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INFRASTRUCTURE NETWORKS IN CENTRAL EUROPE AND EU ENLARGEMENT

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SUMMARY

This paper draws attention to the spatial dimension of sustainability, where spatial self-defence is an important part of control over local assets that have to be preserved. It should be added that well-structured local networks constitute an important requirement for effective spatial self-defence.

In the existing European Union, where the national infrastructure networks have been relatively developed, the formation of a single market called first for concentration of efforts on the overlapping or inter-regional backbone level of networks. In the area now acceding to the EU, it is important to note that this programme cannot be applied with unchanged priorities in regions still lacking appropriate local networks, where great attention needs devoting to internal networks. In the integration process, the transition countries have to understand the importance of a multi-layered network and pay equal attention to every layer of the transport network.

The other issue that has been criticized is the structure of the backbone network. While the development of the trans-European networks in western Europe was governed by internal considerations – the intention of connecting national networks, the starting point in the eastern half of Europe was the external consideration of extending Trans-European Networks (TEN) to the transition countries. Even the backbone elements of the Transport Infrastructure Needs Assessment (TINA) network, which enjoy priority today, still reflect this approach. The danger remains that the additions expressing the needs of candidate countries will become lost in the process.

Turning to Hungary, the paper gives a brief account of how an over-centralized transport network developed over the last century and the process by which a new road-transport layer was being created. The country today faces a similar process, as the new layer is developed into the new structure. Nonetheless, the existing and emerging structure is mistaken. An effort to reorient the conception is being made by defining the network-development criteria for a long-term inter-regional road network offering a structure separate from the traditional network of trunk roads, by developing an open grid that ensures minimum disturbance from transit traffic.

INTRODUCTION*

Infrastructure investments are often described as a driving force of the economy, while any investment plays a key role in the Keynesian economy in maintaining prosperity and averting recession. Rather than considering infrastructure as an amount of investment in an economy, however, this paper focuses on the structural, rather than budgetary consequences of infrastructure networks, through the example of the transport networks of Central Europe. It begins with what may appear to be an unrelated topic: the spatial dimension of sustainability, touching upon the consequences of that approach to transport networks. The next section advances some criticisms of the inter-regional corridors planned in Central Europe. This is followed by a more detailed explication of the problems in relation to the Hungarian network. The paper ends by summarizing its findings.

THE SPATIAL DIMENSION OF SUSTAINABILITY

Treatment of transport networks calls for attention not only to the temporal relations of sustainability, but to the spatial relations of sustainability. The more general, temporal approach sees sustainable development as 'meeting the needs of the present without compromising the ability of future generations to meet their own needs,' to quote the Brundtland Report[1] This approach can also be summed up in the requirement of inter-generational solidarity. It is less frequently added that intra-generational relations – relations between those living at the same time – play a similarly important role in sustainability. (Naturally, there are many other disciplines dealing with various social, cultural, regional and other aspects of intra-generational coexistence.) Remaining with the sustainability approach, it is worth underlining that although inter-generational solidarity is a unidirectional, asymmetric relation, intra-

* The author is a civil engineer, economist and senior fellow at the Institute for World Economics of the Hungarian Academy of Sciences. This is a revised version of a paper delivered at a Polish–Hungarian Workshop organized by the two countries' Academies of Sciences in Warsaw on October 7-8, 2002. He would like express thanks to Károly Kiss, Endre Tombácz, Emőke Magyar and György Zsikla, with whom he jointly prepared a Hungarian-language study entitled *Strategic Environmental Assessment of the Széchenyi Plan's Motorway Development Programme* (Fleischer *et al.* 2001). Although this study conveys the author's own thinking, his ideas have been influenced by the fruitful cooperation during the course of that work.

[1] *Our Common Future* (1987), Oxford/New York: UN World Commission on Environment and Development.

generational relations are bidirectional. Our descendants are hardly in a position to do anything for us, whereas in an intra-generational context, we can formulate a requirement of spatial solidarity (similar to the temporal one) that meets our needs without compromising the ability of others to meet their needs. But that does not exhaust the possible mutual effects, as the reciprocal relation is also possible: the way of life of others may also compromise our chances of meeting our needs. Alongside the requirement of intra-generational solidarity, we must also prepare ourselves for reverse-direction precautions, which can be called intra-generational or spatial self-defence.

Of these two spatial directions of sustainability, more is said about the need for spatial solidarity (perhaps because of the analogy with inter-generational solidarity), and less about the chances for spatial self-defence or our responsibilities in that respect.

