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GEOSITES-GEOMORPHOSITES AND RELIEF[1]

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Abstract: *Geosites-Geomorphosites and Relief***.** Relief alone can constitute a component of the cultural or scientific heritage of a territory, having the same significance as the historical monuments or works of arts, sometimes being the concrete „support" of an architectural, spiritual, cultural etc. expression. Geosites are landforms with a specific shape, which alone or in collaboration with other bioecological or anthropic elements can become objects of heritage. The geosite as a landform represents the particular aspects of the relief determined by the morphogenetic processes and the geologic sublayer. „A place" can have a single significance, in this case related to relief, but many times „a place" comprises several significances, being the result of several factors which give that place a particular feature. Thus, there are places defined by association of cultural, spiritual, historical, archeological, architectonic, touristic, educational-instructive etc elements.

Key words: *geosites-geomorphosites, relief, features*

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Relief alone can constitute a component of the cultural or scientific heritage of a territory, having the same significance as the historical monuments or works of arts, sometimes being the concrete „support" of an architectural, spiritual, cultural etc expression. By its particularities, relief can highlight or even amplify the value of a historical, cultural, spiritual etc. site. Sometimes, even the less spectacular landforms can be components of more important historical or cultural sites, such as the dwellings or places of worship carved in the versants of a valley or the location of a fortress in the stem of a meander (the fortresses of Ramses II on the valley of the Nile).

The relation between geology-geomorphology and the cultural elements of a territory can be seen from two perspectives:

- relief can be a component of the cultural heritage (loosely), of works of art, architectonic, historical monuments etc.;
- in relation with other cultural elements (strictly) in the geomorphological context in which they are inserted.

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The interest for the study of the relation between geomorphology and cultural elements led to a new direction in the research of relief, cultural geomorphology, defined by Panizza and Piacente (2003) as a subject „which studies the geomorphological component of a territory either as a part of the culture of a landscape, or as an interaction with other cultural sites of historic, archeological, architectonic, artistic etc. type".

The geosites are landforms with a specific shape, which alone or in collaboration with other bioecological or anthropic elements can become objects of heritage. Scientifically, the geosites are the most clear representation of the geomorphological processes, of the existent relations between the numerous factors which lead to their occurrence.

Geomorphology is the best option in the process of scientific vulgarization (popularization) of the geosites, because of the direct visuality of the relief (Pralong, 2003, 2004).

Site, location, geosite, relief

The term *se siit*, from English (site), means *location,* which Mac (2000) defines as *„a part of a territory (space) of a certain size and form having a material, energetic and informational substance."*

For D. Petrea (2005) *place is „a part of a territory bearing significance".* To this, the quoted author says that *„place is the territorial incarnation of each phenomenon in part, simple or complex, but unique and non-recurring together with the menthal, lingvistic, graphic representations and elaborated by people by perception and analyzing the meanings, respectively by defining, locating and attributing a denomination to the respective phenomenon."*

A place can have a single significance, in this case, related to relief (for instance, the Bicazului Gorges (fig. 1), Groapa Ruginoasa (fig. 2), Babele etc.); but many times, a place associates several meanings, as a result of the collaboration of several factors which give that place a specific feature. Thus, there can be places defined by association of cultural, spiritual, historical, archeological, architectonic, touristic, instructive-educational etc. elements.

From the above mentioned, one can notice that the closeness between the two terms – location and site – is so big that they can replace one another.

Mac (2000) distinguishes between location and site, considering the site as *„the area around which the initial functional and structural model has transplanted itself."* According to the above mentioned author, the site refers to the cultural and phisical characteristics and to the features of the place itself. According to the same author, the features of a place (site) are: location (absolute or mathematic and relative), size (small, large, extended), geographic contents, area; a certain spacial structure, is shifting in time, space, contents and functions.

Panizza, Piacente (2003), Reynard, etc define *geosites* as landforms or/and geomorphological processes which represent a social-human or cultural scientifical value due to human perception.

