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THEORETICAL PROBLEMS IN THE DEVELOPMENT OF ECONOMIC REGIONS
/WITHIN ONE COUNTRY/ - II

In a paper under the same title, presented in 1961 at the Hague Conference of the Regional Science Association, starting from certain experiences in the field of Polish economic and physical planning /especially on the regional level/ I have tried to define certain theoretical concepts pertaining to the nature of economic regions. Now, in this report on further progress in my studies I would like to reverse the formerly adopted procedure. First I will develop few theoretical deductions, in particular those influencing methods of regional analysis and then I will proceed to verify them on basis of data and indices for one, certainly underdeveloped part of north-eastern Poland - the voivodship of Białystok. The question then shall be: whether this area should be considered as a separate economic region? what are the reasons for its backwardness? how they are reflected in the regional structure? and finally what means should be assumed to overcome those deficiencies in the social and economic development of the region?

I. Additional concepts for the regional analysis and the development of the general theory of economic regions

Looking backward to my former presentation of the theoretical problems of economic space, regional structure and economic region I find that two fundamental aspects of an economic region were not developed clearly enough. In a definition then introduced I stated that "/an economic region/...is a subspace of the socio-economic time-space". It follows obviously that an economic region is at the same time a part of some greater whole /unit/ and a definite and separate whole /unit/ of its own. Let us try to develop further these ideas. For this purpose I would like to use the mathematical concept of transformation of one set into or onto another set.

If we consider the socio-economic time-space to be a set

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of economic relations and activities of the whole human society or community and the economic region to be a set of economic relations and activities of the regional community, the possibilities for purposeful use of the concept of "transformation" should become fairly easy, in fact obvious. However before discussing these possibilities some additional comments on nature of socio-economic time-space seem necessary.

So far when dealing with problems of space in human relations the absolute character of space was traditionally assumed. But with further progress in mathematical formalization of concepts used in social sciences in general and in regional science in particular we may, and indeed we should follow steps taken in physics by Poincaré, Einstein, Sitter, Lemaitre, Weyl, Eddington or even those proposed by Mach. By this statement I mean that it is possible to consider socio-economic time-space as created by existence of men - I would like to add here at once - within the geographical environment. Such approach would lead us naturally to the field theory of socio-economic time-space. To simplify the mathematical side of such a theory we may consider socio-economic time-space to be three and not four-dimensional, i.e. to drop from our considerations the third spatial dimension /height/ as it obviously plays only secondary role in macroeconomics. It is important - I think - to note that the field theory of socio-economic time-space will involve in theory the development of dynamic aspect of locational problems. Indeed it indicates that by introducing time factor we made possible the discovery of a new category of socio-economic locational phenomena which do vanish from our field of observation when we reduce our analysis to static problems of three-/or two/ dimensional space. Personally, I am quite ready to accept such possibilities, In fact I believe it to be a very strong argument for construction of such a field theory of socio-economic time-space. At the same time it should be mentioned here that the use of gravitational and potential models would gain much stronger intuitional basis when introduced within the framework of the properly developed

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field theory. This theory will have to introduce concepts of locational phenomena: static and dynamic - parallel to phenomena of inertia and gravitation or indeed of mass and energy in physics.

But let us return to regional problems. With aid of concept of transformation we are able to define connection between economic region and the wider economic /e.g. national/ whole of which it is a part as an image of economic regional relations and activities into the set of economic relations and activities on the wider /e.g. national/ level and vice versa as an image of wider /e.g. national/ relations and activities into /or perhaps onto/ the set of regional ones. The problem then arises what is the difference between transformation into or onto. Following mathematical definitions we assume that transformation onto involves at least complete identification of all relations and activities contained in the second set with part of relations and activities of the first. All regional relations and activities are of value for the national economy or all national relations and activities are reflected into the regional economy. If the relations and activities contained in two sets are connected one by one in both directions /both are transformed one onto another/ then there exists complete identity of two and in reality this is only possible when we consider the whole set of economic relations and activities in the given area as completely closed - within a space - an absolute region. For instance, such a case arises when we consider the whole country as an economic region. It is possible then to speak of transformation of the regional /and at the same time national/ economy onto itself. Furthermore it is possible to generalize this additional concept of transformation. In fact it seems very convenient and useful to define regional economy as the transformation of economic relations and activities within given territory onto or into themselves. In this way a formalized definition not only of an economic region as a part of a greater whole but also as a whole in itself is obtained.