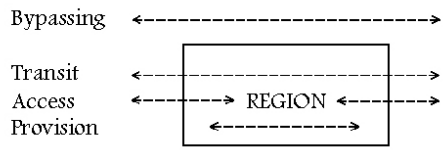
Manuel Castells (2000) introduced a pair of fundamentally important notions for understanding of this domain of sustainability. He distinguishes the space of places, which is just for preserving sustainability needs and needs defending relative to the space of flows. The former means the space that physically surrounds us as our everyday environment and has meaning and significance in terms of order, culture, rules and internal structures. The space of flows is the field of external influences affecting that environment, not as continuous space, but as the space where individual effects occur. For Castells, defence does not mean isolation or closure. He does not want to exclude the external effects or hinder internal change, but he gives a reminder of the necessity for harmony and moderation. External effects can be accepted to the extent that the internal structures are able to adapt to them. Or from the opposite side, an external effect can be accepted if the internal structures have been properly prepared. Too rapid or sudden external effects tend to fragment internal relations and structures, not save them.

The sustainability requirement of control over space helps to clarify the importance of efficiently operating internal transport networks.

This seemingly abstract approach points to practical considerations, when we begin to deal with transport networks. Both the space of places and the space of flows can be translated into regional economic and transport relations. The space of places is provided and reinforced by the internal relations of a region, while for the space of flows, the physical possibilities of motion are offered by the access, traversing and bypassing paths relative to a region (*Figure 1*). The classifications of spaces and 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 route

for a particular settlement. Necessarily, neither space of places nor space of flows is an absolute category, so that it would not be possible even theoretically to establish full, definitive priority between them.

Figure 1
Various network relations relative to a region



Source: After Plogmann (1980), with author's additions.

Defence of the space of places relative to the space of flows means that the extent of the operation and construction of the external relations – even with maximal recognition of the importance of that level of connections – cannot be detached from the extent that the internal relations can provide for the region internally. The related conditions can also be laid down as theoretical requirements (Fleischer 2001), while this paper deals only with considerations regarding inter-regional transport networks.

Before turning to the great European networks, it is worth presenting a historical case that demonstrates the reciprocal connection between dense internal networks and local economic development. *Figure 2* presents the Polish railway network. It shows clearly how the two parts of present-day Poland developed differently after the second half of the 19th century, when the railway network was built. The area of a dense railway network largely coincides with the former frontiers of Germany.

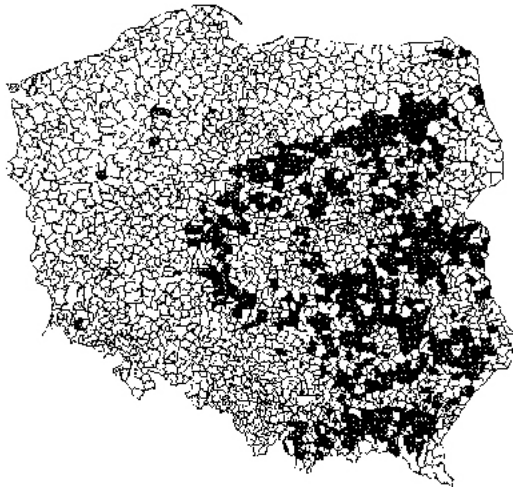
Figure 2
The Polish railway network as an indication of the country's one-time borders

Source: Rey, V (1991), Borders vs. Networks in Eastern Central Europe. *Flux* 3.

Figure 3 shows a situation a century later: the territorial distribution of settlements in the lowest income quintile in 1998. The pattern is similar to the one in Figure 2: the low-income settlements almost all fall in the parts with the low-density railway network. Care must be taken here to avoid any misinterpretation of economic history. It is not being claimed that the settlements are poor because the transport network has been poorer, but the transport network acts as a proxy, reflecting the density of existing internal economic and social relations. The network, once constructed, encourages the maintenance of earlier relations,

and as such, contributes to local development.

Figure 3
The lowest quintile of Polish communes for income per capita in 1998



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

SOME CRITICAL REMARKS ON THE PLANNED EUROPEAN INTER-REGIONAL CORRIDORS

The European Union published a new transport policy, *Time to Decide 2001*, in September of that year. This sends important messages on sustainability issues and for economic affairs by stating that traffic growth needs to be decoupled from economic growth, and that intervention should be to restrict mobility and achieve a more even traffic balance between the various modes of transport.

