

HUNGARIAN GEOGRAPHICAL BULLETIN

2011

Volume 60

Number 2

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Conservation tillage for rational water management and soil conservation

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Abstract

Flooding and waterlogging events showed a frequency rising sharply during the last decades so their prevention has become a very actual task. Prevention should start where surface runoff is generated, i.e. over the areas used for agriculture and forestry of hilly and mountainous watersheds. Conservation agriculture is a very successful method for keeping rainwater in the soil and for decreasing the sediment and nutrient load of surface waters. The increased amount of soil moisture is favorable both for the plants and for soil fauna. The mitigation of runoff, soil and nutrient loss is due to the organic matter which remains in the topsoil as it is not disturbed and moved downwards in the soil by ploughing as well as to the activities of soil edaphon. By applying non-inversion, shallow tillage runoff can be reduced to a mere one third and soil loss to the thirtieth-fortieth of the values measured under conventional tillage, depending on weather conditions of the given year. Experiments show that conservation agriculture provides for profitable production and at the same time it is beneficial for the environment.

Keywords: conservation agriculture, soil erosion, water management, flood

Introduction

As it is well known the occurrence of extreme rainfall events is related to climate change. Global warming is detectable also at regional scales. Warming trends in seasonal average values and mainly drying tendencies in seasonal precipitation have already been established in country-wide observations in Hungary (SZALAI, S. *et al.* 2005; BIHARI, Z. *et al.* 2007). According to these analyses the warming trend is the strongest in winter and summer, whereas the drying trend is valid in all seasons but in summer. Both the overall warm-

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ing and the overwhelmingly drying tendencies lead to deteriorating water balance and to an increasing water deficit. Besides these tendencies of seasonal averages, the daily precipitation data show a paradoxical behaviour. Parallel to drying in the long run, the number of rainy days with an ample amount of precipitation increases, leading to more frequent peak values that sometimes even result in flash floods (GYURÓ, Gy. *et al.* 2007). Both the long-term, regional climate tendencies and the occurrence of dry and wet extremities due to global warming make the soil surface more vulnerable; that is why proper and sustainable land use will be extremely important. Modelling studies support the above statements. The frequency of frost days, expected to decrease with large-scale warming does not support the anticipated negative tendency (MIKA, J. and LAKATOS, M. 2010)

In the spring and summer of 2010 intensive rainfall events occurred throughout the country. Soil erosion and runoff from the slopes of the hills and mountains, floods and inundations on valley bottoms and in the plains have caused extensive damage and misery to those directly affected and also did harm to the national economy.

The question is whether all have been done to mitigate the damage. Looking at the events of 2010 it is obvious that no adequate precaution measures were undertaken. During the last few decades there were no financial sources available for water management and regulation in agricultural areas. The prevention should start at the places where runoff is generated, i.e. in the hilly countries and mountains used for agriculture or silviculture.

Regarding flood prevention the floodplain is generally referred to (e.g. technical problems, such as construction on floodplains, lack of maintenance and water management investments etc.), but as a rule nothing is said about how to increase the water holding capacity of the catchment areas. Cattle and pig stocks of Hungary have gradually decreased below 40% of the stock 30 years before (HORN, P. 1997). Monocultural crop production alternating with oil crops is quite typical today. Besides their great stem volume maize and sunflower growing is unfavorable from the aspect of soil conservation. Ploughing depth doubled between 1965 and 1985 in order to increase crop capacity. The related tillage technology and the application of a huge amount of fertilizers resulted in a spectacular increase of plant volume and grain crop (KÁDÁR, I. 1997). In line with the achieved results cultivation costs increased as well, while soil edaphon was damaged, humus content decreased, soil structure deteriorated, ground and surface waters were polluted to a harmful degree (SZABÓ, L. 1996; VÁRALLYAY, Gy. 2004). The change of the water management system leads to extremities even within one season. After ploughing favourable infiltration conditions of the rainwater can be expected in autumn and winter, however, in spring soil aggregates tend to fall apart and they may be washed off. Even a rainfall event of low intensity may cause runoff and soil loss (BIRKÁS, M. 2002).

Soil erosion research based on measurements and observations started in the last century (ÁDÁM, L. 1967; ÁDÁM, L. 1975; ERŐDI, B. *et al.* 1965; PINCZÉS, Z. 1968). Results of this research were not adopted in the practice, i.e. prevention measures were not performed. During the socialist era quite a few soil conservation projects (e.g. contour tillage, shrub belts) were elaborated and successfully implemented at various locations. After the change of regime in 1989 most of these schemes created in the framework of the previous soil conservation projects became abandoned. The objective of the present paper is to show the benefits of conservation tillage for the environment under the conditions of climate change with a special emphasis on water management.

Soil, water and nature conservation from the aspect of agricultural production

It is well known that improper tillage destroys soil structure and soil aggregates and thus it may lead to colmatation. With topsoil inversion the majority of the living edaphons get from an optimal to a less favourable soil layer, in terms of temperature, oxygen, water and/or nutrient supply. Possibly mechanical tillage does not pose a threat for the quickly reproducing microflora and microfauna (up to 200 micron), if the soil aggregates are not damaged. Contrary to microflora and microfauna, macro and megafauna (2–20 mm) can get injured or even perish due to the mechanical disturbance of plough (inversion). If they get to an unfavourable place, they need considerable time to get back to the original layer and build out their routes. Only then they are capable to perform their tasks in maintaining biocoenoses. According to soil biologists the total weight of all living organisms in the upper 15 cm of the soil is 25 tons per hectare. Microflora (bacteria, fungi, algae) adds up to ca 20 tons, soil fauna accounts for ca 5 tons (FEHÉR, D. *et al.* 1954). This quantity has an important effect on agricultural production. Soil conservation is also concerned about living organisms in the soil, not only about the physical state of the soil.

Tillage is a mechanical operation which destroys soil structure and along with rainfall intensity it is the main influencing factor of soil erosion in hilly regions (BÁDONYI, K. 2006a). The farmer is not always the owner of the cultivated land, rather its user, and in his decisions he prefers the more „economic“ interventions at the moment to the long term effects. Such an example is when the autumn deep ploughing in hillslope direction carried out on wet soil, results in micro relief driving down the precipitation during the season from autumn to early spring. Soils cultivated this way dry out quickly and in a cloddy way in spring, after disking the clods become dusty and are looking forward to be drilled with decimated soil fauna. Their surface is silting up and crusting after the first heavy rainfall event. Its consequence during production is water, soil, nutrient and herbicide lost. All of them load surface waters.

Conservation tillage

In the middle of the last century prominent Hungarian experts (MANNINGER, FEHÉR, FRANK, KREYBIG, SZABADOS, VÁRALLYAY; FEHÉR, D. *et al.* 1954) underlined the favourable effect of non inversion tillage under dry conditions. The technical development of machinery and the availability of more effective herbicides provide a good basis for the application of the method. Non inversion tillage (minimum tillage, no-tillage) was introduced, also for economic reasons first in the U.S. and later in Western Europe.

In the topsoil of chernozem in primeval state the proportion of water stable soil aggregates larger than 1 mm is 40%, which is one order of magnitude higher compared to cultivated arable soils (according to the experiments by DVORACEK, in KEMENESY, E. 1961). KEMENESY had established that this primeval state could not be restored when annual crops were grown. The state of water soluble aggregates can be improved and non-inversion tillage technologies can offer the solution for this improvement.

Conservation tillage avoids inversion and uses shallow discs and subsoiler instead. An important component of the technology is the perfect chop and partial shallow incorporation and rolling of plant residues after harvest. Organic plant residues (mulch) left on soil surface have a fundamental role in the protection against soil erosion. Drilling is carried out with a shallow seedbed preparation and/or direct driller. Weeds are not treated as a hindering factor from every respect because the application of post-emergent herbicides they can play a positive role in the prevention from soil erosion. Conservation tillage aims at providing survival, reproduction and optimal life conditions for soil fauna inhabiting different soil layers (BÁDONYI, K. *et al.* 2008a). The role of soil fauna and conscious use of its functions are essential in establishing the optimal (stable aggregated) structure of the soil. Non-inversion tillage does not damage these layer-specific organisms. Organic material will be transported to the appropriate layer and transformed to humus by the help of its symbiotes. A macropore system will be established, which is capable to absorb rainwater quickly and it plays an important role in the aeration of soil as well. Plant residues protect the soil surface, keep the macropores open and at the same time provide natural nutrition for macrofauna (*Photo 1*).

What advantages can be expected from conservation tillage?

1. Better rainwater storage on the fields, which increases specific yield compared to the ploughed fields.
2. Less runoff and soil loss (better soil protection), more nutrients and herbicides remaining on the fields.



Photo 1. Macropores on the Conservation (a) and Conventional (b) tilled plot

3. More habitable environment, less surface water and environmental pollution (surface water protection is expanded to the whole catchment area).

4. Maintenance of biological diversity (FIELD, R.H. *et al.* 2007).

5. Production of better quality food raw material.

6. Less CO₂-emission from the agricultural machines due to the reduced soil tillage.

7. Decreasing CO₂-emission from the soil due to shallow tillage, up to an order of magnitude, or even more in very hot and dry periods (ZSEMBELL, J. *et al.* 2006; BIRKÁS M. *et al.* 2007), and to the reduced use of artificial fertilizers (ca. 25%: Koós, S. and NÉMETH, T. 2007).

Methods

Plot studies

The main objective of the experiments carried out in the catchment of Zala river since 2003 (BÁDONYI, K. *et al.* 2008a; BÁDONYI, K. *et al.* 2008b; KERTÉSZ, Á. *et al.* 2010; MADARÁSZ, B. and KERTÉSZ, Á. 2010) is to compare the effects of conventional (inversion) tillage and conservation (non-inversion, shallow) tillage on two levels:

1. medium size (1200 m²) plot experiments on soil loss, runoff and nutrients (two treatments, two replicas) at Szentgyörgyvár;

2. large plot experiments (18 plots, 4–5 ha each) on crop production at Dióskál.

The soil erosion measurement station was established in 2003 as an experimental site to attain the objectives outlined above. It is special in size (each plot is 50x24 m = 1200 m²). This size allows cultivation carried out by the

common farm machinery. Contour tillage was applied here to protect the soil on a gentle slope of 10–11%. Since October 2003 the two outer plots have been cultivated in a conventional way (inversive ploughing), while conservation tillage (non-inversion shallow disking) has been applied on the inner plots. The description of the experimental site is given in previous publications of BÁDONYI, K. 2006b; BÁDONYI, K. *et al.* 2008b and KERTÉSZ, Á. *et al.* 2010.

For plot bounding 3 mm thick iron sheets were used at a length of 496 m (!), which were removed before tillage and replaced afterwards. This provided more favourable conditions for measurements than the WISCHMEIER plots (WISCHMEIER, W.H. and SMITH, D.D. 1978), first of all because the “damage” caused to the soil by removing and replacing the sheets is less by one order of magnitude (*Table 1*).

Table 1. Perimeter, area and fence length ratio of selected rainfall simulator plots and field erosion plots

Plot	Perimeter (m) (P)	Area (m ²) (A)	P/A (m/m ²) (R)	
Kazó-type rainfall simulator ¹		1.8	0.3	7.09
Leuven-type rainfall simulator ²		3.0	0.6	5.36
PANNON-R2 rainfall simulator ³		16.0	12.0	1.33
Wischmeier plot ⁴		48.3	44.3	1.09
Szentgyörgyvár experimental plot ⁵		148.0	1200.0	0.12

¹ KAZÓ, B. 1966; ² Poesen, J. *et al.* 1990, 1995; ³ JAKAB, G. és SZALAI, Z. 2005; ⁴ WISCHMEIER, W.H. és D.D. SMITH 1978; ⁵ BÁDONYI K. *et al.* 2008b.

Surface runoff is captured by a collecting system (BÁDONYI, K. *et al.* 2008b; KERTÉSZ, Á. *et al.* 2010). With this solution we could measure a 95–97 mm runoff of a ca. 100 mm rainfall event. The amount of runoff water and that of the eroded soil were determined. Organic carbon and nutrient contents were identified during 2004–2006.

Climate change studies: characterization of year-types

Effects of conservation tillage on runoff and soil loss depend on weather conditions of the given year. This aspect can be investigated in the following way.

a) The two years of wheat production (2004 and 2007) were pre-selected and retained for comparison. The four years of maize production (2006, 2008, 2009, and 2010) are treated separately, together with the single year of sunflower production (2005). This addition is explained by the fact that sunflower exhibits similar features to those of maize with respect to water and soil conservation.

b) Summer half-year temperature and precipitation averages are calculated for each year, including the De Martonne aridity index (DUNKEL, Z. 2009). This index combines precipitation (mm) and temperature (°C) by the equation: $DM (P, T) = P/(T+10)$.

c) This index divides the seven years into three groups effectively as presented in Figure 1. The two years with the highest index values for WET years (2005, 2010), covered by maize, are separated from the three DRY low-index (2006, 2008 and 2009), maize-covered years by the two INTERMEDIATE, wheat-covered years (2004, 2007). Table 2 indicates average climate characteristics of these groups, starting from the temperature and precipitation to the De Martonne index. This subdivision of the seven years of investigation is later compared to expected climate scenarios to interpret the observed differences in terms of climate change.

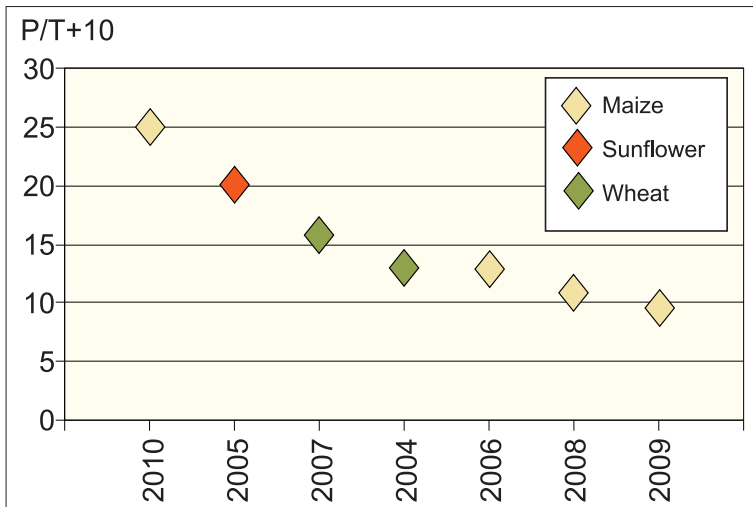


Fig 1. De Martonne aridity index of the summer half-year with different plant cultures at Szentgyörgyvár. The years from left to right: maize (orange mark) – 2010; sunflower (red) – 2005; winter wheat (green) – 2007, 2004; maize (orange, again) 2006, 2008, 2009

Table 2. The three year-types selected from the seven years (2004–2010) at Szentgyörgyvár

Year-types (summer half-year)	Temperature	Precipitation	De Martonne index
WET and COOL with maize (2010, 2005*)	16.2	585	22.3
DRY with maize (2006, 2008, 2009)	17.4	305	11.1
INTERMEDIATE with wheat (2004, 2007)	18.3	414	14.6

*sunflower in 2005, which is similar to maize from erosion and runoff point of view. (See the text for explanation.)

Table 3. Total amount of runoff and eroded soil at the experimental site of Szentgyörgyvár

Years	Rainfall (mm)			Runoff (mm)		Runoff rate		
	Total(A)	Leading to runoff (B)	B/A	No. of rainfall events with erosion	Conv.	Cons.	Conv.	Cons.
2004-2006	1859.6	625.4	0.336	27	130.5	45.6	0.209	0.073
2007-2009	1805.4	653.7	0.362	31	26.2	9.4	0.040	0.014
2004-2009	3665.0	1279.1	0.349	58	156.7	55.0	0.122	0.043
Average/year	611	213		10	26.1	9.2		
Years	Soil loss (t/ha)			Infiltrated water (mm)		Infiltration rate		
	Conv.	Cons.	Cons/Conv	Conv.	Cons.	Cons/Conv	Conv.	Cons.
2004-2006	10.95	0.35	0.032	494.9	579.8	1.172	0.791	0.927
2007-2009	1.54	0.58	0.379	627.5	644.3	1.027	0.960	0.986
2004-2009	12.49	0.93	0.074	1122.4	1224.1	1.091	0.878	0.957
Average/year	2.08	0.15		187	204			

Results

During the six years of measurement (2004–2009) annual mean precipitation amounted to 611 mm. 35% of it caused nearly tenfold measurable runoff on the plots (Table 3). Total rainfall amount was roughly the same during years 1–3 (2004–2006) and 3–6 (2007–2009). There was no significant difference between rainfall amounts causing runoff. However, there were significant differences between treatments concerning runoff and soil loss.

During the six years of the experiment on the conventional plots 157 mm, on the conservation plots 55 mm runoff was recorded, i.e. runoff was 2.85 times higher on the conventional plots than on the conservation plots. Rainfall events had roughly the same erosive effect throughout the whole measurement period. Concerning runoff there is a remarkable difference between the first and second halves of the observation period. In the first three years (2004–2006) runoff volume was five times more than in the second period (2007–2009). Rainfall events of higher intensity during the first period were responsible for this.

The average soil loss was 12.5 t/ha from conventional plots and only 0.93 t/ha from the conservation plots (7.4%). Four heavy rainfall events of the first period were responsible for 90%

of soil loss on conventional and 66% of that on conservation plots. In the second period rainfall intensities rarely exceeded the water holding capacity of the soil. It is not by chance that 88% of the total eroded soil was recorded during the first period, when 27 rainfall events occurred, from the conventional plots runoff was 130.5 mm, from the conservation plots only 45.6 mm. In the first period the soil of the conservation plots was able to receive an average of 28.3 mm more rainwater annually. A greater proportion of runoff water was available for the crops, while soil and nutrient loss were reduced (*Table 4*). The amount of the eroded soil on conservation plots was one thirtieth of that on the conventional plots. This value only increased by runoff moving on the soggy soil surface caused by still and sustained rainfall events, but even so it remained under one tenth.

Looking at the mean values of the six years runoff amount (9–16 mm/year) and soil loss (0.15–2 t/ha/year) could be assessed as remarkable on the conservation plots, and good on the conventional ones. Cultivation of the plots was carried out along the contour lines on all plots. The most important result is that with consistent conservation tillage practice runoff was reduced to one third and soil erosion dropped to one thirtieth-fortieth. Concerning the macro elements 15.5 kg/ha fertilizer (NPK) active substance was washed off annually from the conventional plots and only 4.3 kg/ha from the conservation plots. The latter held back 80% nitrogen, 88.5% of phosphorus and 63.5% of potassium (*Table 4*). The only way to reduce nutrient loss is to decrease runoff and to increase infiltration. This can be achieved in practice by protecting soil fauna, so that it maintains and continuously develops adequate soil physical and water management conditions (*Figure 2*).

Table 5 shows that in the WET and COOL years runoff was higher by roughly 3.5 times than in the DRY years. Conservation tillage was slightly more effective in WET and COOL years as well (30% vs. 33%). As expected, winter wheat retains much more moisture than maize due to its almost full year coverage (2.6 mm compared to 71.1 mm for the WET years, and 20.7 mm for the DRY ones). In case of winter wheat conservation tillage was even more effective, allowing just 5% of the runoff observed in case of conventional tillage.

Table 4. Nutrient loss (kg/ha/year, 2004–2006)

	N	P ₂ O ₅	K ₂ O	NPK
Conventional	6.597	0.887	8.073	15.556
Conservation	1.306	0.102	2.938	4.346
Cons./Conv.	0.198	0.115	0.364	0.279
%	19.8	11.5	36.4	27.90
Conv. nutrient structure (%)	42.4	5.7	51.9	100
Cons. nutrient structure (%)	30.0	2.3	67.6	100

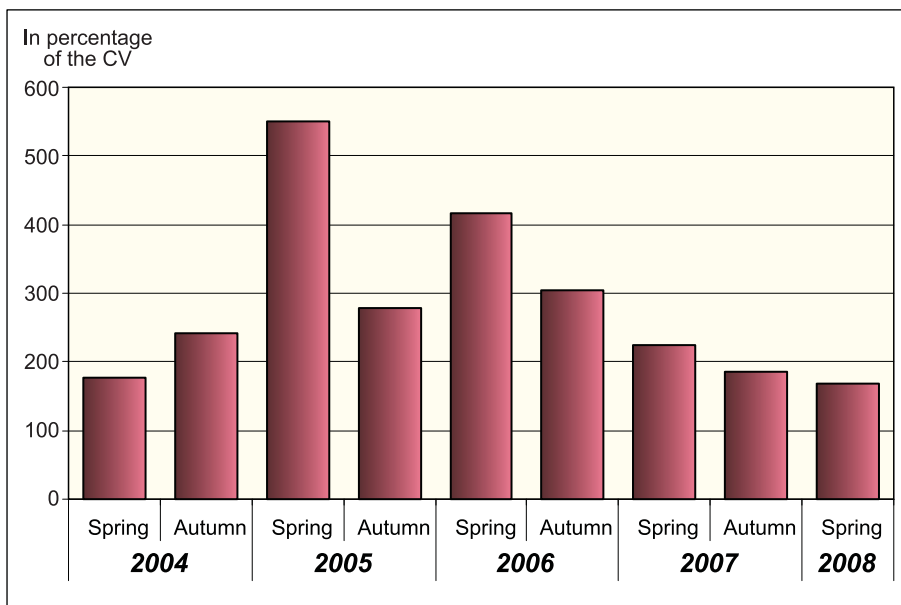


Fig. 2. Average number of earthworms on the conservation plots at Dióskál in percentage of the conventional plots

Table 5. Total amount of runoff and eroded soil at the experimental site of Szentgyörgyvár. (CV – conventional tillage; CS – conservation tillage)

Year-types	Runoff (mm)			Soil loss (t/ha)		
	CV	CS	CS/CV (%)	CV	CS	CS/CV (%)
WET and COOL with maize (2010, 2005*)	71.1	21.3	30	6.84	0.10	1
DRY with maize (2006, 2008, 2009)	20.7	6.8	33	2.51	0.21	8
INTERMEDIATE with wheat (2004, 2007)	2.6	0.1	5	0.07	0.00*	3
AVERAGE IN 7 YEARS (2004–2010)	30.0	9.0	30	3.05	0.12	4

*0.002

Soil loss was also much heavier in the WET year but there was a striking difference in efficiency of conservation tillage allowing just 1% of the loss at conventional tillage. The same value was 8% in the DRY years. In this respect the wheat coverage resulted in much less soil loss than maize, with an effect of the conservation tillage representing an approximate average of the WET and DRY years, i.e. 3% compared to 1% and 8% of soil loss in case of conventional tillage.

The two maize-covered, i.e. WET and DRY groups of years differed substantially in their average precipitation from each other than it would have been suggested by any reasonable climate scenario, based either on global climate model simulations, regional modelling or empirical analogy (ΜΙΚΑ, J. 2009).

Hence, a rough approximation has to be implied presuming proportionality between the De Martonne differences and the effects on runoff and soil loss, i.e.

$$\Delta Y = \Delta Y_{\text{obs}} * \Delta DM_{\text{sc}} / \Delta DM_{\text{obs}} \quad (1)$$

where ΔY is the estimated effect of climate change in runoff or soil loss between the groups,

ΔY_{obs} is the observed difference between the two groups,

ΔDM_{sc} is the climate scenario expressed in De Martonne index,

ΔDM_{obs} is the difference in De Martonne index between the two groups.

For example, taking the PRUDENCE Project projections into consideration, based on 50 km grid-point distance regional models, one may expect 25 mm decrease in precipitation and 1,5°C increase in temperature. These figures are obtained by using the PRUDENCE seasonal changes of precipitation expressed in per cent of the reference period (CHRISTENSEN, J.H. 2005). These changes are multiplied by the reference precipitation, using the weights 2, 3 and 1, according to the number of months in the summer half-year from the given seasons. Considering also that the summer half-year mean temperature at Keszthely (near Szentgyörgyvár) is 18°C and the mean precipitation is ca 400 mm, one may get the following De Martonne indices: Reference: 14.29, year 2030; scenario with 1°C global warming 12.71. The difference between the two values is $\Delta DM_{\text{sc}} = 1.58$, which is just one seventh part of the $\Delta DM_{\text{obs}} = -11.2$ (see the WET vs DRY difference in the last column of *Table 2*) in eq. (1). Following the substitution of the terms into eq. (1), the corresponding values of ΔY_{obs} obtained are -50.4 mm and -14.5 mm of runoff with conventional and conservation tillage, respectively. For soil loss the similar numbers are $\Delta Y_{\text{obs}} = -4.33$ t/ha and +0.11 t/ha. One must remark, however, that this increase of soil loss despite the warming of the year is just a consequence of small samples, exactly by extreme precipitations in spring 2009. Finally, putting the above $DM_{\text{sc}} = -1,58$ mm/°C change in the De Martonne index, one may get the following rough estimates for the effects of 1°C global warming at Szentgyörgyvár: change in runoff with conventional tillage: -7.1 mm/yr; the same with conservative tillage: -2.0 mm/yr. The soil loss is -0.6 t/ha in the first case with (probably false, due to a small-sample error attributable to the irregular spring in 2009) 0.02 t/ha in the second case.

One must consider, however, that both the short period of survey, the uneven distribution of heavy rain within the year and also the order of magnitude difference between the analogous years and the scenarios make the above estimations just first approaches likely outlining the magnitudes of the effect of climate change. Moreover, since the efficiency of conservation tillage is nearly the same in the WET and DRY groups of years for runoff, the climate change may not indicate big difference in this efficiency, either. For the soil loss, on the other hand, the difference between the WET and DRY groups of years was of unexpected sign in case of the conservation tillage. Hence, it is difficult to estimate the impact of climate change upon the efficiency of conservation tillage on this phenomenon.

Reducing production risk

As stated above at the experimental site of Szentgyörgyvár the soil received more rainwater under conservation tillage. If the site is deemed to be representative for similar areas in the region of Transdanubia more moisture can be provided for crops between half of "one irrigation norm" (28 mm in the first study period) and one tenth of that (5 mm in the second period). This is a remarkable amount during the periods of drought. Thus the yield loss due to irreversible damages can be mitigated and production risk is lower. Runoff, soil and nutrient loss are also reduced due to the protecting effect of the mulch on the soil surface not ploughed in and to the insistent activity of soil edaphon.

Yield variations

To establish and use a new technology on a farm may be risky. It is expensive and more complicated compared to conventional methods. For the introduction of a new technology preparation and some routine are needed. The critical question is whether it is worth to change.

The experiment started in autumn 2003 with 9 plot pairs, winter wheat, maize and later oil seed rape were applied. After the initial 3 years a yield decline was established, but during the last 4 years the yields measured on the conservation plots exceeded those on the conventional plots (*Figure 3*). It seems that on the basis of the rather short 7 years period the trend of initial decline reversed (probably due to the technological switch). This coincides with the results published in the literature (NICOLAS, D. 2007). The average variation of crop yields (conservation in percentage of conventional) is as follows: +0.4% (winter wheat), -5.2% (maize) and +12.0% (oil seed rape) (*Figure 4*). The initial

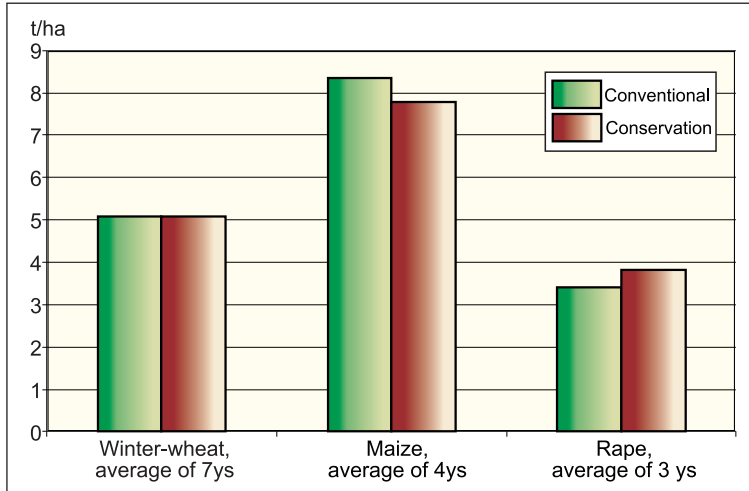


Fig. 3. Yield by treatment at Dióskál (2003–2010)

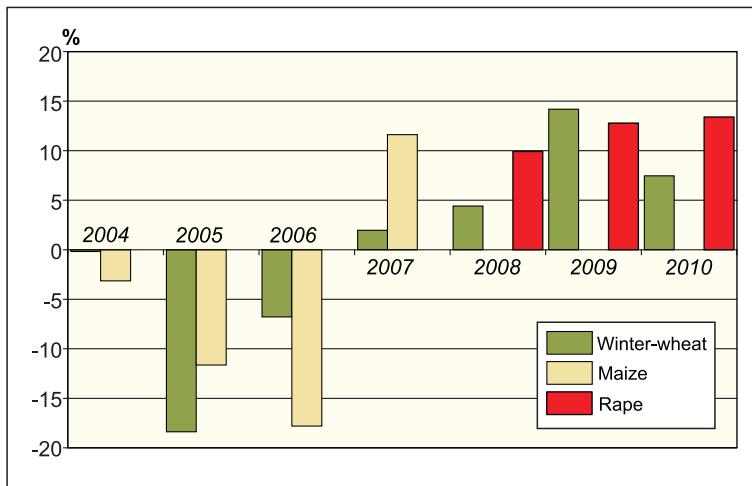


Fig. 4. Annual yield on conservation plots compared with conventional plots. (The percentage values indicate the surplus/deficit on the conservation plots)

yield decline of maize (above 10%) can be explained by the lack of appropriate machinery or by that of experience.

