The potential for polycentric development in the Centrope region

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Abstract

The aim of the article is to analyze the potential for the development of polycentricism in the region of Centrope and its surrounding area. For assessing the potential for polycentric development a survey of existing literature and case studies as well as an analysis of existing or developing polycentric region in Europe will be carried out. The next step will be to analyze the region of Centrope itself and its parameters and character. By this the author hopes to create a reliable and complex set of determinants and conditions for the development of a polycentric region and to prove or disprove the existence of real conditions for polycentricism in the Centrope region. On these findings, the author will base resulting recommendations for policymakers in regional governance, so that the potential can be used in an efficient and sustainable manner.

Keywords: polycentricism, Centrope, cluster, network

1 Introduction

The central European region has undergone a tremendous change in the last twenty years. The geopolitical shift dissolved the artificial barrier that was splitting it apart. After that, the region began slowly to consolidate itself, becoming more and more compact, although not all barriers had been lifted. The cooperation grew steadily nevertheless, at first at the corporate level, followed by the institutional. The parts of the region were gradually getting closer together.

At the heart of this region a core can be defined, which shows a great potential for further development. The source of this potential is in the unique geographical predispositions of the region and partially in its history as well. This core could be coarsely defined as a major part of the euro region Centrope, which is, up to date, mostly a theoretical concept. This concept, however, is becoming more and more real, as different subjects and institution increase their cooperation to give it a real value and to bolster its actual development. The best proof for it is the clustering of companies in the automotive and logistics industries, the increasing official cooperation on municipality and regional levels and the creation of coordinating institutions.

Furthermore, the settlement structure in the core of the Centrope region and in some of its parts as well, could base – under certain circumstances – a suitable environment for the development of polycentricism. This kind of development could strengthen the regional economy; raise the regional political strength as well as the wellbeing of its inhabitants even further.

The concept of polycentric regional development has been gaining on popularity throughout Europe in the past years and finally became an official strategic approach of the European Union.

The European Spatial Development Perspective (ESDP) considers polycentric development as follows:

> *"The economic potential of all regions of the EU can only be utilized through the further development of a more polycentric European settlement structure. The greater competitiveness of the EU on a global scale demands a stronger integration of the European regions into the global economy. ...a polycentric settlement structure across the whole territory of the EU with a graduated city-ranking must be the goal. This is an essential prerequisite for the balanced and sustainable development of local entities and regions and for developing the real locational advantage of the EU vis-à-vis other large economic regions in the world."* (EC, 1999)

This concept is an effective tool for increasing the competitiveness of regions and city networks to prevent urban sprawl which impedes the quality of human and natural environment around or between cities, although many of its impacts and manifestations were not yet well researched (for example the traffic volume changes and their impact on the environment or the economic and socio-demographic effects of specialization and restructuring of cities within a network). Nevertheless, it seems to be an excellent way to increase regional cohesion, especially in regions with higher numbers of small and medium-sized settlements. In this case cooperation is necessary in order to secure the necessary amount of funds needed for bigger-scale investments (for example into technical and IT infrastructure) and to create attractive investment environment. In countries with lingering structural problems it should be possible to gain from the specialization processes increased within a network.

Polycentric development concept has it source in the network and cluster theories, which were originally created to encompass the development in company behaviour, based on the principals of economies of scale and externalities (Porter, 1990, Capineri, Kamann,1998, Capello, Nijkamp, 1993, Batten, 1995). The actual theory of polycentricism was then further developed by several authors, mostly from Netherlands and United Kingdom (Kloosterman, Musterd, 2001, Hall, 1997, Beatley, 2000, Dieleman, Faludi, 2001, Bailey, Turok, 2001, Musterd, van Zelm 2000). These authors concentrated on creating the basic characteristics of polycentricism, make out its main positives and negatives as well and to define the main set of factors which would enable polycentricism to evolve. During this process many problems arose, which had their origin in the overall complexity of the concept and from the diverse relations that were identified within supposedly polycentric regions. The debate, which regions are truly polycentric and what makes out polycentricism still persist. Nevertheless, I believe, that it is possible to set out a group of testable factors for the region of Centrope, which could be the measure for the potential of Centrope or it's certain parts to become polycentric.

Thus the aim of this article will be to determine these factors, apply them on the Centrope region and define which parts of it are suitable for polycentric development, which parts are already showing the characteristics of polycentricism and whether it is a suitable concept to be applied on the region at all.

The article is divided into two parts. The first one examines the concept of polycentrism itself, determining its main characteristics and the set of basic factors which enable it. These will be defined according to existing theoretical knowledge and practical experiences from chosen case studies in Europe. The second part concerns the Centrope region, its parameters,

nature and its development. According to these, the suitable parts of the region for this kind of development will be determined and a certain degree of the potential will be defined. In the conclusions, basic set of recommendations will be presented.

2 The concept of polycentric regional development

2.1 Defining the concept

The first obvious step would be to define the concept of polycentric development, although this appears to be rather problematic. According to many authors in this field (Kloosterman, Musterd 2001, Musterd, van Zelm 2001, Bailey, Turok 2001, Meijers 2004) the concept itself is rather hard to define, due to its complex nature encompassing social, economical, political, geographical or cultural elements. The different approaches to defining the concept are based in different fields of expertise of the authors. The methods, factors and main issues identified by a geographer can thus divide from factors and issues considered by an economist or a social scientist. These differences are the main reason, why there still a generally accepted definition absents. As Shaw and Sykes state:

> *"Polycentricity is an elusive concept which is not easy to define precisely. Rather, it provides a frame of reference for thinking about territorial development which can be applied at a variety of different spatial scales and in essence describes the interconnections and mutual interdependence that exists or may develop between places."* (Shaw, Sykes, 2004)

This formulation by Shaw and Sykes clearly shows the core of the problem – its complex nature – which often leads to rather vague descriptions of the concept, than to concrete definitions. In this description, however, a very important feature of polycentricism is present and that is its applicability at different spatial scales, with local at the bottom (By this, it is important to note, that polycentric patterns are also visible within metropolitan areas as they are in their classic form in a region consisting of several settlements.) and with interregional at the top. Thus Faludi states that the central word, polycentric, needs to be carefully defined because it has a different significance at different spatial scales and in different geographical contexts. (Faludi, 2001)

