

The Changing Spatial Structure Along the Austro-Hungarian Border

Executive Summary

Using the principles of Central Place Theory put forward by Walter Christaller, the region of Austria's Burgenland and the Hungarian counties of Gyr-Moson-Sopron and Vas are examined to determine the extent to which they are moving towards a Central Place-type spatial structure of their urban centers. The empirical data for the region indicates that there is no change occurring on the Austrian side of the border, however, in the Hungarian counties, transition is occurring. The data is broken down into four sections: population; population changes; services and amenities provided; and education. In the population section, Kormend and Csorna are improving and Kapuvar and Szombathely are declining. The population changes section shows Szombathely sharply declining while Kormend and Koszeg decline to a lesser extent. Sopron is improving. Services and amenities provided shows Celldomolk, Kormend, Mosonmagyaróvár, Sarvar and Szombathely declining while Kapuvar is improving. Finally, the education section shows Celldomolk, Sarvar, Sopron and Szombathely improving while Csorna and Mosonmagyaróvár are declining. The overall urban hierarchy shows some changes in the urban centers, however none substantial enough to alter the hierarchical level of the center. Szombathely is a 'B' place, Sopron and Mosonmagyaróvár are 'K' places, Celldomolk, Csorna, Kapuvar, Kormend, Koszeg and Sarvar are all 'A' places, while Vasvár is a 'M' place. The transitions that are taking place within the Hungarian towns can be traced to the transition of Hungary from a centrally-planned regime to a free-market one. Thus while there is an progression taking place in terms of the establishment of a central place hierarchy in the aftermath of a fall in central planning in Hungary, the opening of the political border does not, at this time, display visible tendencies towards creating a central place hierarchy across the Burgenland and Western Hungary.

The Changing Spatial Structure Along the Austro-
Hungarian Border

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Table of Contents

1. **Executive Summary**
3. **Table of Contents**
5. **Introduction**
7. **Theoretical Framework: Central Place Theory**
8. *Assumptions*
8. *Range*
10. *Hierarchy*
10. *Location Patterns*
12. *Other Arrangements of Central Places*
13. *Implications Introduced by August Lösch*
15. **Background: The Burgenland and Western Hungary**
17. *Austria*
18. *Hungary*
25. **Analysis of Empirical Data**
25. *Population*
27. *Population Changes*
30. *Provision of Services and Amenities*
31. *Education*
33. *Hierarchical Impacts*
35. **Conclusion**

Introduction

The central question which this paper seeks to answer is, “Is the Austro-Hungarian border region evolving into a central place-type spatial structure in the aftermath of the fall of the Iron Curtain?” The region, which encompasses the Burgenland along Austria’s eastern border, and the counties of Vas and Győr-Moson-Sopron on Hungary’s western border, is one that has an eventful history and an intriguing future. The combination of a market driven economy and a formerly centrally planned economy provides a fascinating initial dichotomy. It is this dichotomy that provides the intrigue as the region unifies and moves towards a common structure from such divergent backgrounds.

There are a number of different ways in which this region can be examined as well as a number of points of reference to compare it with. In this paper, the region is compared with the central place model proposed by Walter Christaller. Alternative studies could examine the region against the border of Hungary and Slovenia, or could select different criteria to evaluate the hierarchical levels of the urban centers. A further interesting study could be the role of this region in Hungary’s drive for membership in the European Union.

The selection of the first option described above, came about due to it being an extremely rare example of a previously unified region having been split by a political boundary and the two sides then governed under completely different guiding principles. The subsequent process of reunification has never been examined. Additionally, the use of central place theory over a period of time is an idea which has not been greatly investigated, and was completely ignored by Christaller himself. Thus the opportunity to investigate the melding of a centrally

Introduction

planned economy and region with a market driven one over a period of time under a primarily static framework was a compelling case for the chosen option.

The relevance of this study has several varying possibilities. It could be used as a basis for a more comprehensive examination of the region using similar characteristics. Alternatively, it could be used as a framework for policies to implement cross-border regional policies between Austria and Hungary. Additionally, it provides a new setting for the use of central place theory as a tool to evaluate regional policies and planning.

Central Place Theory

The initial intentions of Central Place Theory were to provide an explanation of the numbers, sizes, and locations of urban settlements in essentially rural, farming regions. The uses today have spread to include time factors, urban and intra-urban structures and even anthropological studies of social structures. The ideological foundations of central place theory are to be found in the writings of rural sociologists and geographers at the start of the twentieth century, but the specific formulation of the theory was made in the 1930's and 1940's by two German scholars, Walter Christaller and August Lösch. In their studies, the economic interdependencies between town and country were spelled out, and the principle of a hierarchy of economic functions and a corresponding hierarchy of different-sized urban settlements was developed.

Christaller published his work in 1933, introducing the discussion with the question, "Are there laws which determine the size, number and distribution of central places?" (Baskin 1966). He believed that there were such laws, and that logic could be used to construct from them a theory. This theory, in turn, could be tested and verified with observations of various urban settlement patterns. The key notion of Christaller's theory was the idea of a functional interdependence between a town and the surrounding rural area. This was not a new concept in the fields of settlement studies and rural sociology, however, Christaller formalized the notion in a unique and innovative way. Working from the basic premise that "the chief profession, or characteristic, of a town is to be the center of a region" (Baskin 1966), he constructed a completely new framework for the study of settlement geography. Christaller did not ignore the fact that there exist various other types of settlements – for example, the "pointly bounded places" such as agricultural villages, or the "areally bounded

Central Place Theory

places” which include border and custom towns, mining towns, harbors and ports, and bridge and fortress towns – but these other places were disregarded in his discussion. The focal point of Christaller’s attention was the central place with its central goods and services.

Assumptions: Christaller assumed first of all that there was a boundless and homogeneous plain with regard to soil fertility and other natural resources. This plain was uniformly settled, and the farmers everywhere had the same demand for goods and services and the same levels of income. Travel across the plain was equally possible in all directions, and the costs of travel and of transporting goods were a function only of the distance traveled. Christaller also assumed that both the businesspersons in the urban places as the producers of goods and services, and the farmers as consumers, were rational individuals who would seek to minimize their costs, whether they were production or transportation costs, while maximizing their profits. On the part of the businesspersons, it meant that a good or service would not be produced and sold if a profit could not be made. If there was insufficient demand for them to at least break even, then it was assumed that they would not offer the service or produce the good. From the point of view of the consumers, this would mean that they would travel only to the nearest central place that provided the goods and services that they demanded. Christaller also made various assumptions based upon rational behavior, the assumption that free entry to the various markets was possible to whomever wished to enter them, and that all of the settled plain would be equally well served by central places.