The first year was not favourable for wheat, but it proved to be good for maize, indicated by the 4.5 t/ha and the 10.2 t/ha yields, respectively. Weather conditions affected the experimental site in the same way however, the conser-

Table 6. Average cultivation costs at Dióskál (2004–2006, in Euro, 1€=275Ft)

In Euro	Winter wheat					Maize				
	Cultivation	Materials	Transport	Other	Total	Cultivation	Materials	Transport	Other	Total
Conventional	207	209	35	7	459	193	257	68	23	540
Conservation	182	211	33	6	431	167	285	60	23	535

vation plots showed a more favourable variation trend. This can be explained by the fact that conservation tillage gradually modifies the water and nutrient management of the soil. This change is beneficial for the farmer as well.

These facts focus the attention on the importance of the close and attentive observation of the crop and its environmental conditions when conservation tillage is applied and more professional knowledge on agronomy and technology is necessary.

Cultivation costs

Conservation tillage is manifested in the reduced number of passes using combinators and direct drilling. As a consequence cultivation costs were decreased by 12–13%. Material costs of conservation tillage were slightly higher, but even taking this into account it was still possible to save 2–6% of the costs (Table 6).

However, one should keep in mind that at the beginning conservation tillage needs considerable investments, which obviously return in the long run. In other words proper machinery is essential for conservation tillage, moreover, sufficient knowledge and proper attitude are also important, since only in their possession one is able to harmonize the aspects of agricultural production with soil and nature conservation.

Conclusions

Lately Hungary has been experiencing frequent floods and waterlogging, so it would be very useful, if rainwater could be kept on site. Conservation tillage proved to be a good tool for this. With its application the soil can retain more rainwater, thus increasing soil moisture content and at the same time decreasing surface water pollution. Investigations have shown that soils and the environment could be protected even under the conditions of intense agricultural production. With conservation tillage both soil erosion and nutrient loss can be reduced considerably. The extent of soil erosion can be kept under the value of tolerable soil loss, thus the productivity can be maintained and a long term sustainable production can be

secured. The farmers would profit, nature and water protection benefit from the conscious and consistent application of a soil conservation technology. It can be recommended that non-inversion tillage be promoted by means of the agricultural policy of Hungary and of the EU, at least on the level of research, development and consultancy.

Certainly there is a need for further development of the appropriate agrotechnology concerning nutrient supply, and effective physical, chemical and biological weed control techniques.

On the basis of the results of the investigations it would be important that agricultural practice should support and the society appreciate the application of conservation agriculture technology.

Acknowledgements: The research work was supported by the EU LIFE and Syngenta (LIFE03 ENV/UK/000617). The authors thank Szabolcs Benke and Béla Csiszár for their field work, István Plótár and his family for their agricultural works on the study site and Väderstad for the machinery.

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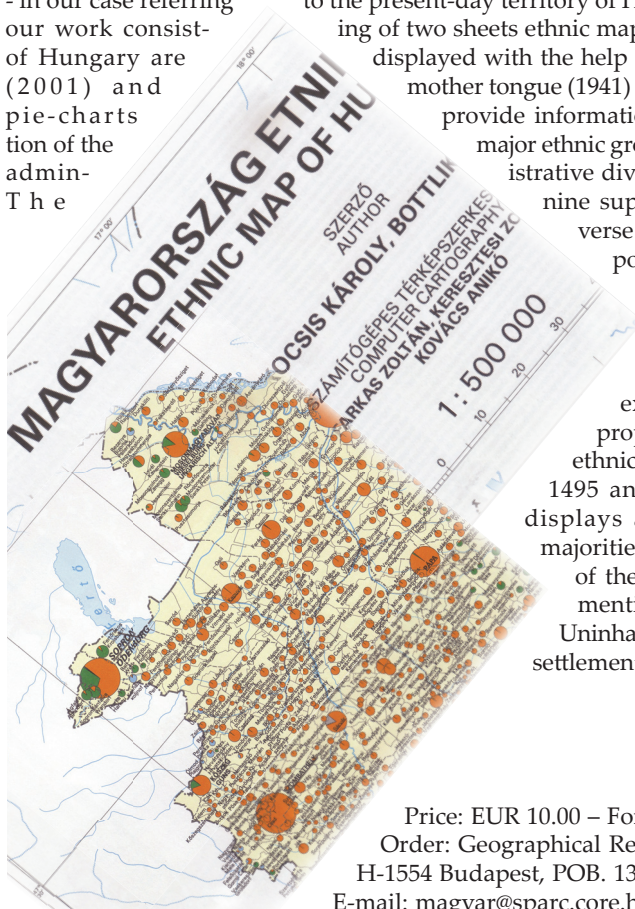
**Ethnic map of Hungary 1941 + Ethnic map of present territory
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Scale 1:500 000

Authors: KOCSIS, K. and BOTTLIK, ZS.

Geographical Research Institute, Hungarian Academy of Sciences, Budapest, 2009

The latest (eighth) piece of ethnic map series of the Carpathian Basin was an attempt to draft the changes that have taken place in the ethnic structure during the past five hundred years as well as to display its present state with the help of ethnic maps and a chart - in our case referring to the present-day territory of Hungary. On the front pages of our work consisting of two sheets ethnic maps of the present-day territory of Hungary are displayed with the help of pie-charts, based on ethnic mother tongue (1941) data. Population-proportional pie-charts provide information on the territorial distribution of the major ethnic groups and on the contemporary administrative division.



nine supplementary maps on the reverse show the lingual-ethnic composition of the present-day territory of Hungary in 1495, 1715, 1784, 1880, 1910, 1930, 1941, 1990 and 2001 respectively. The chart here explores the quantitative and proportional changes of the main ethnic groups' population between 1495 and 2001. The series of maps displays absolute or relative ethnic majorities only in the inhabited areas of the settlements which had been mentioned in the source referred. Uninhabited areas with no permanent settlements are shown as blank spots.

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The World seen by Hungarian students: a mental map analysis

MÁRIA RÉDEI¹, ÁRON KINCSES² and ÁKOS JAKOBI³

Abstract

The project “Eurobroadmap”, funded by the European Commission⁴, is setting out a worldwide survey of the opinions of undergraduate students in different fields of learning (geography, political science, management, medicine and arts) in order to analyze their perception of the World and Europe. Its objective is to catch how undergraduate students from different domains and from different countries perceive the contemporary World in general and Europe in particular.

More precisely, the project focuses on two aspects of this vision: attractive and repulsive places, and relevant partitions of the World. The objectives were reduced to 10,320 questionnaires in 18 countries and 43 cities all around the world. Hungary participated in the survey by 244 questionnaires. The article gives an overview on global and local level on the valuable considerations of the Hungarian students’ cognitive geographical perceptions.

Keywords: cognitive maps, mental maps, students’ mental maps, Europe, World

Introduction

Every map is a reflection of objective realities as well as of partly subjective elements (WRIGHT, J.K. 1966). Analysis of world maps from the most ancient times to the present provides us with evidence of mingling of objective and subjective elements and with a means of measuring changing images of the World (HENRIKSON, A.K. 1979).

This opened a new research trend in geography: the cognitive mapping (LYNCH, K. 1960, GOULD, P.R. and WHITE, R.L. 1986). The definition of cognitive

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⁴ Eurobroadmap – Visions of Europe in the World, FP7-SSH-2007-1

mapping was usually given as “a construct which encompasses those cognitive processes which enable people to acquire, code, store, recall, and manipulate information about the nature of their spatial environment” (DOWNS, R.M. and STEA, D. 1973).

Nowadays most of the social analyses label them perceptions, being the frame of their mental ability. It is important to explore the thinking of participants not from the point of stock, but how the different indicators will reflect to their behaviour. It makes further trust problem, namely the changing factors and the changing impacts. A research on world pattern of geographic literacy was carried out just prior to the end of the Cold War (SAARINEN, T.E. and MACCABE, C.L. 1995).

The structure of questionnaires

The questionnaire itself is divided into four parts. The first one asks for information regarding the situation of the student (age, gender, socio-economic background, mobility practices).

The second part deals with attractive and repulsive cities and countries in the World. Perhaps the third and fourth parts are the most innovative and promise interesting results as the students were asked to divide the World between 2 and 15 regions, to name them, and to give borders to Europe on blind maps.

This paper presents the main findings of the “Eurobroadmap” survey that was carried out in autumn 2009 in Hungary. The document highlights the most interesting features on how Hungarian students mentally perceive the World and Europe. The picture is drawn by the answers of 244 students, who were asked about their experience and vision of the World.

The survey in Hungary was conducted in one city only, Budapest. According to this a significant urban background can be connected to the situation that may influence the students’ perception of the world. There is a significant concentration of high level education in Budapest with quite diverse forms of education, which made possible to easily complete the sample in every domains.

The overall distribution of males and females in the sample is balanced, even if men are slightly overrepresented in the sample (51.6%). There are, however, large differences among domains in gender division with a high overrepresentation of males in engineering studies and with a medium or small overrepresentation in those of arts and political sciences. Females are significantly overrepresented in the sample within the domain of social sciences. There is a fair equilibrium in the samples from business and health science studies.

Experience of the world

The socio economic and spatial background of the students' family is important for the explanation of the students' vision of the world, but it is also interesting to study that background in itself.

National origin of the families

The spatial mobility of the families is very low in our sample: only 3% of the students surveyed are not born in Hungary. Those that are not born in Hungary came mainly from Romania (3), but the sample also contains a student born in Bulgaria, one in Switzerland, one in Pakistan and one in Ukraine.

According to the data on the parents 97% of the students are born in the same country as their father and 95% in the same country as their mother. Place of birth of father if not Hungary is Romania (2), the USSR (2), Bulgaria (1), Estonia (1) or Kyrgyzstan (1). Mothers are born in 4 different countries out of Hungary, namely in Romania (3), the USSR (1), Finland (1) or Slovakia (1).

There were 8 students, who gave no answer about the country where their mother was born. The results reflect that the place of origin outside Hungary is usually in its close surroundings.

Languages spoken

The average number of languages spoken by Hungarian students is 2.66. Among them 9 students speak only one language (3.7%), which is their vernacular, Hungarian. 37.7% of the students declared to speak (or to have spoken) two languages. Finally, 58.6% of the students mentioned to speak 3 languages or more.

The situation is however a bit different if one considers the division of languages spoken by the domain studied. More than 50% of students in engineering and arts speak one or two languages but in business, health or political studies the figure is just about 30% (*Figure 1*).

As such, most of the Hungarian students indicate that they speak two or three languages. For students of Hungarian origin the figure is the following: apart from vernacular Hungarian they speak mainly English and German, and French just in rare cases do.

Other less frequently mentioned languages spoken by students are Italian, Spanish, Latin or Russian, while some of the students speak languages due to foreign origin (Slovak, Romanian etc.).

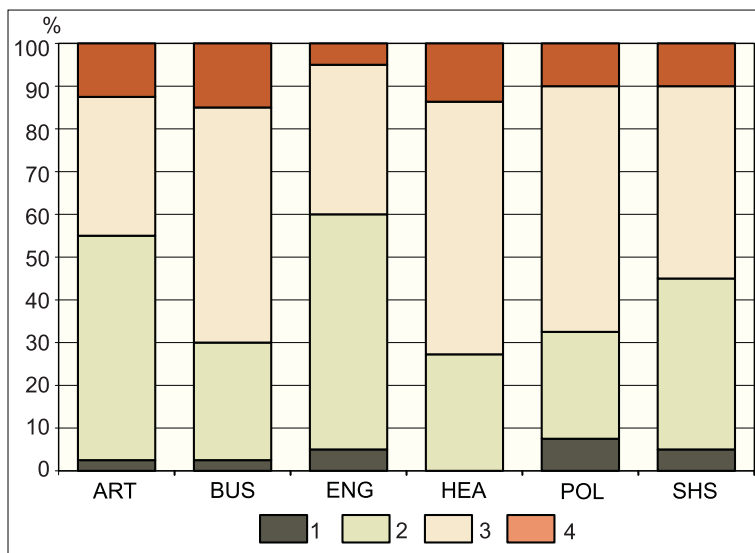


Fig. 1. Number of languages in Hungary by domain of learning. – ART = arts; BUS = business; ENG = engineering; HEA = health; POL = political sciences; SHS = social and human sciences

Student travels in the world

Hungarian students have reported of 4.52 visited countries on average. Those who declare no travel abroad are only 4 (1.6%). The figures vary considerably according to the domain of study: social science students seem to have visited fewer countries than students of art, business or engineering. 80% of the latter group declares to have visited 5 countries (*Figure 2*).

The world experience of the Hungarian students can be observed on the maps. *Map 1* shows the percentage of the students who have lived in different countries for more than four months. Only 14% of all students mentioned that he or she has lived in other countries than Hungary. This resulted in the fact that the issue of world experience does not have a consistent spatial pattern, however European, typically EU countries, were often mentioned. The results are geographically shared among 19 countries. Austria, Germany and the USA were mentioned most frequently.

Map 2 represents the percentage of students who have visited different countries of the world. Altogether 62 countries were mentioned, with the majority located in Europe. The first country referred to was the neighbouring Austria, which was mentioned by 59% of the students. Following Austria, Italy and Germany were mentioned most, which were in turn followed by the group

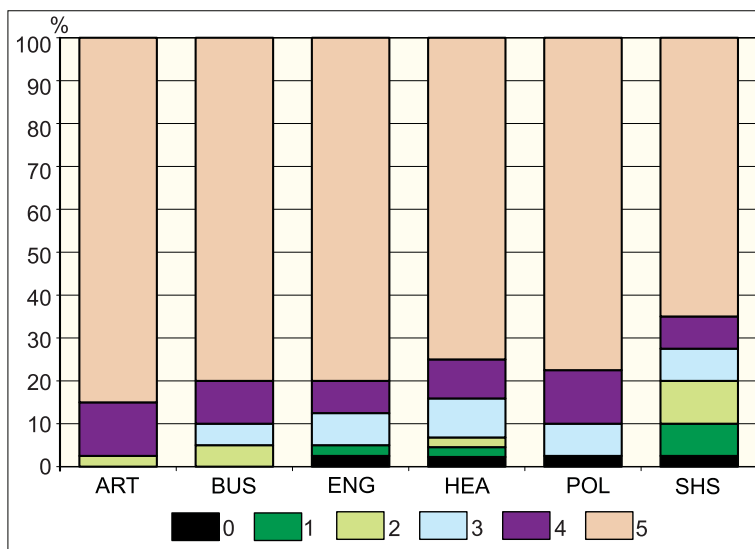


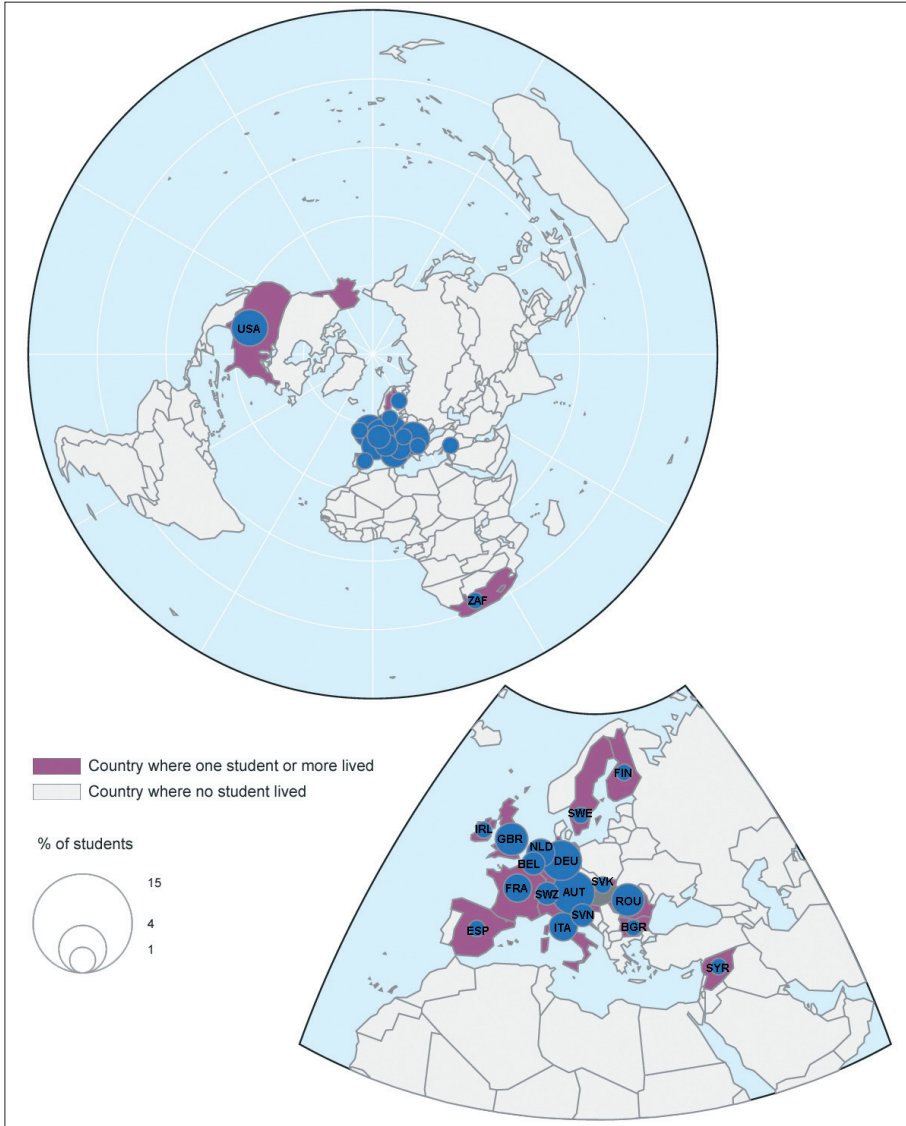
Fig. 2. Number of countries visited by Hungarian students according to domain of learning (For explanation see Fig. 1)

of Hungary's neighbours (Slovakia, Romania, Croatia) and West European countries (France, Great Britain, Spain). More than 10% of the students have visited Greece, Poland and the Czech Republic. Among overseas countries some holiday destinations around the Mediterranean (Egypt, Tunisia) were mentioned as well as countries of North America (USA, Canada), but other destinations were noted rarely. There are large areas in Africa, South America, and South Asia or in Oceania, which are virtually unknown as countries of experience.

Socio-economic background

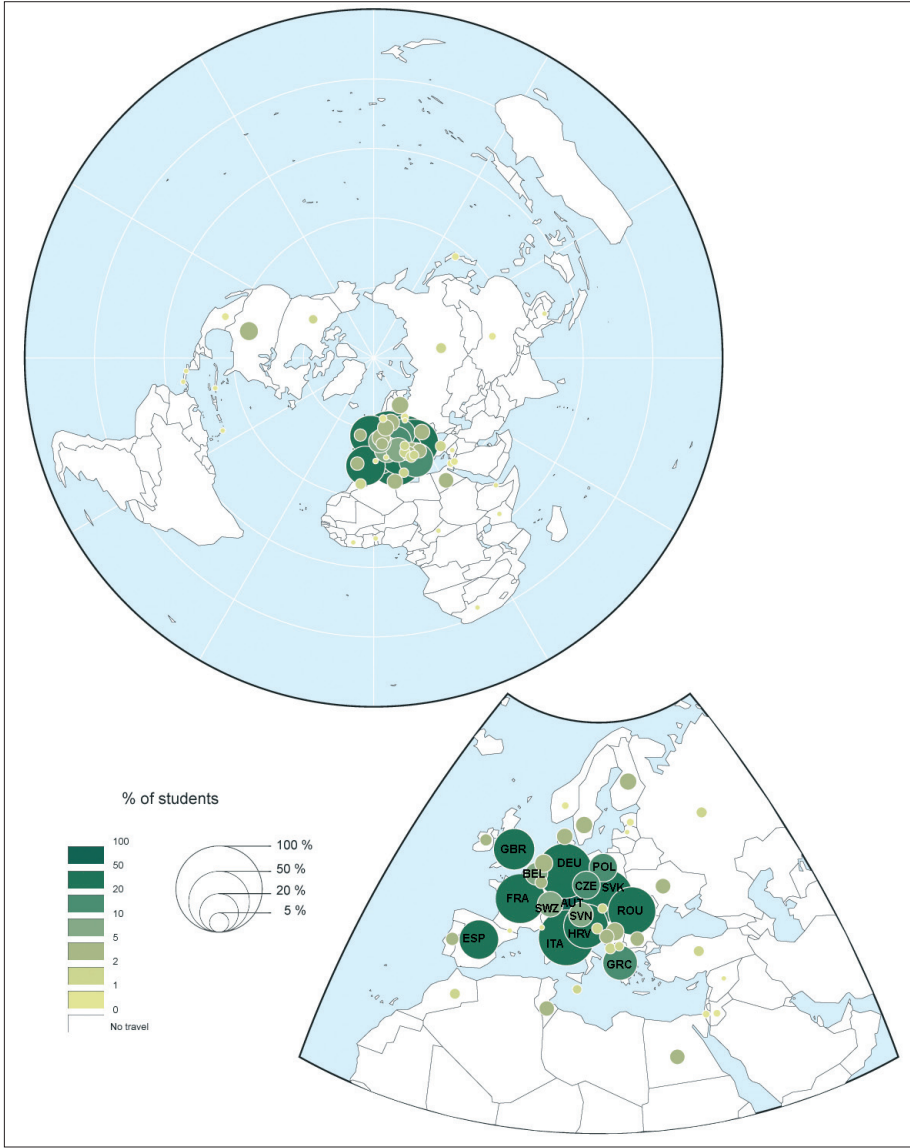
A large majority of the Hungarian students surveyed position themselves in the two medium classes of personal income. Most of the students (40%) state that they belong to the "medium high" level, while an additional 34.6% deem to belong to the "low medium" level. 20.6% consider themselves to belong to the group of the poorest and only 4.6% to the richest.

The figures more or less correlate with the level of education of the parents: the main difference is that the "high" modality has been lot more often and the "low" modality less often chosen. The inquiries have shown no significant difference between the education level of the fathers and mothers.



Map 1. World experience of the Hungarian students (countries where students have lived more than 4 months)

Concerning their religious affiliation 42.6% of the students declare to have a feeling of belonging to a particular religion of coherent set of belief. Among them 91 declare to be Christians and one as Jewish, others refused to answer, did not reply or mentioned other religious affiliation.



Map 2. World experience of the Hungarian students (last 5 countries visited by students)

Analysis of scales of belonging

A large majority of Hungarian students declare that their first level of belonging is the “national” level (43.7%). The second most frequent answer was the

local level (22.3%), which was followed by the infranational level (12.7%) and the global level (11.4%). Students, who answered this question, much rarely quote the supranational level and other levels concerning their belonging (Figure 3).

Concerning the students' history of spatial mobility, a clear difference can be observed in the results of the scales of belonging between those whose country of residence is different from their country of birth and those with a coincidence of the two (Figure 4). The students that were not born in Hungary, are more connected to local level, and quoted infranational and other spatial levels also often. In contrast, students who were born in Hungary quoted national level the most (44%), and only students of this group mentioned the category of supranational and global belonging.

Concerning the differences between the place of birth of the students and their parents the figures are strenghtening the previously mentioned observations (Figure 5). Two thirds of those, whose father was born in different country than Hungary declared to have local level of belonging. Compared to this, whose father was born in the same country quoted less the local level, and rather mentioned national, infranational or supranational levels.

The picture is almost the same concerning the place of birth of the mother (Figure 6). Those whose mother was born outside Hungary referred to local and infranational levels more, and somewhat more often also to the global level, while whose mother was born in the same country rather declared to have national level of belonging.

The scale of belonging of students is somewhat different in terms of gender (Figure 7). Female students mentioned global belonging more fre-

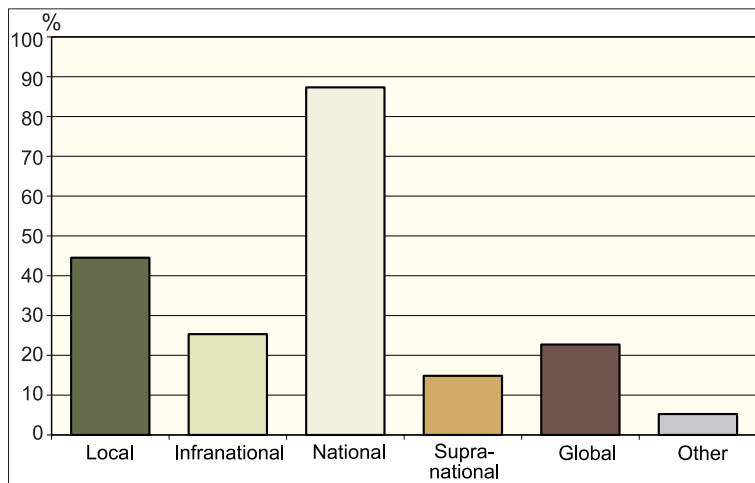


Fig. 3. Frequency of students according to the scale of belonging

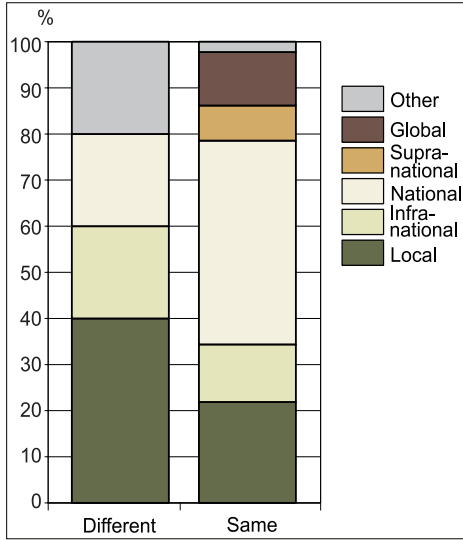


Fig. 4. Spatial mobility by scale of belonging

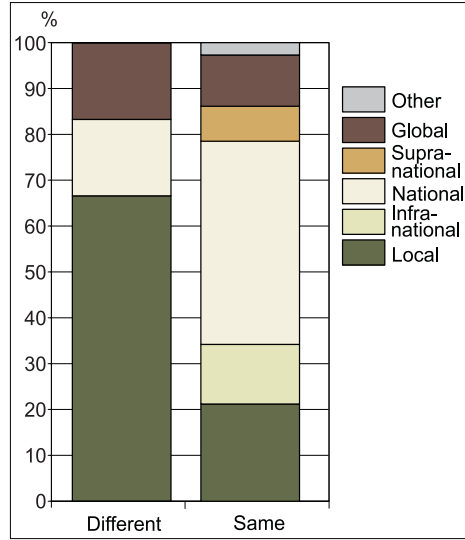


Fig. 5. Place of birth of the father by scale of belonging

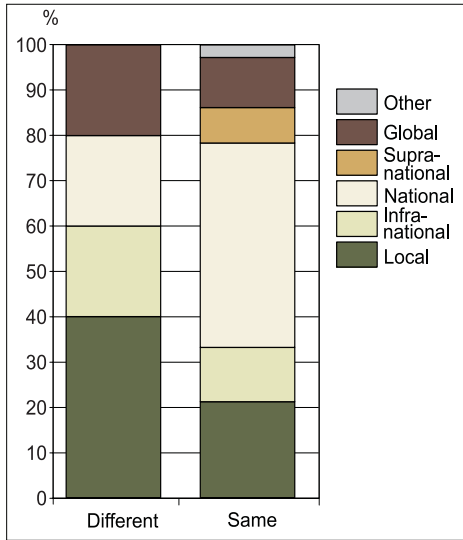


Fig. 6. Place of birth of the mother by scale of belonging

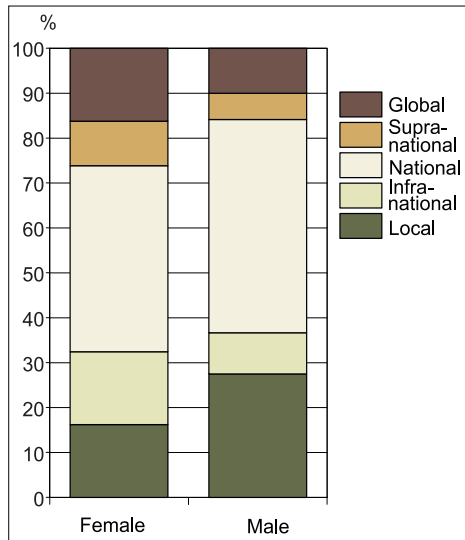


Fig. 7. Gender by scale of belonging

quently than males, while the latter mentioned local belonging more often. The dominantly mentioned spatial level is the national level by both genders, however men chose this category more often than women.

According to the number of languages spoken by the students surveyed, there is no significant relation between the two variables (*Figure 8*). As an interesting result it can be mentioned however, that students, who speak only one language did not quote any interim spatial level (neither infranational nor supranational). They mentioned only local, national or global level as their scale of belonging.