Apart from all the differences and problems by defining and even by grasping of the concept a relatively simple definition of a polycentric urban region, based on the number of development centres of the region can be presented:

> *"A polycentric urban region is a region with two or more separate cities, with no one centre dominant, in reasonable proximity and well-connected."* (Bailey, Turok, 2001)

This basic definition can be further widened to encompass the notions of all main factors considered in literature to date. A great effort in this direction was made by Kloosterman and Lambregts:

> *"…polycentric urban regions can be defined as follows:*
> *(1) They consist of a number of historically distinct cities that are located in more or less close proximity (roughly within current commuting distances).*
> *(2) They lack a clear leading city which dominates in political, economic, cultural and other aspects and, instead, tend to consist of a small number of larger cities that do not differ that much in terms of size or overall economic importance and a greater number of smaller cities.*
> *(3) The member cities are not only spatially distinct, but also constitute independent political entities."* (Kloosterman, Lambregts, 2000)

This definition, or rather definitions take into account historic, geographic, demographic, political, economic and cultural aspects and could be considered sufficient and well representative. These aspects form the basis for the set of factors that should determine the development of polycentricism, the parameters of a polycentric region and the development potentials of regions. Furthermore the polycentric region shows strong resemblance to networks, which function and gain their strength from positive externalities of cooperation and specialization – synergies. (Meijers, 2005)

By looking at these main aspects or dimensions we could find them reasonable and acceptable. The problems and the differences begin when one starts to analyse these aspects and attaches them priorities creating a hierarchy in the concept. Thus a geographer or a planner will consider mostly geographical features, such as proximity, size of the centres, the features of the landscape, both positive as negative, as well as the demographic trends within regions. (Kloosterman, Musterd, 2001, Bailey, Turok, 2001, Champion, 2001, Kloosterman, Lambregths, 2000, Meijers, 2005, Shaw, Sykes, 2004)

An economist would concentrate on the labour market and the flows of workforce, goods, capital or information, defining market areas and clusters of industries. This view would also consider analysis of traffic flows, which are one of the basic factors that define the interconnections between centres in a region. Theories of clusters and networks are the domain of this profession as well. (Porter, 1990, Batten, 1995, Anas, Arnott, Small, 1998)

The prime concern of social and political sciences would be the institutional structure and relationships between the parts of the region, the distribution of political power and governance structures, as well as cultural aspects and identity issues of the region. (Houtum, Lagendijk, 2001)

Another factor visible in all definitions is the aspect of dominance ratio. Polycentricism in this case is understood as a case, in which no one centre is clearly dominant in terms of political or economic power, although some case studies show that a region can be defined as polycentric even with a dominant centre. (Bailey, Turok, 2001)

Furthermore, these orientations intertwine creating fusion between social sciences, which gives them new perspectives and ideas, making them more open and flexible and thus stronger. (Kloosterman, Musterd, 2001)

All aspects mentioned above then collide with the actual parameters of regions in real life, which are specific, individual and mostly so local, that they differ within the region itself. These specific conditions add further to the complicated task of defining the basic structure and preconditions as well as mechanisms through which the development should function.

If one would try to create a complex analysis of the region and its potentials one would have to consider all of these conditions and specific factors. Probably a better approach would be to acknowledge that the complexity of the concept and its encompassing nature make it possible to define it from many angles, according to the actually studied topic within it.

Thus the concept of polycentricity can be interpreted and re-interpreted by different policy actors at different spatial scales in different localities. (Faludi, 2001)

But the fact remains that a functioning region should be based on effective relationships and connections as well as on cooperation. This working and interconnected environment enables effective division of labour, specialisation and gives the region a singular image with which it is easier to identify. So, at the end all of the aspects matter, but they are not always all necessary for polycentricity to occur.

The next part of the text will be aimed at defining the main factors enabling polycentric development in a form of case studies of presented scenarios from Europe. Through this it should be possible to create an image of a polycentric urban region for the purpose of potential evaluation of the Centrope region.

3 Faces of polycentricism - Examples from Europe

3.1 The obvious case – Randstad, Netherlands

Among the regions that are considered for strongly polycentric, the region of Randstad in the Netherlands is the most studied and cited one (Meijers, 2005, Musterd, van Zelm, 2001, Kloosterman, Lambregts, 2001, Bontje, 2001, Priemus, 1998, Lambooy, 1998). The Dutch Randstad, consisting of the four largest cities (Amsterdam, Rotterdam, The Hague and Utrecht), together with a number of smaller cities in the western part of the Netherlands; can be seen as a prime example of a polycentric urban region with relatively strong functional relationships. (Kloosterman, Lambregts, 2001) The Randstad region is well definable as a network as well. Although not being a single agglomeration like London or Paris, the Randstad cities are just as well interconnected. In this environment, processes of specialisation and diversification take place, as clusters of individual industries and service types develop. Within this region clearly definable corridors and interconnections can be pointed out and analysed.

The centres within Randstad are complementary to each other, which enables vertical integration and spatial specialisation (Amsterdam is a leader in commercial services sector, The Hague is an administrative centre and Rotterdam is a transport and manufacturing hub). The shape of Randstad is circular around a green space (green heart), which shows low levels of urbanisation and relatively preserved natural environment. The population of Randstad reaches seven million people, which represents 44% of the Dutch population. This region encompasses 45% of all employment within 22% of Dutch territory. (Meijers, 2005) A common division of the Randstad is into a north wing (including Amsterdam, Utrecht and surrounding cities) and a south wing (The Hague, Rotterdamand surrounding cities). (Meijers, 2005)

This region is characteristic through high population density and excellent technical infrastructure. Co-operation networks of institutions and subjects is also present, to overcome the lack of administrative layers between the municipal and provincial levels and between the provincial and national levels. These co-operation platforms address issues such as transport, traffic, regional spatial development, housing, employment, economic affairs and youth welfare. (Meijers, 2005)

The current state of the region and its characteristics are the result of the past administrative system as well as of spatial planning policies in Netherlands over the past fifty years. This resulted in the polycentric pattern of settlements and in the preservation of the green heart in the middle.

