CONSIDERATIONS ON ADVANTAGES AND DRAWBACKS OF AN INFRASTUCTURE-ORIENTED DEVELOPMENT STRATEGY[1]

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1. INTRODUCTION

According to a popular, hardly contested viewpoint of nowadays Hungarian economy needs an infrastructure-oriented development strategy in order to start a growth path. The present study does not take this statement as an evidence and tries to collect arguments *for* and *against* such a development policy.

Our preliminary assumptions that our survey based on are the following:

- there are several possible scenarios of international politics therefore it is an unreasonable choice to base all our future plans solely on picking up the most favourable one
- according to political scenarios we should think about which is a realistic one, which one is truely favourable for Hungary on the long run and, moreover: what infrastructure-development strategies are compatible with the indvidual scenarios
- it is indispensable to perceive infrastructure not only as a *scalar* factor to be measured in economic dimension but as a spatial, *vectorial* factor too. It does matter the creation of what kind of investments we want to promote under the

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slogan "more infrastructure". There are infrastructures whose establishment would be harmful to the country and this can be proved by both economic and extra-economic arguments.

2. COMPETING POLITICAL SCENARIOS

In the background of present Hungarian development strategies there lurks the idea - sometimes tacitly sometimes expressis verbis - that *the future of Europe is determined for sure by the Maastricht process* and Hungary's task is *to join this process - the sooner the better*. (In the meantime we *should gain their confidence by eminent behaviour* [i.e. behaviour they expect from us]).

We do not think it to be our task to analyse the whole three-pole world economic system and the likely role of regions around individual poles. We only say that in our opinion one might challenge all the three statements set in italics of the previous paragraph. These are things what might happen but *have* alternatives which should also be taken into account. One should acknowledge at the same time that at present we have no mature alternative to them which would define another type of development. But without thinking over the possible alternatives the actual hypotheses neither can be considered as matured.

What concerns the actual Hungarian situation, we sketch up five political scenarios as considered important for thinking about the infrastructural background. They constitute desirable or undesirable alternatives of the future neither of which can be excluded as totally irrelevant.

2.1. "Successful integration with Europe, closing the development gap"

This is the official strategy at present. This scenario thinks that the European integration process will be successful, and Hungary's aim should be to join the European Union as soon as possible.

2.2. "Unsuccessful, semiperipheric integration with Europe, with a subservient economic role"

Naturally enough, this "Third World" type role is not our goal but we should think about whether we can by sticking to the strategy of catching up avoid such an outcome, i.e. to be a follower of and dependent on Western Europe [1]. Whether is it not just our trying so hard to catch up what creates a situation whereby we build an infrastructure *appropriate for a follower model* thereby cementing ourselves in a game to the position of a constant loser?

2.3. "Ideas about Central-European integration"

From time to time, when the environment of the Central-European region changes and the future of the region becomes open for a historical moment, ideas about regional cooperation, a confederation of the Danube-valley or some other form of Central-European integration surface again. Miszlivetz [2] in his study mentions several liberal thinkers who adhered in their 1989-90 enthusiasm to these ideas. At the same time Péter Kende denounces the idea of federation as a beautiful dream without substance, an antiquated notion from history. He summarizes his relating opinion in six points, namely:

- the neceassary complementarity between the economies of the region's countries does not exist, while
- as to the economic development level there are large discrepancies between them,
- due to contested territories the states of the area cannot form a confederation,
- there is mutual distrust and disdain among them,
- there is no common language acceptable for all. Finally Kende
- challenges the meaning of an association outside the European Community when the latter accepts new members only on an individual basis.

A special actuality is given to this problem by the fact that following an initial euphory it is just the *West* now that requires a preliminary evidence on an Eastern European internal ability to cooperate. When dealing with infrastructural networks we shall return to the question that Western-European countries required as a pre-condition of our attachment to the UCPTE system the proper functioning of the common electricity system of the Visegrad countries.

Beyond ideas about *purely Eastern* Central-European integrations there are ideas about *East-West* cooperation, a kind of combination of the former two. Here we can include nostalgies about the Austro-Hungarian Monarchy, the Pentagonale, and its successor the Central-European Initiative. Its original idea was born in the enthusiastic atmosphere of 1989 when the difficulties of transition were not fully appreciated; as a result of later developments Italy and Austria are now much more cautious in their steps towards their Eastern neighbours; one may venture the opinion that Eastern transformation speeded up the EFTA countries' *flight* into Europe.

2.4. "An antidemocratic coup"

Like the "Third World" model which preserves underdevelopment this too is an undesirable scenario but cannot be dismissed out of hand.

2.5. "A positive (environment-conscious) third way"

Finally we have the idea of a third way trying to avoid - relying on green theories - the deadlocks of Western development, a strategy whose aim is not to imitate industrial societies. In moments of political upheaval both Western and local commentators had their faith in the environment-consciousness of post-socialist people - a forecast based on the mass assistance of several environmental movements. This turned out to be an illusion, even more in the East there is no social readiness at present to start a new experiment instead of copying Western examples. At the same time it is plain that the winner on the long run will be he who takes the first step in this direction: **the real challenge of the age to find is not an infrastructure-oriented but an environment-oriented development path.**

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To sum up the five models we can say that the first, the third and the fifth, are the desirable, expected, positive scenarios, namely

- *successful integration to, catching up with Europe,*

- *Central-European integration ideas* and

- *positive (environment-conscious) third ways* -while the second and the fourth, namely

- *unsuccessful, semiperipheric integration to Europe with a subordinated economic role* and

- *antidemocratic coup* - are the undesirable, negative scenarios whose materialization however cannot be precluded.

