

THE INFLUENCE OF THE GEOGRAPHICAL ENVIRONMENT OVER THE MILITARY OPERATIONS IN THE BÂRGĂU MOUNTAINS

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Abstract: *The analysis of geographical spaces and the way in which physical-geographic elements influence the planning and conduct of military operations is related to military geography as a component of military science. From the military point of view, the parameters of the relief are of particular importance. In this respect, in the Bârgău Mountains, the mountainous landforms, with slopes leading to the lack of viability, then the high ridges and dominant points that offer wide views, the regime of the currents, the rain, the harshness of the climate in different seasons, the high temperature variations and atmospheric pressure, are elements that oppose or which, on the contrary, can be used as a real weapon against the enemy.*

Keywords: environment, military actions, military geography, planning, forecasting.

1. Conceptual frameworks

The geographical environment, studied and analysed from a military perspective, requires the determining of the influence of geographic factors over military operations, as well as the evaluation of the war potential for the country in the studied geographic environment. Thus, military geography, as branch of general geography and, at the same time, a component of military science, has as study object the analysis and interpretation of natural and antropogenic elements of the geographic environment, which, one way or another, influence the preparation and carrying out of military operations, the two directions in which the geographic research is orientated being closely related and having a reciprocal influence [6].

The method used by military geography is the analysis of relations and the interaction of geographic and artificial factors, in order to emphasize their influence over the military operations on a well-determined

deployment stage. Consequently, the soldiers' knowledge of concepts related to the geographic space is an essential requirement, without which the preparation and management of military operations, at times of crisis and war, is unthinkable [2].

2. The Bârgău Mountains – location and geographical characterisation

The Bârgău Mountains represent a mountain unit that is relatively low, situated in the central-northern part of Romania, on the western front of the Oriental Carpathians, embedded between two high massifs, positioned to the North and South, namely, Rodna and Călimani. The mountains are bordered by two low areas to the West and East, namely the Transylvanian Depression and Dorna Depression, which justifies the classification of the Bârgău Mountains into the area of „relative geographical discontinuity” of the Bârgău-Dorna-Moldova Valley couloir [8].

The Bârgău Mountains represent a relatively well-shaped unit between the two joining couloirs, the Someșul Mare couloir (to the North, between Ilva Mică and Șanț) and the Bârgău couloir (to the South), whereas to the East, the border reaches Valea Coșna, the Grădinița Pass, Dornișoara Valley and the Tihuța Pass, and

to the West, they stop at the Strâmba (673 m). One may associate the two couloirs as well to the mountain area, for which reason there is the unit called the Bârgăie Couloir. It exists in the shape of a peak descending from the East to the West, sectioned by a series of valleys: Ilva, Leșu and Tiha (Straja) [8].



Figure 1 The Bârgău Mountains – location on the Romanian map, in Bistrița-Năsăud county

