



**COMPLEXUL MUZEAL
BISTRIȚA NĂSĂUD**

STUDII ȘI CERCETĂRI
Geology-Geography

21

BISTRIȚA

2016

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OF

Series Geology-Geography

Published by the Museum of Bistrița-Năsăud, Natural Sciences Section

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Editura Ecou Transilvan

ISSN 2069 – 1513

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GEOLOGY

DECOMPOSITION DEGREE OF DERSCA PEAT BOG (BOTOȘANI COUNTY)

Mihaela V. ADUMITROAEI*, Gabriel O. IANCU*, Bogdan G. RĂȚOI*

Abstract. The present study focuses on the determination of morphologies as well as chemical and mineralogical properties of peat sampled from Dersca peat bog, with the aim of determining the relations between its properties and humification degree. The elemental analysis indicates a high content in carbon and hydrogen, and a low content in oxygen and nitrogen. The mineral assemblage resulted from XRD analyses of peat samples indicates the presence of the following minerals: calcite, gypsum, quartz, clay minerals, feldspars. Additionally, the samples contain iron and titanium oxides such as hematite and rutile.

Key words: mineralogy, TOC, X-ray diffraction, eutrophic bog, Dersca, eastern Romania.

Introduction

Bogs occupy about 3% of the continental realm of the Earth land surface and are considered to be azonal, geological, and biological formations at the same time (Ellenberg, 1988).

Peat deposits represent an accumulation of partially decayed organic matter, where the accumulation process is faster than the rate of decomposition of the organic matter. The plant residues microbial degradation is regarded as a result of microorganism activity in specific conditions such as poor anaerobe and acidic reaction, in the presence of a higher quantity of water. The peat deposits often consist of more than 75% organic substances (Andriess, 1988).

Natural organic matter is a major constituent of soil, sediment, peat, fossil fuels, comprising the largest pool of carbon on Earth (Schimel et al., 1997). The decomposition degree of the peat reflects the quantitative ratio of dark amorphous matter, consisting of humic compounds and other products of plant decomposition to the undecomposed matter (Drzymulska, 2016). The main factors which influence the decomposition of peat can be divided into: biogenic (activity of soil micro - organisms - invertebrates, fungi, bacteria) and non-biogenic (influences of wind, rain, snow, frost, physical crumbling of material, eluviation) (Botch, 1978).

The aim of this study is to determine the morphologies, chemical and mineralogical properties of the Dersca peat bog, which has never been investigated before.

* Department of Geology, University Al. I. Cuza, 20A Carol I Av., 700505, Iași, Romania; Corresponding author: adumitroaeimihaela@yahoo.com

Geological settings

The studied area is located at 15 km from the city of Dorohoi (Botoșani County), next to the border of Ukraine.

The oldest sequence of the peat Preboreal, the first phase of postglacial period, proved by the frequency of the *Pinus* and *Picea* species (Macarovici, 1959).

The peat was formed in Bahna Valley, by the sedimentation of scrub remains, strongly fuelled by water infiltration that increased the emergence of species such as *Carex*, *Scirpus*, *Juncus* (Olaru, 1968). The peat layer consists mainly of bryophytes including *Drepanocladus aduncus*, as well as other species such as *Chrysohypnum sommerfeltii*, *C. chrysohypnum*, *Callergon giganteum*, *Funaria hygrometrica*, *Marchantia polymorpha* (Mititelu & Chifu, 1980).

From a geological point of view, the studied area belongs to the northern area of the Moldavian Platform, where mainly the Lower Sarmatian (Volhynian) deposits are exposed (Fig. 1).

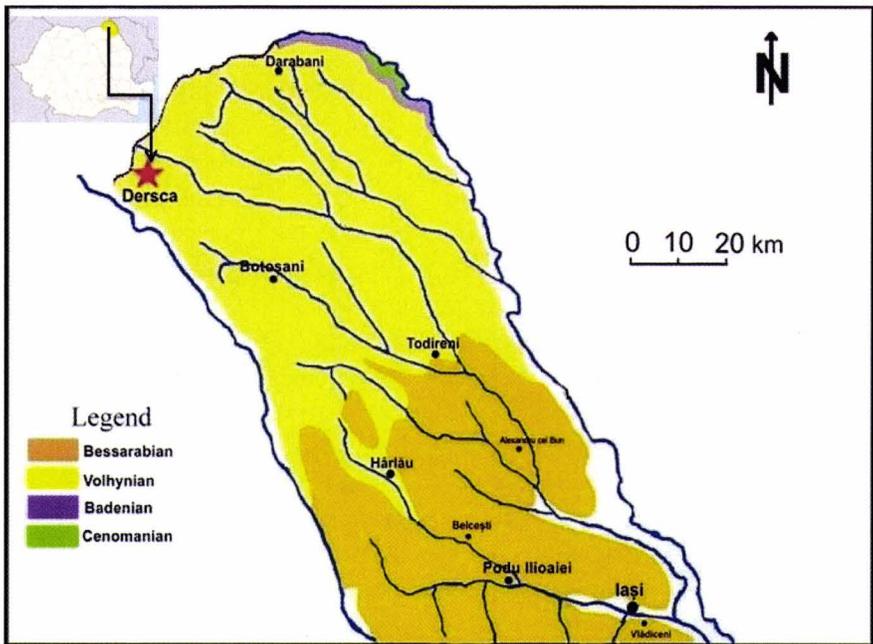


Fig. 1. Geological map. Dersca peat bog is marked with a red star (according to Ionesi, 1994)

These deposits belong to the last sedimentary sequence of the Moldavian Platform (“megacycle” according to Ionesi, 1994). The lithology of Dersca-Mihăileni area consists of silts, sandy silts, sand and sandy clay. From a mineralogical viewpoint, these deposits are composed of quartz, feldspars

(orthoclase, albite), calcite, magnesite, gypsum and hematite (Petreuş et al., 1978).

Materials and methods

On August 2015, a number of 17 peat samples were collected from Dersca peat bog (Fig. 2) up to 30 cm deep. At the same time, 2 peat cores of 100 cm were sampled in order to evaluate the peat humification degree. The samples were dried for 48 hours at 50° C in an electric oven and then sieved at 2 mm.

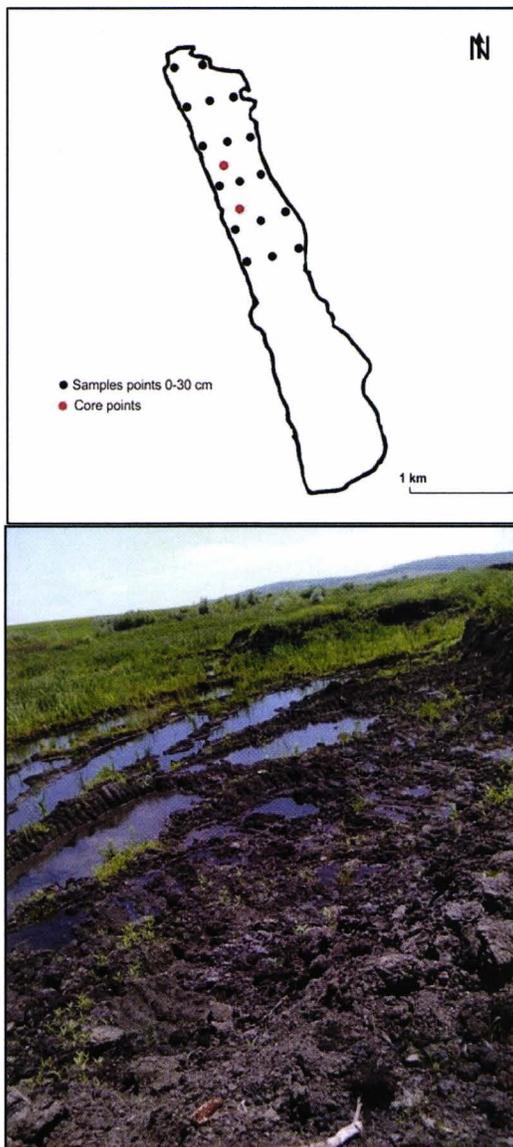


Fig. 2. Sample points from Dersca peat bog

The von Post method, published in 1924, is the most accurate one to estimate the decomposition degree of peat. Each degree of decomposition is labelled with the letter H (from the Latin *humositas*) and a number from 1 to 10. The lowest degree has the symbol H0 while the symbol for the highest is H10. The colour, transparency, content of squeezed matter and water remains can be observed while squeezing the peat lump by hand. The von Post method provides a very detailed system for classifying peats, taking into account the humification degree, moisture content, type of plants and fibres.

An EuroEa 3000 EuroVector elemental type analyser from the Department of Geology of *Alexandru Ioan Cuza* University of Iași was used for geochemical analysis of TOC (%), H, N, S and O.

After the samples were crushed, a 24 hour-treatment with 4 N HCl at 5 g fine samples was applied for inorganic carbon removal. The remaining material was washed with distilled water several times for the acid removal, and then dried at 50° C (Ortiz and Gentzis, 2015). Elemental analysis was used for elemental ratios, oxidation degree, ω (Fong & Mohamed, 2007) and index of hydrogen deficiency, ϕ calculation (Silamikele et al., 2010).

$$\omega = (2O + 3N) - \frac{H}{C}$$

$$\phi = \frac{(2C + 2) - H}{2}$$

For the X-ray diffraction analyses, the samples were homogenized manually in an agate mortar until the optimum particle size was obtained and the random orientation of the crystals in the samples was ensured (Tyni et al., 2014). XRD measurements were performed on representative powdered peat samples using a Shimadzu LabX XRD-6000 diffractometer (Cu K α radiation $\lambda = 1.5406\text{\AA}$), operating at 40 KV, with a beam current of 30 mA. XRD analyses were performed at the Faculty of Physics of *Alexandru Ioan Cuza* University of Iași. Scans were recorded from 5 to 80° 2 θ , at a scan speed of 1 deg/min and a sampling pitch of 0.02 deg.

Results and discussions

The Dersca peat bog area is composed of an eutrophic peat type, with the thickness of peat layer between 1.5 - 6 m, rich in nutrients, with a neutral pH = 6.8 - 7.6, being intensively exploited and used as fossil fuel or as fertilizer in agriculture practices (Codarcea, 1967). The second report about technical analysis from Dersca peat bog was presented in Panteliciă et al. (1997) as: ash content (5.6 - 7.1%), high content in humic acids (33.2 - 36.1%) and volatile components (62.5 - 63.9%).

The peat humification (as an indicator of the decomposition degree of peat) was estimated visually in the field from freshly extracted peat (von Post &

Granlund, 1926). This gives a reasonable assessment for the description of the peat stratigraphy (Fig. 3).

According to the von Post humification test, in the upper peat cores the decomposition degree is H8. The humification degree is higher, with a large quantity of amorphous material and not clearly determined plant structure. When squeezed, about two-thirds of the peat escaped between the fingers and a very small quantity of pasty water was released. The plant material remaining in the hand consists of residues such as roots and fibres that remain during decomposition. In the bottom peat cores the degree of decomposition is between H9-H10 which indicates that the peat is fully decomposed with hardly identifiable plant structure. The decomposition degree of the peat is related to its type. The decomposition degree of the ombrotrophic peat from Romania is lower than that of the eutrophic peat. For instance, according to the von Post humification test, the decomposition degree in the Mohoș peat bog (Harghita Mountains) is between H1-H3, with a high partially decomposed brown-coloured fibre content (Adumitroaei et al., 2016).

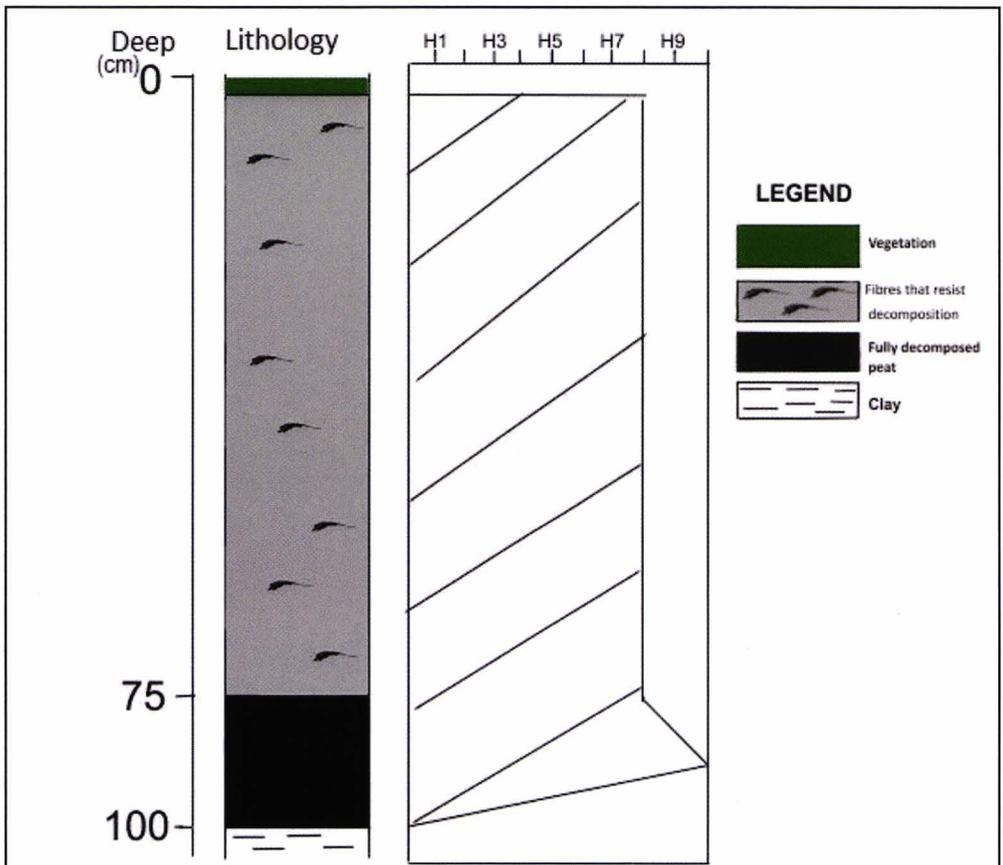




Fig. 3. Description of peat stratigraphy from Dersca peat bog

Analysis of the Elemental Composition of the Peat

The elemental composition of the studied peat samples is shown in Table 1. Because of the absence of carbonates, the total carbon was assumed to be Total Organic Carbon (TOC) (Delarue et al., 2011). The peat samples for the elemental analysis were selected according to the level of decomposition and colour. The peat composition is comprising elements that form organic matter (C, H, N, S, O) and mineral substances.

Out of the analysed samples, D₁₁ contains the highest percentages of carbon (51.30 %) and nitrogen (7.22 %), while D₄ displays a greater concentration of hydrogen (25.01 %) and S (17.26 %). Increased nitrogen values are probably due to the high number of nitrogen-containing compounds (amino acids, proteins, nitrogen-containing heterocyclic compounds) found in peat forming plants (Silamikele et al., 2010).

Table 1. Samples with the highest content of CHHS-O

Sample	N (%)	C (%)	H (%)	S (%)	O (%)*
D ₄	7.12	50.60	25.01	17.26	0
D ₁₁	7.22	51.30	24.64	16.8	0
D ₁₃	7.11	50.37	24.88	17.62	0

* By difference of mean values

The elemental ratios have been used to characterize peat composition (Table 2). The H/C range from 1.6 to 1.2 (Anderson & Hepburn, 1986) is an

indicator for the percentage saturation of the C atoms within the organic molecules and of the carbohydrate content (Fernandes et al., 2012). In our study, the samples with high H/C ratios (5.72% and 5.88%, respectively) indicate the presence of lower aromaticity. It is relatively constant for all analysed samples.

The N/C ratio is useful for the determination the peat decomposition degree because of obtained decrease of N/C ratio (0.12%) that shows an increased decomposition degree as a result of organic matter degradation.

Table 2. Hydrogen deficiency (ϕ), degree of oxidation (ω) and atomic ratios

Sample	ϕ	ω	H/C ^a	N/C ^b	C/N ^c
D ₄	39.97	21.18	5.88	0.12	8.28
D ₁₁	39.10	20.87	5.72	0.12	8.28
D ₁₃	38.94	20.86	5.88	0.12	8.24

$$^a\text{H/C}=[(\% \text{H}/1.008) / (\% \text{C}/12.01)]$$

$$^b\text{N/C}=[(\% \text{N}/14.00) / (\% \text{C}/12.01)]$$

$$^c\text{C/N}=[(\% \text{C}/12.01) / (\% \text{N}/14.00)]$$

The organic matter with a high C/N ratio (> 30:1) may immobilise nitrogen as microbes consume nitrogen in the soil in order to decompose the organic matter. On the contrary, organic matter with a low C/N ratio (< 30:1) may lead to excessive nitrogen release from the organic matter into the soil (Batjes, 1996). The C/N ratio has been considered an index of the possible microbial activity because these communities need at least a C/N ratio of 30 to carry out the organic material decomposition. A decrease of C/N ratio below 30 indicates the increased decomposition rate of organic matter (Kuhry & Vitt, 1996). The C/N ratio confirms that the analysed samples display a high decomposition rate and also a similar decomposition degree. The nitrogen enrichment at this stage of decomposition is related to a greater incidence of microorganisms, including bacteria, fungi, and actinomycetes.

The C/N ratios are used as also in order to difference autochthonous from allochthonous sources of peat sediments (Wang & Wooller, 2006). The C/N ratio has been used to distinguish the algal from land-plant origins of organic matter in sediments (Meyers, 1994).

The C/N values of terrestrial plants are typically > 20, while aquatic plants and algae normally record values between 4 and 10 (Herczeg et al., 2001). In our study, C/N ratios range between 8.24 and 8.28 reflecting the present contribution of aquatic plants and lacustrine algae.

Hydrogen deficiency and oxidation degree show weak correlations with the high properties variability of the peat from the Dersca peat bog, and can be considered relatively homogeneous.

X-ray diffraction analyses

Detailed examination of peat sample mineralogy using XRD is shown in Fig. 4. The X-ray diffraction of peat sample is characteristic of amorphous matter, including vitreous phases and gels, with a hump between 15° and 30° (Tiainen et al., 2002). Bozkurt et al. (2001) in their study of the processes involved in peat formation, describe an anaerobic thick structural layer, which is formed of residual material of original plant structure, decomposition products, and new substances mainly resulting from bacterial activity.

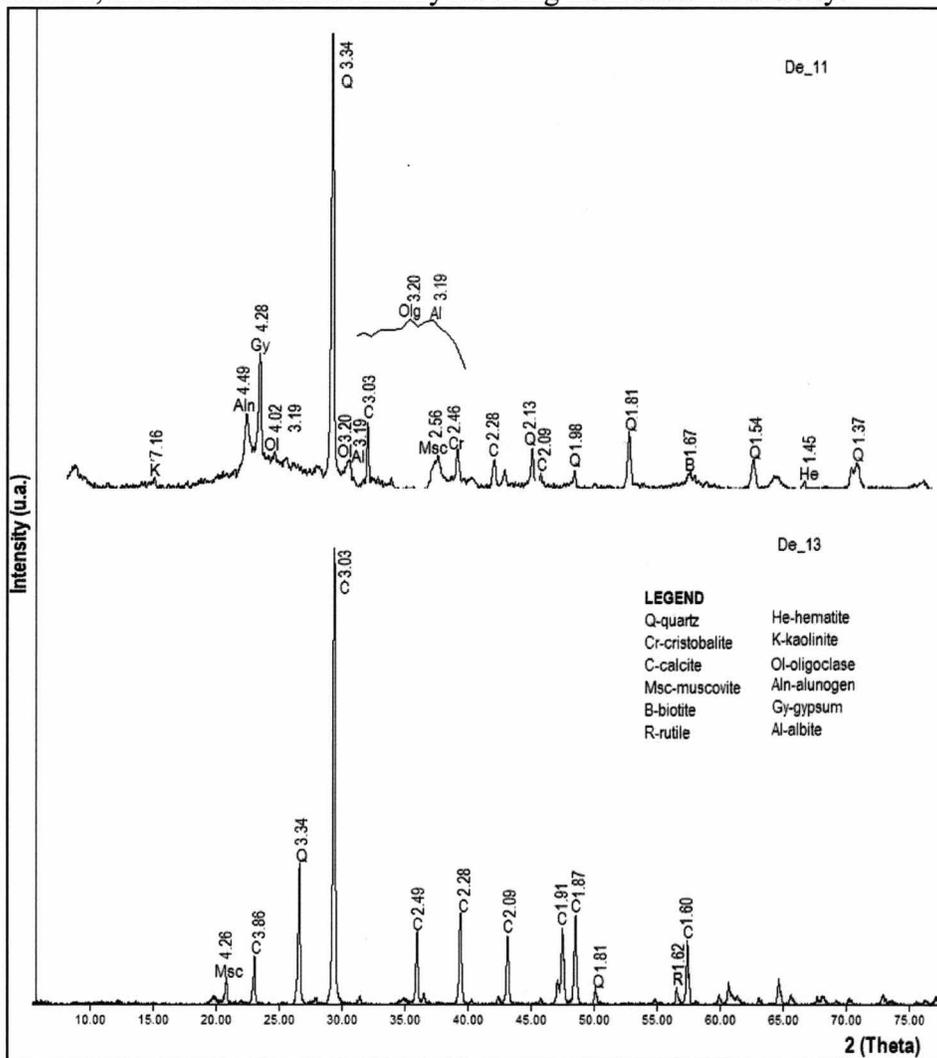


Fig. 4. X-ray diffractogram pattern from peat sample of the Dersca peat bog

Three different types of minerals with different origins were identified. The first type comprises primary minerals, represented by carbonates (calcite). The second type is represented by gypsum, Fe-rich oxides (hematite) and

titanium oxides (rutile) which are characteristic of oxidation products of primary minerals. The third type is represented by distributed detrital minerals, feldspars (oligoclase and albite), silicates (quartz, cristobalite), clay minerals (kaolinite), aluminosilicates (biotite, muscovite). Additionally, there occur secondary minerals, commonly associated with coals as alunogen (Stracher, 2011).

