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Organizational System and Information Flow

/A regional sociology of research survey in Hungary/

In 1975 three of us, Pál Tamás, István Csallagovits and myself worked on an extremely important and interesting problem in the organization of research. Allow me to sketch in the background for a start. In Hungary, in recent years, greater emphasis has been given to the regional aspects of economic development. This comes to the fore in the decentralization of local government councils, and in a more explicit treatment of the problems. The country has been divided into seven economic regions, but research into what regional-mindedness really implies has only been initiated in recent years, that is research into the planning practice required, and into the theoretical problems involved. The centralized economic policy of the 1950s was necessary at the time, but it was often exaggerated, producing numerous undesirable side-effects. Starting in 1968 it was therefore gradually replaced by an economic mechanism operated in conjunction with an economic regulatory and incentive system. Direct, administrative, planning instructions were replaced by more highly developed forms of planning. Enterprises were granted increased independence, and so were local government units, such as county, town and village councils. Hungary has nineteen counties, but their organization into somewhat larger units, the regions, became increasingly important from the economic point of

view. The result were the seven above-mentioned regions.

Decentralization of the economy and administration - which naturally does not mean an absence of central directives - will expectedly be supplemented by the regional organization of scientific research. This is difficult to carry out in Hungary. On the one hand the bulk of the scientific potencial/scientific staff, institutes, universities &c./ is disproportionately located in Budapest, furthermore Budapest acts as a frame of reference for research done in the provinces as well. Information pours into Budapest, and the contacts network of researchers and teachers is directed towards Budapest as well. At the same time numerous technological, economic, political and cultural problems arise in the regions in planning and organizational practice, which demand theoretical work. There is thus a social need for the regional intitutionalizing of the research basis. The trend has caught the eye of the Hungarian Academy of Sciences as well, and as a result three subcentres were established in recent years, additional to the central headquarters of the Academy located in Budapest. Academic commissions were established at Szeged for the south-east, Pécs for the south-west, and Veszprém for the north-west. Further subcentres at Miskolc for the north-east, and Debrecen for the east are in process of being established. The idea is to create cultural and scientific centres in major towns so that the results of research will prove usable not only on a national and international but also on a regional level.

As I mentioned in my introductory sentences a number of us carried out a survey last year studying some of the problems I outlined. The subject was to approach research-organizational problems in the north-east region in a sociological way. This was done at the request of the Veszprém Academic Commission which had asked that its place and function, and organizational operation, be subjected to scrutiny. There are 122 research units in the region, 83 of them university departments.

Right from the start we reached the conclusion that the research organization tasks of the Commission could not be confined to the inner problems involved in exploiting the scientific potential. We made the technological, economic, political, social and cultural needs of the region our starting point, concentrating on those problems which were linked to the scientific discovery and satisfaction of the needs of the regional environment instead of trying to cover scientific research in a comprehensive way.

The methodology employed included an examination of development plans and their documentation; interviews in depths with members of the economic, administrative and political leadership; statistical analysis of economic and research activities; questionnaires submitted to research workers; international comparisons; and the application of information and value analysis. The focus was on economic development and on its relationship to the information needed to feed it.

The following are the more interesting and important observations made and conclusions reached.

1. There is much heavy industry in the region, including chemical industry, engineering and mining. Light industry and the food processing industry are also well-developed locally. We found that the information structure has slid away from the structure of industry, that is industry is not backed by satisfactory data-supplying services. As a result there is insufficient available information for decisions relating to technological development plans, technological development and enterprise strategies.

2. The weight of computerized data-bank services has shifted from heavy industry to light - industry and consumption. This handicaps all-round development in mining and the processing of raw-materials /heavy chemical industry/ as well as delaying satisfactory research organization of research in ore resources husbandry and technological growth.

3. Why information services "withdrew" from the most basic development fields is explained by the fact that computerized data processing services, in order to maximize income, tie down their capacity with work such wages or stock accounting. They sell information to those who pay more, and do not make it available to those who need it most. Enterprises in the light and food-processing industries and in the service industries are interested in the production of the data volume, and the accumulation of their exchange value, and important developmental tasks are^{as} result often left without needed information.

4. It also turned out that the most important developmental tasks are not confined to an industry but inter-industrial. Various industries, administratively structured in terms of differing ministries, and particular interests, are not always sufficiently interested in joint development. Different structures in either industrial production, or data services, make cooperation more difficult.

5. Point 4 showed that industrially structured and therefore discriminating data-transmission networks do not serve composite developmental objectives in the most efficient way.