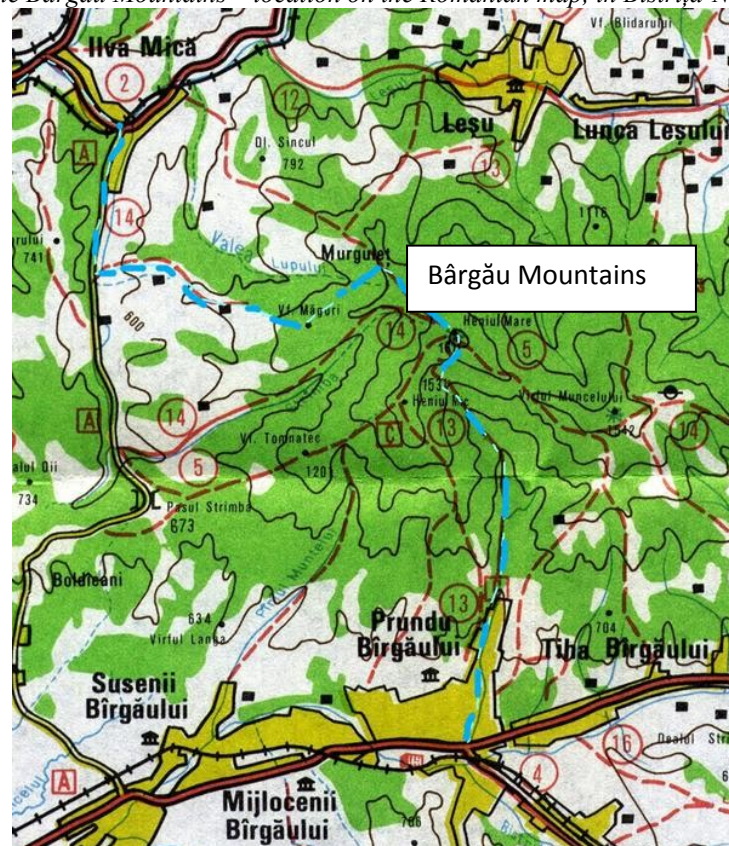


Figure 2 Bârgău Mountains – The physical map [4]

3.The influence of the geographical environment in Bârgău Mountains over the military operations

The military operations in Bârgău Mountains may be influenced by certain characteristics of the geographic environment, namely: the declivity of the pitch leads to a lack of viability, which starts from limiting the carriageways and ends with forbidding walking, slowing down the march rhythm, impossibility to use cars, diminishing of the mobility for different troops. Secondly, the high peaks and dominant points offer wide panoramas, but large land covers (forests) and meteorological phenomena (clouds, fog etc.), on the contrary, limit observation, favoring to a high degree the possibility of ambush surprise. The system of the wind, rain, the harsh climate during different seasons, the temperature variations and atmospheric pressure are elements that oppose, or on the contrary, that may be used as a genuine weapon against the enemy [2].

3.1. Features of the geographical environment and its influence

The Bârgău Mountains represent a geographical area of great importance and strategic value based on their features: altitude, slope orientation towards North-South and East-West, at right angle on the estimated offensive directions of the enemy, large number of depressions, significant material and human resources, existence of mountain passes. All these elements favour a better coordination of military operations for all types of weapons in the case of land forces, in cooperation with the other categories of armed forces and elements of the national defence system. At the same time, this area also has important human and material resources that may contribute to the material and medical provisioning of the military and the units that act in this area.

The wooded regions also pose a significant influence over military operations, being an advantage for defence, while the offensive

is made more difficult by limiting the use of armours and all types of munitions. The forests offer better conditions to hide the defender, allowing him to destroy with less force an attacker that is superior as number and munitions. The mountain landscape of Bârgău is dominated by a few specific elements, such as the Southern subvolcanic massifs constituted in an alignment of knolls. The central part presents a lower landform, alternating between subvolcanic massifs and a series of flysch formation peaks, representing morphological elements separated by valleys. The northern area has the aspect of a plateau dissected by rivers. Nonetheless, these features make it harder for the coordination of military operations, even though the mountain ranges, according to their development, represent strategic, operative or tactic importance alignment [3].

A special landscape is made of valleys, which have alternations of depressions and gorges on certain sections. Some depressions communicate between them through large couloirs, such as the Prundu Bârgău Depression and the Colibița Depression.

The variation of land forms and the abundance of afforestation makes orientation more difficult, and the division of the land, by the nature of its shapes, can also be an advantage for those who know to subordinate it to its purpose or, the other way around, a cause of exhaustion for the human forces, an obstacle for actions of battle, strategy, fire, connection and cooperation.

In the case of a defence war, the mountain regions provide special conditions for the deployment of long-term defence actions, as well as for the resistance formation.

Special attention must be paid to the intermontane depressions which have significant human and material resources and may represent concentration districts of some important forces destined to heavy actions outside the mountain area, but it always gives opening to favourable

directions of actions deep between the mountains [1].

3.2. Climatic influences over military operations

The altitude in Bârgău decreases from West and South towards the East and North. The line of the great subvolcanic massifs in the South and West stands as a moderate orographic obstacle, and being located in the way of western mass air flow, they get higher quantities of precipitations.

The presence of intramontane depressions (Colibița, Dornelor, Lunca Ilvei, Rodna, Leșu) favour the occurrence of thermic inversions, with a special frequency and intensity. These phenomena are made possible by the presence of a surrounding mountain frame, which prevent ventilation of the cold air that sets in the depressions.

