THEORETIC-METHODOLOGICAL BASICS OF PHYSICAL-GEOGRAPHICAL REGIONALIZATION AND ITS REFLECTION IN SELECTED REGIONAL PIECES OF WORK OF SLOVAK GEOGRAPHERS

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Abstract: *The aim of the presented conference paper is a brief characteristic of a major part of theoretic-methodological basics of physical-geographical regionalization on the basis of pieces of work of Slovak geographers. Second part deals with the characteristic of selected pieces of work of Slovak geography representatives*
Key words: *physical-geographical regionalization, region, regionalization*

PREFACE

Physical geography handles an important and typical space aspect of studying the pursued phenomenon, i.e. phenomena are examined (including landscape) with their content and space aspect. An important indication is phenomena and physical-geographic landscape spatial differentiation and its regularities. According to Oťaheľ (1978), regularities of spatial differentiation are the most important theoretical basics of physical-geographical regionalization. The reflection of spatial differentiation objective regularities is physical-geographical regionalization unit system which is, to certain extent, marked with an individual approach of an author (choice of criteria, borders). Physical-geographic regionalization is a process of learning specific characteristics of physical-geographic sphere, specifically its continuity as well as discretion. The existence of physical-geographic regionalization process is a consequence of objective existence of physical-geographic complexes (regions), i.e. parts of physical-geographic sphere which are mutually bounded and differ both qualitatively and quantitatively.

The problems of physical-geographic regionalization resonated especially in the 50s and 60s. In this area, Russia, former DDR and later Poland and Slovakia were the main centers of development. Formularization of theoretic-methodological basics was primarily a matter of Russian geographical school, e.g. work of Armand (1964, 1970), Fedina (1973), Isačenko (1953, 1967, 1991), Petrov (1991), Michajlov (1985), Beručašvili-Žučková (1997), Rodoman (1965). Out of German writing authors can be mentioned Haase (1991), Fischer (1982). Anglo-american literature is represented for instance by Grigg (1965), Spence-Taylor (1970). Polish geographical school includes Kondracki (1976). Slovak authors dealing with these problems in more details are for example Mičian (1971, 1984, 1990), Drdoš et al. (1981), Košťálik (1985), Michal (1997), Lauko (1990), Bezák (1993), Minár et al. (2001).

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Despite the fact that the question of physical-geographic regionalization is not the most important for Slovak geographers nowadays, it occupies an irreplaceable position in Slovak geographical school. Some significant Slovak geographers started on the basis of physical-geographic regionalization and at present some regional physical-geographic pieces of work still end in this way.

TERMS REGION AND REGIONALIZATION

Before clarifying the term physical-geographic regionalization a few words about the terms region and regionalization are needed.

Region is a central term of regional geography and, at the same time, an object of its study. The prototype of this term was, according to Lauko (1990), a Latin term regio which means kingdom. In his opinion the development of this term's conception changed from its interpretation of political-historical territorial unit (18th cent.) through deterministic or ideological concept (19-20th cent.), possibilistical (beg. of 20th cent.), individualistic to treating the region on the basis of its complexity and synthesis aspect. Taking this into account, **region** is understood as a complex spatial unit of varied taxonomical level which consists of elements of natural and socioeconomic structure. Its individuality is determined by a certain essential sign which makes the region differ from neighboring areas.

In geography in general, on the basis of the work of *Mičian (1971, 1984, 1990)*, regions can be divided into **3 categories** according to **contents**:

a) **physical-geographic regions** which contents are physical-geographic complexes or their components. Within physical geography they are delimited according to the criteria selected from the components of physical-geographic sphere, e.g. from georelief, soil cover, climatic parameters of atmosphere, plant cover, etc.

b) **economy-geographical** or **socioeconomical regions** which contents are socioeconomical systems or their components and within socioeconomical geography are defined according to the criteria selected from the components of socioeconomical sphere.

c) **complex, integral** or simply **geographic regions** which delimitation should be a competence of complex, integral regional geography. The borders of these regions are the same as of the socioeconomic-geographical regions.

Regions can be interpreted as following [Lauko (1990) a Mičian (1990)]:

1. individual regions (unrepeatable)
2. typological regions (parts of certain type)

With **individual regions** are important their individual, unrepeatable qualities. For the reason of not repeating, individual region usually has its own name or other specific sign (e.g. mining region Štiavnické vrchy or only name: the Alps). From cartographic point of view, each individual region marked on the map has its own mark in the legend. Individual region has an exact location given by coordinates.