The distinction is important since - as we will show in what follows - the spatial system of infrastructures undoubtedly has a feedback on political scenarios. Whithout assigning probabilities to individual scenarios or selecting a preferred variant it should be plain for us that *we ought to favour such infrastructure development which eases the way for preferred scenarios and diminishes the chances for undesirable ones.* To be able to get closer to a possibility of such kind of selection, below we shall search for links between the social-economic background of individual scenarios and infrastructural systems appropriate for them.

3. RELATIONSHIPS BETWEEN INFRASTRUCTURAL NETWORKS AND SOCIAL-ECONOMIC STRUCTURES

3.1. "Antidemocratic coup"

It will be practical to start the analysis with the infrastructural network of an *antidemocratic system.* Since the logic of infrastructure development of the past decades was analysed through and through it is commonplace by now that centralised political control involves not only centralised distribution of resources but also infrastructural networks similarly centralized in their spatial structure. There are dimensions - the system of settlements, the county system, the transport network - where inherited infrastructural networks were already centralised (as a remnant of the rivalry between Vienna and Budapest, then the capital of a much larger country than today. In these cases the development after 1948 built on this existing structure while newly created centralised structures where it found none - in education, health, trade. Therefore one-sided is the statement which assserts that economic management *simply neglected* the development of infrastructure in the last four decades. We should say rather that resources were given only to infrastructural developments serving some political, power, strategic goal - linking the capital with county centres by road, rail, multiple K-lines, (=exclusive used telephone lines) transmission of (central) radio and TV programs or the above mentioned "distributive" systems. At the same time central management of resources could make it sure that certain goals never be given the necessary money: public telephone, local papers, local studios, everything what makes interpersonal communication easier and would reinforce local autonomy, ease the dependence on the center.

The same logic prevailed in international relation too. First there was the autarchy, the closing down of many existing frontier station, wwhile on the other side the preference of Soviet-Hungarian economic contacts - gas and oil pipes, electricity network, two-way electrified railway lines. This was in line with the trade orientation but hindered contacts in other relations and preserved the unilateral dependence of the economy.

It does not need special proof that an extremist, antidemocratic political turn trying to liquidate multiple contacts would welcome such a centralised, closed system and a re-estability of the corresponding infrastructure networks.

3.2. "Unsuccessful, semiperipheric integration to Europe with a subservient role"

It is somewhat more difficult to see why the existing domestic infrastructural network is a good basis for a semiperipheric, "Third World" type development too. The projects and suggestions to "do away with the infrastructural backwardness of Eastern countries" try to connect the centers of these countries - Budapest, Prague, Moscow, Warsaw etc. - with Western Europe: through highways, high-speed railways, enlarged or doubled airports. This means that investments would keep on flow

to and reinforce the *centers* of these countries exploiting that due to an earlier centralisation everything can be attained from here. The situation whereby everything what is new enters the country through the center is reinforced. What remains for the "countryside" is to fiddle on the road leading to the center. It might be always enlarged somewhat but for something else there will be no money left. Thus there is no way to create a new spatial structure quite the contrary: the present one is reinforced and thereby the mode of distribution too is preserved - with the only not negligeable! difference that now these capitals are turning not towards Moscow but towards Brussels.

3.3. "The Central-European integration ideas"

The analysis above demonstrated that the more we are insisting on our "entry into Europe" before everybody else and neglecting also the domestic needs for restructuring, the greater will be the chances that we create the infrastructure of an unsuccessful, semiperipheric attachment instead of the infrastruture we need on the long run. This constrained hurry makes competitors from our neighbours and blocks contacts with them. This is especially useful for business circles trying to seize Eastern-European markets for they can negotiate with the competitors one by one. Maybe they might build up in three places the "central airport", the "distribution center" of the area.

What concerns electicity, Western Europe does not want to export it: it wants rather to rule out the possibility of Eastern-Central-European countries being dependent on them - as they were on the Soviet Union. In this respect the Western infrastructure development strategy is different from that of transport ways necessary for the export of production/consumer goods. Here not separate *magistral lines* to Budapest or to Prague are bringing association nearer. UCPTE (the electricity system of the Western countries) changed its statute in matters of admission. It no longer examines new candidates one by one but forced the Visegrad countries all aspiring for membership *to prove* first on their common network CENTRAL *that they are able to cooperate troublefree.* (The first trial was arranged at the end of September 1993, and since that time, due to the separation of the Ukrainian system the "trial has been perpetuated" for a longer time).

It would be wise to think about what justifies that these same countries follow a totally different, competitive strategy in case of the other infrastructures - trade networks included? At present there are two arguments *against* cooperation: one is the already mentioned Western business interest in partitioning the market; the other is the competition among the Eastern countries: every one of them wants to be center (transit center, East-West go-between, trade center, financial center, market center, touristic center, infrastructural center etc.) before and *at the expense* of the others.

3.4. "Successful integration to Europe, with catching up"

The starting process of intra-European integration - at least the case of the *Six*, later the *Nine* and the EFTA - was an example that countries which attained a high level of development separately (n.b. partly by exploiting their colonies outside Europe) can start an integration course after having built out their autonomous structure. If this path might be imitated at all it can only through *the development of adaptivity, the transformation of internal structures, the building out of certain stabilisation mechanisms* before aspiring to association.

If, instead, *development is restricted to the physical preconditions of attachment* then we will end up in the asymmetric, "Third World" type strategy which we called in the above *unsuccessful integration.* The present study defends a standpoint whereby **forceful integration of an underdeveloped and a developed structure results in the rigidity of the underdeveloped, or its dependence and distortion** so that the benefits of the attachment are felt only on the developed side.

Concentrating our attention to the infrastructural aspect of the problem we should stress the fact that we should first of all find out *what type of networks* contribute most to the development of the country. In the next chapters we try to prove the statement that this goal is best furthered by networks assisting local effort, making local contacts more multilateral and dense - and not networks forcing them into predetermined channels.