Conclusions

The decomposition degree of a peat bog is an important factor for the genesis observation of carbon contents and for the organic matter degradation of deposits.

In Dersca peat bog, the H/C decrease with an increasing degree of decomposition of organic matter, yet the decrease of the N/C ratio indicates that the decomposition degree of peat is increasing. In the studied peat samples, different groups of mineral phases were distinguished: a primary authigenic mineral phase, with carbonates, and a secondary mineral phase comprising gypsum, Fe-rich oxides, which are products of oxidation or weathering of the primary minerals from the study area.

The elemental and XRD analyses indicate that the studied peat is highly humified and rich in organic compounds.

Rezumat. De-a lungul timpului, în plan internațional, au apărut numeroase lucrări privind studiul descompunerii materiei organice din turbă, cu scopul de a înțelege rolul acesteia asupra biogeochimiei carbonului, în condițiile în care carbonul atinge concentrații de peste 50%. Turba de la Dersca este exploatată și utilizată ca un combustibil fosil, dar și fertilizator în agricultură datorită proprietăților specifice unei turbării eutrofe. Raportul izotopic N/C scăzut denotă gradul ridicat de descompunere a materiei organice. În urma analizei elementale s-a remarcat conținutul ridicat în carbon și hidrogen și scăzut în azot. Compoziția chimică a turbei este caracterizată de un amestec de compuși organici, care împreună cu compușii anorganici, fac obiectul acestui studiu.

Acknowledgments

We are grateful to Reader Dr. Țabără Daniel (Department of Geology, Iași) for providing the CHNS analysis. We would also like to thank Scientific researcher Dobromir Marius (Faculty of Physics, Iași) for his availability and help with the X-ray diffraction analysis.

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MAMMOTH TEETH IN THE NATURAL SCIENCE MUSEUM OF DORHOI (BOTOȘANI COUNTY)

Bogdan HAIDUC*, Bogdan RĂȚOI*, Mihai BRÂNZILĂ*, Vlad CODREA**

Abstract. A sample of Pleistocene mammal teeth and postcranial bones originating from various localities from Botoșani County (northeastern Romania) is curate in the Natural Sciences Museum of Dorohoi. Part of these vertebrate fossils documents mammoths. It refers mainly to the Upper Pleistocene woolly mammoth *Mammuthus primigenius*, but also to the older Middle Pleistocene steppe mammoth, *M. trogontherii*. Both evidence Pleistocene cold stages occurred in this region of Romania. All are scattered finds, with rather poor stratigraphy. However, such fossils enlarge the list of mammoth localities in our country.

Keywords: steppe mammoth, woolly mammoth, Middle-Upper Pleistocene, Moldova, Romania.

INTRODUCTION

Dorohoi town is located in the northwestern area of Botoșani County (northeastern Romania; Fig. 1). From geological and structural viewpoints, this area belongs to the Moldavian Platform (Ionesi, 1994). In fact, this name is nothing but a local one meaning just a southwestern portion of the Eurasian Platform (Săndulescu, 1984, Balintoni, 1997; or ‘the Podolian-Russian Platform’ *sensu* Popescu-Voitești, 1936). The platform sole is not exposed anywhere in Moldova, being studied exclusively based on drilling cores recovered from various boreholes as the ones from Iași, Popești, Bâtrânești or Todireni. But, in the Republic of Moldova, this sole is exposed in the northern areas, as Soroca (Ciobotaru, 2001). The metamorphic rocks are mainly Karelian gneisses, close to the ones of the Ukrainian shield (Balintoni, 1997).

The sedimentary cover, comprises three megasequences (Ionesi, 1994). The sedimentation of the last megasequence is exclusively Cenozoic, more specifically Mid-Late Miocene (Late Badenian – Meotian; Ionesi, 1994; Brânzilă, 1999). The monocline structure of the platform, with strata dipping from northwest to southeast, control the exposures of these deposits, due to the specific regional erosion: the oldest ones can be observed on the northern areas, while the youngest, on the opposite direction.

* “Alexandru Ioan Cuza” University Iași, Faculty of Geography and Geology, Department of Geology, 11 str. Carol I, 700506, Romania; corresponding author: bog21rat@gmail.com

** “Babeș-Bolyai” University Cluj-Napoca, Faculty of Biology-Geology, Department of Geology, 1 Kogălniceanu Str., 400084 Cluj-Napoca, Romania.

The Miocene formations are covered by Pleistocene deposits, that form mainly the river terraces (Băcăuanu et al., 1980). Around Dorohoi, one can observe both Sarmatian and Pleistocene-Holocene outcrops.

In the collection of the Natural Science Museum of Dorohoi there is a sample of Pleistocene mammal remains, mainly of large herbivores. Among these ones, teeth and bones of mammoths are in majority. The fossils reported in this paper originate from various river terraces and were collected during several decades of the last century. This collection was not a result of systematic diggings, but of fortuitous finds. Such finds are often devoid of too many details about stratigraphy or lithology - in the huge majority of cases only the name of the locality of origin is labelled, as it happens in the inventory list of the Natural Science Museum of Dorohoi. The rocks which these fossils were extracted from are diverse: clay, sand and gravel.

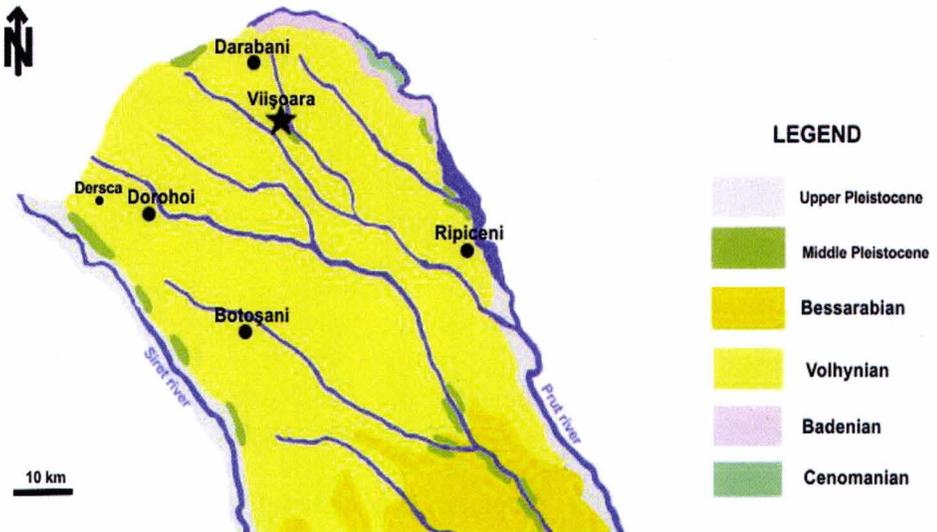


Fig.1. Geological map of the northeastern region of the Moldavian Platform (based on Ionesi, 1994 and Ghenea et al., 1971; star is marking the steppe mammoth locality)

It worth to be mentioned from historical viewpoint, that some woolly mammoth remains were found long time ago in Dersca (Apostol, 1968), possibly in the local peat bog, a local peculiar deposit (Adumitroaiei et al., 2017). There are extremely few data about the Dersca discoveries, but if the mammoth remains really originated from the peat bog, this one could be among the oldest of peat bogs of Romania, which could perhaps be compared with the one of Avrig 1, in Transylvania (Tanțău et al., 2005). However, one should play for safety with these old discoveries: the mammoth remains could be unearthed not from the peat bog, but from the older sediments laying under the peat bog. One may presume that Dersca peat bog could evolved from an older

Pleistocene lake gradually invaded by plants, than turned into a peat bog. Such lake environment would be excellent for the preservation of the mammoth bones and teeth. Probably future pollen studies at Dersca could bring richer data about this local evolution and about sharper dating of the sediments, as long as for instance the last occurrence of the woolly mammoth in our country remains rather unclear: a lot of discoveries are completely devoid of dating and even of a clear stratigraphy.

Material and methods

All fossils were stored into a box, in an old storage room of the museum. They had only old registry number, turned into new ones after this study. Before, in the collection inventory list all these fossils were considered as *Mammuthus primigenius* (Blumenbach, 1799) but now, at least one is herein related to the steppe mammoth, *Mammuthus trogontherii* (Pohlig, 1885).

The mammoth cheek teeth belong to the Natural Sciences Museum of Dorohoi (abbreviated, NSMD); inventory numbers are mentioned in text. The lower molars are mentioned as mx, while the upper ones as Mx.

Measurements were taken with a professional caliper. For photos capture a Canon EOS 100D camera was used. For photos processing Corel Photo Impact 3X software was used. The abbreviations for measurements in Table 1: P - plate number; L_{max} – maximum length; H_{max} - maximum height; W- width; E- enamel thickness; LF- lamellar frequency (no. of lamellae/10 centimeters); HI – hypsodonty index.

The taxonomy, measurements, lamellar frequency, as well as the enamel thickness and calculation of the hypsodonty index follows Maglio (1973) and Lister (1996).

Results and discussions

Class Mammalia

Order Proboscidea ILLIGER 1811

Family Elephantidae GRAY 1821

Subfamily Mammuthinae SIMPSON 1845

Genus *Mammuthus* BROOKES 1828

Mammuthus trogontherii POHLIG 1885

Plate I, Figs. 1 a- b

Material: right m2 (NSMD 924) in mandible fragment.

Locality: Viișoara – Darabani.

Geological age: Middle Pleistocene (Riss/Saale).

Measurements (mm): for the cheek tooth, in Table 1.

Mandible (fragmentary): maximum length – 300; maximum width under m2 – 120, length of the symphysis – 76.

The tooth is partially nested in a mandible fragment, broken in the symphysis area as well as in the rear part of the tooth. Its mesial portion bears attrition marks, which cannot be observed in the distal area. Obviously, it documents an adult. According the studies of Laws (1966), Beden (1979) and Jachmann (1988), all re-interpreted for the mandibular teeth by Stansfield (2015), the age of the specimen from Dorohoi could be estimated around 26-27 years. The m2 wear stage according Beden (1979) is the one he noticed as D1; in Jachmann (1988), it fit with the XVI-XVII wear stages. However, this estimation remains just indicative, as long as all the above-mentioned works are based on the actual elephants, while all mammoths are extinct.

In Romania, the steppe mammoth is not frequent at all, the number of localities bearing this species being by far fewer than the ones with wooly mammoth (e.g. Patte, 1936; Apostol, 1968; a detailed report on the main steppe mammoth localities from our country, in Ursachi & Codrea, 2008). This situation is simply to be explained, as long as the mammoth localities older than Würm/Weichesel are rather rare, excepting few regions as, e.g.: southwestern Transylvania (Rădulescu & Samson, 1985) where the steppe mammoth is reported from Rotbav-Dealul Țiganilor or Zoltan (Middle Pleistocene) or in northwestern Romania, in the Middle Pleistocene of Betfia VII/4 (Terzea, 1994).

In the northeastern region of Romania, Simionescu (1930) reported a mandible of steppe mammoth found in the village Movila-Ruptă, nearby Prut River. From his few measurements, it can be noticed a very low lamellar frequency (4.5), atypical for this species. Therefore, it is not surprising that latter Patte (1936) and Macarovici & Zaharia (1963) were not agree with Simionescu's viewpoint and reassessed this fossil to *Mammuthus meridionalis* NESTI 1825, a much older mammoth specific to Early Pleistocene.

Another difficulty is related sometimes to distinguish between the steppe mammoth and the wooly mammoth intermediate stages, as long as the last species is descendant of the first one, inside same lineage. That explains why some paleontologists as Jurcsák & Moisi (1983) or Codrea & Ursachi (2008) underlined such aspects for the discoveries from Oradea (Bihar County) or Roșiești (Vaslui County). On the other hand, the last ones discussed the species *Mammuthus intermedius* (JOURDAN, 1861); = *Mammuthus chosaricus* (DUBROVO, 1966) as integrating both the archaic *M. primigenius* and the evolved *M. trogontherii* stages.

Patte (1936) mentioned a steppe mammoth cheek tooth from Jevreni (Bacău County), reworked into Trotuș River alluvia. Macarovici & Zaharia (1963) pointed out "*Elephas trogontherii*" remains from Holboca (Izvorul Pândarului) nearby Iași, recovered from a strata where the fossils would had been found associated with lithic artefacts and fire marks. Such a discovery would be extremely outstanding but unfortunately, the authors did not offer too

many details; thereby the enamel thickness is missing from their measurements. In fact, they did not mention any details about the method used for calculating the lamellar frequency method, therefore it is hard to know how they did it. The Holboca mammoth should be related rather to the woolly mammoth (Codrea & Ursachi, 2008).

Simionescu (1990) in her repertory of the Pliocene, Pleistocene and Holocene vertebrate localities from Moldova, mentioned the presence of the steppe mammoth in the “Siret terraces between Roman and Bacău”. In fact, she resumed some data first reported in an older reference by Bandrabur & Giurgea (1965), mentioning the presence of both species – the steppe mammoth and woolly mammoth – in the deposits of the lower terrace (20-35 m) of the aforementioned river. Based on these fossils, this terrace was considered to be Upper Pleistocene, because this author considered the steppe mammoth in Moldova as characteristic not only for the Middle Pleistocene, but for the Upper Pleistocene too (in Table II of the mentioned reference). Probably she included in this species also the basal woolly mammoth specimens still bearing throntheroid features, at least in some cases. Or, for the terrace deposits apparently bearing the both mammoth species, one may think also to the possibility that the steppe mammoth fossils could be reworked from older terraces, inside younger deposits. That’s why it would be interesting to know if the fossils she only mentioned in a list could not yield through a more detailed study, richer details about the stages of evolution of the specimens. But as we have to deal with old finds, it is difficult to know exactly if these fossils are still curate in some museum collections, or if they rather would be lost.

Mammuthus primigenius BLUMENBACH 1799

Plate II, Figs. 1 a, b, c

Material: right M2 (NSMD 911).

Locality: Unknown.

Geological age: Late Pleistocene.

Mesurements (mm): in Table 1.

A fair preserved upper molar, slightly broken in its antero-lingual and antero-buccal portions. The cement is little damaged too. All plates are worn.

As the locality is unknown, there is no data available about the specific deposit of origin, but the presence of this Upper Pleistocene species could be in accord with a lot of terrace deposits from northern Moldova. However, the high value of the lamellar frequency, as well as the rather thin enamel are indicative for an evolved specimen.

Plate II, Figs. 2 a-b

Material: right m2 (NSMD 910).

Locality: Unknown.

Geological age: Late Pleistocene.

Measurements: in Table 1.

This lower molar is well preserved, excepting small portions of the cement. It belonged to a mature old specimen.

Table 1. Measurements (mm) of the studied mammoth cheek teeth.

Catalogue number NSMD	P	Lmax	Hmax	W	E	LF	HI
<i>M. trogontherii</i> 924 m2 dext.	x13x	230.1	165.3	93.4	2.7	6	1.77
<i>M. primigenius</i> 911 M2 dext.	-16x	220.3	155.6	83.2	2.1	9	1.87
<i>M. primigenius</i> 910 m3 dext	x12x	156.4	202.6	77.5	2.2	9	2.61

Conclusions

In Romania the Pleistocene large herbivores are still rather poor documented by rich discoveries: there is neither any mounted mammoth skeleton based of a specimen find in our country, nor one illustrating a rhinoceros. One can notice only the skeleton of a cow specimen of steppe bison mounted at Brukenthal Museum in Sibiu, found at Teliu in Transylvania, by Phleps (Codrea & Ursachi, 2010). All the finds refer in majority to isolated bones and teeth. Rarely a skeleton fragment is unearthed (Jurcsák & Moisi, 1983; Apostol, 1971).

The mammoth cheek teeth collection of the Natural Sciences Museum of Dorohoi doesn't break this rule: it includes fair enough preserved specimens, but nearly all are devoid of their stratigraphy. Unfortunately, as it often happens in the local museums such data were completely neglected in the past, and cannot now be retrieved if the discoveries happened long time ago. In this manner, a rich paleontological heritage is lost. In the case of such samples of fossil vertebrates, their scientific significance for interpreting and reconstruct the Pleistocene environments from the region are practically, valueless. However, in spite of these lacunar data we considered that these fossils worth to be mentioned just for the regional distribution of these species, both illustrative for the Pleistocene of Romania.

This sample allows to evidence the presence of both steppe mammoth and woolly mammoth. Probably some deposits (? river terraces) are Middle Pleistocene, while other are surely related to the Late Pleistocene, as in other regions of Romania. A better understanding could be done if richer stratigraphic data, as well as the taphonomic ones would be available.

For the species distribution in our country one should underline that Viișoara means a new steppe mammoth locality, as far as it is neither

mentioned in the list published by Apostol (1968), nor in the one of Simionescu (1990). On the other hand, the presence of these vertebrate fossils is a sign of a richer potential of the area, where the field works worth to be continued in order to get better discoveries.

Acknowledgements

Authors thank Igor Nicoară (Geophysical and Geological Institute Chișinău, Republic of Moldova) for his help in obtaining some references and to Mihaela Ștefură and Lucian Apastinei (Museum of Dorohoi) for allowing us to study the fossils curate at NSMD.

Rezumat. O colecție de dinți de mamifere pleistocene provenind din diferite localități din județul Botoșani (nord-estul României) se găsește depusă la Muzeul de Științele Naturii din Dorohoi. O parte dintre aceste vertebrate fosile documentează mamuți. Ea se referă îndeosebi la mamutul blănos pleistocen superior *Mammuthus primigenius*, dar și la specia mai veche pleistocen medie, mamutul de stepă, *M. trogontherii*. Ambele specii dovedesc episoade climatice reci pleistocene petrecute în această regiune a României. Toate descoperirile sunt izolate, cu date stratigrafice însoțitoare mai degrabă precare. Totuși, astfel de descoperiri largesc lista localităților pleistocene cu mamuți din țara noastră.

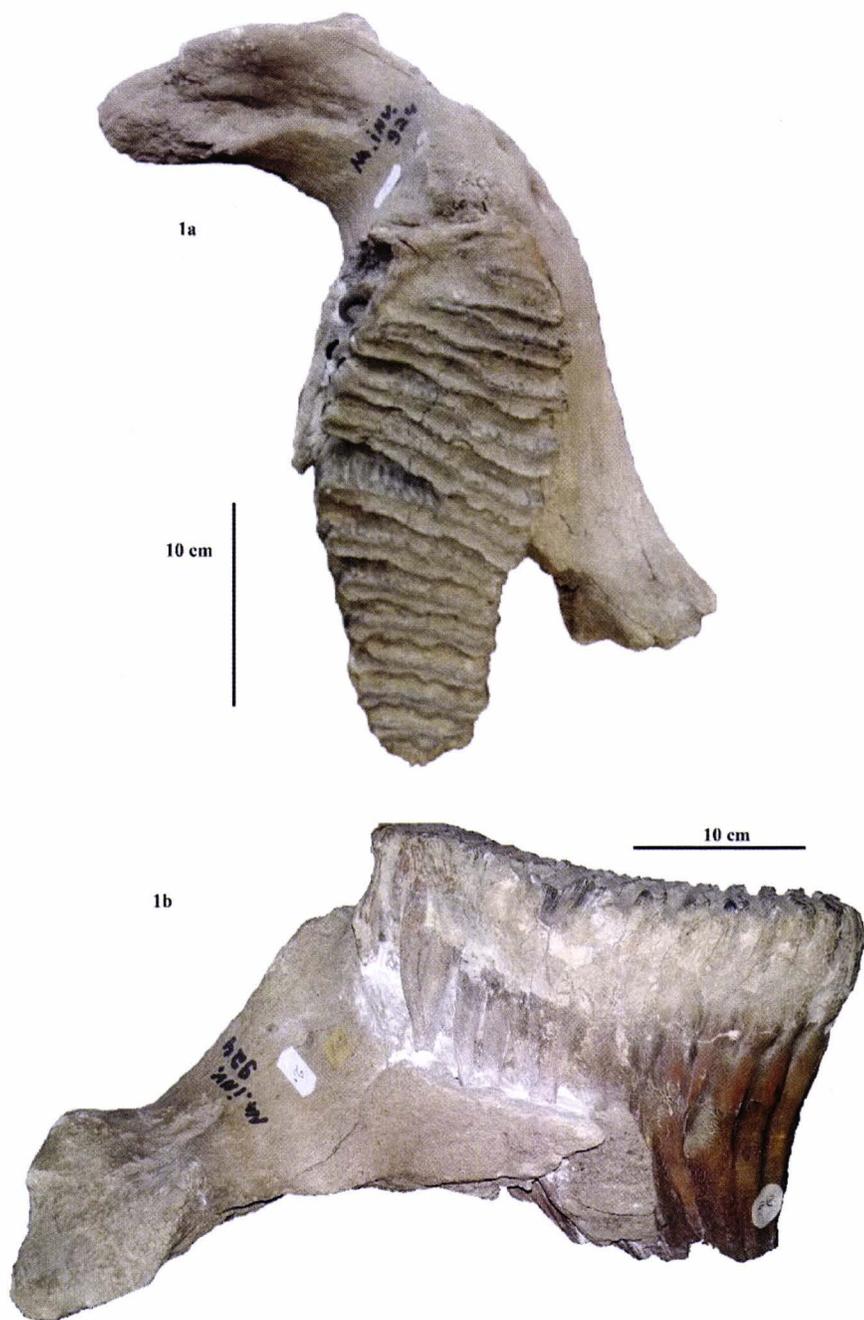


Plate I. *Mammuthus trogontherii*. Fig. 1, mandible fragment from Viișoara (NSMD924) with m2.- a. occlusal view; b. lingual view.