Finally the relationship between different religions and the mentioned level of belonging can be observed (*Figure 9*). It seems that those who declare themselves as Christian appear to identify themselves more with national level than others. Catholics, who form the largest group in the sample, mention national and local levels frequently, and quote global level also a bit larger than others.

Those who declare themselves as Protestants are also connected more to the national level. Finally students with Jewish or Lutheran religion were quite rare in the sample, therefore their results of belonging more to local or infranational level is not representative for these social groups.

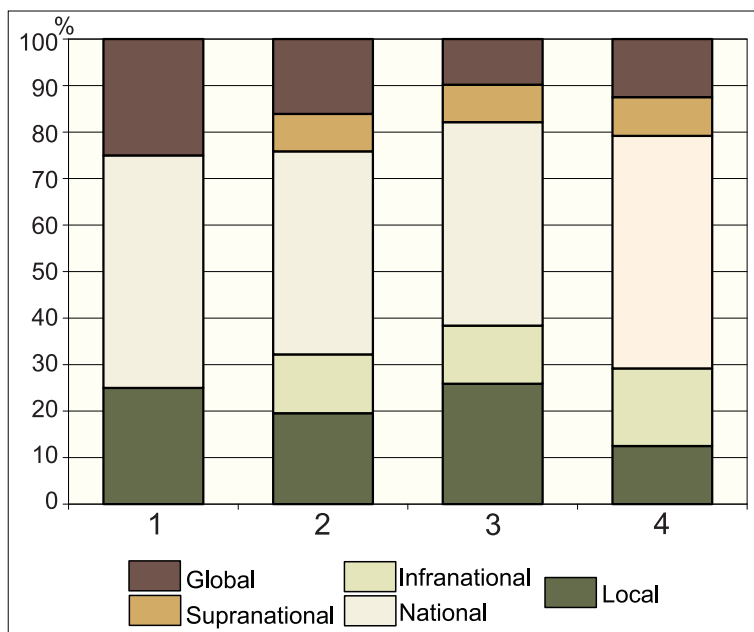


Fig. 8. Number of languages spoken by scale of belonging

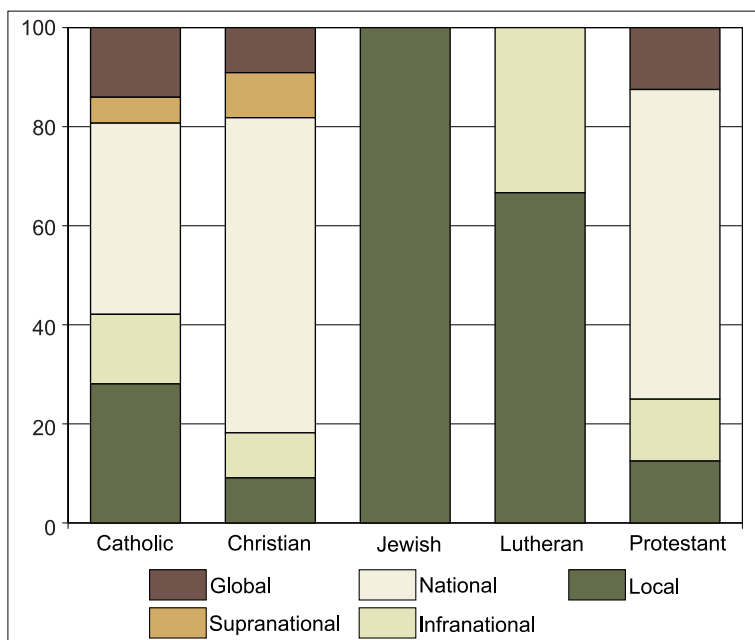


Fig. 9. Religion by scale of belonging

Countries where students would like/not like to live in a near future

Typology of world states according to Hungarian students

In the following the combination of answers on two questions will be presented. They deal with the knowledge about countries of the World, and with the positive or negative judgement of them (Figure 10). The results are presented in main groups.

High Degree of Knowledge and Positive Asymmetry: Switzerland, Spain, Austria, Germany, Italy, United Kingdom and France. These seven countries which are mentioned by more than 30% of students and with a clearly positive asymmetry (more students would like to live in these country than not like to live). *High Degree of Knowledge and Symmetry:* The USA is mentioned by a great number of students in this category, which means that it is a country, where both students would like to live and would not like to live. *High Degree of Knowledge and Negative Asymmetry:* China, Iran Islamic Republic, Iraq, Romania, Russia, Slovakia and Ukraine are countries that are cited by many students and almost always as places where they would not like to live.

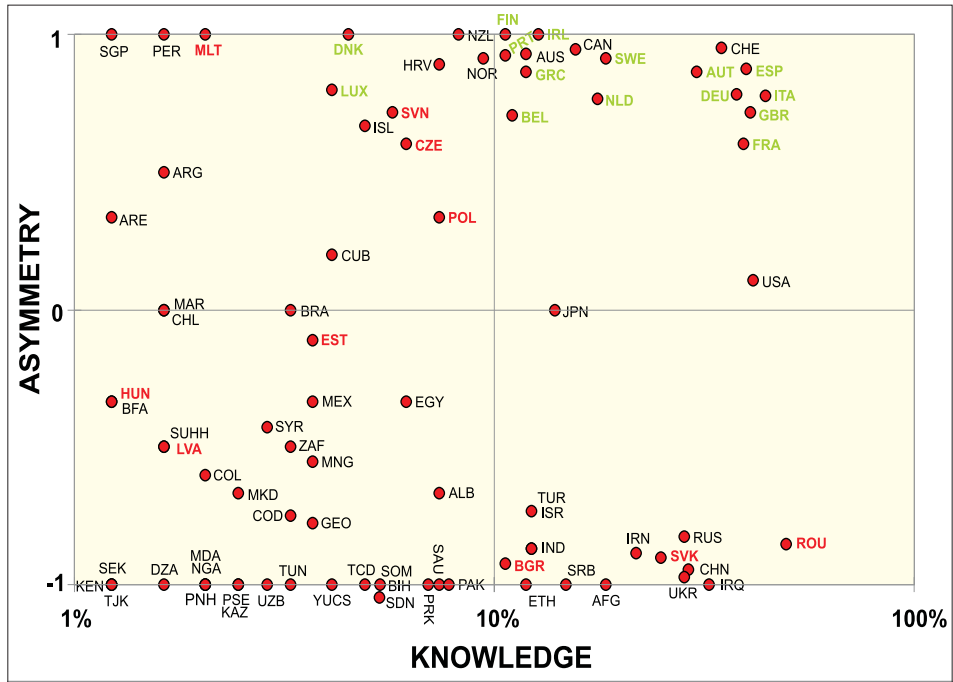


Fig. 10. Knowledge and asymmetry in the perception of countries where students would like/not like to live (Hungary). – Green = EU15; Red = new EU members; Black = other countries). – Abbreviations: AFG = Afghanistan; ALB = Albania; ARE = United Arab Emirates; ARG = Argentina; AUS = Australia; AUT = Austria; BEL = Belgium; BFA = Burkina Faso; BGR = Bulgaria; BIH = Bosnia and Herzegovina; BRA = Brazil; CAN = Canada; CHE = Switzerland; CHL = Chile; CHN = China; COD = Democratic Republic of the Congo; COL = Colombia; CUB = Cuba; CZE = Czech Republic; DEU = Germany; DNK = Denmark; DZA = Algeria; EGY = Egypt; ESP = Spain; EST = Estonia; ETH = Ethiopia; FIN = Finland; FRA = France; GBR = United Kingdom; GEO = Georgia; GRC = Greece; HRV = Croatia; HUN = Hungary; IND = India; IRL = Ireland; IRN = Iran Islamic Republic; IRQ = Iraq; ISL = Iceland; ISR = Israel; ITA = Italy; JPN = Japan; KAZ = Kazakhstan; KEN = Kenya; LUX = Luxembourg; LVA = Latvia; MAR = Morocco; MDA = Moldova; MEX = Mexico; MKD = (Former Yugoslav Republic of) Macedonia; MLT = Malta; MNG = Mongolia; NGA = Nigeria; NLD = Netherlands; NOR = Norway; NZL = New Zealand; PAK = Pakistan; PER = Peru; POL = Poland; PRK = Democratic People’s Republic of Korea; PRT = Portugal; PRY = Paraguay; PSE = Occupied Palestinian Territory; ROU = Romania; RUS = Russia; SAU = Saudi Arabia; SDN = Sudan; SEN = Senegal; SGP = Singapore; SOM = Somalia; SRB = Serbia; SUHH = former USSR; SVK = Slovakia; SVN = Slovenia; SWE = Sweden; SYR = Syrian Arab Republic; TCD = Chad; TJK = Tajikistan; TUN = Tunisia; TUR = Turkey; UKR = Ukraine; USA = United States; UZB = Uzbekistan; YUCS = Yugoslavia; ZAF = South African Republic

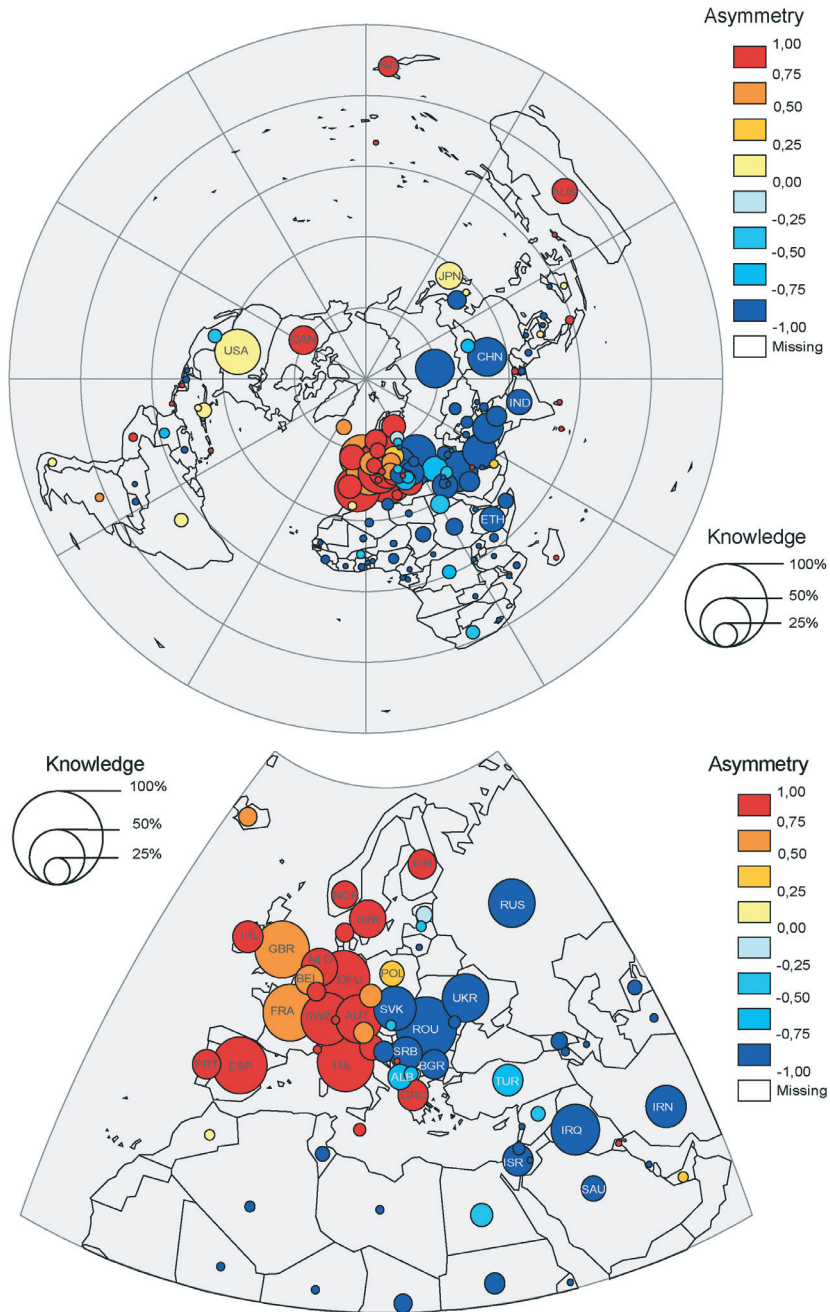
Romania is the country mentioned the most often concerning all categories. Within this group primarily countries are detached, which are related to political issues or conflicts, among them a group is formed by the neighbour countries of Hungary, and an other group by distant countries with global geopolitical affairs. *Medium Degree of Knowledge and Positive Asymmetry*: Australia, Belgium, Canada, Finland, Greece, Ireland, Netherlands, Portugal and Sweden. These countries are not mentioned by as many students as those countries in the high knowledge groups, but are quoted as places where students would like to live. The countries of this group are basically connected with higher living standards or pleasant living forms. *Medium Degree of Knowledge and Symmetry*: Japan is the country mentioned by a medium number of students. Students both mentioned this country as a place likely to live, and as a place where they would not like to live. *Medium Degree of Knowledge and Negative Asymmetry*: Afghanistan, Bulgaria, Ethiopia, India, Israel, Serbia and Turkey. This group consists of countries almost the same types as those in the group of high knowledge and negative asymmetry, but with somewhat less quotations. Some of the countries in this group are connected to global geopolitical affairs and media representations, while others may be connected to inherit rather negative stereotypes of students.

Geography of the perception of world states by Hungarian students

The map combining knowledge and asymmetry reveals a relatively simple spatial pattern of places where Hungarian students would like to live and not like to live (*Map 3*).

Positively perceived areas:

- Western Europe appears clearly as the geographical core of places where Hungarian students would like to live in a near future. The degree of asymmetry is rather high in West Central European countries (Austria, Switzerland, Germany), and in countries of Scandinavia (Norway, Sweden, Finland) and the Mediterranean (Spain, Portugal, Italy, Greece). Ireland and the group of the Benelux countries are also perceived positively, while France and the United Kingdom has somewhat smaller positive values in perception.
- Northern America is also positively perceived, especially Canada, while the United States was evaluated less positive, however more students mentioned this country.
- Oceania is mentioned also positively by students, in particular Australia and New Zealand, however with not as often quoted as most of the countries of Western Europe.



Map 3. Localisation of countries where student would like/not like to live in a near future (Hungary)

Negatively perceived areas:

- Russia, Balkans and Eastern Europe are frequently mentioned as negative perceived areas of the World. Most of Hungary's neighbouring post-socialist countries like Slovakia, Romania, Ukraine and Serbia are quoted as less attractive countries. A negative perception is connected also to Bulgaria and Russia according to the results.

- Middle East is often mentioned but mainly in a negative way, in particular in the case of Israel, Iraq and Iran. Among the Islamic countries also Turkey is referred negatively, but with somewhat better values in perception.

- Southern Asia and Eastern Asia are generally mentioned mostly in a negative way, in particular China and India. Japan is a slightly positive exception, which was perceived rather positive than negative.

Areas rarely mentioned:

- Africa is relatively rarely represented among the mentioned countries, except Ethiopia, which is referred to somewhat more positively. The asymmetry of the vision is almost always negative concerning the countries of this continent.

- Central and South America are part of the World mentioned infrequently, especially small Central American countries are quoted rarely. The students' opinion on these countries is quite heterogeneous, some countries are perceived positively (e.g. Argentina, Peru), while some are mentioned in a negative way (e.g. Venezuela, Paraguay).

- Central and South-Eastern Asia are also places less mentioned by Hungarian students. The countries of this group are mentioned both positively (e.g. Malaysia) and negatively (e.g. Burma, Vietnam), however Central Asian countries have more frequently negative results concerning their mental perception.

Top 10 countries where Hungarian students would like/not like to live

The top 10 countries where Hungarian students declared they would like to live in a near future are, firstly, Mediterranean countries (Italy: 96 responses, Spain: 91 responses), followed by Great Britain (85), Switzerland (83), Germany (82), France (77), Austria (69), USA (56), Sweden (43) and the Netherlands (48). Looking at the variation by gender and domains of studies a slight divergence can be seen in the rank of the countries. Men answered German language countries more frequently, on the contrary Latin language countries (France, Italy, and Spain) were quoted as top countries to live by women. The top 10 countries where Hungarian students declared they would not like to live in a near future are firstly Romania (112 answers), Iraq (79), China (69), Ukraine

(68), Russia (63), Slovakia (58), Iran (50), Afghanistan (45), USA (45) and Serbia (36). It is interesting that USA figures both among the most and the least favored countries (*Table 1*).

Cities where students would like/not like to live in a near future

Typology of world cities according to Hungarian students

Considering the cities in terms of Knowledge and Asymmetry provide a better appreciation of their real importance in the vision of the world of Hungarian students (*Figure 11*).

Table 1. Top 10 countries where students would like/not like to live in a near future by gender and domain

LIKE	Total	Gender		Domains					
		Male	Female	ART	BUS	ENG	HEA	POL	SHS
Students	244	126	118	40	40	40	44	40	40
Answers	1189	612	577	195	188	196	216	195	199
Mean	4.87	4.86	4.89	4.88	4.70	4.90	4.91	4.88	4.98
Top 10									
1	ITA	CHE	FRA	GBR	CHE	CHE	ITA	ITA	ESP
2	ESP	DEU	ITA	FRA	DEU	USA	ESP	AUT	FRA
3	GBR	ESP	ESP	DEU	ITA	AUT	DEU	ESP	GBR
4	CHE	ITA	GBR	CHE	AUT	ESP	GBR	CHE	ITA
5	DEU	GBR	AUT	ITA	GBR	SWE	AUT	DEU	DEU
6	FRA	AUT	CHE	ESP	ESP	GBR	CHE	FRA	USA
7	AUT	USA	DEU	AUT	USA	DEU	FRA	GBR	CHE
8	USA	FRA	USA	CAN	FIN	ITA	USA	NZL	NLD
9	SWE	SWE	NLD	GRC	SWE	FRA	NLD	CAN	PRT
10	NLD	CAN	IRL	IRL	CAN	NLD	BEL	NLD	AUT
NOT LIKE									
Students	244	126	118	40	40	40	44	40	40
Answers	1,198	620	578	196	192	197	216	200	197
Mean	4.91	4.92	4.90	4.90	4.80	4.93	4.91	5.00	4.93
Top 10									
1	ROU	ROU	IRQ	ROU	ROU	ROU	ROU	CHN	ROU
2	IRQ	CHN	ROU	RUS	UKR	IRQ	CHN	ROU	IRQ
3	CHN	RUS	IRN	UKR	IRQ	CHN	IRQ	IRQ	IRN
4	UKR	SVK	UKR	BGR	SVK	SVK	RUS	SVK	CHN
5	RUS	UKR	CHN	USA	USA	IND	UKR	UKR	SVK
6	SVK	SRB	RUS	SRB	AFG	AFG	IRN	USA	UKR
7	IRN	IRQ	AFG	IRQ	CHN	IRN	SVK	SRB	ETH
8	AFG	AFG	SVK	CHN	RUS	SRB	AFG	AFG	RUS
9	USA	USA	USA	TUR	IRN	ISR	TUR	IRN	AFG
10	SRB	BGR	TUR	AFG	ISR	GBR	USA	RUS	JPN

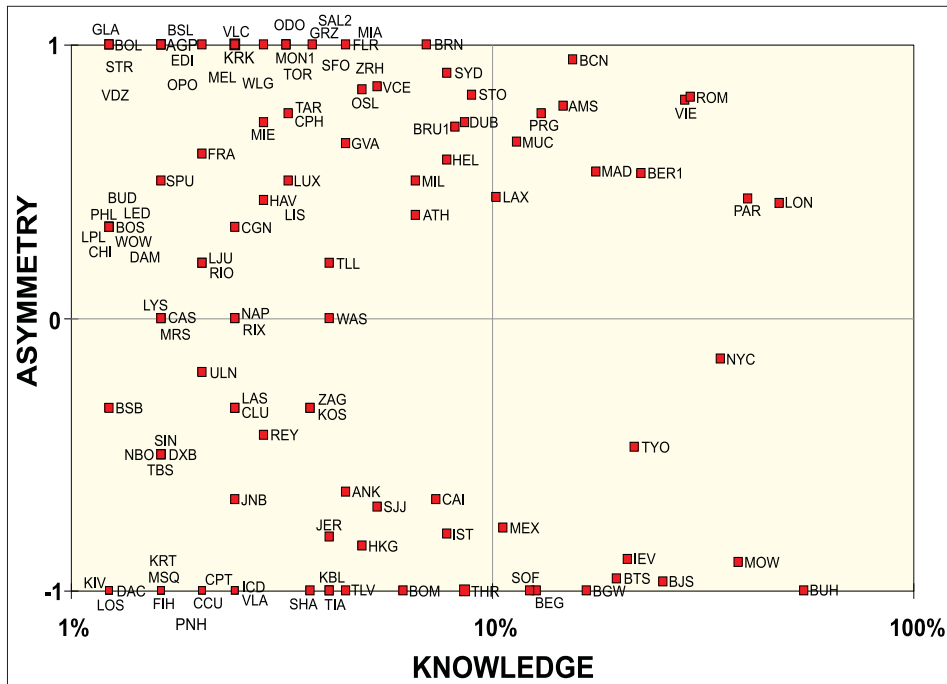


Fig. 11. Knowledge and asymmetry in the perception of cities, where students would like/not like to live (Hungary). – Abbreviations: AGP = Malaga; AMS = Amsterdam; ANK = Ankara; ATH = Athens; BCN = Barcelona; BEG = Belgrade; BER1 = Berlin; BGW = Baghdad; BJS = Beijing; BOL = Bologna; BOM = Mumbai (Bombay); BOS = Boston; BRN = Bern; BRU1 = Brussels; BSB = Brasilia; BSL = Basel; BTS = Bratislava; BUD = Budapest; BUH = Bucharest; CAI = Cairo; CAS = Casablanca; CCU = Kolkata (Calcutta); CGN = Cologne; CHI = Chicago; CLU = Cluj-Napoca; CPH = Copenhagen; CPT = Cape Town; DAC = Dhaka; DAM = Damascus; DUB = Dublin; DXB = Dubai; EDI = Edinburgh; FIH = Kinshasa; FLR = Florence; FRA = Frankfurt; GLA = Glasgow; GRZ = Graz; GVA = Geneva; HAV = La Habana; HEL = Helsinki; HKG = Hong Kong; ICD = New Delhi; IEV = Kiev; IST = Istanbul; JER = Jerusalem; JNB = Johannesburg; KBL = Kabul; KIV = Kishinev; KOS = Košice; KRK = Krakow; KRT = Khartoum; LAS = Las Vegas; LAX = Los Angeles; LED = St. Petersburg; LIS = Lisbon; LON = London; LOS = Lagos; LPL = Liverpool; LUX = Luxembourg; LYS = Lyon; MAD = Madrid; MEL = Melbourne; MEX = Mexico City; MIA = Miami; MIE = Miercurea-Ciuc; MIL = Milan; MON1 = Monaco; MOW = Moscow; MRS = Marseilles; MSQ = Minsk; MUC = Munich; NAP = Naples; NBO = Nairobi; NYC = New York; ODO = Odorheiu Secuiesc; OPO = Porto; OSL = Oslo; PAR = Paris; PHL = Philadelphia; PNH = Phnom Penh; PRG = Prague; REY = Reykjavik; RIO = Rio de Janeiro; RIX = RIGA; ROM = Rome; SAL2 = Salzburg; SFO = San Francisco; SHA = Shanghai; SIN = Singapore; SJJ = Sarajevo; SOF = Sofia; SPU = Split; STO = Stockholm; STR = Stuttgart; SYD = Sydney; TAR = Târgu Mures; TBS = Tbilisi; THR = Tehran; TIA = Tirana; TLL = Tallinn; TLV = Tel Aviv; TOR = Toronto; TYO = Tokyo; ULN = Ulaanbaatar; VCE = Venice; VDZ = Vaduz; VIE = Vienna; VLA = Vladivostok; VLC = Valencia; WAS = Washington DC.; WLG = Wellington; WOW = Warsaw; ZAG = Zagreb; ZRH = Zurich

Major Degree of Knowledge and Positive Asymmetry: Vienna, Roma, Berlin, Paris and London are well known and positively perceived cities in the vision of the world of Hungarian students.

Within this category London is mentioned the most frequently by 117 students (48% of all mentioned this city). The highest proportion of positive answers is connected to Vienna, which obtain a positive asymmetry of +0.81, as well as to Rome with +0.80 asymmetry result. *Major Degree of Knowledge and Symmetry:* New York is a city, which is well known among students, but perceived very differently. The results show that just a bit more students dislike this city than like it.

Major Degree of Knowledge and Negative Asymmetry: Bucharest, Moscow, Beijing, Tokyo and Kiev are the most negatively perceived cities of the World according to Hungarian students.

Bucharest is the most frequently quoted city of all students; it is mentioned by 134 answers (55%). According to the results all the answers were negative concerning the perceptions of Bucharest.

The next most often mentioned city is Moscow, which has a negative asymmetry of -0.89, and Beijing, which is not preferred relatively by large proportion of the students that is reflected in the asymmetry result of -0.97. Tokyo is perceived better than the above mentioned countries, but still has significant negative asymmetry.

Medium Degree of Knowledge and Positive Symmetry: Barcelona, Stockholm, Amsterdam, Prague, Dublin, Brussels, Munich, Madrid and Los Angeles appear as a second level in terms of knowledge (mentioned by respectively 15–20% of Hungarian students). Barcelona is typically positively perceived by the students (+0.95), while Madrid is significantly less attractive but still positively perceived (+0.53).

Hungarian students generally feel Western European cities more attractive, the only East Central European city that was quoted as a favorable place to live is Prague with an asymmetry of +0.75. *Medium Degree of Knowledge and Negative Asymmetry:* Baghdad, Belgrade, Bratislava, Mexico City, Sofia and Teheran are known by 15–20% of the students, who mentioned them as cities, where they do not prefer to live.

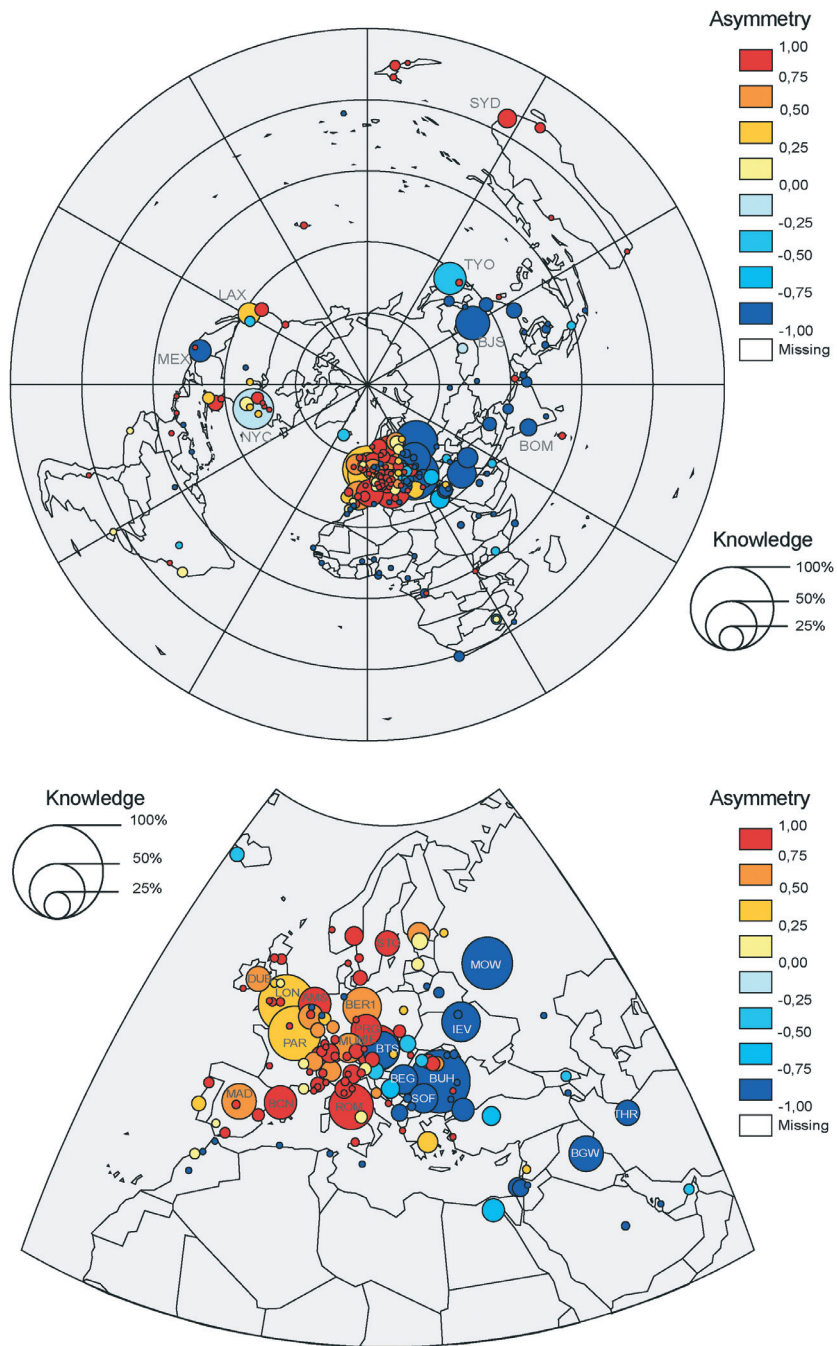
Baghdad, Belgrade, Sofia and Teheran are cities, which were perceived negatively by all students, who mentioned them. Mexico City may have the negative asymmetry (-0.77), according to the students' opinion on the environment and the overcrowded neighbourhood, Baghdad and Teheran may be associated with political conflicts, while Bratislava can be perceived negatively (-0.96) because of recent years' unfavourable trends in the Hungarian-Slovak relations, which was reflected by the media. The results show that in a city's mental perception the preconception of the country it is located in can affect its attractiveness.