Panizza (2003) shows that by the scenery characteristics, geosites can be seen from three perspectives: environmental, historic and cultural-philosophical.

From *environmental* point of view, the geomorphological processes can generate sites, but can also be risky, leading to the degradation of some geosites or/and of complex sites, which requires human intervention for their protection.

Historically, geosites can be interpreted according to the concepts of continuity and integration between present state and the processes belonging to the historic, prehistoric and geohistoric times.

The *philosophical-cultural* aspect refers to the dialogue and the cultural integration between humanities and sciences (for example, the ratio between social requirements and

geomorphological conditions necessary to a geosite formation. It refers to a cultural unity of all sciences.

By *relief* we understand the totality of the Earth's surface formations, positive and negative, under air and underwater. They form the interface between the two big Earth subsystems: the internal subsystem and the external subsystem, whose action is antagonistic and complementary.

Geosite as a landform represent the particular aspects of relief being determined by the morphogenetic processes and the geographic sublayer. Landforms difer from one another not only by genesis but also by phisionomy and dimensions.

Phisionomically, the landform is a relatively stable configuration, defined by lines (curves, straight-lined or geometrically variable) and dots, which circumscribe a variable number of surfaces diferring in geometry, extension, genesis and exposure and which incoporate a certain charge of substance, energy and information (Josan N., Petrea D., Petrea Rodica, 1996).

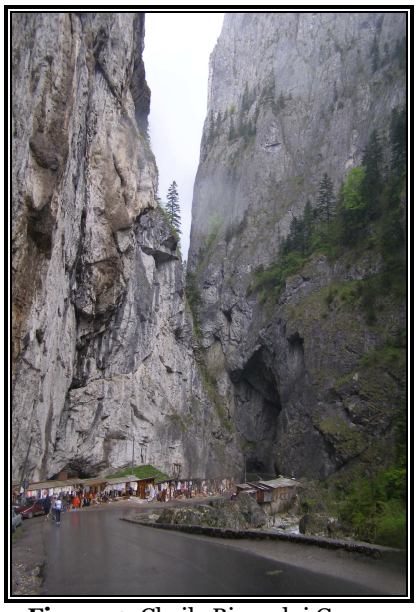

Figure 1. Cheile Bicazului Gorges

Figure 2. Groapa Ruginoasa, Apuseni Mountains, Romania

Genetically, the landform represents the answer of the Earth crust to the demands imposed by the consumption, transfer and the accumulation of substance, energy and information from Earth's inside to outside. The landform implies the composition and the structure of the material mass in which it was shaped as well as the processes that generated it.

Between the landform and the morphogenetic processes there is a process of specific reversibility: processes alter shape and sublayer and these, in their turn, due to alterations, generate changes in nature and the intensity of the processes (Petrea, 2006). Landform, like any other cybernetic system, is characterized by self-organization, respectively, it has the capacity to sustain its own evolution, since once formed it becomes an active factor of morphodynamics, generating new landforms (Mac, 1986). The main idea is that a landform is under a permanent change, it representing the existent relations – in a certain place and at a certain time – between all the factors participating to its genesis.

The features of the geosites

Due to their significances, geosites are the main subject of numerous domains of

activity (Panizza, Piacente, 2003). Cultural geomorphology is the subject that studies the geological-geomorphological component of a territory, alone or as part of a landscape, or in interaction with other elements of culture (archeological, historical, artistic, architectural, spiritual (Panizza, 2003). The main goal of the scientific study of cultural geomorphology is „to offer the possibility of re-balance by touristic highlighting of the Earth sciences in relation to the living world sciences and to the historical subjects, without favouring any of them" (Pralong, 2004).

The scientific feature of the geosites. Cloos (1969), one of the finest observers of the Earth, shows what has to be the goal of the privileged scientist: „interception of the Earth's voice. He will not just report, recount, but will show the one who is thirsty for knowledge, papers which will lead him to a better understanding of the Earth: the barren and arduous journey of objective observation and severe deduction which a researcher has to follow."