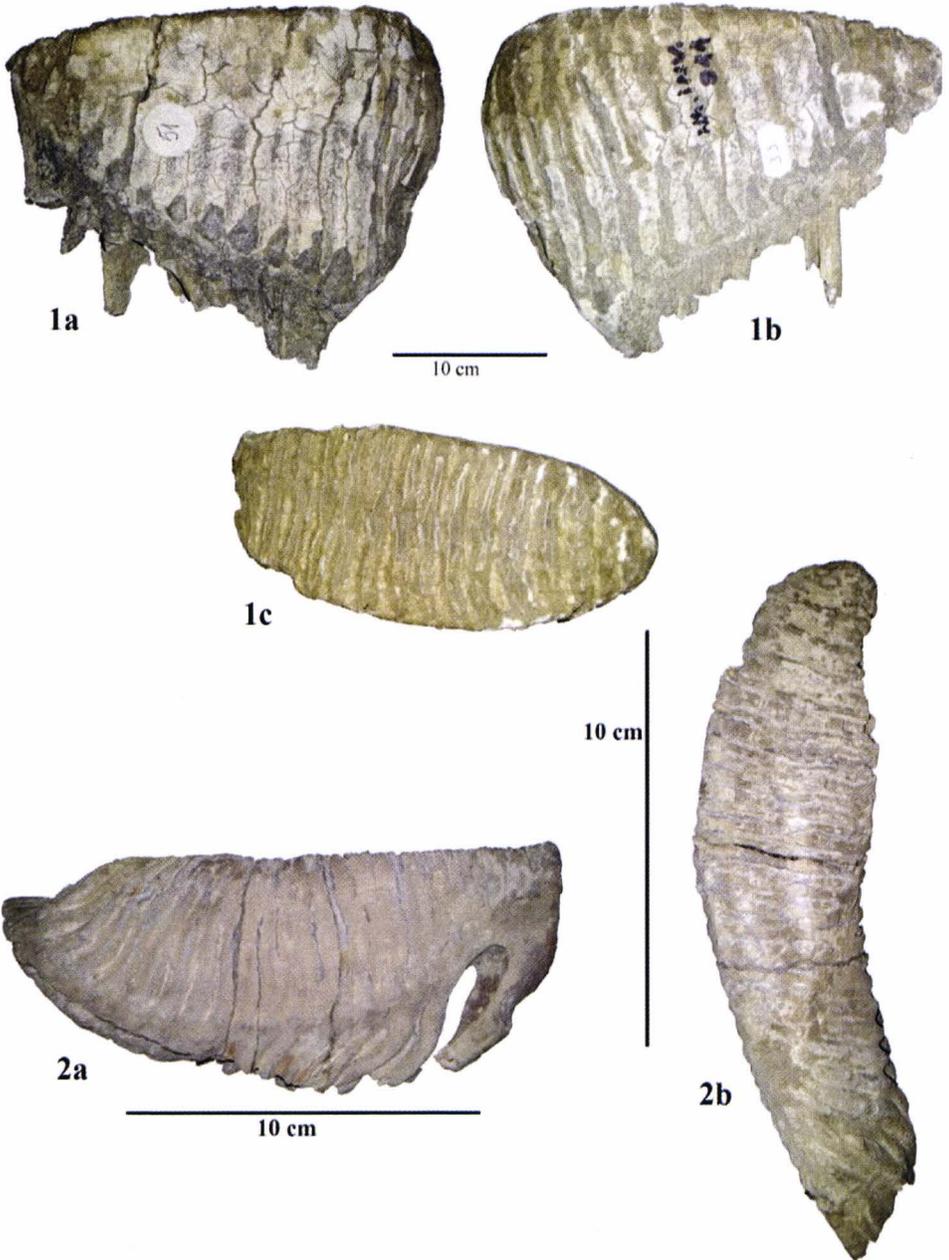


Plate II. *Mammuthus primigenius*. Fig. 1 unknown locality– M2: a. buccal view, b. lingual view, c. occlusal view; Fig. 3 unknown locality – a. buccal view, b. occlusal view.

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GEOGRAPHY

A FEW MALFUNCTIONS RELATED TO THE URBAN SPRAWL IN THE WESTERN PART OF CLUJ-NAPOCA CITY

Nicolae BACIU*, Carmen STĂNESCU**, Gheorghe ROȘIAN*,
Viorel ARGHIUȘ*, Liviu MUNTEAN*, Vlad MĂCICĂȘAN*,
Radu MIHĂIESCU*, Eduard SCHUSTER***

Abstract. From the year 2000 onwards, the urban and suburban areas in Romania offered a new type of urbanism as a result of economic growth and the expansion of the banking sector. Financial stability offered proper growth premises for the real estate industry, which in turn effected the occurrence of dormitory suburbs in the proximity of large cities. The middle and high income population was attracted by these new spaces, which did not offer, though, high standard facilities expected from a modern urban area. Local authorities faced new challenges, such as adapting the transport infrastructure, the water supply and sewage systems, and green areas.

Key words: urban space, rural space, Florești, Cluj-Napoca, infrastructure.

Introduction

Inside the urban areas and outside the built up areas of our country occurred spectacular changes, especially after the year 2000. Urban areas answered to the economic recovery, and high level of real estate investments in Romania. Financial stability and low unemployment level have led to a relaxed bank policy for medium and long-term loans, with immediate impact in the developing of real estate. Investments in housing aimed proximity of cities, which have quickly become a bedroom space; real estate developers have focused attention to attract the middle and upper-income population.

Thus, new challenges and associated problems emerged: the adaptation of transport infrastructure, sewerage and water supply, green spaces, sanitation. The commuting system was revived, after 10 years when it was on the background of urban actors concerns, due to industrial restructuring. The Cluj-Napoca city fits to the modern pattern of this new urbanism. Its western side is an area corresponding to our paper demands, especially since there is one of the most dynamic communities in the country and the most populous village - Florești.

* “Babeș-Bolyai” University of Cluj-Napoca, Faculty of environmental and Science Engineering, 400294 Cluj-Napoca, nicubaciu2@yahoo.com

** “Iuliu Hațieganu” School, Cluj-Napoca, 400560 Cluj-Napoca

*** “Babeș-Bolyai” University of Cluj-Napoca, Faculty of Geography, University Extension Bistrița, 420117 Bistrița

The southern part of this residence village represents an area which raises many issues of urbanism, so we have focused our study only on the southern area of Florești.

Study area

Nowadays Florești looks like an atypical village, characterized by visible urban footprints copied from the city in close proximity. A first visual aspect describes a peripheral urban landscape, or rather urbanized (Baciu et al., 2012; Baciu, 2014). We are talking about a dynamic periphery, which gained the nickname of the most populous commune in Romania. Between the 1992 census and the 2011 census it had a population growth of over 350% - from 6088 to 21832 inhabitants (<http://www.floresticluj.ro>, see Fig. 1). Of course, the urban service of Florești stresses that these figures are outdated statistics from censuses

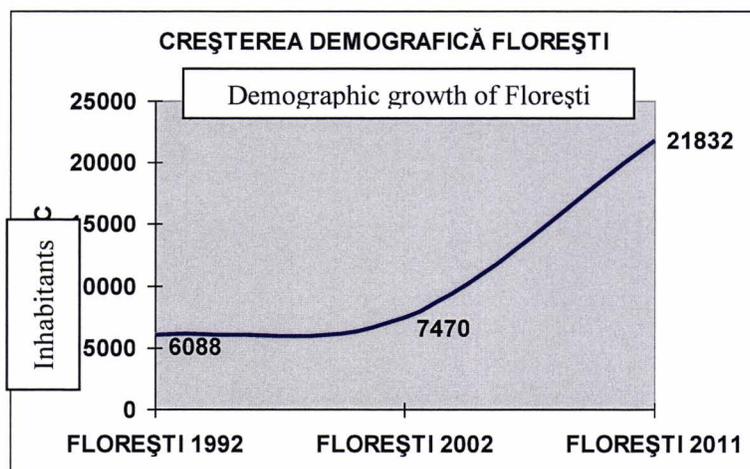


Fig. 1. Demographic growth of the commune of Florești, according to censuses

Methodology

For identification and mapping of urban elements in the studied area there were used specific methodology office activities, and specific field activities.

Among the methods that were used in office work we could specify: analysis method of the topographic maps; remote sensing methods of aerial images, land use map analysis method, morphometric analysis method (it was monitored distribution and exposition of landforms), types of landscape mapping method, the method described type of landscape, GIS method (Baciu et al., 2010). They are briefly detailed below.

Analysis method of topographic map consists in delimitation of the southern area of the village, Florești, from existing topographic maps and plans (were used mainly topographic maps scale 1: 25,000, stereographic projection

1970). Among the interest points there were extracted data about old intra-urban space and road network.

Method of aerial photo interpretation of the remote sensing images uses orthophotoplans created mainly based on the flights in 2008, 2009 and 2012. In this context, informations on the ground were overlapping orthophotoplans to check the variation in their area. Color orthophotoplans were used in the field activities.

Land use map analysis method was used to verify the changes in the use of territory.

GIS method consisted in application of several GIS functions in order to extract the necessary information from the existing data base and after collecting information in the field works, notably by GPS, and GPS track (Roșian, 2011). The main functions that have been used for this purpose are: creating function of shape file (themes or layers), editing function in a shape file, the function of spatial analysis, insertion of map elements, and export function for JPG-type maps.

Few methods used in the fieldwork are: direct observation method (for determining the type of land use), GPS method, GPS track method.

Direct observation method was used in the field for identifying and delimiting areas according to landforms and land use.

GPS method (Global Positioning System) was used for the sampling points with accurate localization of elements of the landscape. Information taken from the field was then downloaded and brought into GIS software for data processing.

GPS track method was applied using a GPS device to record the route. In this way it was recorded the perimeter of different land use types, by recording successively the position of the user, resulting in what is called a track (Roșian, 2011).

Results

Although the housing boom coupled with the demographic explosion are obvious, landscape we are talking about is discontinuous urban one; a landscape with urban aspect, given by the type of construction of the housing system - 4 levels, units of duplexes, high density - but consisting of urban *spotlights* with disparate elements (Baciu, 2014). Housing estates are grouped into dense areas and sometimes isolated, not in uniform areas, such as residential districts of Cluj (e.g. Cetatea Fetei district, the west side - Șesul de Sus, Cetății Street - see also Fig. 2).

Spatial extent of the southern area of the village was a dissipated one, relying on crystallization of few residential nuclei far away from major transportation infrastructure (E60), e.g. Cetatea Fetei housing district. The built

space in Florești increased from 221 ha in 1992 to 520 ha in 2012, reaching 600 ha at present (source - GIS calculations, Baciu et al., 2012).

There were combined interests from local stakeholders and the real estate developers, who have only partially responded to the market requirements and current urban rules. Political interest has been attracting of investors, placing to the intra-urban space of arable land, pastures and hayfields, winning amounts increasingly higher to the local budget, by attracting of new commune's residents (Baciu et al., 2012). The developers initially sought a reduced price for field designated to built, for a maximum profit to the finite product. Their offer has only partially followed the request of new residents: new construction, large spaces, low price, and quiet areas.

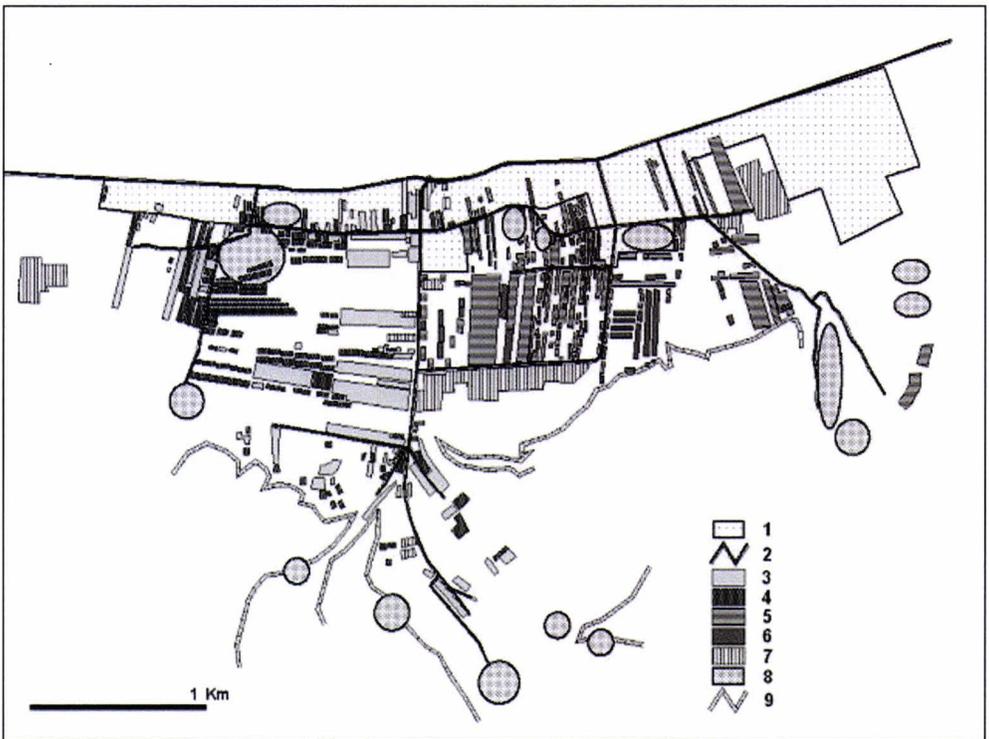


Fig. 2. Intra-urban areas' sprawl in the south part of Florești (legend keys means: 1 - old intra-urban; 2 - major routes; 3 - new built areas in 2010-in west; 4 - new built areas in 2015-in west; 5 - new built areas in 2010-in east; 6 - new built areas in 2015-in east; 7 - industry and facilities; 8 - mainly individual houses; 9 - forest limit)

In addition to these achievements of the future owners, new problems have gradually emerged, unanticipated by the local decision-makers and developers: insufficient transport infrastructure or low sized one, without absorption capacity, because they were created on the old streets of the village – the lanes; new isolated housing districts, with a very late suitable connection to the transport infrastructure to the Cluj-Napoca city (Baciu, 2013).

Also, construction stages were *unnatural*, not correlated with the development model of city's districts. The housing districts were built from isolated areas to the village's center and to the major infrastructure (E60), setting an increasing pressure on poor infrastructure of the village (Fig. 3).

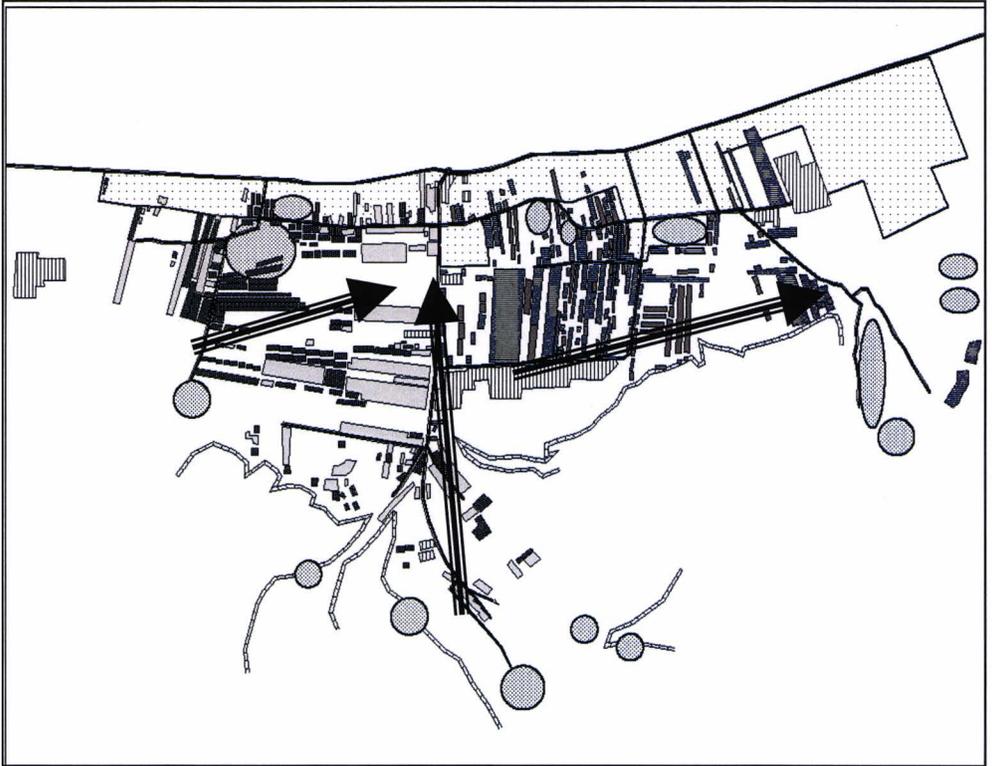


Fig. 3. The direction of Intra-urban areas' sprawl in the south part of Florești, after 2000

The optimizing of transport for 7 km from the west end of the village and city falls within the competence of local decision makers (<http://cluj.citynews.ro/>), but also those in Cluj-Napoca, as any intervention on the transport network in Florești will affect in domino style the urban transport in Cluj:

a. The construction of two network infrastructures in the north and south of the village, the second is in phase of the endorsement. But thus we are dealing with the transfer of responsibility from Florești to Cluj-Napoca.

b. Setting up alternative drive lanes, called reversible lanes, which take the surplus of traffic between Florești and Cluj based on peak traffic momentum; but again, the question is whether Cluj has the necessary capacity to absorb road traffic, or we are actually talking again about the transfer of responsibility from Florești.

c. Denser and more efficient public transport; It is impossible if the personal auto transport is maintained – according to Florești urban service sources, there are 14,000 cars on direction Florești-Cluj between 6.30 and 9.00 a.m. (<http://cluj.citynews.ro/>)

In our opinion, even if these measures will be taken in short period of time, once real estate activity will be reactivated beginning with 2015, infrastructural problems will recur.

Conclusions

Residential development has had an immediate effect on the demographic explosion in the village of Florești. It is a village with an advanced degree of centrality – it has only three villages, including the village of residence, and a big trend of polarization; Florești was concentrating 3800 of the 6088 people in the year 1992 – thus, the attention of real estate developers turned to village Florești.

Real estate boom has led a trend of rapid occupancy of the land, without respecting a gradual extension "of nearby". Population growth in the period 1992 - 2012 is over 350%, and the approximately 30,000 inhabitants, Florești is the most populous in the country.

The strengths points for this oversized commune are: a) the large number of inhabitants attracts a large number of investors; b) European structural funds are more easily to attract for a well populated village with numerous opportunities, and resource management; c) taxes are lower than in urban areas, and they are easier to collect from economic agents (they contribute up to 70% of the commune's budget).

Weaknesses: a) overcrowding in a short period of time has raised fluency transit roadways problems (on E60); b) connection to the communal sewerage problems; c) economic and financial crisis have led to the stopping of construction of all buildings, including non-occupation tendency of completed houses.

Rezumat. După anul 2000, spațiul urban și periurban din România au oferit un nou tip de urbanism, ca urmare a dezvoltării economice și avântului sectorului bancar. Stabilitatea financiară a oferit sectorului imobiliar un teren propice de dezvoltare, ce a dus la apariția spațiilor "dormitor" în proximitatea marilor orașe. A fost atrasă populația cu venituri medii și ridicate, dar nu au fost oferite toate pretențiile unui spațiu urban modern, la standardele actuale. Noi provocări au apărut pentru factorii de decizie locali: adaptarea infrastructurii de transport, a rețelelor de apă și canalizare, a zonelor verzi.

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THE STATISTICAL DIMENSION OF THE EVOLUTION OF SPA TOURISM IN THE SÂNGEORZ-BĂI RESORT

Mircea MUREȘIANU*

Abstract. The location was once a flourishing health resort due to its mineral waters, but is presently fighting to survive the harsh economic environment caused by the financial crisis of the past several years. Since the 1990s, when state-supported treatment for union members was discontinued, the hotels Hebe and Someșul, the two main lodging and treatment facilities, are trying to attract a minimal number of tourists to assure their survival. Smaller units are also competing for tourists, but until the domestic economy will recover (due to the fact that the absolute majority of tourists are Romanians), tourism flows in Sângeorz-Băi will stay low.

Key words: tourism flows, health resort, underutilised facilities, lack of investments.

Introduction

The mineral water deposit from Sângeorz-Băi is considered “the gold” of the town, and its existence is linked to the Rodna Fault, dividing the Mesozoic crystalline structures of the Rodna Mountains from the Neogene eruptive rocks of the Bârgău Mountains. The mineral water resources of the spa have been surveyed as early as the 18th century, when the Austrian authorities from the former Năsăud Border District built some spa facilities around several rich springs.

