

# INFRASTRUCTURE NETWORKS IN CENTRAL EUROPE AND THE EU ENLARGEMENT

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## INTRODUCTION

Earlier in this conference<sup>1</sup> infrastructure investments were once mentioned as a *driving force of the economy*. Any investment plays a key role in the Keynesian economy in maintaining prosperity and in avoiding recession. In that context we deal with infrastructure as *an amount of investment* (within a national economy). Differently from that approach, the following paper focus on the consequences of *not* the budgetary side but rather of *the structural characteristics of the infrastructure networks* and first of all of the transport networks of Central European countries.

The paper starts with a seemingly unrelated topic, namely about the spatial dimension of the sustainability, also touching upon the consequences of that approach in the field of the transport network. The next part recites some critical remarks on the planned development of the Central European interregional corridors; while a more detailed explication of the problems will be presented in the following part, concerning the Hungarian network. The paper ends with a summary of the findings of general interest.

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<sup>1</sup> The paper was prepared for the Polish-Hungarian Workshop organised by the Academies of Sciences of the two countries in Warsaw, on October 7-8, 2002.

**ABOUT THE SPATIAL DIMENSION OF SUSTAINABILITY****Dealing with transport networks, besides the well-known temporal relations of sustainability, we must also focus our attention on the spatial relations of sustainability**

The most general access to the sustainability phenomenon is a temporal approach. A basic element of the sustainability – sustainable development – is meeting „the needs of the present without compromising the ability of future generations to meet their own needs”. This approach has come into general use since 1987 when the Bruntland Committee issued its report on Our Common Future<sup>2</sup>. This approach can also be summarised as short as the requirement of the *intergenerational solidarity*.

It is not so frequently added to that approach, that the *intra-generational relations* – that is the relations between those living in the same time – play similarly important role in the sustainability issue. (Naturally many disciplines are dealing with different other aspects of the social, cultural, regional etc. segments of the intra-generational coexistence.) Remaining at the sustainability approach, it is worthy to underline, that while intergenerational solidarity is a *one-directional*, asymmetric relation, the intra-generational relation is *two-directional*. Our late descendants whose fortune we are anxious about, can hardly do anything for us. Contrary to that, in intra-generational context on the one hand we are able to formulate the requirement of spatial solidarity (similarly to the temporal one) – as *meeting our needs without compromising the ability of others to meet their own needs* –; but the possible mutual effects are not covered by that, as the reciprocal relation is also possible, namely that the way-of-life of others may also compromise *our* possibility in meeting our own needs. That is why besides the requirement of the *intra-generational solidarity*, on the other hand we must also prepare ourselves here for a reverse direction precaution too, that we may call *intra-generational self-defence* or spatial self-defence.

Among these two spatial directions of sustainability, still we speak more about the necessity of spatial *solidarity* (perhaps because of its analogy to the intergenerational solidarity), and much less about the possibilities of the spatial *self-defence*, about our responsibilities in that context.

Manuel Castells (Castells 2000) introduced a pairs of notion of basic importance that can promote the understanding of this domain of sustainability. Castells distinguishes the *space of places*, that just for preserving its sustainability needs defence relative to the *space of flows*. 'Space of places' means the space that physically sur-

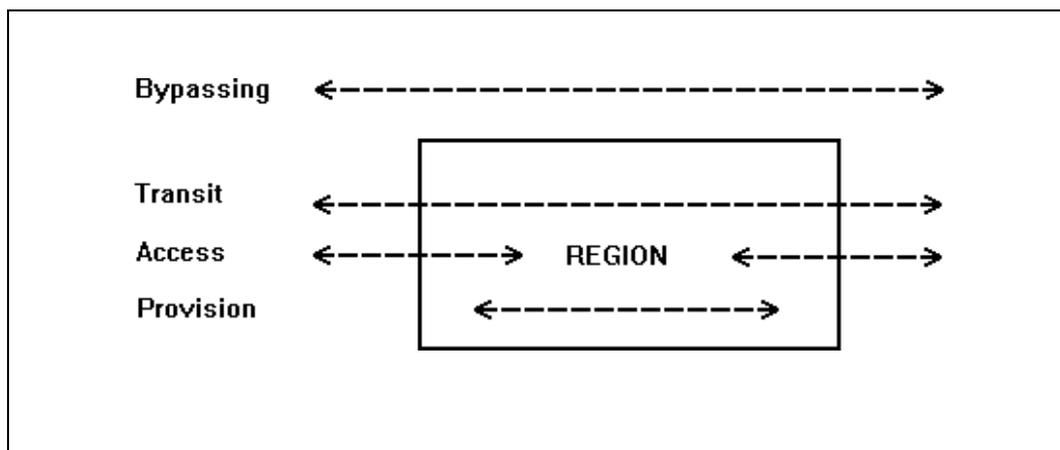
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<sup>2</sup> „Sustainable development which meets the needs of the present without compromising the ability of future generations to meet their own needs” Our Common Future. United Nations World Commission on Environment and Development (1987) [also called the Bruntland Report]

rounds us, that is our every-day environment that has *meaning* and *significance* for us with its order, culture, rules, and internal structures. The „space of flows” is the field of force of the external influences affecting the above environment. This latter is not a continuous space, but rather space of individual effects.

Just to avoid misunderstandings it is important to underline, that for Castells *defence* does not mean isolation, or closure. He does not want to exclude the external effects, or to hinder the emergence of any internal change, but he reminds us to the necessity of the *harmony* and the *moderation*. The external effects can be accepted but to the extent the internal structures are able to adapt to, – or, from the other side, to accept a given external effect, we have to be properly prepared with the internal structures. *Too rapid or too sudden external effects not serve, but rather disintegrate internal relations and structures*: that is what defence is needed against.