The distances between the largest cities are rather small (Amsterdam – Utrecht: approx. 35km, Rotterdam – The Hague: approx. – 21km, Amsterdam – Rotterdam: approx. 57km[1]), which adds to the integration possibilities and possibilities for a large united labour market (which is not always present even on regions considered as polycentric.). Some authors consider the driving distances for one of the most important factors for defining the borders of polycentric regions. Bailey and Turok, for instance apply the commonly used centre-to-centre time of one hour, which is acceptable. (Bailey, Turok, 2001)

There are only few regions in Europe that have similar characteristics, the best examples being the Rhine region (Dortmund, Düsseldorf, Köln, Duisburg), the Po region in northern Italy (Padua, Treviso, Venice) the Flemish Diamond (Antwerp, Brussels, Ghent), northern England (Liverpool, Manchester, Bolton, Blackburn) and the South Poland region (Katowice, Gliwice, Sosnowiec). These polycentric regions have a common industrial history, which is

[1] Source: Google Earth - 2007

connected to concentrated production or mining facilities. Many of them however are in the process of restructuring. This group could be called a classic polycentric region.

Figure 1 – Randstad region

Source: Meijers, 2005

To conclude, the main characteristics in the case of Randstad (and many of the other examples as well) are:

- geographical closeness of settlements
- high population density
- infrastructural interconnections (technical and IT)
- specialisation in the economic sectors and administration
- clustering of economic activities
- industrial history
- network of settlements around a "green heart"

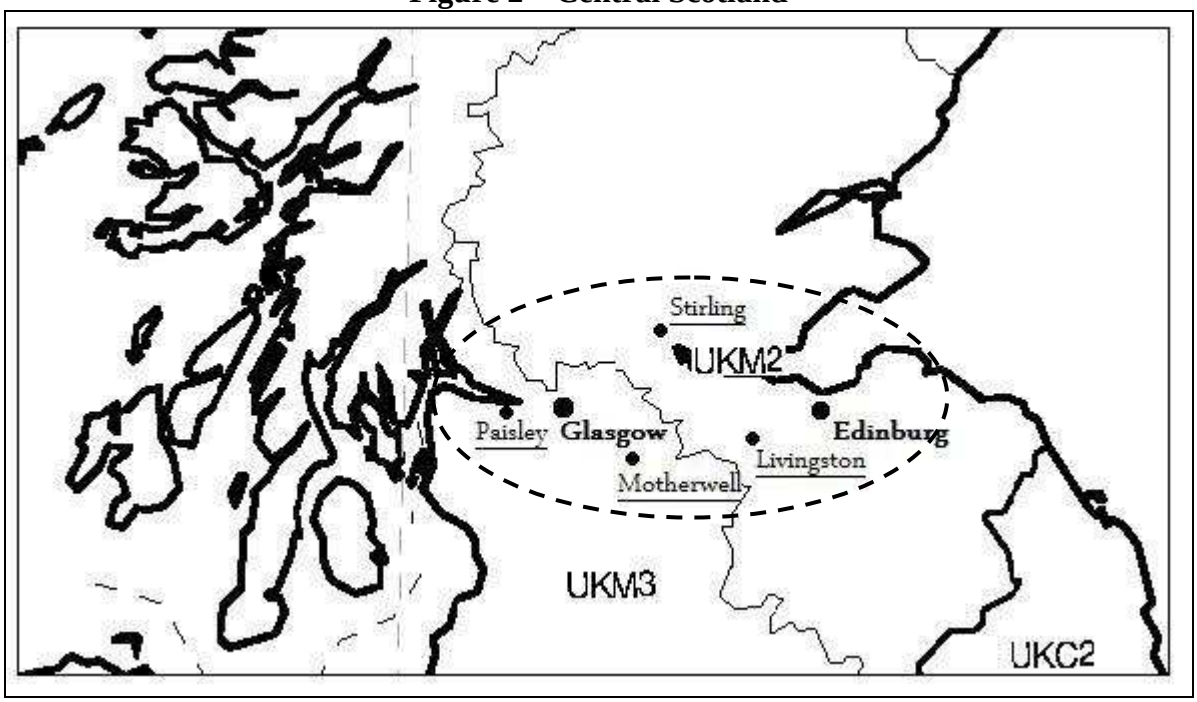
3.2 A resemblance? Central Scotland, the Glasgow-Edinburg conurbation

The region of central Scotland consists of two main population centres in close vicinity (Glasgow and Edinburg – 65km). Between these cities there are a number of small and medium-sized settlements, which are well connected to the central axis of the region. The region is home to 3 million inhabitants, which makes out 58% of the overall population of Scotland. The area of the region is 4908km^2 and the density of its population reaches 611

inhabitants per km^2.[2] Its relative isolation from other major urbanized centres in Britain resulted in the development of a strong regional economy. (Bailey, Turok, 2001)

The region is steadily shifting towards polycentricity, as the population relocates from the poles to the settlements around the main axes, increasing their weight and decreasing the level of dominance of Glasgow and Edinburg (Glasgow scored the highest net emigration in 2006 of 18,150 inhabitants and Edinburg the highest net immigration of 18,600 inhabitants[3]). This is a continuous trend that lasts from the second half of the 20.century. Population of Glasgow decreased from 1.2 million in 1950s to 580,690 in 2006. According to Bailey and Turok, the cause for relocation and movement of the population is the restructuring of city and regional economies, which is noticeable especially in and around Glasgow. Nevertheless, Glasgow remains the dominant pole in the region with 580,690 inhabitants although its dominance diminished in the past decades. (Bailey, Turok, 2001) The Edinburg remained more services and administration-oriented, while Glasgow posed as a manufacturing and industrial centre. Nova days, the divide is diminishing, as Glasgow develops a stronger services sector, due to overall decline of industrial activities in the region.

Figure 2 – Central Scotland



Source: Eurostat (modified by Author)

Central Scotland is reasonably well connected internally, although there are a number of critical gaps or missing links in both rail and road infrastructure. Although there are three airports, there is no clear coordinated development strategy and the airports expand each on their own.