Geosites, constituting the most representative results of the processes and factors which shape the surface of the Earth's crust, leading to land formation. That is why, if the tourist admires a site or a geomorphological landscape, the scientist has to explain its genesis and evolution trend.

The cultural-artistical feature. It derives from the fact that geosites can be a source of artistic inspiration (painting, sculpture, photographic art), material support for some works of art or natural framework for movie-making.

Cloos (1969) asserts that „there is another way of knowledge available only for few: the inner road, from our own subconscience to the imponderability and the invisbility of the terrestrial entirety. This second road in particular connects the artist to the world and he who follows it sees the beauty and hears the music of the Earth....What is the beauty of a landscape? Is the intention not a subconscience of the intimate order of the Earth, of the rhythmic relations, the harmony of its surfaces and lines, of the subtle balance of its components sensed by a being that itself is the child of the same nature, thus being subject in the inner to the same rules that are applied outside."

Painting has been and still is the means by which lived experience together with the impact on the landscape, from the perspective of communicating with the Earth's life, has brought the art and nature lovers „a kingdom of artistical belonging"(Dinca, 2006).

Geosites and landscapes have always been sources of inspiration for the graphic artists, some of them truthfully depicting in their works their features. There are numerous examples, representative being the works of Cezanne who, fascinated by the beauty of Mount Sainte-Victoire, painted it in over sixty variants, the painter considering it „an amazing theme". Geosites had the same effect on other famous painters such as Monet (The Cliffs of Belle Ile), J.M.W. Tarner (Fingal's Cave), T. Moran (paintings from Yellowstone) etc.

The first painting that constitutes a precise reference point in Leonardo da Vinci's work is „The Landscape of Saint Mary of the Snow" (1473). Impressed by „the abundance of varied and strange shapes that nature created ceaselessly", he later painted „The Virgin of the Rocks".

Choosing locations suitable for their contents (rock) and expressivity (for highlighting), sculptors created gigantic works such as „Decebal" at the Danube Pass, the Presidents of the USA.To these, geosites have been the „pedestal" for various spiritual symbols such as Cristo Redentor situated on Pao de Açucar above the city of Rio de Janeiro, the Cross on the Caraiman, the Energetic Monument at the dam of Vidraru hydroelectric power plant etc.

The relation between landscape and music resides in the joy we all feel when contemplating nature and is based on the existent agreement between the music of our souls and the music of the Earth. Impressed and at the same time inspired by the beauty of some geosites in the Apuseni Mountains (Cetatile Ponorului, the Focul Viu Glacier, the Scarisoara Glacier), Marţian Negrea composed „the Apuseni Mountains suite".

Out of the literary talent and the scientific calling of some illustrious personalities have resulted remarkable literary works of landscape type, in which the picturesque description combines with scientific presentation. Such literary works shift us in locations we have never seen but which we would like to see, show us processes and shapes not to be found here, expanding our scientific and cultural horizon. „The difference between fiction and documentary literature, when it comes to landscape, resides in the way of work (fiction for the former, reality by concrete terms for the latter) and in the nature of the expressed message (soul moods in fiction, real data for the documentary)" (Dincă, 2005).

Figure 3. `Looking Up The Yosemite Valley´, by Alfred Bierstadt.
(source : http://www.articlesandtexticles.co.uk/2007/05/31/dylan-cole-matte-painter/)