The transport policy adopted by the Hungarian Parliament in 1996 and the system of international transport corridors took as their basis the objectives of the earlier 1992 Common Transport Policy, which is worth a moment's consideration.

For stronger attention has been paid in Central and Eastern Europe to adopting the principles of the Common Transport Policy than to local and intra-regional connections. The basic principle of the policy was to create a single network for a single market, so that the main concern in connecting the national networks of member-states was not with their internal shortcomings, but with common issues – it was designed to promote transport at the inter-regional level. The sporadic expression 'internal' that appears in the document means within the Union, not within its member countries.

TRANS-EUROPEAN NETWORKS

The principal means of improving links between countries advocated in the EU concept were Trans-European Networks (TEN). The idea of corridors traversing Europe evolved in the 1980s and the outlines of the plan were presented to the 1989 Strasbourg summit. The TEN were meant to provide the spines of the European transport, telecommunications and energy networks. The concept was incorporated into the Maastricht treaty of December 1991

and formed an important part of the Common Transport Policy. Fourteen large development projects were given priority by the European Council in December 1994. Two years later, all the intentions were summarized and reinforced in more detailed guidelines (*TEN Guidelines* 1996). Meanwhile the basic concept has hardly changed, despite the collapse of the Iron Curtain and revival of connections between East and West. The guidelines still rest on the idea of overlapping regional networks connecting the existing, operating transport systems of member-states.

However, connecting up to larger European networks is by no means the only task awaiting the acceding CEE countries. There has to be parallel development of functional systems capable within the regions and the country, for existing national and regional networks are still inadequate. No inter-regional, trans-European network components can compensate for this inadequacy. An efficient capillary system of local links is a precondition for the trans-European backbone elements to have their expected regional impact.

In creating the pan-European corridors, the EU laid emphasis on extending the trans-European network and improving East-West ties, while the need for better connections between transition countries was also forgotten.

PAN-EUROPEAN CORRIDORS

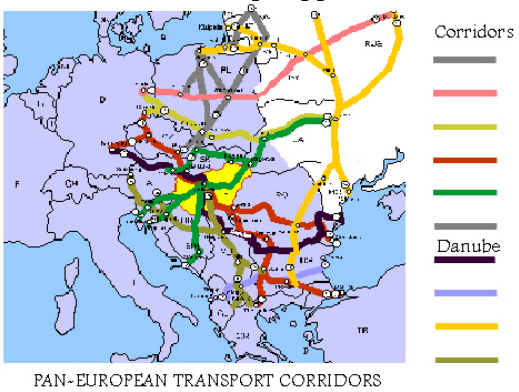
The question of East-West links in Europe came to the fore in the early 1990s, with the change of political and economic system in the former Soviet bloc. This introduced a new criterion for assessing the existing and planned transport networks of the transition countries. Network elements able to function as extensions of the overlapping TEN network were given priority.

High-level dialogue on extending the trans-European networks eastward began at the First Pan-European Transport Conference in Prague in 1991. A second such conference in Crete in 1994 specified nine multi-modal corridors covering several modes of transport, to which a third conference in Helsinki in 1997 added a tenth (*Figure 4*).

Figure 4 reveals a conspicuous scarcity of North-South connections, apart from Corridor IX extending from the Finnish and to the Greek networks in the eastern part of the region. For instance, there is no such corridor connecting Slovakia and Hungary along the 660 km of common border east of Bratislava. There is one other designated North-South connection formed of sections of Corridors I, VI, V, IV and X, which in essence links the transition

through the Bratislava-Vienna area. This shows how regional considerations were secondary when the existing TEN system was extended eastwards.

Figure 4
Pan-European (Helsinki) corridors in Central and Eastern Europe approved in 1997



Source: http://www.khvm.hu/EU-integracio/A_magyarorszagi_TINA_halozat/Image11.gif.

THE TINA NETWORK

The transport ministers of the EU and candidate countries initiated in 1995 a separate programme for areas outside the EU, *i.e.* a further extension of TEN. Known as the TINA programme, it was designed to assess the transport infrastructure needs, devise assessment methods for network and development concepts, and develop the information system for the network. The report (TINA 1998) shows that candidate countries were able to propose 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 method was used to define the structural priorities for TINA: 'The Commission proposed to use the results of the Conference as a 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' (TINA 1999, p. 25). This illustrates the methods devised for assessing the network development concepts.