Geography of the perception of world cities by Hungarian students

There is a significant relationship between the selection of cities and countries where students would like or not like to live in terms of asymmetry. As for the results of the cities also the western part of Europe is the most attractive, as well as the Mediterranean, while Eastern Europe, the Balkans and Asia is less favourable for students (*Map 4*).

Knowledge of states subsumed by a single city: 61% of the countries mentioned by Hungarian students are reduced to a single city. The perception of these cities appears as representative of their respective countries. Most cities of this group are mentioned only by few answers, namely 9 or fewer students quoted them. Those, which are mentioned by significantly more students, are mainly cities associated with typically negative appreciated countries like Afghanistan (Kabul), Albania (Tirana), Bosnia and Herzegovina (Sarajevo) or Egypt (Cairo). However, there are cities, which are single representatives of their country and have positive asymmetry like Helsinki in Finland or balanced asymmetry like Tallinn in Estonia. The result suggests that Hungarian students frequently perceive a city and its country in the same manner. *States reduced to several cities with different knowledge but equivalent asymmetry:* At least 2 cities are quoted in 40 countries (38%), however there are only 10 countries (9,8%), which are represented by 5 or more cities. From the group of states, which are assimilated to several cities, 18 cases are represented by cities with different knowledge but equivalent asymmetry. A stable positive asymmetry is connected to cities of Austria, Australia, Belgium, Canada, Denmark, Greece, Ireland, New Zealand, Norway, Portugal, Sweden and Switzerland. On the contrary all cities are perceived negatively from countries like China, India, Israel, Nigeria, Serbia, Ukraine and Vietnam. The knowledge of cities is mostly unbalanced in countries with several mentioned cities, with a dominant city and some alternative cities of second degree of interest. Exceptions can be however India, Israel, New Zealand, Portugal or Switzerland, where cities are mentioned quite the same frequently. *States reduced to several cities with variable asymmetry:* According to the dispersion of answers there are 22 countries, which are quoted by several cities but with variable asymmetry. These countries have large number of quoted cities (e.g. 12 in Italy, 12 in the USA, 10 in France), therefore it can easily happen that a city is perceived somewhat differently than the other ones across the country.

A rather positive asymmetry is connected to some large Western European countries, but all have at least one city that is perceived negatively or with almost zero asymmetry. France is basically positively perceived where the exceptions are Lyon and Marseilles. The same is the case in Italy, where Naples is perceived relatively worse than other cities. In Spain Seville is the only exception with zero asymmetry, while in the UK both Manchester and



Map 4. Localization of cities where student would like/not like to live in a near future

Liverpool have balanced asymmetry. Other large countries have more diverse results: in the USA cities like Miami or Los Angeles are attractive for students, New York or Washington is balanced, while Kansas City is unfavorable. In Germany Berlin and Munich are mentioned positively, while Hamburg and Düsseldorf are evaluated negatively.

Another group of countries are largely negatively mentioned, having however some better perceived cities as well. That is the case in Japan, where Osaka is perceived positively, or in Bulgaria, where Varna as a holiday destination is a positive exception. In Russia only St. Petersburg is mentioned as a city perceived not negatively. Some countries have quite mixed picture of perception: in Romania cities with relatively high number of Hungarian minority are evaluated positively (Odorheiu Secuiesc, Târgu Mureş, Miercurea-Ciuc), others have balanced (Cluj-Napoca) or negative asymmetry results (Bucharest, Iasi). *Ignored Areas*: although resembling the results on the national level, the fact is worth mentioning, that only some cities of Africa, Central Asia, Central America or South America have reached a significant level of knowledge.

Preliminary analysis of words associated with Europe

Table 2. Top 21 words associated to Europe (Hungary)

	All students	
	Words	Frequency
1	culture	61
2	union	56
3	European Union	30
4	history	24
5	development	23
6	continent	19
7	diversity	17
8	home	17
9	Christendom	16
10	variety	16
11	unity	14
12	welfare	14
13	democracy	11
14	community	9
15	euro	9
16	old	9
17	old continent	9
18	civilization	8
19	togetherness	8
20	multicoloured	7
21	war	7

Hungarian students perceive Europe above all as a cultural, historical place, or as a political entity, which is represented in the frequently mentioned words like “union” and “European Union” (Table 2). If we sum up these two phrases, it seems that this is the first that comes to their mind when asked about Europe. Often mentioned words like “culture”, “history”, “old”, “old continent” or “civilization” also reflect student’s belief that traditional values are predominantly connected to Europe. The historical dimension can be observed in some fairly definite words like “Christendom” or “war” (thinking

on perhaps Europe's historical role in some large military conflicts). Words like "diversity", "variety", "multicoloured", as well as "unity", "community" and "togetherness" represent that they perceive Europe not as a non-homogeneous area, where a lot of different people has to understand each other. Some other phrases like "development" and "welfare" or "euro" connected with economic phenomena are mentioned also frequently, which is related to the perception of the quality of life.

Finally it is important to mention that students mostly quoted relative words, which they think mentally separate Europe from other parts of the World (like Africa, Asia or America). They think some of the words are more typical of Europe than of other continents.

Conclusions

According to the results presented here, the students' knowledge of different parts of the World bears a close relation to previous life experiences and travels. This is reflected in the fact that Hungarian students have typically mentioned neighbouring countries, as well as west European or Mediterranean countries they have visited. Based on these experiences the perception of the countries of the World in terms of "like" or "do not like" to live in can also be examined.

These results are reflected in frequent mention especially of West Central European countries (Austria, Switzerland, Germany), and countries of Scandinavia (Norway, Sweden, Finland) and the Mediterranean (Spain, Portugal, Italy, Greece), which are favoured by them.

The negatively perceived countries are primarily Hungary's neighbouring post-socialist countries like Slovakia, Romania, Ukraine and Serbia, or countries from the Middle East and Asia. Cities give a similar picture of the world as perceived by Hungarian students. London, Paris, Vienna and Rome are the most quoted cities in a positive way, while Bucharest, Moscow and Beijing are perceived negatively.

Main findings on global level

As mentioned previously, this survey was made not only in Hungary, but also in several other countries of the World. Some interesting global findings should be therefore worth to mention.

Concerning the family background: if the father had a low level of education, the frequency of student mobility was low. On the other hand, if the family background was much better, it provided greater opportunities for

mobility. Speaking about the family's national origins, typically 3 or 5% of the answers mentioned living longer in a country other than home. In Scandinavia 40% of students already lived longer in another county.

The results also reflected that 52% of participants never lived in a different state. The students have different relations to countries where they have lived. As an answer on the level of belonging 38% of the students declared stronger connections to national level, 22% to global level and 10% to supranational level.

There were no significant differences among the answers given by urban and rural residents. It is interesting that students who had lived several countries or had wide mobility, like in Sweden, showed the highest local feeling in rank.

Neighbourhood effects show a universal view: we know but do not like each other. The distant geographical regions are more attractive. If the student speaks one language his or her belonging is bound to stick to the national level. 20% of the students noted only one language, but over half of them more than four languages. In terms of gender the mental perceptions of females appear to be more global.

From asymmetric variables we are able to make some conclusions regarding perceptions. The preferred countries are situated in a geographically concentrated manner. The preferred countries are typically rich, enjoy good social benefits, are not far, and speak the same language. The large countries are more attractive than the smaller ones.

Ranking the countries by their global connection, those that are at the top, such as Turkey, Azerbaijan, Egypt, Brazil, Russia, all have had large diasporas.

The cities according to the scale of belonging can be grouped into several types: global local mix, (Coimbra), local (Dakar, Stockholm), infranational (Beijing, and all Chinese cities), national (Moscow, all other Russian cities, Budapest, Delhi, Bangalore, Leuven, Liège). In scale of belonging the languages are playing a determining role. It was verified that English is on the second place after the mother language.

Visions of Europe according to the domain of study generally indicated a negative vision, frequently mentioning racism, xenophobia, terrorism. Among students in business studies integrative words like economy, commission, rich, sports, slow prevailed, those in political sciences liberalism, democratic, war, Christianity, cooperation dominated. Among students in human science wellbeing, power, colony, polluter, civilization, were frequently referred.

On health the answers were differentiated. On engineers idealistic words like Coco Chanel or Eiffel tower were mentioned. The students with high mobility typically cited: diversity, Schengen, exchanges, history, culture and expressions.

Local view

This survey made it possible to draw a picture of how Hungarian students see the World and Europe mentally. In most of the variables Hungary was ranked in mid positions. The surveys presented some interesting results, in regards to how the students identify themselves when their respective experiences of the World are taken into consideration. Concerning their spatial history only 3% of the students surveyed are not born in Hungary, therefore they rather collected experiences of the World by traveling to foreign cities. Hungarian students have quoted an average of 4.52 visited countries, which are typically the neighboring countries, as well as West-European or Mediterranean countries. There are large areas in Africa, South America, and South Asia or in Oceania, which are unknown as countries of experience.

Another interesting result regards the spatial level Hungarian students identify themselves as the preferred level of belonging. According to the answers a large majority of Hungarian students declare that their first level of belonging is the "national" level (43.7%), while the second most frequent answer was the local level (22.3%).

The students' vision of the countries of the world, in terms of "like" or "not like" to live in, reflects some interesting geographical consequences. The most preferred countries to live in are located in Western Europe. The students mentioned especially West Central European countries (Austria, Switzerland, Germany), and countries of Scandinavia (Norway, Sweden, Finland) and the Mediterranean (Spain, Portugal, Italy, Greece), which are favorable for them. Some developed countries far from Hungary are also among the possible living destinations (Canada, Australia, and New Zealand). The negatively perceived countries are primarily Hungary's neighbouring post-socialist countries like Slovakia, Romania, Ukraine and Serbia, or countries from the Middle East and Asia. In the background of negative perception in many times the relation to political affairs and conflicts could be identified, as well as the negative attitude in the neighbouring countries to Hungarian minorities living there in a relatively large number.

There is a significant relationship between the selection of cities and countries where students would like or not like to live. As for the results of the cities also the Western part of Europe is the most attractive, as well as the Mediterranean, while Eastern Europe, the Balkans and Asia is less favorable for students. Most of the countries mentioned by Hungarian students are assimilated to a single city, mostly the capital, but there is a significant number of countries, which have more than one city mentioned, and not always with the same sympathy. In Romania for example cities with relatively high number of Hungarian minority are evaluated positively, while others are not. In Germany Berlin and Munich are mentioned positively, while Hamburg and Düsseldorf are evaluated negatively.

The word analysis about the perception of Europe reveals that Hungarian students perceive Europe above all as a cultural, historical place, or as a political entity. They mention also words connected to traditional values or the perception of the European quality of life.

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Hungary in Maps

Edited by
Károly Kocsis and Ferenc SCHWEITZER

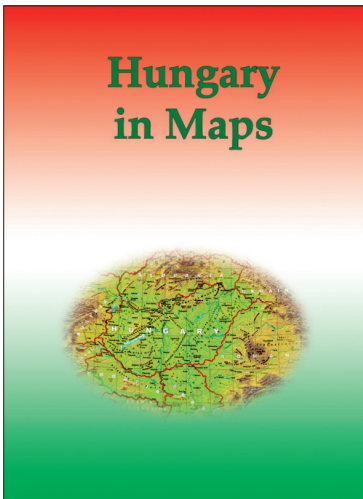
*Geographical Research Institute Hungarian Academy of Sciences
Budapest, 2009. 212 p.*

'Hungary in Maps' is the latest volume in a series of atlases published by the Geographical Research Institute of the Hungarian Academy of Sciences. A unique publication, it combines the best features of the books and atlases that have been published in Hungary during the last decades. This work provides a clear, masterly and comprehensive overview of present-day Hungary by a distinguished team of contributors, presenting the results of research in the fields of geography, demography, economics, history, geophysics, geology, hydrology, meteorology, pedology and other earth sciences. The 172 lavish, full-colour maps and diagrams, along with 52 tables are complemented by clear, authoritative explanatory notes, revealing a fresh perspective on the anatomy of modern day Hungary. Although the emphasis is largely placed on contemporary Hungary, important sections are devoted to the historical development of the natural and human environment as well.

In its concentration and focus, this atlas was intended to act as Hungary's 'business card', as the country's résumé, to serve as an information resource for the sophisticated general reader and to inform the international scientific community about the foremost challenges facing Hungary today, both in a European context and on a global scale. Examples of such intriguing topics are: stability and change in the ethnic and state territory, natural hazards, earthquakes, urgent flood control and water management tasks, land degradation, the state of nature conservation, international environmental conflicts, the general population decline, ageing, the increase in unemployment, the Roma population at home and the situation of Hungarian minorities abroad, new trends in urban development, controversial economic and social consequences as a result of the transition to a market economy, pri-

vatization, the massive influx of foreign direct investment, perspectives on the exploitation of mineral resources, problems in the energy supply and electricity generation, increasing spatial concentration focused on Budapest in the field of services (e.g. in banking, retail, transport and telecommunications networks), and finally the shaping of an internationally competitive tourism industry, thus making Hungary more attractive to visit.

This project serves as a preliminary study for the new, 3rd edition of the National Atlas of Hungary, that is to be co-ordinated by the Geographical Research Institute of the Hungarian Academy of Sciences.



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Budapest as a destination of migration: the view of transnational creative workers

TAMÁS EGEDY¹ and ZOLTÁN KOVÁCS¹

Abstract

Creativity, knowledge and innovation are broadly recognised as the essential ingredients of economic success in the advanced capitalist world. Concerning further development of Europe it might be decisive how the metropolitan regions will be able to attract and integrate firms in the sphere of the creative economy and their manpower. In this process highly skilled transnational migrants play an ever increasing role and they contribute actively to the international competitiveness of cities. Based on the results of empirical research we try to assess those triggers and motivations that are decisive in attracting and settling down of transnational migrants in Budapest. Ex-pats living and working in Budapest expressed their opinions and criticism about hard and soft factors provided by the city. The paper highlights the most relevant findings about how foreign creative workers see the city and how they evaluate its potentials, strengths and weaknesses. At the end of the paper few recommendations are formulated for decision-makers to make Budapest more attractive for creative transnational migrants.

Keywords: creative workers, migration, transnational migrants, Budapest

Introduction

In transnational migration Hungary is considered to be a source, transit, and destination country at the same time. However, according to experts its transit character is going to increase in the future and due to the emerging negative effects of the global economic crisis Hungary will probably strengthen its position as a transit country between the Eastern and Western European countries (ILLÉS, S. 2004). As a consequence of the transit character the country has remained more or less homogeneous regarding the ethnic composition of its population until now. Hungarians show up low mobility in international comparisons, so it is not likely either that masses of Hungarians would leave the country in order to work abroad. Obviously, these trends might be modified by the unpredictable effects of the global economic crisis and by the political unrest that might be entailed.

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Budapest has always played a significant role in the social and economic development of Hungary. The capital city has not lost its dominance following the systemic changes either and it is still to be considered the main driving force of the national economy. This can be explained by the fact that Budapest and its agglomeration has been the primary target of foreign capital investment and technology transfer. The restructuring of the economy and the consequent tertiarisation has been more profound here than in any other cities. This partly explains why Budapest has been the foremost leader of development of innovative and knowledge intensive industries in the country since the mid-1990s. The city is an undisputable centre of gravity for the growth of creative industries due to its human capital (EGEDY, T. and KOVÁCS, Z. 2008). As a consequence of the trends drawn above Budapest is the prominent destination of international and domestic migration within the country due to its economic performance and quality of life. Young people intending to study, jobseekers from abroad, including highly qualified transnational migrants feel a particularly strong attraction to the Budapest Metropolitan Region.

In order to assess the impacts of the emerging 'creative class' and 'creative economy' on the competitiveness of EU metropolitan regions the ACRE project (Accommodating Creative Knowledge – Competitiveness of European Metropolitan Regions within the Enlarged Union) was carried out in 13 metropolitan region across Europe between 2006 and 2010 (KOVÁCS, Z. *et al.* 2007). The project was financed by the European Commission within the 6th Framework Programme. An important stage of the integrated research was to investigate preferences and locations of transnational migrants working in creative and knowledge intensive industries in Budapest.

Current paper highlights the most relevant outcomes of the in-depth interviews carried out amongst ex-pats to recognise the drivers behind their decisions to settle at a certain location in Budapest and at the same time to estimate the relative importance of the location factors that played a role in their decision making.

Theories on migration: the case of highly skilled migrants

There is no consistent theory on migration, as migration research is based on a wide range of theories. In the classical theories migration is explained as a consequence of economic disparities and adverse conditions on which individuals react and decide to migrate. Among them the push-pull-model is the best known which states that push-factors dominate in the location of origin (e.g. social and personal factors) and pull-factors do in the destination (e.g. economic disparities), encouraging migration (BÜRKNER, H.-J. and HELLER, W. 2008; HAUG, S. 2000; KNEER, G. 1996; LEE, E.S. 1972). Neoclassical theories are

based predominantly on the push-pull-model. Macro-economic approaches focus on economic factors like economic growth (LEWIS, W.A. 1954, TODARO, M.P. 1976). It is assumed that disparities between places of production and labour markets – namely disparities of wage level as well as labour supply and demand for labour – lead to migration. Migration is seen as an attempt to reach macro-economic equilibrium (BÜRKNER, H.-J. and HELLER, W. 2008). In the micro-economic approaches the focus is on the individual migrant. Individuals opt for migration by rational cost-benefit calculations. Hence, migration is interpreted as investment in order to maximise economic utilities (MASSEY, D.S. *et al.* 1993; HAUG, S. 2000). The new migration economy approach focuses on an economic factor: the income. According to this approach households try to maximise the expected income and to minimise risks for their economic wealth (HAUG, S. 2000). The dual labour market theory states that in advanced industrial societies a dual economy develops with a capital-intensive primary segment and a labour-intensive secondary segment. Hence these economies demand foreign workers for the secondary segment which generates migration (BOYLE, M. *et al.* 1994; HAUG, S. 2000). The world system theory deals with the idea of the clash between capitalist industrial, and less developed nations. It is presumed that international labour migration follows the international flows of capital and goods in the opposite direction. This means that migration is detectable first of all in global cities, which attract migrants mainly from the periphery (BÜRKNER, H.-J. and HELLER, W. 2008; LEBHART, G. 2002). The theory of migration systems assumes that the intensive exchange of information, goods, services, capital, ideas and persons between specific countries causes a stable system. Migration appears as one of these exchange processes (FAWCETT, J.T. 1989; LEBHART, G. 2002). Migration networks shape the social and spatial paths of migration that provide information and resources for new migrants and therefore facilitate their migration. Migrant networks can produce security but also dependency, liability, little integration in the host society and therefore less freedom (HAUG, S. 2000).

Two of the new migration theories applied in our article are the concept of the transnational migration and brain drain approach (FINDLAY, A.M. 1995). Transnational migration is characterised by spatial movements that can be nomadic and pluri-local, but these movements are not de-territorialised. Transnational migrants can benefit from opportunities of their home countries as well as of their current domicile. They are able to create flexible strategies of sojourn. The possibility of gaining power in their country of origin by i.e. transferring economic capital there and simultaneously gaining more power in the host society as political actors, as “voices for the minorities”, is a specific feature of transnational migrants. Transnationalism is explained by the process of globalisation and it is linked with modern communication, transport and labour forms (BÜRKNER, H.-J. 2005; HAUG, S. 2000; PRIES, L. 2001).

The brain drain approach is normally applied on migration of highly skilled workers between different countries. The concept of brain drain assumes a unidirectional and permanent migration between 'more' and 'less' developed countries. Again economic factors like the higher income level in the destination area are claimed to be the main motivation for migration. Developing regions are characterised by a loss of human capital while highly industrialised societies benefit. As a consequence it is said that the emigration of highly skilled obstructs the economic progress of developing regions and as a result keeps them in economic dependence (PETHE, H. 2006). But this approach does not consider that highly skilled emigrant workers might return to their home countries. This would be brain gain since highly skilled workers improve their qualification abroad and therefore could push the development in their home countries. Instead of speaking about brain drain, it is more likely that there is brain circulation (PETHE, H. 2006, p. 9). Even though the region of origin firstly suffers a brain drain by losing highly skilled workers there is also a brain gain by foreign highly skilled or a brain re-gain by returning highly qualified workers, who might have improved their skills.

According to the emerging role of creative economy the theory of Florida has to be considered. "Regional economic growth is powered by creative people, who prefer places that are diverse, tolerant and open to new ideas", writes Richard FLORIDA in his book "The rise of the creative class" (FLORIDA, R. 2002). The attractiveness of cities is pivotal for the future economic development of regions. A good local climate will draw new creative people to those places and will increase the economic success of regions. Diversity which is described as heterogeneity in terms of ethnicity, sexuality and lifestyles is seen as a precondition for the inflow of new talent (FLORIDA, R. 2007). FLORIDA'S ideas might be one of the most prominent accounts in social science which emphasise the importance of the international migration for regional economies.

In the political arena the issue has been more strongly articulated since labour shortage appeared in several sectors across industrialised countries (OECD). Although several restrictions do exist, for examples for citizens of the new EU member states, the European Commission try to reduce the barriers, introduce a common migration policy and to support the mobility of certain groups actively. The goal is to increase the competitiveness of the member states of the European Union by stimulating their ability for innovation and knowledge transfer.

Brain drain and brain gain in Hungary

According to the estimation of migration potentials Hungary belongs to the low mobility countries by international standards regarding transnational migration. Only 0.8 to 1.3% of the population show intention to leave the country. Hungar-

ian citizens living in the EU member states accounted for around 80,000 at the very end of the 1990s and remained at a similar level ever since then. Meanwhile the number of EU citizens moving to Hungary increased gradually.

As for the composition of international migration according to nationality European migrants have always been dominant (*Figure 1*). The share of Europeans has varied between 90 and 82% since 1995, and it was 84% in 2008. Romania still has the highest (though decreasing) share followed by Ukraine, Germany and Serbia and Montenegro. The share of Asians increases slowly but steadily.

Educated and highly qualified people have always been overrepresented among those who were leaving the country. There were several personal reasons behind the decisions to emigrate but a common point was that people with greater ambitions and good educational background could not find any chance for a decent life and the environment for their talent to evolve was not found satisfactory. The main motivations of leaving the country have always been the higher income, the more fertile professional milieu abroad, and the changeable and unpredictable social climate in Hungary.

The emigration rate counts as medium among the people with higher education in Hungary (14%) compared to the global statistics. The problem is that even there is a shortage in the country of highly qualified professionals about leaving Hungary (physicists, mathematicians, researchers, IT experts, engineers, people in the medical service etc.). Around 83% of the highly quali-

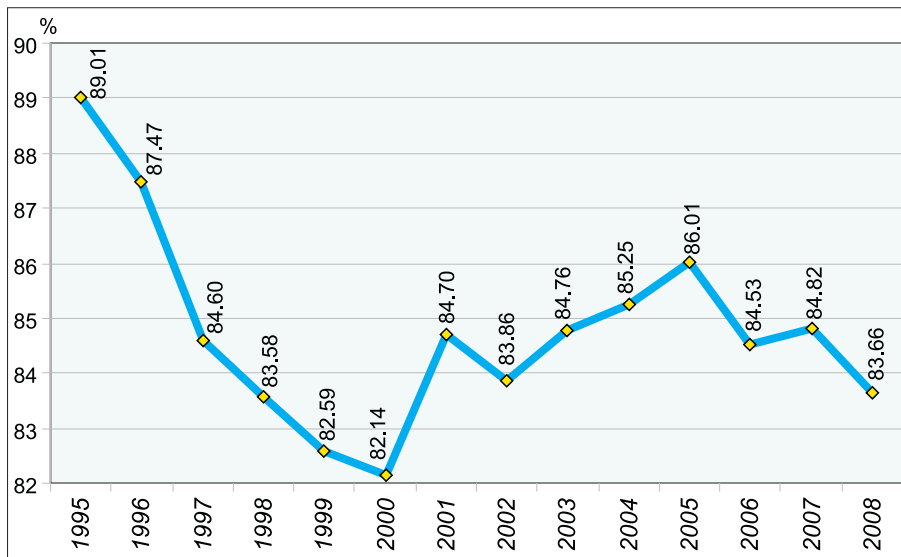


Fig. 1. The share of Europeans among transnational migrants in Hungary (in percentage of the total number of migrants) *Source:* Central Statistical Office, 2008

fied emigrants were staying in the six most important target countries in 2000, and their total number exceeded 100 thousand (Figure 2). The “lost brains” are substituted via the Hungarian-Hungarian brain gain, which means receiving and employing highly skilled ethnic Hungarian immigrants from the neighbouring countries (e.g. in the medical service so far).

The reasons behind the relative high rate of brain drain is complex and to be sought for within the socio-economic environment of Hungary (GELLÉRNÉ, L.É. 2011). First of all, higher education is not in harmony with the expectations of the labour market. Another cause is that the budget of research and development in Hungary is low. This is not a new phenomenon, in the past 40 years most of the Hungarian scientists have been convinced that – independently from the field of science – the necessary conditions, means and the motivating milieu together are only available abroad.

According to brain gain in Hungary 3.2% of the people with higher education is transnational migrant. The rate is the highest in Budapest with 4.6% and in Pest County with 3.6%. It is important to note that except for the migrants from Romania, the migrants from the surrounding countries have higher level of education on average than that of the local population. It is the most striking in the case of migrants from the EU15 countries. From this group almost half of the people over 18 have at least one university or college diploma (Figure 3). This share is highly exceeded in Budapest (67%) and Győr-Moson-

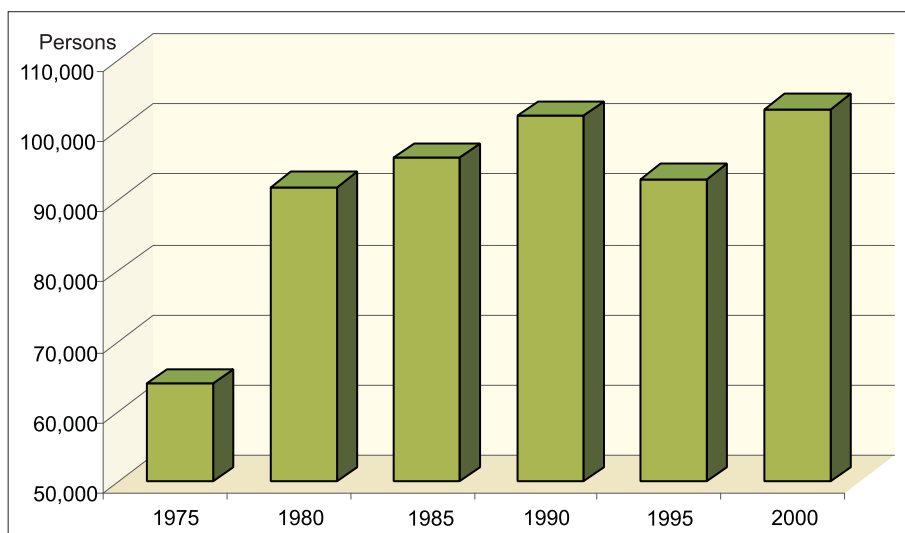


Fig. 2. Hungarian emigrant professionals in the six most important target countries (USA, Canada, Australia, Germany, United Kingdom and France). Source: <http://www.hier.iif.hu/hu/konf/muvelt.ppt>

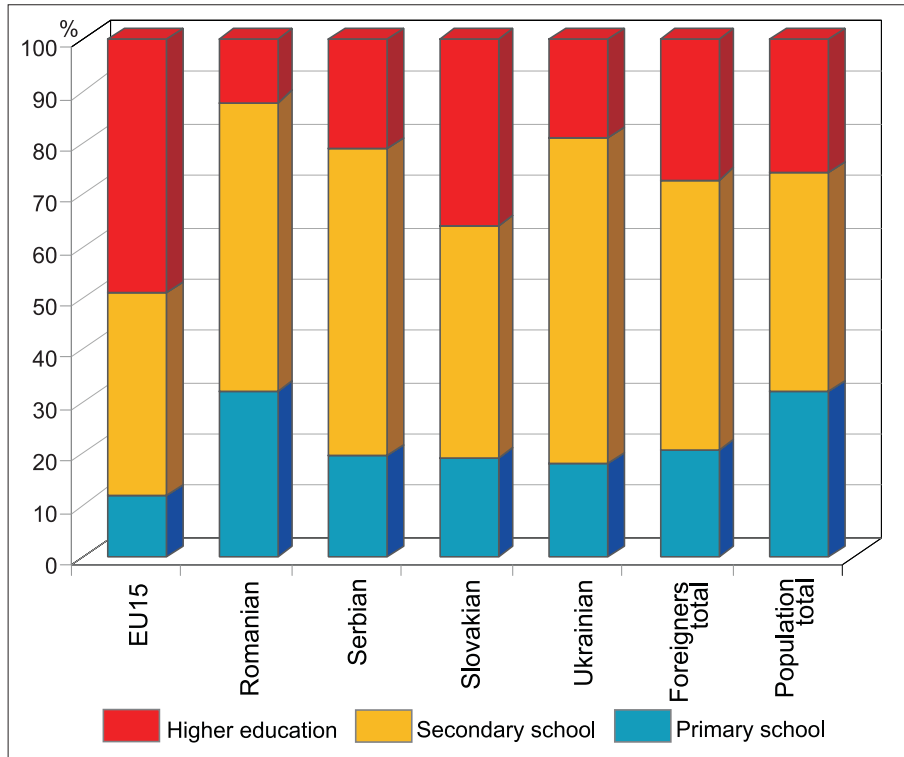


Fig. 3. Residents of Hungary over 18 years by citizenship and educational background.
 Source: RÉDEI, M. and KINCSES, Á. 2008

Sopron County (65%). It seems that the migrants from the western countries (EU15) have higher educational diploma more frequently than the average of the transnational migrants (ILLÉS, S. 2009).