The region has a strong regional identity and the term Central Scotland is well recognized by the population of the region and of Scotland as well. The further strengthening of the identity is inhibited by very strong national identity of Scotland. (Bailey, Turok, 2001)

Nevertheless, central Scotland does not constitute a single labour market (but neither does Randstad).

[2] http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=7657 4.10.2007
[3] Scotland's population 2006 – The Registrar General's Annual Review of Demographic trends. Edinburgh: General Register Office for Scotland, 2007. ISBN 978-1-874451-76-1

In this case, the main characteristics would be:

- geographical closeness
- two poles of similar strength with different economic structure
- levelling of population levels of the poles
- increasing investments into infrastructure
- strong regional identity (although not so strong as the national)
- viewed as a compact destination for investment
- strong inter-business linkages

This type of polycentric region could also be called bipolar as the main actors are only two centres considerably larger than the rest of the settlements. The dominance ratio in this case should probably be taken with less weight as in truly polynucleated regions, such as Randstad. More important should be the trends in labour division and specialisation between the centres which lead to the creation of inter-business linkages and interdependencies.

And once again, the case shows that labour markets remain rather local until they reach their limits in face of actual demographic trends. From that point the complementarity of the centres and specialisation enhances the intra-regional workforce migration.

4 The key factors and characteristics

By analysing the cases presented in the literature as well as the theoretical concept itself, it should be possible to determine the key characteristics that constitute polycentric regions. They could be divided into five groups:

1. Spatial characteristics (types, numbers and sizes of settlements, distances and connections between them, landscape – possibilities and obstacles)
2. Economic space (labour market, economic structure and business linkages, investment destination)
3. Public administration (administrative division, institutional structure and coordination of administrative bodies)
4. Demographic trends (migration and population change)
5. Culture and identity (regional identity, cultural differences and attitudes of the population)

The degree and number of positive values of these characteristics should reflect the degree of polycentricism in the region or its potential to become polycentric, if this type of development would be supported. In my opinion, it is not necessary to deem a region unsuitable if some of the characteristics aren't present or well developed, but it would mean that a region has only limited potential for polycentric development and thus will not be able to gain full array of advantages from polycentricism. Furthermore, it is necessary to define whether the region is suitable for polycentricity as a whole or whether only some of its parts are. There is always the possibility that there will be a potential for different vertical levels of polycentricism (from local to interregional). So even if the region will not be truly polycentric, it can harvest some advantages of the concept.

Very important for the integration of any region is the ratio between cooperative and competitive forces. The most important seems to be the administrative and political cooperation and coordination as it creates the overall environment for further integration by the means of harmonization and dissolution of administrative barriers. Furthermore, the coordination in the public administrative sector enables higher efficiency by fundraising and allocation of funds and helps to create an image of the region to win investor support.

So even if the business sector or some of the publicly owned assets remain in the field of competition the region itself will gain on integrity.

The building of regional identity has of course its limits. Even within regions that are a part of one country there always remain obstacles rooting in local patriotism. In the regions like Centrope, which comprises four different nationalities (with strongly intertwined history) and had undergone different types of development in the past, the cultural obstacles are and will be a major concern.

The next section of the paper will concentrate on the analysis of parameters of the Centrope region and on the evaluation of the potential for polycentricity within it. The analysis will be carried out in accordance with the above stated groups of factors.

5 Defining the Centrope region

5.1 The Concept

The concept of Centrope or central European euro-region is a result of an interregional cross border cooperation project, which is predominantly aimed at creating a stable and attractive investment environment. Furthermore the activities carried out under it should increase the social and economic cohesion and tighten the relationships between its neighbouring regions. The concept is an initiative of the Austrian part, which sought to stabilize and enhance the investment environment around its eastern borders. Under this concept fall several types of projects, including spatial planning, investment support, infrastructure development, environmental projects or the promotion of tourism. One of the priorities is also building of networks of small and medium-sized cities.[4]

The main orientation in the economic area is on the development of automotive, IT & Telecommunication, logistics and biotechnology clusters, which already start to take shape. It is a reasonable orientation considering the industrial tradition in these regions (especially in Niederösterreich, Trnava and Bratislava regions) and recent development.

To find out, if the region or its certain parts are suitable for the development of polycentricism and to better understand its potential, we will have to analyze the region's geographical, economic, political as well as social parameters.

5.2 Geographic profile

The region referred to as Centrope is located in central Europe, encompassing parts of four neighbouring states, namely Austria, Czech Republic, Hungary and Slovak Republic. Its entire area is 58 338 km^2 and it is home to almost 7.5 million inhabitants. The average population density reaches 677.7 inhabitants per km^2, the highest being in Vienna (4013.4 inh./km^2) and in other main population centres (Bratislava, Brno). Outside the cities, the density is significantly lower with only 135 inh./km^2 on average.[5] This relatively low density outside the population centers shows that only a small number of cities or towns are present. The rest of settlements are of rural nature, not reaching the population of 5,000. Despite this, there are some regions, which show a presence of small and medium-sized city clusters.

[4] Regional management in Centrope – Final report of the pilot project Centrope. Zistersdorf: 2006. Source: Slovak coordination centre for Centrope, Bratislava

[5] Sources: The statistics Offices of Slovakia, Czech Republic, Hungary and Austria. The values are of the year 2005, presented in publications of 2006. Available on the internet: http://www.statistik.at/web_de/statistiken/index.html, http://portal.statistics.sk/showdoc.do?docid=4, http://www.czso.cz/, http://portal.ksh.hu/portal/page?_pageid=38,119919&_dad=portal&_schema=PORTAL

The region consists of ten NUTS III regions:

1. Burgenland, Niederösterreich and Vienna regions in Austria
2. South Bohemia and South Morava regions in Czech Republic
3. Győr-Moson-Sopron, Vas and Zala regions in Hungary
4. Bratislava and Trnava regions in Slovakia

Up to date, only Burgenland, Niederösterreich and Vienna regions in Austria, city of Brno in Czech Republic and Bratislava and Trnava regions in Slovakia are active in the Centrope initiative. Other regions haven't joined projects under it, but remain a part of Centrope geographically (Mostly the South Bohemia region).

