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Bataille de France, 1940. Repenser les forces aériennes au combat

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La géographie militaire de la campagne de France (mai-juin 1940), révélatrice de la maîtrise des espaces par les stratèges allemands

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OUTLINE

1. A military campaign in a temperate environment: the environment of the “blitzkrieg”
 1. 1. A campaign in a temperate environment
 1. 2. An environment favourable to the German “sickle cut”
 1. 3. A static conception of terrain for the Allies
2. The preponderance of the geographical factor in operations
 2. 1. An influence on strategic and tactical decisions
 2. 2. Influence on combat and weapon systems
 2. 3. Influence on logistics and support
3. Controlling the restrictive environment
 3. 1. Fighting in mountainous areas
 3. 2. Controlling airspace
 3. 3. The coastline and the British embarkation

TEXT

- 1 The Battle of France, between 10 May and 25 June 1940, was an essential phase of the Second World War in Europe. The German offensive led to the collapse of the entire front that had been held by the French, British and Belgian armies since the Allies declared war on Hitler's Germany at the beginning of September 1939. The battle area where the bitterest rivalries between the two sides were played out was relatively small compared to the previous world war. It formed a triangle with its base facing the English Channel and its tip facing the Ardennes. It did, of course, extend as far as the centre of France and Bayonne after the Allied defeat in the north in May and the lightning advance of the German armies towards the south between 4 and 25 June. This battle area in north-western Europe had all the geographical conditions necessary for the success of the Ger-

man plan: mild weather conditions in the spring, plains and plateaus favourable to mobility, including the Ardennes massif, which the French strategists considered impassable. Clearly, in addition to the material and organic aspects, German strategists had learned from the lessons of military geography given in military academies at the beginning of the 20th century. They knew how to make use of all the physical and human dimensions of the terrain that needed to be crossed and conquered by following a daring plan known as the “sickle cut”. How did the geographical factor, in general, contribute to the strategic and tactical success of the German army? Three aspects can be highlighted: the temperate environment of the “blitzkrieg”, the impact of the geographical factor on the conduct of operations, the control of constraining environments (air, coast and mountains).

1. A military campaign in a temperate environment: the environment of the “blitzkrieg”

1. 1. A campaign in a temperate environment

- 2 A temperate environment is most propitious to modern warfare. The Battle of France of May-June 1940 was no exception to this dynamic, which has been part of a long history since Antiquity. All the military revolutions that led to changes in weaponry, the organisation of armies, doctrines and the conduct of armies first occurred in a temperate environment. The natural characteristics of this environment offer less restrictive possibilities than in other mountainous (discussed below) or desert environments: search for open spaces, control of hills, climate favourable to operations during three seasons. The temperate climate zone in Europe, which extends between the Mediterranean zone in the south and the Arctic Circle in the north of Europe, is marked by a low thermal amplitude, regular precipitation, mild winters with an average coldest month above -3° C, hot and humid summers, and climatic influences that are oceanic, continental and Mediterranean. The biogeographical environment favours the diversity of tree species but also to its exploitation. The hydrographic

networks, due to the regular rainfall, are numerous, while the water-courses shape valleys that have traditionally been routes of exchange and invasion for centuries.

- 3 Since ancient times, the great battles that lead to the outcome of wars between states have taken place on the vast rural expanses, which have been mostly open since they were deforested and brought under cultivation from the 12th century. The open field landscape that characterises north-western Europe has developed since this period. It consists of unenclosed fields (with variations according to the region, such as in Flanders or Thiérache), a dense network of roads, and a grouped or semi-grouped settlement. Further inland, where the continental climate dominates, and moving away from the oceanic influence, the meadows characterise the agrarian landscape, which is just as favourable to human development such as grouped villages and cultivation. While adapting to the diverse topographical forms of the regions (plains, plateaus, hills, etc.), this type of so-called open landscape was the ideal location for the implementation of military innovations. Cavalry charges, artillery fire, the deployment of tank attacks and the use of aircraft, among others, are most effective in this type of environment. As Marc Bloch wrote in *L'Étrange défaite* (*Strange Defeat*), then an eyewitness soldier in the Battle of France, this environment in northern France and Belgium was largely devoid of physical constraints when he described the manoeuvre adopted by the strategists:

Others, on the contrary, wanted the entire war immediately outside our national territory; they invited us, for that purpose, to occupy, in one leap, the left bank of the Dyle, that of the Belgian Meuse and, in the interval between the two rivers, a diagonal drawn, from Wavre to Namur, across the high plains of the Hesbaye, almost completely devoid of natural obstacles.¹

- 4 In the inter-war period, military capabilities and their doctrines of use, the concepts of strategic and tactical manoeuvre were envisaged for this type of environment. Traditional armaments, such as light and heavy tanks, artillery firepower and transmission systems, among others, were modernised to adapt to manoeuvres on the Picardy and Lorraine plateaus, on the Alsace plain and on the vast plains of northern Europe. The Battle of France conducted by the German army

between the 10th May and 25th June 1940 followed this military reasoning. It presents this doctrinal and capability innovation of the “blitzkrieg”, conceived for the rural spaces of a temperate environment, for the plains and the European open spaces where strategic manoeuvre is facilitated, unlike so-called constraining environments.

1. 2. An environment favourable to the German “sickle cut”

- 5 The Battle of France conducted by the German armies on Belgian and French territory in the spring of 1940 was based on these data linked to a natural environment favourable to daring plans and conducive to a surprise effect. On 17 February 1940, the German High Command led by Manstein, heir to the old Prussian General Staff, presented a first offensive plan that appealed to the Fuhrer. This plan, improved at the end of the month, went against the Schlieffen plan of 1914: the “sickle cut”. The 1914 plan foresaw a French offensive through the Ardennes towards southern Germany with a German counterattack through Belgium. The “sickle cut” imagined by the German Chief of Staff in 1940 provided for an allied offensive through Belgium and an enveloping manoeuvre by the German army from the Ardennes massif. The German surprise effect came precisely from the ability to exploit the natural environment, the different types of terrain using modern military capabilities designed for this purpose. However, it contradicted a traditional idea of the art of war: the crossing of a rugged environment such as the medium Ardennes mountains. Whether it is the cities or the mountainous massifs, the Western doctrinal thought consists in avoiding them to favour manoeuvres on the plains. The originality of the German plan is to create a surprise effect by crossing this mountainous terrain without neglecting the rapid mobility making use of the plains and plateaus. The speed of a German offensive in a rugged environment and the new capacity for using tanks were intended make a surprise attack on the French rear-guard possible.
- 6 The German “sickle cut” was thus based on very favourable geographical conditions: a spring season without any major constraints, manoeuvring in an open area by the offensive of Army Group B towards the plains of Holland and northern Belgium in order to draw

the Franco-British forces northwards, a succession of mobile and rapid manoeuvres in the open spaces of northern France and Belgium. Two other army groups were effectively engaged. Army Group C, towards the Maginot Line (a set of continuous or semi-continuous fortifications covering the north-eastern and eastern sides of the French border), was to provide a breakthrough. Army Group A, led by General Rundstedt, had to create a surprise by passing through the Ardennes massif and then seizing the decisive transit routes: the bridges over the Meuse between Sedan and Dinant, the valley of the Somme as far as Amiens and then on to the Channel coast.

- 7 Through the Lorraine and Picardy plateaus, which favoured the movement of mechanised and mobile units, the manoeuvre aimed to envelop the French and British armies located in Belgium and Holland. Geographically, the use made of the natural environment was daring but in fact it was part of a long tradition of Western military thought: manoeuvring in open spaces using mobile units. It therefore reveals a certain conceptual continuity in its implementation in 1940, based on new military capabilities such as aviation for air control and armoured units. The ten German tank divisions (Panzers) were the cornerstones for exploiting the terrain. They constituted a new and effective weapon system that could cross a medium mountain range and travel up to 60 kilometres a day.