In these rather simple statements some rather interest-

ing implications are contained. Transformation of the regional economy onto itself means that it is complete and the given region is in its economy fully independent from the outer world. We may assume then that its economy is closed within its territory. However the transformation may be also only into itself, i.e. it is only partial - then we say that its economy is only partly closed within its territory, its remaining relations and activities being closed only within the wider area or territory, on the wider level. Although all regional relations and activities certainly do belong to that wider /e.g. national/ economy, we may say that in the narrower sense only those ones which are closed only within a wider territory properly do belong to that wider /e.g. national/ economy and those closed within the region are properly regional. Indeed an area should not be considered to be an economic region when no economic relations or activities are closed within its territory. Here arises a rather interesting point - whether elements of the domestic, subsistence economies should be taken into account in the analysis of the regional economy? Certainly in the wider sense they should be included, they are parts of the economic life in the region but in the narrower sense they certainly do not form any basis for the development of regional economy and therefore should not be considered as the same as other regional economic relations and activities. Perhaps this is one of the cases where the difference between inertial and dynamic can be introduced.

All these lead us back to the statement that an economic region is a `s u b s p a c e` of socio-economic time-space. In a region economic relations and activities during certain period of time should be at least partially closed within its territory. The concept of regionally closed economic relations and activities gives us also an useful basis for the delimitation of regional territory and establishing its boundaries. Within the regional territory at least local maximization of the closure of regional economy should be obtained. Only when increase or diminution of the regional territory would increase the openness of the regional economy the given region is fully and properly delimited.

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All these concepts allow further development of the theory of hierarchical correlation of various types of economic regions. They admit also existence of another phenomenon mentioned in my Hague paper, i.e. the existence of areas which are included into the regional structures of higher levels without being separate regions of lower rank. The recognition of this phenomenon eliminates numerous difficulties which in many cases impede our efforts to establish by careful analysis the division of a certain area into the network of existing regions of the same rank.

Here it is necessary to remind of those elements of the theory of economic regions which deal with interrelations between economic regions as natural subdivisions of socio-economic time-space and administrative regions as formal and arbitrarily created territorial units of political, social and economic organization of human society. The importance and influence of administrative boundaries on the delimitation of economic regions become much clearer in the light of just presented new definition of regional territory on basis of the closure of regional economy. The administrative boundaries are obviously crystalizing lines for closure of at least some economic relations and activities.

So far we did use these rather loose terms "economic relations and activities" without any discussion of their contents. For further development of the regional theory some comments on this are however necessary. Obviously on what more detailed terms, concepts and meanings are included in this very general class of "economic relations and activities" depends the choice of algebras and geometries which are to be used both in the theory and in practice. It is not necessary and indeed possible to enumerate all relations and activities which should and would be finally included. It will be enough at present to indicate at least some of them. Naturally we have to include some of basic economic relations which are those between production and consumption. In principle their treatment on mathematical side involves no more than introduction of primary operations of addition and subtraction. However when dealing with the elements of production

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and consumption in socio-economic time-space we should treat them as tensors. This statement alone shows already the tremendous possibilities contained in the mathematical formalization of the theory of economic regions.

But there are also other economic relations and activities. Among them such relations as personal incomes and expenses of population or as between places of work and of dwelling, i.e. problems of journey to work /and perhaps to leisure too/ should be mentioned. These last may probably be dealt within the field theory of socio-economic time-space.

A specific, rather difficult problem is created by the many possible uses of natural resources. Here the concept of mapping as between geographical environment /considered as a space/ and socio-economic time-space may perhaps provide a fruitful approach in form of one - many transformation for future and one - one transformation for present. On the other hand, the same problem taken from the point of view of geographical environment as influenced by man would take form of another many-one transformation.

Further development of these and other problems has however to be left for discussion in another place and at a different moment.