Range: All central place functions have a range. The range has both an upper and lower limit. Saey (1973) argued that the upper limit was the key concept in Christaller’s formulation of the hexagonal pattern of market areas and the hierarchy of central places. The upper limit was defined simply as “the farthest distance the

Central Place Theory

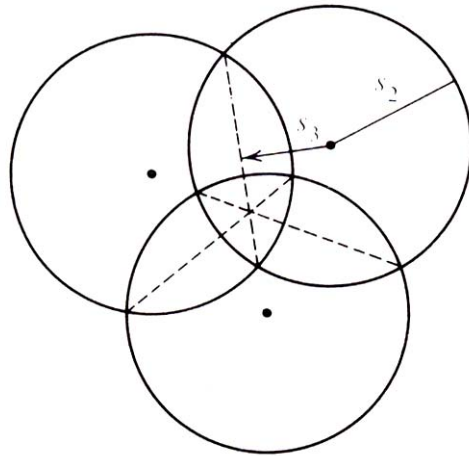


Figure 1. Ideal and Real Ranges of a Central Place Function.
Source: King (1984).

dispersed population is willing to go in order to buy a good offered at a place – a central place” (Baskin, 1966). The more expensive the good, the greater the willingness to travel long distances and hence the upper-limit range would be larger as the travel

costs become an increasingly smaller percentage of the total price of a good. For more frequently demanded goods, which tend to be cheaper goods, the upper-limit range would be smaller as travel costs make up a larger percentage of the total cost. Christaller did acknowledge that the economics of the supply side also would affect the range while emphasizing the demand side in defining the notion of the upper limit to the range of a good. The lower limit of the range could be thought of as “the minimum amount of consumption of this central good needed to pay for the production or offering of the central good” (Baskin 1966). Christaller also acknowledged the range would also be affected by the density and distribution of population in an actual region. The lower limit of the range is directly related to the threshold value for a central place function. It is a measure of the minimum level of demand needed to ensure that the provision of a good or service will be profitable. The key concept involved is the real range. It is key as the upper limit to the range is the maximum distance over which a good will be demanded, but in the case that there is another central place nearby that offers the same good, then there is a point at which it becomes cheaper for the purchaser to go to this other center. That point defines the *real* range of a good. Finally, the size of its range determines the *order* of

Central Place Theory

a place and/or central place function. Lower-order places and functions have smaller ranges, both limit-wise and real, than the higher-order places and functions.

Hierarchy: The size of the market area necessary to provide the economic support for the business offering the good or service is established by the range of a good or service. In developing his argument, Christaller assumed that there already existed a well-developed urban system with one large city, a smaller number of towns, and a large number of villages and hamlets in his hypothetical region. He did not, however, seek to explain or describe how this hierarchy of centers came into existence, or why some centers grew larger than did others. In Christaller's model, the larger urban places would have the larger tributary or trading areas and they would be able, therefore, to offer those goods and services that could not be supported by the smaller urban centers. Additionally, the larger places would be able to offer everything that could be offered in a smaller place.

Location Patterns: Christaller assumed that the urban places of each level of his central place hierarchy would be uniformly distributed throughout the region. This would mean that hamlets would be equidistant from one another, as would be villages, and so on up the hierarchy. The largest or highest-order central place had a large tributary area, the extent of which was determined by the average real range of the highest-order functions offered there. But that same center also offered all of the lower-order functions that have smaller ranges and, therefore, smaller tributary areas. There is then, for the highest-order center and, indeed, for each center at any level of the hierarchy, a set of tributary areas of differing sizes nested within one another. Further, it is clear that within the larger tributary area there are located many lower-order urban places. Christaller contended that under a pure marketing system, a consistent pattern would emerge. This pattern consists of one center of a higher order surrounded by six centers of the next lower order and these six surrounding centers

Central Place Theory

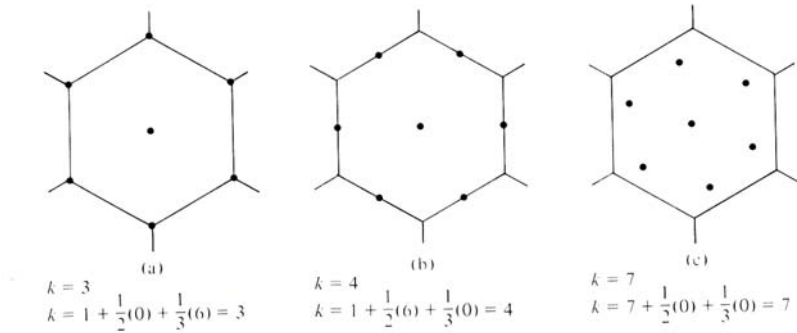


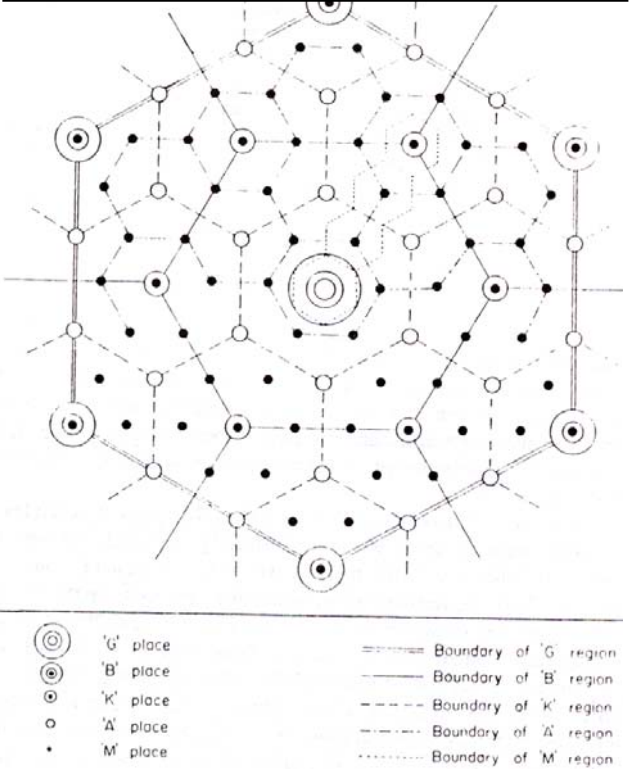
Figure 2. Three Different Arrangements of Central Places
Source: King (1984).

are located on the vertices of the higher-order center's largest tributary area.

Figure 2

displays this pattern. There is one complete B region and another six B regions that are shared with other G places not shown on the diagram. Each G places serves one-third of each of these six B regions; this is the equivalent of two full B regions. Hence, there are the equivalent of three full B regions shown in the figure. Similarly, for the K places there are seven full K regions contained in the region plus one-third of six partial K regions, which adds up to a total of nine K regions. For the A places, the corresponding total is twenty-seven and for the M places is eighty-one. Each central place is presumed to perform all the functions of lower-order places. The highest-order place, therefore, also acts as a second-order place, a third-order place, and so on. Thus, by saying that, “the equivalent of three second-order tributary areas exist within the highest-order tributary area.”, one means that in

Figure 3. Market System of Central Places According to Christaller
Source: Baskin (1966)



Central Place Theory

addition to the first-order place (now also considered as a second-order place) there are two other centers. Similarly, nine third-order tributary areas involve the first-order place, both second-order places all acting now as third-order places, and six other places. Hence, the progression describing the number of different sized places in a system of degree three is: 1, 2, 6, 18, 54, 162, 486, and so on.