1. 3. A static conception of terrain for the Allies

- 8 Was the natural environment made good use of by the Allies? On the eve of the Battle of France, the Army Geographical Service was one of the cogs in the wheel of French military power thanks to the quality of its cartographic work and its studies of French territory since 1914. Geographical knowledge of the battle area therefore appears to have been well managed.² At the same time, the French High Command had adopted a defensive approach to the terrain. This approach was also the result of several centuries of doctrinal evolution.
- 9 In French military thought, and in the West in general, terrain refers to three different approaches. The first stems from the art of warfare during the modern period (16th-18th centuries), where terrain was

considered in an abstract and geometric manner. From the French Revolution onwards, at the end of the 18th century, the approach to terrain developed by General Napoleon Bonaparte favoured other implementations: manoeuvring using terrain. By taking into account its physical and human factors, the terrain thus became an aid to mobility and manoeuvring. This approach appears in the German plan to invade France, Belgium and Holland in May 1940. The third traditional approach is that of considering the terrain as a geographical objective, including in the defensive by increasingly durable and resistant development. This last conception is that of the French army in the aftermath of the First World War, leading to the construction of the Maginot Line between 1929 and 1935. This line extended over 120 kilometres, but 325 kilometres of borders had no defensive facilities, particularly in Belgium. On the eve of the French campaign, the French plan consisted of defending itself from the Italian border to the Belgian border by a network of continuous or discontinuous fortifications, and from the Channel to the Maginot Line by mobile units deployed according to military needs.

- 10 The “Maginot Line” spirit characterises French military thinking. This wall, equipped with recent progress in permanent fortifications, would be inviolable and impassable, and would ensure the best defence of the terrain against the German offensive. “By 1922, the French army had decided that its soldiers would never again fight a defensive battle on open ground”, says John Keegan.³ A mobile field army and a British expeditionary corps were to defend Belgian territory. However, the lack of coordination of strategic plans with the Belgian High Command and the lack of reconnaissance of the terrain of Belgian territory by the Franco-British command showed some uncertainty. In October 1939, General Gamelin, Commander-in-Chief of the French army, placed the first units on Belgian territory, on the Dyle between the Schelde estuary and the Meuse, where fortifications built on its banks were to create a solid defensive line. Without going into considerations related to military structures, it is important to note the contrast in the way the terrain was taken into account in the Allied and German military plans. On the Allied side, strategic considerations were based on the principle of terrain planning as in the First World War, relying on lines of fortifications that had been costly to the French and Belgian military budgets in the 1930s.

- 11 Thus, beyond its organic and structural characteristics, the Battle of France shows an unequal balance of power linked to the physical and natural environment. Each side viewed it differently: mainly static for defensive manoeuvring on the Allied side, mainly mobile for offensive manoeuvring on the German side. These two approaches to terrain thus played a part in the course of the battles. Although they were only one aspect of the Battle of France, the fact remains that the use made of physical aspects was more daring and active on the German side, whereas the balance of power between the two sides was more or less even.

2. The preponderance of the geographical factor in operations

2. 1. An influence on strategic and tactical decisions

- 12 The first influence of the geographical factor, whether physical or human, is on the choice of strategic operational and tactical decisions. This first category includes a set of elements: the preparation of manoeuvres (the task, the part played by the environment in the decision), the part played by the terrain in choosing a direction as a geographical objective, the compartmentalisation of the terrain, the communication routes, the transmission networks, the choice of intermediate targets such as the stages, and the development of the terrain by the adversary.
- 13 On a strategic level, each side's decision-making begins with a reading of the map. For Hitler, the orientation of the offensive had to take into account Germany's "Achilles' heel", the Ruhr. The strategic plan was to direct the effort and the concentration of forces as far away as possible from this industrial region, in other words towards the West in Belgium, without taking into account its neutrality. For the French High Command, the organisation of the river basins served the approach of the strategic plans made before the German offensive of May 1940. A series of plans were drawn up until March 1940 by the French General Staff on defensive lines that were generally based on rivers. Crossing them required material resources and trained units

but the obstacle itself could be overcome. The Dyle line was thus retained on the assumption that the Dutch army would resist a German offensive long enough for the French army to reach Antwerp on the Scheldt and Namur on the Meuse, 230 km from its positions. Other plans were put forward and then abandoned because of political decisions, notably by the Belgian King, and less because of the characteristics of the terrain.