6. We showed the presence of all these discriminatory trends in the research basis as well. Research and teaching units in the region are subjected to a variety of ministries and central authorities. Their systems of financing, organization, regulation and interests differ to such an extent that cooperation became more difficult. There is a greater tendency to spontaneous separation, and isolation of industries, basic and applied research, and research and development. The various branches of learning /different structures in research/ on the one hand handicap cooperation between research units, on the other they slow down the flow of results to the points of technological, economic &c. development where they are to be applied, handicapping their efficient use. That is why the industries in need of development in the region are all starving for research results, and much that is achieved by researchers never reaches the industries concerned.

What was outlined under the above six points draws attention to two basic phenomena.

a/ The present sectional organization of the economy, of research /the production of information/, and of the computerized data network /information services/ often handicaps the flow of capital /finances, material resources/ and of information, including research results. This makes it difficult for material resources and information to reach those places where they can be most efficiently used. Different structures of departments of economy thus put a brake on the cooperation of industrial and economic organs and enterprises, the coordinated operation of research units, and finally efficient contacts between the social sub-systems of the economy /industry/ and science /research/.

b/ Because of the organizational framework indicated under a/, production and consumption organizational systems of the region progress more slowly than expected, as well as for those of the institutionalizing process between them and the science /research/ system. The institutional system that acts as a transmission belt between material and intellectual activities cannot develop satisfactorily, or operate efficiently, until the organizational framework offers maximum opportunities to do so.

The following symptoms are thus present in the north-western region we examined;

a. From time to time there is a shortage of information at certain key-areas of development. b. Cooperating infrastructures cannot take shape either between the subsystems of material production, or scientific research. /An infrastructure in this sense in the coordinated development of activities that belong to a number of government departments./ c. The industrial and the information structure have largely slid away from each other. d. A regional differentiation of interests also makes coordinated development difficult from time to time since the administrative

and development structures have also to some extent slid away from each other. County limits, for example, handicap region-wide development.

The results here outlined prompted us to the following conclusions:

1. whatever the intentions of government, a truly regional economic policy has not yet taken shape to the desired degree;
- 2, the ideas of the central science-policy intention have not achieved the desired results yet, that is there is no research organization which is regional-minded, and regionally effective is present in full maturity either.

Reaching this point we asked ourselves what should be given priority, a comprehensive information system, or a restructuring of organizational and institutional relations. Which is a precondition of which? Marx argued that limited interpersonal relations put a brake on the growth of the forces of production. But what do these in turn depend on? Obviously on the organizational order of society which is itself based on property relations and the division of labour. We have reached the stage of social development where the socialization process of material and intellectual production is slowed down from time to time by precisely that organizational framework, and the institutional forms it gave rise to, which had earlier carried out its function successfully. Hungarian Socialist workers' Party and Government authorities clearly recognised that organizational and institutional forms which did their job at the time of extensive development must sooner

or later make way for forms which provide a better framework for the intensive development of the forces of production. The relationship between the organizational system and the information system is thus accorded a decisive importance. In our 200 page report we nevertheless endeavoured to tunnel from both ends. In the spirit of the central intentions of economic and science policy we proposed that an integrated information and data basis be elaborated in the region. As regards computer services therefore, those present economic regulators ought to be further developed, those elements in particular need transformation which do not yet provide sufficient incentives for the link-up between the information systems.

We showed that given sectional input-output underpinning, and what is called the "turbulent" information and data-transmission network, the present efficiency of exploitation and provision should be significantly increased. We showed that only the present input and output capacity of computers was exhausted. At the same time much reserve capacity of the central units of the computers awaits exploration. The organizational and institutional precondition of such an integrated information system, without which it cannot be created or operated efficiently, is that the research-directing authorities be linked up in a complex organizational system. Our directing authorities should produce a cooperating infrastructure by functionally linking up structures which now operate in isolation. Central

planning authorities are carrying out thorough analyses in connection with the creation of such new type directing authorities.

We as well made certain recommendations concerning the further institutionalizing of regional administration. We consider them suitable for implementation on the levels listed below: a/ legal and organizational institutionalization /division of decision-taking spheres/; b/ economic institutions /division of goods/; and c/ sociological and social relations /regional administration and the political aspects of budgeting/.