**The “control over space” sustainability requirement helps us to understand the importance of the well-operating internal transport networks**



Source: After Plogmann (1980), with own additions.

**Figure 1. Different network relations, relative to a region**

The above, seemingly totally abstract approach leads us to practical considerations, when we begin to deal with transport networks. Both the *space of places* and *space of flows* can be translated to the economic and transport relations of a region. Namely „space of places” are provided and reinforced by the *internal relations of a region*, while for „space of flows” the physical possibilities of the motion are offered by the *accessing, traversing and by-passing paths relative to a region*. (Figure 1.) Both the classifications of „spaces” and that of „paths” are always relative: a relation that can be internal for a whole region may prove to be an external access or even a transit for a single settlement. Necessarily, neither space of places nor space of flows

are absolute categories, so even theoretically it wouldn't be possible to determine a full and eternal priority among them.

From the point of view of the relations the defence of „space of places” relative to „space of flows” means, that the extent of the operation and the construction of the external relations – even beside a maximal recognition of the importance of that level of connections – *can't be detached from the extent that the internal relations are able to provide for the region internally*. The relating conditions can also be laid down as theoretical requirements (Fleischer 2001) while here in this paper we are dealing but with considerations regarding the *interregional transport networks*.

Before turning to the great European networks, we present here a historical case to demonstrate the interconnection between the dense internal networks and the local economic development.



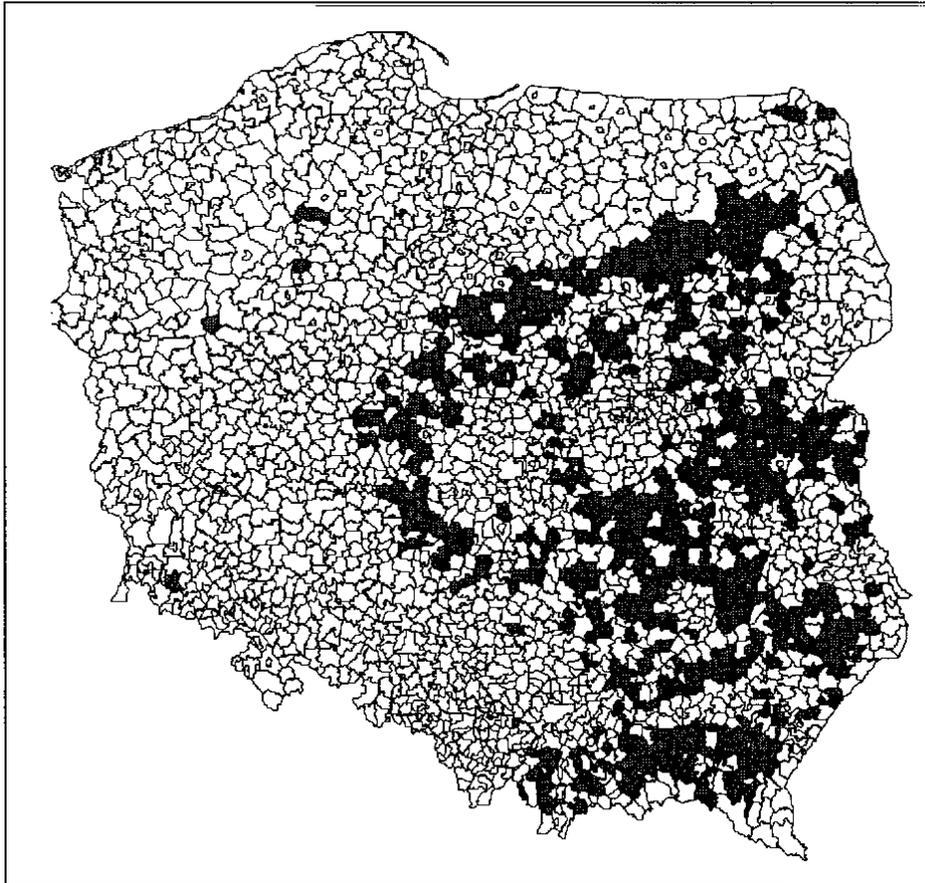
Source: Rey V (1991) Borders vs. Networks in Eastern Central Europe. *Flux* No. 3.

**Fig. 2. Historic boundaries and the network of the Polish railway system**

*Figure 2.* presents the Polish railway network, where it is easy to notice that during the second half of the 19<sup>th</sup> century, – when the railway network was built, –

the two part of present Poland developed differently. The outlines of the dense railway network more-or-less follows the once German borderline.

Jumping now one century in the history, on *Figure 3*. we present another map that shows us the territorial distribution of the lowest-quintile settlements by income in 1998. The pattern is very similar to that Figure 2.: those settlements with lowest income are almost totally falling to the same eastern part of the country classified with the low-density railway network.



Source: Gorzelak G – Jalowiecki B (2002) *European Boundaries: Regional Studies*, Vol.36. 4.

**Fig. 3. The 20% of Polish gminas with lowest own income per capita, 1998**

We have to avoid here any misinterpretation of economic history: we do not state that the settlements are poor *because* the internal transport network was not more developed. The transport network is first of all an *indicator*: it reflects to the density of the existing internal economic and social relations. But the network once constructed also encourages the maintenance of the earlier relations, and as such it still contributes to the local development.