With Bârgău being merely a transfluent passage of air mass flows from the West towards the Dorne Depression, their outflow towards the East is often obstructed by the presence of the Călimani wall, which stops and redirects these air masses, thus producing a vortex of the air masses coming from the South of Rodnei mountains and which curves to the North and West and go back on the East-West direction. At the same time, with the thermic inversions, the Dorne Depression sometimes works as a buffer zone, with stationary cold air, which prevents the distribution to the East of Western influences.

With regards to the winds in the studied areas, the different orientation of peaks and valleys represent an element of instability in their frequency and speed. Up to a few tens of meters altitude, the winds are highly influenced by the degree of fragmentation, peak orientation, rugosity, vegetation, the presence of lake Colibița. At a higher altitude, the winds' parameters present a relative uniformity only in the area of northern depressions; while in the rest of the mountain ensemble there are series of disturbances, visible in the influence of local orographic blockages. The summer

thermic average temperatures are slightly higher than in the areas situated at similar altitudes in the neighbouring mountains, which is reflected also in the composition and distribution of the pedovegetal shell, and, on the other hand, the winter thermic average temperatures are influenced by the high areas, colder ones, in the North or South [8].

Climate influences the military operations through the temperature variations, the status of atmospheric precipitations and air currents. Temperature variations bear influences over the feeding and equipment of troops, exploitation of the battle technique, functioning of the weaponry, and humidity and especially the status of precipitations has influences over the accessibility of land, over visibility and use of different technique categories.

The variations of atmospheric pressure, of the duration of light and darkness, in various periods of the year, the status of winds influence the actions of aviations, shootings by the artillery and rockets.

3.3. The influence of the hydrographical network

The place and role of the water component in the overall natural geographic conditions of the Bârgău Mountains are extremely important, both as quantitative oscillations, as well as due to the interactions they determine between the elements of the natural environment. The climatic conditions are directly imposed in the formation and partial regeneration of water, by influencing the water balance, both through the intake of precipitations, as well as through the loss due to evapotranspiration [7].

The Bârgău Mountains are drained by rivers that belong to two different hydrological systems: namely the Someș and Bistrița rivers, the former being part of the Western group of Romanian rivers, while the latter in the Eastern group. The Bârgău Mountains may thus be considered a sort of local hydrographic knot, as there are rivers of moderate importance that spring from here: Ilva, Bârgăul, Bistrița and Leșu,

Someșul Mare, the largest river that crosses the mountains, springing from the Suhard Mountains [7].

Rivers and hydrotechnic systems considerably influence military operations, some of them representing even strategic importance alignments. Even though armies have been allocated various and efficient means of passage, watercourses, associated with the characteristics of the shores and adjacent areas still remain significant obstacles that allow the organisation of powerful defence alignments, and the attacker thus encounters complex situations. The obstacle value of a river, though insignificant, may strongly increase through hydroenergetic settlements (such as the case of the artificial man-made lake at Colibița, settlement located on Bistrița Valley, between the Bârgău Mountains and the Călimani Mountains), which determines major changes in the forcing procedures and methods.

Moreover, a dense hydrographical network, oriented at right angle to the offensive direction, poses difficulties to the attacker, who thus requires numerous passage means and a complicated manoeuvre, which represents an advantage to the defender. On the other hand, in such a situation, the attacker will largely make use of the vertical manoeuvre, posing the defender into difficulty [1].

Due to the numerous changes and the limited timeline that the hydrographical network suffers, the geographic environment, which may become a stage of military operations, must be carefully studied under this aspect, and the studies must be permanently updated in this respect.

3.4. The influence of the human factor, the communications system and natural resources

Settlements are located inside the Bârgău Mountains, in the depressionary basins spanning along the most important valleys, as well as on the Eastern side and especially Western one, where the most important

settlements are set, attracted by the wideness of the piedmont areas. Compared to the majority of massifs, where settlements are located peripherically, Bârgăul is highly populated. The villages are stretched alongside the five hydrographic axes oriented from East to West. These settlements become scattered on the soft and wide interfluvies and climb in the proximity of peaks. The valley network in the massif and the two couloirs allowed the organisation of two important means of communication that make the connection to the neighbouring areas in the East (to Moldova): on the road (on Someșul Mare, through the Rotunda Pass or Rodnei to Valea Bistriței Auri; on Bistrița, through Bârgăie and the Tihuța Pass, to Vatra Dornei) and on rails (Ilva Mică – the Grădinița Pass – Vatra Dornei), the connection between Ilva Mică and Vatra Dornei being made possible only in 1937.