In connection with **typological regions,** their general common signs are predominantly emphasized; qualities which are repeated in many delimited areas. Their names should give a true picture of pursued mutual signs (e.g. mountain areas of Europe).

Regionalization can be perceived in two different ways: as a **process** and as a **state** (Mičian 1971, 1984). Regionalization as a **process** is a delimitation of territorial and aquatorial units having some common sign and their separation from those territories

(aquatories) which do not have it. This sign is the basis of separation, delimitation and it is called regionalization criterion. The one, who carries out the regionalization, selects the criterion as well. Regionalization as a **state** is a result of a regionalization process and has a form of a map on which regions are delimited.

According to contents (object, i.e. what we regionalize) we distinguish *(Drdoš et al. 1981)*:

a) **physical-geographic regionalization** which object is physical-geographic sphere or its components

b) **human-geographic regionalization** (in the past – socio-economic-geographical regionalization) which object is human-geographic sphere or its elements

c) **total geographic regionalization** which object is landscape sphere (geosphere)

TERM PHYSICAL-GEOGRAPHIC REGIONALIZATION

According to *Mičian (1984)*, the definition of physical-geographic regionalization is, strictly speaking, identical with general definition of regionalization; it is only narrowed to physical-geographic sphere or the choice of regionalization criteria is limited to the components of physical-geographic sphere. Consequently, he claims that physical-geographic regionalization as a process is a delimitation of natural territorial (aquatorial) units (i.e. parts of physical-geographic sphere) having some common sign selected only from the components of physical-geographic sphere and their isolation from those territories (aquatories) which do not comprise this sign.

Concerning **contents** (according to *Drdoš et al. (1981)*, *Mičian (1971, 1984, 1990)* and *Michal (1997)* physical-geographic regionalization can be divided into:

a) **sectoral (component, partial) physical-geographic regionalization,** where relevant components are the determining criteria, which results in climate-geographic, hydro-geographic, pedo-geographic, plant-geographic regionalization.

b) **complex physical-geographic regionalization** which contents are physical-geographic systems (complexes) with the determining criteria of signs of physical-geographic complexes that can alter, depending on taxonomical level. These signs can correspond with single physical-geographic components. *Michal (1997)* shows as an example a procedure where on the first regionalization level is used a criterion selected from the geo-relief character, on the second level from a vegetation character, on the third level from lithosphere, then pedosphere, etc. It is actually a simple way of physical-geographic synthesis. Examined region is delimited by overlapping single analytical maps.

According to **forms (modes)** are distinguished following couples of regionalization:

a) **Individual and typological regionalization** *(Drdoš et al. 1981; Košťálik 1985*, *Lauko 1990; Mičian 1984, 1990; Michal 1997; Oťaheľ 1978*)

Individual regionalization represents delimitation of individuals, spatial areas (physical-geographic complexes) which carry the sign of territorial integrity. They are labeled as regions and on the lower level as sub regions. From formal-cartographic perspective, individual (or own) regionalization is where each shape (area) on the map has its special individual characteristic in the text and one explanatory note in the map legend refers only to one shape on the map.

Typological regionalization (**typization)** is a delimitation of physical-geographic complexes which do not possess the sign of territorial integrity, they are repeatable.

Physical-geographic complexes represent delimited types in a hierarchical manner. Typological regionalization is when one characteristic refers to more shapes on the map.

Newer frame of reference concerning individual and typological regionalization brought *Bezák (1993) a Minár et al. (2001)*. They label contents classification (creating class on the basis of internal characteristics analogy disregarding spatial neighborhood) of already delimited elementary map geo-ecological units as **geo-ecological** (complex physical-geographic regional) **typization**. Individual delimitation (spatial classification where neighboring relations play an important part) and individual characteristic of geo-ecological units are called **geo-ecological** (complex physical-geographical) **regionalization**.

b) **Single-level** and **multi-level regionalization** *(Drdoš et al. 1981; Lauko 1990; Mičian 1984, 1990; Michal 1997)*.