Nowadays, both representative spa “giants”, the *Hebe* Complex (900 beds) and the *Someșul* Complex (600 beds), accommodate far less tourists for treatment than their capacity would allow, as a result of the dramatic decrease of social-unionist tourism after the year 1989. The decline of tourism flows is also due to the absence of managers able to negotiate with government and union representatives for the allocation of sufficient treatment vouchers for the resort to be profitable. These negative aspects are amplified by the lack of investments in recreational facilities which could create an all-year interest in the location and attract tourists looking for leisure and recreation, thus diminishing seasonality.

Materials and methods

The present paper represents an effort to monitor the development of local spa industry and supporting tourism flows over the past three decades.

* Babeș-Bolyai University Cluj-Napoca, Faculty of Geography, Bistrița Extension, 3-5 A. Mureșanu Street, 420117 Bistrița, mircea.muresianu@ubbcluj.ro

This temporal span comes with inherent difficulties, given the regime change in Romania in the year 1989 and the incoherent and deficient system of quantifying tourism flows.

The focus of the paper is directed towards four distinctive data collecting methods: 1. Consulting bibliographical sources which can provide relevant information on the topic; 2. Conversations with local authorities and the management of the *Hebe* and *Someșul* hotels and spa complexes; 3. Collecting statistical data directly, from the aforementioned lodging facilities; 4. Tourist interviewing, asking two questions: *How do you appreciate the spa and wellness services in the resort?* and *How do you appreciate the lodging, eating, and recreational facilities?* with the answers being noted within a simple matrix.

Geographical and historical features. Spa treatment factors and spa infrastructure

The climatic health resort Sângeorz-Băi is situated in the upper basin of the Someșul Mare River, upstream its confluence with its right tributary, Cormaia, in a geological and geomorphological contact zone between the Rodna Mts. to the north and the Bârgău Mts. to the south (Mureșianu, 2011).

Sângeorz-Băi is the only town in the area, an old settlement known for a very long time by its Saxon name, Sânt-Gergen, first documentary mentioned in 1245, ten years after Rodna, together with several other settlements on the Someș River (Maieru, Feldru, Rebrișoara, Năsăud, Salva) (Mureșianu, 2004).

The first habitation core was built around the present-day Orthodox church, on the natural and communication axis of the Someș River, from where the settlement extended along the river and the lower course of the Cormaia stream, on the Borcut Valley (where, at the end of the 18th century, the initial health resort took shape).

After the establishment of the Năsăud Border District, most of the scattered peripheral houses have been moved in the valleys and along the roads, so that the Austrian authorities could keep the local population under control.

The present administrative territory incorporates several distinct locations: Sângeorz-Village, Sângeorz-Băi, Cormaia, Valea Borcutului, and Valea Tătarilor.

The touristic attractiveness of the resort is given by its nine mineral springs, with bicarbonate, calcic, magnesian, sodium-chloride, mild ferruginous waters, already utilised in the 18th century (Mureșianu, 1997). Associated with the mineral water resources are curative muds and carbon dioxide escapes (mofette).

The resort infrastructure went through several changes during the spa's existence. The location was once a pretty villa resort, until the inauguration, in 1973-1974, of the spa hotel complexes *Hebe* (450 rooms, 900 beds) and

Someșul – the former UGSR Hotel, belonging to the sole communist union, controlled by the Communist Party (600 beds), and of 17 villas accommodating a maximum of 611 tourists (until now, only 5 of these villas have been privatised and refurbished, the rest lying in decay. In the proximity of these facilities there were built numerous private guesthouses, capable of lodging 500-600 tourists, effectively revitalising the resort. Also to mention are the dining facilities (restaurants, canteens, bars, cafés), the treatment and recreational infrastructure of the two complexes, and auxiliary tourism services providers.

Results and discussions

Carefully studying and analysing the statistics and linking them with all the factors we registered in our research files we found that there can be identified three distinct periods, each having special characteristics, as follows:

- 1986-1990
- 1991-2007
- 2008-2015

The timeframe **1986-1990** defined the resort as a major tourism attraction, with high demand and elevated lodging facility occupation rate (between 60-66% for the *Hebe* Complex, and 88-90% for the *Someșul* Complex, at the end of the 1980s).

In the year 1990, the growing demand trend is interrupted, with the occupation rate for the two facilities dropping to 58% (*Hebe*) and 66% (*Someșul*), respectively.

The period **1991-2007** is showing a relative reviving and stability of tourism flows, thanks to managers (directors and/or chief accountants) who accomplished productive negotiations with the Labour Ministry, the National Pension House, and the unions, thus gaining a reasonable number of treatment vouchers.

In the first part of the period (timeframe 1991-1995), tourism flows are significantly lower than before, not exceeding 3500-4000 tourists/year (Fig. 1), as a result of a certain inertia linked to the „good times”, as many of the old clients kept visiting the resort.

Among the causes of the decrease of tourists, we mention:

- The transition from a mass tourism special to socialist societies (as it was state subsidised), to a free market tourism, afforded only by those with a high enough income to spend for treatment and recreation;
- A dramatic increase of tourism services prices, in clear contrast to the income of the general population;
- The occurrence of far more stringent social problems for the majority of the population than health and leisure concerns;

- A drop in foreign visitors from the neighbouring former socialist countries due to their own social-economic problems.

On the other hand, the resort successfully keeps its activity thanks to union leaders from the county of Bistrița-Năsăud (growing in both number and presence) which, profiting from a lack of legislation and clear rules, raised the interest of employees from the county's industries and companies for vouchers for Sângeorz-Băi. Thus, accepting and promoting unwritten rules of mutual advantage, the employees went to the spa, where they acquired groceries (canned food, meat products, oil, sugar, etc.) covering 60-70% of the free voucher offered by the union, while the rest of 30-40% of the voucher's value remained to the service providers. In the timeframe 2000-2005, there still were state facilities operating with substantial government subventions (e.g. the Mining Facility from Rodna, closed at January 1, 2006).

The last part of this period starts with a decrease in tourist numbers to under 3000 visitors/year (in 2006) for the first time since 1986 and to less than 2000 tourists in 2007 (Fig. 1).

Between 2005 and 2007, an Arab businessman who leased the *Hebe* Complex invested in the renovation of just the first two floors of the nine of the hotel, while the rest entered a visible state of degradation. We face a hotel and therapy giant that is hard to be maintained and managed efficiently. The coexistence of abandonment and wealth is hard to ignore.

This period witnesses the loss of a large share of the traditional tourists, caused by the lack of an active and dynamic manager-negotiator, but also by the poor financial means of old clients who lost their jobs.

Between **2008 and 2015**, the effects of the economic-financial crisis that disturbed the entire society also affect the resort, and tourist numbers fall dramatically to 1041 in 2008, and 893 in 2012 (Fig. 1).

The last three years of the period (2013-2015) show a slightly rising trend in tourism flows (from 1312 in 2013, to 1525 in 2015), as well as a shift in tourism preferences towards guesthouses, villas, and other private-owned houses that offer better conditions, with an adjustment to the time interval spent here (weekend – week-long stay). Traditional tourists, spending the classic spa treatment period of 2-3 weeks, are still bond to the old units *Hebe* and *Someșul*, and number some 1500-1600 visitors/year (Fig. 1).

Of real interest were the answers to a small interview from July 2015 from the 220 tourists (120 from *Hebe* and 100 from *Someșul*). To the question *How do you appreciate the spa and wellness services in the resort?* 58 tourists were satisfied; 39 considered that the services were not modernised for the past decade; and 38 tourists were very dissatisfied. The question about *the lodging, eating, and recreational facilities* received different answers from the visitors of the two facilities, with those from *Hebe* being far more satisfied about the hotel (95 positive answers), because the rooms from the two refurbished and

modernized floors, as well as restaurant services are of higher quality, and tourists have reasonably priced buses at their disposal for visiting the area; only 25 tourists from *Hebe* had higher expectations, expressing some concerns. On the other hand, all 100 tourists from *Someșul* complained about the old, damp rooms and bathrooms, and the expensive bus tours. The answers shed light on the visitor's disposition, explaining, at the same time, the modest numbers of visitors.

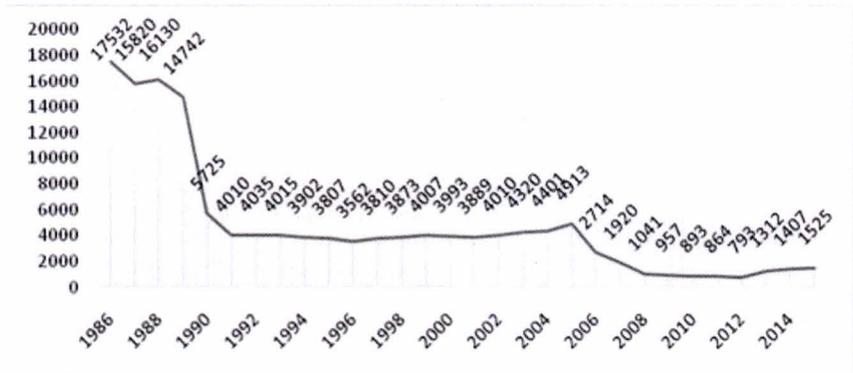


Fig. 1. Evolution of tourism flows in Sângeorz-Băi between 1986 and 2015 (based on data provided by the hotels *Hebe* and *Someșul*)

Regarding the origin of the tourists (relying on data from the hotels *Hebe* and *Someșul*), the majority is domestic (95%), while foreign tourists represent only a small part – a situation that didn't changed during time. Also unchanged remained the regional structure of domestic tourists (Fig. 2) for the past two decades, showing only minor fluctuations from one period to another.

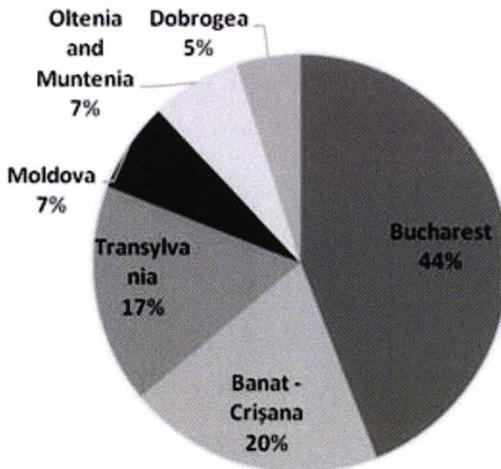


Fig. 2. The structure of domestic tourism flows in Sângeorz-Băi by the origin of the tourists (2015, source: *Hebe*, *Someșul*)

Conclusions

The Sângeorz-Băi health resort is undergoing a deep crisis caused by the dramatic recess of social-unionist tourism and the associated decrease of state-supported treatment vouchers.

The lack of investments in the recreational infrastructure (gyms and sports grounds, spa centres, discos, winter sports facilities, swimming pools, bowling alleys, training camp facilities, etc.) also contributes to low visitor numbers, rendering it unattractive for those who seek only recreational activities.

Under these circumstances, it is not easy to predict the future of a resort with huge geographic and human potential, once the proud of the upper Someșul Mare River. It is still too early to give a precise answer to the question: where is the spa and leisure tourism from the only national ranking resort in the county of Bistrița-Năsăud heading to?

Rezumat. Apele minerale de la Sângeorz-Băi, considerate „aurul orașului”, au fost valorificate în scop balnear încă din sec. al XVIII-lea, când autoritățile habsburgice au realizat câteva amenajări în zona unor izvoare cu debit consistent. Stațiunea este amplasată în Bazinul Superior al Someșului Mare, în aval de confluența acestuia cu afluentul său de dreapta, Valea Cormaia, atractivitatea ei derivând din prezența a nouă izvoare minerale cu ape bicarbonatate, calcice, magneziene, clorosodice, slab feruginoase. Cândva o cochetă stațiune de vile, în anii 1973 – 1974 au fost inaugurate complexurile balneo-turistice *Hebe* (450 de camere, 900 locuri) și *Someșul* (fostul Hotel UGSR; 600 de locuri) și 17 vile, care, în perioada funcționării lor cumulau 611 locuri. În prezent, doar cinci dintre vilele amintite mai funcționează (în regim privat), la acestea adăugându-se numeroase pensiuni care pot găzdui circa 500-600 de turiști. Cele două hoteluri amintite atrag anual turiști veniți la tratament într-un număr mult sub capacitatea lor de cazare și de tratament, fapt grefat pe refluxul dramatic înregistrat de turismul social-sindical după 1989. Cu toate acestea, ele concentrează cel mai mare număr de turiști din stațiune, fapt ce ne-a determinat să le considerăm determinante în analiza evoluției fluxurilor turistice din stațiune. Am reușit astfel să identificăm trei perioade distincte, jalonate de evenimente cu impact major în plan politic și economic: 1986-1990, când gradul de acoperire era de peste 60% la hotelul *Hebe* și de peste 80% la *Someșul*; 1991-2007, când, după scăderea dramatică a numărului de turiști ca urmare a refluxului turismului social-sindical, fluxurile turistice mai reprezentau doar circa un sfert din cele de dinainte de 1990; și 2008-2015, când efectele crizei economice duc la o nouă scădere a numărului de turiști (cu aproximativ același factor procentual), ridicând mari semne de întrebare cu privire la supraviețuirea stațiunii. Ușoara creștere din ultimii trei ani ai acestei perioade poate fi un semn bun în această privință. Răspunsurile turiștilor la un scurt chestionar privitor la condițiile din stațiune pot oferi managerilor celor două hoteluri indicii despre domeniile în care trebuie să investească în viitor pentru a-și păstra și crește numărul de vizitatori.

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BISTRIȚA'S URBAN INFRASTRUCTURE: SMART CITY vs. PROVINCIAL TOWN

Ioan BÎCA*, Eduard SCHUSTER*

Abstract. The smart city concept is an increasingly present topic among scholars, as well as in urban planning and city governance. While there are differences in defining the smart city, the key elements that are recurrent in any analysis are the same: smart governance, smart citizens, smart economy, smart mobility, smart healthcare. Comparing a set of such elements that are necessary to declare a city as „smart” with the present state of things in Bistrița, we tried to establish whether the town has at least some of the characteristics of a smart city and to identify the gaps in the town's „smartness”. We focused on visible elements, namely electronic devices in public areas, to support our idea that Bistrița has a long way ahead to become a smart city.

Keywords: smart city, electronic devices, online governance, connectivity.

The concept of *smart city*

A *smart city* is a human settlement using digital technology (ICT) to improve the quality of urban services, to reduce resource costs and consumption, and to interact as actively as possible with its citizens. The smart city has the ability to offer smart answers to a number of needs (everyday life, services, commercial activities) that occur simultaneously.

The sectors that are using smart technologies are: governmental services, transport and traffic management, healthcare, waste management, tourism, etc. (fig. 1).

The main components of a smart city are: human capital (level of education and culture), infrastructure (optic fibre, internet networks, electronic devices), and information.

The smart city is defined by Cohen (2013) through several smart components, such as:

- Smart government
- Smart environment
- Smart mobility
- Smart economy, based on digital technologies
- Smart population
- Smart living conditions (healthcare, social cohesion, interesting tourism attractions).

* Babeș-Bolyai University Cluj-Napoca, Faculty of Geography, Bistrița Academic Extension, 3-5 A. Mureșanu str., 420117 Bistrița, corresponding author: ioan.bica@ubbcluj.ro

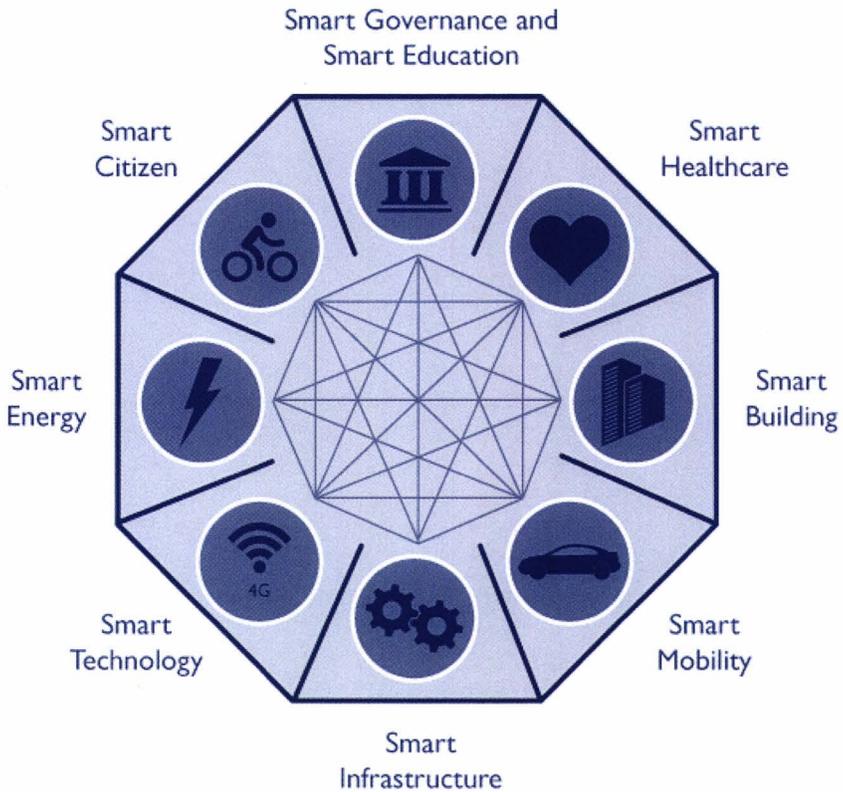


Fig. 1. Smart city concepts (Frost & Sullivan analysis, source: Singh, 2015)

Applying the „smart” attribute within a tourism destination calls for a dynamic interconnection between interested actors through a technology platform where information regarding tourism activities can change in real time. This integrated platform has several connection points that can be accessed by a variety of end-user devices, thus supporting the creation and facilitation of tourist experiences in real time, and improving the efficiency of tourism resources management within the destination at both micro and macro levels.

Smart tourism has following advantages:

- Technology integrated in the environment
- Receptive processes at micro and macro levels
- Internal devices at several connection points
- Interested actors which use the platform dynamically, like a neural system

The final goal is to use the system to improve tourist experience, resource management efficiency, to satisfy destination competitiveness and the customers, and to demonstrate long term durability.

Applications that define a smart city:

- a) Cloud Computing
- b) End-User Internet Service System (computer systems that include email-servers and web servers)
- c) Smartphone (mobile devices with advanced operating systems, personal digital assistants – PDAs, media players, GPS)
- d) smart meters (electronic device recording the power consumption over a given time period and transmitting daily results to the user, for monitoring and payment)
- e) The Internet of Things/Everything (a network of objects / things equipped with electronic devices, software, sensors, etc. aiming to collect and export various data to the user)
- f) Radio-frequency identification (the method to transfer data via electromagnetic waves in order to identify and automatically track devices attached to objects that possess stored electronic information)
- g) Informational Portal (electronic devices placed in cities, near tourist attractions, in institutions, railway stations, bus terminals, and airports, or in Tourism Information Centres)

The benefits for the tourism:

- Access to cultural heritage
- More visitors outside the main season
- Novel experiences
- Usage of digital services to obtain information (travel routes, accommodation conditions, location of restaurants), to view maps, and to contact other tourists.

The present state of city elements in Bistrița

Bistrița is, by all standards, a medium-sized provincial town, its growth coming from its rejuvenating economy and its position as county capital. In regional context, it is part of a larger grid of support towns, having a somewhat marginal geographical position. Thus, not being in the first line of city innovation, its chances to become a candidate to being a smart city in the near future are rather slim.

Still, some incipient elements of a modern city are present in the town (table 1), and our intention is to point them out and to establish which elements are still needed to provide the town with essential smart city functions. Our empirical analysis focused on comparing the present state of such elements versus the necessities that would boost the town's „smartness”, and on identifying electronic „smart” devices in public areas, as a measuring tool for the level of smart city equipment.

Table 1. Comparison between the current state of Bistrița's key smart city elements and the minimal requirements to declare the town a „smart city”

Elements of the present city	State	Necessities
Government	Mayor, City Council, city hall website	Online tax payment, online open access to public projects, online access to public expenditures, online public services
Citizen involvement	Public debates announced in local media or on the town hall website	Online opinion expressing, online petitions, online citizen survey
Mobility	Buses, taxis, personal cars, congestions	Electronic traffic monitoring, electronic displays on bus schedule, electronic access of information on traffic conditions (congested streets, traffic jams, alternative routes), digital apps for taxi calling, bike lanes
Education	Kindergartens, public secondary schools, universities	Electronic linking between school and parents, school websites, digital learning resources, computerised administration, electronic monitoring, digital teaching and evaluation, digital portfolios, electronic devices (TV, tablets, iPhones / smartphones, information portals
Healthcare	Family doctors, public and private clinics, private medical offices, hospitals	Digital database, online services (appointment, consultation, prescription)
Information Technology	Online Town hall services, electronic devices at the train station, two environment conditions monitoring tables	Information portals on streets and in institutions, near tourist attractions, electronic devices to measure energy consumption
Buildings	Apartment blocks, villas, houses, various other buildings	Materials, architecture, landscape integration, functionality, energy consumption
Water and Energy	Running water, natural gas, electricity	Electronic devices to measure consumption, electronic power consumption management, freshwater and wastewater treatment
Waste management	Selective waste refusal, disposal services by SC Vitalia SA	On-time waste disposal, recycling, online information

As an overview of the table above can clearly point out, there is a wide gap between the present state of the town and the necessities that can lead it towards the status of smart city. Prioritizing the necessities and integrating them into future urban development strategies will assure at least a sustainable development of the city (Pollio, 2016), if not it being included in the ranks of Europe's smart cities. Along with such strategies, public awareness-rising campaigns could help the population to better understand public policies and thus support the various initiatives, but also influence people to take active part in the transformation processes.