## CRITICAL REMARKS ON THE PLANNED DEVELOPMENT OF THE EUROPEAN INTERREGIONAL CORRIDORS

In September 2001 the European Union published its new transport policy, *Time to Decide 2001*. This document offers very important messages both for sustainability issues and for economic affairs when it lays down, that *traffic growth must be decoupled from economic growth*, and the aim of intervention must be to restrict mobility and to achieve a more even balance in traffic between the various modes of transport.

Still, as both the transport policy adopted by the Hungarian Parliament in 1996 and the system of international transport corridors fundamentally influencing the eastern European transport structure took the objectives of the earlier 1992 Common Transport Policy as a basis, in analysing the current situation of the transport corridors, it is worthwhile looking back at this earlier document.

### **In the Central (and Eastern) European process of adopting the principles of the Common Transport Policy of the European Union, the development of the interregional connections has got an exaggerated extent relative to the local and intra-regional connections**

*“Single network to the single market”*

The basic principle of the 1992 Common Transport Policy (CTP 1992) was *to create a single network for a single market*. The main effort aimed at interconnecting the national networks of the member-states; the CTP (in harmony with its name) didn't deal with the internal problems of single countries, but with *common* issues. In other words the target was the promotion of the construction of the *interregional level* of the transport, the basic principles has dealt with connections on that level: the sometimes used expression '*internal*' in this context meant “within the Union, between Union countries”.

#### *Trans-European Networks*

The principal means for improving connections between countries in the EU's concept was the Trans-European Networks (TEN). The basic idea, the way of thinking in corridors traversing Western Europe has been evolved during the 80s, and the main lines of the plan was ready by the 1989 Strasbourg summit. By that principles the TEN comprise backbone components of European *transport, telecommunications* and *energy* networks. The concept became part of the Maastricht Treaty signed in December 1991, and formed an important pillar of the Common Transport Policy too. As instrument necessary for the development of the network, 14 large projects were given priority by the European Council in December 1994, and two years later

all the intentions were summarised and reinforced in more detailed guidelines (TEN Guidelines 1996)

During all these processes the structure of the basic conception hasn't been really changed, in spite of the fact that in-between the iron curtain has collapsed and the connections reawakened between the eastern and western side of the continent.

*It needs to be stressed that TEN are entirely based on the concept that the regions' overlapping networks have to connect the existing, operating transport systems of the member-states with each other.*

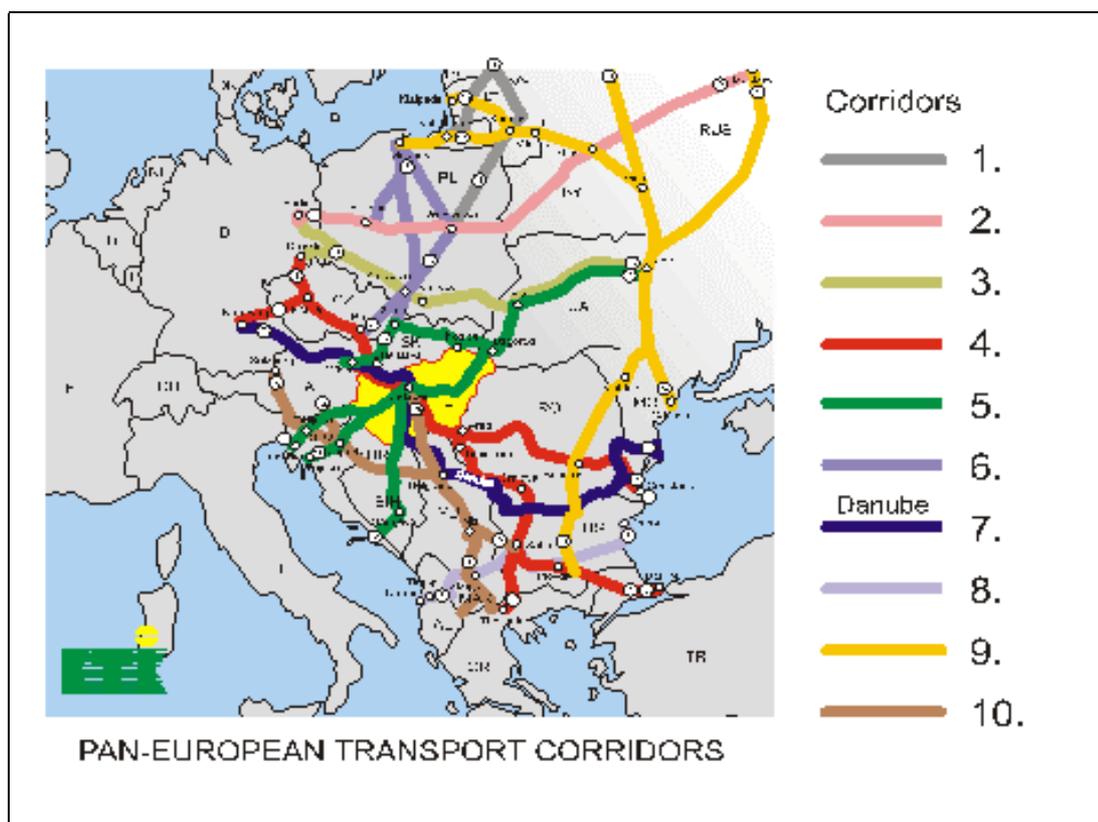
*In the accession countries of central and Eastern Europe, however, by no means the connection to the large European networks would be the only task to be solved. In these countries there has to be a parallel development to create well operating systems capable of appropriately providing connections within the regions and the country, from the today still inadequate national and regional networks. Interregional network components cannot substitute for this inadequate internal system of connections: moreover, an existing and well-functioning capillary system that is capable of providing for local background connections is a precondition of trans-European backbone elements having their expected impact in the region.*

**Creating the pan-European corridors the EU stressed the extension of the trans-European network and the improvement of the east-west relations, while the importance of the need for better connections between the transition countries got totally lost**

#### *Pan-European Corridors*

From the early 1990s, due to the change of political system in countries previously excluded by the Iron Curtain and due to the restructuring of commercial relations, the issue of east-west relations in Europe came increasingly to the fore. The existing and planned transport networks of the transition countries came to be judged and assessed from a new viewpoint. Examining which network elements were able to function, as an extension of the TEN overlapping network became dominant.