These networks are however not those magistral lines which would liquidate the lacunae of East-West infrastructural links - high speed railways, highways, directed pipelines. *At least parallel* with the development of magistral lines one should secure similar resources for infrastructure required by internal restructuring. Otherwise *infrastructure-oriented* development strategy becomes a mere ideology for building out the magistral lines needed by foreign investment and *does not serve* the catching up efforts of the country.

3.5. "Positive (environment-conscious) third way"

For a thinking which stresses environmental values magistral infrastructural constructs are even more "suspicious": in this case not only the sequencing is questioned but also the *necessity* of *highways* (good only for generating new travel needs). Within this value system the reduction of unit and total energy consumption, economy with materials, recycling are all goals resulting at the same time in diminished transport needs. Less travel is needed if local business potentials are better used, if production and services are developed within human scale distances. All this is assisted by a price system taking into account transport, travel, material and energy consumption at their real cost.

I do not want to go here into the details of the chances of the time needed for such a value system to prevail either in developed countries or in Hungary. I want only to stress the fact that environment-oriented economy too requires a certain kind of infrastructure: and this infrastructure is in line with that dense local networks required by a more autonomous local economy.

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To sum up the relationships between the five models and infrastructural structures we can assert that either of the positive, desirable models i.e.

- *successful integration to Europe with catching up*
- *Central-European integration ideas* and
- *positive (environment-conscious) third way*

all require a bottom-up infrastructural network making local contacts more dense and connecting regions on similar level of development - whereas the development of the two negative, undesirable scenarios, i.e.

- *unsuccessful, semiperipheric integration to Europe in dependent role* and
- *antidemocratic turn*

are more likely if we neglect the development of local infrastructures and reinforce hierarchic, centralised infrastructural systems.

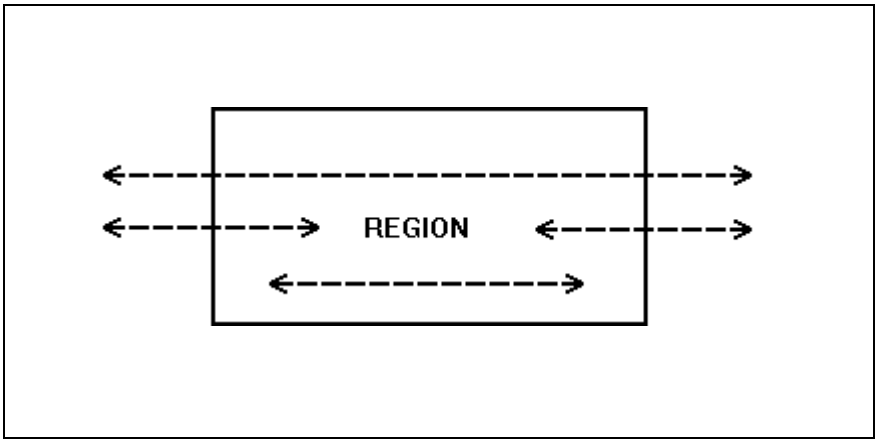
Social-economic scenarios and their evaluation have a direct impact on our choice among infrastructure development strategies.

In what follows I shall turn to actual examples, those gained from transport, energy networks, from their international analyses and I shall distinguish *magistral* and *distributive* type infrastructure systems presenting different impacts of these types.

4. TENDENCIES IN THE CONSTRUCTION OF INFRASTRUCTURAL NETWORKS

4.1. Tendencies in the development of European transport networks

Whereas nobody challenges the statement that infrastructural networks have an impact on the region where they are located, it is difficult to find out what this impact actually is. Plogmann [4], relying on *spatial impacts* distinguishes three main interrelationships between transport and a region. (Figure 1.)



Source: Plogmann [4]

Figure 1. Transport links relative to a region

In the first case the infrastructure traverses the region without having any considerable impact. (Highway with few crossroads, high speed railway without stations). This is the pure *corridor effect.* In the second case there is better contact between the region and the outside world, but here it is important how many such opportunities there are: peripheric regions are characterised by being *stringed on one thread* whereas with more variegated, more dense contacts there is a *crossroads effect*. In the third case depicted contacts *within the region* multiply what improves the internal efficiency of the region [5].

Vickerman adds [5] that the above mentioned contacts may appear within the same infrastructure as different tendencies. He himself drops in what follows the point of view concentrating on *physical vicinity* and introduces two other points of view: the *functional position* of the region and the *eligibility for assistance*. Both criteria stress that **the potential development of a region due to infrastructure is largely determined beyond the infrastructure proper by the starting position of the region concerned, namely its position within the larger environment and its earlier development level.** By varying these latter criteria the territory of European Community might be divided into four catchment areas [5]:

- core areas, main agglomerations (London, Paris, Frankfurt, Cologne, Dusseldorf, Amsterdam, Rotterdam etc.)

- "Shaded areas" between the above poles (Greater-London, Ile de France, Kent, Northern Pas-de-Calais, a large part of Belgium, Limburg etc.)

- Rapidly developing new poles outside core areas (Eastern-England, Rhone-Alpes, Stuttgart, Hannover etc.)

- Finally the peripheries: Wales, Scotland, Ireland, Mid- and South-Italy, Spain, Greece.

If we analyse further the *internal development level* of a given region we can state that the same infrastructure has different impact on a more efficient and on a backward region. Competitive producers gain through the new, long-distance contact *new markets.* while the producer providing in the past the relatively closed local market gains *new competitors.* Although this might seem to result on the short run in a favourable selection of producers which is good for the consumer the reduction of local production results in *loss of local jobs* and thus in loss of purchasing power for the local consumer on the long run. This makes the market unstable on the long run even for the remote producer.

Despite recognising this and other important global factors it is a practical experience of the European Union that only those projects can survive which are *promising direct, short-term benefit* for some influential group - not least in the form of large investment works. The indirect and longer-term - positive or negative - impacts of transportation are not weighing much in the decision.