Other Arrangements of Central Places: Christaller insisted that the so-called marketing principle that underlies the pattern shown in Figure 3 would be the normal situation. He recognized, however, that other forces might distort the pattern and produce different central place arrangements. In particular, two competing principles – the one of traffic routing and the other of administrative partitioning – were recognized as the dominant forces in the central place patterns shown in Figures 4 and 5. The “traffic principle” necessitates a revision of the system so as to ensure that as many places as possible lay on any one traffic route between two important towns, the route being established as straight and economical as possible. The system is then essentially a linear one and might be expected to dominate, for example, in areas characterized by a ridge and valley terrain. By contrast the “administrative”

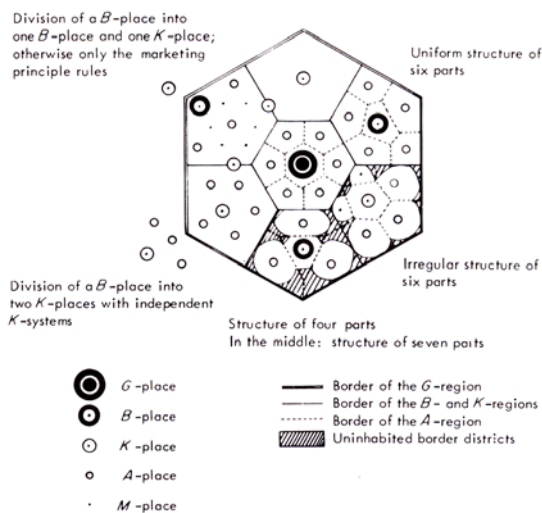


Figure 4. A System of Central Places According to the Administrative Principle.
Source: Baskin (1966).

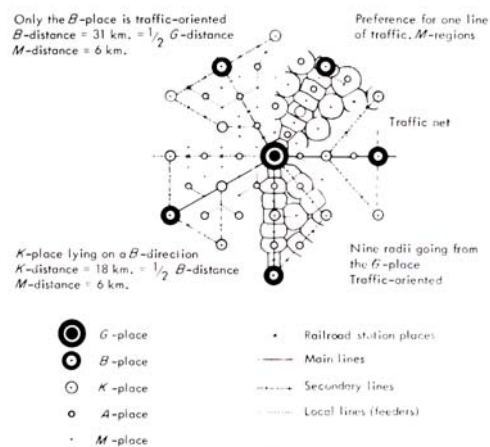


Figure 5. A System of Central Places According to the Traffic Principle.
Source: Baskin (1966)

Central Place Theory

or “separation principle” results in the creation of virtually complete districts of almost equal area and population, at the center of which lies the most important place.

Implications Introduced by Lössch: Lössch based his theory around the nature of demand and market area for a single good and attempted to build from there in logical sequence a system of market regions. Lössch contended that Christaller’s $K = 3$ network was simply a special case of a more general arrangement. Beyond the $K = 4$ and $K = 7$ ideas proposed by Christaller, Lössch considered a number of other values for K . Parr and Denike (1970) correctly observe that it is only in the very restricted sense of the geometrical appearance of the two schemes that Lössch’s claim for the generality of his scheme over that of Christaller’s holds true. A significant difference

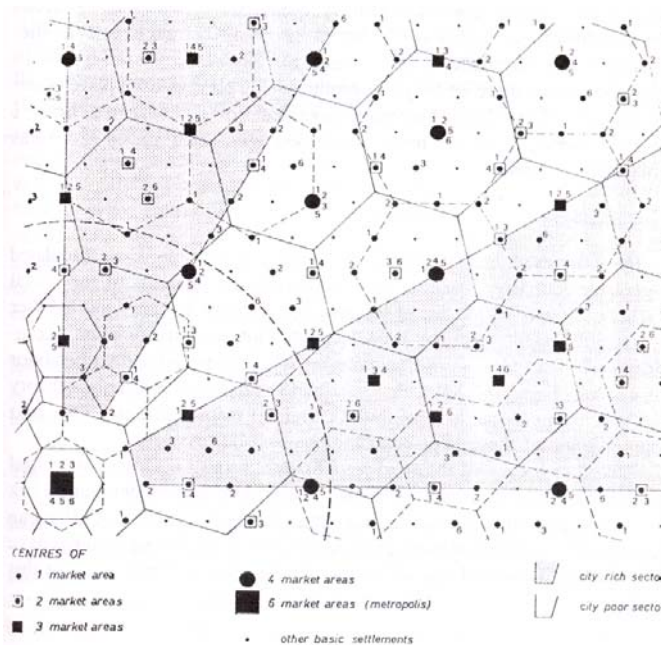


Figure 6. Loschian Landscape Involving the Six Smallest Economic Areas.
Source: Saey (1973).

between the two formulations of Lössch and Christaller relates to the fact that in Christaller’s scheme, as has been noted already, there is a nested hierarchy of places and market areas with the lower-order market areas completely contained within higher-order areas. Thus, a center offering good m , also offers all goods of a lower order than m .

Lössch argued, however, that two centers of order m may have different functional mixes. That is, one may have a brewery and a bakery, while another may have a bakery and a laundry. Yet another center of similar size might conceivably contain all

Central Place Theory

three functions. This can occur as Lösch generalized from his discussion of the market area arrangement for a single economic good to the regional level in which there are many goods offered by numerous producers in the urban centers of the region. The assumption of a uniform and continuously distributed population was dropped. The individual market area networks were then thought of as being overlaid on one another in such a way that there would be at least one common central location (the metropolis) and as many other place locations coinciding. Rotation of the networks around the central metropolis would then produce a landscape or location pattern in which there would be certain sectors with many urban places and others with few. These regions were referred to by Lösch as being “rich” or “poor” in cities.

These theories provide a framework from which the region in question can be examined. They do not provide a formula which must be observed, but rather provide a model against which they actuality observed, as well as compared and contrasted with. The differences are as important as the similarities in attempting to explain and predict the nature of human settlements.

The Burgenland and Western Hungary

The area of land which today is known as the Burgenland, Gyr-Moson-Sopron and Vas regions of Austria and Hungary is one with a long history of human settlement. This history stretches back prior to the thirteenth and fourteenth centuries when western types of cities reached Hungary. These cities, though, never became important on the Hungarian plains where large market towns made up the urban framework (Enyedi 1978). The region then fell under the reign of the Hapsburg Empire, and it has been argued that the effect of the Empire was to form a sort of free trade area, at the center of which was this region, allowing for substantial economic integration to occur through the distribution of resources (Dornbusch 1994). Even the fall of the Hapsburg Empire in 1918 and the subsequent formation of firm nation states did not completely drive a wedge between the two sides of the border. The settlement of the national borders between Austria and Hungary was concluded in the referendum of 1921 that decided that Sopron would remain Hungarian while the Burgenland would become Austrian. The spatial preconditions of the time had an Austrian form prior to the handing over of the “neglected peripheral areas” of the Hungarian kingdom (Jandrisits 1991). The negative effects of this border erection are often interpreted in such a way as to generalize their impact upon the whole border region. It has been argued that the Burgenland suffered greatly from the loss of its natural centers in terms of business and economic development, but additionally it can be argued that the urban centers on the Hungarian side suffered from the loss of their western rural hinterlands. Holzinger (1996) has argued that even before the official split Burgenland was split in its economic orientation with the northern parts oriented towards Austria (Vienna) and the southern parts towards Hungary. Whether this split existed or not, is irrelevant, as the Russian occupation and the