- 14 Uncertainty and improvisation remained for the Allied forces which had been trained in defence and were yet launched in an offensive against the German army. Geographical intelligence, aimed at defining routes in Belgium, seems to have been insufficient to anticipate the German offensive. In addition, the plans of the Belgian army, the capabilities of the Belgian resistance on the Albert Canal, the coordination of the Allies with the Belgian and Dutch armies were poorly used. When the Allied armies entered the Belgian plains in May 1940 to fight the decisive battle, the terrain remained unknown and poorly prepared to create a solid line of defence. In short, the geographical preparation seems to have been deficient before and during the German offensive. Based on poor knowledge of the situation on the ground, due to deficient communication and transmission systems, the Allied command made counterproductive decisions during the German blitzkrieg. On the other hand, the German armies planned a rapid advance with a centralised command and superior knowledge of the terrain to better envelop the powerful Allied units. From the knowledge and control of the terrain in Holland, Belgium and Northern France, German strategists imposed their power at their own pace in decisive actions.
- 15 Weather conditions were also taken into account when implementing strategic plans such as the operations of May-June 1940. The bad weather conditions between October 1939 and March 1940 led Hitler to delay the launch of the offensive. The German units would have had the greatest difficulty in crossing the Ardennes massif, which the German General Staff estimated would take nine days to cross. This massif was wooded and strewn with tactical obstacles, with narrow roads and few bridges. Poor weather conditions combined with the difficult terrain would have hampered the success of the central army group's offensive. German strategists took these natural conditions into account when deciding when to launch the offensive. When it

was launched on 10 May, the weather conditions were satisfactory for invading Holland by air: 4,000 paratroopers and an airborne division reached their objectives, paving the way for the armoured offensive on 14 May.

2. 2. Influence on combat and weapon systems

- 16 The influence of the geographical factor was also apparent strategically, operationally and tactically during the combat and weapon system employment phases. Its influence was therefore felt at several command and unit levels and at several geographical scales. The repercussions of the terrain were also felt in other ways: on the choice of weaponry, the protection provided by shelters and vegetation for concealment and the organisation of the command.
- 17 On the German side, in addition to the air force, which played a decisive role in controlling the airspace, the weapon system based on armoured divisions was designed for tactical combat leading to strategic success. While the quality of the various Allied and German tanks was similar, their doctrine of use diverged. The German army's doctrine was to deploy panzers in a concentrated manner to break through a limited front. The task of these armoured vehicles, supported by motorised units, was to hold the conquered ground until the arrival of infantry troops.⁴ In contrast, French doctrine envisaged the heavily-armoured division (*Division cuirassée*), created in March 1940, as a defensive tool to achieve tactical success. It supported and depended on the infantry, which had no means of anti-aircraft or anti-tank defence. On the Sedan front, 80 km wide, the French troops of the 2nd Army had to stop the advance of the German tanks under specific conditions. The Ardennes massif was then considered by the French strategists as a natural barrier that could not be crossed. They had to revise their plans. The Meuse was crossed on the third day of the German offensive by infantry units transported in rigid inflatables, *i.e.*, on 13 May, instead of the nine days planned. The concrete defences were not yet complete, while the counter-mobility mines were in short supply. The reserve troops were engaged from the very beginning, while the air force suffered heavy losses. General Guderian's German troops took intact bridges over the Meuse and its

canal while the air force bombed key sites such as artillery positions and command posts. Although the French armoured units were scattered, the German units advanced in a concentrated manner and crossed the entire length of the Meuse on the 4th day. Guderian's forces were then able to swing westwards towards the English Channel.