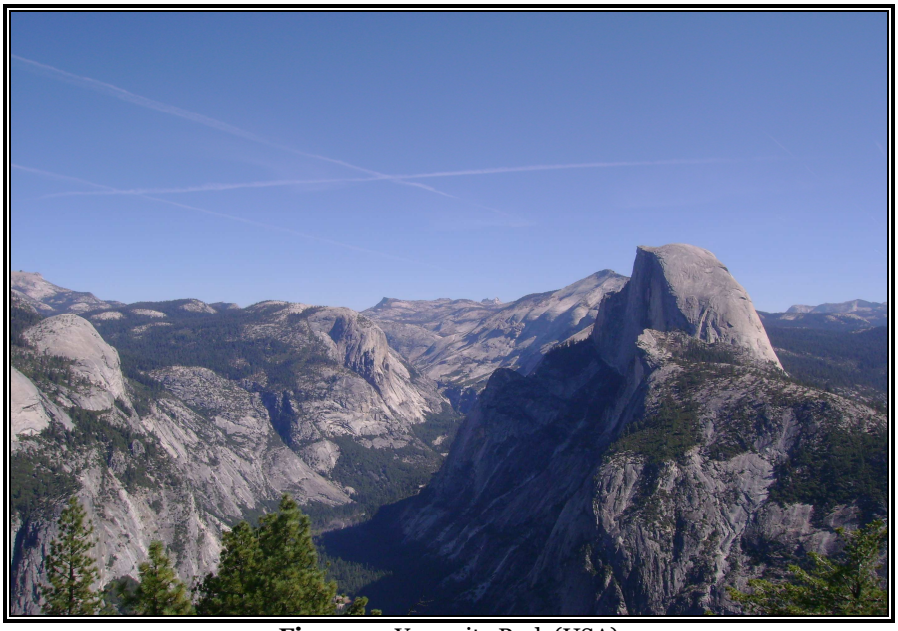

Figure 4. Yosemite Park (USA)

The historical- archeological features of the geosites

Between geosites and elements of history and archeology (citadel, fortifications etc.) there is a relation which contributes to the amplification of the value of each of the two site types and of course of the complex formed by them. There are numerous examples both around the world and in our country (the Deva Fortress (fig. 5), the Dacian fortresses, almost all of them, feudal fortresses etc.)

The relation between the two composing elements is based, according to Panizza and Piacente (2000) on:

- knowledge of the geo-morphological aspects of a site in which the historic asset is situated, when it comes to either resources or danger;
- individualization of the cause-effect ratios, seen as the geosite reasons which determined the location of the historic sights;
- assessment of the risk determined by the possible geomorphological processes (landslides, landfalls etc.);
- assessment of the ambiant impact of the archeological and historical assets on the enviroment, generally, and on the landform on which they are situated, in particular;
- the good management of the historical-archeological site, that implies a thorough knowledge of both knowledge, which should allow the site preservation and capitalization on the whole.

Figure 5. The Deva Fortress, Romania

The spiritual feature of the geosites. Many geosites have a great spiritual significance kept in time, for centuries or even millennia. The far mountain peaks as opposed to human society, the closeness of the peaks to the sky, turned the mountain into a sacred place. For example, in China, the cult servants considered the strange-looking landforms to be a symbiosis between natural and supernatural, often considering them to be the bearers of fantastic religious messages. Thus, five of China's mountains are considered sacred mountains. Buddhism too has four sacred mountains (Wutai, Putuo, Emei şi Juhma). On Mount Emei there are numerous places of worship and the biggest statue of Budda in the world (71 m).

The relation between geosites and places of worship becomes obvious in Christian religion as well. Mount Athos in Greece is considered sacred and the Meteora monastery in the same country is the most suggestive representation of the relation between a geosite and spiritual entirety. Isolation, difficulty in getting there are the qualities of a landform which was chosen to become a place of worship and communication with God.

Geosites are also an adjacent to several cultural-spiritual acts such as the nedeile in our country, the most renowned being the one on Mount Gaina (The Girls Fair).

The instructive-educational feature. The instructive-educational feature of the geosites resides in the depiction and understanding of the natural processes and mechanisms which led to their occurrence, as well as learning some behavioural norms in relation with the enviroment, especially in protected areas.

Conclusions

Geomorphology is of a great importance in the scientific vulgarization (popularization) of the geosites, due to the direct visualization of the relief (Pralong, 2005). Lately, the importance of relief study has been noted not only from the strict geological-morphological perspective but also from the cultural, architectonic, historical-archeological, didactic etc. perspective.

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