Electronic devices in Bistrița as an indicator of the smart infrastructure development level

Smart electronic devices, interconnected at various levels, are a key element in a smart city's infrastructure. As one of the more visible features of a smart city, they represent a good indicator for the level of development of a town's public infrastructure. This is the main reason behind our choosing to identify these devices in Bistrița, as an effort to better understand its true level of smart infrastructure development.

The result was rather disappointing, with only very few of electronic devices found in public areas, which brought us to the same conclusion we extracted from the comparison table above, that the town is far from being a smart city. We counted six electronic devices (figures 2-7): three digital info panels, two electronic advertisement panels, and a „smart” bike charger for electronic devices.



Fig. 2. Digital information panel at the town hall



Fig. 3. Digital information panel at the County Council



Fig. 4. Digital information panel at the railway station

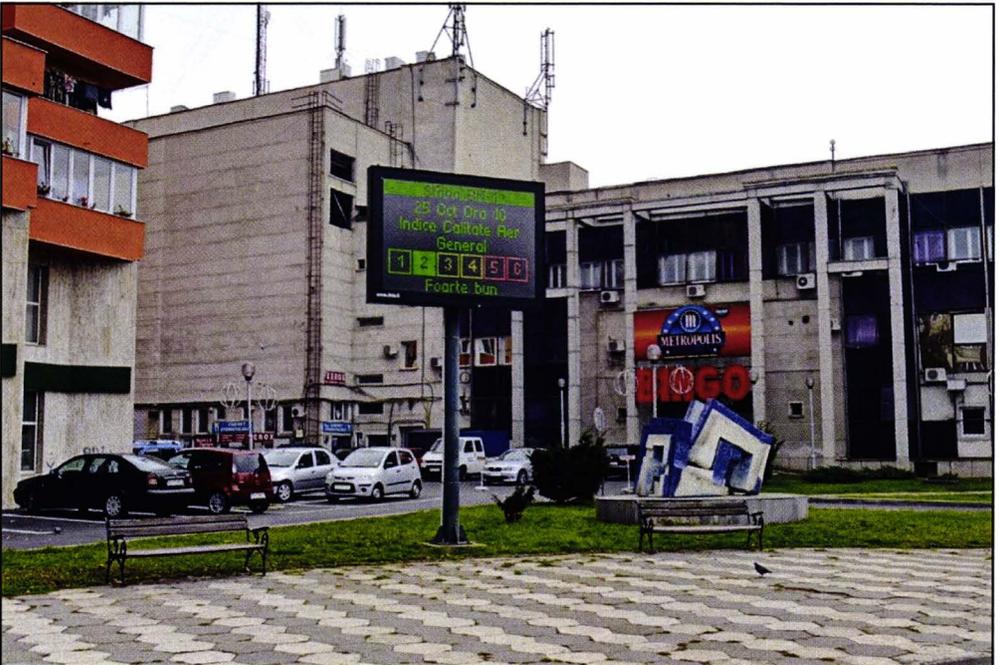


Fig. 5. Electronic advertisement panel in the vicinity of the railway station



Fig. 6. Electronic advertisement panel at the County Council



Fig. 7. Bike charger for electronic devices (phones, tablets) in the Central Park

Rezumat. Conceptul de oraș inteligent reprezintă o temă tot mai prezentă atât în mediul științific, cât și în planificarea urbană și administrațiile locale. Cu toate că există diferențe în definirea orașului inteligent, elementele-cheie care se regăsesc în orice analiză sunt aceleași: guvernare inteligentă, cetățeni inteligenți, economie inteligentă, mobilitate inteligentă, sistem de sănătate inteligent. Comparând un set de astfel de elemente care sunt necesare pentru a declara un oraș ca fiind inteligent cu stadiul actual al situației acestora la nivelul municipiului Bistrița, am încercat să stabilim dacă orașul prezintă măcar unele dintre caracteristicile unui oraș inteligent și să identificăm lacunele din „inteligenta” orașului. Ne-am concentrat în demersul nostru pe elementele vizibile, respectiv dispozitivele electronice din spațiile publice, pentru a demonstra ipoteza cercetării noastre empirice, și anume că orașul Bistrița se află abia la început de drum în acest domeniu. Concret, cele câteva ecrane tactile informative, panouri electronice și bicicleta inteligentă de încărcare a dispozitivelor electronice personale, ca infrastructură vizibilă a conceptului de oraș inteligent, nu sunt suficiente pentru a considera Bistrița ca făcând parte din această categorie. În plus, tabelul comparativ cu starea de fapt din Bistrița față de necesitățile orașului vine să sublinieze această concluzie.

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PARTICULARITÉS ANTHROPONOMASTIQUES DANS LA COMMUNE TIHA BÂRGĂULUI (DÉPARTEMENT DE BISTRIȚA-NĂȘĂUD, ROUMANIE)

Ioan BÎCA*, Lia-Maria CIOANCA*

Résumé. L'anthroponymie est une branche de la linguistique qui étudie les noms de personnes ou les anthroponymes. Par leur résonance et importance, les noms des personnes d'une localité ou d'une région sont un véritable patrimoine culturel, qui illustre l'évolution et leur connexion à cet endroit et à leur caractère spécifiquement historique et géographique. Cela contribue à renforcer l'identité sociale de la région et celle-ci peut être donc tracée au niveau d'une zone géographique plus large (département, région, pays). Cette recherche vise la spécificité et la diversité des noms de famille dans la commune Tiha Bârgăului, mais aussi leur fréquence dans la commune et leur dispersion à travers le pays. Par cette étude on a constaté que les noms de famille les plus typiques pour la commune Tiha Bârgăului sont les suivants: *Cioanca, Hangan, Pavelean, Rus, Găvan, Socină, Bălan* et *Sas*. Certains de ces noms se rencontrent aussi dans les localités voisines (Bistrița Bârgăului, Prundu Bârgăului, Mureșenii Bârgăului) ou même dans d'autres départements (Mureș, Alba, Cluj, Suceava).

Mots-clé: onomastique, anthroponymie, système anthroponymique, patrimoine culturel, patrimoine onomastique.

Introduction

L'anthroponymie est une branche de la linguistique qui étudie les noms de personnes ou les anthroponymes. Ce sont des mots qui représentent des noms propres (prénom, nom de famille, matronymes, patronymes, surnoms) ou des noms de lieux (lieux, localités) qui proviennent du nom personnel (par exemple la commune *Horea*, la commune *Traian*, la ville de *Washington D.C.*, *Saint-Pétersbourg*, etc.).

L'onomastique est une discipline linguistique dont l'objet d'étude est l'origine, la formation et l'évolution des noms propres.

Les noms de personnes étaient à l'origine des noms communs qui sont devenus, après le changement du statut linguistique, des noms propres. Par exemple, les noms communs tels que *fleur, ramereau, blanc, berger, turque, Tatar, montagne, haidouk*, etc. ont engendré des noms propres tels que: *Floarea, Crenguța, Albu, Ciobanu, Turcu, Tătaru, Munteanu, Haiducu* etc. D'autres noms propres dérivent des noms d'animaux (*Lupu, Iepure, Hulpe, Pasăre* etc.) ou des plantes (*Păstaie, Mazăre, Mălai, Pepene*, etc.), des

* Université Babeș-Bolyai Cluj-Napoca, Faculté de Géographie

phénomènes météorologiques (*Vântu, Ploaie*), des caractéristiques de la couverture de la hydrosphère (*Baltă*) et ainsi de suite. Par la résonance et l'importance de leur signification, les noms propres d'une localité ou une région représentent un véritable patrimoine culturel, qui illustre l'évolution et leur connexion à cet endroit et à leur caractère spécifiquement historique et géographique. Cela contribue à renforcer l'identité sociale de la région et celle-ci peut être donc tracée au niveau d'une zone géographique plus large (département, région, pays). Cette recherche vise la spécificité et la diversité des noms de famille dans la commune Tiha Bârgăului, mais aussi leur fréquence dans la commune et leur dispersion à travers le pays.

L'étendue de la zone d'étude

La commune Tiha Bârgăului est située à l'est du département de Bistrița-Năsăud, sur le ruisseau Bârgău (affluent de la rivière Bistrița Ardeleană) et sur la Route Européenne 58 (Bistrița-Vatra Dornei). La surface totale de la commune est de 190 km² et elle se compose de cinq villages, et notamment Tiha Bîrgăului (résidence de commune, Figure 1), Tureac, Mureșenii Bârgăului, Piatra Fântânele et Ciosa (Figure 2).

Selon le recensement effectué en 2011, la population de la commune Tiha Bârgăului était de 5.722 habitants, étant structurée comme ceci: Roumains - 92,03%, 4,14% Gitans, 3,74% avec l'appartenance ethnique inconnue; -93,46% orthodoxes, pentecôtistes 1,71% ; 3,74% avec confession inconnue.

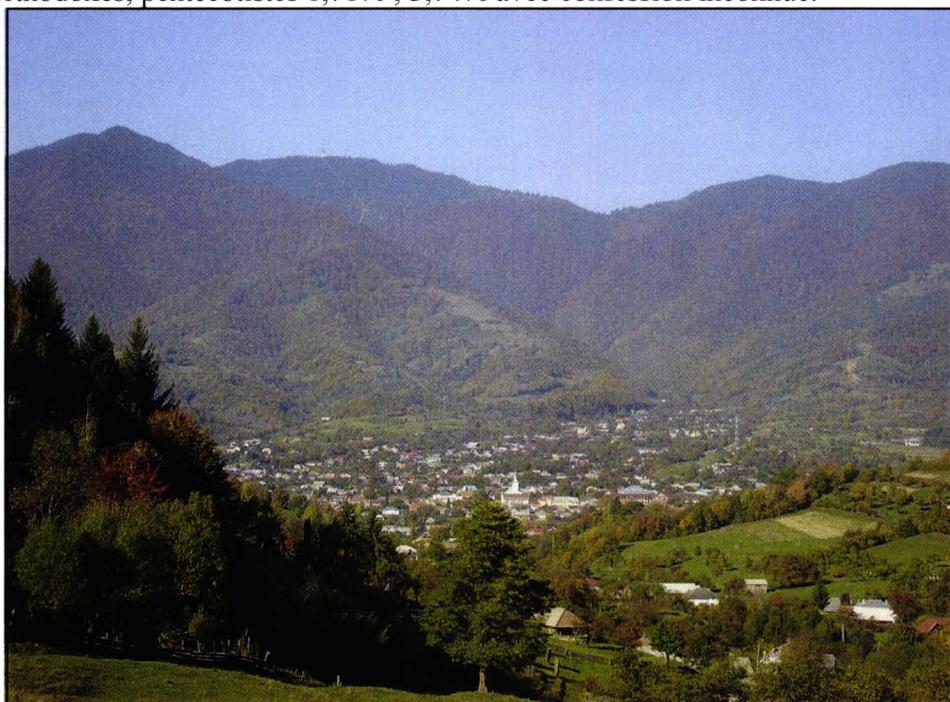


Fig. 1. Vue sur la localité Tiha Bârgăului

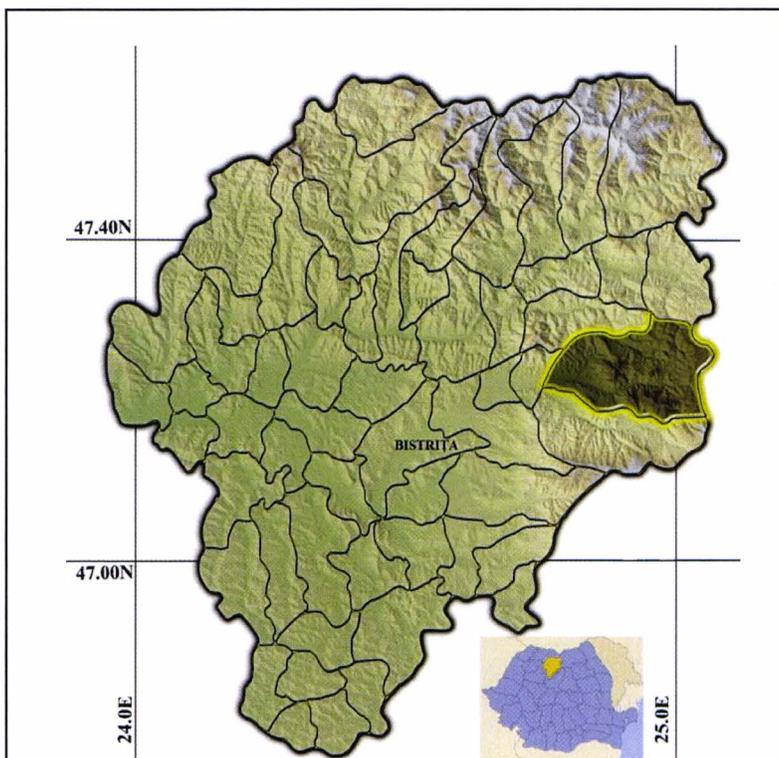


Fig. 2. La position géographique de la commune Tiha Bârgăului dans le département Bistrița-Năsăud

(https://ro.wikipedia.org/wiki/Comuna_Tiha_Bargaului_Bistrita_Nasaud)

Méthodologie

Pour l'élaboration de la recherche on a suivi les étapes méthodologiques suivantes:

- recherche des ouvrages historiques sur la commune Tiha Bârgăului (Buta et al., 2011);

- la recherche de la littérature spécialisée en onomastique (Moldoveanu, 2010; Turcuș et al., 2010; Zăbavă, 2009, 2010);

- la recherche des sites Internet avec des informations spécialisées en anthroponymie

(<https://ro.wikipedia.org/wiki/Antroponimie>; <https://arnoldplaton.wordpress.com/localitati-cu-nume-de-personalitati>) et sur l'évolution numérique de la population (Recensământul Populației și al Locuințelor 2002; Rezultatele finale ale Recensământului din 2011);

- la collecte des données existantes sur les listes électorales archivées dans la Mairie de Tiha Bârgăului et leurs interprétations statistiques existantes;

- la délimitation des groupes onomastiques et des noms prédominants dans la commune;

- la réalisation des corrélations onomastiques au niveau national;
- l'explication de l'origine des noms propres.

Pour cette démarche on a utilisé un échantillon de 1344 personnes inscrites sur les listes électorales de 2012. L'observation statistique de ces listes a permis de trouver le nombre de personnes portant un certain nom, le spécifique, mais aussi leur fréquence. Les données obtenues ont été regroupées par nom de classe et de fréquence et les résultats ont été tracés sous forme de diagramme en bandes. On est ensuite passé à interpréter et corrélérer les données, en réalisant des cartes de la fréquence et de la répartition du nom au niveau national.

Résultats et discussions

Après les interprétations des listes électorales selon le nombre d'apparitions, on a établi en première étape, la fréquence des noms de famille de la commune (Figure 3) et on a ensuite réparti les noms les plus fréquents et les plus spécifiques (Figure 4).

En corrélant les données obtenues avec les résultats anthroponymiques provenus des localités voisines (Mureșenii Bârgăului, Tureac, Bistrița Bârgăului et Prundu Bârgăului) on a conclu que les noms propres les plus fréquents dans la commune Tiha Bârgăului sont spécifiques à celle-ci, bien qu'ils existent dans les autres endroits aussi, ce qui offre à cette commune une certaine identité culturelle et onomastique.

L'application des enquêtes à l'échelle nationale a révélé le fait que quelques noms seulement se trouvent aussi dans d'autres départements, tels que: *Șut* (Bistrița-Năsăud, Mureș), *Cioanca* (Bistrița-Năsăud, Alba, Sibiu, Suceava) et *Hangan* (Bistrița-Năsăud, Neamț), les autres ayant de fortes chances d'être uniques et spécifiques uniquement à cette zone.

En ce qui concerne l'origine des noms propres de la commune, on a utilisé *Dicționarul explicativ al limbii române, 2009* (www.dex.ro), qui propose quelques explications et notamment:

- CIOANCA: Pipe à queue courte; Objet de la fumée, comprenant une partie plus épaisse et creuse dans laquelle est placé le tabac et un tuyau (plié) à travers lequel sort la fumée.

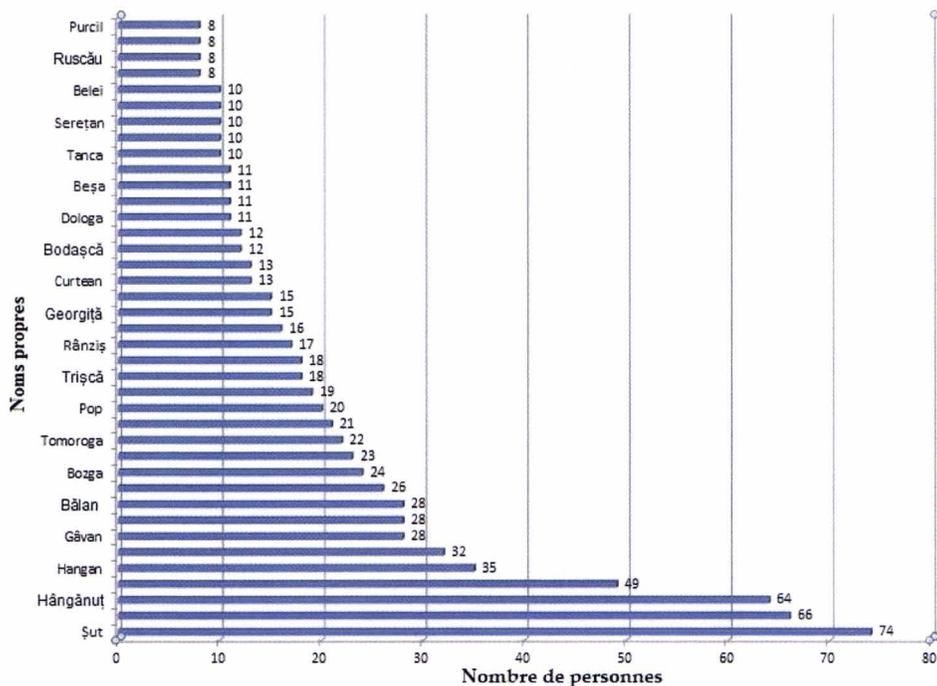


Fig. 3. La fréquence des noms propres dans la commune Tiha Bârgăului

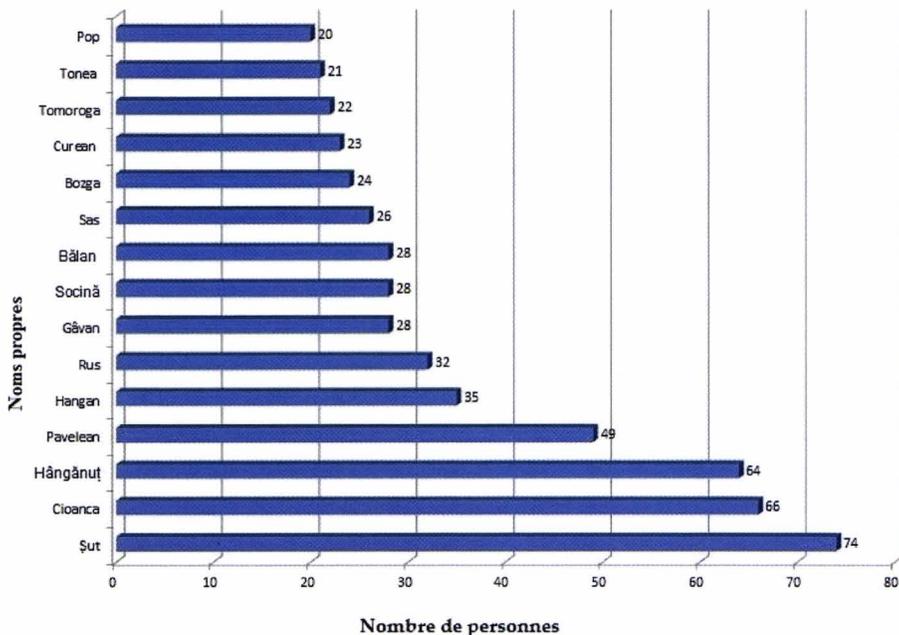


Fig. 4. Les noms les plus communs dans la commune Tiha Bârgăului

- ȘUT: Coup (fort dans le ballon) à la jambe, au bras, à la tête ou avec un outil spécial à certains jeux de sport.

- HANGAN: Variété de maïs de montagne avec un grand épi et le grain jaune-rougeâtre.

- GĂVÁN: Objet ou partie d'un objet ayant une cavité; écuelle ou assiette en bois; le contenu de ce récipient.

- BĂLÁN: 1. (À propos des personnes ou leurs cheveux) Blond. 2. (À propos des animaux) au poil gris ou jaunâtre.

- SAS: Une personne qui faisait partie de la population allemande installées dans les XI-XII-ième siècles dans certaines parties de la Transylvanie.

- TRÍȘCĂ: Ancien instrument populaire à souffler en canne ou en sureau et semblable à une flûte sans trous.

- CURTEÁN: Personne qui a effectué des travaux à la cour d'un monarque ou qui faisait partie du cortège d'un souverain. Soldat qui dépendait d'une cour princière, en faisant quelques emplois et en profitant de certains privilèges.

- TANCÁ: Fournir du carburant à une automobile.

- OLTEÁN: Personne originaire de l'Olténie ou qui habite en Olténie.

- MĂJÉR: Celui qui pèse les charrettes avec du sel.