The formal objective of the TINA process was to implement an assessment procedure. In practice, it operated as the decision of a policy body about a network. No strategic environmental assessment was prepared for the network: 'TINA itself is an assessment and an assessment need not be assessed.' However, its concentration on traffic, technical and financial issues meant it did not examine social and environmental aspects thoroughly or pay due attention to network considerations.

Some CEE countries have realized in recent years that the rapidly accepted backbone routes do not match the interdependencies among the countries of the region. Efforts are be-

ing made to gain endorsement for extra routes and corridors. If development of these cannot be supported by the very modest EU subsidies and pressures continue to focus exclusively on the backbone extensions of TEN, the regional interests of candidate countries will come into sharp and unpleasant conflict with the TINA process.

Figure 5
Hungary's network of secondary roads

Source: OTAB Database

A MISTAKEN STRUCTURE FOR HUNGARY

The inter-regional corridors provide a mistaken structure for Hungary, reinforcing the existing radial structure and explicitly preventing the formulation of a new one. The functions of the high-speed road network can only be understood in the context of the whole network, the three principal layers of the national road network together.

The longest-established layer is the secondary network, which retains traces of time-honoured tracks and paths between neighbouring villages. Its specific feature is that it covers the country uniformly, without giving preference to focal points (*Figure 5*).

The network of trunk roads has a shorter history, having developed in the mid-19th century, almost at the same time as the railways. The function of these paved roads gradually evolved with the spread of motor transport. The network links towns and cities and as far as possible bypasses villages. Trunk roads spread radially from larger urban centres and a new structure corresponding to the new function developed in the network as a whole. This new structure shows a measure of independence from the network and functions of the secondary roads (*Figure 6*).

Figure 6
Hungary's network of trunk roads

Source: OTAB Database

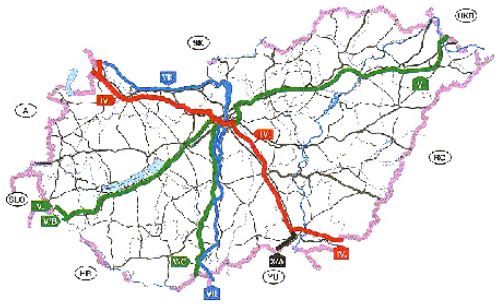
The development of the radial road and rail networks centred on Budapest played a big role in the success of the Hungarian capital in rivalling Vienna by the 1900s as a metropolis of comparable importance. However, the preservation of this single-centred structure to the present day is described in all authoritative regional, transport, environmental and economic analyses as an obstacle to further development and a retarding structural problem. It has become clear that changing this existing structure is one task for the overlapping layer of transport networks now being created.

Nonetheless, the Hungarian motorways that began to be built in the 1960s were routed strictly within the existing structure, following the busiest sections of trunk road and relieving some localized congestion. So far, motorways have been built parallel to the radial trunk roads numbered 1, 3, 5 and 7, starting from the capital (*Figure 7*). Plans for the future follow the same template by continuing these motorways to the borders of the country. At European conferences, the government has proposed the same routes as the axes for the main Pan-European corridors that cross Hungary (IV and V, *Figure 8*).

Figure 7
Hungary's trunk roads and existing motorways

Source: OTAB Database

Figure 8
The official Hungarian interpretation of the Helsinki corridors, 1998



Source: Útgazdálkodás (Road Management) 1994–1998. Budapest: KHVM, Közúti Főosztály.

While motorways originally were built to relieve traffic loads on the trunk roads, it has since become clear that they can fulfil a wider range of functions. Mass long-distance road transport of freight and passengers, hitherto inconceivable by road, has developed on the motorways. This new possibility has restructured the relations between the means of transport, and despite rational considerations, tipped the scales in favour of the road in terms of market relations. In fact, no developed country has been able to re-

sist this pressure, and despite transport-policy declarations to the contrary, changes in the reverse direction are likely to be very slow.

It was already being acknowledged in Western Europe in the 1980s that the new dimensions of international traffic required planning in terms of transport corridors. The North-South and East-West multimodal corridors conceived at that time can be regarded as a starting point for the trans-European transport network. The EU Common Transport Policy gave a concrete policy framework to the recognition that when linking national markets together, connections between national transport networks had to be ensured as well.

Transport corridors linking European regions came to be new structure-forming elements. Just as the later structure of inter-city trunk roads was divorced from the earlier network of rural roads, so the structure of the inter-regional network has to be divorced from the trunk-road network, as it has another role. The latter connects cities and bypasses villages, while the inter-regional corridors have to connect regions and even bypass cities as they do so.