The Burgenland and Western Hungary

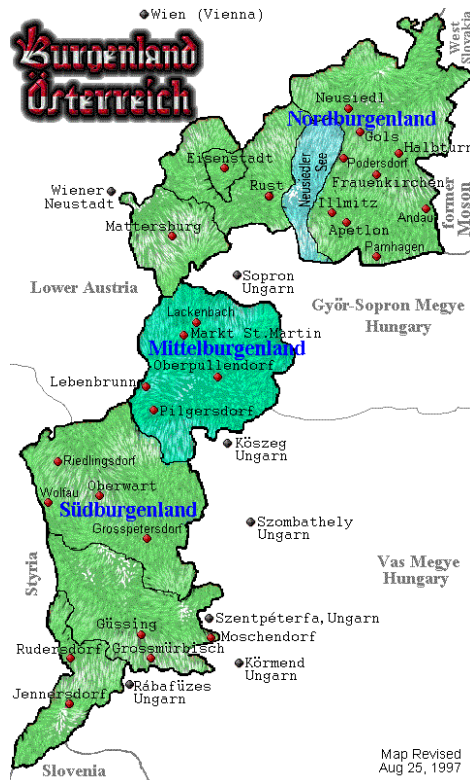


Figure 7. The Burgenland
 Source: <http://www.spacestar.com/users/hapander/burgen5.html>

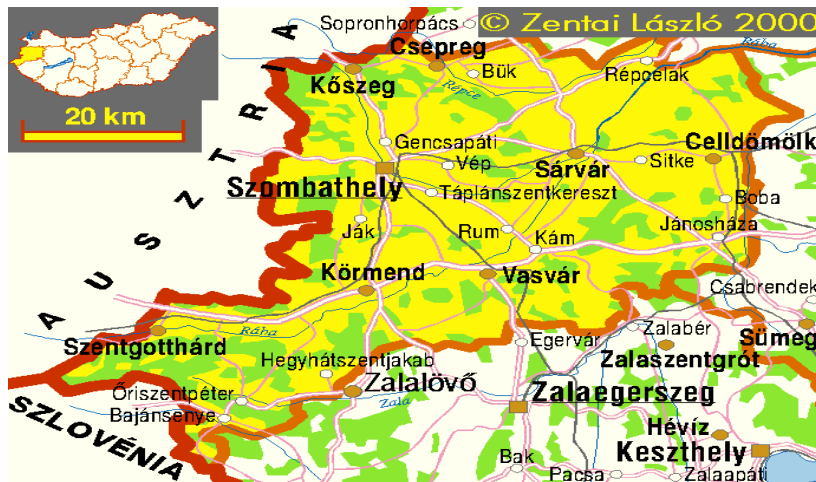


Figure 8. Győr-Ménfőcsanak and Vas Counties of Hungary

The Burgenland and Western Hungary

erection of the Iron Curtain ensured that the region became two separate regions with distinctly different structures. While still located in geographical close proximity to one another, the political and ideological differences which now separated them had a profound effect upon the spatial development of the two regions over the next half-century.

Austria: It is necessary to examine both of the countries individually in order to be able to understand the situation as it exists today. On the Austrian side of the border, a look at the Austrian foreign trade figures (Table 1) from 1920 to 1990 clearly illustrate the declining role that Hungary played in the Austrian economy as a result of the Russian occupation and subsequent Communist rule. These figures would increase in the aftermath of 1990 as

Austrian Foreign Trade 1920-1990							
	1920	1924	1929	1937	1947	1960	1990
% of total Exports: Hungary	8.1	8.8	7.5	9.1	4.3	2.4	2.2
% of total Imports: Hungary	3.2	11.7	9.9	9.1	2.9	1.9	1.6
Table 1. Source: Stankovsky 1997.							

relations between the two nations improved and trade increased as their ideologies both embraced a capitalist mentality. This increase in trade during the 1990's has a parallel in the field of Austrian immigration. Immigration takes on two main forms, push and pull migration. Pull migration is immigration which is drawn in by a strong economy and the job prospects which accompany it, as well as sometimes by active government encouragement in order to fill labor shortages. This is generally seen as a positive thing. Push migration which is caused by conditions in the immigrants' native country, can have the effect of accelerating employment crises (Zimmerman 1995). Since the fall of the Iron Curtain, Austria has been faced with a wave of push migration from Eastern Europe, including Hungary. While foreign labor constituted only 5.4 percent of total employment in 1988, by 1994 it had reached 9.5 percent, or

The Burgenland and Western Hungary

291,000 workers. Similarly, the development of the foreign population in Austria leapt from 4.5 percent of the total population in 1988 to 8.9 percent in 1994 (Breuss and Tesche 1996). Since then, however, there have been increasingly restrictive immigration policies such as the Unemployment Insurance Law, Foreign Labor Employment Law, Residence Law, Asylum Law, and Foreigner's Law aimed at shielding the Austrian labor market and population from foreign workers and migrants (Gächter 1995). It is important to note that the inflow of foreigners consists of a number of different categories of status, most notably, foreign workers (seasonal or year-round work) and dependent employees or self-employed (Biffel 1995). Table 2 illustrates the numbers of immigrants in the labor market and population, with special note of those from Hungary. The reason for this migration can be

Austria Stock of Foreign Labor and Components of Total Population (figures in thousands)												
	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Hungary	-	-	-	-	-	-	-	-	-	10.1	10.0	-
Total	145.3	138.7	140.2	146.0	147.4	150.9	167.4	217.6	266.5	273.9	277.5	291.0
Foreign Labor in % of Total Employment	5.3	5.1	5.1	5.3	5.3	5.4	5.8	7.2	8.6	9.0	9.0	9.5
Total Including Foreign Un-employed	154.8	146.7	148.3	155.0	157.7	160.9	178.0	236.0	286.9	295.9	304.6	316.4
Inflow of Foreign Workers	31.4	32.4	34.0	18.0	15.3	17.4	37.2	103.4	62.6	57.9	37.7	-
Foreign Population	296.7	297.8	304.4	314.9	326.2	344.0	387.2	456.1	532.7	623.0	689.6	713.5
% of Total Population	3.9	3.9	4.0	4.1	4.3	4.5	5.1	5.9	6.8	7.9	8.6	8.9

Table 2. Source: OECD (1995); Biffel (1995); EUROSTAT (1995).

clearly understood when considering the fact that in 1995, the GDP per capita in Austria was 15.794 ECU (PPP), while Hungary's was 5.314 ECU (PPP) (Breuss 1995). Thus the average person in Austria was nearly three times better off than their counterpart in Hungary. The difference is even more striking when looking at the average annual wages. The 1994 average annual wage (in US\$) for Austria was \$27,950 as compared to Hungary's \$3,904 (Havlik 1995).

Hungary: While Austria followed an almost model path of capitalism and market-motivated development patterns, Hungary took the Communist route of planned central control. While Hungary did experience some early reforms in

The Burgenland and Western Hungary

agriculture and other peripheral areas, it was not until 1987 that the move away from central planning really accelerated and entrepreneurship and private enterprise were encouraged (Downes 1996). By that stage, however, the urban structure of the country was well set. The industrialization that took place in Hungary in the aftermath of the Second World War took place with far less urban population growth and spatial concentration than those under capitalist systems. Essentially, Hungary became 'under-urbanized' during the socialist industrialization (Szelenyi 1996). By comparing the growth trends of urban industrial jobs to the growth of the permanent urban residents in Hungary, Ivan Szelenyi (1996) concluded that socialist industrialization had followed a very different trajectory from Western capitalist countries in their stage of industrialization. The growth of urban industrial jobs occurred much faster than the growth of a permanent urban population under socialism. This 'under-urbanization' is a value-neutral term as it is simply referring to the pattern of industrialization and urbanization under which the growth of the urban population falls behind the growth of urban tertiary and industrial sector jobs. It is not caused by policy errors, and indeed, is not necessarily an undesirable pattern of urbanization. It can be argued that it is in fact a desirable outcome as it avoids costly and unsustainable over-concentration of the population (Szelenyi 1996).