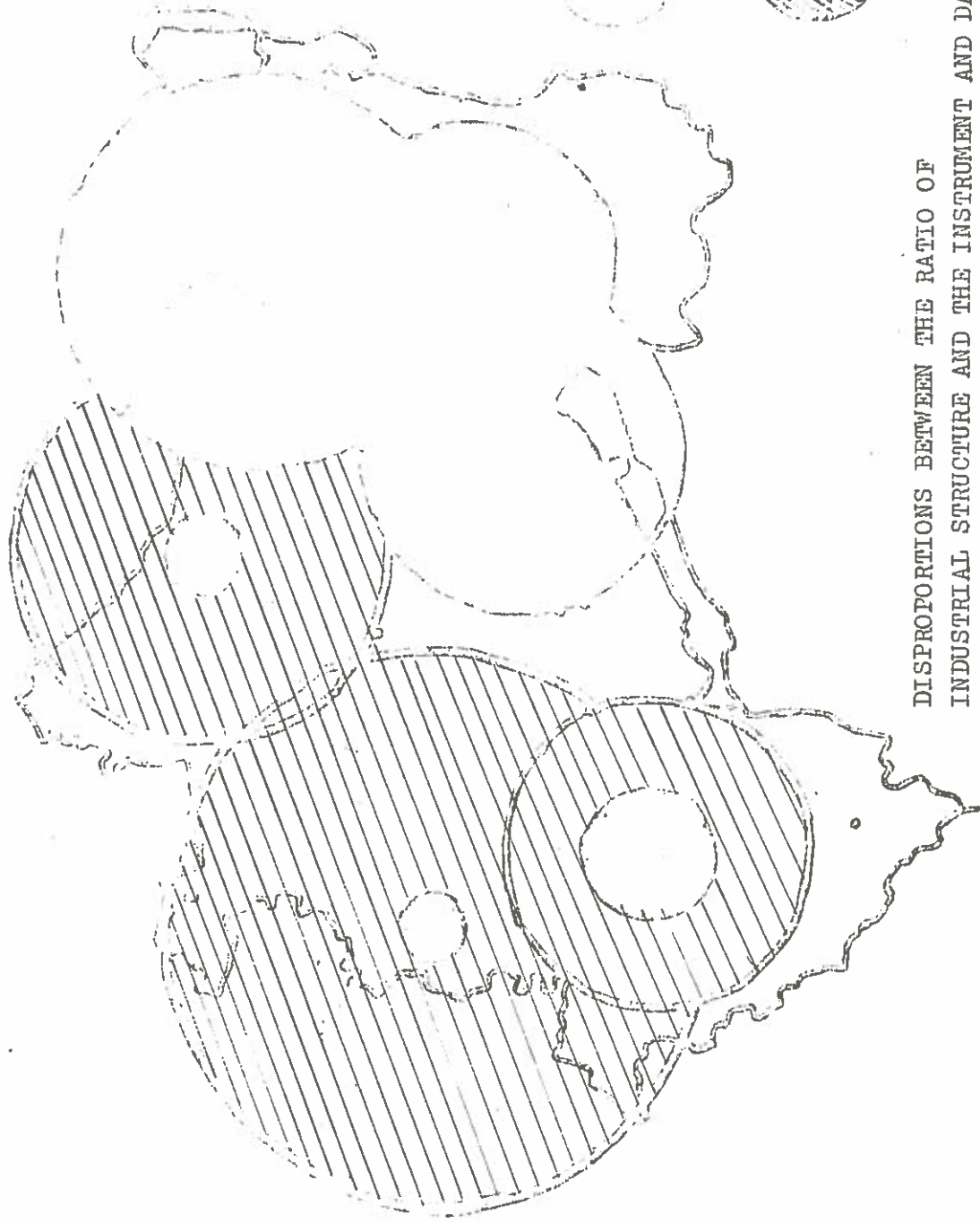
New forms of labour organization must be created at the higher stage of socialist development. These demand new forms of administration. Organizational and institutional features based on socialist property relations must come into being which subsume necessarily differing systems of economic organization and social interests in a complex /infrastructural/ web. More closely intertwined and therefore more developed types of material and intellectual processes of production demand new types of organization, institutionalization and therefore administration.

Synopsis

The lecture contains the conclusions drawn from a sociological study of certain problems in the regional organization of research activities. The research project was carried out in 1975 and dealt with the research basis of the North-West Hungarian Economic Region. The collaboration of research units operating in the six counties which make up the region is really needed to carry out basic economic objectives. The survey brought out that a/ research capacities cannot at present satisfy the requirements of the region, since they are preoccupied with matters of national and international concern. b/ Within the region the weight of information services has shifted from development tasks in mining and heavy industry to light industry and the food-processing industries. Data-processing thus does not serve technological growth, but low-level accounting. This is explained by the fact that data - processing enterprises are guided by the desire to maximise profits. c/ In both research and industrial production organizations work on a sectoral /industry/ principle. This produces isolated organizational interests and ideologies which make inter-sectoral /inter-industry/ development objectives difficult of impossible to carry out. Two major recommendations resulted from the survey: 1/ an integrated information system ought to be established in the region; 2/ the sectoral /industry/

based organizational system which acts as an obstacle, ought to be transformed into an inter-sectoral /inter-industry/ one.

What must be done is to take an organizational system which took shape in the extensive stage of industrial and research development, and adjust it to the needs of intensive growth.