The main population centres in Centrope are:

- Vienna – capital of Austria and with the population of 1.6 million the biggest city of the region. Vienna has a central position within Centrope, which supports the thesis of Centrope being wider economic area of the metropolis.
- Bratislava – capital of Slovak republic and with the population of 427,049 the second biggest city of the region and largest in Slovakia. Being only 55km away from Vienna and being the second economically strongest centre in Centrope, Bratislava is a worthy pole of the tri-polar core of the region.
- Brno – the third largest city of the region with 366,680 inhabitants is the administrative centre of South Morava
- Other centres include: Győr, Trnava, Sopron, St. Pölten and České Budějovice.

Figure 3 and 4 – Centrope region and its active regions

Most potential for development is located in the central part of the region, covering most of its population and economic capacities. Population centres are relatively evenly distributed over the area. Especially in Slovakia and Czech Republic, there is a well developed structure of small and medium-sized cities in relatively small distances between them, which presents a possibility for city network creation at the local or regional level.

The distances between the main population centres are presented in the next table. (The core cities are marked red):

Table 1 – Approximate distances between major population centres in Centrope

	Bratislava	Brno	České Budějovice	Győr	Sopron	St. Pölten	Trnava	Vienna
Bratislava	-	122	216	65	66	112	42	55
Brno	122	-	158	185	169	132	116	112
České Budějovice	216	158	-	275	212	120	238	163
Győr	65	185	275	-	79	161	78	112
Sopron	66	169	212	79	-	93	108	60
St. Pölten	112	132	120	161	93	-	147	55
Trnava	42	116	238	78	108	147	-	92
Vienna	55	112	163	112	60	55	92	-

Source: Google Earth 2007

Concerning landscape, the main vein of the region is the Danube River, connecting Vienna with Bratislava and Győr. Furthermore, the areas around Danube are well preserved (especially between Vienna and Bratislava and on the Slovak-Hungarian national borders), which creates suitable conditions for free-time activities and local recreation for city population. Otherwise the landscape in the core of the region is in majority flat, with concentrated agricultural production. The only mountainous area is located in the southwest of Niederösterreich region. Another natural divide are the Small Carpathian Hills running northeast of Bratislava (also an important recreation area). An interesting area in the region is the border area of former "Iron curtain", which shows a high degree of preserved natural environment and with almost none settlements. This area, if carefully planned, could present high quality locations for recreation and housing (even if limited).

5.3 Economic structure

The regions in Centrope are predominantly service-oriented, although a very strong presence of industry is noticeable (automotive, metals, chemicals, machinery, textile, food processing, electronics, paper and printing). The current trends are represented by phasing-out of industries out of major cities into industrial complexes situated alongside their main development corridors (for example the Záhorie and Trnava regions in west Slovakia). The emergence of economic cluster is also becoming to be visible, especially in the automotive and logistics industries, which are strong in Slovakia. Their support is one of the priorities of regional authorities of Centrope.

The specialization within major centres, such as Vienna and Bratislava is clearly service-oriented, with the dominance of retail (19% of registered employees in Vienna and 25% in Bratislava), real estate and rental activities (21% in Vienna and 24% in Bratislava) and with the growing influence of the financial services, consulting and research oriented activities. These processes are standard for the conditions within the EU countries. The rest of areas within the regions are more industry oriented (The industry represents 29% of the registered workforce of South Morava region and 31% in Trnava region).

The education institutions and research facilities are oriented into three major cities – Vienna, Bratislava and Brno. Both, Bratislava and Vienna have been preparing large research infrastructure projects (CEPIT in Bratislava and ASPERN in Vienna). This could prove to be a source of strong competitive forces between these cities. The competition is likely to grow

in other areas as well, as Bratislava grows stronger. The areas of future interest in research include biotechnology, automotive, renewable resources or IT.

The infrastructure in Centrope is rather well developed, although some connections are still missing. The cause was the artificial divide of the region during the 20.century. The investments are oriented mainly on connecting of main centres and on Trans-European networks, which connect the region to the core of EU ("the Pentagon"), which has global significance.

From regional point of view, currently there are several important links missing:

1. The direct highway connection from Vienna to Bratislava (Austrian part)
2. Highway connection from Vienna to Brno (which can be partially supplemented by the Slovakian highway from Bratislava)
3. Northern electrified rail connection between Vienna and Bratislava (Slovakian part)
4. Rail terminals on the Bratislava and Brno airport
5. Connections from the core to South Bohemia region (a basic precondition for the inclusion of the region into the Centrope space)

The airports are currently developing independently and competitively, which on one hand can lead to faster expansion (Bailey, Turok, 2001) of all of them but on the other hand to a smaller degree of coordination. The coordination would probably lead to specialization of airport services, which would have a visible impact first of all in Vienna-Bratislava region.

5.4 Administrative space

The Centrope region is not an official region with political and administrative boundaries and institutions. It can be identified on the base of certain economic and geographic characteristic, which give it compact and logical form (with Vienna being the center and the surrounding regions being its field of economic and political influence). It is until now a concept created by several stakeholder groups on a regional or local level. Its economic space covers the area of ten NUTS III regions, but it is to date represented by activities of only seven. The administration of projects within the Centrope initiative is carried out by regional and municipal authorities, such as Vienna, Bratislava, Trnava or Brno municipal authority and Niederösterreich, Burgenland, Bratislava or Trnava regional authorities. The NUTS III regions then divide into NUTS IV counties, which also have their own authorities.

The coordination is carried out (to a certain degree) by coordination centres (one for each state), which also present communication and promotion platforms. These centres organize the activities within singular projects and help create strategic documents and visions. There are two coordination centres active so far (in Slovakia and Austria).

The administrative division of land (although harmonized in EU) presents a complicated administrative environment. No aegis institutions were yet created and the cooperation takes place through the coordination centres and on base of individual initiatives of regional or municipal authorities. The fact that the region covers four different national states presents a significant challenge for governance and for development and realization of projects and activities. If there is to be a strong and coordinated development carried out the coordination will have to be increased rapidly. It is possible that the inactive regions will fall off even further if they fail to join coordination efforts.

For the development of local and regional settlement-networks a certain amount of flexibility in the institutional structure will be necessary, to allow counties or individual cities to act on their own in case of lack of effort from the higher-level authorities.