In contrast with the stereotypes, foreign residents with long-term permits on average have higher occupational status than Hungarian citizens, and permanent residents (who are mostly returning "ethnic" Hungarians) are less qualified than temporary immigrants. This is reflected primarily in the proportion of highly qualified individuals, which makes up one-third of the total immigrant population and more than 40% of temporary migrants. The proportion of non-manual workers is around 50% of the active foreign population (JUHÁSZ, J. 2003).

Within international migration temporary migration for the purpose of study has become increasingly typical by now. A whole industry has been established to provide services for the students arriving in Hungary in the recent years. The rate of students coming from foreign countries was 2.6% of

the total in 1998 and their share has been increasing ever since. According to the OECD data this ratio was 3.4% in 2001. Studentification process is also important for the viewpoint of the creative industries. Presently there are 15,500 foreign students in higher educational institutions in Hungary altogether. The majority of them are concentrated in the Budapest Metropolitan Region. Budapest's joining the European mainstream of students' exchange contributes substantially to the creative industries fertilizing especially the sphere of arts, sciences and research as bases of economic dynamism.

Brain drain and brain gain in the Budapest urban region

Budapest and its metropolitan region (BMR) has always been the engine of economic development in Hungary, and the most spectacular changes with respect to migration flows have taken place here. The intensity of the migration flow between Budapest urban region and the rest of the country has decreased significantly in the past 40 years reflecting the general national trends. While in the 1960s and 1970s the migration to Budapest and Pest County made up 20–30% of the domestic migration, by the 1980s and 1990s it has reduced to 6–8%. The intensity of migration to Budapest proper was already extremely low in the 1980s and it further diminished almost down to zero in the 1990s. The national tendencies of permanent migration in the post-1990 period are shown in *Figure 4* according to settlement types.

The population loss of Budapest was the combined outcome of suburbanisation and natural decrease, while the increase in the agglomeration was due to the massive population inflow (from Budapest and to a lesser extent from the countryside), what outweighed the otherwise also characteristic natural decrease. The first recognisable signs of classic sub-urbanisation appeared at the beginning of the 1980s, however, it required even more thorough socio-economic changes to evolve. The suburban-bound massive population move affected the areas over the agglomeration zone as well, especially the settlements along the main traffic routes (railway lines and highways), which all joined the commuting zone of the capital city.

Most recent statistics indicate that the massive rearrangement of population within the BMR has slowed down and even terminated in 2008. It is also indicated by the facts that it was the turn of 2007 and 2008 when the population of Budapest started to grow again after almost 20 years of massive decline and the loss of approx. 300 thousand inhabitants. The suburban bound flows have not ceased, but there is also a detectable counter-flow of people, a kind of backward movement to the city. The reason is complex, but it definitely has a lot to do with the increasing costs of living related to suburban lifestyle, and to the improper traffic infrastructure which makes commuting extremely time consuming and inconvenient.

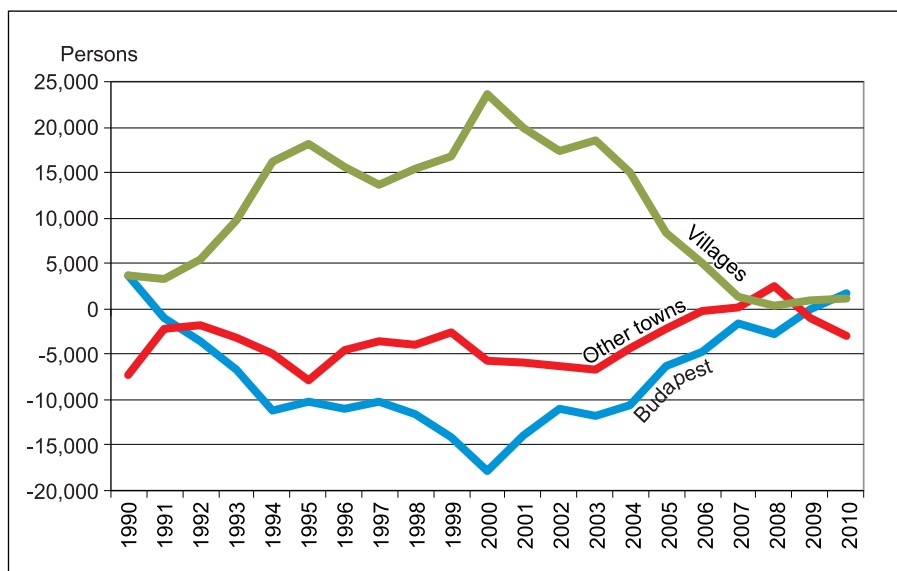


Fig. 4. Balance of internal migration by settlement types. Source: Central Statistical Office, 2010

Domestic migration has contributed to increasing socio-economic disparities within the country. One of the main triggers is the growing unemployment in the east and south-east of the country. The pull areas are the western regions and more specifically the Central Hungary Region with better prospects for higher income. Table 1 shows those counties, where every sixth migrant found its new home in the Central Hungary Region (including the

Table 1 The share of people moving to the Central Hungary Region by counties (within the total number of migrants)

County	percent
Bács-Kiskun	16.0
Békés	15.2
Borsod-Abaúj Zemplén	15.0
Fejér	17.7
Heves	17.3
Jász-Nagykun-Szolnok	21.9
Komárom-Esztergom	16.6
Nógrád	25.0
Szabolcs-Szatmár-Bereg	15.3

Source: Central Statistical Office, 2005.

BMR) in 2005. As it can be seen the brain gain of the Central Hungary Region is the strongest with regard to the northern and eastern counties, as especially the younger and better educated segment of the population is leaving these regions. Due to migration the general educational level of these areas is decreasing to the advantage of the BMR and of the western counties where people take steps even further and leave for abroad with aspiration of the same nature but at an advanced level as the young educated migrants arriving from the disadvantaged areas.

Regarding the BMR as a migration destination it can be stated that it is the one and only area in the country that is equally important to all the transnational migrant groups with no respect to their national origin (*Figure 5*).

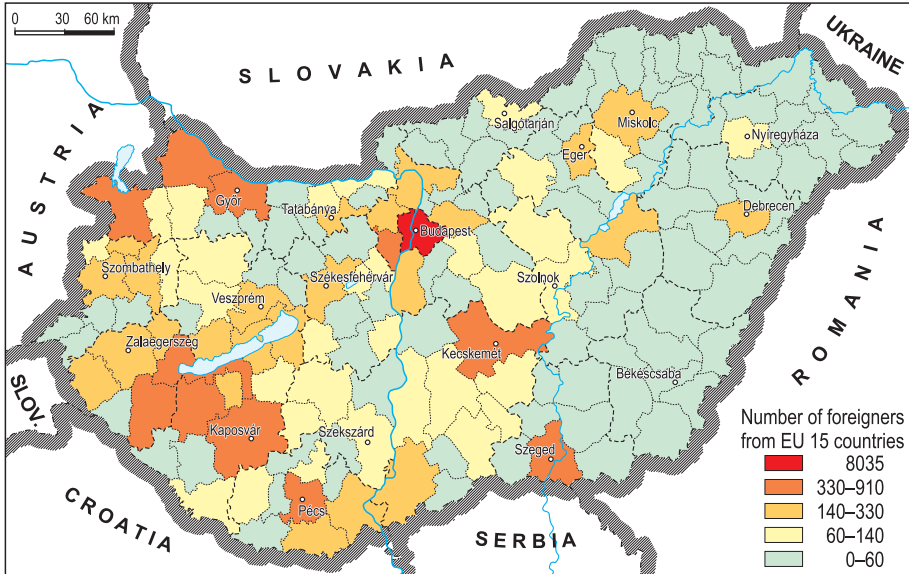
Creative industries – especially business and the arts to a lesser extent – were the most affected by the arrival of highly skilled ex-pats sent over by their mother companies in the 1990s. The circle of top and second line managers of the branches established by multinational firms in Hungary has been concentrated in Budapest and the BMR just as the companies themselves have. Typically this special “privileged” group of ex-pats have had no inclination to integrate in the local society. They socialise within circles of their own and live a cosmopolitan life, though making home here for a relatively longer period of time (3–5 years). After 20 years of capitalist transformation this group is more and more restricted to the sphere of top managers. The position of the second line managers are prone to be filled up with and taken over by talented local managers educated and trained by their companies.

Research methodology

In order to find out motivations of foreigners to live and work in the BMR a survey was carried out among them. The target group of the survey was the transnational migrants acting in the creative economy. Only highly skilled persons actively working in the creative knowledge sector could be selected for in-depth interviews. The topics of the interviews contained 7 large clusters of questions (introduction of ACRE research project, education and professional career of the interviewee, reasons for selecting the BMR, motivations of site selection, the relevance of hard and soft factors, advantages and inconveniences of the city, social networks and family background of migrants, living and working conditions, personal backgrounds).

We applied the so-called semi-structured topic of interview which means that the topics (groups of questions) chosen could be varied by the interviewer freely or the prepared list of questions could be completed with new ones if he/she felt it was indispensable for obtaining the necessary information.

A



B



Fig. 5. Spatial distribution of foreigners by microregions (LAU level 1), January 2007. Foreigners of EU 15 (A) and their total numbers (B). Source: RÉDEI, M. and KINCSES, Á. 2008

It was stipulated that the sample should consist of highly qualified persons working in the creative economy with continuous stay in Hungary and in the BMR for at least 6 months. For the sake of identifying motivations and location factors it was necessary to involve people who after spending considerable time here had got to know the country and the city quite well, created a well-defined image of Budapest and formed a firm opinion about the study area. The selection of interviewees began from the acquaintances of the researchers and followed with the snowball method (the interviewees proposed to invite persons who might have been involved). This method was suitable to perform the required number of interviews to meet the criteria. The composition of the sample is summarised in *tables 2 and 3*. As it was planned earlier altogether 28 interviews were conducted amongst transnational migrants and in addition 4 in-depth interviews were performed with local experts on transnational migration.

Table 2. Number of interviewees by sectors and gender

Sector	Male	Female	Total
Creative industries	6	2	8
Knowledge intensive industries	13	7	20
Total	19	9	28

Table 3. Number of interviewees by country of origin

European countries	19
EU 25	18
Non-EU countries	1
Neighbouring countries	2
Non-European countries	9
America	5
Asia	3
Africa	1

Motivations to come to Hungary and Budapest

From the results of in-depth interviews it became clear that personal and family ties should be handled separately from the hard and soft factors. The analyses showed that personal and family reasons proved to be such a strong motivation to move into a place (in our case to Budapest and its region) that any other hard or soft factors were secondary for the migrants (see also STRY-JAKIEWICZ, T. 2010).

Analysis of the personal, hard and soft factors as motivation factors revealed that in many cases the decision of interviewees was not determined by one particular group of factors (*Table 4*). This is supported by the results: in 8 cases of the 28 interviews the combination of two groups of factors from the three was decisive in making a choice to move to Budapest. Even in the case of these interviewees, however, the stronger influence of a certain factor could be pointed out in the decision making process.

Table 4. Motivations of creative people to come to Budapest by sectors and gender

Sector and gender	Pure motivation			Mixed motivation			Total
	H	P	S	Hs	Sp	PH	
Creative workers	4	1	1	1	1	0	8
Knowledge intensive workers	6	7	1	2	2	2	20
Male	5	7	2	2	3	0	19
Female	5	1	0	1	0	2	9
Total	10	8	2	3	3	2	28

H = Hard factors, P = Personal trajectories, S = Soft factors

As demonstrated by *Table 4* a large part of transnational migrants were attracted to Budapest by hard factors (work and studies, living and housing conditions). So it can be stated that for transnational migrants hard factors are critical when making decision. It became also clear that a considerable part of them moved here for personal or family reasons. For 13 interviewees personal and family reasons had played certain role in one way or another in moving to Budapest and 8 of them these were the only triggers. Of personal ties the intention to join the Hungarian companion (boy- or girlfriend, husband or wife) was the first priority. In these cases personal tie supported the intention to move and it was a strong migration drive contributing to an eventual settling down of the interviewee. Our survey also testified the subordinated role of soft factors among the triggers of migration. Altogether only two interviewees argued that they came to Budapest due to soft factors exclusively. It was also confirmed by the survey that decision to undertake a job or to join the partner was often made on the basis of positive experiences and impressions gained earlier.

Examination of the results by economic sector and sex highlights some differences. On the one hand, hard factors were more frequently mentioned among the motivations of creative workers (50%) whereas in the answers of those belonging to the knowledge intensive sector personal reasons dominated. On the other hand, males tended to make their choice on emotional basis and followed their partners, what means that in voluntary international migration it is more frequent that they follow companion. In contrast, female transnational migrants had a tendency to choose their place of living with hard factors such as study and work opportunities (50%).

Assessment of localisation factors by transnational migrants

Opinion of foreigners about hard factors

Education, schools and universities

According to the respondents public education is aimed at a direct conveyance of knowledge instead of raising interest in children and youth, to make them open-eyed and apt to think. Since the change of regime there has been a considerable structural change in public education followed by further attempts of reform over the past ten years (revision of the subject-matter, change in the system of final examination) but all these are subject to vivid professional debates.

„Hungary is a wonderful country with a lot of theoretical learning, but knowledge that could be applied in practice is frequently missing. The problem with the system of education is that the children study for 12 years and then they cannot find any job because their knowledge is not market compatible and nobody cares about how many skilled workers by different professions are needed.“ (49 years old married English male, teacher, business manager).

According to the interviewees in the university sector there is a high-level of education providing stable professional background. However, in international comparison the Hungarian universities are more conservative, less dynamic and flexible than their West European or Anglo-Saxon counterparts. University environment in Hungary seems to be unstructured in many respects, what is stimulating for creativity but negative for the younger researchers and lecturers because they should find their ways themselves. There is a dire necessity of higher dynamism, more active international cooperation in research, an extensive collaboration between the researchers and fields of studies; these activities should be given an emphasized interdisciplinarity. Young lecturers and researchers arriving from the Anglo-Saxon world have voiced unanimously that feedback of quality control is missing from the Hungarian higher education, especially over research activities and strategy, there is no feedback of evaluation, or students' assessment about education either and this is a big difference in comparison with the international education programmes.

„One of the real problems is that nothing is being changed, everything is being the same for long years. The system is inflexible; there is a lack of dynamics and the management is also responsible for the lack of development. As feedback is missing, nothing could really be changed because no information is available about what should be changed actually?“ (36 years old married English female, researcher, lecturer).

Employment and actual working conditions

Based on the statements of the interviewees a general conclusion could be drawn that highly qualified international workers in Hungary operate in a more favourable infrastructural environment than their local colleagues do. Accordingly, the interviewees were highly satisfied with the background infrastructure provided by their workplace; they enjoy good conditions in comparison with the average situation in Hungary and Budapest (*Photo 1*). As a whole respondents were content with their work and they as a rule did not want to quit.

Of the remarks concerning conditions at workplaces the flexible and versatile working environment and opportunities offered for self-realisation and personal liberty in the creative and knowledge intensive professions (e.g. universities, research institutes) could be mentioned. However, a few respondents voiced that the state does not pay enough attention to a more efficient use and integration of human capital to be found in Hungary and sometimes a highly qualified transnational migrant employed in the creative sector had hardly any relation with the Hungarian economy.



Photo 1. Graphisoft Park providing a modern working environment with high-quality services. *Source:* photo by EGEDY, T.

„My impression is that in Western Europe all things are pre-structured, quiet and finished, already completed, and you have to fit into these certain boxes and you have to do what is expected from you or what was done before you. Here is a lot of freedom to develop what you want.“ (27 years old single German male, project manager, media expert).

Besides the positive circumstances the negative ones were also pointed out. These are mainly associated with the relatively low level of salaries. It is typical that wages in Hungary are lagging far behind those in Western Europe and US. They often do not commensurate with the work performed. Not only the Hungarian wages are very low but the personal purchasing power is also extremely weak by international comparisons.

Living conditions and cost of living

Our results confirmed that the cost of living in Hungary is more favourable, than in Western Europe. In the opinion of the interviewees, however, the coin has two sides: there are some aspects of everyday life where the costs are definitely lower but in other respects Hungary is an expensive country. Costs of housing and transport are cheap in international comparison. Energy and food prices are at similar level than in the West, perhaps they are even lower. In contrast, consumer goods, technical equipments, computer devices and electronics are more expensive. It should also be kept in mind that wages are relatively low in Hungary compared to the West.

„When I came to Hungary for the first time I had English pounds and everything seemed to be very cheap but now I get the average Hungarian salary for my work and I see how expensive the life is here. I can not even imagine how people can live from wages lower than mine? And life in the countryside does not seem to be cheaper either.“ (36 years old married English female, researcher, lecturer).

Housing conditions, price of dwelling

The composition of housing stock and dwelling prices show a favourable picture in Budapest in international comparison. It is the main reason why Budapest has become a favourite target of Irish, Dutch, and Spanish real estate purchasers and speculants for the last ten years. Real estate development and investments in the sector have also shown an upward trend during this period. As a result many new houses were built in the BMR. A wide variety of the new residential areas and growing diversity of the housing stock cre-

ated favourable conditions for transnational migrants who wanted to settle down here. Favourable price of housing has appeared as one of the significant motivation factors:

„Expenses and price of housing are good. For instance one has to pay one fifth of the price in London for an apartment of a similar size. It is a high sum in terms of Hungarian wages but really cheap with English standards.” (36 years old married English female, researcher, lecturer).

When looking for a dwelling, besides the quality parameters other soft criteria came to the fore such as the character of the neighbourhood, the accessibility of green spaces, the distance from the workplace, just like shopping opportunities and places of entertainment nearby. When searching for a suitable dwelling foreigners preferred two areas within the city: districts on the Buda side that are rich in green spaces (2nd and 12th districts) or quarters located close to the downtown on the Pest side. Price of dwelling is much higher on the Buda side, whereas there is a considerable difference in the prices of the downtown apartments and dwellings located elsewhere. This is why the less affluent foreigners are eager to choose the newly developed quarters (e.g. 13th and 14th districts).

Administration, bureaucracy

From the viewpoint of legal administration it is still difficult to settle down in Hungary and get citizenship. Citizenship is granted only after a long procedure, and dissatisfaction has been often voiced by foreign citizens working here and living with Hungarian husband or wife. It must also be noted however, that the worst experiences with administration go back to the times prior to Hungary's EU accession. Information gained from the interviews revealed that the situation has improved and the level of bureaucracy dropped since then – especially in the case of EU citizens.

„Prior to Hungary's accession to the EU it was virtually impossible to settle down as a foreigner. After that it became much faster and smoother but the whole administrative system is very complicated, frustrating and senseless. And in addition it is expensive.” (30 years old married English male, teacher, catering expert).

Bureaucracy is very tough to foreign entrepreneurs in the field of economy too. It has been expressed that foreigners are discriminated negatively as there is too much and contra-productive and also very expensive administration relating to the operation of firms and SMEs. For the small ventures

it is more advantageous if foreign citizens do not work as entrepreneurs or managers but employees. According to highly skilled transnational migrants the Hungarian system does not support foreign creative workers in their efforts to settle down and establish their venture. The present system is not prepared for the smooth acceptance of foreigners.

Taxation

In the last years it became obvious that the Hungarian economy (and society) suffer very much from the system of taxation. Not only the bands of personal income tax are high in European comparison but the contributions to be paid both by the employers and employees are among the highest in Europe. This system is detrimental and hits these social groups hard. To keep manpower working the employers are in a difficult position because a great part of the declared payment “disappears” in the form of taxes and extras. This has a direct impact on the employment level and quality of workforce because highly qualified persons are in underpaid jobs and many people are employed illegally. Foreigners also drew the attention to the fact that in spite of the relatively high taxes paid in Hungary no positive effects could be recognised in education, health care or in infrastructure development.

Opinion of foreigners about soft factors

Social networks

On the basis of the interviews the circle of friends of an „average foreigner” is recruited from foreigners living in Budapest whom he/she as a rule got acquainted with at the workplace or in the course of free time activities (pubs or clubs visited by foreigners, national circles, sub-networks). A general experience is that foreigners living in Hungary establish friendly contacts with foreigners much easier (and perhaps more willingly?) than with the locals. In this case, however, it might be a problem that many foreigners stay in the country provisionally so the relations are to be interrupted or to vanish. Within the circle of friends there is a high share of Hungarians who have spent more or less time abroad or speak foreign languages fluently. They can find common topics and share experience, and communication is not hampered by language barrier.

The initial phase of social networking couple of months after the arrival in Hungary is really difficult for the foreigners. This is why national circles maintained by foreigners are very important as sub-networks; they

can provide occasions to regular meetings with compatriots. Via partners and acquaintances foreigners can be members of several sub-networks simultaneously. Such sub-networks might be instrumental to make the establishment of contacts and everyday life easier; one can get acquainted with others and made to be known (e.g. Professional Women's Association).

„When I arrived in Budapest I did not realise immediately that I was in a cosmopolitan city. Soon I got to know what a sizeable French community live in Budapest. I got acquainted with a great number of French citizens and also with Hungarians speaking French. This was a brand new feeling as my command of English in England only provided a link to the English culture.“ (32 years old single French male, IT executive).

The interviewee's workplace plays an important role in shaping the size of his/her social network. Those employed in the academic sphere have the most favourable position since in everyday work they meet many colleagues and students in an open, receptive and multicultural environment. The position of foreigners employed by international institutions of higher education with foreign languages of instruction (e.g. CEU) is the best. Those having jobs at transnational firms occupy intermediate position because there are many colleagues speaking foreign languages but personal ties are rarely friendly due to the market sphere and permanent competition. Freelance workers are in the worst position, especially those on their own or working alone, because the lack of professional contacts and interactions is a hindrance to the establishment of contacts in an alien environment.

In the course of the analysis of social networks it emerged repeatedly that the knowledge of Hungarian language might be decisive not only in the establishment of contacts but it has a part to play in the long term employment and settlement in Hungary. With only few exceptions the interviewees have serious problems with the Hungarian language.

Quality of life

Everyday life

All in all, quality of life is good in Budapest – in the opinion of the interviewees. Budapest and its society is becoming increasingly multicultural, nevertheless, it is still far from being too cosmopolitan as other European capitals. Budapest has both advantages and disadvantages. Its greatest advantage is that life is more quiet and calmer here than in the megalopolises in the West. For the respondents it means that they feel well during workdays, people

are kind and they claim being in safety all day and night. Highly qualified transnational migrants think that life is slower in Hungary than in Western Europe so people have more time and they are friendlier. Some of the interviewees mentioned that the work is not so tense, one should not work so much, but the level of payment is also much lower. Altogether it means for the migrants that they have more time to spend with family and for themselves and they have more time for leisure activities.

„There are lots of positive things here, we have a lot of friends, life is not so stressful here, the weather is much better. I think people have better priorities here in things like family. It is definitely much safer here.” (35 years old single English female, teacher).

Culture, leisure and entertainment

Cultural values and programmes belong to the strongest attractions of Budapest – as it was held unanimously. Cultural life is versatile, the choice is extremely rich. Festivals are organised regularly, there are especially many cultural events in spring and summer (e.g. Sziget Festival of European fame). Galleries, museums, cinemas and concerts, performances of contemporary art make the cultural offer even more varied (see also MICHALKÓ, G. 2007). The only negative remark is that the programmes could underline more the specific character of the city.

„High culture is much more typical for the streets of Budapest than of those in Prague or Vienna. I prefer theatre, contemporary dance and fashion shows. Good programmes are just as frequent as to satisfy the fans of different arts.” (28 years old single Vietnamese male, fashion designer).

Foreigners can attend theatrical performances and watch movies in their languages which promote to maintain links with their native culture. A great help in this respect is provided by the activities of institutions supported by the mother countries (British Council, Institute Francaise, Instituto Italiano, Goethe Institut etc.). Newspapers and journals in foreign languages have lately been published in an increasing number.

Quality of the environment

The main attraction of Budapest is associated with its geographical settings. The hilly Buda side with full of greenery, separated by the Danube from Pest is the main destination. The magnificent panorama with the Royal Castle of

Buda, bridges over the Danube and buildings of invaluable architecture flanking the banks on both sides gives the city a unique character (*Photo 2*).

Although Budapest is one of the largest metropolises in Central Europe it is smaller and more compact than those cities familiar to transnational migrants from Western or Eastern Europe. One of the greatest advantages is that one can get out of Budapest relatively rapidly (within 20-40 minutes) and reach the agglomeration, the surrounding green belt and hills. The countryside is easily accessible within the metropolitan region.

Although the positive remarks on the quality of the environment unambiguously outnumbered the negative comments in Budapest, the city has its negative features and life is far from being ideal for all. One of the biggest problems is the scarcity of green spaces in the inner part of the city. The general attitude towards green spaces in Hungary is at a lower level than in the West, which means that less money and energy is spent for the creation and proper maintenance of green areas. Environmental protection and environmentally conscious lifestyle is not general yet, the streets are littered with rubbish and they are dirty of dog shit. Air pollution is high due to the intense vehicle traffic, especially in the downtown. Frequent road works and constructions are a hindrance to urban transport, traffic jams are frequent.



Photo 2. Geographical settings of Budapest. *Source:* photo by EGEDY, T.

The quality of public areas should be improved as well. On the squares creative pieces of art are few. There are extensive squares but they do not attract urban life.

There is a sore need in public territories that would make the appearance visually and creatively vivid and the city modern and where young people could gather spontaneously to attend social and cultural events (like Covent Garden in London).

„Even if I were rich I would not moved away from Budapest because there is something inexplicable why I feel bound to this place. Perhaps it is the rhythm of life, the atmosphere of the city. It seems an attractive and proper place to live if it must be abroad.” (43 years old single American female, photographer, video maker).

Attractive architecture and attractive residential environment

As it was mentioned in the previous section Budapest is a highly spectacular city from architectural point of view. The ensemble of edifice built in art nouveau style at the turn of the 19–20th centuries is invaluable and deserves attention.

The Royal Castle of Buda with the panorama of the Danube and the row of the buildings along the banks became part of Unesco World Heritage in 1987. Andrassy Avenue with Europe's second („Millennium”) underground (after London) also was put on the list in 2002. Downtown districts abound in art nouveau buildings even though many of them are in bad shape due to the neglect of maintenance (FÖLDI, Zs. 2006).

The inner courtyards of tenement houses with hanging corridors also represent architectural interest (*photos 3 and 4*). Night lights in the streets and illuminated buildings, a varied street pattern are also belonging to the beauties of the city.

Some interviewees emphasized that they were grasped by the great diversity and wide variety of architecture of Budapest. Respondents live in most different places throughout the city from the most elite neighbourhood of Buda (2nd district) to lower class neighbourhoods of Pest side (e.g. 8th district). Transnational migrants coming to the city could find the attraction they were looking for or the neighbourhood where to live.

„Budapest has a unique architecture. Dilapidated buildings, firewalls appearing here and there, varied ornaments mixed with modern edifice or with houses still wearing traces of projectile impacts from the world war along with the renovated buildings are very expressive about a perpetual deterioration and rejuvenation of a city.” (47 years old divorcee Japanese male, painter, artist).



Photo 3. Art nouveau building in the inner city of Budapest. Source: photo by EGEDY, T.



Photo 4. Hanging corridors in the inner courtyard of a tenement block built at the turn of the 20th century. Source: RÉV8 Urban Development Company

Tolerance, acceptance of diversity, equality and openness

„ I think tolerance and acceptance do not belong to the main features of Hungarians. Sometimes I feel suddenly a little bit disattracted by these nationalistic tendencies what I can perceive. I don't feel frightened, I feel a certain mood in the population that is rather direct it backwards than towards the future.“ (33 years old single German female, researcher, teacher).

In the Hungarian society the gravest prejudice is related to the Roma (KOC SIS, K. and BOTTLIK, Zs. 2004). According to some polls this is the case with 70% of the Hungarians. Foreigners hold that the Roma are blamed for lots of things, often even for deeds they are not responsible for. On the other hand, there is a highly developed sexism within the Hungarian society and this statement seems to be supported by lots of sexist anecdotes about women, gays or lesbians. The status and place of women in the society is not clear. In the opinion of the interviewees a lower level of tolerance might be attributed to the fact that Hungarian society is less cosmopolitan, there are not so many minorities and foreign ethnicities here as in the countries of Western Europe.

Inevitably a low level of tolerance and acceptance of diversity are the issues that will have to be solved by politics and society in the near future. Even now there are signs that highly qualified foreigners living in the country are under some apprehensions about intolerance and it might have negative feedback on the economic efficiency of Hungary not to mention the social consequences.