The dialogue on the eastern extension of trans-European networks began at the 1<sup>st</sup> Pan-European Transport Conference in Prague in 1991. In 1994 the second conference in Crete defined nine concrete corridors to which the third conference in Helsinki in 1997 added another (*Figure 4.*). These are *multi-modal* corridors (covering several transport sectors).



Source: [http://www.khvm.hu/EU-integracio/A\\_magyarorszagi\\_TINA\\_halozat/Image11.gif](http://www.khvm.hu/EU-integracio/A_magyarorszagi_TINA_halozat/Image11.gif)

**Figure 4. The Pan-European or Helsinki Corridors approved by the Third Pan-European Transport Conference in 1997**

Looking at Figure 4., the scarcity of north-south connections in the central European region is conspicuous. The only uninterrupted north-south connection is Corridor IX linking the Finnish and Greek networks in the eastern part of the region. In the zone more closely concerning Hungary, there is, for example, no connection between Slovakia and Hungary on a 660 km section to the east of Bratislava of the 668 km common border. Except for Corridor IX, there is one other north-south connection which is formed of sections of Corridors I, VI, V, IV and X, and which in essence ensures the connection between candidate countries by access through the Bratislava/Vienna area. This clearly demonstrates that when the network was devised all regional aspects which did *not* support the extension of previously developed TEN corridors played a role of secondary importance.

#### *The TINA (Transport Infrastructure Needs Assessment) Network*

In 1995 the transport ministers of the EU and candidate countries initiated a separate programme for areas outside the EU, that is a wider extension of TEN. The original aim of the TINA programme was *to assess the needs of transport infra-*

*structure, to devise the assessment method for the network and development concepts, and to develop the information system for the network.* The TINA report of 1998 (TINA 1998) shows candidate countries were given the opportunity of proposing *supplementary elements* for the network based on their own concepts. These elements, however, were from the start considered secondary priorities, as *the backbone components were exclusively the Helsinki Corridors, that is the elements extending TEN planned from the western European viewpoint.*

It is worth recalling what a “refined” and “circumspective” method was applied by the TINA process to determine structural priorities: “... *the Commission proposed to use the results of the Conference as basis for the backbone network definition: the ten multi-modal Pan-European Transport Corridors. It was understood that all parties concerned agreed on the need for the Corridors so that further economic or financial justifications were not required.*”<sup>3</sup> – This serves as an illustration of the unified methods devised for the assessment of the network development concepts.

*The TINA process’s formal objective was to implement an assessment procedure. In practice, however, the end result operates as if it were a political body’s decision concerning a network.* At the same time, no strategic environmental assessment was prepared for this network (“TINA itself is an assessment and an assessment need not be assessed”). The TINA procedure, however, concentrated on traffic/technical and financial issues, thus it did not merely examine thoroughly social and environmental aspects, and moreover it did not give the appropriate attention to network considerations either.

In recent years various central and eastern European countries have gradually woken up to the fact that the rapidly accepted backbone routes do not proceed at all in the manner required by *the region’s internal interdependencies.* Today efforts are being made to have other routes and new corridors accepted into the network additionally. If, however, it were to happen that these development could not be financed from the very modest EU subsidies, and pressures continued to exclusively focus on the building of the backbone routes of the extensions of TEN, the regional interests of candidate countries would come into sharp and unpleasant conflict with the interpretations of the TINA process.

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<sup>3</sup> TINA 1999, p.25, 3.1.1.