It is instructive for us how Vickerman when dealing with the West-European practice (in [7] p.9) blames transport development strategies concentrating on transport needs only. "The problem with the transport-oriented development of communication is that it tries to improve only the time parameter of network access. It stresses *inter-regional* elements at the expense of *intra-regionals* and does not take into account the special features of economic structure within individual regions." We should rather distinguish "*non-spatial* and *spatial* impact of communication infrastructure. To the first belong the impacts of infrastructural investment on the aggregate level of business activity of the region, on productivity and competitivity. Spatial impact refers to the *differences* in performance (either between or within regions) due to infrastructure." [7]

The analysis of non-spatial impacts relies on the perception of infrastructure as public good. According to Biehl [8] "public goods" are characterized by the following properties: *indivisibility, non-substitutability, irremovability and parallel use by several user*s. Dealing with local differences he says that one should measure not only the level of *provision* with infrastructure but also infrastructure use relative to the stock of private capital. In certain less developed regions there is outright overcapacity of infrastructure due to a development policy which tried to *compensate* regions with infrastructure. At the same time *access* to the region is not continuous, crosspoints are scattered and therefore individual crosspoints gain importance - if there are any crosspoints in the region at all. But even if there are crosspoints, a characteristic of large-scale infrastructure is that a large group of both travellers and non-travellers are benefitting from the service a large part of whom are living *outside* the region (at other crosspoints or away from major lines) but the costs are fully born

by those living in the given region. This means a certain redistribution among individual regions and it is no more certain that benefits are reaped by those who built the infrastructure on their territory.

4.2. Tendencies in the development of European natural-gas networks[2]

Even internationally, trade of natural gas only started in the early 60s: it first meant the pipe connection between the Groningen natural gas fields in Holland and the neighbouring countries, and an Algerian natural gas liquidizer constructed in 1964 using American technology together with the installation of the European receiving station. Soviet natural gas entered the European market in the next decade from a pipeline built up to Germany. The major lines in Europe were constructed in these three 'climatic' directions i.e. sources of the Atlantic, sources of the Mediterranean and Soviet sources (*Figure 2*). This, at the same time meant the formation of two different types of gas supplying systems.

The Atlantic *distribution* system is an organic development of local networks relying on local sources, where - with some reminiscence of the operation of electricity networks - exports could be accounted for in the form of equivalent amounts through chain-transactions between neighbouring areas.

Unlike the above, the main feature of the *magistral* system is the construction of long, independent, large-diameter export target lines. It is built in cases where the source country cannot itself finance the production, and its supply network is also deficient. The user of the gas will then provide funds in order that the gas should reach him/her after overcoming the local difficulties. While technically this is up-to-date and it represents a high level of development, in the source country it results in an enclave-like formation to produce and transport exclusively raw material greatly independently from the local economy. This was characteristic of export departing from both *Algerian* and former *Soviet* territories.

Figure 2 provides a good distinction of the three predominant destinations. Norwegian gas from the North sea together with the Dutch gas is fed into the system from the Atlantic. (In 1989 gas exports of these two countries totalled 60 billion m^3). From the south, besides liquid gas supplies already mentioned (this is how just about yearly 16 billion m^3 of natural gas arrives in Europe from Algeria), TRANSMED, the 3000 km Algeria-Tunisia-Italy magistral pipeline was completed in the 80s. In 1989, it conducted 11 billion m^3 of gas into Italy. Ukrainian-Russian gas comes from the south through Slovakia and branches off in the Bratislava region to travel on to-

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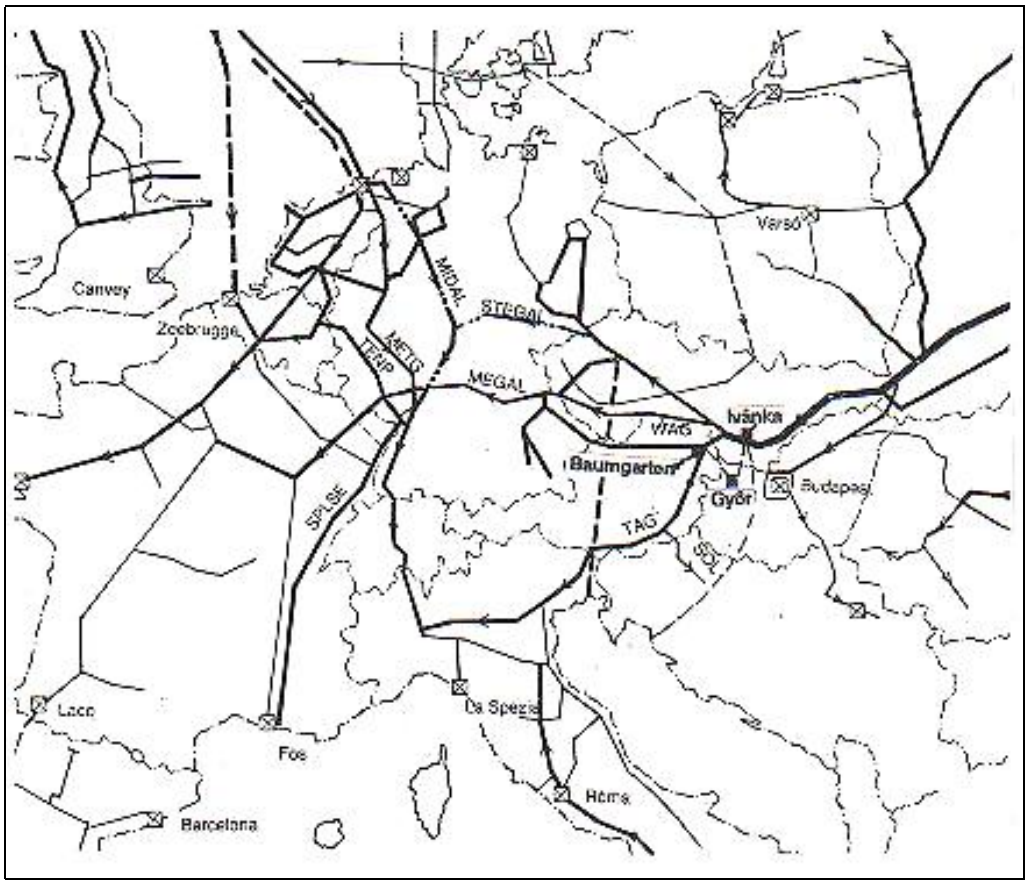
2 This chapter was written on the basis of the article of Mramurácz L. [9]