- 18 On the Allied side, the nature of the terrain was taken into account to create natural defensive bastions. In Holland, although protected by its neutrality, a German invasion was envisaged, thanks to information from their military attaché in Berlin, which would aim to bypass the Belgian defences from the north. Generalissimo Reynders devised a strategic defensive plan to protect only the vital area of the country. He used the tactical and strategic flooding method that had already been used against the French troops of Louis XIV at the end of the 17th century and to deter any invasion attempt by the German army during the First World War. Withdrawn in the natural bastion of Old Holland, surrounded by wetlands several metres deep, the Dutch army (400,000 ill-equipped and prepared men) would fall back after delaying fighting further south. On 10 May, the German invasion plan was triggered: a Panzer and a division attacked while German paratroopers stormed the airfields around The Hague. On 13 May, the German offensive strengthened to take the natural stronghold in the north while gliders and seaplanes -landing on the Meuse- dropped commandos and helped push the retreating Dutch army westwards. On 15 May, the military command accepted the surrender order, realising that the strategy of the Dutch redoubt protected by floods was becoming ineffective in the era of *blitzkrieg*.
- 19 Similarly, during the Battle of France after 10 June, the French General Staff undertook to reorganise its defensive retreat on natural defensive lines. The 10th Army had to stop the German advance towards the west by relying on the hills of the Perche. The Paris Army and the 7th Army were to entrench themselves behind the Loire in the South. The 6th, 4th and 2nd Armies were to block the valleys of the Marne, Seine and Yonne⁵. The teachings of the military geographers of the *École supérieure de guerre* ("Superior School of Warfare") at the end of the 19th century seem to have been followed for a defence against the same opponent. However, this use of geography for military purposes seems to have been conceived in another era for the conduct

of a previous war. Even the concept of the *Réduit Breton* (Breton redoubt in the peninsular of Brittany), already envisaged at the end of the 19th century, was proposed again on 10 June by the President of the Council, Paul Reynaud, in order to facilitate defence and reorganise not only a crumbling army, coming from Dunkirk, but also the failing French state. The *Réduit Breton* was intended to maintain the link with England, which would ensure supplies by sea. The strategic manoeuvre was in fact abandoned on 14 June. General Weygand described it as “romantic” given the disorganisation of the French army. On 15 June, the invasion of French territory continued with the capture of towns in the north-east (Saint-Dizier) and east (Besançon, Lyon for example).

2. 3. Influence on logistics and support

- 20 The influence of the geographical factor could also be seen in all the support and logistics activities of the armed forces. In particular, it affected the functioning of the various services responsible for meeting the needs of units in the field (commissariat, transport, health, accommodation, military justice, etc.), links between units and their command, supplies, transport and intelligence gathering. The repercussions of physical and human geography on all these activities were therefore extensive. They had a direct impact on the collapse of the front on the Allied side and on their successive capitulations until 25 June 1940.
- 21 In terms of logistics, the elongation of the front over more than 800 km, the difficulties in supplying petrol to the heavily-armoured divisions and the supply of the Allied armies, the distance between the front and the command at Vincennes were all strategic constraints. For example, French divisions (25 infantry and two heavily-armoured divisions) were placed in reserve between Saverne and Besançon. These were then intended to support parts of the front that were under attack. They were to be transported by rail and the manoeuvre to ferry a division was to take at least four days. The air threat and the rapid offensive of German motorised units meant that time constraints had to be reconsidered and delays were inevitable. These same divisions were sometimes surprised by the speed of encircling manoeuvres and surrendered without a fight. When the Wey-

gand plan was implemented on 22 May, the counter-offensive of the armies on the front proved difficult because of limited supplies. From Montmédy to the mouth of the Somme, a continuous front was re-established at the beginning of June, but several units had to ration themselves and lacked equipment such as anti-tank guns. The front gave way again on 7 June between the Oise and the Somme. On the contrary, the German command concentrated its resources on strategic axes such as Sedan on 10 May 1940. Its units took advantage of several phases of recovery to reorganise. On 14 May, after the Sedan breakthrough, its panzer divisions were supplied with petrol and ammunition, as were Rommel's 5th and 7th at Dinant, in preparation for a drive westwards and southwards towards the Franco-British units. The lines of communication were never broken and ensured permanent support for armoured and motorised units.