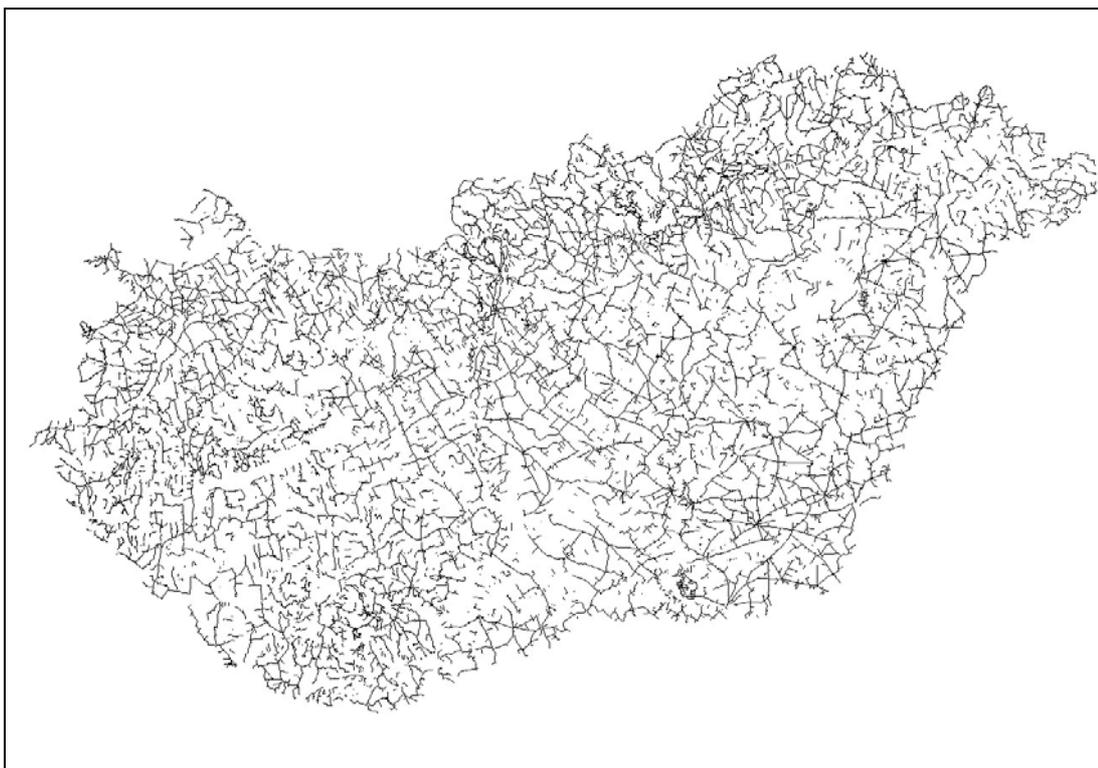
**HUNGARY PLANS THE TRANSIT-CORRIDORS IN A MISTAKEN STRUCTURE**

**The interregional corridors are constructed in a mistaken structure in Hungary, reinforcing the earlier single-centred structure and explicitly obstructing the formulation of a new structure**

*Development of the High-speed Road Network*

The specific functions of the high-speed road network can only be understood in the context of the whole network, looking together the three principal layers of the national road network.

The most traditional layer of the Hungarian road network is the *secondary network* that preserves the trace of cart-tracks *linking neighbouring villages with each other*. The specificity of the secondary road system is that it uniformly covers the whole territory of the country without favoured focal points. (Figure 5.)

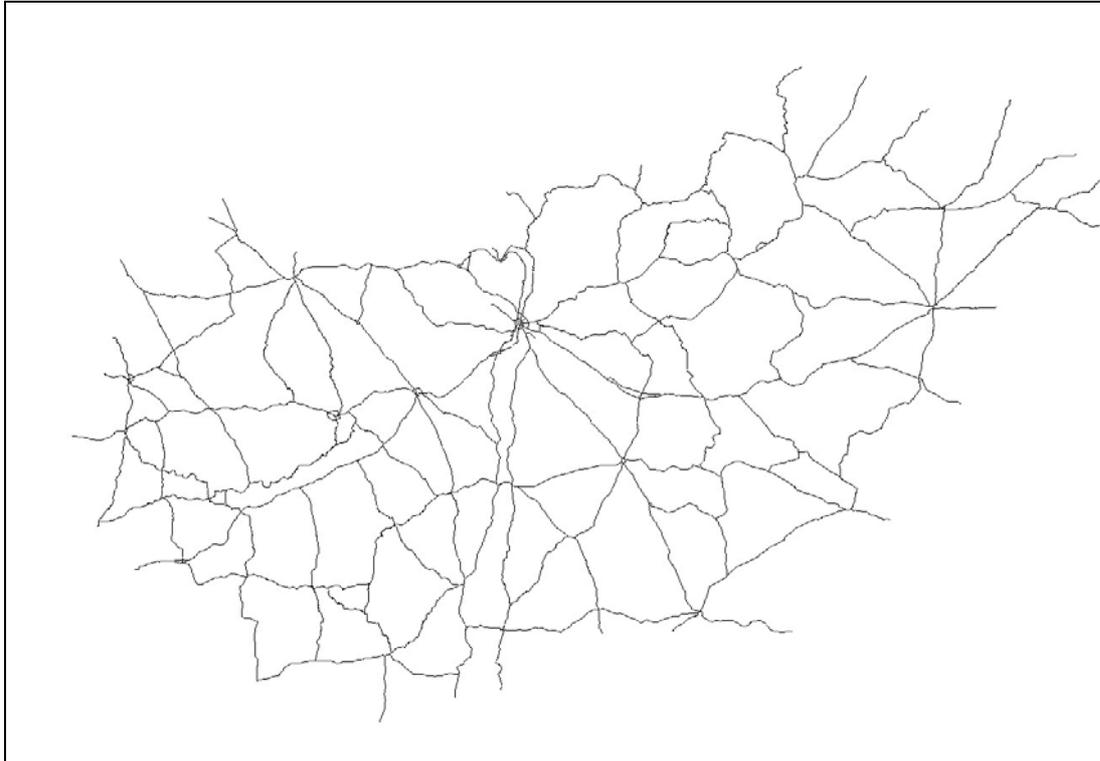


Source: OTAB Database

**Figure 5. The secondary road network of Hungary**

With modest antecedents, the construction of the Hungarian *main road network* began in the middle of the 19<sup>th</sup> century, almost at the same time as railway construction. These are paved roads whose present function gradually evolved with the

spread of motor-vehicular transport. The main road network directly *links cities together* and as far as possible bypass villages. Main roads spreading radially from bigger cities, and in the network as a whole a *new structure* corresponding to the new function developed. This new structure indicates a certain measure of independence from the network of cart-tracks and their functions. (*Figure 6.*)