wards the Czech Republic, Germany, Austria, and Northern Italy. In 1989, a total of 100 billion m^3 of Soviet gas exports was shared on a 50-50 basis by Western and Eastern Europe. (Hungarian imports of the latter amounted to exactly 6 billion m^3.)



Source: Mramurácz L.. [9]

Figure 2. Possibilities of diversification in the European natural gas pipeline system

Natural gas supply systems reaching into Europe from various directions apparently merge in German and Northern Italian soil. It was primarily the interest of these two countries to secure the nearly 50 billion m^3 German and just below 30 billion m^3 Italian gas imports from several sides. Linkages to the pipe networks, however, make it possible even for other countries to lift the one-sidedness of that import possibility now that the distributive use of magistral axes may take place on a continental scale.

4.3. Tendencies in the development of European electricity networks

In Europe five major electricity systems are operating: UCPTE linking the continent's countries on the West side of the former iron curtain, NORDEL bringing together the Scandinavian countries, the UK system operating on the British iles, UPS embracing the former Soviet Union and IPS uniting the other former socialist countries. The latter two were linked up to the recent past, with a centralised, centrally managed dispatcher-service and making use of possibilities to carry electricity to long distances. On the borderline of the "Eastern" and the "Western" system the iron curtain was reproduced on the level of technology: two separate systems even if operating with the same frequency.

Characteristic	UCPTE	NORDEL	MIR
Population [million]	300	23	170
Area [1000 km²]	2280	1260	1628
Built-in capacity [1000 MW]	371,1	83,4	172,4
Maximal performance [1000 MW]	220	49,1	121,9
Max.performance/built-in cap [%]	59 %	59 %	71 %
Electricity production [billion kWh]	1400	338,4	811,4
from this			
by thermal power station [%]	42,9 %	17,5 %	78,4 %
by nuclear power station [%]	36,9 %	28,0 %	16,8 %
by hydroelectric station [%]	20,2 %	54,5 %	4,8 %
Electricity production [kWh/cap]	4700	14700	4800
Network 220kV and above [1000 km]	150	27,4	92,6

Source: Kucherov-Rudenko-Voropai [11]

Table 1. Characteristics of large European electricity systems in 1988

The Western system is decentralised: UCPTE, NORDEL and the UK system are insulated from one-another by a rectifying valve. Decentralised management prevails within individual systems too, based on the principe that individual countries should provide for a balanced production and use of energy. Although export and import of energy is possible it is regulated by bilateral contract between the parties concerned and guarantees to this effect might be included into country balances. Decentralised operation is backed by severe quality prescriptions and quantity obligations. These obligations concern partly the network (every defaulting section should be replaced) and partly the existence of capacity reserves both within power stations (to be connected within seconds) and in the network (to be connected within minutes, automatically). Considering that the share of power plants older than 20 years is below

10% in the UCPTE and around 50% in the IPS/UPS, the chances for breakdown are larger on the latter side. [10]

The size of larger systems is demonstrated by *Table 1.* Comparative data for the East refer to MIR which in 1988 embraced beyond the Eastern-European countries also the Ukraine and Moldova.

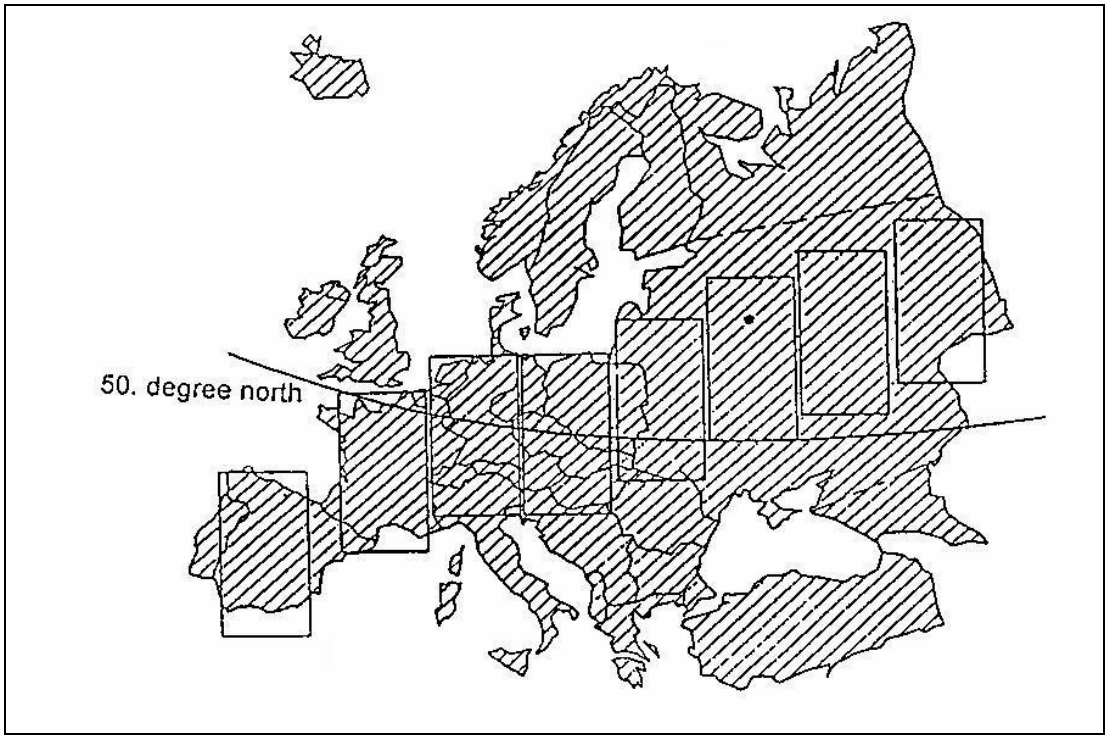
Changes of last years naturally had an impact on the mentioned networks and even more on ideas about the future. The West- and East-German systems were linked through four 380kV lines. Thereby the Polish and the Czechoslovak network - and through them the Eastern system - acquired a direct-current link to UCPTE.