Single-level regionalization lies in the delimitation of one taxonomical level of regions. Multi-level (more-level) regionalization grounds in singling out more taxonomical levels of regions.

c) **Simple** and **complex regionalization** *(Drdoš et al. 1981*, *Lauko 1990; Mičian 1984*).

Simple regionalization is created by using only one scheme of regionalization, one type of criteria – e.g. only zonal or azonal.

Complex regionalization results from using zonal and azonal regionalization in the same area. As a consequence of mutual intersection of borders zonally and azonally delimited regions, new hybrid regions are created which, concerning initial regions, form regions of lower taxonomical level.

d) **Zonal** and **azonal regionalization** *(Drdoš et al.. 1981; Mičian 1984, 1990; Michal 1997)*.

At zonal regionalization we delimit units on bioclimatic condition, i.e. zonally (horizontal, foothill, vertical zones). At azonal regionalization we delimit units on hydro-substrate-geomorphological condition, i.e. not in a zonal matter (e.g. mountain range, basin, heights, plain, fluvial region, terrace region, etc.).

Mičian (1984, 1990) distinguishes **general-scientific** and **applied** physical-geographic regionalization. Maps of general-scientific regionalization often reflect the past; they present genetically homogeneous reconstructed complexes and often do not pay attention to what these complexes represent nowadays. Applied physical-geographic regionalization maps are focused into the future; they have to reflect not only current state of complexes, but also their future state and behavior which will be determined both by natural processes and character of interaction with relevant type of human activity. In the first case, the object of research is physical-geographic complex itself (and only it); in the second one – system of the kind: 'complex – a type of activity' or 'complex – technical work'.

Regionalization is carried out in two basic methods *(Drdoš et al. 1981; Lauko 1990*, *Mičian 1971, 1984, 1990*)

a) **deductive approach 'from the top to the bottom'**, i.e. by dividing bigger units into smaller ones. Theoretically, this method is possible from physical-geographic sphere to 'geotop' – representing the smallest complex and at the same time cartographic physical-geographic unit,

b) **inductive approach 'from the bottom to the top'**, i.e. making groups, joining smaller units (e.g. geotops and their complexes) into bigger units.

METHODS OF PHYSICAL-GEOGRAPHIC REGIONALIZATION

Physical-geographic regionalization grounds on certain methods among which the most known and used are *(Drdoš et al. 1981; Mičian 1984):*

a) **The method of map superposition of partial physical-geographic regionalizations.**

A map series of regionalization of single natural components is used, i.e. individual or typological component regionalization, e.g. map of geomorphological, litogeographical, pedogeographical, climageographical, etc. regionalization. Optimal condition is if all ground maps are of the same scale. However, in real we usually have maps of some components and very often in different scales. Every time we try to gain a map of pedological or pedogeographical typization or individual regionalization, because soil as a mirror and memory of landscape reflects the overall character of physico-geographic regions very well. Moreover, pedological maps contain information about substrate, i.e. geological ground of soils. A significant matter is a topographical or already a geomorphological map as for the borders of many physico-geographic regions are overlapping with the borders of geomorphological units. The method lies in bordes lines comparison of single component regions or territiorial types. We can 'superpose' maps if we have them on the transparent paper in the same scale. Those parts where the borders of more component regions (types) overlap can be considered as a border of complex physico geographic region. In the parts where the component borders diverge more significantly, as a border of complex physico geographic region we have to take one of them. These problematic border segments are verified in the field by thick (step) feeler [according to *Minár (1998)*]. This procedure is manageable from organizational point of view, however, it has some drawbacks. To different extent, mapped components are immediately visible (on one hand an easy follow of real vegetation and geo-relief, on the other hand, lithosphere or pedosphere only through feelers and uncovers) and are characterized by various dynamics of pursued status qualities (relatively static lithosphere and geo-relief, and maximally changeable atmosphere or hydrosphere) which influences different degree of spatial accuracy of component maps. At simple superposition of these maps the result is weighed down by a mistake accounting for the least accurate spatial ground. The effect of integrated research disappears, which immediately takes into account correlation relations between attributes of different landscape elements.

b) **The method of leading factor** *(Drdoš et al. 1981; Mičian 1984)*.