Overall, the region (or economic space) is still in the phase of creation and so are its institution and administrative and coordinating facilities. Nevertheless, it is becoming increasingly well known among investors, which is clearly positive for its competitiveness.

5.5 Demographic situation

The population trends in the region are standard for the developed nations of EU. The overall aging of population is present, the largest cities are in the phase of de-urbanization, and the migration flows are concentrated on border regions between countries and around the cities. The population of Vienna and Bratislava is steadily decreasing as the population moves to suburbs and alongside the development corridors (The corridor for Vienna is clearly the area between the city and Wiener Neustadt, for Bratislava, it is the Carpathian corridor including cities of Pezinok, Modra and Senec, bringing Trnava closer to Bratislava). As the cities are widening their centres decrease their population and parts of the wider centre begin to specialize economically, creating in-city clusters of retail, office, research or light industries.

The flows of population in Slovakia are as well oriented towards border regions, especially with the Czech Republic (Skalica and Senica counties in Trnava region have shown positive migration flows).[6]

In the overall migration, the highest positive ratio is present in the regions of North Burgenland, Wiener Umland (north and south), Senec and Malacky counties. These trends show a classic case of spreading of metropolises rather than of conjoining of cities. Nevertheless, the development of corridors outside of cities is often considered a sign of polycentric processes (Houtum, Lagendijk, 2001, Kloosterman, Musterd, 2001, Bontje, 2001), as well as is the specialization within cities.

5.6 Culture and identity

Culture, traditions and identity form in this case the biggest problem for cross-border development. All four countries had a difficult history together, which in some cases deteriorates the relations between them. Furthermore, the three former socialist states with their heritance of centrally planned economies and the significant difference in wealth between them and their western neighbour make out difficulties for further integration.

Most of the problems however occur on a political level, while the general population of the border regions interacts more and more every day. The hardest seems to be the barrier between Slovakia and Hungary which is systematically supported by political subjects on both sides and is based on a generally spread antipathy of both nationalities to each other.

Another barrier is present in a form of fear of “migration flows from the east” present in Austrian regions. This fear is based on conservative character of the Austrian society and on the general fear of poor immigrants from the east that is present in several European countries. The migration statistics however do not show any stronger migration flows to Austria as the region gets more wealthy and stable.

Apart from these differences, there is a strong motive to cooperate between neighbours, which has strong tradition in the past (in the case of Czech Republic and Slovakia) or is simply natural in mixed border areas.

6 Analysing the potential for polycentricism

By looking at geographical parameters it starts to be obvious that the region of Centrope as a whole has limited potential to be polycentric. There are areas with very low population and settlement densities and there are strong centres with their hinterlands which are

[6] Sources: The statistics Offices of Slovakia, Czech Republic, Hungary and Austria. The values are of the year 2005, presented in publications of 2006. Available on the internet: http://www.statistik.at/web_de/statistiken/index.html, http://portal.statistics.sk/showdoc.do?docid=4, http://www.czso.cz/, http://portal.ksh.hu/portal/page?_pageid=38,119919&_dad=portal&_schema=PORTAL

dependent on the economy of the metropolis. Nevertheless, the region is well interconnected through infrastructure and the economic potential of former peripheral centres is increasing creating a counterweight to the dominant cities.

Furthermore, all of the polycentric regions we mentioned above were significantly smaller in landmass as the concept on a regional level remains more concentrated and compact. But the regional and local level of polycentricism is not the only applicable. If we create a hierarchy of vertical levels of polycentricism (starting with local and ending with international) we will be able to identify several potential areas for polycentricism in Centrope as well. The settlement structure shows potential rather for local polycentric networks based on small and medium-sized cities and rural settlements, then for regional networks based on large metropolises (like it is in Germany or the Netherlands).

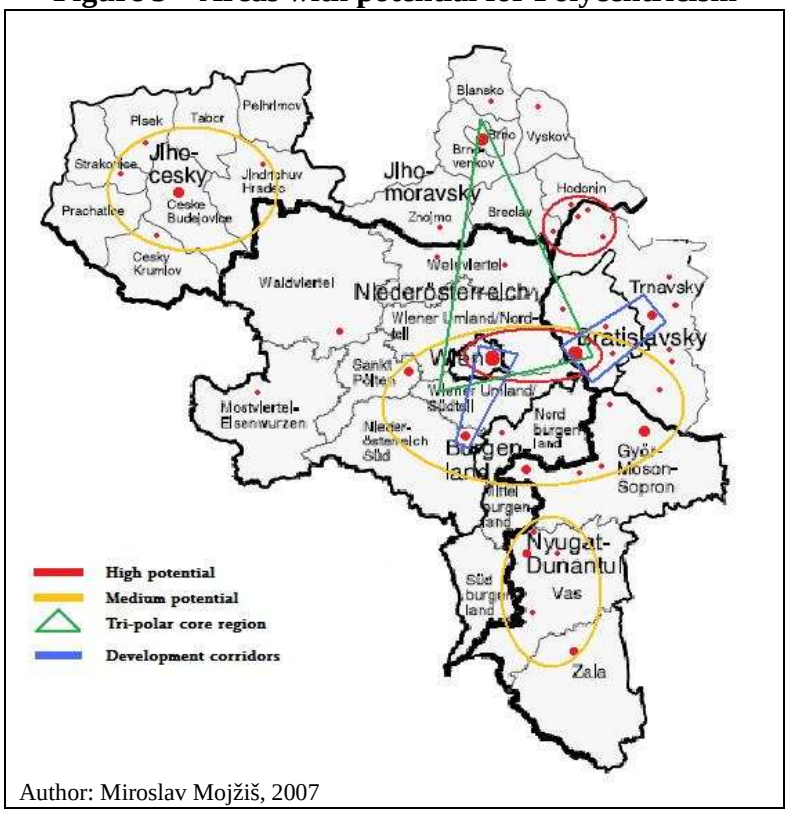
It is important to notice that the singular levels of polycentricism tend to be interconnected, as small local networks connect with regional and interregional networks. Furthermore, polycentricism can also develop within a city, which is rather common in modern economy in which the network pattern dominates.