The settlements were formed along the two couloirs (of the Someșul Mare and Bârgăie), some of them entering the category of very large villages: Maieru and Rodna, Prundu Bârgăului and Bistrița Bârgăului. The only town in this unit, situated at the crossroads of Năsăudului Hills and Rodnei Mountains and Bârgău Mountains, on the valley of Someșul Mare, is Sângeorz-Băi, with an important spa resort developed based on the presence of spring water in the town, together with a small unit of knittery [7].

All kinds of natural resources are taken into consideration when the geographical environment is studied as a potential stage of military operations. Quite often, the existence of significant natural resources on a certain territory, represents the object of conflicts between nations, determined by seizure tendencies, on the one hand, and the legitimate self-defence reaction of the states that own these resources, on the other hand. The existence of varied natural resources, associated with a strong processing industry, favors a sustained economic activity, which ensures valuable material

resources to the armies that have activity in these areas. Consequently, they may become stages for military operations at any time.

The ores in Bărgău Mountains represent an important resource for the metallurgical industry, and andesite, dacite, marble, ornamental limestone, clay, sands, gravel and volcanic tuff have both industrial uses and uses for the constructions industry.

The human resources, as a numeric and qualitative ratio, also present a great importance in the coordination of military operations by different nations. A numerous population may provide important quota of fighters, favouring the building of large armies.

The communications system and especially its orientation towards the probable operative and strategic directions, considerably influence the military operations. Even though armies have been equipped with a battle technique capable to act outside communications, most of these means remain nonetheless linked to the communications system, and during abundant precipitations (rain, snow) or during thaw periods, the substantiality of the technique that uses the roads is linked to communications [6].

A dense communications network, of all kinds and quality, favours the rapid deployment of battle actions, with massive use of the armoured technique, and the technical-material provision may be accomplished under good conditions.

Massive damage that may be executed in the communications system, the use of an effective system of dams, flooding, land works executed especially during unfavourable conditions, all these may totally or temporary hinder the offensive under certain directions. As a result, ensuring the visibility of communications means represent one of the basic requests, both for the defence and the attacker [2].

3.5.The impact of military operations over the geographic environment

Threats and warnings regarding the damaging of the environment are more and more complex.

As support of all living beings, the environment has imprinted and still imprints numerous particularities to battle actions and social conflicts. The action of disconsidering the context and configuration of the environment during fighting moments or during social conflicts amplified together with the evolution of fighting methods. Hence nowadays, weapons and weaponry systems represent, by their very existence, a permanent and potential danger of ecological disaster [3].

4. Conclusions

To sum up the above mentioned, one may conclude with the fact that military geography analyses the military operations stages and the nations occupying them from the point of view of the geographical-military territory, with reference to: landforms and the ground plan details, the hydrographical network, climate, natural resources, natural and artificial obstacles; economic and industrial objectives; population and human settlements; the communications and telecommunications system, which it treats in close relation to the tactical, operative and strategic actions, with their own organisatory structures, as well as those of potential allies or enemies, considering the laws and principles of armed battles [5].

Great efforts, as a result of the difficulty in accessing the land and the specific meteorological conditions, considerably influence the attention, capacity to judge and the will of people who are engaged in military operations. Among the first signs of tiredness one must note the lack of attention; often leading to disorientation and the great possibility of being surprised [3]. When tiredness turns into fatigue (which is felt extremely fast by those who are not situations that are apparently simple to solve seem complicated, and feelings replace thinking, thus exaggerating dangers.

Fighting actions in the mountains demand special efforts from troops; the role of fighters' moral factor, their battle preparation, their know-how and ability of commanders of all levels play a much more important role than in the battle on common ground.

All these indicate that the success of battle action in the mountains depend on the

accurate preparation and training of the military, the experience and the appropriation degree for certain skills, the courage to overcome the difficulties of battle and the specific meteorological conditions. These qualities are formed in the case of all preparation categories, alpine training having a special contribution.

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