

CRITICAL ENVIRONMENTAL REGIONS

IOAN MAC, VICTOR SOROCOVSCHI

“Babeş-Bolyai” University, Faculty of Geography, Clinicilor 5-7, 400006 Cluj-Napoca, Romania,
Email: svictor@geografie.ubbcluj.ro

ABSTRACT - A short etymological interpretation of the notion of regions (Rette Lineatte. etc.). The region is: $R = f(S+P)$, where S is space and P is power. There follows an evaluation of the characteristics of the region and the presentation of different approaches to the region. From the classic ideas (von Humboldt, 1885, Dokucaev, 1899, Herbertson, 1905, and others) we get to a wide interpretative array of what we accept as organizational spatial units of geographical reality. The environmental region has important connotations with regard to the system as a surrounded element (man, society) and the adjacent system. Critical environmental regions are areas where there already exists interactive degradation. The critical character may be physical, hence the “geocritical regions” or the result of human impact, hence the “anthropocritical regions.” Critical situations are differentiated at the local, regional, and global level. In order to understand critical regional situations we must refer to the following characteristics: fragility, resilience, and vulnerability. Still there are few environmental studies on critical regions and work must be done in this field.

Key words: region, regional characteristics, regional units, and critical environmental regions.

COVERING NOTE

The Upper Terrestrial Layer (U.T.L.), the integration of the Earth’s physical, biotic and human masses within a planetary determination, can be discovered in various territorial expressions.

Two of these expressions are considered to be “the carriers” of the geographic integral message: **the region** and **the landscape**. We will make a short analysis of the former, while making only references to the latter.

THE GEOGRAPHIC REGION: ETYMOLOGY, CONTENT, AND SIGNIFICANCE

1. The ancient astrologers divided the starry canopy of the sky in order to decipher the spatial structure and to understand/reveal the celestial message. Thus, Rette Lineatte distinguished several areas called RETE and governed by a certain power strongly guiding humans as well. Thus, *rete*, *regio*, *region* signify SPACE-POWER ($R = f(S+P)$).
2. Since then and probably for eternity, the region has been defined by: localization, surface, flexibility in space, load (material, energetic, informational), message-function (for ex. the guiding function), operational facilities.

UPON THE EARTH’S SPATIAL DIVISIONS

2. The 18th century studies on spatial distribution and classification of living beings and soils led to the appearance of the zonation concept. Thus, the notion of **zone** was defined (Von Humboldt, 1885, Dokucaev, 1899). The **zone** is an extended territorial area where natural conditions are **similar**.
3. In the same period, zones were divided, globally, into **regions** (Herbertson, 1905).
4. The subsequent thorough researches on the structural distribution of the territorial “weaving” into **spatial units** with various significance were very diverse (Pollsarge, 1929, Veatch, 1930, Bourne, 1931, Tansley, 1945, Berg, 1947, Biasnetti, 1962, Sukachev and Dylis, 1964, Wertz and Arnold, 1966, Bertrand, 1968, Troll, 1971 and others): landscape units or landschaft, “site” and “site regions” (inhabited places or regions), ecosystems (Tansley, 1935), units for territorial use, geosystem, ecoregions, etc.

All notions, and all the structuring of the geographic reality, both on the horizontal and the vertical plane, must be considered in relation to the scalar thresholds.

The immediate consequence of this approach is ecosystemic geography, which “is meant to study the distribution of patterns, structures, differentiation processes and the interaction frameworks at various scales” (Beiley, 1996).

Ecosystemic geography focuses on **the regional and the global systems**. Various hierarchies and ranks are identified within these systems.

Ecoregions are considered through their determining factors such as: geologic substrate, relief, climate, waters, land use, etc.

This ecogeographic regionalization (ecoregions) is obviously different from the approach of classical and even modern geography to the **geography of the region**.

4. **The region** is a spatial unit for various geographic and para-geographic approaches (in economics, planning, administration, etc.), which leads to extremely contradictory interpretations.

Without enumerating persons and ideas, some vague aspects of the regions do stand out:

- a) - The region does not have a univocal definition.
 - The region is an instrument of spatial knowledge and generalization (Fellman, Getis, Csetis, 1990, Cocean, 2004).
 - The region is a complex territorial unit (Mihăilescu, 1968).
 - The region is a space formation (Thrift, 1996).
 - The region is a social category (Passi, 1986).
- b) The formation process of regions is not clear.
 - It is a natural-historical process (Demangeot, 1990).
 - It is the result of societal determinism (Weichart, 1996).
 - It is the result of technocentrism (O’Riordan, 1976).

However, this wide spectrum of opinions does not prevent us from approaching the problem according to Aristotelian logic.

Before all, we consider that **the region is an objectified space**. Whether regional analysis is interior or exterior, we have to admit that the region is governed by several variables: material load, energy, space, and time. Two tendencies characterize this objectified space: **endurance** with a tendency to grow entropically and **continuous renewal** (negentropy).