- 22 In terms of telecommunications, the French General Staff had accumulated delays in terms of equipment, while the devices used appeared to be from another era. There were still no teletypewriters and messages were transmitted by motorcyclists. At the General Staff, located at the Fort de Vincennes, there were no radios or carrier pigeons, and telephone and telegram connections were poor.

3. Controlling the restrictive environment

3. 1. Fighting in mountainous areas

- 23 The control of constraining environments distinguishes, in the first place, the Ardennes massif and the more extensive and diversified Alps. The French army considered the Ardennes massif, mentioned above, to be impassable. This ancient massif is the western extension of the Rhine schist massif, whose highest point is 694 metres at the Signal de Botrange in Belgium. In the shape of an inverted crescent (the two points facing north), it extends for about 250 kilometres from east to west and for about 80 kilometres from north to south in its narrowest part, and covers several states, namely Germany, Belgium, France and Luxembourg. The largest part of the massif is located in Belgium in the Walloon region. It is bounded by the Lorraine

and Champagne plateaus in the south, the Sambre and Meuse rivers in the west and the Eifel region in the east. Its relief is uneven due to soil erosion and its hydrographic network with narrow valleys and a rugged relief. Several rivers had their source in the area, such as the Lesse, the Amblève and the Sûre, but only the Meuse, in its western part, constituted a river forming a natural obstacle to traffic, giving a strategic value to the various bridges. In addition to the relief and the watercourses, the forest cover of the massif also constituted a constraint to mobility, forcing peripheral transit routes to be followed. The fact remains that between the 10th and 14th May, this natural obstacle, difficult to penetrate, was crossed by motorised and armoured units prepared to force their way through. The French strategists had thus overestimated the importance of the natural obstacle of this massif.

- 24 It was quite different in the Alps, where the Italian strategists had underestimated the difficulty of crossing the medium mountains of southern Provence and the high mountains of the Alps. The fighting appeared to be localised and border-based. Mussolini's Italy went to war against France on 10 June. Its army, composed of Alpine hunter units, launched a first offensive on 15 and 16 June, which was stopped by a French counter-attack on 17 June. It resumed the offensive on the 20 June and came up against the specific tactical constraints of the mountain environment: compartmentalisation of the terrain, transit routes in the valley bottoms, strategic importance of locks and passes, difficulties in dealing with the Alpine zones, constraints of altitude for the weapons systems. These different aspects, which are not exhaustive, required troops who were seasoned in one of the most hostile terrains for combat. In fact, the resistance of the French Alpine hunter units did not allow the Italian troops to seize strategic objectives. They remained contained along the border. They only seized a few isolated fortified works and did not penetrate deep into French territory. However, Menton was seized on 23 June with relative losses on both sides⁶.
- 25 In short, the mountain environment was not a central theatre of operations in either the Ardennes or the Alps. The strategic objectives of each of the belligerents were always located on the plains.

3. 2. Controlling airspace

- 26 Since the First World War, airspace had become a new strategic environment. Western theorists, from the beginning of the 20th century, have shown the importance of controlling it during a military campaign. They influenced German strategists who dominated this environment during the Battle of France.
- 27 The doctrine of use of the Luftwaffe included two essential components: an air force for bombing the strategic sites of the adversary, and an air force for supporting the motorised and armoured units of the army. Ground attacks were thus preceded by air reconnaissance, while well-equipped anti-aircraft defence units, located in the front line, ensured the protection of ground forces against the enemy's air threat. This employment doctrine thus ensured air control and the success of operations. It also relied on large forces: 4,800 aircraft, including 3,600 for the Battle of France, notably 340 *stukas*, 1,000 fighters and 1,000 bombers.
- 28 The Allied doctrine was characterised by similar principles of use but with a different organisation. For the French army, a fleet of bombers was meant to hit enemy sites, while an air force was meant to support ground forces. However, different factors contributed to less efficiency in operations. Its forces were smaller in number and comprised 1,300 modern aircraft, including 790 fighters and about 100 bombers. During operations, the French air command tended to save its air assets and protect them from the enemy. Moreover, cooperation between heavily-armoured and air units lacked doctrine and experience, while land commands tried to ensure the use of their own air division. The concentration of air forces thus appeared more than limited. At the same time, the Royal Air Force, which had forces in France, also preserved its capabilities to ensure the protection of its national territory.
- 29 In the course of the German offensive, the use of airspace demonstrated daring and success. During the night of 9-10 May 1940, 300 German soldiers were dropped by glider on the western bank of the Albert Canal in Belgium in order to control the three bridges and then neutralise the fortifications, in particular the fort at Eben Emaël, which was abandoned on 11 May. During the offensive against Hol-