Conclusions and recommendations

As statistics show the presence of foreign labour force in the Hungarian labour market is not significant though it is steadily increasing. The estimated share of labour migrants is below 2% of the population which is rather low compared to the level of European Union and similar to other post-socialist countries. Recently, within international migration temporary migration for the purpose of study is becoming more and more important. Beside the traditional migration for working and settling in a foreign country the 'studentification' process became also important, which has direct effects on the development of creative industries.

Nowadays the Budapest Metropolitan Region (and the city itself) is the most prominent destination of international and domestic migration within the country due to its economic performance and quality of life. Secondary concentrations of transnational migrants can be recorded in regions along the national boundaries. Migrants from the EU15 clearly prefer Budapest and

its surroundings as well as Győr-Moson-Sopron and Somogy counties near the Lake Balaton in the West. Budapest and its region is the only area in the country that is equally important to all groups of transnational migrants with no respect to their national background.

Our empirical research revealed that the greatest part of transnational migrants was attracted to Budapest by hard factors (work and education). A considerable part of them came to the city due to personal or family reasons (e.g. following their partners). Our survey as a whole testified the subordinated role of soft factors among the triggers of migration. For the transnational migrants living in Hungary it was difficult to separate and identify individual soft factors. Our survey showed that moving to Budapest was not motivated by one single factor, it was rather the joint and multiple effects of hard and soft factors, latter often playing an indirect role. Based on our interviews it became also clear that hard factors play an important role in attracting creative transnational migrants to the city, while soft factors are decisive in the decision about staying in the metropolitan region on the long run.

Highly qualified foreigners in Budapest work under very comfortable circumstances as far as the infrastructure provision of the workplaces is concerned. The greatest problems for the foreigners are the low wages by international standards and high taxes imposed on the income. The system of taxation imposes a negative impact upon employment and economic performance in the country. According to ex-pats living conditions in Hungary (and Budapest) are good in international comparisons, but the cost of living is too high compared to the average wages in Hungary.

Both positive and negative opinions were expressed about the system of education. One of the main shortcomings of the Hungarian education system was described by its less practice oriented character while the high theoretical level has been admitted. The average standard of higher education is very high in international comparison but the system as a whole is rather unstructured and not flexible enough.

Of the soft factors the attractive architecture and residential environment are to be mentioned in the first place. These factors were emphasized by the interviewees as the main attractions of Budapest. Cultural services, thermal spas and wellness opportunities and in the sphere of gastronomy Hungarian cuisine and wine culture are highly popular among the foreigners.

A richness of the built environment in Budapest and its monuments, a diversity and multi-faceted character of the residential quarters might contribute to the positive decision of transnational migrants about settling here. Similarly positive opinion was expressed about the geographical settings of the city and quality of environment. The boasting dynamism of the city couples with calmer and safer conditions of living compared to other West European cities.

Negative aspects of life in Budapest could also be determined. Unanimously negative opinion was expressed about the low level of tolerance and openness in Hungary and its capital city. Not only the economic success of the country depends on the measures to be taken in order to ease the present, increasingly alarming tensions within the society and among people; it is the future of the society at stake.

There are still some unfavourable conditions perceived by highly qualified foreign workers living in Budapest: these are the extremely heavy tax burdens especially in the light that Hungarian salaries and their purchasing power are still rather low in international (EU) comparison. A further problem is caused by the fact that Hungarian administration is highly bureaucratic so management of affairs (i.e. business, housing) is quite a challenge for foreign citizens. In everyday life the language barrier also creates serious problems for transnational migrants. The lack of well maintained green spaces, the high intensity of traffic with all the negative consequences and the less environmentally conscious lifestyle were mentioned among the main shortcomings.

Highly skilled creative workers formulated important proposals for the Hungarian and Budapest decision makers in order to make the city and its region even more attractive for transnational migrants. These proposals could be grouped around four main topics:

a) Strategy and image building – Budapest needs a new communication strategy with an emphasis on image elements to call the attention to its real, potential and unique values in the international competition of large cities.

b) New functions for public spaces in planning and land-use – New, functioning public spaces should be created based on interdisciplinary planning that would support social strata representing innovative and creative spirit all over the city.

c) Information for transnational migrants – Foreigners arriving in Hungary generally do not know much about the country and even afterwards they receive scarce information about it, therefore information networks should be extended and more materials need to be released.

d) Political and administrative arrangements – Measures need to be taken to raise the level of social tolerance, modify the system of taxation and to minimize bureaucracy in public administration.

Acknowledgement: The research and the article presented above have been supported by the 6th Framework Programme (Contract no.: 028270) and the Bolyai János Scholarship of HAS.

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Ethnic residential segregation in three cities of Northwest Romania¹

PATRIK TÁTRAI²

Abstract

While ethnic residential segregation research is still current in Western Europe and in North America, there are only few studies about urban ethnic patterns of the former state socialist countries. This article is an attempt to contribute with an analysis of three cities (Oradea, Satu Mare, Baia Mare) in Northwest Romania. As no census data are available below the settlement level, there were used the results of the Hungarian ethnic party achieved at Romanian parliamentary elections. Based on this method the spatial position of the Hungarian inhabitants could be drawn, while field work helped to map the distribution of the Roma population.

The result is a 'quasi-segregated' situation: there exist parts of the cities, where the otherwise minority ethnic group Hungarians live as local majority, but their distribution is rather uniform. The residential segregation of Roma is spectacular, but due to the lack of data it cannot be quantified.

Keywords: Romania, segregation, ethnic geography, electoral geography, urban space

Introduction

Study on the spatial position of ethnic groups is one of the main targets of ethnic geography. In East Central Europe the still existing ethnic diversity creates an opportunity to study the ethnic issues from different perspectives: from national/regional level down to local/settlement level. Until presently most of this research related to ethnic geography focused on the regional level, independently of the size of the territorial unit. While in Western Europe and in the Anglo-Saxon countries, studies on the ethnic patterns of the urban space

¹ The research was supported by the Pro Renovanda Cultura Hungariae Fund, the 'SefoNe – Searching for Neighbours' EU FP6 project, the 77973 OTKA project and the 'Szülőföld Alap'.

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are rooted deeply, in East Central Europe that kind of research only (re)started after the change of regime around 1990.

The target area of the present study is Northwest Romania and its three main cities, *Oradea* (in Hungarian *Nagyvárad*), *Satu Mare* (*Szatmárnémeti*) and *Baia Mare* (*Nagybánya*). This multiethnic region is called *Crișana-Maramureș* by Romanians and *Partium* by Hungarians.

The extraordinary mixture of the population with different ethnic and religious background gives its unique character: from the 18th century five significant denominations and seven large ethnicities formed the religious-ethnic pattern. Nowadays the most sizeable ethnic groups are the Romanians, Hungarians, Roma people (Gypsies) and Germans.

Located only 14 km from the Hungarian-Romanian state border, due to its geographical position Oradea is one of the most important international traffic junctions and most prosperous cities of Romania. Since the late 17th century, Oradea is situated next to the Hungarian-Romanian ethnic-language boundary, and is the seat of the ethnically mixed region *Bihor* (*Bihar*). Oradea is surrounded by Hungarian villages in the north and west, and by Romanian villages in the east and south.

Satu Mare is situated only 10 km from the border crossing point, but before the political transformation in 1989 the border was not traversable. This fact and the remoteness from Bucharest (600 km) resulted in its rather peripheral position, and its being less prosperous as Oradea. Satu Mare is the seat of the ethnically extremely mixed region *Satu Mare* (*Szatmár*). Nowadays the city is surrounded by Hungarian villages in the north-west and east, by mixed villages in the north-east and by Romanian villages in the south.

Baia Mare is situated at the foot of the Mountains *Igniș* (*Rozsály*). It was an important mining town of the medieval Hungary and now is one of the most important industrial centres of Romania and the seat of *Maramureș* (*Máramaros*) county. The surrounding of the city is almost homogeneously Romanian, only some Hungarian villages can be found south of the city.

Earlier studies on segregation – differences between East and West

Although ethnic residential segregation is not the mostly examined issue in the former state socialist countries of East Central Europe, it is an existing research trend. In this region, investigations into residential segregation have been limited, they rather focused on social segregation and on the capital cities (GENTILE, M. and TAMMARU, T. 2006).

Studies on the ethnic dimensions of urban segregation are particularly meagre, which has three main reasons. Firstly, the former Jewish ghettos were transformed after the Second World War so one of the potential scenes

of the segregation disappeared. Secondly, during socialism "...the leaders of these societies had the – more or less seriously believed – illusion that ethnic based inequalities could not exist under the socialism." (LADÁNYI, J. 2008. 64.) Thirdly, in case of national minorities (i.e. minorities with mother-country in the region), research has been missing because no census data were available below the level of settlements (GENTILE, M. and TAMMARU, T. 2006). So only a few works can be mentioned here related mostly to the Roma minority in Budapest (e.g. LADÁNYI, J. 1988, 1993), where one of the first real examples of ethnic-based urban ghettos could be found in post-communist East Central Europe (KOVÁCS, Z. 1998).

Despite the above-mentioned phenomena, ethnic segregation was still investigated, but mostly in rural neighbourhoods. The objects of the research were mostly multiethnic villages in Hungary and in the neighbouring countries, while significantly less work examined the towns and cities (except the capital cities). An important feature of these works is that they do not measure the segregation; they mainly present the actual ethnic structure of the settlement and intend to reveal the causes and results of the (possible) segregated situation.³

Recently we can classify two main trends in the research of the ethnic residential segregation in this region, which are the followings: (1) studying the regional segregation of ethnic groups,⁴ where the basic units are the settlements; or (2) studying the ethnic residential structure of a settlement. In latter category we have to differentiate between (2a) rural and (2b) urban space, because of the different applied methods of these two levels. Dealing with category 1 and 2a is not an objective of this article; we only need to refer works that belong to this group because of their methodology (namely measuring the segregation).

Meanwhile, in Western European or other Anglo-Saxon countries research of the urban ethnic segregation has deep roots and rich present. Outlining this history is not a goal of present study; some outstanding summaries have come out in this topic (e.g. KAPLAN, D.H. and HOLLOWAY, S.R. 2001; ELLIS, M. *et al.* 2004; DEURLOO, M.C. and DE VOS, S. 2008; GUEST, A.M. *et al.* 2008). Below the differences between the 'eastern' and 'western'⁵ approaches will be presented. Ethnic residential segregation according to the perception of the 'eastern' and 'western' researchers is a little bit different, what is caused by

³ E.g. AUBERT, A. 1994; KEMÉNYFI, R. 1994, 1998; TÁTRAI, P. 2004, 2010.

⁴ Four different methods of the research of ethnic circumstances of a region were deployed by BOTTLIK, Zs. (2001), BAJMÓCZY, P. (2005), FARKAS, Gy. (2006) or MAJO, J. and HORŃÁK, M. (2007).

⁵ What is called here 'western' is not a uniform research trend; it is a whole complex of studies about Western European and Anglo-Saxon cities. In this topic significant differences can be found according to the circumstances of the European and American cities (e.g. different structure of urban space, less mobility of population in Europe) or according to the divergent approaches of the research models (e.g. assimilationist or culturally-pluralist models – see FORREST, J. and JOHNSTON, R. 2001).

the divergent ethnic history and the different present ethnic structure, which have resulted in different aims of the studies. In the Carpathian Basin several ethnic groups live together for centuries; ethnic diversity is not something new. Diversity is not restricted to towns and cities but characterizes whole regions, both urban and rural neighbourhoods, and in huge areas minority ethnic groups live as a local majority. Therefore in Hungary and in the neighbouring countries, research focuses not only on urban, but on rural areas as well. On the contrary, 'western' researchers have focused on urban areas as the possible location of ethnic segregation (and main target of immigrants).

So the main factors, which caused the differences between 'eastern' and 'western' (especially Eastern and Western Europe's) scientific development in this issue, are the followings:

- Different type of ethnic groups and ethnic history: in East the existence of ethnic minorities originates from the fact that national borders and ethnic boundaries do not coincide (so migration is not necessary for the formation of a minority),⁶ while in West ethnic/racial minorities are mostly immigrants and the descendants of 19–20th century immigrants.⁷

- Different type of migration: in urban space migration is an essential source of the population growth and ethnic heterogeneity – in East it is mostly due to the internal migration, while in West ethnic diversity is the result of international migration.

- Different type of urbanization: western urbanization has been mostly a spontaneous process, while in East the urbanization was controlled and promoted by the state during the socialist era.

- Different ethnic patterns in rural areas: in East ethnic minorities in rural environment can preserve better their ethnic identity, especially if they are the local majority, whilst in West rural areas are less characterized by ethnic heterogeneity.

Applied methods – how to measure the segregation

Researches in the last decades often focused on the question of measuring segregation (e.g. WONG, D.W. 1993, 2005; DEURLOO, M.C. and DE VOS, S. 2008). They tried to find methods and indices, which can explain all features of the segregation. As until our days no single index can do this, present study accepted MASSEY, D.S. and DENTON'S, N.A. (1988) work as starting point. They

⁶ With the exception of the Roma and Jewish population.

⁷ That is why the classification scheme by JOHNSTON, R. *et al.* (2006) based on the percentage of host communities cannot be applied for the Romanian cities investigated, because there, during the 20th century, the host community (in political meaning) changed three times, while in demographic meaning it changed only once.

highlighted five characteristics of the segregation and tried to find a relevant index to each principle. So according to MASSEY and DENTON evenness (how even the distribution of an ethnic group), exposure (how large the contact area, the possible interactions between the ethnic groups), concentration (how 'compact' the spatial position of an ethnic group), centralization (where live the ethnic group inside the city) and clustering (relative position and contiguity of ethnic groups) can explain all dimensions of the ethnic residential segregation.

What were the indices that MASSEY, D.S. and DENTON, N.A. (1988) recommended for their categories? To examine evenness *index of segregation/dissimilarity* (IS and D) was found the most adequate. It is the most frequently applied index, elaborated by DUNCAN, O.D. and DUNCAN, B. (1955). Almost every work on ethnic residential segregation use this index, thus making the results world-wide comparable. IS and D show the extent of the population in an area, which has to be redistributed to get an equal distribution of every group between the subareas. It suffers from many disadvantages (see WONG, D.W. 2005; DEURLOO, M.C. and DE Vos, S. 2008): among others it only provides an answer to the question of evenness without tackling the question of distance and contiguity.

As already DUNCAN, O.D. and DUNCAN, B. (1955) noticed some of these problems, more researchers suggested several adjustments to strengthen the above mentioned geographical factors in the index and to eliminate the effects of the variation in the size of the areal units (e.g. WONG, D.W. 1993, 2005). Despite the efforts, every method has weaknesses and none of them can explain all dimensions of segregation.⁸

Recognition of the problem that segregation is an asymmetric phenomenon led to the creation of *isolation index* (P^*) by LIEBERSON, S. (1981). According to MASSEY, D.S. and DENTON, N.A. (1988) isolation (or interaction) index can capture the essence of exposure best of all, but similarly to the segregation/dissimilation index, it is neither suitable for measuring the spatial aspects of segregation. It measures the probability that a member of a certain group shares the area or comes into contact with a person from another group in the same area. P^* also has drawbacks (like IS and D), including the lack of the geographical factor (DEURLOO, M.C. and DE Vos, S. 2008).

Another index to be mentioned here is the index of fragmentation. This index is more frequently used in regional research for measuring the degree of segregation of ethnic groups using settlements as basic units (FARKAS, Gy. 2006; MAJO, J. and HORŇÁK, M. 2007). Fragmentation index is suitable for presenting the scale of exposure, but since its value is inversely proportional to the share of the specific ethnic group (expressed in percent of total population), it does not have an extra worth compared to calculating percent values.

⁸ For description, calculation and problems of each measure see MASSEY, D.S. and DENTON, N.A. 1988; WONG, D.W. 2005; MUNOZ, S.-A. 2006.

Whereas the application of the above mentioned 'hard' indices is widespread, some authors call attention to the possibility of using 'softer' indices. JOHNSTON, R. *et al.* (2001) suggest to use thresholds in order to measure the level of concentration of each ethnic group. As a matter of fact, it is only a little more than counting per cent values of the ethnic groups within the total population of each district. Although JOHNSTON, R. *et al.* (2001) introduce this procedure as a new method, it is rather a classic method of ethnic geography widely used in East Central Europe – but mainly in regional studies and less in urban research (e.g. Kocsis, K. *et al.* 2006). For its applicability this study also utilizes the threshold method to present the concentration.

Unfortunately, measuring the rest two categories (centralization and clustering) with the recommended indices is not possible in our case, because the needed data on the areal extent are not available. That is why centralization and clustering is going to be analyzed with the help of maps.

An important question is the source of the data used in the research. In Western Europe and in Anglo-Saxon countries measuring the segregation is generally based on ethnic statistics of census data (see SIMPSON, L. 2004). In these countries censuses provide detailed data on ethnic/racial background of the population on the level of census collection districts. In East Central Europe and in the post-Soviet countries, collecting data on the same level (or at all) is not so easy (GENTILE, M. and TAMMARU, T. 2006). In some countries (including Romania) even the access to the data on the level of settlements run into difficulties. If the necessary data are not available another method should be found. In the case of the cities of Northwest Romania only one option has presented itself: adopting the results of the parliamentary elections.

What is the basis of this method? In Romania and in Hungary's other neighbouring countries, which have sizeable Hungarian minorities (Slovakia, Serbia and Ukraine), there exist Hungarian ethnic parties. Along acting as political parties they generally safeguard Hungarian interests or function as cultural associations too. Since they represent the Hungarian minorities, non-Hungarians hardly cast their votes for them and the same situation is valid inversely: Hungarians usually vote for their ethnic party (see ILIEȘ, A. 1998; BODOCAN, V. 2003; MARIOT, P. 2003 and BOAMFĂ, I. and HOREA-ȘERBAN, R.-I. 2009). So voting for a Hungarian ethnic party is one of the components of the Hungarian identity (VERES, V. 2005); moreover it may be a better indicator of the ethnic affiliation, than the census, because there are less external influencing factors during the voting.

In Romania the Hungarian ethnic party Democratic Alliance of Hungarians of Romania, DAHR (called UDMR in Romanian, RMDSZ in Hungarian) managed to get in the parliament since the first democratic elections in 1990. It is the only ethnic party, which get approximately as many votes as the proportion of the represented ethnic group (*Table 1*), so ethnic voting

is mostly proceeded in case of Hungarians. From the point of view of ethnic segregation research, the results of the DAHR in the parliamentary elections is the only data, which can be used.⁹

Using data of the result of elections naturally have many limits and disadvantages. General features of election data are summarized in the followings:

- First of all it could not be proved that all who votes for DAHR are Hungarian in any sense. Despite, DAHR politicians and local Hungarian elite agree on the coincidence of DAHR voters and Hungarians. According to BOAMFĂ, I. and HOREA-ȘERBAN, R.-I. (2009) the correlation between the proportion of the Hungarians and the voting results of the DAHR in the local elections is persistently over 0.93 on the level of communes (the basic administrative units).¹⁰

- The result of the DAHR strongly depends on the turnout. But as *Table 1* shows, the extent of the fluctuation is not so significant as it could basically influence the results.

- The change of the system of the Romanian elections between 2004 and 2008 also influenced the results and has made the comparison more difficult.

Table 1. Share of Hungarians and result of DAHR in the parliamentary elections in the cities and counties studied, 1990–2008 (%)

Year	Romania	Bihor	Oradea	Maramureș	Baia Mare	Satu Mare	Satu Mare (city)
1992m	7.2	29.1	33.8	10.1	..	39.1	..
1992e	7.1	28.4	33.3	10.2	17.5	35.0	41.3
2002m	6.7	26.9	28.2	8.8	14.4	39.1	41.4
2002e	6.6	26.0	27.6	9.1	15.0	35.2	39.8
1990cd	7.2	28.3	..	10.1	..	38.2	..
1992cd	7.5	25.4	..	9.8	..	31.9	..
1996cd	6.6	23.6	..	9.0	..	29.4	..
2000cd	6.8	23.0	25.6	9.1	14.5	36.2	38.3
2004cd	6.2	23.0	23.4	9.0	13.8	34.7	36.4
2008cd	6.2	25.1	24.3	7.8	12.6	36.1	38.9

Legend: m = mother tongue; e = ethnicity; cd = chamber of deputies; .. = no data.

Sources: <http://www.kia.hu/konyvtar/erdely/erd2002.htm>; <http://www.bec2004.ro>; <http://www.becparlamentare2008.ro>; <http://valasztasok.adatbank.transindex.ro>

⁹ Using electoral data or electoral wards in research of the segregation is not something new (e.g. SIMPSON, L. 2004), even though it is undoubtedly a rarely applied method.

¹⁰ 1992: 0.960; 1996: 0.957; 2000: 0.986; 2004: 0.977; 2008: 0.932 (BOAMFĂ, I. and HOREA-ȘERBAN, R.-I. 2009. 176).

– Since ageing is more characteristic among the Hungarians than within the total population, thus the share of Hungarians eligible to vote is higher than that of the total population.

– Due to mixing and assimilation, the wide group called Hungarians is heterogeneous and includes ethnic groups with Hungarian mother tongue (e.g. Gypsies, Swabians) and groups who declare Hungarian ethnicity but different mother tongue. The electoral behaviour of these groups can be different. At the Romanian census in 2002 different mother tongue and ethnicity was declared by 2.3% in Oradea, 3.2% in Satu Mare and 2.7% in Baia Mare within the total population.

– The electoral wards generally include 1000–2000 inhabitants in the cities studied.

– The size of the electoral wards is also different; and sometimes remote parts of the city belong to the same ward.

– There exists no map showing the boundaries of wards,, just a list about which streets constitute the wards. Moreover this may change between two elections which hinders the comparison.

– Fortunately, districts comprising housing estates are generally not united with other type of built up areas within the same electoral ward.

On the basis of the above mentioned factors, this study uses electoral data as ethnic data regarding to Hungarians, where the DAHR-voters can be interpreted as Hungarians and the valid votes as the total population. The applied methods are determined by the available data, so they will be a sort of mix: evenness can be explained by the index of segregation, exposure by isolation index, and the spatial features (concentration, centralization, clustering) by drawing maps and by the threshold method of JOHNSTON, R. *et al.* (2001)¹¹. But it is still not enough to map the real ethnic situation, because there is another, increasingly significant ethnic group, the Roma, whose number and location cannot be revealed by the census or the elections. To get rid of this problem field research was made too.

Population dynamics and ethnic transformation in the cities of Northwest Romania

Before World War I, Hungarians constituted the majority ethnic group in both cities, moreover, according to the Hungarian censuses, the population was almost homogeneously Hungarian in Oradea and Satu Mare. But con-

¹¹ Applying the isolation index and any types of the adjustment of the dissimilarity index was not possible, because the data on the Romanian, German or Roma population and on the size of each electoral ward were not available.

sidering the fact that both cities had significant Jewish and Greek Catholic community,¹² it cannot be stated that the population would have had such a homogeneous ethnic background. Data are missing whether ethnic segregation could be observed from this period (at the end of the 19th century), except the Jews, who – due to their occupation (e.g. trader, financier) – concentrated in the city centre.¹³

After First World War the state power in the researched area changed, this region became part of the enlarged Romania and many Hungarian left the cities. The new power tried to secure the newly obtained territories, which resulted – among others – in the settling of loyal, mostly Romanian population. Due to these events the ethnic structure of the cities had also changed (*Table 2a,b,c*).

According to the second Vienna Award in 1940, North Transylvania (included Oradea, Satu Mare and Baia Mare) returned to Hungary. As a con-

Table 2a. Ethnic composition of Oradea between 1880–2002(%)

Year	Oradea						
	Total	Romanian	Hungarian	German	Jew	Gipsy	Other
1880m	34,231	6.3	87.4	3.6	..	..	2.7
1890m	42,042	6.1	89.5	2.5	..	..	1.9
1900m	54,109	6.4	89.6	2.7	..	..	1.3
1910m	68,960	5.5	91.3	2.1	..	..	1.1
1920e	73,025	11.8	62.2	0.8	24.6	..	0.6
1930m	88,830	24.5	67.8	1.3	4.7	0.4	1.3
1930e	88,830	26.3	53.7	1.1	16.7	0.6	1.6
1941m	98,621	5.2	92.1	0.9	1.3	0.1	0.5
1941e	98,621	5.2	92.0	0.7	1.6	0.1	0.4
1948m	82,282	32.8	63.9	0.2	2.2	..	0.9
1956m	98,950	34.9	63.5	0.4	0.4	0.0	0.8
1956e	98,950	36.0	59.0	0.3	3.6	0.0	1.0
1966m	122,534	45.5	53.2	0.4	0.1	0.0	0.8
1966e	122,534	46.1	51.4	0.4	1.2	0.0	0.9
1977e	170,531	53.9	44.1	0.4	0.5	0.6	0.6
1992e	222,741	64.8	33.3	0.4	0.1	1.0	0.4
2002m	206,614	70.7	28.2	0.3	0.0	0.5	0.4
2002e	206,614	70.3	27.6	0.3	0.1	1.2	0.6

¹² According to the censuses before First World War, the proportion of the Jews in the total population increased from 20 to 24% in Oradea, from 7 to 21% in Satu Mare and from 2 to 11% in Baia Mare. Due to their gradual assimilation, the Hungarian became mother tongue of their majority. In the same period the Greek Catholics formed 11–12% of Oradea's population (together with the Orthodox believers), 15–20% in Satu Mare and 35–38% in Baia Mare, which numbers indicate a sizeable population with Romanian (and few of them perhaps Ruthenian) origin.

¹³ For detailed data on the streets in Satu Mare with the birthplace of Jewish children in the second half of the 19th century, see CSIRÁK, Cs. (2001).

Table 2b. Ethnic composition of Baia Mare between 1880–2002(%)

Year	Baia Mare						
	Total	Romanian	Hungarian	German	Jew	Gipsy	Other
1880m	8,632	29.6	66.7	2.2	..	..	1.5
1890m	9,838	19.7	77.2	1.1	..	..	2.0
1900m	11,183	21.5	76.5	1.3	..	..	0.8
1910m	12,877	20.8	77.6	1.4	..	..	0.3
1920e	12,780	39.2	36.4	9.6	14.0	..	0.8
1930m	13,904	46.7	41.5	2.1	9.0	0.0	0.7
1930e	13,904	47.6	35.4	1.1	14.0	0.9	0.9
1941m	21,399	17.1	79.4	0.6	1.7	0.9	0.2
1941e	21,399	13.1	82.0	0.4	3.6	0.7	0.2
1948m	20,959	43.3	53.7	0.0	2.6	..	0.3
1956m	35,920	52.2	46.6	0.3	0.6	0.0	0.2
1956e	35,920	53.8	42.7	0.3	2.9	0.1	0.3
1966m	62,658	65.4	33.9	0.3	0.1	0.1	0.2
1966e	62,658	65.7	32.8	0.4	0.7	0.1	0.3
1977e	99,202	72.7	25.8	0.4	0.3	0.5	0.3
1992e	148,363	80.1	17.5	0.7	0.1	1.3	0.3
2002m	136,254	84.5	14.4	0.2	0.0	0.5	0.3
2002e	136,254	82.6	15.0	0.4	0.0	1.5	0.4

Legend and sources: see Table 2a.

Table 2c. Ethnic composition of Satu Mare between 1880–2002(%)

Year	Satu Mare						
	Total	Romanian	Hungarian	German	Jew	Gipsy	Other
1880m	19,708	5.0	88.9	3.8	..	.	2.3
1890m	20,736	3.5	94.5	1.3	..	..	0.8
1900m	26,881	3.4	93.3	2.2	..	..	1.1
1910m	34,892	2.8	94.8	1.8	..	..	0.5
1920e	37,376	12.2	66.0	0.4	21.0	..	0.4
1930m	51,495	27.1	58.9	1.3	11.3	0.1	1.3
1930e	51,495	31.6	42.6	1.8	20.8	1.2	2.0
1941m	52,011	4.6	92.1	0.5	2.4	0.1	0.3
1941e	52,011	4.0	92.9	0.4	2.0	0.5	0.3
1948m	46,519	29.2	65.6	0.2	4.5	..	0.5
1956m	52,096	30.3	67.6	0.3	1.4	0.0	0.4
1956e	52,096	34.8	59.9	0.2	4.6	0.0	0.5
1966m	68,246	43.0	56.2	0.4	0.0	0.1	0.3
1966e	68,246	46.4	50.5	0.8	0.7	1.2	0.4
1977e	101,860	50.3	48.0	1.0	0.3	0.3	0.2
1992e	130,584	54.8	41.3	2.8	0.0	0.8	0.3
2002m	113,697	57.5	41.4	0.5	0.0	0.2	0.3
2002e	113,697	57.5	39.8	1.4	0.0	0.9	0.4

Legend and sources: see Table 2a.

sequence of the wartime events (e.g. mass forced migrations, changing hierarchy of ethnic groups, Jews subjected to discrimination) the overwhelming majority of the population declared themselves Hungarian again at the 1941 census. After the Holocaust in 1944, only the minority of the deported Jews had returned to the cities, and their number decreased on the average by 60% (REMEMBER..., 1985). The Hungarian rule lasted only four years, as the Soviet and Romanian troops captured the cities researched in 1944 and Northern Transylvania got back to Romania.