Consequently, the region may be:

- real-objective, not dependent on human or societal will (the Antarctic Region);
- inferred (noticed);
- conceived with a clear purpose which may be: envisaged (mental), normative (legislative), planned (plan, region), constructed (built), institutionalized, attributive (flourishing region, underdeveloped regions, poor regions);
- specified (climatic, geomorphologic)

Many aspects should still be discussed in order to avoid semantic, interpretative, constructive (poles, areas, attractors), and terminological confusions or misunderstandings.

From the semiotic point of view, the region is a polysemantic concept. Environmental regions illustrate this aspect as discussed above.

THE ENVIRONMENTAL REGION

The complex semantic register relating to the **region** and to the **regionalization process** grows with a new element: the environmental region. Far from being a well-defined concept, the region could be identified by such criteria as: the form in which the central component is inter-related to the surrounding one, its state at a certain moment and its evolution, its determinative factors (as viewed by modern environmentalism), the dynamics of its change etc.

Generally, when talking about the environmental region we talk about an area (territory) in which the surrounded element – the human being, society – interrelates with the surrounding one – the environment – and whose prevailing state is favourable or not to society.

From the anthropic point of view, environmental regions can be:

1. real (the real-objective environment);
2. operational (the operational environment);
3. perceived (through a certain feature or quality);
4. behavioural – in connection with the territorial environmental load (for ex. relating to drought, earthquakes, volcanoes).

CRITICAL ENVIRONMENTAL REGIONS

The quality of the environmental state defines the ambient regional character. The following categories can be distinguished:

- viable environmental regions (balanced);
- critical environmental regions.

The latter category can be divided into:

- geocritical regions, when physical attributes change significantly;
- anthropocritical (sociocritical) regions when the societal factor is affected.

The critical environmental region represents an area where an interactive state of degradation was reached (Beiley et al., 1978). The critical moment is a balance of several elements: resource demand is higher than the natural potential, which leads to gradual exhaustion; the tolerance limits are surpassed by aggressive and harmful contamination.

The critical character and its associated terms are analyzed at various scales: global scale – human necessities and growing limits, regional scale – critical zones or critical areas refer to the capacity of certain territorial resources to sustain a certain population, local scale – critical areas as “places” with humidity excess or areas invaded by Aeolian sands.

In critical regions, human efforts to maintain a certain **level of ambient efficiency**, through skilful friction reduction, are often risky.

The methodology used to analyze the critical environmental regions implies the examination of some attributes identified as central in such situations. These attributes include: sensitivity, fragility, resilience, and vulnerability. These will help us understand change as a derivation of the action of stress upon systemic resistance. There are several discussions about these attributes (Holling, 1986, Blaikie and Bookfield, 1987, Travis and Morris, 1992, Turner and Benjamin, 1994, Kaspersen et al., 1995, Mac, 2003 etc.) and we recommend the following definitions:

- Sensitivity (or susceptibility) is the extent to which the environmental systems respond to the perturbations caused by extrinsic factors;
- Fragility represents the susceptibility of the environmental systems to instability and risks;
- Resilience is the ability of the environmental system to preserve its structural basis after perturbations caused by human actions and recover its essential state after such changes (perturbations);
- Vulnerability is the relationship between possible changes under certain conditions and the normal use patterns. Therefore, vulnerability is a function of susceptibility, dependence (on some goods or factors), and transferability (relocation, substitution).

There are various ways in which critical environmental regions can be approached, identified, defined, and interpreted. This process is strongly related to increasing awareness about the environmental changes caused by humans. These changes were first perceptible locally and regionally, and, later on, globally. The “critical environmental situations” were the first to have been taken into discussion. Russian geographers made “red data maps” (Mather and Sdasynk, 1991) where they marked critical areas. Subsequently, several international organizations (FAO, UNO, etc.) and famous scientific institutions (UNU - United Nations University, the Institute for Geography of the Russian Academy, the Khark University etc.) co-coordinated various projects and programs, which led to the definition of the “critical environmental states.” They also researched the spatial manifestation of these regions, i.e. such critical environmental regions, as Amazonia, the Basin of the Aral Sea, the Northern Sea, Llano Estacada of the American Southern High Plains.

There were no attempts to regionalize the Romanian territory according to the criterion of the critical environmental states. However, there are several such local studies worth mentioning. They focus mainly on critical urban and technological areas: Coșșa Mică (Mac, 1996), Zlatna (Rusu, Muntean, 1992), Ocnele Mari (Bălțeanu, 2002) etc.

Regionally, such attempts are insignificant (Mac, 1992), even if the Romanian territory includes some evident regional critical environmental units.

An eventual critical environmental region will highlight the ethological aspect of the human community.

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