land, the German air force also carried out the first unopposed bombing of a town. On 13 May, the city of Rotterdam was bombed by mistake, following a misinterpretation of a signal announcing the victory of the German land forces. The bombing resulted in the death of 814 civilians and the surrender of the country the following day after the Queen's departure for England. During the crossing of the Ardennes massif in May 1940, the air force ensured the protection of the ground units crossing the various rivers. It controlled the roads and transit routes, bombed the points of resistance and demoralised the enemy with the whistle of the *stukas*' dive-bombing sirens. It allowed the armoured tanks to reach Sedan on 12 May and to begin the Battle of the Meuse two days ahead of the strategic plan. During the battle for the Somme and the Aisne in June, the air force still dominated the air and concentrated its forces to support the *blitzkrieg* on the ground. Its long-range bombers attacked factories, airfields and communication hubs in large cities such as Lyon and Paris, demoralising the population as it fled south.

30 In short, the air environment was efficiently approached and exploited by the German army despite all the constraints linked to this space. Air space did not offer permanent strength and was vulnerable to constraining meteorological factors. Despite this, the airspace was fully controlled during almost six weeks of operations.

3. 3. The coastline and the British embarkation

31 Coastlines form a contact space between land and sea, between high and low water. They are characterised by their shifting nature and the changing forms of which they are composed. The slope of the beach, the profile of the dune, the surface of a sandy bank all evolve. The beach thickens due to the addition of sand, the dune next to the beach can be compacted by rainfall and slide towards the beach, the sandbank moves according to high tides and storms. The profile of a coastline is directly related to erosive forces, which refer to oceanic, atmospheric, hydrological and biotic factors. From a military point of view, they became increasingly important throughout the 20th century and became strategic as demonstrated by the amphibious landing experiments of the First World War in the Dardanelles Straits⁷.

- 32 During the Battle of France in June 1940, the French and British armies found themselves facing the English Channel, encircled by the German army which closed the “sickle cut”. On 20 May, German armoured divisions reached Abbeville at the mouth of the Somme and cut the Allied forces in half. Thanks to Guderian’s tanks, the “sickle cut” accelerated towards Calais (22 May), then Boulogne sur Mer (23 May), and finally reached Dunkirk. Hitler then gave the order to stop 15 km from Dunkirk (25-26 May) to allow the slower infantry to join them. He also considered that armoured vehicles were not suitable for fighting on the coastal plains, particularly on the canal-strewn northern coast of France. On 20 May, the British Admiralty decided to evacuate its forces via the Channel ports. The withdrawal zone was reinforced at Dunkirk and reduced as the enemy advanced. It covered about 150-200 km² in a rectangle that was limited to the Mardyck canal at the Spycker gap in the west, the Haute-Colme and Basse-Colme canals in the south and the Moêres region in the east (an area 20 km long and 10 km deep).
- 33 The Allied divisions thus withdrew behind the Aa and the Colme canal, which became a defence line. Sixty French and two British divisions were waiting to be embarked and were beset by 89 infantry divisions and 15 German armoured or motorised divisions. On 27 May, as Belgian King Leopold surrendered, Operation Dynamo began, under favourable weather conditions, through Dunkirk and nearby coastal areas under attack from German aircraft. The protected zone extended from the vicinity of Dunkirk to the port of Nieuwpoort on the coast, from Bergues to Veurne and from Veurne to Nieuwpoort inland. 200,000 English and 130,000 French were evacuated from the coast and Dunkirk until 4 June. However, two French divisions were maintained to protect the embarkation operation and 40,000 French were captured afterwards.
- 34 The geographical conditions for this embarkation were considered specific. The coastline was made up of wide dunes and a foreshore with a gentle slope of several hundred metres at low tide, which favoured the temporary parking of waiting units. Three kilometres east of Dunkirk, the foreshore extended to about 300 metres at Zuydcoote. The topography of the sandy coastline offered a comfortable parking area, but this was only relative, as exposure to the sun made soldiers thirsty, the sandy wind got into their equipment and