RATIO = $\frac{\text{HEAVY INDUSTRY}}{\text{LIGHT INDUSTRY} + \text{FOOD INDUSTRY}}$

DATA TRAFFIC TOTAL OUTPUT

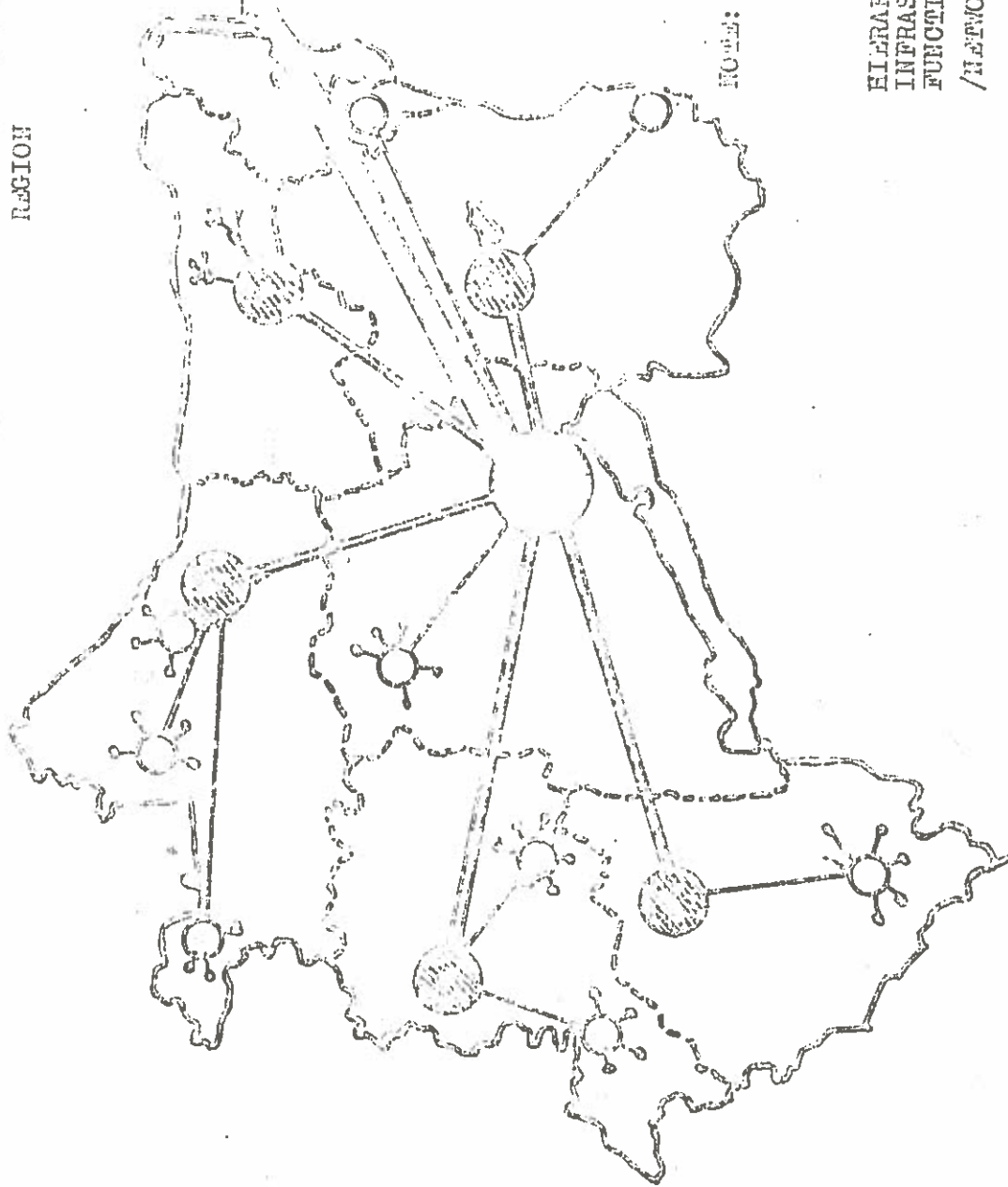
DISPROPORTIONS BETWEEN THE RATIO OF
 INDUSTRIAL STRUCTURE AND THE INSTRUMENT AND DATA
 TRAFFIC RATIO

THE FIELD OF RESEARCH IN RELATION TO THE AREA OF HUNGARY



== VESEPRÉM AKADEMIAI
KOMISSZIÓ TERÜLETE

A THEORETICAL SKETCH OF THE INFORMATION-
TRANSMITTING NETWORK OF THE NORTH-WESTERN
REGION



NATIONAL PLANNING OFFICE
CENTRAL
DIRECTION

NOTE: THE INDICATED LINES ONLY
REFER TO ADMINISTRATIVE AND
REGIONAL ECONOMIC POLICY
ASPECTS

THE "TUBULENOM" FOR-
HIERARCHICAL NETWORK OF THE ACTUAL
INFRASTRUCTURE COVERING SPECIALIZED
FUNCTIONAL REGIONAL CENTRE
/NETWORK AND CENTRES/