Conclusions

À la fin de cette étude on a constaté que les noms de famille le plus typiques pour la commune Tiha Bârgăului sont les suivants: *Cioanca, Hangan, Pavelean, Rus, Găvan, Socină, Bălan* et *Sas*. Certains de ces noms se rencontrent aussi dans des localités voisines (Bistrița Bârgăului, Prundu Bârgăului, Mureșenii Bârgăului) ou même dans d'autres départements (Mureș, Alba, Cluj, Suceava).

Rezumat. Antroponimia este o ramură a lingvisticii care studiază numele de persoane sau antroponimele. Prin rezonanța și semnificația lor, numele proprii dintr-o localitate sau regiune reprezintă o adevărată moștenire culturală, care ilustrează evoluția și legătura acestora cu locul respectiv și cu încărcătura sa istorică și geografică. Acest fapt contribuie la consolidarea identității social-istorice și culturale a regiunii în cauză, putând fi, deci, urmărite la nivelul unui spațiu geografic mai extins (județ, regiune, țară). Acest studiu relevă specificitatea și diversitatea numelor proprii din comuna Tiha Bârgăului, dar și frecvența acestora în comună și răspândirea lor la nivelul țării. Pe baza acestui studiu s-a constatat că cele mai tipice nume de familie pentru comuna Tiha Bârgăului sunt: *Șut, Cioanca, Hângănuș, Pavelean, Hangan, Rus, Găvan, Socină, Bălan* și *Sas*. O parte dintre aceste nume se întâlnesc și în localitățile învecinate (Bistrița Bârgăului, Prundu Bârgăului, Mureșenii Bârgăului) sau chiar la nivel național (Mureș, Alba, Cluj, Suceava).

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THE EVOLUTION IN TIME OF CULTURAL LANDSCAPES IN THE TRANSYLVANIAN PLAIN

Andras-Istvan BARTA*, Adrian-Nicolaie VODIȚĂ**, Irina RABOȘAPCA*

Abstract. The cultural landscape of Transylvanian Plain had a complex evolution led by a multitude of factors, geographical, historical and socio-political. In our days, its valences are difficult to detect because of the multitude of existing variables. This scientific paper wishes to clarify the time evolution of the natural landscape and the human habitat in the reference region, but especially the interaction and mutual influences between man and nature. Geographical unit studied presents a complex cultural landscape both in terms of historical, geographical, cultural, agricultural, industrial and especially habitation, with unique customs and traditions.

Key words: landscape, nature, culture, influence, plain, resource, man, interaction.

Cultural landscapes as scientific concepts

In the approach of the investigation we should benefit from the latest achievements of science that can support this research, opening new horizons of knowledge. Thus, for the study of cultural landscapes in the given territory it is necessary a complex interdisciplinary research to address the topic from most diverse angles possible.

The landscape is a dual reflection, objective and subjective of some combinations of elements. The landscapes are repeatable on the globe, but every landscape has a certain specificity that characterizes it. With the advent of transformations brought by human to the natural landscapes, these are partially or totally altered, appearing the anthropic landscapes and the anthropized landscapes depending on the degree of human intervention. These last two categories of landscape formed by excellence genuine cultural landscapes under perpetuate human modeling. Currently in scientific community is considered that any system of interaction between human activities and natural habitat is a cultural landscape. Cultural landscape must be understood from the perspective of natural frame - human component relationship, being the "merge result of natural and anthropic elements; the landscape is also undergoing permanent changes, either due to intervention from human factor, either because of the nature itself" (Crăciun, 2012).

* Babeș-Bolyai University Cluj-Napoca, Faculty of Geography, Bistrița Academic Extension, 3-5 A. Mureșanu str., 420117 Bistrița, andras.barta@geografie.ubbcluj.ro

** Babeș-Bolyai University Cluj-Napoca, Faculty of Geography, Department of Regional Geography and Territorial Planning, 5-7 Clinicilor str., 400006 Cluj-Napoca

In the same context, the relationship between man and the natural environment must be understood and the notion of culture, which considers the so-called lifestyle (*genre de vie*) and represents "a set of habits which the group who practice them ensures its existence" (Derruau 1991, quoted by Voiculescu, 2002). It is about fishing, hunting, picking, sedentary agriculture, pastoral life, inceptive economic practices that appealed to different practices and tools aiming changing environment by man.

The cultural landscape must be viewed also from the perspective of temporal evolution: it is an expression of the legacy of the past, but must be viewed from the perspective of the future:

→ on the one hand, knowing the exact conditions of the historical landscapes and changes in time, it can facilitate and improve predictions about the current and future state of the landscape and can generate scenarios for the future (Marcucci, 2000, quoted by Pătru-Stupariu, 2011);

→ on the other hand, values of the past must be integrated into the requirements and future needs of the society (Antrop, 2005, quoted by Pătru-Stupariu Ileana, 2011). Further evolution is indissolubly linked by the protection of landscape heritage.

Cultural Landscape Structure in the Transylvanian Plain

It is based on a concept, which besides the natural components (relief, climate, hydrography, vegetation, soil), includes the anthropic action. Basically, the cultural landscape is made up of several (cultural) layers which interact at different scales and are changing over time (www.culturallandscapes.ca). The cultural landscape is always representing a mirror of society, which is adapted to functions that must be met for society (Schmidt, 2006, quoted by Crăciun, 2012).

Cultural landscape related to accommodation and house holding management activity - is the visual expression of the ways of human intervention on landscape, reflected (especially in rural areas) through traditional household. A similar, but manifested on a smaller scale situation, can be evidenced in urban areas. Thus, areal concentration of urban elements with similar functions (homes, villas or apartment buildings, buildings belonging to various institutions or similar in architecture, etc.) led to highlighting a cultural landscape related accommodation and house holding management activity with urban specific (Gavra, 2012).

The first human settlements in the Transylvanian Plain appeared in Eneolithic era when the first groups of hunter-gatherers began to be sedentary and began to intensively exploit local resources. These settlements were mainly composed of natural shelters (caves, cliffs, areas with more intense vegetation), screened from bad weather. With the emergence of agriculture in the Eneolithic era, settlements have diversified, the tents and buried or semi-buried shelters have appeared. In the following period, namely the Iron Age, with the

development of tools and weapons, appeared larger settlements that make more visible changes in the landscape, these settlements were either open or fortified settlements. They had remarkable size, a larger population and they appear to be the first administrative political entity in the region. During Daco-Roman period appear the first major settlements like "dave", camps, who had multiple meanings, both defense and politico-administrative centers. In large, their construction was made of local materials, particularly stone and wood. In the Middle Ages, the population increases, there are a huge number of documents attesting settlements and the localities architecture is influenced by ethnic structure of the population it occupies them. Household structure is diversified, in addition to living quarters begin to appear annexes (stables, barn, food stores), residential homes are starting to have 2-3 spaces, depending on the level of welfare. The base materials used in construction were: earth, wood and stone and for the roofing straw, reed and rarely splinter. In the Middle Ages are distinguished actual towns from the Transylvanian Plain, Târgu Mureș, Gherla, Beclean, Sârmașu, Luduș and Sic (oppidum = free royal city) - medieval town which was burned in 1717 Tatar invasion.

The modern period brings major changes in the structure and appearance of settlements, the houses change their architecture, the windows appear larger, and the ceilings are higher to reduce tuberculosis cases. Building materials used as favorite are stone, brick, plaster and roofing tiles which are starting to be used. The villages of the plain gain more pronounced agricultural character, the villages of Southern Plain specializes in cereal crops and aquaculture and made their own arrangements for these occupations (grain warehouses, fish ponds arrangement, equipment used in the cultivation, storage and processing of grain). The population of the Northern Plain was specialized in animal husbandry and arboriculture (Batin, Unguraș, Cireșoiaia, Braniștea, Măluț, Malin and Nușeni). In this area stables and cellars used for household storage of the fruit have increased dimensionally. After the second World War, towns and some villages in the region acquire more pronounced industrial character, Târgu Mureș and Gherla appears as complex industries centers, the other centers are specialized in a particular industry. With the advent of industrial centers in the plain, rural habitats are getting into regression, it begins depopulation of villages, population aging and the abandonment of traditional occupations, parts of household lose their usefulness and the spaces once used in production processes become storage areas or spaces housing (stables are converted into workshops or kitchens). Around this time there is a new major transformation in the architecture and planning of settlements, appear new construction material with a major negative aesthetic impact in the landscape, such as tin, eternit, strident decorative materials, wrought iron, stainless steel, which in most cases led to decreased tourism attraction, disappearance of visually pleasing landscape. In rural, houses are emerging 2-3 levels and in urban areas, due to poor urban planning in many areas destined to the constructions of

houses appear apartment blocks construction with an aesthetic negative impact. A great importance in the landscape of villages and towns have rural and urban parks, the overwhelming majority of these parks are inherited from the old parks of the nobility domains that today are rearranged to a greater or lesser degree (Baciu, 2014).

The historic cultural landscape which has shaped the landscape not in recent history or for the moment but long time before going back in time. This change in time can be in tens, hundreds, thousands or tens of thousands of years. Mainly the historical landscape of Transylvania Plain precedes the nineties of the twentieth century. Once Romania joins the European Union amendments in the landscape, has changed, diversified, but appeared the standardization of interventions in landscape and the need for normative compliance across all of component countries. Analysis of cultural historic landscapes in the region studied has as purpose the identification of landscape elements that need to be protected and which are of special importance and defining in the landscape. Even if some elements of the cultural-historic landscape of the region lost their practical use (brownfields, personal farms or stables, wells on the former vineyards and pastures or wells in villages that already have drinking water systems), have a great impact on the landscape, attract or can attract certain types of tourists creating a special niche tourism.

Cultural landscape elements are influenced decisively by the relatively large number of ethnic groups that have lived and still live in the region. A hazard for cultural-historic landscapes is the process of renovation of buildings in the region studied, so, from the lack of knowledge, interest or because of poverty, many traditional buildings were renovated with new materials nontraditional such as tin, eternit roof or materials decorative and insulating exterior. Of course with proximity to towns such phenomena intensify because every householder wants to be in move with the modern world. The best preserved cultural-historic objectives are found in small isolated villages with an aging population, from where the young population has migrated to cities. Not everything new is beautiful and attractive, and this should give us some thought, because once destroyed, heritage it 's almost impossible to recover and long-term losses are enormous.

To get a clear picture of the cultural landscape from the studied region we should take into account the chronological evolution of population and historical sites remaining after this. In this study we take into account the number, density, degree of preservation and to enhance the value of historical cultural sites. The period of time that the analysis extends is done from Eneolithic to the present, cultural-historic sites from this period are having an attractiveness and a greater popularization in the common population.

Eneolithic in the Transylvanian Plain

During this period the region was under the influence of the culture Coțofeni and the population of the plain was underrepresented and rarefied. As historical sites we have “Cetatea Păgânilor” (Heathen Fortress) on the site of existing settlements Șincai and Eneolithic sites around outcrops of salt from Sic. Primary occupation at the time was animal husbandry and was less focus on plant growing (Lazăr, 1995 quoted by Bădărău, 2005).

The Bronze Age in the Transylvanian Plain

There has been found several sites from this period among which the most important ones such as: the sites of Arcalia, Rusu de Jos, Șieu Măgheruș, Archiud “Hânsuri”, Fântânele “Rât”, Archiud, “Dealul Fragilor”, Stupini “Vătaștină”, Buza “Dosul Țăpieșului”, Visuia “La Țigla”, Țigău “La Dâmburi”. Important necropolises were investigated at Fântânele “Dîmbul Popii”, Budești Fânațe “Benișoara”, Mărișelu “Coasta Domneștilor”, Șopteriu “La Curmătură” and at Fântânița. Other necropolis were at Ocnîța “La Ștefălucu”, Stupini “Fânațele Archiudului”, Vermeș “Căminul Cultural”, Chiraleș “Pe Deal”, Figa “Băile Figa”, Chiochiș “Pe Clejă”, Bretea “Colnic”, Bozieș “Poderei”, Budești “Tăuți”, Chintelnic “Știubei”, Delureni “Dosul Uilacului”, Nicula “Podul Mic”, Tonciu, “Dâmbul Pietros” or at Band.

This age triggered controversial debates within the scientific community, as some felt that deforestation for agricultural purposes started in this period, others deny this and claim that the intense deforestation began in the Iron Age when tools were perfected. The main factor of shaping the landscape was grubbing for agricultural purposes and switching to more intensive cultivation of plants.

Iron Age and Middle Ages in the Transylvanian Plain

Iron Age begins with the settlement of Scythian populations origins in the steppes of Asia to Budești and Frata, in this period the Transylvanian Plain was still having a forest steppe character, but later with the iron work tools improvement and population growth began deforestation for agricultural purposes (agricultural crops and pasturelands). In the next period Geto-Dacian and Celtic settlements appeared and brought new practices such as mining and salt mining in several locations in the plain. This period coincides with the appearance of the first agriculture boom and brings first political-administrative formations in major settlements, the latter originally were not fortified and were located on the first terraces of rivers, spared from floods and landslides. Later came the fortified settlements, some of them even touched the size of 30 hectares. They were placed in panoramic views on the slopes, hilltops, peaks and confluences of heights hill and were easy to defend places. Materials used in fortifications were local and could be: simple earth, wood or in some cases volcanic rock. With the Roman administration appeared constructed

communication paths (paved Roman roads) and were organized in networks which have brought major changes in the landscape of places and in socio-political life of the people in the region. It started intense exploitation of the salt surface especially at Cojocna, Sic and Figa, were appeared the first salt baths from the Roman period that were recently rediscovered. Other occupations in this period are the first forms of beekeeping and fish farming by constructing ponds. The appearance of primitive fish farming marked the landscape of the Transylvanian Plain irremediably until today. Aquaculture in the time that has passed was modernized and expanded spatially until modern times.

With the Aurelian withdrawal unfortunately started a political-administrative relative decline began in the early Middle Ages that brought more obscure times, insecurity, population movements that have begun to stabilize the appearance of the first principalities in the region.

In the middle Ages due to population growth and the expansion of agriculture appears an increasing pressure on landscapes of the Transylvanian Plain. The number of villages grows and appear the first attesting documents starting with the eleventh century.

In the fourteenth century are recorded a large number of attesting documents including appearing of a fortress (Fortress Ungurașului), the population is growing both because of agricultural development and due to population movements. During this time already it can be notice different ethnicities (Saxon, Szekler, Hungarians and later Armenians) which together with local people shape this territory until the present. Also this time there is a large extension of pastures and hayfields in the region and a further restriction of the forest steppe. Also during this period appear nobles' mansions and parks or gardens surrounding them, they had a strong impact on the landscape while some are preserving even now.

The modern era of shaping the cultural landscapes

The transition to a more intensive agriculture in the second half of the nineteenth century, is observed a more aggressive intervention in nature, the landscape of Transylvania Plain turns to the needs of modern society, houses grow spatially which increases the need for wood for heating their houses, which put implicit pressures on forestry fund. The first industrial centers appear, which put pressure on the various resources of the region. This process continues in the two world wars which in addition to continuous depletion of land resources, changes were made by constructing new roads and military buildings with the front movement in the Second World War. With the end of the Second World War communist ideology occur in the region and that will lead to the most aggressive shaping of the landscape in the Transylvanian Plain. Appears the concept of collectivism, individual agriculture and individual property disappears, new forms of cultivation and technical plants are introduced into plain agriculture (sugar beet, tobacco, hemp, flax, sunflower,

etc.). Unprecedented increase of livestock, animal breeding farms are making serious changes to landscape and people's mentality. Also during this period appears industrialization of villages, or as complex of processing livestock or as industrial crops centers (sugar factory from Lechința). During this period there is an intensive development of communication lines, main roads are paved or even asphalted, are installed road fences and the roads are protected by bad weather through curtains of planted trees (walnut, ash, poplar, acacia or different fruit trees). Communication paths follows the water courses, having direction N-S and E-V, secondary communication paths on the inter-flows loses their importance and are used only locally. An unprecedented development is known by the cities, because they are becoming industrialized or super industrialized. Some cities have developed one branch of industry, other cities have developed complex industries such as for example Târgu-Mureș and Gherla. With the industrialization of cities, the industrial cultural landscapes appeared, however, we will discuss about them later.

Agricultural cultural landscape - cultural elements belonging to those categories of landscape owes its existence to the practice of agricultural activities and traditional crafts, reflecting the natural potential and the specific modes of exploitation. Agricultural landscape is the landscape that has been completely modified by human activity. Over time every period of human development has brought a development of agriculture and implicit of rural cultural landscape. The first primitive forms of agriculture in the Eneolithic in the Transylvanian Plain occur with the first domestication of wild animals and the harvesting of wild crops that were growing near human settlements. First, were used polished stone sickles, which they evolve over time. Although primitive agriculture first appeared in the East Mediterranean basin, in the Eneolithic Age, on the Romanian territory came later. The first time was practiced in Southeast Romania and was influenced by population movements from the current plateau of Anatolia. During the early development of agriculture, the main occupation in the Transylvania Plain was animal domestication and animal husbandry, crops having a secondary role, so natural landscape undergoes changes more by extending the grazing areas. In The Bronze Age, the share of both agricultural practices is balanced. With the advent of bronze tools and agricultural development first appear grubbing soil and growing areas of plant, noticing a pronounced agricultural landscape. The development of iron tools in the Transylvanian Plain led to the emergence of the deforestation with purposes to obtain grazing, hayfields and arable land which induces visible changes in the forests and the forest-steppe of the plain. In this period, with the increasing population and settlements, there is an agricultural extension dictated by necessity. Agriculture was diversified, new species of crops are selected from wildlife and in addition to animal husbandry and cultivation of plants appeared the first forms of fish farming in the

Transylvanian Plain, especially in the current valley of Fizeș in the Daco-Roman period. The first forms of aquaculture were practiced in the natural ponds, impoundments and modern concept ponds appearing later. These practices have brought changes in the structure and species diversity of animals and plants, leading to a unique landscape evolved from an agricultural perspective. Also during this period are deemed to have occurred the first agriculture terraces that are still visible in the landscape of the Transylvanian Plain. These terraces have been built plowing along contour lines and overturning furrows down for dozens, hundreds, or even thousands of years. These agro-terrace appeared on slopes and terraces of water courses, protecting the crops from floods and providing a food stability for local populations. In the Middle Ages, with the increasing number of settlements, of their surface and population, agriculture becomes more organized, responding to the necessity of their growing needs. Starts the production and export of grain and animals of the plain to the other regions, farmlands and pastures are organized on aristocratic areas. It appears the organization of cultures. Due to more aggressive interventions in nature, begun to manifest the first erosion processes (ravines, torrents, basins, and even landslides) due to the introduction in agriculture of larger and larger surfaces of land. With the industrial revolution and the introduction of modern agricultural farming techniques, agriculture move to another level. Landscape interventions were more aggressive, modern technology was leading to an unprecedented expansion of the area occupied by pastures, hayfields and arable lands. If until now in agriculture were used only animal and human labor from that period appeared agricultural complex mechanisms which were using the power of steam engine, the internal combustion engine and electric motor later. The most aggressive farming practices developed in the period next after the Second World War, and during the communist era appeared the Agricultural Production Cooperatives (collective farms). This period is characterized by mechanized agriculture, traditional agricultural practices are losing ground to modern equipment, land decreases preparation time and cultivation of the crop, leading to higher production which in many cases was forced. The damming process was created and a lot of fishponds appeared, organized in state fish farms on almost all rivers in the Transylvanian Plain. These fishponds reach very large sizes (Țaga -164 hectares) producing large quantities of fish. They were arranged in over 50 lakes of fisheries, leading to a unique lacustrine landscape. Mechanized agriculture imposed some changes in the landscape by the arranging of the necessary local roads for access with equipment to agricultural areas. Arrangement of these roads besides proper farming practices have led to unprecedented intensification of erosion and led to brutal changes of the landscape. In conclusion, we deduce that there are two types of agricultural landscape in the Transylvanian Plain, namely an agricultural landscape based on plant crops and aquaculture in the southern and agricultural landscape

shaped by arboriculture, viticulture, hayfields and pastures in northern of the plain.

Starting in 90` until today, with the disappearance of communism and the production society which it was based on, forms of agriculture in the Transylvanian Plain enters on a setback, many cultivated areas are abandoned, the number of domestic animal's decreases, fishing farms are dissolved and no longer produce large amounts of fish, as fish ponds having more recreational purpose. There are new crops that replaced the old crops (soybean, canola, medicinal plants or aromatic plants); bringing a new color to the landscape. Together with the regress of agriculture, changes occur in the density and composition of natural vegetation, processes of natural reforestation start, gaining landscape once again, the forest-steppe shades.

The forest cultural landscape is under the influence of two factors, such as natural factors and anthropic factors that are shaping it. We mention that the natural factors are represented by the climate variations and anthropic factors, where we refer to human interventions on forests. The first notable human intervention to the forest landscape emerged in the Iron Age, when deforestation appeared for agricultural purposes. Then human intervention was accentuated with the increasing population and their needs (need for heating a wider range of housing, need for construction materials, or need for agricultural areas). We can emphasize that the forest landscape in the Transylvanian Plain, from the Neolithic to the present pass through three major evolutionary steps. Initial appearance of the forest landscape in the Transylvanian Plain was in the Neolithic and it was compound from the forest-steppe and deciduous forests. The first major stage of human intervention in the landscape begins with the Bronze Age and lasts until the Industrial Revolution due to the fact that a large amount of wood was withdrawing from nature and used during the processing of metals (forges and furnaces heated by wood) and construction purposes (fortifications, houses, churches, harnesses). The second phase of major intervention is the Second World War (a large quantity of wood was exported to countries like Germany and Hungary) and the period beyond it (Communism), when much of the forests were cleared to make room for agricultural surfaces and to obtain paper for the pulp and paper factory in Dej, or for the furniture factory in Gherla. Also in the communist period, changes occur in the composition of tree species in the lowland forests by planting experimental curtains of conifers (pine and spruce). In the 90`, the land areas affected by landslides and surfaces erosion were carried out underbrush and acacia plantations to stabilize the land. The last stage of evolution of the forest landscape, this time positive, start with the accession of Romania to the European Union, when the Romanian society was transforming from a production society into one of consumption, so, agricultural practices are narrowed and specialized and appear grants for reforestation. Due to regress of

agriculture, natural reforestation processes began to intensify and appeared planted forest areas subsidized by forestry and national funds (forest of acacia, American poplar, heat wicker, paulownia, etc.).