weapons, and the lack of protection from air attacks was a major constraint. The shape of the coastline did not favour embarkation either, because of the distance from the ships docking offshore and the scarcity of landing stages. The marshy areas in the hinterland, on the other hand, favoured land-based defence, creating unavoidable transit routes and the installation of blocking positions. However, outside the port of Dunkirk and in the absence of control of the neighbouring ports (Calais, Boulogne sur Mer), the geographical conditions for embarkation proved difficult in every respect.

- 35 In the end, the Battle of France, between the 10th May and 25th June 1940, led to the successive successes of the German strategists' so-called "sickle cut" plan. It also revealed the mastery of geographical knowledge and the natural environments in which the various battles were fought. Geography could also appear as the "queen of battle" crowned by this strategic boldness. It revealed, generally, that various conditions were met that led to the success of the German army: favourable weather conditions in a battle space mainly composed of plains and plateaus favourable to swift movement, the bold strategic and tactical use of geography as the river-crossing operations showed, the full understanding of the constraining environments (air, mountains, coastline). In this respect, German strategists were able to combine, as they had during the 1870 war, the necessary knowledge of the terrain with its tactical and strategic use.

NOTES

- 1 M. Bloch, *L'étrange défaite* (Paris: Folio Histoire, 1990), 69.
- 2 P. Boulanger, *Géographie militaire française (1871-1939)* (Paris: Economica-ISC, 2001), 614 p.
- 3 J. Keegan, *La Deuxième Guerre mondiale* (Paris: Tempus), 84.
- 4 H. Michel, *La Seconde Guerre mondiale* (Paris: PUF, Volume 1, 1977), 503 pages, 102-103.
- 5 H. Michel, *op. cit.*, 145.
- 6 French losses: 10 dead, 21 wounded, 30 prisoners. Italian casualties: 162 dead, 1,725 wounded, 37 prisoners.

7 P. Boulanger, *Géographie militaire* (Paris: Ellipses, coll. Carrefour, 2006), 384 pages.

ABSTRACTS

English

How did geographical factors influence military operations during the Battle of France? This article attempts to answer this broad question by appropriating the approaches of historical military geography. The Battle of France, between 10 May and 25 June 1940, shows that various conditions were combined to mark the success of the German Army: favorable weather conditions in a battle area mainly composed of plains and plateaus suitable for mobility, the bold exploitation at the strategic and tactical level of the geographical factor such as river crossing operations or the control of restrictive environments (air, mountains and coastline).

Français

Comment les facteurs géographiques ont-ils influencé les opérations militaires durant la bataille de France ? Cet article tente de répondre à cette large question en s'appropriant les approches de la géographie militaire historique. La bataille de France, entre le 10 mai et le 25 juin 1940, révèle que différentes conditions sont réunies pour marquer le succès de l'armée allemande : des conditions météorologiques favorables dans un espace de bataille surtout composé de plaines et de plateaux propices à la mobilité, l'exploitation audacieuse au niveau stratégique et tactique du facteur géographique comme les opérations de franchissement des cours d'eau ou la maîtrise des milieux contraignants (airs, montagnard, littoral).

INDEX

Mots-clés

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