Hungary already in summer of 1990 - first among the Eastern countries - announced its intention to join the UCPTE system. But soon representatives of the neighbouring Czech, Slovak and Polish electric power systems has also announced their intention to join the UCPTE. In UCPTE's earlier practice the preparation of the feasibility study has been taken by the neighbouring countries relating always a *single candidate.* .Beginning with 1992, however, UCPTE has changed its procedure and is now managing the joining of all the four countries. So in that respect the Visegrad cooperation actually came live in the framework of CENTREL, the cooperation of the Hungarian, Slovakian, Czech, and Polish electric power systems. The four systems have to form a four-sided autonomous operation splitting off the Ukrainian system. The main objective is to prove their independent operating and controlling capabilities. On the one hand, this is a constraint in the sense that Russia, which formerly did the adjustment across the whole CDU network declines to continue doing so; and it is sensible on the other hand, as UCTPE does not undertake this obligation either, since it sets the proof of the independent working abilities as a condition to joining. (By the way, satisfying this condition is *easier* than the condition whereby the four countries should prove their ability to work separetly from each other.) The systems test has already been started in 1993 (29-30th of September). As a result of the adverse energy situation within the CIS the test run had to be prolonged: the CENTREL functioned as a seperate system.

There are *technical, efficiency, security and political considerations* about the feasible future trends relative to large electricity systems. From a purely technical perspective large, centralised networks are feasible and they have efficiency gains (individual countries need less reserve capacities). This idea would be in line even with the Maastricht spirit. It is undeniable at the same time that the growth of benefit decelerates beyond a certain network size: and if economies with precarious stability are included this raises risk.

Consequently the Aachen RWTH [12] suggests a trans-European electricity system up to the Ural composed as a network of medium-sized units (*Figure 3.*). Individual units to be linked would be of the size of the Iberian peninsula, France, Ger-

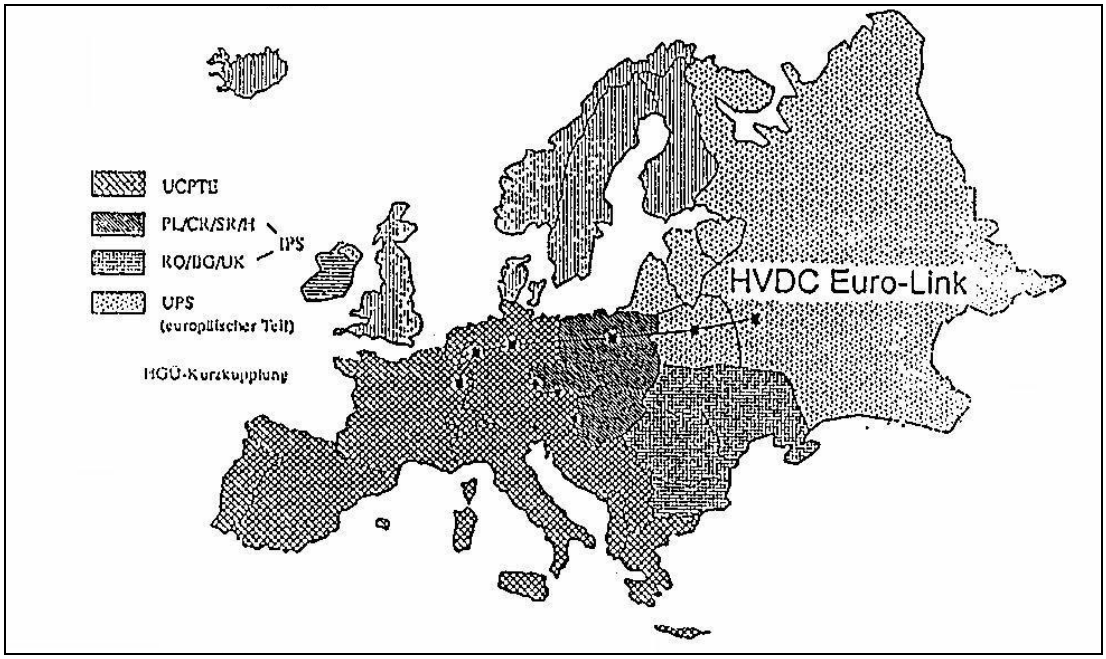
many; or the four-country network of CENTREL. The project divides the European part of CIS into four similar size units.



Source: RWTH, Aaachen. [12]

Figure 3: The outlines of a connected electricity system after 2000

This idea is in line with the *distributive* conception of networks already mentioned which would link larger self-sufficient regions. In the same time the conception requires as a condition the existence of such large, balanced regions. If somewhere this condition is missing the import expected from a distance becomes insecure. Therefore the Aachen institute supplemented its conception to a socalled hybrid solution: in order for Western-Europe to have a secured electricity import from Russia (the Smolensk-region) a separate, direct-current link should be established between the two endpoints (*Figure 4*) spanning the deficitary Ukrainan region. Even more is revealed from the nature of such magistral elements by the suggestion to add to the electricity generating capacity of Western-Europe a 10 or possibly 20 GW unit feeded by Kongo precipices [13].