From the early 1970's onwards, there can be identified a distinct regional policy. Financial resources were allocated so as to incorporate regional priorities. One of these regional objectives was to promote the development of medium and small towns and villages within the national settlement hierarchy, particularly in the rural and backwards areas. The centralized control that existed was not, however, able to counterbalance the increasingly wide regional disparities across the country. The economy was dominated by large companies which made more difficult the government's attempts stimulate particular regions through subsidies. A 1985

The Burgenland and Western Hungary

parliamentary decree attempted to raise the profile of regional policy within Hungary, however it was not able to achieve any significant results as a result of lack of funding as well as an inadequate institutional system (Downes 1996).

There are three dimensions of urban development in which it is possible to detect socialist characteristics. These are: urban forms and patterns of social segregation, the 'urbanism' of cities, and the urban-rural relationship (Szelenyi 1996). All three of these dimensions are now experiencing far-reaching changes as Hungary moves away from its central control. In particular, the urban-rural relationship is at a breaking point. There is presently massive rural unemployment within Hungary. Particularly affected are those regions that lie outside of commuting range of the industrial centers. There is not, however, the expected flight from the land that serves to propagate the under-urbanization of the industrial centers, despite the fact that the socio-economic and political basis for it has been removed. The reasons for the lack of flight are twofold, a weak push from the rural communities and an even weaker pull from the urban centers. There is a very limited supply of jobs in the urban centers, and those that do exist, lie in the expanding tertiary sector that favors younger and better-trained people to the unskilled and semi-skilled working class that reside in the country. Thus cities have little attraction for the population. Rural living, while not an easy task, at least offers a handful of advantages. There exists good-quality rural housing that was built in the 1970's and 1980's. Additionally, the prospect of having a garden, which would be impossible in the urban centers, is a huge factor as it provides the ability to produce food and a method of survival at the present time (Szelenyi 1996).

There are a number of key institutional issues that have become prominent in the scheme of regional development at the regional level. One of the most important developments was the local government reform that took place at the start of the

The Burgenland and Western Hungary

1990's. In the name of increased local autonomy, this created over 3000 independent autonomous municipal authorities with no legislation aimed at forming associations between them. This figure is far higher than required for local government administration and service organization. As a result of this highly fragmented system, it is increasingly difficult for towns to play an integrative role in local and regional development. These characteristics of the new local government system strongly influence central regional policy. Central development priorities and the scope of regional policy are defined by this new disintegrated structure. The autonomy of all the local governments has made the formation of a regional strategy highly problematic. The government took steps in 1993 to encourage the cooperation and association of municipal governments through the determination of development support eligibility. At the same time, however, the operational financing is still encouraging autarky, isolation and separation. Further complicating matters is the lack of a strong intermediate level administration which could provide a regional overview of development needs as well as an appropriate forum for the implementation of suitable measures. This role was formerly held by the county governments, however, their positions were seriously weakened during the early 1990's, and as such they have been left to fulfill tasks which the local authorities are not willing or not able to perform (Downes 1996).

A new Law on Regional Policy was adopted in 1995 that sought to clarify the institutional and incentive issues in Hungarian regional planning. Ruth Downes (1996) breaks down the key points of the law as follows:

The Burgenland and Western Hungary

1. to assist the development of a market economy in every region of the country, to create necessary conditions for sustained growth, and to improve economic conditions and quality of life through coordination between social, environmental and economic interests
2. to create conditions for self-sustaining growth
3. to reduce spatial disparities in terms of living conditions, economic, cultural and infrastructural conditions) between Budapest and the rest of Hungary and between developed and underdeveloped regions
4. to encourage initiative by regional and local communities and to coordinate them with national objectives.¹

There are two issues in particular which require urgent attention in order for regional policy and development to continue on an effective course for the future of Hungary. Firstly, an overall strategy for regional development needs to be formulated in order to provide a framework for the coordination of plans and funds at a national, regional and local level. Secondly, the role of intermediate or regional levels of government needs to be decided. As with the overall strategy, this issue is widespread in its realm of influence as it affects the formulation and efficient implementation of effective regional and local development plans, as well as other central matters. Indeed, Downes(1996) has argued that much of the success of future regional policy in Hungary depends on the solution of these issues.

The regions of Gyr-Moson-Sopron and Vas do not face quite such a bleak picture as has been painted for the majority of the rest of the country. As prices were liberalized in leaps and bounds from 1988 through 1991 (OECD 1992), foreign investors favored the western region of the country, and this had the effect of radically transforming the regional pattern (Cseflavay 1995, Enyedi 1996, Hastenberg 1996, Swain 1998). Between January 1990 and December 1993, almost \$10 billion of Western capital was ‘invested or committed’ to Hungary (Andrusz 1996). This foreign investment has led to higher levels of economic development, lower unemployment, better growth rates and more intensive business contracts in this area.

The Burgenland and Western Hungary

These factors are enabling these regions to reverse some of the problems the nation as a whole had been facing, namely low population density, out-migration, poor housing and infrastructure (Downes 1995). Győr, despite this trend, has not been able to have its population catch the level of employment offered there and thus remains ‘under-urbanized’. Even with an ‘under-urbanized’ population, the region has shown tremendous growth since 1990. Jozsef Nemes-Nagy (2000) writes argues that the Győr-Moson-Sopron

Hungarian Economic Indicators						
Regions / Counties	GDP per capita National Average = 100			Economic Health ² (factor values)		
	1975	1996	Change	1990	1996	Change
Győr-Moson-Sopron	111	110	-1	0.92	1.01	+0.09
Vas	82	109	27	0.46	0.89	+0.43

Table 3. Source: Nemes-Nagy (2000).

¹ Downes, Ruth, *Regional Policy Development in Central and Eastern Europe*, p.267 as found in, *Regional Development Strategies: A European Perspective*, edited by Jeremy Alden and Philip Boland, Jessica Kingsley Publishers, London, 1996.

² “In the case of the ‘economic health’ indicator formed by factor analysis, we could make calculations for the years 1990 and 1996. The index comprises the elements of crisis and relative dynamism symptoms characterizing this decade. Entrepreneur activity measured by firm density, employees’ taxable incomes, unemployment rate and proportion of joint ventures to the total number of firms are merged resulting in a single factor (with common high – over 0.8 – factor weights, and with 72 percent of variation). High positive figures mean relatively high levels of income, low rates of unemployment, a great number of business ventures, and a large amount of foreign capital investment. In contrast, high negative figures indicate counties where the signs of crisis are dominant, while figures close to 0 represent the average.” (Nemes-Nagy 2000, pp. 174-5).

The Burgenland and Western Hungary

county, along with its counterpart immediately south, Vas, are the winners in the economic-political transition which took place in Hungary. Indeed, the numbers support his claim, as illustrated by Table 3.

It is important to keep the national trends as a frame of reference when examining the data on the Western counties of Hungary. They provide a backdrop against which to measure the transitions that are being experienced by these urban centers in addition to the obvious comparison between the centers themselves.

Empirical Data

The data gathered regarding the Burgenland and the Western Hungarian regions provides an interesting picture of transition and stability. In the Burgenland, Crajasits (1998) observed that very little has changed within the past ten years, and even within the last forty years. Eisenstadt is the only major urban center in this region and even that is dominated by the presence of Vienna to its north. This could somewhat be predicted due to the stability which Austria has maintained during this period. The transition then, can be more expected along the Hungarian side of the border where a number of urban centers are experiencing changes in the aftermath of the move away from a centralized economy.