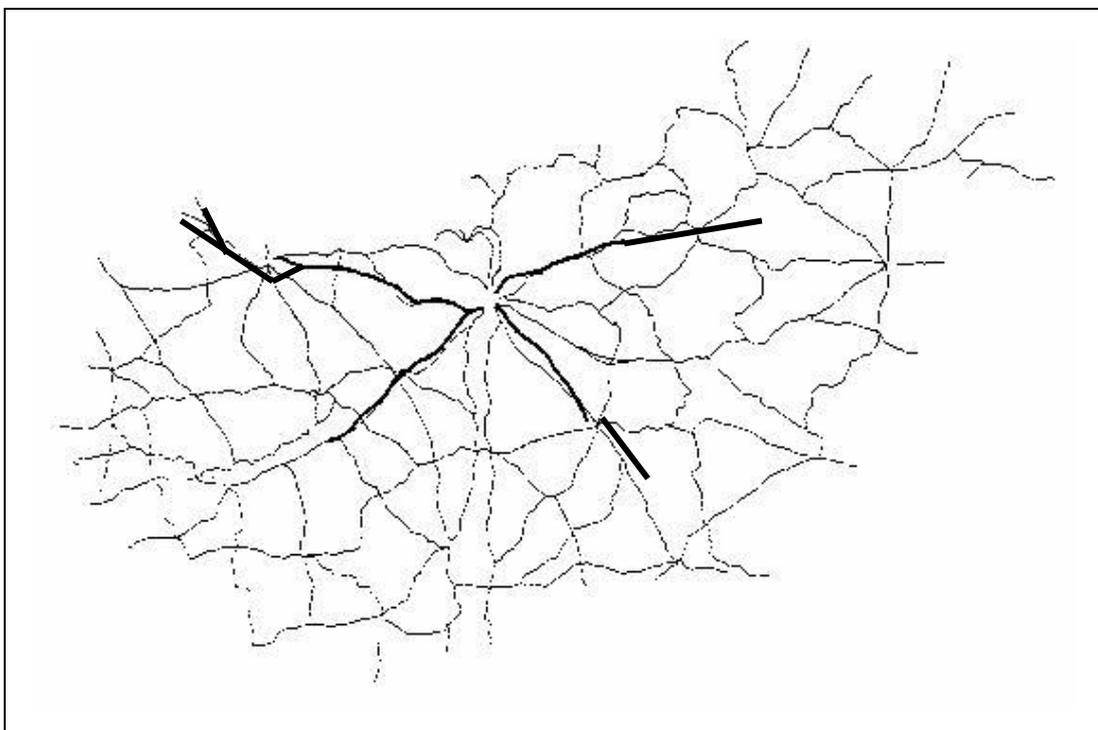
Source: OTAB Database

**Figure 6. The main road network of Hungary**

The development of the Budapest-centred radial road and rail networks played a great role in the fact that the Hungarian capital by the 1900s became an obvious centre and a metropolis of comparable weight to Vienna. On the other hand, the preservation of the single-centred structure to the present day is regarded by all authoritative regional, transport, environmental and economic analyses as *an obstacle to further development and a retarding structural problem to be corrected*. By now it has become clear that *changing the existing structure would be the task of the new overlapping layer of the transport networks just being created*.

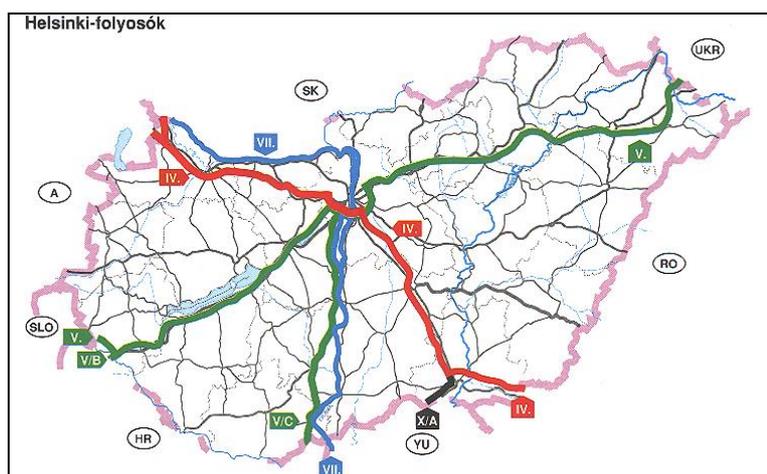
Hungarian motorways, constructed from the 1960s onwards, however, were built strictly in the existing structure, along the line of the most loaded sections of the main roads, serving locally to relieve traffic congestion. Until now motorways have been built in parallel with the radial sections of main roads 1, 3, 5 and 7, starting from the capital. (*Figure 7.*) Network plans for the future have also got stuck on this

level, and continuing the construction of these roads to the border is considered to be the priority. At European conferences the government has proposed the same routes as the axes for the most important Pan-European Corridors crossing Hungary (IV and V) (Figure 8.).



Source: OTAB Database

**Figure 7. The main road network of Hungary with the existing motorways**



Source: Útgyazdálkodás 1994–1998. (KHVM, Közúti Főosztály) [Highway Management 1994-1998]

**Figure 8. The official Hungarian interpretation of the Helsinki Corridors on the road network 1998**

*While motorways* originally were built to relieve traffic loads on the main roads in an organised way, *in the course of their using it became clear that they were suitable to fulfil a wider variety of functions than this*. Mass long-distance road transport of freight and passengers, which earlier would have been inconceivable by road, developed on the motorways that were built. The new possibility restructured the former relations between all modes of transport, and, contrary to all kinds of rational considerations, it also tipped the scales in favour of the road in terms of market relations. In fact no developed country was able to resist this pressure, and today, in spite of transport policy declarations intended to reverse the trends, changes are only likely to occur very slowly.