Source: RWTH, Aaachen. [12]

Figure 4: Hybrid connection in the European electricity system: high voltage direct current Euro-link

4.4. Summary: tendencies in the development of European networks

Let us return to *Figure 1* (on page 9) where we distinguished three different types of traffic relative to a narrow region: *transit* which is just going through the region, *external link* providing for traffic into and out of the region and *region intern* provision.

These types of link have a historical order. In the case of public roads sideways inherited the network of roadways linking villages. This was enhanced in the first half of this century by highways linking major cities and intended already for passenger cars, finally in the second half of the century speedways appeared which bypass cities and link economic regions.

In the case of gas networks there were city networks since the turn of the century and regional pipes since the thirties. In smaller countries this regional network becomes international in the sixties and in the seventies magistral networks appear.

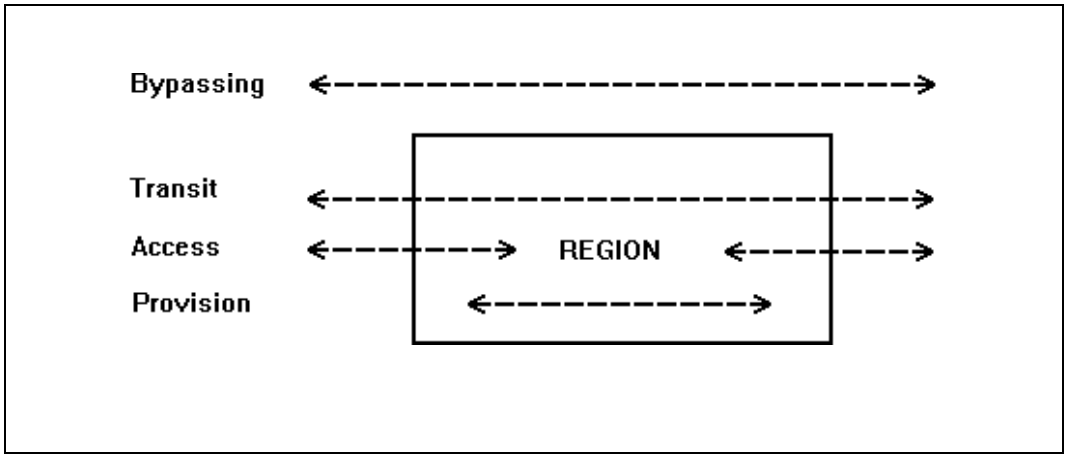
Parallel to this was the development of electricity networks. According to the German development [12] electricity generated in the household appeared at the turn of the century, city-wide networks came with World War I., from the thirties we find links between settlements and from the fifties large, connected electricity systems.

Let us mention that this was a link between distributive systems. Magistral lines were developed gradually in coming decades.

(In Hungary the first public use city electricity generators were established in the 1880s (Temesvár 1884, and Mátészalka on the country's present territory in 1888). In Budapest electricity supply began in 1893. In the 1930s power plants were still isolated and supplied smaller regions with electricity without cooperating. The first long-distance transmission line was established in 1929 and was used for railway electrification between Bánhida and Budapest. Gradually a unified national network did emerge and by 1963 the supply of Hungarian settlements with electricity became universal [14]. The internationalisation of the network was started in 1952, with a link between the Hungarian and the Czechoslovak network. This was followed in 1958 by a link with Yugoslavia and in 1962 by the first Soviet-Hungarian long distance transmission line. In 1963 the Hungarian electricity system was attached to the unified system of the CMEA. Beyond that since 1968 there is a mutually advantageous, regular exchange of electricity between Hungary and Austria).

With all these networks it is a development of the last decades that large-capacity, magistral network components did appear serving not regional but interregional circulation. In their case transit character is not accidental (the traveller either stops or proceeds on his way) but a built-in technological parameter. And there is often such a huge difference in economic development level between the end-points that the presence of the magistral line certainly means quite different things for one end and the other. In the case of transport we stressed the importance of local receptivity. In the case of the gas pipe we mentioned it might be not by chance that the pipe line arriving from Algeria through South-Italy and that from the Soviet Union through Eastern-Europe are of magistral type. In the case of electricity networks it has a quite symbolic meaning that proposed transmission lines both from Russia and Kongo are for direct current (what certainly does not mean technically that current can flow in one direction only).

If we return to *Figure 1.* with its *transit, accessing and internal traffic* it is striking that we left out a "link" whose importance is growing: namely the "transit" which *does not even cross* the border of the region: the bypassing traffic (*Figure 5*).



Source: After Plogmann [4] with own supplements

Figure 5: Transport links relative to a region

Nowadays regions on different level of development increasingly have to suffer transit totally alien to them, with no benefit only cost. Increasingly is thus argued that such kind of lines (ways) mean the export of *contamination* with mainly non-monetary costs - remarking that even monetary part of the costs are not offering to these regions from benefit accrueing at points of access.

5. ECONOMIC, REGIONAL, ENVIRONMENTAL AND SOCIAL IMPACT OF INFRASTRUCTURE

5.1. Non-spatial impacts

As we have seen earlier (p.11.) foreign literature divides the impact of infrastructure into *spatial/nonspatial* (this is more or less equivalent to our *vectorial/scalar* differentiation). If we want to go further into the details of such impacts we have to include into spatial impacts the bulk of the impact on environment, on the regional economy and on local politics, whereas the *non-spatial* group embraces mainly economic, macroeconomic elements (regionally integrated economic indicators, competitivity, productivity, employment etc.).

We could observe that when speaking about *infrastruture-oriented economic policy, development strategy,* than arguments for concentrate on macroeconomic factors. This is natural since what concerns the aims we are speaking about *economic policy* which is a macroeconomic category. It would be one-sided however to exclude thereby an inadmissibly large part of effects related to infrastructure the driving force behind processes.