On each taxonomical level we select one leading factor and according to it we lead the borders. However, the leading factor may change. Such an example presents *Mičian (1984)*: When delimiting the units of the first order the leading factor we choose is geo-relief. On the basis of geomorphological regionalization map we delimit e.g. fluvial and mountainous region (the regions of the first order). In the mountainous region, on the basis of pedological regionalization map, we delimit e.g. region with prevailing cambisoils on granite and region with prevailing rendzinas on limestone (regions of the second order). For another division we use e.g. vegetation-geographical region map: in both previous regions we delimit e.g.regions with prevailing community of oak degree and regions with prevailing community of beech degree (regions of the third order).

Both methods use deductive approach - 'from the top to the bottom'.

c) **The method of delimiting regions on the basis of physical-geographic complexes typological maps** *(Drdoš et al. 1981; Mičian 1984)*.

The way of making groups is used at this method, the process from the bottom to the top, i.e. inductive approach. At first a geotop map is created and, by making groups of them, nano-, micro-, mezzo- and macrochoras are formed.

According to *Mičian (1984)*, we make groups, join neighboring physical-geographic complexes (their areas) in bigger and bigger groups, taking into account some common sign by what we form complex physical-geographic units – regions according to the pattern 'from the bottom to the top'. An important and frequent criterion of making groups is the relief character, e.g. we join various areas in one region according to the position on riverine plain, on incline of certain exposition, on plateau, etc.

Currently the basic and acknowledged method of physical-geographic research, which results in physical-geographic regionalization, is a **complex physical-geographic (stand) analysis on the geographical point** (tessera) – so called Swiss-German method. These geographical (research) points have to be sufficiently representative, i.e. they should include e.g. various forms of geo-relief, soil sub types, etc. On such checkpoint physical-geographic differential and complex analysis and, consequently, synthesis is realized. An example of using the method of complex stand analysis and synthesis in topical dimension is the work of *Scholz a i. (1979 in Drdoš, 1999, s. 77)*.

Methodology grounds in these three steps:

1. **Geo-topological differential analysis** – at this step, available materials about landscape components of territory are assessed (geological, geomorphological, pedological, hydrological, climatical, botanical or silvicultural) and filled in by the results from the field research. The outcome is sign characteristics of individual landscape components (e.g. elements and forms of georelief, character of substrate, etc.) series of thematical sign maps and charts (the results of measurements).
2. **Geo-topological complex analysis** – at first mosaic of stands on studied area is made by observation (on the basis of the results of geo-topological differential analysis). The aim is to find out the combinations of landscape components on the representative points of stand, which allows to grasp the system of their mutual relations and mutual activity. The points have to be ordered in lines which intersect typical stand places in order to delimit the geocomplexes accurately.
3. **Geo-topological synthesis** – complex geo-topological analysis enables to order sign combinations of geocomplexes and, subsequently, homogeneous areas – geotops (ecotops) can be set up.

The data about research points in final form provide card indices of research points. However, these research points miss spatial dimension, therefore, it is necessary to create individual homogeneous spatial physical-geographic complexes (IHSPGK) of the geotop (ecotop) character. The areas of these complexes are separated according to the data obtained in the field from research points and other fundamentals. The borders are determined in compliance with the significant changes of main differential factor – mostly geo-relief, soil sub types, etc. or significant change of more studied characteristics. On the basis of character affinity (common signs) of more IHSPGKs, physical-geographic typization is realized by making groups into the types of homogeneous spatial physical-

geographic complexes (THSPGK). It is possible to make groups of these types into more taxonomical levels.

PHYSICAL-GEOGRAPHIC REGIONALIZATION IN SELECTED PIECES OF WORK OF SLOVAK GEOGRAPHERS

Problems of physical-geographic regionalization are in Slovak geography in theoretic-metodological as well as in practical form well-developed in numerous pieces of work of different authors. There were published many regional pieces of work dealing with physical-geographic regionalization in real area. For the paper needs we selected them according to individual authors. The focus in analyses is on selected criteria of delimiting physical-geographic types or regions, number of taxonomical levels and territorial units which were the object of regionalization.

Barčáková (1998) deals with geoecological typization of Turčianska kotlina basin part.

Cebecauerová (1997) determines the types of physical-geographic complexes of natural landscape in selected parts of Borská nížina lowland and Chvojnická pahorkatina heights.