Industrial cultural landscape has evolved in a shorter time in the Transylvanian Plain and largely was developed based on local resources and local brands which were producing economic branches. The first forms of industrial manufacturing have emerged in the Middle Ages in the cities of the plain (by processing the leather, wood, metals, salt extraction, etc.). With the industrial revolution and the modern period industries have diversified cities in the Transylvanian Plain and they received industrial valences, even some villages have been industrialized. The most important development occurred under communism, so in a few cities such as: Târgu Mureș (chemical industry, construction materials industry, food industry) Gherla (woodworking factory, brick factory, glass factory, alcohol factory). Other cities have specialized more on one industry, such as Beclean which focused on metallurgy, Luduș where was existing and is existing a sugar factory, at Sărmașu the extraction industry of natural gas and from industrialized rural centers we remember Lechința (factory sugar) and Năsal (milk processing). The 90` years bring major changes in the industry of the Transylvanian plain, some industries disappear, such as brick factory from Gherla, the sugar factory from Lechința, but instead there are a multitude of new industrial branches and the specialized small industrial cities in the past with one industry become complex regional industrial centers. The industrial branches recently introduced into the Transylvanian Plain are: energy (solar fields), leather industry, food industry which is growing in centers such as Beclean, Lechința, Budești, Gherla, Silivașu de Câmpie, etc. At the same time with the disappearance of certain industries appear desolated changes in the landscape by leaving the old derelict factories, the old farms and old agricultural equipment parks.

Cultural landscape related to transport

The first communication routes in the Transylvanian Plain consisted of trails, paths and water courses in the Neolithic and Eneolithic period. With the domestication of animals and the use of carts, appear the first communication paths in the form of roads. These were rudimentary roads which followed the watercourses and the inter-flows, requiring virtually no arrangements, were following the unevenness of soil and vegetation gaps and were linking the human communities. With the increasing number of settlements, communication networks became more diversified and, in the Transylvanian Plain, began to appear several categories of roads (agricultural roads, pastoral roads, forest roads, etc.). The first serious development of the communication ways was developed in Roman times, where paved roads appeared with major engineering and construction on them (bridges, causeways). Until the modern

period, except during Roman period, roads were made from earth and their practicability vary depending on the season. At the beginning of the twentieth century occurred paved roads, and more recently, since the early twentieth century 50` began to appear roads with asphalt and concrete. Regarding the means of communications in cities, they have developed earlier in the medieval towns, paved roads appeared, later going on to asphaltting works. XXI century brings major changes to the status of communication infrastructures in the Transylvanian Plain, the dawn of modern roads starts, so a good part of the county roads in the area are newly rehabilitated and the rest is under modernization. Even more, with European funds appeared asphalted roads like agricultural roads and some forest roads.

The cultural landscape of tourism and recreation

Tourism in the Transylvanian Plain is at its beginnings yet there are big gaps in the planning, promoting and exploitation of local tourism resources. The main forms of tourism in the Transylvanian Plain are: balneal tourism, cultural tourism, religious tourism, leisure tourism and rural tourism. Centre of balneal tourism in the Transylvanian Plain rely on the resources of salt in the area and are in Figa and Cojocna. Both resorts have been remodeled on European funds and represents zonal and regional attractions. In terms of cultural tourism should be remembered as both pluses and minuses the main cultural centers of the Transylvanian Plain in the urban centers and mansions of the old nobiliary domains. A major lack of cultural tourism in the Transylvanian Plain is made by leaving derelict of these nobiliary castles which during the communist period were used as warehouses, barns, cultural centers, C.A.P. offices, schools, kindergartens, losing the cultural-historical valences. The religious touristic attractions are the churches, monasteries, cemeteries and other religious constructions (trinity, etc.). In the past, most of these buildings were made of wood or stone, there is a relatively large number of wooden churches that still maintains. Among the objectives of modern religious we remember Nicula monastery, Armenian church in Gherla, fortified church in Lechința, cathedral in Târgu Mureș, etc. Religious architecture of the Transylvanian Plain varied depending on the confession and ethnicity, this creating a diversified, pastel and interesting cultural-religious landscape. Forms of recreational tourism which are practiced in Transylvania Plain, are equestrian tourism (Beclean stud farm), recreational fishing (on lakes and rivers), sport hunting and birdwatching (sightings of wild birds, an observation point is in the reservation Stufărișul Sicului in the town of Sic). The recreational tourism impacts through the facilities of each form of entertainment, so, in equestrian tourism we have stables for horses, trails obstacles, road for carts and pastures for the stud herds. Within the recreational fishing we have arrangements that appear alongside rivers and lakes, wharves, etc. The main attraction for fishing is the reservation of pike "Lacul Știucii" ("Pike Lake") from Săcălaia. In terms

of sport hunting, the impact on the landscape bring hunting arrangements such as floor pens with animals, herds of wild animals, observatories, towers, mud huts, places used for ambush by hunters. As regards the rural tourism, a particular impact brings the touristic rural boarding houses and arrangements of various rural tourist routes. An impact on the landscape are having also the farming practices.

Conclusion

People's willingness to adapt to the surrounding environment according to their necessities has led to an increasingly stronger anthropization dictated by the development of which they were part. So we can say that the Transylvanian Plain landscape suffered major changes over the passage of time due to anthropic interventions on natural evolution, which has led to an artificial transformation of the landscape from the Neolithic period to the present.

The cultural landscape of the Transylvanian Plain presents a highly complexity due to the variables working together for its individualization. The landscape had a long evolution and continuity in time, with upsurges, stagnation and setbacks normal to any process of formation. The human factor has always been present and active in the landscape, resulting in a continuous molding of the landscape. An important role in the current cultural landscape of Transylvanian Plain have also had ethnic and confessional diversity of the population, which depending of traditions and habits have shaped the nature.

Rezumat. Acest articol urmărește evoluția pe care Câmpia Transilvaniei a avut-o din perspectiva peisajelor culturale. Putem afirma faptul că această evoluție a fost influențată de o multitudine de factori care au dus la modelarea peisajului. Astfel, ne-am concentrat pe următoarele aspecte pe care le-am considerat importante în evoluția în timp a peisajelor culturale, cercetând astfel mai multe tipuri de peisaje culturale.

La peisajul cultural legat de activitatea de locuire și gospodărire s-a urmărit dezvoltarea în timp a spațiului habitabil, de la locuirea în peșteri și alte adăposturi naturale, până la locuirea în casele și blocurile din zilele noastre, punând accent pe materialele de construcție și arhitectură.

Peisajul cultural istoric reprezintă de asemenea un factor important de referință în studiul nostru. Ne-am axat pe studierea epocilor istorice (epoca eneolitică, epoca bronzului, epoca fierului, Evul Mediu și epoca modernă și contemporană) și rolul lor în dezvoltarea peisajelor culturale.

Peisajul cultural agricol în care am urmărit dezvoltarea agriculturii din Câmpia Transilvaniei din epoca eneolitică unde au apărut primele forme de agricultură primitivă, până în prezent, unde aceasta s-a modernizat considerabil.

Peisajul forestier a suferit de asemenea modificări de-a lungul timpului, fiind influențat atât de factorii naturali, cât și în special de cei antropici. Putem astfel vorbi de perioade în care au loc defrișări pentru mărirea suprafeței agricole, materiale de construcție, exporturi lemnoase, precum și despre împăduriri antropice dar și naturale.

Peisajul cultural industrial ia amploare în epoca industrială, atingând potențialul maxim în perioada comunistă, urmând după aceea un declin major al acestuia care a dus la apariția unui peisaj dezolant.

Peisajul cultural legat de transporturi, își are originea în epoca neolitică, unde apar primele căi de comunicație sub forma cărărilor și potecilor, dar și a cursurilor de râu și continuă până în prezent unde drumurile asfaltate și reabilitate au remodelat peisajele culturale.

Peisajul cultural turistic și de agrement este unul destul de recent exploatat în Câmpia Transilvaniei, cele mai vizate ramuri turistice sunt turismul balnear, turismul cultural, turismul religios, turismul agremental, precum și agroturismul.

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TERRITORIAL EVOLUTION OF THE TRANSPORT INFRASTRUCTURE IN THE HISTORIC REGION OF UNTERWALD, TRANSYLVANIA

Eduard SCHUSTER*, Adrian VODIȚĂ**

Abstract. Unterwald is a historic region of the Transylvanian Saxons, part of the so-called *Königsboden*, or King's Land, where the Saxons enjoyed a large autonomy until the 19th century. This particular region stretches from east to west along a major trade route in southern Transylvania, thus having since medieval times a well-developed transport infrastructure. However, modernization and expansion of the road network comes with a partial redrawing of the routes, made to increase speed and to integrate it with the railways in the late 19th and early 20th centuries. Presently, the importance of the region for trans-European transport is reconfirmed by the construction of a motorway, underlining the region's transport function.

Key words: Unterwald, transport infrastructure, roads, railroads, temporal evolution.

Introduction

Transportation is a key element in the development of a region, as well as resources and human potential. Given a region's location in relation to resources, processing locations and markets, its transport potential can be rated as low, medium or high, as its importance for transport extends at local, regional or trans-regional level.

Analysing the temporal and spatial evolution of the transport network of a given territory can also indicate a region's transport potential. The persistence of some transport routes in a region and the historically attested commercial activity within or in its access areas are true indicators for the importance of that region as a transport hub.

The present paper will analyse both aspects, listing the geographical features of, and the historical conditions in the Apold-Orăștie Corridor (as it is the geographical expression of the historic region of Unterwald), showing the region's importance for supra-regional transport, before detailing the evolution of its transport infrastructure.

* Babeș-Bolyai University Cluj-Napoca, Faculty of Geography, Bistrița Extension, 3-5 A. Mureșanu Street, 420117 Bistrița, eduard.schuster@ubbcluj.ro

** Babeș-Bolyai University Cluj-Napoca, Faculty of Geography, 5-7 Clinicilor Street, 400006 Cluj-Napoca

Geographical and historical conditions for the development of the transport infrastructure in Unterwald

Even if on regional level Unterwald can be considered an axis-type entity, morphologically there are two distinct units, with some similarities: The Mureș Valley in the western half and the Apold Depression in the eastern half, linking in the confluence area of the rivers Secaș, Sebeș and Mureș (Fig. 1) (Schuster, 2015). The corridor formed by these two units is a natural passageway through the region, connecting the Banat region in the west with southern Transylvania, and was used as such either on land or by navigating on the river Mureș (in the western half of the region), which is another crucial natural factor for the region's transport potential. Moreover, the complex junction area at Sebeș (the two units mentioned above are linked with another important transport corridor running towards north, the Alba Iulia – Turda Corridor, also along the Mureș River) make the region an important transport hub.

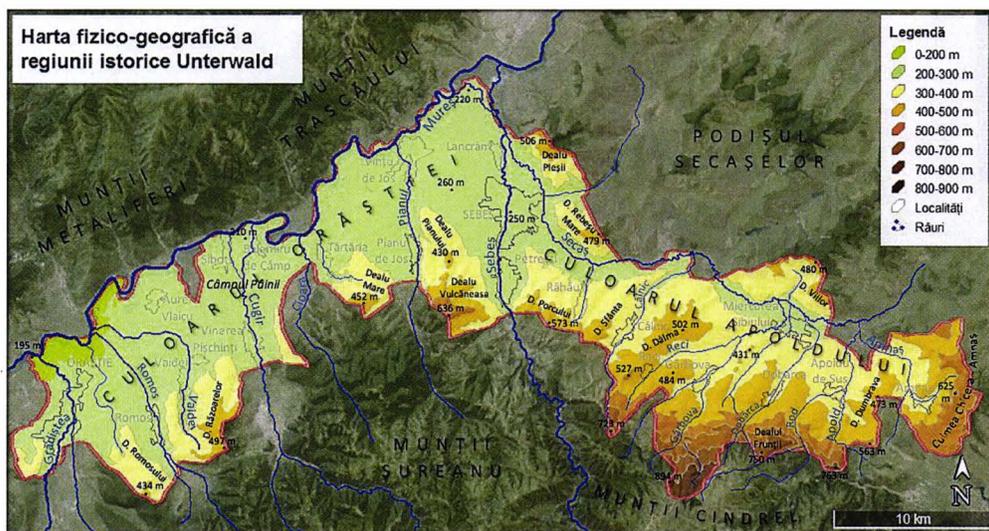


Fig. 1. Physical-geographical features of the Apold-Orăștie Corridor (Schuster, 2015)

Historically, the natural resources from the surrounding areas (precious metals, wood, livestock, salt) needed ways to be transported, so that roads and water routes developed early, with routes drawn on maps as early as the 16th century. The region was an important route between the former Hungarian Kingdom (and later Austrian Empire) and the Romanian Principalities outside the Carpathians, thus keeping its commercial function throughout the centuries. In addition, the Saxon settlements (especially the Saxon Seats' capital towns Orăștie, Sebeș, and Miercurea Sibiului) were important craftsman centres and trading markets along the transport routes, bringing their contribution to the development of transport infrastructure in their respective jurisdictions.

Roads

Some of the oldest written descriptions of the roads in the historic region of Unterwald (Fig. 2) are found in Robert Walsh's *Narrative of a Journey from Constantinople to England* (1831) and in Friedrich Körner's *Vaterländische Bilder aus Ungarn und Siebenbürgen...* (1858), depicting the road conditions and the way they were maintained at the beginning of the 19th century: „We now arrived at an obelisk by the road-side with this inscription – VIA FRANCISC: I. AUSTRILAC: IMPERAT: STRATA – 1817. The road was certainly the best we had met with since we had left Constantinople, but it was the work of the peasants. Every village takes care of a certain extent of road in their district; we met groups of them near this place, - men and women, in the act of repairing their proportions, by filling up the waggon-ruts. At certain intervals are wooden pillars, with black stripes painted on them, and inscriptions marking the distance from Hermanstadt, and the village in whose district the part of the road is.” (Walsh, 1831, pp. 319-320); „Does he [the Saxon peasant] have some time left, then he repairs the Provincial road, digs roadside ditches, maintains the beautifully arched bridges, [...]” (Körner, 1858).

In the 19th century, the Austrian Monarchy uniformes the road nomenclature system and establishes three main road categories:

- Reichsstraße (Imperial Road), maintained by the state;
- Landesstraße (Provincial Road or Land Road), maintained by each province;
- Gemeindestraße (Communal Road), maintained by each village or town.

M. Lebrecht describes the condition of the roads in Transylvania in *Versuch einer Erdbeschreibung des Großfürstenthums Siebenbürgen* (Attempt to a Geographical Description of the Great Principality of Transylvania, 1804), stating that the monarchy “tried to reduce the harshness [of the travel] by relocating the old [roads] and by building new post roads; and yearly there are high expenditures from the provinces’ and the central budget for this purpose; but neither the commissions, nor the engineers can eliminate all the unpleasantness that nature has in store for the traveller”. Lebrecht then lists the best roads in Transylvania, counting six, all of which start from Sibiu towards the rest of the Principality, among them the road from Sibiu to Deva crossing Unterwald from east to west.

In 1855, there is introduced a new road construction and maintenance system (Komers, 1856), through which the old province roads and their location were reevaluated, trying to find faster routes, paralleled by the construction of railroads in an attempt to cover the Empire with what we would call nowadays an integrated transport system (Fig. 3). The mid-term economic effects of these re-routings had been both positive (for the communities that were now linked to

the new road net) and negative (for the villages that no longer lies on the main road and for the inns along them).

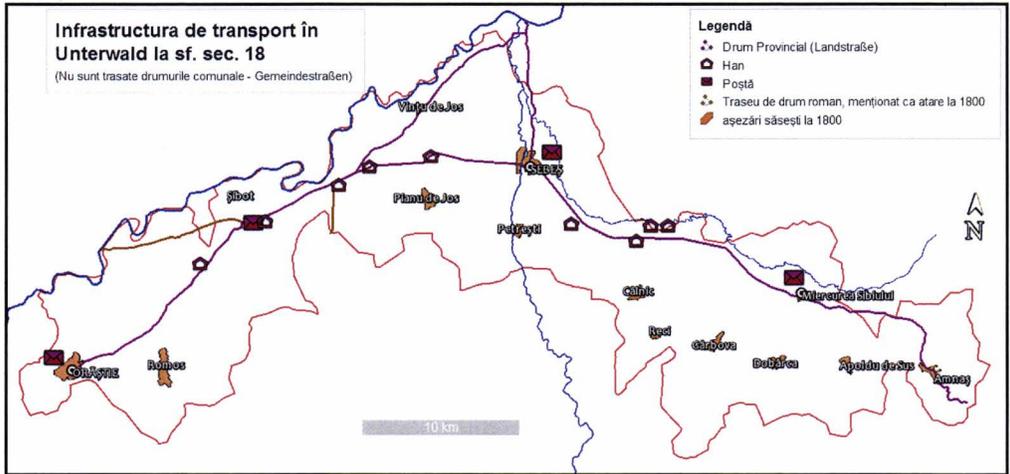


Fig. 2. The main roads in Unterwald at the end of the 18th century (Schuster, 2015)

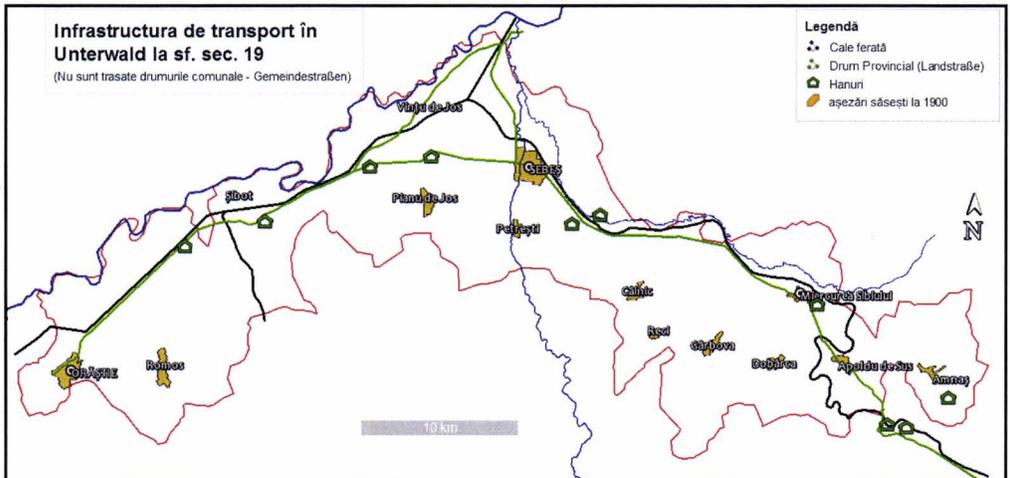


Fig. 3. The main roads in Unterwald at the end of the 19th century (Schuster, 2015)

The changes were made as follows: the main road between Orăștie and Sebeș was relocated northward from Orăștie to Șibot, on a much straighter line, a route that will be followed by the future railroad; the route from Sebeș to Alba Iulia was also straightened between Sebeș and Oarda by moving the road some 1 km westwards, while keeping Lancrăm connected, as the new road now brushed the village on its west side, not its east one, like before; the main road between Miercurea and Sibiu (Fig. 4) was completely changed by moving it southwards, through Apoldu de Sus and Săliște (again foretelling the future

railroad), and leaving the villages of Apoldu de Jos and Amnaş gradually isolated.



Fig. 4. The traces of the old road between Miercurea and Sibiu, east of the Amnaş village (foto: E. Schuster, 2013)

In the 20th century, the road infrastructure keeps its previous configuration with the exception of a newly built road west of Sebeş, where the route to Deva was altered by orienting it north-west to make the junction with the route from Alba-Iulia to Deva near Vinţu de Jos, thus leaving the old road's section between Sebeş and Şibot in a secondary position, at most. The roads are periodically modernised and adapted to the growing traffic. Under the new Romanian administration, the old *Landstraßen* (Provincial Roads) become National Roads, and some of the *Gemeindestraßen* (Communal Roads) are being renamed to County Roads, with the rest of local roads being assigned as Communal Roads (Fig. 5).