II. Problems of regional structure of the voivodship of Białystok in Poland

In the voivodship of Białystok an administrative district of the first rank in the north-eastern Poland, with an area of about 23 100 sq. km. and with a population of about 1,2 million inhabitants, belong to the most unsatisfactorily developed regions of the country. It is enough to say that the index of the produced national income per head of the population is here three times smaller than the same index for the voivodship of Katowice which includes the Upper Silesian Industrial District. At the same time the average density is about 50 persons per sq. km. in comparison to over 350 persons in Upper Silesia. The underdevelopment of this territory /especially when compared with others/ is certainly due

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to the lack of more important natural resources and to the low density of population as well as to the history of its settlement, economic development and political /state/ allegiances. In fact its territory is extremely heterogenous, various parts belonging at different periods to different political and economic bodies. It was established within its present administrative boundaries only after the Second World War, in 1946. However it is generally recognized that in spite of all these reasons and excuses it is still insufficiently developed, that something should be done to overcome its handicaps and to bring the level of living conditions up to the average for the whole country.

In my former paper I have already described difficulties facing us in planning for the development of such substandard areas. However in this as in other such cases more definite and detailed diagnosis and remedies are necessary. Let us therefore look closer at its regional structure in hope to find more concrete solutions. Following our earlier theoretical reflections let us first look on the one side at the image of the regional economy as transformed into the national one and, on the other side, at the image of the national economy as transformed into the regional one. In 1959^x the image of the regional economy as transformed into the national one was expressed by the following data and indices: 3,8% of the total population, 7,4% of the State territory, 2,6% of the gross global product, 1,3% of the industrial product, 5,7% of the agricultural product, 2,5% of the net national income as regionally produced and 2,8% of the net national income as regionally consumed, 3,0% of the total consumption and 2,5% of the ^{investment outlays} /invested national income/. These figures give a very clear picture of its poverty /for instance: percentage of population higher than those of gross global product and net national income/ and of subsidies paid into the regional

x/ All data here are given for 1959 because for that year the basic economic data e.g. national income and other similar were established and summarized by voivodships.

economy /for instance: percentages of divided national income and of consumption higher than that of produced national income/. More detailed data throw further light on the role of this voivodship in the national economy. In agriculture the data for 1959 are as follows: 6,1% of the agricultural population, 5,7% of the arable land, 5,7% of the total agricultural product, 4,9% of the final agricultural product and 4,2% of the commercial agricultural product, 5,8% of the grain production, 6,4% of the potato production, 5,8% of the cattle population, 7,0% of the pig population, 9,3% of the sheep population; in forestry: 7,0% of the afforested land, 6,9% of the total production of wood, 6,8% of the produced timber and 8,7% of the fire wood; in industry: 1,4% of the industrial employment, 1,3% of the industrial product, 0,1% of the total produced electric energy, 0,5% of the all produced machinery, 1,3% of the metal products, 1,7% of the building materials /but 2,6% in the employment/, 3,2% of the wood products /1,8% in the employment/, 2,7% of the textiles /but 3,3% in the employment/, 1,2% of the clothing, 1,7% of the leather products and 1,8% of the food products. From those data it is easy to perceive that in spite of its backwardness as indicated by the extensive character and limited development of the commercial production in the agriculture as well as by the evidently low effectiveness of labour in the industry, the voivodship of Białystok plays quite a distinctive role on the national level in the production of livestock, of wood, wood products and textiles; to a smaller extent in the production of processed food products, of leather, building materials and clothing.

When we turn in our analysis to the interregional exchange of goods the importance of certain products of Białystok becomes even clearer. The export from the voivodship of livestock /to the meat factories in Warsaw, Gdańsk and in the Upper Silesian Industrial District/ reached, in 1959, 12% of the total interregional exchanges; the export of potatoes /to the voivodships of Szczecin and Katowice/ was about 10% /i.e. 140 thousand tons/, of wood and timber about 7% /i.e. 473 thousand tons/; saldo in exports of building materials

/mainly sand and gravel to the Warsaw Metropolitan Area/ reached above 700 thousand tons.

So far as the interregional services are concerned the northern part of the voivodship is an important tourist area, frequented specially by the inhabitants of the Warsaw Metropolitan Area but also of other big Polish cities and industrial conurbations. On the other hand, the Medical Academy of Bialystok serves as a medical teaching centre for the whole north-eastern Poland, i.e. also for the neighbouring parts of other voivodships.