By analyzing the characteristics mentioned above, it is possible to point out several areas that are (or could be) suitable for the development of polycentricism on different vertical levels:

- The Vienna – Bratislava bipolar conurbation (with adjoining development corridors)
- The wider space in the triangle Vienna, Bratislava, Brno (the core of Centrope)
- The border region between Slovakia and Czech Republic
- The border region between Austria and Hungary
- South Bohemia region

For the purpose of this paper we chose to analyze the Vienna-Bratislava region and the border region between Slovakia and Czech Republic.

Figure 5 – Areas with potential for Polycentricism



Author: Miroslav Mojžiš, 2007

6.1 The Vienna – Bratislava conurbation

Among the regions mentioned above, this conurbation, which to date presents the main active part of the Centrope and its economically strongest part, has one of the highest polycentric potentials. The poles are only 55km away (No other European capitals are geographically so close together) and well within the "one-hour drive" centre-to-centre range considered the main predisposition for the process of labour market integration and economic specialization. (Bailey, Turok, 2001) The connections between the cities are strong although a direct highway connection on the Austrian side is missing (due to change soon). By enhancing the integration of the poles it is also necessary to react with a proper development of mass transit system which will have to be more competitive (especially in Slovakia) if it is to mitigate the negative impacts if increased traffic. Speed, comfort and costs will have to be attractive to passengers and will be the basic precondition for further integration of labour markets.

The authorities and some groups of stakeholders are pushing for widening of cooperation (The concept Twin-cities is a great example). Despite of many different explanations of why there exists the pressure for cooperation the cities are getting closer by coordination and cooperation. Infrastructural projects concerning highway and high velocity rail connections are planned and carried out. On the other hand strong competitive forces remain while Bratislava grows enjoying the benefits of cheaper highly qualified labour force. Although there are no systematic overviews of labour trafficking between the cities, it is highly probable that Vienna remains the top destination. This doesn't mean that a single labour market is present.

Even though the cities are not comparable in size or economic strength, with Vienna being clearly the dominant one, there is a good chance of the area to develop itself towards more evenly distributed capacities. The cities themselves are spreading into their surroundings which increases the power and potential of the regions. It is possible that by "dissolving" into

the region the cities will create more polynucleated settlement structures, as it happened in Central Scotland and is happening all over the world. It is also important to notice, that even though Bratislava is smaller in size and economy, its strength is big enough to pose as more or less equal pole to Vienna.

The economic structure of the cities shows that there is no complementarity. Both cities have approximately the same structure of economies, with the services sector dominant (84% in Vienna and 89% in Bratislava)[7]. Vienna is stronger in research and development and in financial services and tourism. Bratislava is dominated by basic services such as retail and real estate. Bratislava is trying to break through as a multimodal logistics hub, which would boost the creation of a logistics cluster. Vienna pushes for healthcare, research and development and consulting specializations. Both cities share their interest in renewable energy resources.

Despite being so close to one another, there is no support network of smaller settlements present, like in the case of Central Scotland and both major development corridors are oriented away from the connection, facing inland (Wiener Neustadt and Trnava – see figure 5). The competition is visible also in the field of investment attraction especially in the field of research and development. Both cities have started their own technology park projects (CEPIT in Bratislava and ASPERN in Vienna).

Between the cities, there is an area with a very low level of urbanization, consisting of rural settlements and very small towns. And in this space there is something similar to the space between the cities of Randstad. A "green heart" around the Danube River, which is an area well suited for leisure activities.

To date it is not yet possible to tell what structural changes the cities will be going through. There is a good possibility, that a common cluster will be created joining the cities or that both cities develop clusters on their own. But this area seems to be a good candidate for polycentricism, because it presents a core that is well connected to global network knots and to regional metropolises as well. There are local centres connected to the core, which makes it strategic for the development of the whole region.

By better connecting Vienna-Bratislava region to Brno a triangle could be created, which would present a very strong and competitive economic space.

So today, it is not possible to say whether the region will become polycentric or if it is on the way towards polycentricism. This makes it into an interesting case for further research.

6.2 The border region between Slovakia and Czech Republic

The border region encompassing two counties (NUTS IV) from the Czech side (Břeclav and Hodonín) and two counties from the Slovakian side (Skalica and Senica) seems to be a great candidate for the development of a local city network. With close distances between its centres of similar size (Hodonín, Břeclav, Skalica, Holíč and Senica) and with a relatively large number of rural settlements around them it should be an ideal area for the development of polycentricism.

The economic structure of the region shows a strong industrial presence (36% of the registered employees of the Senica region and 43% of the Skalica region is active in industry, the South Moravian region's share of industrial workforce is 29%) as the counties were traditionally strong industrial localities (mostly machinery and steel industry, automotive, oil and natural gas industry, paper and printing industry). The agricultural production that is still strong especially in the Czech part of the region presents also an opportunity for the creation of small-scale agricultural clusters oriented at high quality products (ecological production).

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[7] Including public administration, education and healthcare. Source: http://www.statistik.at/web_de/statistiken/index.html, http://portal.statistics.sk/showdoc.do?docid=4