The centers of Celldomolk, Csorna, Kapuvar, Kormend, Koszeg, Mosonmagyarovar, Sarvar, Sopron, Szombathely and Vasvar are examined here to try and illustrate the changes which have occurred in the spatial structure in the past ten years. Data has been collected regarding population, population density, migration, natural growth, construction of dwellings, number of hospital beds, educational capabilities, cinemas, clothing stores and pharmacies. These have been clustered into the following categories: Population; Population Changes; Provision of Services and Amenities; and Education.

Population: The population category consists of Resident Populations for 1989 and 1999, as well as the population densities for 1989 and 1999. These categories were selected as they can be used as a measure of urbanization of an urban center. Population serves to indicate the immediate consumers available to provide the threshold number for local businesses and services. Changes in this population will affect the ability of these services and industries to continue to exist as they may no longer have sufficient demand for their good to survive should the population

Empirical Data

decrease by a significant amount. Alternatively, should the population grow, they may be able to expand their business or service to take advantage of the increase in consumers. A higher density is indicative of increased urban activity as land in the urban center becomes more valuable as firms and services seek to minimize their costs, in this case transportation costs, by locating in a central location (O'Sullivan 1996). These figures show some consistent trends across the spectrum of the ten cities studied here. Examining Table 4, it is instantly apparent that there is a strong trend towards declining populations within the selected cities as nine out of the ten cities have had decreasing populations between

Population Statistics for Selected Hungarian Centers						
TOWN	RESIDENT POP 1989	RESIDENT POP 1999	1999 POP as % of 1989 POP	POP DENSITY 1989 (per square km)	POP DENSITY 1999 (per square km)	1999 POP DENSITY as % of 1989 POP DENSITY
Celldomolk	12,061	11,778	97.7	232	225	97.0
Csorna	10,603	10,478	98.8	103	114	110.7
Kapuvár	11,167	10,508	94.1	116	109	94.0
Kormend	12,157	12,405	102.0	230	235	102.2
Köszeg	11,945	11,715	98.1	217	214	98.6
Mosonmagyaróvár	30,079	29,704	98.8	354	348	98.3
Sárvar	15,836	15,525	98.0	244	240	98.4
Sopron	55,083	53,573	97.3	326	317	97.2
Szombathely	85,617	81,228	94.9	872	833	95.5
Vasvár	4,946	46,88	94.8	74	85	114.9

Table 4. Source: Kozponti Statisztikai Hivatal 1989, 1999.

1989 and 1990. This is indicative of most of the country as many Hungarians moved to either Budapest and the economic opportunities offered there, or out of the country to the promise of economic prosperity offered by Western Europe. Kormend's increase is thus hard to explain in this context as it defies the prevailing conditions throughout the rest of the region, however, it is important to keep in mind that it was a relatively small increase. Regardless of the reason that it grew, Kormend still experienced a transition different than any other urban center examined here, and that makes it noteworthy. Kapuvár, Szombathely and Vasvár all had populations that declined by more than five percent.

Population density also is generally declining in the region as seven of the ten cities displayed a drop in this attribute. Kormend again showed an increase in the attribute as the density increased to correspond with the population increase. Csorna and Vasvar both showed substantial increases in their densities as their population densities increased by over ten percent each. Kapuvar again was the largest decliner as its density fell by six percent, seemingly to correspond with their population decline.

Thus from the population section, we see Kapuvar, Szombathely and Vasvar declining in terms of their residential population while the others remained relatively stable, while Kapuvar again declined in terms of population density. Csorna and Vasvar were the towns that showed large increases in their population densities during this period. The urban centers that appear to improving their level in the urban hierarchy then are Kormend and Csorna, while Kapuvar and Szombathely appear to be declining. Vasvar does not clearly appear to be going in one direction or the other, while the other urban centers appear to be remaining stable in terms of their population over this period.

Looking at the hierarchy levels for 1989 and 1999, it is clear that initially, Szombathely is at a higher level than the others. It is followed by Sopron and Mosonmagyaróvár which are then followed by Celldömök, Csorna, Kapuvar, Kormend, Koszeg, and Sarvar all in close proximity to one another. Finally, Vasvar trails all the other urban centers in hierarchical scale. Moving ahead to 1999, While Kormend and Csorna are improving, and Kapuvar and Szombathely are declining, the effects upon their overall hierarchical status is not great enough to alter their level.

Population Changes: The population changes section includes Natural Growth figures, Permanent Migration, Temporary Migration, Total Migration as well as figures for Natural Growth and Net Migration per thousand inhabitants of the urban

Empirical Data

center. There are again a number of trends that can be seen from the data. Natural growth tends to be declining, which corresponds with a decline in the natural growth per thousand members of the population. Permanent migration tends to be remaining the same or declining with the notable exception of Sopron, while temporary migration is for the most part increasing with the notable exceptions of Sopron and Szombathely. Total migration is remaining fairly stable with the exception of Szombathely, as is net migration per thousand with the exceptions of Koszeg and Szombathely.

Population Change Statistics for Selected Hungarian Urban Centers									
TOWN	Natural Growth 1989	Natural Growth 1999	Change	Nat Growth / 1000 1989	Nat Growth / 1000 1999	Change	Perm. Mig. 1989	Perm. Mig. 1999	Change
Celldomolk	-3	52	+55	-0.3	-3.6	-3.3	-16	9	+25
Csorna	20	61	+41	1.6	-2.5	-4.1	20	-16	-36
Kapuvár	-35	-36	-1	-3.1	-3.4	-0.3	-1	-6	-5
Kormend	13	-13	-26	1.1	-1.0	-2.1	116	15	-101
Koszeg	-8	-8	0	-0.6	-0.7	-0.1	81	-22	-103
Mosonmagyaróvár	91	-57	-148	3.1	-1.9	-5.0	-37	-80	-43
Sarvar	0	-72	-72	0	-4.6	-4.6	-5	-19	-14
Sopron	-19	-140	-131	-0.3	-2.6	-2.3	-2	172	+174
Szombathely	83	-375	-458	0.9	-4.6	-5.5	-39	-370	-331
Vasvár	-17	-2	+15	-3.1	-0.4	+2.7	0	0	0
TOWN	Temp. Mig. 1989	Temp. Mig. 1999	Change	Tot. Mig. 1989	Tot. Mig. 1999	Change	Net Mig. / 1000 1989	Net Mig. / 1000 1999	Change
Celldomolk	-15	30	+45	-31	39	+70	-2.6	3.3	+5.9
Csorna	-44	12	+56	-24	-4	+20	-1.9	-0.4	+1.5
Kapuvár	-89	18	+107	-90	-124	-34	-8.0	1.1	+9.1
Kormend	-1	2	+3	115	17	-98	9.3	1.4	-7.9
Koszeg	-86	-100	-14	-5	-122	-117	-0.4	-10.4	-10.0
Mosonmagyaróvár	-83	66	+149	-120	-14	+106	-4.0	-0.5	+3.5
Sarvar	-34	60	+94	-39	41	+80	-2.5	2.6	+5.1
Sopron	164	-178	-342	162	-6	-168	2.8	-0.1	-2.9
Szombathely	766	-101	-867	727	-471	-1198	8.2	-5.8	-14.0
Vasvár	-25	-15	+10	-25	-15	+10	-4.6	-3.2	+1.4

Table 5. Source: Központi Statisztikai Hivatal 1989, 1999.