Čech (2003) characterizes physical-geographic complexes of SE part of Galmus mountain range on 6 taxonomical levels. Crucial differential factor of physical-geographic sphere is geo-relief and its forms and partly geo-relief exposition, rock composition and hydrological situation. Another piece of work *(2004)* deals with physical-geographic complexes of Červené skaly national nature reservation in Galmus mountain range on 5 taxonomical levels defined predominantly according to the forms and exposition of geo-relief and rock composition.

Drdoš dealt with physical-geographic typization or regionalization in several pieces of work (e.g. *1967, 1968, 1975, 1977, 1979, 1982, 1988, 1989, 1990, 1994a, 1994b, Drdoš-Žudel 1984, Drdoš et al. 1994*). Depending on physical-geographic heterogeneity and the area size (ranging from the landscape area of basin to land register), he defined different numbers of landscape types on several taxomonical levels. The most frequent differential factors in studied areas (such as Slovak karst, Košická kotlina basin, Liptovská kotlina basin, Zvolenská kotlina basin, land register of Očová, Detva, etc.) were geological composition (basic differential factor of vast areas), geo-relief, geomorphological processes, morphometric characteristics of geo-relief, soil, underground water and potential vegetation. Differential factors may be applied in different ways on various taxonomical levels. However, geo-relief is a universal differential factor applied in all taxonomical levels. In the western part of the Liptovská kotlina basin he delimited (homogeneous units) taxons of natural character (according to the potential vegetation) on the lowest hierarchical level and on the basis of their current use he delimited human variants (categories of land use).

Typology of basic choric structures of Zlaté Moravce area and its hinterland presents *Drgoňa (1983)*. He distinguishes two major typological criteria: physiosystems combinations complexes (on the first level substrate and pedological qualities, second level of physical-geographic processes types) and the complex of physiotops combinations (geomorphological forms). Another paper *(1988)* aims at characteristic of geoecological types in Tríbeč mountain range part Ponitrie protected landscape area where he distinguishes

4 taxonomical levels: 3 groups of types, 5 types, 11 sub types and 20 varieties. The main differential factors are: the type of geo-relief and its morphometris characteristic, original plant cover, soil hydromorphism, process dynamics, etc.

Typization of physical-geographic systems, subsystems, complexes of subsystems and subsystems of Nové Mesto nad Váhom area can be found in *Feranc*'s work *(1978)*. The author distinguishes 3 taxonomical levels. There are 3 individual systems on the highest level: Podunajská nížina lowland, Malé Karpaty mountain range, Považský Inovec mountain range. On the second level within each system he recognizes 2 subsystem complexes acoording to the geo-relief. On the third level were delimited 12 subsystems on the basis of substrate, geo-relief, soil composition and potential vegetation.

Having geo-relief as a dominant factor, *Harčár (1972)* delimits 3 basic landscape units within one level in Šarišská vrchovina mountain range. *Harčár a i. (1982)* realized physical-geographic regionalization of Prešov district into 2 taxonomical levels. Higher level is formed by 10 macrochores rooting from individual geomorphological units of Slovakia. Lower level consists of 21 mezzochores sourcing from substrate- geomorphological, climate and soil composition and potential vegetation.

Kandová (Michaeli) - Karniš - Kosťálik (1970) delimit 3 physical-geographic regions of Pieniny according to the geo-relief. Another piece of work [*Kandová (1973)*] delimits complexes and groups of ecotop complexes on profile belt of Liptovská kotlina basin. Geo-relief was the dominant differential factor on the basis of which author defined 4 groups of ecotop complexes. Moreover, the first group was divided into 5 ecotop complexes according to geomorphological composition.

Kandráčová - Michaeli (1987) divide the land register of Drienovská Nová Ves into 8 physical-geographic microregions on the basis of substrate and geo-relief.

Kolény (1997) analyses physical-geographic complexes in surroundings of Malacky – Modra – Pezinok – Senec areas.

Geoecological nature landscape types of Stará Ľubovňa district occur in *Košťálik*'s work *(1980, 1982, 1984, 1985)*.

Kroupová (1976) carried out physical-geographic regionalization on profile area of middle part in Malé Karpaty mountain range. Total number of ecotopes (200) was joined into 43 types of ecotopes. On the first level she merged the ecotopes into microchores working on the similarity of geo-relief, geological composition, soils and vegetation. In such way she obtained 30 microchores which belong into 23 types. On the second level she united microchores regarding their membership to tectonic-morphological mezzostructures – she gained 8 types of mezzochores. On the third level she joined mezzochores into 2 individual macrochores: Záhorská nížina lowland and Malé Karpaty mountain range.