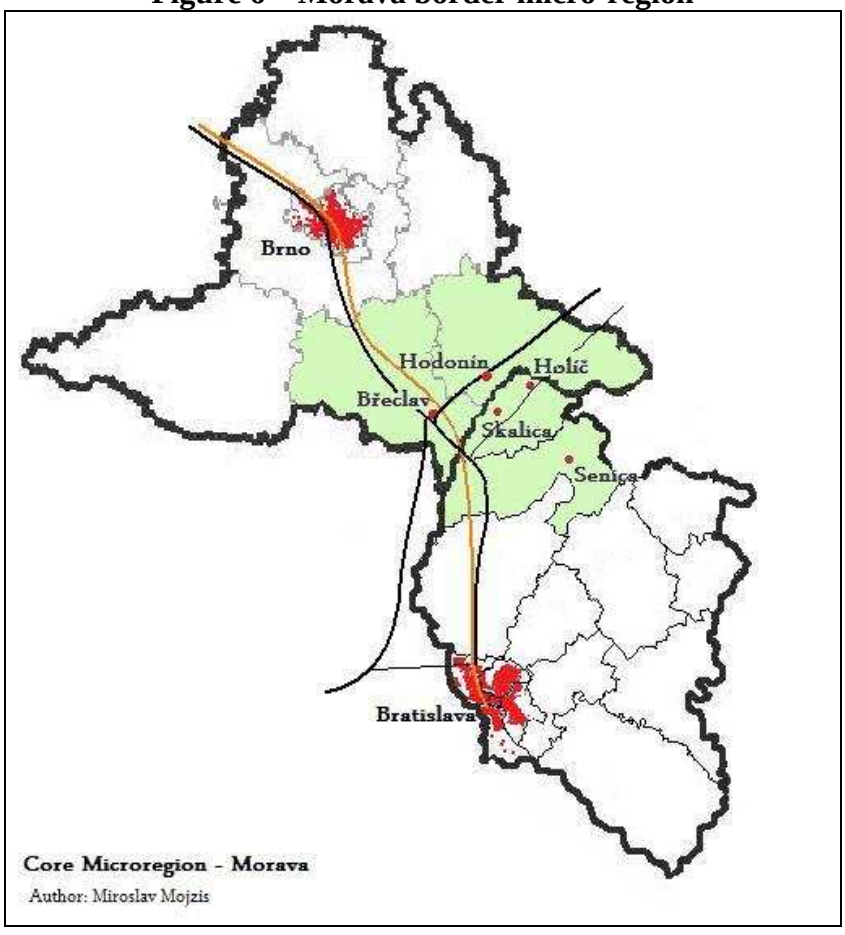
Even though the industry has undergone a shock after the revolution in 1989 it is beginning to revive itself. This trend is understandable as the region has the necessary resource basis and skilled if not highly educated cheap labour force. The unemployment levels are approximately at the same level with an average of 11.5%, most of it being long-term unemployment, which shows structural problems in the region.

It lies on the south-north corridor connecting South Europe to Poland and Baltic and on the corridor connecting the capitals Bratislava and Prague. The distance of the region from major centres of Centrope are 73km from Bratislava, 78km from Vienna and 60km from Brno.

The core of the network consists of three small-sized cities, Hodonín (CZ), Skalica and Holíč (SK). Distances between them are less than 6km. The best infrastructural connections has the city Břeclav (CZ) which is 20km away from the three and is the main hub of the micro-region. The largest population centre with 27 thousand inhabitants is the city of Hodonín. The worst connections are to the city of Senica (SK) which lies 20km from the three (investments to logistic capacities and infrastructure should change this situation soon, as Senica presents a gateway across the Carpathian hills into Slovakia).

Despite of the national borders, the region shows a vivid cross-border interaction as it always did. No cultural differences can be observed as the region shares the same cultural traditions. The national border, which is mostly formal, presents an artificial obstacle soon to be removed after the joining of the Schengen area. The commuting to work is very strong on both sides.

Figure 6 – Morava border micro-region



The demographic trends are slightly different for the parts of the region. While the Czech side shows slight decrease of population and negative migration ratio, the Slovak side on the contrary shows positive migration patterns.

The priorities for the region should include the concentration on the development of an investment core area, using existing capacities and infrastructural connections. An interregional administrative institution would increase the efficiency of the process. Joining of resources is necessary for the realization of larger projects including infrastructure (connections to Senica and Břeclav) and building of education capacities (to improve the educational profile of the population).

The representatives should consider what structural changes are necessary and which orientation should the region take. The basic precondition to start developing of polycentric development is the knowledge of the concept and its positives among the stakeholders and policymakers. The necessary step is to significantly improve planning and governing abilities and capacities on the regional and municipal level, the ability to take a coordinated action and to increase the will to cooperate.

Conclusions

The concept of polycentric regional development is becoming increasingly popular and important as well, as it has found its way into key documents within the European regional and spatial planning agenda. It is an important tool for increasing of competitiveness of regions and for increasing of territorial cohesion of the EU. Beside all the polemics about the concept and its characteristics and boundaries resulting from its complex and interdisciplinary nature it remains an attractive alternative for regions with denser and regular settlement structures. As this concept is relatively new and the research in it is still at the beginning there are lots of unanswered questions concerning its impacts on the society and its economy within its environment. Nevertheless it seems to be a natural step in the development of regions inside a network-based global economy.

The concept is at some degree applicable also in the Centrope region, which is overly heterogeneous but in some of its areas suitable for this kind of development. The region itself is growing more and more integrated although it has yet to take a more official form. Its investment environment is becoming very powerful and stable as the regional cohesion grows.

Our conclusions are that the Centrope region is suitable for different forms of polycentricism, ranging from local to interregional. Its development shows that the landscape in many areas is becoming more polynucleated as larger centres spread out alongside their development corridors and as clustering of functions and industries takes place not only on a regional but also on a municipal level. The interconnections between the knots are growing and are becoming more efficient, which should further boost its development.

At present there seem to be very little processes in tact that would indicate an increase of polycentricism in Centrope. The poles in possibly polynucleated areas are not yet complementary and have similar economic structure. The fast growth of centres like Bratislava or Brno seems to strengthen the competitive forces as the dominant centre Vienna tries to obtain control over their potential. We think that it is only a natural phase in the development in the era of economic transition of the former socialist countries and it will prevail until a new balance of economic and political powers is set.

In search for the potential for polycentricism, we identified several differently suitable areas. Among them is the core of the region, the bipolar conurbation of Vienna and Bratislava (with the possibility to include Brno as a third pole or Győr as a fourth), which is the engine of the region, the border regions between Czech and Slovak Republic and Austria and

Hungary. To enhance the potential of South Bohemia a large scale investment would have to be carried out.

The settlement structure in former Czechoslovakian regions is suitable for local and intraregional forms of network-building (as shown on the case of Morava micro-region). These local micro-networks should be well connected to national and interregional centres to complete the set of networks out of which an economy should consist.

Significant effort needs to be made to spread the concept and its positives among the policymakers and stakeholders and to promote the idea of Centrope. Although the regional differences in identity and political forces will prevent the forming of a higher organized and more independent regional entity, it is well possible to create a powerful and stable investment environment that is technology and service oriented and has a strong production basis. Effective administration and coordinated governance must develop in order to ensure a balanced development of a cohesive polycentric area while preventing negative effects of urbanization and increased migration on the environment.

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