In western Europe it was already acknowledged in the 1980s that the new dimensions of international traffic required planning in *transport corridors*. The north-south and east-west multi-modal corridors conceived at that time can be regarded as the starting point for the trans-European transport network. The Common Transport Policy of the EU gave a concrete political framework to the recognition that by linking national markets together interconnections of national transport networks had to be ensured as well.

Transport corridors linking regions came to be *new structure-forming elements*. Just as through developing a new structure main roads linking *cities* were divorced from the former *intervillage* road network, the structure of the *interregional network* must also be divorced from the main road network linking cities, as it has another role. The main road network directly connects cities bypassing villages; *interregional corridors must connect regions and in doing so must bypass even cities*.

### *Hungarian Transport Policy*

The *Hungarian Transport Policy* adopted by the Hungarian parliament in 1996 (Közlekedéspolitikai 1996), and still in force today, has five main strategic objectives:

- *promoting integration to the European Union,*
- *improving conditions for co-operation with neighbouring countries,*
- *promoting the more balanced regional development of the country,*
- *protecting human life and the environment,*
- *the efficient operation of transport conforming to the market.*

The development of the motorway and high-speed road network was strongly affected by the interpretation pervading the whole of transport policy which on the one hand (in spite of any declaration about equal-rank objectives) gave a bigger weight on promoting integration, and, on the other hand considered European accession as being promoted primarily *by building transit and backbone networks as soon as possible*. For the developers it was never questioned that the “urgent transit directions” obviously meant the priority of channels crossing the capital. (Main roads 1, 3, 5, 7).

By that way the interregional level of relations (the carrier of the ‘space of flows’) had been emphasised at an unjustified extent at the expense of the inter-city and inter-village relations (that is the background of the ‘space of places’) within the whole transport system. And, what is more, the interregional network was developed and planned in an anachronistic single-centred structure.

**The suggested long-term interregional road network of Hungary must offer a separate structure from the traditional main roads network, developing an open grid structure and assuring that through-traffic disturb the life as little as possible**

Bearing in mind both the above considerations about the role of the inter-regional corridors and the special Hungarian heritage of the over-centralised transport network; and also surveying the different official high-speed road network development concepts of the last decade, a few important requirements for the network to be built can be reached. These can be summarised as follows:

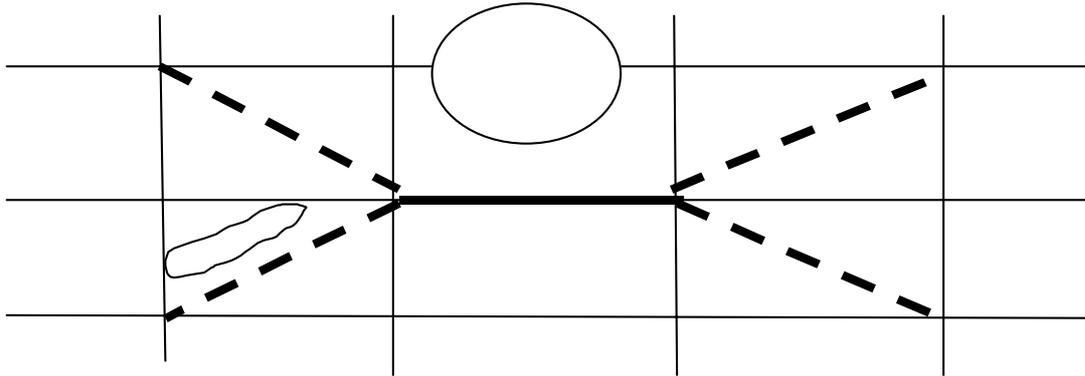
*Three Theses on the Development of the High-speed Road Network*

*The interregional network, in compliance with its function, should be created with a structure separated from the secondary and main road networks. The interregional network is one of the levels of the multi-layered transport structure – where all layers should cover the country separately*

*The development of the “radial-orbital” network formerly suggested cannot be an objective anymore. The radial-orbital system is also single-centred; it reflected the endeavours of a closed country to progress beyond the radial system. Today, in an open country, the development of an open grid structure should be set as the target. (See Figure 9.)*