Lehotský (1991) delimits geoecological types of Štiavnické vrchy mountain range landscape on 6 taxonomical levels where the dominant differential factors are: geo-relief (energy, form), soils (sub type or variety, depth, sort) and reconstruction plant community.

Physical-geographic regionalization of Jur pri Bratislave landscape is presented in the work of *Lukniša (1977)*. The author defines 5 taxonomical levels. The dominant criterion is geo-relief, underground water, potential vegetation and soil.

Mazúr (1971) deals with the typization of Slovak karst. The main differential factor is geo-relief, climate, soils and vegetation are attached signs. The area is divided into

3 taxonomical levels. *(Mazúr a i. 1977)* delimit geoecological (natural landscape) types of Slovakia on 4 taxonomical levels according to the geo-relief, substrate, climate, underground water, soils and vegetation. Delimitation of natural landscape types of the eastern part of Zvolenská kotlina basin can be found in work of *Mazúr a i. (1979).* Within three-level classification according to geo-relief, the authors distinguish on the highest level 4 basic geoecological landscape systems, on the second level, rooting from geo-relief, climate and potential vegetation, 9 groups of geoecological landscape types and on the lowest level 27 geoecological landscape bound to geo-relief, substrate, soils and biota. In Atlas of Slovak socialistic republic *Mazúr a i. (1980a,b,c,d)* presented 4 geoecological maps focused on the Slovak territory, Žilinská kotlina basin, Záhorská nížina lowland and Slovak karst. In another piece of work *(Mazúr a i. 1985)* are stated the types of Tatranská Lomnica nature area on 3 taxonomical levels. The dominant differential factor is geo-relief which conditions the differentiation of the landscape into the mosaic of special systems. In natural landscape structure on the highest taxonomical level the authors define 3 landscape units; on lower taxonomical level 8 landscape types; on the lowest taxonomical level the dominant factors are geo-relief, soils and vegetation which was the base for delimitation of 46 landscape sub types.

Physical-geographic regionalization of Borská nížina lowland is well-developed in *Mičian-Plesník*'s paper *(1981).* The authors applied individual regionalization by use of which they defined 4 regions of the first order (area) and on the lower taxonomical level were created 12 sub units. *Mičian - Zaťko (1990)* delimited the types of natural-landscape complexes of the eastern part of Horehronie. The two-level classification contains on the highest level 2 individual units: Horehronské podolie basin and its surrounding mountain rim; on the second level 34 physical-geographic complexes with geo-relief as the dominant criterion.

Geoecological types in the Východné Karpaty biospheric reserve and the upper part of the Zboj Creek catchment area can be found in *Midriak (1997a,b).*

Michaeli deals with physical-geographic regionalization in several papers which concern Hornádska kotlina basin and its surrounding mountain rim (*1976, 1980, 1983, 1985*). In these papers the author frequently joins geotops into bigger units regarding their substrate-morphological signs, soils and vegetation similarity. *Michaeli - Kandráčová (1982)* divided the Medzany land register into 4 types of physical-geographic microregions according to the geo-relief, soils and potential vegetation. *Michaeli - Kandráčová (1985)* define 5 types of physical-geographic microregions of the Šarišské Michaľany land register taking the geo-relief as the dominant differential factor.

Michal (1976) realized the physical-geographic regionalization on the profile of part of the Nízke Tatry mountain range, Zvolenská kotlina basin and Kremnické vrchy mountain range. On the lowest level he delimited 47 ecotopes which he joined on the second level according to the geo-relief, exposition and altitude into 14 microchores. The third level is presented by 3 mezzochores (delimited on the basis of geo-relief, substrate and vegetation level) and the fourth level by 3 macrochores – individual geomorphological wholes (Nízke Tatry mountain range, Zvolenská kotlina basin and Kremnické vrchy mountain range).

Miklós (1978, 1983) develops the physical-geographic regionalization of Gemerské Turce catchment.