Since the middle of the last century the changes of ethnic structure have been determined mainly by the socialist urbanization. The Romanian (and the Transylvanian) urbanization had several but ever subsiding waves (BENEDEK, J. 2006). The declared aim of this state-controlled process was the modernization (industrialization), which was to be achieved with the flow of rural population into urban centres. This period had two important administrative characteristics: the monocentric development (the county seats were privileged) and the forming of the so called 'closed cities'; the latter meant that in certain settlements only the selected ethnic group – generally the Romanians – was allowed to immigrate. This points out the second, though non-declared aim of the Romanian urbanization, which was the change of the existing ethnic structure.¹⁴

The arrival of the new, (culturally) diverse population led to breaking the local society into fragments, which had previously been weakened by the deportation of the Jews. Sometimes the theoretically autochthonous Hungarian community became also mixed. So the mass of the (mainly Romanian) immigrants caused a complete transformation of the interethnic relations and hierarchy. With the increasing proportion of Romanians the local political elite and the local policy has also changed, which contributed to a growing tension between the two main ethnic groups.

In Oradea, Satu Mare and Baia Mare the process of the socialist urbanization took place in a similar way: industrialization generated immigration, and – from the early 1960s – the newcomers were accommodated in new housing estates with low comfort. Contrary to South Slovakia – where the newcomers were mainly settled in the centre into the flats/houses of the deported Hungarians¹⁵ (Kocsis, K. and Kocsis-Hodosi, E. 1998) – the new residential quarters are located in the periphery of the cities, because this was the fastest solution to house the new inhabitants. In the first period (in the 1960s) the ethnic composition of the immigrants was more or less balanced (except

¹⁴ For a description of „Romanization“ of Transylvanian towns (especially Cluj-Napoca), see BRUBAKER, R. *et al.* (2006. 109–118).

¹⁵ That is why in towns of South Slovakia ethnic residential segregation cannot be observed.

Baia Mare),¹⁶ because in the first place generally the agrarian population of the environs moved in. From the end of the 1960s the ethnic structure of the incomers has changed; they became Romanian in absolute majority and the proportion of Roma started to increase. By around 1953 the Romanians formed the majority ethnic group in Baia Mare, around 1970 in Oradea and around 1973 in Satu Mare. Since then Hungarians are dual minority i.e. both in political and in demographic sense. On the whole, the highest population growth took place during the socialist period: between the 1948 and 1992 censuses its extent was around 2.7–2.8 fold in Oradea and Satu Mare and 7.1 fold in Baia Mare, which confirms that the latter is a real industrial city (see also GENTILE, M. and TAMMARU, T. 2006).

What were the spatial consequences of the urbanization? The cities enlarged their built-up area and several new residential quarters emerged, where the majority of the population now lives. In ethnic sense along with the management of state-controlled migration another important task of the (local) power was the symbolic appropriation of urban space (see BOBÓ, J. and BÍRÓ, A.Z. 2000; ERŐSS, Á. and TÁTRAI, P. 2010).¹⁷

From the late 1980s, due to the repressive minority policy of the Ceaușescu regime, many Hungarians (and other minorities) left the country and especially the cities included Oradea, Satu Mare and Baia Mare. The emigrants were mainly intellectuals which had a detrimental effect upon the social structure of Hungarians. Later from the early 1990s Romanians joined *en mass* to this emigration wave, because of the inferior economic situation of the country. Due to the disadvantageous processes (ageing, emigration, dezurbanization), the population of the cities decreased by about 10% between 1992 and 2002, which is typical of the former communist countries, and especially of industrial cities like Baia Mare (see GENTILE, M. and TAMMARU, T. 2006).

Patterns of ethnic residential segregation by the results of general elections

In the last decade there were three parliamentary elections in Romania (see *Table 1*). It is only the election in 2004, when the result of DAHR by electoral wards for all the cities could be analysed.¹⁸ Another reason why the research was based on this date is its closeness to the census in 2002, which gives the possibility to compare the electoral results with the ethnic data.

¹⁶ Romanians and Hungarians settled alike, but the majority was Romanian.

¹⁷ For example erecting statues of national (Romanian) heroes, naming streets in the spirit of communist/nationalist ideology or creating a new city centre.

¹⁸ In Romania, parliamentary elections comprise the election of the senate and the chamber of deputies. For the sanalysis only the latter is used.

In *Oradea* there are 131 electoral ward. Generally, the share of the votes cast for the DAHR is changing between 3 and 74 per cent – in this respect the difference between the last three elections is negligible. In 2004, the share of the votes gained by DAHR was less than the share of the Hungarians in the city. Only 41.6% of the ethnic Hungarians and about 45% of Hungarians above 18 years voted for the DAHR.

In 2004, most Hungarians (or to be more precise: DAHR-voters – in the followings simply Hungarians) have been concentrated in Episcopia Bihor (Biharpüspöki), a former village, which was attached to Oradea after the Second World War and has been inhabited predominantly by Hungarians. Here not only their number but their proportion is also the highest (above 72%).

Out of the top ten wards, where the highest number of DAHR-voters lived, six is situated in Oradea's largest housing estate, the Rogerius quarter. On the other hand, five of the last ten wards are situated in Ioşia (Őssi) and two in the south-eastern peripheries.

What is the reason for that? Rogerius is the largest¹⁹ and quite early built housing estate (from the 1960s). That was the period of industrialization and the population of Oradea started to grow to a large extent. Living in a city like Oradea meant much better circumstances and geographical mobility meant social mobility for the immigrants (BRUBAKER, R. *et al.* 2006). So in the first time newcomers arrived mainly from the broad surroundings of Oradea; and since the rural countryside was settled by Hungarians and Romanians as well, it resulted in an almost balanced immigration, which directed towards the new housing estates. The history of Ioşia is quite different. It has started to build up between the two world wars, it looks like a village and mainly Romanian colonists were settled here. The ethnic composition of this quarter has not changed significantly since that time.

For mapping the exposure of Hungarian population it is useful to calculate their proportion in the total voters (*Figure 1*). According to that indicator, the highest values are in two peripheries, where the DAHR-voters are the absolute majority (in the above-mentioned Episcopia Bihor and in Podgoria [Hegyközség], which is a hilly, sparsely populated area and part of Oradea since around 1960). The second highest proportion of Hungarians lives in the city centre, especially south of the river Crişul Repede (Sebes-Körös) in Oraşul Nou (Újváros).

On the contrary, the southern peripheries (e.g. Ioşia, Nufărul, Tokai) can be characterized by the lowest proportion of Hungarians. Nufărul is the second largest housing estate of the city and was built only in the 1980s. By that time the demographic 'reserve' of the rural vicinity had exhausted, so a

¹⁹ About quarter of Oradea's population live in Rogerius.

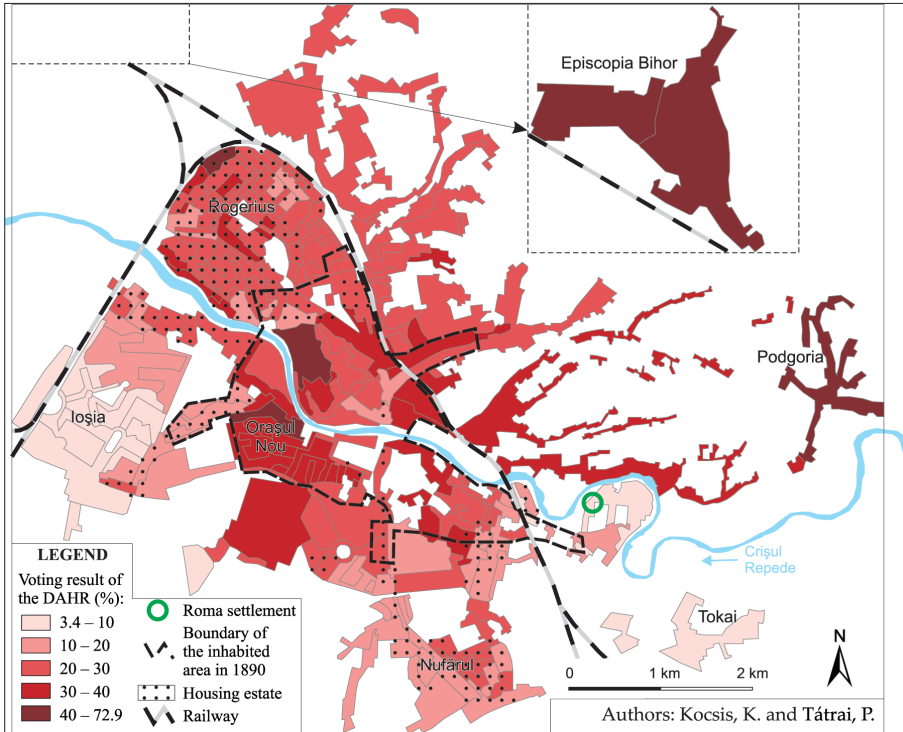


Fig. 1. Proportion of the DAHR-voters in Oradea in 2004. Source of data: DAHR office in Oradea

significant share of the in-migrants arrived from far countrysides, even from beyond the Carpathians – and were mostly Romanians.

In our days suburbanization is the most important process in the transformation of the city. In the southern fringe of the city new gated communities, while in the western, hilly districts, new family houses have been built. In the new quarters, it was not the ethnic affiliation but the social/financial background that determined the composition of the newcomers.

To sum up: the outskirts of Oradea and the large housing estates are mostly inhabited by Romanians; while the centre, the heart of the city still has some Hungarian features, exactly as the former independent villages in the north-western and in the eastern peripheries. While the first housing estates can rather be characterized as the field of coexistence of different ethnic groups, quarters built later are more homogeneous (Romanian).

In *Satu Mare* 60 electoral wards existed before 2008. In 2008 the number of the wards increased to 74. Generally, the share of the votes for the DAHR has changed between 12 and 73%. In 2004 – unlike in Oradea – the share of the

votes cast for the DAHR here (36.4%) was more than the share of the ethnic Hungarians (35.2%). It is observable that the result of the DAHR is commonly between the share of the ethnic Hungarians and the native speaker Hungarians (*Table 1*). Despite the relatively good result of the DAHR, only 40.2% of the ethnic Hungarians and about 43% of Hungarians above 18 years voted for the DAHR.

In 2004, wards with the lowest number of Hungarians coincide with wards with the minimum proportion of Hungarians. All wards with less than 25% votes for DAHR are situated south of the river Someş, mainly in the south-eastern part of the city. Likewise, the wards with maximum number and proportion of Hungarians also coincide; they are located on the opposite, north-western side of the city. This situation refers to the relatively even size of the election wards.

Votes collected by DAHR reached the 50% in eight contiguous wards in the north-western part of Satu Mare, which formed the western part of the city hundred years before (*Figure 2*). This part is a lowly built up area with historic buildings at the edge of the city centre and it turns into garden city beyond. The proportion of the Hungarians is also high in the northern part of the city and is above average in the oldest housing estates (Cartierul Solidarităţii north of the Someş and Micro 14, Carpaţi I. south of the Someş) – for the same reasons as in Oradea. The historic city centre itself is considered to be an interim zone concerning the votes for the DAHR with average values. The proportion of Hungarians is below average in the new city centre, in housing estates built after the 1970s and in the southern part of the city (especially next to the road to Cluj-Napoca).²⁰ In the newly built and still expanding suburbs (mostly in the eastern part of Satu Mare) DAHR achieved a result around or below the average, like in Oradea, which reflects that the ethnic proportions here correspond to those of the whole city.

Generally it can be stated that in Satu Mare, the ageing Hungarians live in old, lowly built up and partly in central quarters of the city, where they still form the majority ethnic group (50–70%). East of the railway and in the south their proportion is far from the average, and here they constitute a minority (20–40%). Contrary, the Romanians have younger age structure and live mainly in housing estates built during the last forty years and in the vicinity of the new centre (*Photo 1*). In spite of the above characteristics Hungarians and Romanians are not segregated. The residential differences originate from

²⁰ The new housing estates were built mostly south of the Someş; here can be found seven from the total nine new quarters, where the majority of the population is Romanian. The flood in 1970 also influenced the ethnic structure of the city, because subsequently two Roma camps on the riverbank were liquidated. In addition the construction of the new city centre started and therefore many Hungarians had to move out.

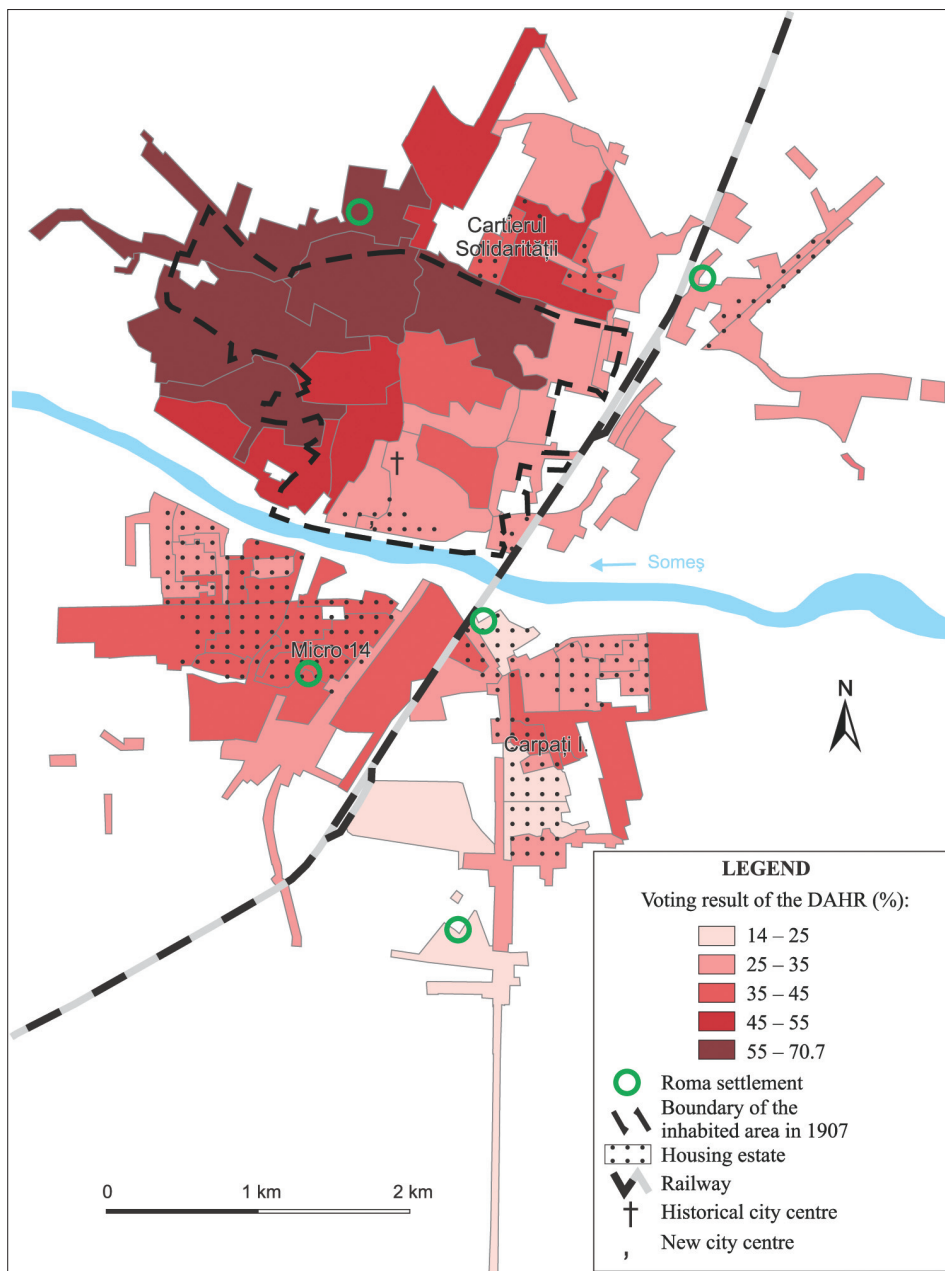


Fig. 2. Proportion of the DAHR-voters in Satu Mare in 2004. Source of data: DAHR-office in Satu Mare



Photo 1. The new city centre with the city hall (in the middle) in Satu Mare. Photo by TÁTRAI, P.

the past settling down of the ethnic groups and from the socialist urbanization with aspirations to change the ethnic composition of the city. In our days segregation on the basis of the financial conditions is more important than that on the ethnic basis. Housing estates are in bad condition and many people move from the flats without the needed comfort to the garden cities built next to the roads eastwards to Odoreu (Szatmárudvari) and Păulești (Szatmárpálfalva).

In *Baia Mare* – unlike the other two cities – Hungarians are considered to be a weak minority. This is the only of the three cities, where the number of the ethnic Hungarians is higher than the number of the native speaker Hungarians, which fact indicates significant assimilation process of Hungarians to the Romanians.

There are 76 electoral wards in the city at the parliamentary elections. Generally, the share of the votes for the DAHR has varied between 1 and 34%. During the 2000s, the share of the votes cast for the DAHR was less than the share of ethnic Hungarians (*Table 1*). In 2004, only 40.7% of the ethnic Hungarians and about 45% of Hungarians above 18 years voted for the DAHR.



Photo 2. The old city centre in Baia Mare. Photo by TÁTRAI, P.

In 2004, DAHR got the greatest number of votes in the eastern and central part of the city. At the same time the greatest proportion of Hungarian votes was found in the eastern areas (in wards mainly east of the old main square). The proportion of the votes gained by DAHR was above average in the whole downtown (with the exception of the new administrative centre) and north of the stream Săsar (Zazár), in garden suburbs stretching up the hills (Valea Roşie – Veresvív). These are the oldest parts of the city, where Hungarian population traditionally live (*Photo 2*). Generally it is stated here too that the proportion of the Hungarians is the highest in the old centre and in its neighbourhood.

The western edge of the centre, where the first housing estates were built is an interim zone with average or just above average Hungarian votes. The proportion of Hungarians is below average in the western part of the city in both bank of the Săsar as well as in some isolated wards in the southwestern and southern part of the city. Wards with the worst result (less than 10%) achieved by DAHR are situated (1) in the eastern and western peripheries (Fernezium [Alsófernezely]²¹ and Valea Borcutului [Borpaták]) and (2) in the

²¹ Fernezium was a Romanian mining village, which was ceded to Baia Mare after Second World War.

southern part of the city, where the newest housing estates and the largest industrial zones can be found (Figure 3).

On the whole, Baia Mare's ethnic configuration is quite similar to what is observable in Satu Mare. Hungarian population resides in the centre and east of the centre in a higher proportion than the average. These are the oldest, lowly built up quarters of the city. The housing estates serve as home mainly for the Romanians having arrived during the socialist urbanization, but a relatively high proportion of Hungarians also live in housing estates built in the 1950–60s. The neighbourhood of the main industrial zones is inhabited mainly by Romanians.

How can be the segregation shown in the cities researched? With the use of the categories by MASSEY, D.S. and DENTON, N.A. (1988), evenness and exposure can be measured by indices (IS and P*), while concentration, centralization and clustering cannot be measured with the indices recommended by them due to the lack of data within electoral wards. Latter three categories can be analysed with the maps (figures 1 through 3) and with the threshold method of JOHNSTON, R. *et al.* (2001).

The index of segregation testifies to the rather even distribution of Hungarians in all the three cities. The values of IS are low – particularly com-

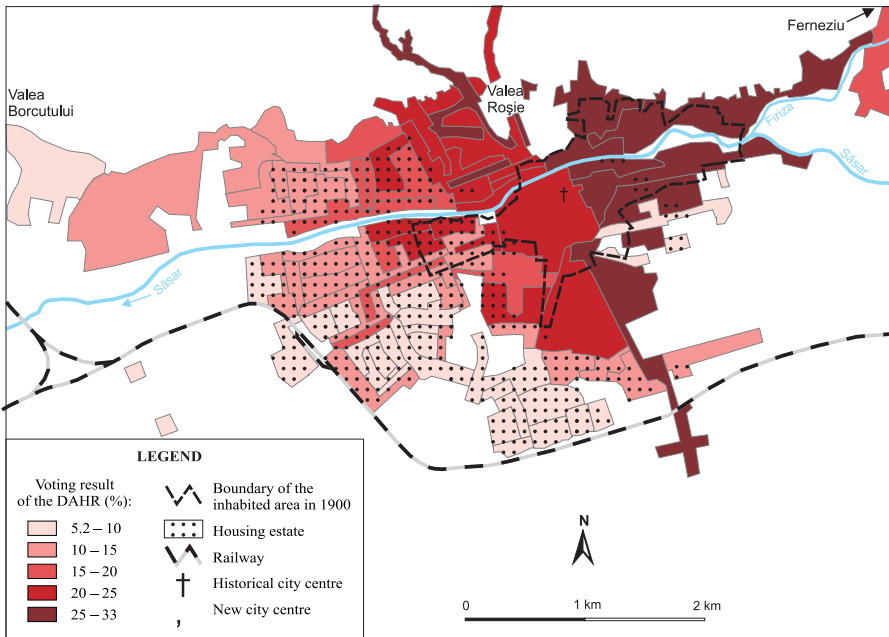


Fig. 3. Proportion of the DAHR-voters in Baia Mare in 2004. Source of data: DAHR-office in Baia Mare

Table 3. Segregation and interaction indices in cities investigated and in some western cities

Year	Oradea		Satu Mare		Baia Mare		Amsterdam	Rotterdam	The Hague	Utrecht
	Hungarians		Hungarians		Hungarians		Non-western minorities			
	IS	P*	IS	P*	IS	P*	IS	IS	IS	IS
2000	17.2	0.71	-	-	-	-	34.9	40.8	45.7	34.8
2004	18.0	0.72	16.7	0.60	23.7	0.83	36.3	38.5	46.1	37.4
2008	18.0	0.75	19.1	0.57	24.9	0.84	-	-	-	-
	Belfast	East Berlin	West Berlin	Bradford	Budapest	Dusseldorf	Glasgow			
	Catholic-Protestant	Foreigners	Foreigners	South Asians	Gypsy pupils	Labour migrants	Indian	Pakistani	IM-PM	IH-IM
	D	IS	IS	IS	IS	IS	IS	IS	P*	P*
1971	49.6	-	-	-	38.7	-	-	-	-	-
1981	57.7	-	-	-	-	36.2	-	-	-	-
1986	-	-	-	-	39.3	37.1	-	-	-	-
1991	60.2	36.8	32.1	75.0	-	36.7	-	-	-	-
1996	-	29.6	30.1	73.9	-	-	-	-	-	-
2001	-	-	-	74.0	-	-	35	38	0.311	0.001

Legend: IS = Index of segregation; D = Index of dissimilarity; P* = Isolation index; IM = Indian Muslim; PM = Pakistani Muslim; IH = Indian Hindu. Sources: Amsterdam, Rotterdam, The Hague: Bolt, G. et al. 2008; Belfast: DOHERTY, P. and POOLE, A.P. 1997; East and West Berlin: KEMPER, F.-J. 1998; Bradford: SIMPSON, L. 2004; Budapest: LADÁNYI, J. 1993; Dusseldorf: GLEBE, G. 1997; Glasgow: MUNOZ, S.-A. 2006.

paring with other and somewhat larger cities (Table 3) – and have not changed considerably between 2004 and 2008.²² What is the reason for the low segregation index? Formerly, during the Hungarian rule, the Hungarians were the majority ethnic and political group; they filled up the urban space. During the socialism rural Hungarians immigrated into the cities, and because of the lack of housing and the better state of supply, they could mainly move to housing estates of the peripheries, to where the majority of the Romanian newcomers did too. So comparing with western cities, one important factor is the (partly) autochthonous origin of Hungarians (in contrast to the dominantly migrant background of Western European minorities) and the second factor is the uniform distribution of Hungarians, which is attributed to the historical development of the cities.

²² The change in Satu Mare's IS index is rather the consequence of the transformation of the electoral wards.

Isolation index proved that exposure of Hungarians gives the possibility for close contact with the Romanians. It is due to the even Hungarian distribution in the cities, but it should be emphasized that the value of the index is basically influenced by the current ethnic proportions. In practice interaction is not only a possibility, it is the reality, people with different ethnic background live, work or learn together (e.g. see BLOMQUIST, A. 2006; BRUBAKER, R. *et al.* 2006). The high values of P* also indicate the incompact settling of Hungarians and the huge surface of contact between the two largest ethnic groups.

On the basis of the first two categories (evenness, exposure) and indices, it is concluded that concentration of Hungarians is observable, and *Table 4* shows the dimension of the concentration in the cities. It presents the percentage of Hungarians living in wards where they exceed at least their defined ratio within the total population. According to the results at 2004 election, only a small proportion of Hungarians lived in wards, where they form the majority. But half of Oradea's, 95% of Satu Mare's and 17.5% of Baia Mare's Hungarians lived in wards, where they formed 25% or more of the total. If the threshold is the average of votes cast for the DAHR in each city, then Baia Mare seems to be the first in the relative concentration of Hungarians: their 59.2% in 2004 and 65.4% in 2008 lived in wards where DAHR gained votes above the average.

Unfortunately, concentration can be measured only on the level of electoral wards, which are not small enough to get to know the detailed patterns of residential concentration. Despite this it can be stated – on the basis of field

Table 4. The concentration of the Hungarian population in the cities investigated

Threshold (% of total population)	Oradea		Satu Mare		Baia Mare	
	2004	2008	2004	2008	2004	2008
5	99.7	99.7	100.0	100.0	99.4	97.3
10	98.8	98.2	100.0	100.0	78.2	78.6
15	94.7	90.1	99.5	99.7	53.1	54.7
20	79.4	67.7	99.5	99.0	35.1	34.3
25	49.9	35.9	95.6	97.5	17.5	6.1
30	28.2	18.2	82.2	81.8	5.4	6.1
35	11.9	9.6	61.1	70.6	0.0	0.0
40	8.6	6.3	34.7	50.9	0.0	0.0
45	4.9	6.0	24.4	37.1	0.0	0.0
50	4.9	6.0	20.6	25.0	0.0	0.0
60	4.6	6.0	9.5	13.7	0.0	0.0
70	4.6	2.7	3.9	2.7	0.0	0.0
above city average	56.2	58.9	49.5	53.5	59.2	65.4

work and local opinions – that there are not blocks or small districts (or they are very few) in which Romanians or Hungarians would live exclusively.

As far as fourth category of MASSEY, D.S. and DENTON, N.A. (1988), the centralization is regarded, two characteristics are outlined: first, the proportion of Hungarians is above average in the city centres, but their highest share can be seen in old quarters in the edges of centre and not in the very centre. Second, the ethnic patterns are influenced by the administrative changes, so peripheries may also concentrate sizeable Hungarian population (e.g. in Oradea). An analysis of the maps shows that centralization of Hungarians is equally significant in Satu Mare and Baia Mare and less typical in Oradea.

Clustering and contiguity can be only analyzed by the maps. Wards with high proportion of Hungarians are generally clustered in the vicinity of each other. The position of these wards is contiguous in Satu Mare and Baia Mare and rather scattered in Oradea, however it is neither random in the latter.

Patterns of the residential segregation of Roma population

Roma are a small but increasing ethnic group in all of the cities investigated, but the social, economic and residential circumstances of Roma and non-Roma are clearly distinct. Official data on their distribution inside the cities are not available, but the existing data (e.g. ethnicity, mother tongue on the level of settlement) are also needed to deal with cautiously. Although Roma generally have specific electoral behaviour (e.g. lower turnout or important role of the community leaders in decision on voting – see KOVÁCS, Z. and DINGSDALE, A. 1998; BODOCAN, V. 2003), the election results are neither applicable to present their residential distribution since at this moment there exist no such Roma party, which could represent and unite the whole (heterogenous) Roma community. So the following analysis is based on sporadic data released by the local governments and on own observations (only in Oradea and Satu Mare).

In Oradea the official number of Gypsies is 2,449 persons according to ethnicity and 1,024 persons according to mother tongue (1.2 and 0.5% of the total population). 37% of ethnic Roma has Hungarian and 22% has Romanian mother tongue. According to estimations about 4,500–5,000 Gypsies live in the city, whose majority belongs to the so called Hungarian Gypsy group. They settled here earlier than the Romanian Gypsies and resided in a peripheral colony. This colony was demolished during the socialism and Roma moved to a housing estate (called “Voltaire” – *Photo 3*) formerly owned by the army. Now “Voltaire” and the family houses of the surrounding streets (green ring in *Figure 1*) concentrate about third of Oradea’s Roma population – mainly the Hungarian Gypsies. The rest live in various places throughout the city (but most of all in the south-eastern peripheries).



Photo 3. Roma ghetto in Oradea. Photo by Erőss, Á.

1,115 ethnic Roma and 265 native speaker Roma lived in Satu Mare in 2002 (0.9 and 0.2% of the total population). Hungarian Gypsies formed 60% of this group. According to local estimations about 2,500 Gypsies live in the city, whose predominant majority is Hungarian Gypsy. Until 1970 two colonies had existed, but the flood of the Someş swept away them. Nowadays half of the Roma live in six bigger colonies in different but peripheral points of the city (www.satu-mare.ro), including housing estates, segregated colonies, neighbourhood of industrial zones and deteriorated garden suburbs. In this six colonies Roma live mostly in public social housing, where the 97% of the flats consists of one room, and 4.55 persons fall to each flat (www.satu-mare.ro).

In Baia Mare 2,092 persons declared Roma ethnicity and 733 declared Roma mother tongue according to the 2002 census. Contrary to Satu Mare, here 61% of Roma has Romanian mother tongue. Gypsies mostly live in deprived housing estates in the peripheries or in the neighbourhood of industrial zones.