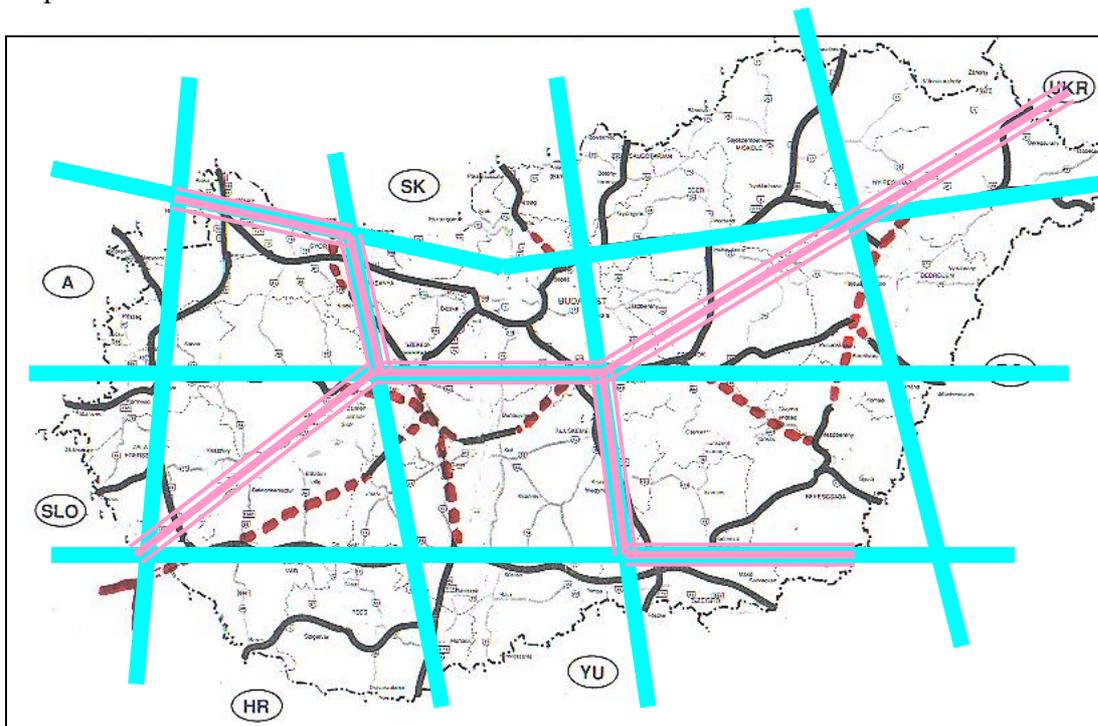
*The first goal is to link domestic regions in an interregional network, and not just ensure corridors crossing the country. In spite of this – due to Hungary’s location, which is partly an advantage and partly a disadvantage – the transit traffic of the busiest Pan-European Corridors has to be reckoned with as well. The aim is that the through-traffic should disturb the life of the country as little as possible. To achieve this, the transit corridor should (a) link the border points marked on the Pan-European Corridors, (b) cross the country with the minimum total length, (c) avoid ecologically sensitive or densely populated areas and those with heavy traffic loads, (d) encourage the use of vehicles and transport modes that pollute the environment less, (e) ensure through-traffic pays for the transit costs.*

The geometric requirement for the minimum length transit has been proposed in earlier works (Tombácz et al. 1993, Fleischer 1994), here just the network model developed is presented on Figure 9.



**Figure 9. The model for the domestic interregional open grid network with east-west and north-south corridors. The minimum length crossing of Pan-European Corridors IV and V marked by the thick line requires the insertion of diagonal elements.**

Apart from the network elements, Figure 9 shows two sensitive areas (the resort area of Lake Balaton and the conurbation of Budapest) through which it would not be practical to force transit traffic.



Source: based on *Diagram 4* and the application of principles outlined in this study

**Figure 10. Outline of a proposal for a long-term high-speed road network**

In the frame of a more detailed survey of a strategic environmental assessment (Fleischer et al 2001) where we identified many of the here summarised facts we

placed the hypothetical grid-system to the real map of Hungary. Taking also into consideration the different earlier network plans, we could select those sections of these networks that fit well to the new structure too, while omitted those unnecessary or contradicting parts that was definitely part of another structure.

*Figure 10.* presents the *density and structure* of a suggested alternative high-speed road network largely satisfying our assessment criteria. The central element of the new structure is the transformation of the single-centred radial system shown in Figure 8, to a structure that fit to the above cited criteria, while all the international transit axes still dispose of proper possibilities to cross the country.

This drafted corridor system is just at the beginning of a domestic professional debate on this topic. It was not our target to go into the details of such a debate here, just outline the network as a logical consequence of the earlier theoretic approaches.

We stop here and below summarise the main findings of general interest.

## SUMMARY

The paper draws the attention on the spatial dimension of the sustainability, where spatial self-defence is an important part of the control over the local values to be maintained. The author adds to it that *well-structured local networks* constitute an important condition of an effective spatial self-defence.

In the European Union, where the national infrastructure networks were relatively developed, the formation of a single market needed first of all the *concentration of efforts on the overlapping or interregional backbone level of networks*. When dealing with the extension of the EU it is important to pay attention to the fact, that this programme cannot be applied as an unchanged priority in regions where an appropriate fabric of local networks still needs to be created and where great attention needs to be devoted to *internal networks*. In the integration process the transition countries have to understand the importance of the multi-layeredness of the network and to pay equal attention to every level of the transport network.

The other issue criticised is *the structure* of the backbone network. While the development of the trans-European networks in western Europe was governed by an *internal* aspect, namely the intention of connecting national networks, in the eastern half of Europe, the extension of TEN, i.e. *an external consideration was the starting point for network formation*. Even the TINA network's backbone elements that enjoy priority today still reflect this procedure, and the danger remains that the additions which express the connection needs of candidate countries will get lost in the process.

Turning to Hungary, we shortly analysed the century-long formation of the over-centralised transport network and the process where the creation of a new road transport layer formed a new structure of the network. Now-a-days we face to a similar process when the newly developing interregional layer should carry the new structure. Contrary to all that, in the practice the construction of the new motorways consequently follow the existing and admittedly mistaken structure. In order to re-orient the conception we defined the network development criteria by which the suggested long-term interregional road network of Hungary must offer a *separate structure* from the traditional main roads network, develop *an open grid structure* and assure that through-traffic *disturb the life as little as possible*.

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## OTHER DETAILS

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**INFRASTRUCTURE NETWORKS  
IN CENTRAL EUROPE  
AND THE EU ENLARGEMENT<sup>4</sup>**

Tamás Fleischer

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