Physical-geographic regionalization of Liptovská kotlina basin is to be found in *Oťahel*"s paper *(1978, 1982)*. In the first paper the typization was based on an azonal principle and regularities of detailed differentiation of physical-geographic sphere which conditioned hydrological- substrate-geomorphological composition. He also applied genetical principle and complex principle. He distinguishes 5 taxonomical levels. In the *1982* paper the author presents 3 basic types of Liptovská kotlina basin nature landscape delimited according to the geo-relief, vegetation and soils. *Oťahel' - Poláčik (1987)* defined on the basis of geo-relief, potential vegetation and soils 3 basic complexes of the types of physical-geographic complexes of Liptovská kotlina basin and on the lower taxonomical levels the main criteria were: geo-relief, underground water and climate. Natual landscape types of Bratislava and Nitra area can be found in *Oťahel'-Žigrai-Drgoňa*'s paper *(1993)*. *Oťahel'-Lehotský-Ira (1997)* worked on the natural landscape structure of Kraľovany and Podtatranská kotlina basin area. In the three-level classification, the dominant differential factors on the highest level are geo-relief, underground water and climate; on the two lower levels are added soil and substrate composition as well as potential vegetation. *Oťahel' - Feranec (1997)* delimited natural landscape types of Záhorská nížina lowland on 3 levels taking into account geological- substrate, geo-relief, potential vegetation and soil composition. Natural landscape types of the western part of Liptov region on 5 taxonomical levels are dealt with in *Oťahel' – Feranc*'s paper *(1998)*.

The basic factors of typization are: geological- substrate composition, geo-relief, soil, hydrological, climate composition and potential vegetation. Geoecological structure of Slovakia on 4 taxonomical levels is elaborated in *Oťahel*"s paper *(2000)*.

Ružička – Drdoš - Ružičková (1974) delimited types of abiotic complex in Bratislava-Lamač area.

Šeliga (1978) deals with the characteristic of microchores and ecotops of the physical-geographic complex of the middle part of Záhorská nížina lowland. He delimited 17 ecotops which were put into groups on the hydrological- substrate-geomorphological signs.

Within one level *Tremboš - Minár (1997)* identified 49 abiotic complexes of Kluknava land register on the basis of the information about lithpsphere, geo-relief, pedosphere and hydrosphere.

It is obvious that frequently regionalized area is a land register and its hinterland, profile belt crossing several geomorphological wholes, combination of contrast areas (mountain range – basin, mountain range – lowland) or simply complete geomorphological whole of its part. The most frequent differential factor is geo-relief, which is the most often condition applied in the process of physical-geographic regionalization and according to which the borders of physical-geographic units are made; other factors are less used. Concerning the number of taxonomical levels, the multi-level regionalization is used the most often.

SUMMARY

Physical-geographic regionalization generally represents final part of detailed physical-geographic analysis of the selected area and its partial components. This method is still often used in order to obtain complex synthetic overview of the studied area. It provides us with an outline of the area regarding its heterogeneity or relations between partial units. Brief analysis of selected regional papers of Slovak geographers points at its significant role at the physical-geographic research of the landscape.

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TEORETICKO-METODICKÉ ZÁKLADY FYZICKOGEOGRAFICKEJ REGIONALIZÁCIE A JEJ REFLEXIA VO VYBRANÝCH REGIONÁLNYCH PRÁCACH SLOVENSKÝCH GEOGRAFOV

Zhrnutie

Vo fyzickej geografii je podstatný a typický priestorový aspekt štúdia sledovaných javov, t. j. skúmajú sa javy (vrátane krajiny) s ich obsahom a priestorovým aspektom, pričom dôležitým znakom je priestorová diferenciácia javov a fyzickogeografickej krajiny a zákonitosti tejto diferenciácie. Zákonitosti priestorovej diferenciácie sú podľa Oťaheľa (1978) najdôležitejším teoretickým základom fyzickogeografickej regionalizácie. Výrazom objektívnych zákonitostí priestorovej diferenciácie je systém jednotiek fyzickogeografickej regionalizácie. Tento systém je v rôznej miere poznačený subjektívnym prístupom autora (voľba kritérií, vedenie hraníc). Fyzickogeografickou regionalizáciou sa označuje proces poznávania špecifických vlastností systému fyzickogeografickej sféry, konkrétne jej kontinuity a zároveň diskrétnosti. Existencia procesu fyzickogeografickej regionalizácie plynie z objektívnej existencie fyzickogeografických komplexov (regiónov), t.j. častí fyzickogeografickej sféry vzájomne ohraničených a odlišujúcich sa nielen kvantitatívne, ale i kvalitatívne.