The road infrastructure suffered a general degradation during the 80s and 90s, at the end of the Communist regime and in the following decade, because of political and economic changes, hampering local and international transport in a period in which traffic increased heavily due to the liberalisation of commerce and border crossing after 1989. Only in the next decade, with the aid of EU development funds, did the transport infrastructure (and especially the roads) begun to be modernised and properly maintained with regard to the still increasing traffic. The most notable change is arguably the building of a section of the A1 motorway through Unterwald, underlining the region's importance as a major transport corridor in the 21st century. The new motorway section, although suffering a temporary interruption between the exit points at Cunţa and Sălişte due to some structural problems, permits a rapid transit through the region from Deva to Sibiu, a route known for its traffic problems in the past. It is also believed that it would boost economic development, especially after the rest of the A1 motorway's sectors (notably Lugoj – Deva and Piteşti – Sibiu, with the former in a more advanced stage of construction, thus linking the

were also two lines from Unterwald: Arad – Turnu Roșu and Vințu de Jos – Alba Iulia (Fig. 6). A planned allocation of operations was not considered necessary, and there was made only an estimation of implementation time of about 10-15 years. However, in the following 2-3 years there was reached the decision that a number of 16 railways from the advanced 55 should be built with governmental aid. Among these 16, there were also included the two above-mentioned lines from Unterwald, underlining the importance given to this transport corridor. In 1865, the construction and functioning of the railway from Arad to Alba Iulia through Vințu de Jos was decided, and the government was empowered to contract the construction to an entrepreneur and to close a deal with the Theiss-Eisenbahn Company or another partner for the exploitation of the line, or to license these operations (Strach, 1898).

Verzeichnis
 der in dem Entwurfe eines neuen österreichischen Eisenbahnnetzes beantragten
 Linien, deren beiläufige Längen und Anlagekosten. *)

Namen der Linien	Beiläufige		Namen der Linien	Beiläufige	
	Länge Meil.	An- lagekosten Gulden öst. Währ. in Silber		Länge Meil.	Anlage- kosten Gulden öst. Währ. in Silber
Wien-Budweis	26.5	26,000,000	Uebertrag	398.5	336,800,000
Budweis-Pilsen	10.0	14,000,000	Grosswardein-Szegedin	23.5	11,000,000
Pilsen-Karlsbad	10.0	8,000,000	Marburg-Pettau	3.0	1,500,000
Karlsbad-südl. Grenze	4.0	4,000,000	Kanizsa - Fünfkirchen- Essegg	33.0	14,000,000
Horn-Zaaim	5.0	3,000,000	Essegg-Semlin	23.5	11,200,000
Zaaim-Pardubitz	21.5	18,000,000	Stuhlweissenb. - Essegg	32.0	14,000,000
Zaaim-Brünn-Prerau	18.0	11,000,000	Agram-Kottori	14.5	10,500,000
Budweis-Prag	20.0	19,000,000	Gr. Kikinda-Erdöd	17.0	8,000,000
Schwadowitz - Königs- hain	3.0	2,000,000	Arad-Temesvár	6.75	4,000,000
Jungbunzlau-Rumburg	11.0	10,500,000	Arad-Rothenthurmpass	41.2	39,000,000
Prag-Neeratowitz	3.5	2,000,000	Alvincz-Karlsburg	1.17	1,000,000
Prag-Karlsbad-Eger	24.5	20,000,000	Piski-Hatzeg	4.0	2,000,000
Teplitz-Komotau-Karls- had	11.0	8,000,000	Karlsburg-Klausenburg	17.35	11,000,000
Linz-Budweis	12.0	11,000,000	Klausenburg-Szigeth	27.5	20,000,000
Bruck a. d. M.-Haag	19.0	17,000,000	Karlsburg - Kronstadt- Grenze	40.0	29,000,000
Braunau-Neumarkt	7.25	5,000,000	Debreczin - Szigeth- Grenze	59.0	41,000,000
Salzburg-Rattenberg	24.0	15,000,000	Czernowitz-Suczawa	11.5	7,000,000
Innsbruck-Dornbirn	23.5	25,000,000	Czernowitz - russische Grenze	4.0	3,000,000
Imst-Vils	8.0	9,500,000	Lemberg-Brody	11.5	9,500,000
Brixen-Villach	26.0	24,000,000	Kaschau-Tarnów	20.0	23,500,000
Villach-Udine	15.0	12,000,000	Pest-Miskolcz	24.0	14,000,000
Mantua-Borgoforte	1.5	700,000	Kaschau-Oderberg	42.5	38,000,000
Locara-Legnago	4.5	2,000,000	Neusohl-Suczana	9.0	7,500,000
Rovigo-Pontelagoscuro	3.0	1,600,000	Weiskirchen-Sillein	10.0	6,000,000
St. Peter-Fiume	7.5	10,000,000	Puchó-Dioszegh	10.3	7,000,000
Szegedin-Essegg	20.5	14,000,000	Troppau-Zuckmantel	8.5	6,000,000
Essegg-Sissak	25.5	16,000,000	Olmütz-Zuckmantel	10.5	7,500,000
Sissak-Karlstadt	9.75	6,500,000			
Karlstadt-Fiume	17.5	22,000,000			
Zusammen	398.5	336,800,000	Zusammen	921.77	684,000,000

Fig. 6. The list of the railways planned in the Habsburg Empire at the middle of the 19th century (source: Strach, 1898)

Financial problems delayed by several years the start of the construction of this railway section, that should have been the first railway to Transylvania. Finally, the private company „Erste Siebenbürger Eisenbahn” (The First

Transylvanian Railway) acquired the licence to build the railway from Arad to Alba Iulia from the Hungarian government and started operations in 1867. At December 22, 1868 the line was opened, being operated at first by private companies, until the contract was taken in 1884 by the Hungarian state-owned railway company MÁV. Back then, a train could cover the 211 km of the route in 7h 30min (online sources, 1).

In 1872, Sibiu was finally connected to the Hungarian railway network through a track from Copșa Mică. Despite this, the railway transport between Sibiu and the Hungarian capital Budapest was laborious. To shorten the distance, the Hungarian government decided to build the second half of the Arad – Sibiu route as it was initially planned, starting from Vințu de Jos (where it would be joined with the already existing route between Arad and Alba Iulia) and linking Sibiu and Miercurea Sibiului with Sibiu. The distance between Vințu de Jos and Sibiu was thus shortened from 119 km to 83 km. The railway Sibiu – Vințu de Jos was opened at December 25, 1897 (online sources, 2). At the same period the railway from Șibot to Cugir, as a branch of the Arad – Alba Iulia route, was built.

The constructors did not build only the railway, but also the entire related infrastructure, including the stations, hence the resemblance between some of these buildings, such as those from Simeria, Vințu de Jos, and Alba Iulia; Orăștie and Șibot; or Sebeș and Miercurea Sibiului (Fig.7, Fig. 8).



Fig. 7. Early 20th century postcard depicting the railway station from Sebeș (source: own collection)



Fig. 8. The old railway station from Miercurea Sibiu (foto: E. Schuster, 2013)

Rezumat. Unterwald este o regiune istorică a sașilor transilvăneni, parte a așa-numitului Ținut Crăiesc, unde sașii s-au bucurat de o largă autonomie până în sec. 19. Această regiune se întinde pe o direcție generală est-vest acoperind în mare parte Culoarul Apold-Orăștie, o axă majoră de transport din sudul Transilvaniei care a avut încă din evul mediu o infrastructură de transport bine dezvoltată. Lucrările de modernizare și extindere întreprinse începând cu sec. 19 aduc și câteva retrăsări importante, menite să crească viteza de transport și să integreze infrastructura rutieră cu cea feroviară construită la sfârșitul sec. 19 și începutul sec. 20. În prezent, importanța regiunii pentru transportul transeuropean este reconfirmată prin construcția unui tronson din autostrada A1 de-a lungul culoarului.

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GEOGRAPHICAL FUNCTIONALITY AND UNITY IN THE ORGANIZATION OF THE TRANSYLVANIAN SPACE

Călin C. POP^{*}, Ana Maria CORPADE^{**}, Cătălin Daniel POP^{***},
Ciprian ROGNEAN^{**}

Abstract. The article offers an approach of historical geography in Transylvania by analyzing the Transylvanian geoidentity as an entity formed of natural sites and humans. The paper focuses on the historical dimension of the Transylvanian geoidentity and points out aspects as historical evolution, archeological evidence or main political-administrative changes throughout time.

Key words: Transylvania, historical geography, settlements, geoidentity.

Introduction

The Transylvanian space represents an extremely interesting area within the Romanian territorial pattern, both geographically and historically. Through its central position, bordered by the Carpathian ring, it plays a central convergence role for the other geographical units of the country. Geographically, the Transylvanian space is a large subsidence area induced by the strong tectonic movements that took place in Mesozoic-Cretaceous. Considered initially as a plateau and then as a depression (Geography of Romania, volume I, 1983), we consider the latter term more appropriate for defining morphologically the large area embraced by the Romanian Carpathians. Historically, the name Transylvania, also known as Ardeal, is associated with the Romanian territory located on the western part of the Carpathian range.

In the dictionary of human geography, historical geography is defined as a branch of geography that reconstitutes past geographical landscapes. Throughout time, some other meanings were assigned to the term, as the historiographical one, study of the geographical discoveries and exploitation of new territories (especially in the XIXth century). Other aspects studied by the historical geography were the evolution of territorial borders and political systems or the influence of geographical factors on the historical evolution. In the lack of a coherent methodology to be used by the historical geography studies, a possible approach is to analyze the way in which local population transformed the geographical landscape as a result of the political and socio-

* „Babeș-Bolyai” University, Faculty of Geography, 400006 Cluj-Napoca-Romania, e-mail: cpop@geografie.ubbcluj.ro e-mail: calin_c_pop@yahoo.com

** „Babeș-Bolyai” University, Faculty of Geography

*** „Babeș-Bolyai” University, Faculty of Law, 11 Avram Iancu Str., 400089, Cluj-Napoca, Romania

cultural changes that occurred throughout their evolution. This means that communities endow the natural space they live in with certain attributes as accessibility, shelter, support for their basic activities etc. (Corpade and Corpade, 2014).

All the attributes that describe a territory reveals an inner order that triggers all geographical facts, both physical or social (Mac, 2004). The territorial valences, assumed by man selectively and in various ways, are then reflected in the territorial pattern. Communities project and model their space in accordance with their conceptual images. Along their living, communities have developed a specific way to understand reality, its deepness depending on the variety of relations established between the two components (man, territory). A good example reflecting in an optimum way the coexistence between man and its habitat is the formation of geoidentities, which can be defined as territorial-human entities formed by natural sites and the communities linked to them (Corpade and Corpade, 2014). Transylvania is indubitably a geoidentity, proved by the continuity of the relations that its people established with its territory, transformed and adapted throughout time to their necessities and desires.

Elements of Territorial Unity

The space defined by Carpathian Mountains, Danube and Pontus Euxinus has been inhabited since immemorial times by the tribes of Geta and Dacians, who formed one people. Their tribes united under the management of Burebista and formed the first centralized Dacian state. The dissolution of the Dacian state was followed by the entrance of regions on both banks of Danube under the Roman authority. The unity of Dacians in Transylvania continued to consolidate in statal forms and to withstand and defy the empire, which finally led to the long wars of Decebal, finished with the transformation of a large part of Dacia into a Roman province. The geographical unity of Transylvanian territory, clearly and unanimously argued by the characters and general and detailed functions of this territory is the result of a heightened diversity of natural conditions with manifestations and mutual conditions which privilege the complementary relations between regions. They offered life environments with exceptional and well-differentiated economic opportunities to support themselves and reunited to create a harmonious whole. The unity of Transylvanian space is indeed a geographical reality. This can be seen from the structure and orientation of its relief, from the few groups of mountains which bypass the Transylvanian Plateau, forming a natural walled city, from its feature of bulwark which dominates the neighbouring fields and the historical role of Transylvanian Carpathians positioned as Moldova, in the path of all mischiefs (Someșan, 1940). The geographical function is a result of the structure and position seen from the perspective of human activity. It is carried out differently in time and space. Transylvania, as part of Dacia, represents for

Romanians a source of gold, element of its geographical structure and a landpost in front of stretched territories with Asian and Germanic populations on the move. In Middle Ages Transylvania fulfilled the function of bulwark of Central Europe towards the pontic space where the forays of Petchenegs, Cumanians, Tartars and Turks came from (Mihăilescu, 1968). Today it fulfils the function of central core of Romanian territory by its position and complementary resources. The geographical function of Transylvania is also defined by the synthesis of relationships between the population and the generous spacial offer of the territory inside the Carpathian ring which allowed for the uninterrupted historical functioning of all the regions in part, but also their functional grouping into one form or another. For example, the conquest of Dacia in 106 A.D. allowed for the intensification of Romanization of this province which had strategic and economic importance for the empire. The receptiveness of Dacians towards the civilization of Romans made the Romanization start slowly, even before conquest. The Roman administration was withdrawn in 271 A.D. but the Dacian-Roman population stayed foot. The danger represented by the invasions of migratory populations accelerated the unification process of Dacian-Roman population with free Dacians, who made frequent forays in the empire until the withdrawal of Roman administration. The unity between the territory and population became even tighter in front of dangers, by withdrawal in sheltered places offered by relief, places difficult to reach.

Aspects of the evolution of the settlements network in Transylvania

The beginnings of habitation of prehistoric man, under the strong influence of the geographical environment are related with the places which offered shelters, such as caves, promontories or terraces hard to access. Settlements in Paleolithic, Neolithic and Bronze Ages are illustrative by the traces of material culture discovered in Iosășel in Arad county, tools carved of silex and opal (<http://www.museumarad.ro/>), from Ohaba-Ponor, Pui commune in Hunedoara county (<http://www.primaria-pui.ro/>) and from other towns which attest activities of man on the territory of Transylvania over one million and a half years ago, being listed among the oldest presences of prehistoric man in Europe. The settlements from Thracian-Geta-Dacian age argue the functioning, habitation and territorial grouping of settlements in Transylvania, expressing ethno-cultural syntheses on the basis of the local fund. The network of settlements dates back to Iron Age, especially in the second half (stage marked by the beginnings of iron treatment), an important step in the continuation of human permanency on the territory of Transylvania. Expression of a new step in the evolution of society, human settlements from Thracian-Geta-Dacian age (about 900 B.C. - 106 A.D.) became numerous, occupying stretched surfaces, which reflects a more functional inhabitation. At the contact of Roman Empire

with the Geta-Dacian world, the network of settlements from the territory of Dacia was characterized by the presence of many rural settlements and the existence of urban settlements such as the old Dacian towns Napoca, Potaissa, Apulum (Poncea, 2006). The settlements from the 8th-13th Centuries appear in the conditions of crystallization of the new economic, social, and political Medieval structures since the 8th Century, when against a background of stability and peace the population knew a slight growth and so did the number of human settlements. The settlements occupied all relief forms of the space, being usually grouped. Many of these rural concentrations were identified as political bodies of statal nature of the type governships, principalities or lands (voivodships). In the first centuries of our millennium some groups of foreign populations (Hungarians, Germans and others) settled on territories inhabited by Romanians, tying their fate together with the fate of Romanian people. Our Medieval documents (Pop, 1997c) certify the presence of these human communities especially in Transylvania, whose inhabitants worked and lived together, fought side by side with Romanians for freedom and independence, for social justice and for a better life. The villages and towns from the 14-19th centuries, the period of written documents, evolve on the background of an age with more political and social stability. The continuous institutional, statal, demographic and economic consolidation creates favourable conditions for a more complex development for the settlements in Transylvania. All the old local house concentration systems are taken over and developed into new, viable residential bodies. The whole territorial and economic structure of rural settlements gradually and differently changes. This stage, thanks to the impetus of production forces and growth of population, integrates and develops the previous social territorial structures, and especially unifies the network of rural bodies and new urban ones. The studies and maps drawn up based on internal sources prove that all the geographical units of Transylvania, welded together on the background of common ethno-cultural and economic interests, by the connections mediated by the phenomenon of moving of flocks, but especially the cities Sibiu, Braşov and Bistriţa were better populated in 14-17th Centuries. Villages were extremely important in the network of settlements, formed now by their increased number, economic importance and role played in the continuity and humanization of space. By the end of seventeenth Century, the network of towns is unified with a relatively large number of new settlements, develops and intensifies in altitude and on horizontal on lands uninhabited until then. Around the year 1541 only in the principality of Transylvania around 4,000 towns are quoted. For example, in Transylvania, among the 3,500 settlements attested until 1400, 2,154 were villages and in 1542 there were reported about 750 fortified towns (Pascu, 1979). The towns on the internal side of Carpathians – Rodna, Bistriţa, Braşov, Sibiu – by economic and cultural connections with the Extra-Carpathians – Baia, Buzău, Câmpulung, Curtea de

Argeș, Pitești, Râmnicu Vâlcea – cement the conscience of kinship unity and pave the way to the brave act of union of all Romanians under a single political management. Under the incidence of economic power, political and administrative functions and environmental factors, the urban agglomerations oscillate in time, but many of them keep the trend of population growth. At the end of fifteenth century, Brașov was the biggest city of Transylvania, with 13,200 inhabitants, Clujul 6,400 inhabitants, Oradea 6,000 inhabitants, Arad and Timișoara with 4,000 – 5,000 inhabitants each (Pascu, 1979). In the evolution of network of settlements from eighteenth-nineteenth centuries new economic, political and social factors strikingly and intensively intervene and gradually crystallize the territorial image, the morphological, social and functional structure of the network of settlements in the form presented to us by maps from the end of Nineteenth Century. An original important mapping document is represented by "The Charta of Great Principality of Transylvania" drawn up by Spiridon Fetti and published in 1862 by the Lithographic Institute F.A.R. Crabs from Sibiu (Mihail and Săndulache, 1966). The map has the frame between 45° - 48° Northern latitude and 40° - 45° Eastern longitude, having as origin the meridian Ferro from Canary Islands. The geographical outline is indicated only on the frame of the map, being marked from degree to degree both on latitude and longitude. The sizes of map frame are 62/48 cm. The map scale is graphically represented with double measure, in fathoms and English miles, transformed in metric units is 1:500000. The represented territory of Transylvania in 1862, is delimited by the surrounding regions through province borders which contained the whole depression of Transylvania. From political and administrative point of view, the territory of the Great Principality of Transylvania appears as divided into eight counties (Solnocului, Dobîcei, Clusiului, Turdei, Albei inf., Uniedorei, Cetății de baltă and Albei), four districts (Fogarașului, Nasaudului, Brașiovlui și Bistriței) and fourteen sedriale (county seats): Haromszek, Ciucului, Udorheiului, Osiorheiului, Arieșiului, Orastiei, Sebisului, Mercurii, Sabiiului, Mediașului, Sighișorei, Nocrului, Cincului și Rupii (Mihail and Săndulache, 1966). The villages which have constantly carried for almost two millennia cultural values and indigenous civilization, continues for the two centuries the pioneering action in humanization of Carpathian Danubian Pontic spaces. The towns go through a process of real edilitarian, residential, economic and functional detachment from villages in the eighteenth-nineteenth centuries. This process is much slower in unification of the network of settlements in Transylvania, as effect of reduction of economic dynamism, but seems more alive in Banat, where the dissolved guilds no longer hamper economic initiatives. In the 18-19th Centuries important roles in the dynamics of territorial and functional outline of the settlements network in Transylvania, had the towns Brașov, Cluj, Sibiu, Sighișoare, Baia Mare, Satu Mare, and in Banat, along with old cities

Timișoara, Caransebeș and Lugoj, they activate as new fairs and becoming cities such as Reșița, Oravița, Sânnicolau Mare etc. (Istoria României, III, 1964). The evolution of the network of settlements had a unified character, assured by the compact presence of Romanian population on the entire stretch of Dacian lands, distinctly outlined by the stratifications of allogeneic ethnicities.

Conclusions

Transylvania represents one of the most coherent geoidentity at national level, an area in which all the fundamental territorial dimensions are linked synergically, in which social, political, historical, economic and cultural relations converge together towards a single and important purpose, the coherence of the territorial system. The Carpathian range, bordering Transylvanian Depression, constituted throughout time the most important element towards its geographical and historical unity.

The present geographical landscape, with a palimpsestic character, offers important hints in the reconstruction of past historical events. Thus, historical geography becomes nowadays an important interdisciplinary bridge between geography and history.

Rezumat. Spațiul transilvan reprezintă o zonă interesantă din toate punctele de vedere în arhitectura teritorială a țării noastre. Prin poziția sa centrală, cu inelul carpatic periferic, are rolul central de convergență pentru celelalte unități geografice. Genetic, spațiul transilvan provenit din edificiul carpatic este definit de o întinsă arie de scufundare, rezultat ale puternicelor transformări tectonice din mezozoic-cretacic. Între noțiunea clasică de *podis* și aceea, mai recent introdusă în literatura geografică, de *depresiune*, pentru a defini vasta regiune cuprinsă în interiorul masei muntoase a Carpaților Românești, cea de-a doua noțiune reflectă mult mai fidel realitatea (Geografia României, vol. I, 1983). Sub numele de *Transilvania* se înțelege în mod obișnuit ținutul românesc, situat pe versantul apusean al munților Carpați, în întregul lui. În limba românească, acest teritoriu mai este cunoscut și sub numele de *Ardeal*. Într-un sens mai restrâns al cuvântului, denumirea de Transilvania se aplică numai uneia -anume celei mai însemnate- dintre cele trei provincii din care se compune întreg ținutul, celelalte două fiind cunoscute sub numele de *Banat*, provincia din sud-vestul țării și *Crișana-Maramureș* în nord-vestul Transilvaniei (Lehrer, 1991). Centrul României, unde s-a format și primul regat al populației geto-dace, formează provincia geografico-istorică Transilvania. Este una dintre cele mai importante de pe cuprinsul țării, deținând 23,9% din suprafață și înglobează în arealul său întinsa depresiune a Transilvaniei și spațiul montan ce o înconjoară (Pop, 1997). Transilvania, ca și Erdély, înseamnă „țara de dincolo de pădure”, adică dincolo de codrii Meseșului, denumire ce apare documentar prima oară la 1075 cu numele de *Ultrasilva* (Lehrer, 1991).

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