The notable points from the natural growth figures come from Celldomolk, Kormend, Mosonmagyaróvár and Szombathely. Celldomolk is the exception from this group as they reversed a trend of declining natural growth in 1989, to post a

positive figure in 1999. The other three urban centers all declined from positive figures to negative ones over the same ten-year span. Examining natural growth per thousand inhabitants, Csorna, Kormend, Mosonmagyaróvár, Szombathely and Vasvár all stand out. The first four urban centers all experienced a decline in natural growth per thousand from a positive figure to a negative one. Vasvár stands out as while it still has a negative natural growth per thousand, its figure still improved during the period, the only urban center to do so.

Examining the migration figures, there are several noteworthy statistics. Sopron's increase in permanent migration and decrease in temporary migration illustrates a trend contrary to the national one described by Szelenyi (1996). Sopron is experiencing an increase in people moving to the city and remaining there to work, while its number of 'migrant' or temporary workers is declining. Thus Sopron is not only providing the lure of employment, but it is also retaining those people that it attracts through its employment opportunities. It is reducing the number of people who come into the center only to work and then leave to reside elsewhere, usually the surrounding countryside.

Szombathely's decline in both temporary and permanent migration is a disturbing trend as not only is the urban center not attracting people on a permanent basis, it is not even able to attract them temporarily through lures of employment. Koszeg and Kormend also display losses in permanent migration, with Koszeg improving its temporary migration while Kormend continued to decline. Examining net migration per thousand inhabitants, it is no surprise to see Szombathely declining markedly, as is Koszeg, Kapuvar was the only urban center to show marked improvement on the basis of a turnaround in temporary migration from negative to positive.

Empirical Data

Examining the data to see how it affects the urban hierarchy, it is clear that Szombathely is sharply declining with Kormend and Koszeg also declining but to a lesser extent. Sopron is the lone urban center appearing to improve in this section. The urban hierarchy in 1989 as indicated by these figures bears a striking resemblance to the one described in the earlier section. Again, the larger three centers of Szombathely, Sopron and Mosonmagyaróvár dominate in terms of scale, the figures from this section. The difference lies in the fact that over the ten year span examined, Sopron improves its position, while Szombathely declines. Kormend and Koszeg also decline, lowering their hierarchical status with regard to the surrounding urban centers.

Provision of Services and Amenities: This section consists of: dwellings built per thousand inhabitants for 1989 and 1999; clothing stores for 1994 and 1999; pharmacies for 1994 and 1999; and hospital beds for 1989 and 1999. The trends illustrated by these figures

Statistics for Selected Hungarian Urban Centers											
Town	Dwell Built / 1000 1989	Dwell Built / 1000 1999	Change	Clothing Stores 1994	Clothing Stores 1999	1999 Stores as a % of 1994 Stores	Pharmacies 1994	Pharmacies 1999	Hospital Beds 1989	Hospital Beds 1999	1999 Beds as a % of 1989 Beds
Celldömök	6.3	1.7	-4.6	48	32	67.7	3	3	125	110	88.0
Csorna	6.5	2.1	-4.4	58	35	60.3	3	2	213	221	103.8
Kapuvár	3.2	2.0	-1.2	36	39	108.3	3	3	175	185	105.7
Kormend	9.2	2.5	-6.7	68	41	60.3	3	2	167	110	65.9
Koszeg	2.4	3.7	+1.3	58	33	56.9	2	2	0	0	-
Mosonmagyaróvár	5.4	0.9	-4.5	240	177	73.8	5	5	280	280	100
Sarvar	5.9	2.6	-3.3	81	59	72.8	4	3	144	110	76.4
Sopron	3.0	2.7	-0.3	492	429	87.2	14	12	1288	957	74.3
Szombathely	4.3	1.5	-2.8	392	321	81.9	16	16	1425	1261	88.5
Vasvár	4.2	0.4	-3.8	22	20	90.9	1	1	0	0	-

Table 6. Source: Központi Statisztikai Hivatal 1989, 1994, 1999.

reflect many of the same trends as do the ones presented earlier. The figures regarding dwellings built show a sharp decrease in Kormend, while almost all of the urban centers showed a decrease in the number of clothing stores from 1994 to 1999. The numbers of pharmacies remained fairly constant across the towns, as did the number

of hospital beds provided with the exceptions of Sopron and Szombathely. Koszeg provides an anomaly in the dwellings built category as it is the only urban center to display an increase in the ration. Similarly, Kapuvar is the only center that increased its number of clothing stores while other locations decreased theirs by as much as 43 percent. Csorna and Kapuvar were the only locations to increase their number of hospital beds in contrast to the slight decline faced by the others.

Interpreting the figures in terms of the urban hierarchy, it appears as though Celldomolk, Kormend, Mosonmagyarovar, Sarvar, and Szombathely are declining, Kapuvar is improving its status and the rest are maintaining their positions. This section, however, is clearly dominated by Sopron and Szombathely, with Koszeg and Vasvar bringing up the rear in terms of scale.

Education: The education category brings together all of the data regarding the schools provided. This includes the number of kindergarten places per thousand residents for 1989 and 1999, the number of elementary school pupils in 1989 and 1999, the number of elementary school teachers for the same years, the ratios of pupils to teachers for these years, the number of elementary school children per thousand members of the population, the number of secondary school pupils, and the ratios of secondary school pupils to teachers. The

Elementary Schools												
Town	Pupils 1989	Pupils 1999	1999 Pupils as a % of 1989 Pupils	Teacher 1989	Teacher 1999	1999 Teachers as a % of 1989 Teachers	Pupils / Teacher 1989	Pupils / Teacher 1999	Change	Pupils / 1000 1989	Pupils / 1000 1999	Change
Celldomolk	1,610	1,308	81.2	136	130	95.6	11.8	10.1	-1.7	135.4	111.1	-24.3
Csorna	1,714	1,277	74.5	127	101	79.5	13.5	12.6	-0.9	137.0	121.9	-15.1
Kapuvar	1,568	1,114	71.0	118	92	78.0	13.3	12.1	-1.2	140.8	106.0	-34.8
Kormend	1,704	1,422	83.5	153	129	84.3	11.1	11.0	-0.1	137.6	114.6	-23.0
Koszeg	1,657	1,176	71.0	119	95	79.8	13.9	12.4	-1.5	122.4	100.4	-22.0
Mosonmagyarovar	3,913	3,013	77.0	294	270	91.8	13.3	11.2	-2.1	131.5	101.4	-30.1
Sarvar	2,142	1,569	73.2	144	138	95.8	14.9	11.4	-3.5	135.3	101.1	-34.2
Sopron	6,563	4,845	73.8	455	382	84.0	14.4	12.7	-1.7	114.6	90.4	-24.2
Szombathely	10,494	7,726	73.6	806	692	85.9	13.0	11.2	-1.8	118.2	95.1	-23.1
Vasvar	635	587	92.4	49	44	89.8	13.0	13.3	+0.3	116.5	125.2	+8.7

Table 6. Source: Kozponti Statisztikai Hivatal 1989, 1999.