While the above-mentioned factors describe rather a complex situation of the Roma segregation, some common characteristics still are observable. First of all Roma suffer residential, educational and labor segregation in the cities studied (and over the whole country). Many of them reside in peripheral,

dilapidated housing estates or camps, which are considered to be ghettos. In urban neighbourhoods an important share of Gypsies live in public housing, meanwhile the same indicator for non-Roma is negligible (RUGHINIS, C. 2004). On the whole, Roma is the most segregated ethnic group in Romania, both in rural and urban settlements. According to LADÁNYI, J. and SZELÉNYI, I. (2002) 10.9% of Romanian Roma live in Gypsy settlements, while an additional 17.1% live in neighbourhoods, where a majority of the population is Roma. Strong Roma residential segregation is also observable in the region dealt with in the present study, mainly in the rural areas (see TÁTRAI, P. 2010). But it is also to be emphasized that the segregation of Roma is not a new phenomenon, it has deep historic roots in this region. Already back to 1893, Roma resided separate in 60% of the 226 settlements in the historic Sathmar (Satu Mare/Szatmár) region (A Magyarországon..., 1895).

Conclusion

In East Central Europe – as all over the world – segregation is a tangible phenomenon. Segregation of population with different cultural roots can have various types: it may be based on linguistic, religious or ethnic cleavages as well (see MUNOZ, S.-A. 2006), but the present study only focused on latter. The research aimed to present how these ethnic groups are situated in the (urban) space, what are the similarities and differences in their residential conditions.

In this region, where ethnic and national boundaries do not coincide, ethnicity has a strong political connotation. During the 20th century, state borders changed several times, which resulted in sizeable minorities and tensions among states and among ethnic groups. Therefore segregation cannot be studied without dealing with the general demographic conditions, processes and the current political situation. Segregation depends both on local and national power relations.

Focusing on Northwest Romania, the former ruling (politically dominant) ethnic group, the Hungarians found themselves in minority position after 1920 and 1945. This generated a change in the ethnic composition of (mostly) the cities, so by the last quarter of the century, Hungarians became ethnic and political minority group locally too. The extent of ethnic diversity of cities researched is the result of this process. The relative segregation in the cities is first of all the result of the socialist urbanization imposed by the nationalist-communist Ceaușescu-regime. Another important factor is the different time of settling down of the ethnic groups. Here, coexistence has tradition, but it did not affect a large number of population until the middle of the last century. So the duration of the segregation is quite short yet; much

shorter than in villages (see TÁTRAI, P. 2010). A possible ethnic conflict can also contribute to the development of the segregation, but in the cities investigated it is not typical.

What are the features of the segregation in Oradea, in Satu Mare and in Baia Mare? On the whole, it could be stated that there is not an absolute ethnic residential segregation among Romanians and Hungarians. Nevertheless, in every city one can find quarters dominated by Hungarians (or at least those with a high proportion of Hungarians). These are parts of the settlements where they have lived for at least one hundred years. Examining the history of the immigration, it is found that Romanians practically settled next to Hungarians, instead replacing them – as it happened to new majority and minority groups in many countries in East Central Europe. Another common feature, that Hungarians live in old, lowly built up and central parts of the cities, while the surroundings of the new administrative centres are inhabited by Romanians in most cases. Housing estates rather serve as home for Romanians. Among the other ethnic groups certain residential segregation of Roma is observable; they live mostly in urban peripheries, which can be easily transformed to small ghettos in the near future.

As there is not a real ethnic segregation between the Romanians and Hungarians, the question is the duration of this 'quasi-segregated' status. The index of segregation reported about a stagnating situation, but it only represents a short interval. With the economic and social changes (e.g. suburbanization) ethnicity as worth probably declines. Other processes (e.g. the transformation of the ethnic composition, migration, mixed marriages, assimilation) also have effects against ethnic segregation, but the date of the termination of segregation is unforeseeable.

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LITERATURE

Hungarian Geographical Bulletin 60 (2) (2011) pp. 217–220.

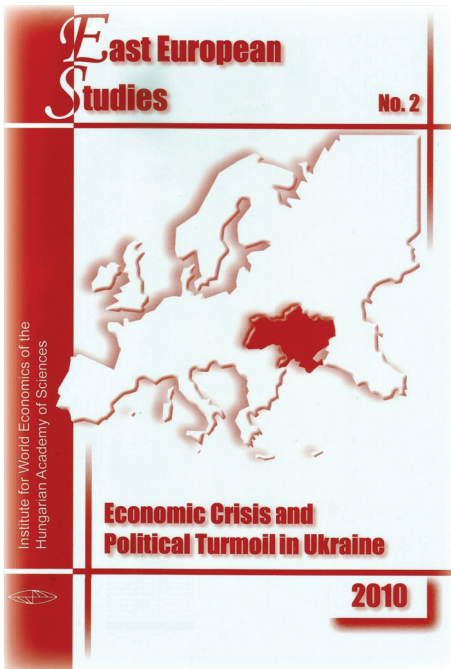
Fóti, G. and Ludvig, Zs. eds.: Economic Crisis and Political Turmoil in Ukraine. East European Studies No 2. Institute for World Economics of the Hungarian Academy of Sciences, Budapest 2010. 153 p.

In late 2009 the Institute for World Economics launched a new publication series entitled “East European Studies”. The second piece of this series is devoted to the research topic of the impacts of global economic crisis on Ukraine. Since this crisis has been accompanied by a lasting political turmoil in the country the volume treats the two phenomena in parallel while also analyzing their interdependence.

The first study (*Economic Crisis and Ukraine’s Financial System*) by Valeriy HEYETS leads the reader to the true substance of the Ukrainian economic crisis focusing on its financial issues. As it is widely known, Hungary’s eastern neighbor is one of the most hardly hit economies by the global crisis even in a broad international comparison. However, before the crisis period Ukraine’s economy had a prolonged growth stage with annual rates exceeding 7%. Even though in its separate phases the causes of growth were quite different, this period terminated in the middle of 2008, Later these triggers appeared to be the factors determining the very acute character of the crisis arising in 2008 and 2009. The author gives a comprehensive explanation why this should and could happen, and presents an analysis of the previous fiscal and monetary policies and their relationship with domestic political developments.

The second article (*Crisis Management in Ukraine: State, Private and International Actors*) by Tetyana I. YEFIMENKO deals with the challenging issue of crisis management and draws some predictions concerning the future of public private partnership in Ukraine. YEFIMENKO also argues that it is an objective development trend worldwide that new institutions emerge to promote interactions between government authorities and private business. International experience shows that PPP-based co-operations boost the efficiency of society’s essential systems and divide the risk between the state and the private sector in a rational manner.

The third study (*The Effect of Presidential Elections and the World Economic Crisis on Power Politics in Ukraine*) by István SZABÓ closely connects the problems of the economic crisis and the issue of domestic political landscape with a special attention



to Ukrainian oligarchs. Oligarchic structures are present in almost each post-Soviet polity, although their role and position may alter from country to country. Opposite to their Russian counterparts, Ukrainian oligarchs need to spread out their business activities on almost all sectors of the economy due to the scarcity of natural resources. One major thesis of the author is that the economic crisis amplified the scope for change in the political elite, whereas oligarchs managed to survive during the last nearly two decades. Nonetheless, the challenge they have to face at present, namely the global economic crisis is a dreadful one.

The second block of studies focusing on key Ukrainian economic issues contains two prominent studies on the state and prospects of the agrarian sector and the processes of migration. In his economic geographical study (*The Ukrainian Agrarian Sector and the Global Economic Crisis*) Dávid KARÁCSONYI raises the question whether European and worldwide agro-ecological conditions could offer an inexhaustible source of wealth or not. The study analyzes the history of agrarian transformation since the systemic change in Ukraine with an emphasis on the product structures and production dynamics, the issues of agricultural employment, ownership and production efficiency with a regional approach, and the participation in global agricultural markets. Eventually KARÁCSONYI highlights the impacts of the global crisis on the Ukrainian farming sector. It should be highly appreciated that the study is rich in thematic maps demonstrating different scales of indicators of agricultural activity in Ukraine.

The closing study (*Migratory Process Transformation under Conditions of a Global Crisis*) by Ella LIBANOVA leads the reader to the intriguing issue of Ukrainian migration as it is one of the most precise characteristics of any given population's attitude to the quality of life and living standards, assessments and expectations of possible changes in the region of permanent residence and in other places accessible for in-migration. It is only since 2005 that migratory balance turned positive again in Ukraine. The study provides rich statistical database to these processes while trying to give answers to basic motivations for the movements as well. Regretfully, maps showing the main geographical directions and volumes of migration across the country are sorely missing.

With this publication the authors contribute to the better understanding of today's Ukraine and hopefully the readers from the academic and the educational fields as well as from the administration sphere will find this volume valuable and useful in their work.

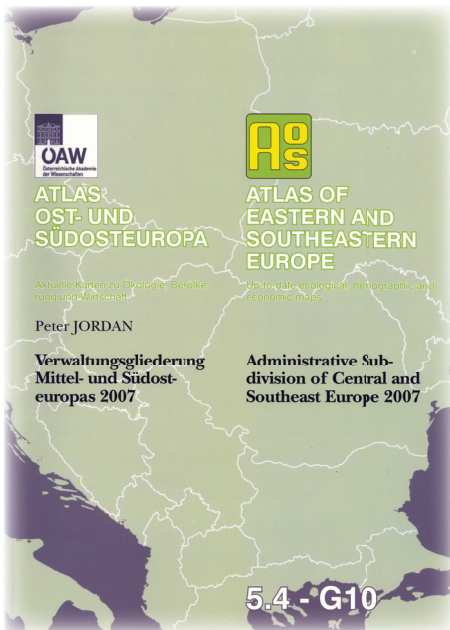
TIBOR TINER

Jordan, P.: Verwaltungsgliederung Mittel- und Südosteuropas 2007/Administrative Subdivision of Central and Southeast Europe 2007. Institut für Stadt- und Regionalforschung der Österreichischen Akademie der Wissenschaften, 2010. Vienna. 212 p. (Series: Atlas Ost- und Südosteuropa/Atlas of Eastern and Southeastern Europe. 5.4 – G10)

The latest volume of the series Atlas of Eastern and Southeastern Europe is the supplement (or continuation) of the publication with the same topic from 1989. It consists of two parts: the map and the accompanying text (70 pages in German, 69 pages in English). At the end a register is added on 70 pages.

The map layout represents an extract of Central and South-eastern Europe as of 01.01.2007. This date seems rather early compared to the date of publication (2010), but it helped the author to avoid the problem arising from the present legal status of Kosovo. The area represented is the same as in 1989: from Thuringia in the west to Kiev in the east and from Vilnius in the north to South Albania in the south. Only the former socialist buffer states between the Soviet Union and Western Europe are represented on the map completely. The map depicts administrative borders and seats of various levels: besides the state borders, generally the levels of NUTS-3 through NUTS-5 are shown (as in most of the countries investigated NUTS-2 is a merely statistical-planning level without real administrative functions). The border of the EU is also represented. The inscriptions are written in the official language of the specific country. Regarding the design of the map it should be emphasized that the harmonic colours of the administrative units can be clearly marked off.

Four of the five main sections of the accompanying text consist only 7–8 pages together. The introduction begins with a general overview and includes some basic definitions for a better understanding of the text. The second part deals with the state of the EU integration of the countries in transition. The author describes the EU enlargement process, the membership of Eurozone and Schengen Area until 2007 (but indicates the changes until 30.06.2010), writes about the relation with the non-member states and puts forward the perspectives of the further enlargement. The third unit investigates the present situation of the decentralisation process in the transformation countries. It starts with an overview about the roots of the administrative system, since the historical development has been quite diverse in the region: it fundamentally differed in the Hapsburg, Russian and Ottoman empires. This chapter then turns from the past into the present and depicts the expectations by



the EU: that would be the weakening of the centralised nation states and empowering the regions (NUTS-2–3 levels). The author also refers to the importance of the European and regional identity in this process. On the one hand his views seem realistic: e.g. barely developed European awareness, existing but weak regional identities, on the other hand idealistic conceptions and general statements also occur (e.g. “strengthening of regional identities and regionalisation could be in a position to halt nationalism and reduce the likelihood of large-scale conflicts. Switzerland offers of good example...”). That idea might be right theoretically, but it is very far from working in the reality.

The fourth part of the accompanying text (entitled Subnational territorial-administrative units and their development) is the main analysing section. A detailed presentation is given about the 17 countries (in order: Bulgaria, Czech Republic, Hungary, Lithuania, Poland, Romania, Slovakia, Slovenia, Albania, Belarus, Bosnia and Herzegovina, Croatia, Macedonia, Moldova, Montenegro, Serbia and Ukraine). To be more comparable, every country has been elaborated according to identical criteria: first, the cultural and administrative traditions are shown, followed by the developments between 1989 and 2007; finally the current administrative-territorial system is presented. There is a figure at every country about the current administrative system, which makes them more understandable.

At the end of the accompanying text a short synopsis can be found, which offers the essential characteristics of the 17 states surveyed. Figure 18 is perhaps the most valuable part of the book: it summarizes the main features of the administrative systems by countries and by NUTS-levels, completed with information on administrative traditions.

The final part of the book is the register of the administrative units depicted on the map with their seats. This part includes not only transformation countries, but all the regions that appear on the map. As it was mentioned earlier, only official names were indicated on the map, even so the register includes a very few minority names too. It is evident in Slovenia, where Italian and Hungarian minority names are official in certain regions, but not so in Hungary, where the German names for Győr and Sopron are indicated, but e.g. Kőszeg appears only in Hungarian or in Romania, where Hungarian and German geographical names are in the register but the reader cannot find neither historical nor ethnic connotations for that.

The attempt to draw the administrative map of Central and Southeastern Europe and to present the administrative characteristics of 17 countries was a significant task – and it has proven to be a successful undertaking. The atlas is a very useful database for anybody interested in administrative issues of this region.

PATRIK TÁTRAI

CHRONICLE

Hungarian Geographical Bulletin 60 (2) (2011) pp. 221–227.

Report on the international workshop „Regional Socio-Economic Processes in Central and Eastern Europe – 20 Years in Transition and 2 Years in Global Economic Crisis”

Budapest, April 4–5, 2011

The first scientific encounter of geographers from Visegrad countries and their neighbours was organized in Budapest. The idea of the workshop evoked in the host institute, the Geographical Research Institute Hungarian Academy of Sciences, while further financial support was afforded by the International Visegrad Fund and the Department of Social and Economic Geography of the Eötvös Loránd University, Budapest. Not only the press but also the politicians paid close attention to the event: in her welcome speech Mrs. Edit SZILÁGYI BÁTORFI, the V4 national coordinator of Hungary emphasized the moral and political importance of this scientific forum for all the Visegrad Group.



Participants of the ReSEP CEE workshop, GRI HAS

The almost fifty invited lecturers arrived from ten different countries and spoke nine vernaculars from post-socialist Central and Eastern Europe. Twenty years after the change of communist regime human geographers could evaluate the recent processes and discuss the possible new directions of cooperation. The purpose of the conference was to refresh the former scientific connections and to build new ones. In a globalising world the eastern neighbour areas of the European Union have been being upgraded. In addition, the Visegrad Four (V4) might form a kind of bridge between East and West. This goal was to be reinforced by the workshop with the main objective of getting a deeper insight in socio-economic processes having taken place in the CEE countries and in the wider surroundings and their interpretation from geographical aspects. According to its general conception the conference was to provide a chance to specialists of the region representing various disciplines of geography to exchange ideas about numerous regional, structural and ethnic problems that had emerged in the last two decades.

The main goal of the workshop, to open the floor to geographers from neighbouring countries, was attained: participants arrived from Austria, Germany, Poland, Czech Republic, Slovakia, Belarus, Ukraine, Russian Federation, Romania and Hungary. All the partners (not only colleagues from the V4 countries) supported the idea of preparing a website of the workshop in all the languages of the participants to enhance the multifarious cultural character of the region. As a result of the participants' efforts therefore the general conception and the detailed programme could be read in ten different languages (http://www.mtafki.hu/ReSEP_CEE.html) which highly contributed to the value of this project. Although the official language of the conference was English, a session was also held in Russian to encourage communication among the Russian speakers as well.

Károly Kocsis, director of the GRI HAS opened the two day long conference. The workshop had two plenary sessions, where the representatives of the leading geographical institutions introduced their professional profile and on-going research projects. On behalf of the V4 countries Antonín VAISHAR offered a brief overview from the Geonics, Brno, Grzegorz WĘCŁAWOWICZ from the Geographical Research Institute Polish Academy of Sciences, Warsaw; Vladimír IRA from the Institute of Geography, Slovak Academy of Sciences, Bratislava; and Károly Kocsis the GRI HAS. The second plenary session, chaired by Vladimir KOŁOSSOV, was entitled to the V4 neighbours' geographical institutes. From the western neighbours Peter JORDAN introduced the Institute of Urban and Regional Research from Vienna, while Isolde BRADE talked about the Leibniz Institute for Regional Geography, from Leipzig. Regarding the eastern neighbour countries the participants had the opportunity to get acquainted with the following institutions: Belorussian State University Faculty of Geography represented by Ekaterina ANTIPOVA, the Institute of Geography Ukrainian National Academy of Sciences by Grygorii PIDGRUSHNYI and the Institute of Geography of Russian Academy of Sciences by Vladimir KOŁOSSOV.

In the afternoon the first scientific session was the Russian speaking one, chaired by József NEMES-NAGY, about the actual demographic and economic issues in the post-Soviet region. Grygorii PIDGRUSHNYI presented a summary about the actual industrial processes in Ukraine, Liudmila FAKEYEVA highlighted the most important demographic shifts in Belarus in the last twenty years, while Mikalai KABYLINSKI talked about the actual characteristics of labour market in Belarus. Summarizing this session its chairman called the attention of the audience to the divergent development trajectories of these post-soviet countries.

The second session was dedicated to actual socio-geographical processes in the Visegrad Countries, chaired by Vladimír IRA. Viliam LAUKO presented the spatial pattern of higher education in Slovakia in the last twenty years; István TÓZSA gave an overview about the spreading of info-communication technologies in the region; Mikulas HUBA summarized

the recent environmental challenges Slovakia had to face; Janusz GÓRECKI revealed some spatial characteristics of the business sector in Poland.

In the afternoon the foreign participants also were invited to a bus sightseeing tour round Budapest, guided by Zoltán Kovács (GRI HAS).

On the second day seventeen presentations were held in four scientific sessions. The first session focused on rural areas and peripheries chaired by Peter JORDAN. The opening presentation by Thilo LANG offered an in-depth and remarkably systematized overview on the theoretical frame of peripheralization. Antonín VAISHAR presented a case study on a peripheral part of the Czech-Polish border zone. Magdalena DEJ and Robert GUZIK analysed the spatial accessibility of rural areas in Poland. Based on abundant statistical and field work data Magdalena DEJ studied the accessibility of secondary education facilities, while Robert GUZIK evaluated the public transportation system in the Western Carpathians in Poland.

The second session chaired by Isolde BRADE was devoted to the urban areas. Grzegorz WĘCŁAWOWICZ gave a lecture on the effect of economic crisis upon Central and Eastern European urbanization processes. László JENEY offered an overview on the state of CEE countries in the European city competition. Then Kostyantyn MEZENTSEV analyzed the changes in urban regions and urban network in Ukraine. The session was closed with a presentation by Petr KLUSÁČEK about the revitalization processes and challenges of a brown-field area in the Czech Republic.

Grzegorz WĘCŁAWOWICZ opened the fifth session dedicated to the investigation of effects of global economic crisis, although the first exciting presentation by Márton CZIRFUSZ rather aimed at showing how the post-socialist economies have been portrayed in contemporary art. Volodymyr ANDERSON evaluated the clusterization potential in different areas of Ukraine. Olga SHUVALOVA's presentation focused on the energy sector in East Germany. The following papers were dedicated to the spatial effects of the crisis in Hungary and Romania. Hajnalka LŐCSEI focused on the regional effects of the crisis in Hungary, while Egon NAGY put the emphasis on the nationwide trends in the economy of Romania and governmental responses.

The Russian Federation and the European Union was the topic of the last session, chaired by Volodymyr ANDERSON. A lecture by Pál SZABÓ on the spatial structure of the EU, a paper by Andreas WUST about changing border regimes and an exciting presentation by Ferenc GYURIS about changing spatial disparities in Russia closed the workshop.

Active discussions followed each session, especially in connection with the countries or territories that have not been recognized officially by the UN (after the presentation of Anna Shmytkova). These conversations also emphasized the importance of events as this conference to give chance, among others, to harmonize divergent opinions.

The presentations will be available on the website of the conference mentioned above; in addition they will be published in a volume of papers during this summer. The hosts of the workshop hope that this initiative will be organized later as a regular meeting of geographers from V4 and neighbouring countries. The leading geographical institutes of Visegrad Countries consider the compilation of a joint publication: an atlas entitled "Visegrad Countries in Maps".

Coordinators of the ReSEP CEE workshop, GRI HAS

Ágnes ERŐSS and Dávid KARÁCSONYI



It is a rare occasion that the professional career of a specialist coincides almost exactly with an accelerating transformation of the technology of the domain he has been involved in deeply. Nonetheless this is just the case with Zoltán KERESZTESI who has been chief of the Department of Cartography of the Geographical Research Institute (GRI) HAS for several decades. Most of his half-century activities cover this period of cartography leading from the classic technology based on photo- and lithography to computer assisted mapmaking.

KERESZTESI received his diploma of geographer-cartographer at the Faculty of Natural Sciences of Eötvös Loránd University, Budapest, in 1960 and joined the Geographical Research Group (RG) HAS in the following year. This workshop guided by Márton PÉCSI was thoroughly engaged in thematic mapping, particularly in working out the methodology of geomorphological

mapping. This way the young cartographer entered the academic sphere.

For ten years (1963–1973) KERESZTESI returned to his *alma mater* as an assistant professor, to teach the young generations and to project and set up a modern laboratory of cartography providing equipment for reproduction photography, typesetting, preparation for printing. He defended dissertation in hydrogeographic mapping in 1965. At the same time he kept on maintaining close contacts with the RG, where established a similar laboratory after his return, in the mid-70s.

Later KERESZTESI became involved in large-scale projects, participating in the edition of two maps for Atlas of the Danubian Countries (*Atlas der Donauländer*) edited by Josef BREU: those of hydrology and geomorphology. At the GRI the engineering-geomorphological mapping of Budapest was completed by 1980 at a scale of 1:20 000. Then the legend of a new type of a base map: that for the environmental assessment of urbanized and technogenous areas became created with his active participation.

The 1980s were dominated by atlas cartography in his life work. He became the editor of the physical geographical section of the second edition of the National Atlas of Hungary (NAH) and co-author of some of the maps. These efforts in organization and coordination yielded an atlas that gained a high governmental recognition subsequently: editorial board members received Széchenyi Prize in 1990. Two years later a thematic atlas in palaeogeography came out (late Pleistocene–Holocene environment of the northern hemisphere) prepared in international cooperation. The responsibility for lithography and printing rested completely with KERESZTESI's department. It should be mentioned that the high quality was reached in spite of the very modest technological background. For instance, the printing out of copies of four-colour maps was carried out on a monotint press of the GRI. This was one of the last pieces among the series of atlases produced by

the traditional way, with the strict division of design, drawing, colour separation, and printing from plates.

In the 1990s KERESZTESI was championing the new technology – computer aided mapping. All over the world cartography laboratories grew up with workstations, PCs and peripherals: scanners, plotters and printers. KERESZTESI was in charge of purchasing instruments for the GRI for long decades. It has been largely his merit that by the mid-90s a SUN workstation with Arc/Info electronic map publishing software supported by PCs produced NAH supplementary map folios. The primary demand towards the system was the adequate preparation for printouts. At the same time GIS-based mapping of Hungarian ethnic minorities in the Carpathian basin started with the establishment of textual and graphic databases: their merges resulted in a map series at different scales (Burgenland, Slovakia, Transcarpathia, Transylvania, Vojvodina, Pannonian territory of Croatia, Prekmurje) authored by Károly Kocsis. The long lasting editorial work and computer assisted mapping terminated with a double ethnic map of Hungary (scale of 1:500 000; 1941–2001) in 2009.

The first decade of the new millennium saw the publication of *Magyar Tudománytár* in six volumes by the Centre for Social Studies of HAS. Some of the volumes are richly illustrated with maps produced by the small workshop of a couple of gifted young cartographers guided by KERESZTESI. Initially solicited by high EU circles, three pieces of the “in maps” albums with a strong geographical orientation (on South-Eastern Europe, Ukraine and Hungary) were published in English in the second half of the decade. The Hungarian version of the latter (*Magyarország térképeken*) appeared in May 2011.

The editorial board of the Hungarian Geographical Bulletin (HGB) congratulates Zoltán KERESZTESI on his 75th birthday. For he has shown

- a high accomplishment in technology of mapmaking,
- persistence in teaching cartography to young generations,
- consistence in the application of innovations,
- skills in organization and leading large-scale projects.

Ferjan Ormeling, Secretary-General and Treasurer of the International Cartographic Association in a lately evaluation of our journal HGB wrote: “To have access to a cartographic laboratory where cartographers are able to illustrate in a relevant way the papers and articles to be incorporated in the journal is a real bonus and the scientists working in the GRI of the HAS might not treasure this sufficiently. The level of the cartographic illustrations in HGB is very high, and I hope it will remain so.” Thank you, Zoltán!

László BASSA

Senior adviser László Bassa is 65 years old

This March our colleague and friend László BASSA, managing editor of Hungarian Geographical Bulletin celebrated his 65th birthday. On this remarkable occasion we'd like to thank with a few words for his permanent contributions to the cartographic activities of the Geographical Research Institute of Hungarian Academy of Sciences, for translating, editing and revising a huge number of books, attractive atlases and series of thematic maps demonstrating achievements of physical, economic and human geography in Hungary.

László BASSA was born on 29th March 1946 in Budapest. He attended the Moscow State University of Geodesy, Aerial Photography and Cartography from 1964 and graduated as a cartographer (engineer in cartography) in 1969. Returning to Budapest he worked at the state-owned company (Cartographia) as a junior cartographer. Parallely he translated geographical studies into Russian and also edited cartographical publications. In 1971 he made a state exam in English and soon became a skilled translator of geography and cartography in both languages.

In 1977 he changed his workplace and joined the staff of the Geographical Research Institute of HAS. Owing to his excellent Russian and English and organizing talent, he became responsible for international relations of the institute. He held an administrative but important position supervised by the director of the institute. For the first years of his activity he prepared and co-ordinated numerous international conferences in geography held in Budapest and other Hungarian venues.

László BASSA was a stable member of delegations which travelled abroad to take part at international geographical meetings (conferences, symposia, workshops etc.) mainly organized in socialist countries. He prepared regular reports on the outcomes of these meetings, which were published on the columns of Hungarian Geographical Bulletin. Moreover, deriving from his open personality and positive attitude to life László BASSA was able to build and maintain friendly personal contacts with all kinds of geographers from all corners of the world, enabling to promote mutual and fruitful contacts between our institute and foreign academic bodies (institutes of geography, geographical departments of universities etc.).

In the early 1980s he began a postgraduate course at the Faculty of Civil Engineering of the Budapest University of Technology, from where he received his second university degree (consulting engineer of natural resources) in 1983.

From the early 1980s László BASSA became a member of the Department of Cartography of the Institute, engaged in methodological and empirical problems of the-matic cartography. He developed skills in map editing, engineering geomorphology and environmental management. During his active 34 years in the institute he was the author of several book chapters, prepared dozens of reviews about books written by Hungarian



and foreign geographers and cartographers in Hungarian, English or Russian. He compiled a range of guidelines and supervised hundreds of map legends in foreign languages. In addition, he translated, revised and edited thousands of pages into English and Russian in different geographical and cartographical topics (eg. for the books in the series *Studies in Geography in Hungary*; *Recent Developments in Spatial Information, Modelling and Processing*; *Ethnic Geography of the Hungarian Minorities in the Carpathian Basin* etc.)

László BASSA was among most active members of the editorial board of the *National Atlas of Hungary* (published in 1989), and in 1990 his work was rewarded with the Széchenyi Prize handed over by the President of the Republic of Hungary. In the 1990s he was the person who translated one the most essential geographical publications on the European Union into Hungarian (Garrett Nagle and Kris Spencer: *Geography of the European Union - Regional and Economic Approach* published in 1999).

Since 2009 he is retired but it does not mean that he has ceased to be active. He keeps on working with the editorial board of the *Hungarian Geographical Bulletin* as a managing editor, helps with his advise the younger cartographer colleagues, revise English and Russian manuscripts prepared for publications and checks the texts of the series of atlases published by our institute (*South Eastern Europe in Maps*, 2007; *Ukraine in Maps*, 2008; *Hungary in Maps*, 2009)

And I close my words with a private but essential remark: "Laci" is a really good friend, whose modest and open personal character makes him very popular with the staff of our institute and among geographers both home and abroad.

On the occasion of László Bassa's recent 65th birthday, we would like to express personal greetings from all our colleagues for all his life-long activity promoting the progress of cartography and geography in Hungary. We wish him many more years full of success, with remarkable achievements in academic and personal life, spent in good health and inner satisfaction.

Tibor TINER