Problematika fyzickogeografickej regionalizácie intenzívne rezonovala v európskej geografii predovšetkým v 50. a 60. rokoch. Hlavnými centrami rozvoja výskumu v tejto oblasti bolo Rusko, bývalá NDR, neskôr aj Poľsko a Slovensko. Formulovanie teoreticko-metodických základov fyzickogeografickej regionalizácie bolo záležitosťou predovšetkým ruskej geografickej školy. Z viacerých prác sem patria diela Armanda (1964), Fediny (1973), Isačenka (1953, 1967, 1991), Petrova (1991), Michajlova (1985), Beručašviliho-Žučkovej (1997), Rodomana (1965) a ďalších. Z nemecky píšucích autorov možno spomenúť Haaseho (1991), Fischera (1982), z poľskej geografickej školy zase Kondrackého (1976). Z anglo-americkej literatúry je to napríklad Grigg (1965) a Spence-Taylor (1970). Na Slovensku sa podrobnejšie touto problematikou zaoberal Mičian (1971, 1984, 1990), Drdoš et al. (1981), Košťálik (1985), Michal (1997), Lauko (1990), Bezák (1993), Minár et al. (2001) a ďalší.

Napriek tomu, že v súčasnom období už otázka fyzickogeografickej regionalizácie nie je v popredí záujmu slovenských fyzických geografov, táto problematika má svoje nezastupitelné miesto v slovenskej geografickej škole. Viacero významných slovenských

geografov začínalo práve na báze fyzickogeografickej regionalizácie a aj v súčasnosti sa ňou končia viaceré regionálne fyzickogeografické práce.

Podľa *Mičiana (1984)* definícia fyzickogeografickej regionalizácie je v podstate zhodná so všeobecnou definíciou regionalizácie, iba je zúžená na fyzickogeografickú sféru, resp. výber regionalizačných kritérií je obmedzený na komponenty fyzickogeografickej sféry. Na základe toho tvrdí, že fyzickogeografická regionalizácia ako proces je vyhraničovanie prírodno-teritoriálnych (akvatoriálnych) jednotiek (t.j. výrezov fyzickogeografickej sféry) majúcich nejaký spoločný znak vybraný len z komponentov fyzickogeografickej sféry) a ich oddelenie od teritórií (akvatórií), ktoré tento znak nemajú.

Problematika fyzickogeografickej regionalizácie je v teoreticko-metodickej i praktickej forme v slovenskej geografii rozpracovaná v početných prácach rôznych autorov. Regionálnych prác, ktoré sa zaoberajú fyzickogeografickou regionalizáciou na konkrétnom území bolo publikovaných viacero. Pre potreby príspevku sme urobili výber podľa jednotlivých autorov. V analýzach prác sme sa zamerali hlavne na použité kritériá vyčleňovania fyzickogeografických typov, resp. regiónov, počet taxonomických úrovní a územné celky, ktoré boli predmetom regionalizácie.

Na základe uvedených prác je zrejmé, že veľmi často regionalizovaným územím je kataster obce a jeho zázemie, profilový pás prechádzajúci viacerými geomorfologickými celkami, kombinácia kontrastných území (pohorie-kotlina, pohorie-nížina) či jednoducho celý geomorfologický celok, alebo jeho časť. Najčastejším diferenciačným faktorom, ktorý sa v procese fyzickogeografickej regionalizácie najviac uplatňuje a podľa ktorého sa potom spravidla vedú hranice jednotlivých fyzickogeografických jednotiek je georeliéf, v menšej miere sa uplatňujú iné faktory. Z hľadiska počtu taxonomických úrovní sa najviac využíva viacstupňová (mnohostupňová) regionalizácia.

Fyzickogeografická regionalizácia predstavuje spravidla zavŕšenie etapy podrobnej fyzickogeografickej analýzy vybraného územia, jeho všetkých čiastkových zložiek. Bola a stále ešte je často používanou metódou k získavaniu komplexného syntetického pohľadu na skúmané územie. Poskytuje nám prehľad o území z hľadiska jeho heterogenity, či väzieb medzi čiastkovými jednotkami. Predložená stručná analýza vybraných regionálnych prác slovenských geografov poukazuje na jej významnú úlohu pri fyzickogeografickom výskume krajiny.

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