The most frequently used arguments for infrastructure development are the following:

– Faulty infrastructure is an obstacle to production/services therefore to do away with shortages in indispensable for economic growth

– Infrastructure development is not import-intensive and this is favourable for the domestic economy and the trade account

– The development and operation of infrastructure is labour-intensive which is favourable for employment

– Infrastructure development releases high demand within the production sphere, favours certain subcontractors and thereby starts a boom of the economy.

One cannot say *in general* that these statements are true or wrong. Under Keynesian economic policy it is true that *any* state investment, be it military preparations, the building of a government residential district or jails has similar trickle-down economic impact but this does not make the above goals appealing. One cannot spare to make a similar evaluating distinction within infrastructure too and weigh the actual impact of individual objects.

In case of certain infrastructure types the above mentioned policy goals do not come through at all. The largest investments, due to their high technology level employ *few labour,* they are *capital- and import-intensive,* their trickle-down *effect shows up abroad* (cases of metro-, high speed train-, nuclear power plant-, highway constructions, telephone exchanges). Some are *nevertheless* needed but we should not mix their support with inappropriete general arguments.

Naturally as with any investment, with the above mentioned large, capital-intensive infrastructural investments too *there are* interest groups, sometimes whole industries who are interested in the realisation of these establishments. These groups try to involve state resources, acquire state guarantees. This would be made easier by laying down the general principle that infrastructural investments *in general* are preferred, subsidized, assisted. But there is *no* such a principle, on the contrary, *there are* infrastructural establishments which are, analysing their substance oughtright harmful, whose establishment should be explicitly opposed or delayed by central and local government. Matter of fact evaluation and decisionmaking cannot be replaced by general principles precisely in case of the largest investments.

5.2. Spatial impacts

From among the spatial factors the general pro-infrastructure argument singles out and generalises one, namely the goal of *becoming a regional center.*

In this century Budapest and the country were not very often an appealing target but the largest part of the eighties was such a positive period. Not because then it would have been a high priority goal to become a regional center, quite the contrary: at that time the country followed a comparatively liberal, comparatively market-oriented and comparatively dissident path relative to its environment. It was simply the change in local circumstances what made it attractive: as a *result* of an in-country regulation a region was defined whose center, one can say, was Budapest.

In the politics of the nineties priorities were reversed: Budapest and its antagonists alike would all like *to have a central role* and seek its outside preconditions, not least infrastructure, Western aid, investor, capital. The physical content does not matter, what matters is that it should come "to us" not to another capital (or district on a local level). The abtract idea of "regional center" is as *inhuman* as are the industrialised magistral networks: only we did not realise up to now that to build world trade centers in a residential district is as devastating as to run a highway or a pipeline through the apartment houses. The residents are under increasing pressure in both cases and it turns out sooner or later that they are - together with their apartment - just a troubling factor in a larger game.

What concerns infrastructural networks in *chapter 4* we reviewed the impact of dictributive and magistral networks, the role of their "developed" and "underdeveloped" end upon spatial development. Georgraphy of transport gives an even more comprehensive classification for transport networks that is worthy to look over.

When dealing with regional impact of transport infrastructure we have to distinguish first between two parts of **transport ways**: ***open sections*** which have first of all negative impact on the region concerned whereas positive regional impact may emerge on ***points of access.*** There was a gradual, historic shift from *everywhere accessible* transport ways towards transport ways having sparsely scattered but *concentrated crosspoints*.

Crosspoints are classified by geography of transport into ***primary, secondary*** and ***tertiary.*** *Primary* are the points whose importance is determined by their *geographic location* (gate, cape, col). Crosspoints where transport flows meet are *secondary,* whereas *crosspoints* created by the *operative functions* of transportation belong to the *tertiary* group. Nowadays both the magistral ways of transportation and the crosspoints created by them increasingly have an industrial/mass-production character and accordingly are separated from the areas for everyday life (housing, recreation, shopping, education, leisure etc).

Traditional communication relates from a **functional point of view** in three ways to a given area: it either ***reveals*** the area from inside (*provision*), ***collects*** transport heading towards it (*access*) or ***passes through*** a region (*transit*). Lately in the relationship of busy ways and locality a fourth function has emerged: namely that the

transit flows have *no direct contact* with the area: (***bypassing***). We have no "hard" statistical data for the evaluation of the degree of *bypassing* but we have to call the attention to the fact that in the evaluation of regional development *environmental factors* have an increasing role and in this respect it is not the *larger* traffic but the smaller one that is preferable.

6. SUMMARY

The starting point of our paper dealing with advantages and drawbacks of infrastructure-oriented development strategy is that one should not base economic policy on the assumption that the best hoped political strategy will undoubtedly prevail. From among the five possible scenarios evaluated with the three positive ones similar infrastructural networks are attached: all of them can be characterised that they try to ease the centralisation of the networks and promote internal, regional development with a kind of restructuration. In the same time just the scenarios to be avoided would be promoted by reinforcing the existing, hierarchic, centralised infrastructure network structures. In such a situation the paper express a definite standpoint: it is not enough to be for infrastructure orientation in general, since while constructing networks contributing to restructuration have an urgent need, the development of other and opposite kind of structure-preserving networks would be explicitely harmful.

Our differentiation gained from political scenarios is in line with the experience to be gained from the analysis of the state and development tendencies of existing large European structures - gas, transport and electricity networks. Distributive networks able to secure sufficient local privison are a sufficient basis for the crosspoint effects of larger, magistral networks to have positive impact on the area. On the other hand in underdeveloped, ill-provided regions magistral networks easily can produce enclave-like, Third World type effect raising rather torsion in than promoting development and thereby rather coserving instead of liquidating backwardness. Only a cautiously and selectively initiated infrastructure oriented economic policy taking all the above mentioned facts into account might serve as a development alternative for the country.

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