Empirical Data

elementary school data shows a decline in number of students across the all of the urban centers examined. Csorna, Kapuvar, Koszeg, Sarvar, Sopron and Szombathely show the sharpest declines of over twenty-five percent each. There is a corresponding decline in the number of teachers which each urban center employs as again all of the centers reduced their number of teachers during the ten-year span. The largest proportional decreases occurred in Csorna, Kapuvar and Koszeg. Examining the ration between teachers and pupils, almost all of the centers improved and lowered their ratios, with the exception of Vasvar. Sarvar and Mosonmagyarovar were the two centers in particular that significantly improved their pupil to teacher ratio. Finally, the pupils per thousand ratio shows declining rates with the exception of Vasvar. Kapuvar, Mosonmagyarovar and Sarvar are the largest decliners with decreases in their elementary school pupils per thousand of over thirty.

As an indicator of the overall urban hierarchy, this section closely resembles, with good reason, the population section examined earlier. Szombathely occupies the highest level, followed by Sopron, which is followed by Mosonmagyarovar. The other centers trail these ones, with Vasvar again being the lowest one considered.

The kindergarten and secondary school data illustrates some trends that are different than those visible in the elementary school data. Looking first at the number of kindergarten places available per thousand members of the population, the majority of the centers are declining with the largest faller being Csorna. Koszeg, Szombathely and Vasvar are increasing their ratio of kindergarten spaces. Kormend, while having a declining ratio, still boasts the best ratio of places per thousand population. The figures regarding secondary school pupils depicts a very different picture than the elementary school figures did. Celldomolk, Kormend, Mosonmagyarovar, Sarvar and Szombathely all increased significantly, while only Vasvar experienced a drastic decline in their numbers of secondary school pupils. The ratio of pupils to teacher

Town	Kindergarten			and Secondary Schools					
	K'Garten Places / 1000 1989	K'Garten Places / 1000 1999	Change	Pupils 1989	Pupils 1999	1999 Pupils as a % of 1989 Pupils	Pupils / Teacher 1989	Pupils / Teacher 1999	Change
Celldomolk	43.4	39.9	-3.5	268	444	165.7	9.9	9.9	0
Csorna	49.1	35.5	-13.6	705	627	88.9	12.4	12.3	-0.1
Kapuvár	37.3	33.3	-4.0	234	230	98.3	11.1	8.8	-2.3
Kormend	47.2	43.4	-3.8	388	493	127.1	9.9	11.2	+1.3
Koszeg	33.8	38.0	+4.2	743	660	88.8	10.6	10.5	-0.1
Mosonmagyaróvár	44.0	37.9	-6.1	736	1641	223.0	13.4	20.0	+6.6
Sarvár	40.4	38.3	-2.1	414	635	153.4	15.3	12.7	-2.6
Sopron	38.1	34.8	-3.3	3133	3427	109.4	12.1	9.7	-2.4
Szombathely	34.0	36.5	+2.5	5041	6335	125.7	14	13.3	-0.7
Vasvár	36.7	37.3	+0.6	265	181	68.3	13.3	8.2	-5.1

Table 7. Source Kozponti Statisztikai Hivatal 1989, 1999.

reflects many of the changes in the number of pupils as the Mosonmagyaróvár ratio skyrocketed as a result of their more than doubling of their pupils. Celldomolk, Kapuvár, Sopron and Vasvár all boast pupil to teacher ratios of under 10, while Sarvár is also improving.

Using the education figures to evaluate the urban hierarchy, it appears as though Celldomolk, Sarvár, Sopron and Szombathely are improving, while Csorna and Mosonmagyaróvár are declining. Szombathely and Sopron again are the leaders on the hierarchical scale, followed by Mosonmagyaróvár. Vasvár again is the bottom of the hierarchy.

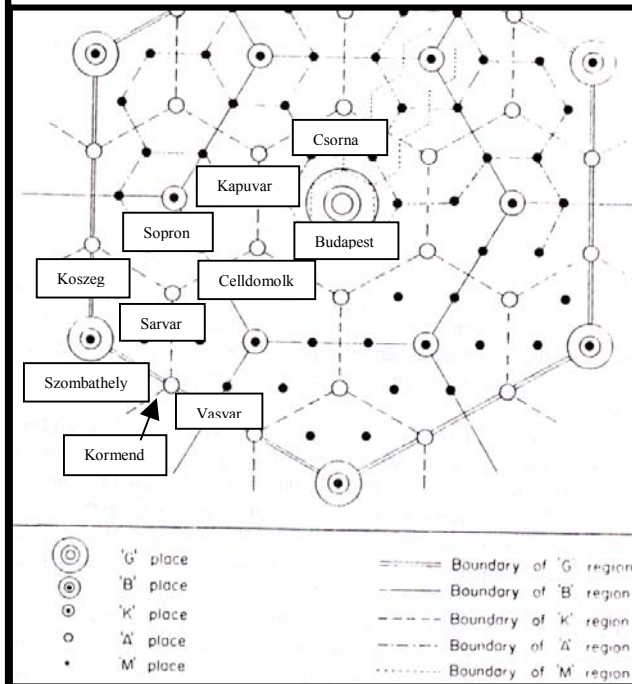
Hierarchical Impacts: Examining the five sections and their impacts upon the urban hierarchy, it appears as though Szombathely occupies the highest order level in the hierarchy in both 1989 and 1999. Its dominance of this position does, however, decline over the decade. Sopron occupies the next level within the hierarchy in both years, though during the decade it improved its level and is now closer to Szombathely. Mosonmagyaróvár is at a third level in both years, however it is declining during the decade and moving closer to the majority of the centers examined here. The next six centers all occupy the same hierarchical level. Sarvár remains fairly steady during the decade, as did Celldomolk, Kapuvár and Csorna, while Kormend and Koszeg declined slightly. Vasvár occupies the lowest level in this

Empirical Data

hierarchy for both years of reference and appears to remain relatively stable there. It is interesting to note that from a spatial sense, the urban centers on the periphery of the region examined, Mosonmagyaróvár, Kormend and to some degree, Szombathely, all experienced decline, while Sopron in a more central location, experienced improvement.

Figure 9. Market System of Central Places According to Christaller Applied to Vas and Gyr-Moson-Sopron Counties of Hungary.

Source: Baskin (1966), modified by author.



It is important to remember that within this hierarchy, the highest level urban or central places are occupied by Budapest and Vienna which are located to the East and North-West of the region examined here. These two places would be 'G' places. Szombathely, as a regional capital, is a 'B' place. Sopron and Mosonmagyaróvár are 'K' places. Celldomolk, Csorna, Kapuvar, Kormend, Kozseg and Sarvar are all 'A' places in this scheme and Vasvar is a 'M' place. Harkening back to Figure 3, if we locate the towns, we can see a very similar pattern emerging as illustrated in Figure 9.

Conclusion

The examination of these urban centers through a hierarchical frame of reference provides us with an alternative way of evaluating the nature of change within an urban center. Though a relatively short period of time was examined here, transitions within the centers and their relative importance to one another, were visible. The effect of the loosening of the political boundary between the Burgenland and Western Hungary has had no discernable effect on the spatial structure of the region, primarily as the Burgenland serves almost exclusively as the hinterland for the urban centers on the Hungarian side. Perhaps over a longer period of time, changes on that side of the border would be visible. The changes that have occurred within the Hungarian towns can be traced to the loosening of the economic restrictions and the movement from a centralized economy to a free market one. Thus while there is an interesting progression taking place in terms of the establishment of a central place hierarchy in the aftermath of a fall in central planning, the opening of the political border does not, at this time, display visible tendencies towards creating a central place hierarchy across the Burgenland and Western Hungary.

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