HUNGARY'S TRANSPORT POLICY

The transport policy adopted by the Hungarian Parliament (Közlekedéspolitika 1996) and still in force today has five strategic objectives:

* promoting integration into the European Union,
* improving cooperation with neighbouring countries,
* promoting more balanced regional development,
* protecting human life and the environment, and
* providing efficient, market-compatible operation of transport.

Developing the motorway and high-speed road network has been affected by a pervasive policy interpretation. On the one hand (despite declarations on equal-rank objectives), greater weight is given to integration, and on the other, building transit and backbone networks is seen as the main transport contribution to EU entry. Developers have never questioned whether the 'urgent transit directions' really call for priority for routes converging on Budapest (trunk roads 1, 3, 5 and 7).

The result has been unjustified emphasis on the inter-regional level of relations (the carrier of the 'space of flows') at the expense of 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 inter-regional network was developed and planned in an anachronistic single-centred structure.

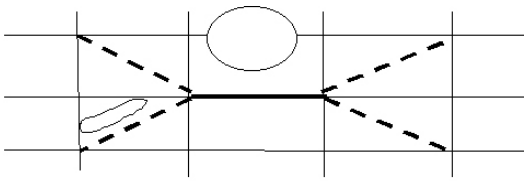
Hungary's projected long-term inter-regional road network has to offer a separate structure from the existing network of trunk roads. It should develop an open grid pattern and assure that transit traffic disturbs life as little as possible.

In view of these considerations about the role of the inter-regional corridors, the special Hungarian legacy of an over-centralized transport network and the various official high-speed road-network concepts of the last decade, a few important requirements for the projected inter-regional network can be outlined:

* In compliance with its function, it should have a structure separate from the secondary and trunk-road networks, as one nationwide layer in a transport structure of networks each covering the country separately.
* The 'radial-orbital' network previously suggested is no longer a worthwhile objective. Such a system is also single-centred, reflecting the endeavours of a closed country to progress beyond a radial system. In the open country that Hungary has become today, the development of an open grid structure should be the target (*Figure 9*).
* The first goal is to link Hungary's regions into an inter-regional network, and not just provide corridors across the country. The advantages and drawbacks of Hungary's geographical location mean that transit traffic on the busiest Pan-European corridors has to be catered for, with as little disturbance to the life of the country as possible. Transit corridors should therefore (a) link the designated border crossings, (b) cross the country with a minimum total length, (c) avoid ecologically sensitive or densely populated areas with heavy existing traffic loads, (d) encourage vehicles and transport modes that pollute the environment less, and (e) ensure that through traffic pays its way.

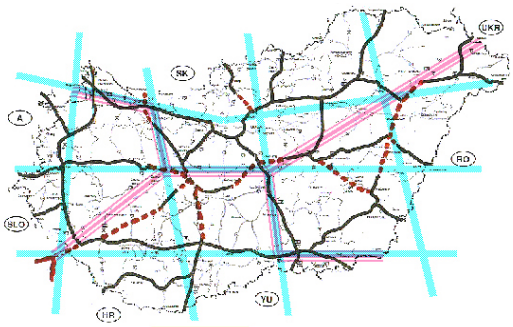
The geometrical requirement for the minimum-length transit has been put forward in earlier works (Tombácz *et al.* 1993; Fleischer 1994). Here just the network model developed appears in *Figure 9*. Apart from the network elements, this shows two sensitive areas (the resort area of Lake Balaton and the conurbation of Budapest), through which it would not be practical to force transit traffic.

Figure 9
Model of an inter-regional open-grid network with East-West and North-South corridors. The minimum-length crossing of Corridors IV and V (thick line) calls for the insertion of diagonal elements



In a more detailed survey and strategic environmental assessment (Fleischer *et al.* 2001), many of the facts summarized here were inserted as a hypothetical grid system on the real map of Hungary. This, in the light of various earlier network plans, allowed us to select the network sections that would still fit well into the new structure, while omitting those redundant or contrary to it. *Figure 10* presents the density and structure of a suggested alternative high-speed road network largely satisfying our assessment criteria. The central feature is transformation of the single-centred system shown in Figure 8 into a structure that fits the new criteria, while still catering for all the international transit axes.

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



Source: Based on Figure 4 and the application of principles outlined in this paper.

This draft corridor system is just the starting point for professional debate on the subject. It has not been the intention here to go into the details of such a debate, but simply to outline the network as a logical consequence of earlier theoretical approaches.

* * * * *

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