It may therefore be safely stated that the voivodship of Bialystok, although a poor and backward area, achieves in some elements already quite an important role in the national economy. Moreover its economic relations with farther off lying parts in Poland are - and this is very characteristic - much more developed than with its immediate neighbours.

Let us now turn our attention to the other side of the problem - to the image of the national economy as transformed into the regional one. This is however much more difficult to establish because, generally speaking, the present ways, followed in compilation of statistical data do not take into account such necessity. From the data on railroad transport it is possible to obtain information on the imports from other voivodships but only for very general classes of goods and then measured only in units of weight.

In spite of all these difficulties certain general image may be deduced from various dispersed and partial data. The voivodship of Bialystok depends on the national economy in several ways: first in production, then in consumption and in social services, finally in general economics. In production three basic branches of industry, agriculture and forestry seem to vary in their dependence. But to bring out the real structure of the interrelation of regional and national economics it is necessary to break through the simple and schematic divisions. For our purposes it is more convenient to discuss here the problems of the full cycle of production for food, wood, textile and leather goods without too much attention being paid

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to the divisions between various branches of economy, such as agriculture or others.

Let us start with problems of food production. Most of the agricultural products - grain, potatoes, sugar beets, milk and livestock are exported from the area as raw materials, practically without any processing. This phenomenon is so strong that for instance all grain exported to other parts of the country is later re-imported in form of flour and other processed products /about 70 thousand tons of grain are exported and then 52 thousand tons of flour are brought back/. The same is true for sugar-beets and sugar. Potatoes, milk and livestock, on the other hand, are the true export products of the voivodship but still they are sent to other regions practically unprocessed.

With wood products the situation is somewhat better, although the proportion of wood used as a fuel is unusually high and the amount of timber exported without any further processing is rather big. Still the wood mills and wood processing plants belong to the larger and more efficient in the country. Their equipment is comparatively modern and, in consequence, the productivity of workers is over the average for the whole country.

The traditional /i.e. since the first half of the XIXth century/ industry of the area - the textile industry depends for raw materials - as may be well expected - on imports from the overseas countries and from the USSR. Generally speaking, the situation is the same in other parts of Poland but there are also some important differences. At present the whole cycle of production is not closed within the area and the produced goods are transferred to Łódź for final processing. Now the situation is worse than before the war. Historically the textile industry of Białystok arose independently, in fact as a strong competitor to the Łódź region. In wool it even developed and possessed before the war its own, specific source of raw materials in form of processing second-hand woollen rags. But now with the unification and concentration of the whole textile industry in the hand of the State all

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this belongs to the past. On national scale the whole production is certainly more efficient but the regional economy has suffered. However in the near future, with the completion of a new large textile plant in the vicinity of Białystok, the whole cycle production will be again closed within the voivodship.

With the production of leather goods again the situation is the same as with the food products. One of the main producers of livestock in the country, outside several antiquated tanneries, the area does not possess any larger modern leather processing plants. The general situation is therefore clear. For final processing of its products the regional economy depends completely on the national one.

To all these should be added a complete lack within the area of any more important fuels /outside wood and peat/ and in result its dependence on other areas for energy.

So far as the regional consumption is concerned the situation changes. In foodstuffs the voivodship of Białystok is the most selfsufficient area of Poland. It possesses at present the highest index /over 50%/ of consumption of its own global agricultural product. This may be partly influenced by the persistence of domestic economy among peasants and by generally lower standards of living among the whole population. With predicted and planned changes in these directions the self-sufficiency of the area in foodstuffs will decrease and interdependence with the whole country, based on the specialization in agricultural production will certainly increase.

On the other hand, in consumption of industrial goods the voivodship of Białystok is completely dependent on the production of other parts of Poland. This is again seriously increased by open cycles of production in its own industries.

So far as the services on regional scale are concerned the voivodship to a very large extent depends in higher education on university colleges and schools of all kinds concentrated in Warsaw, but also on those of Gdańsk /technical education/ and Olsztyn /agricultural education/.

In general, in respect of government policies of wages and prices the area has a higher level of living than its own economy guarantees /see data for the net national income as pro-

duced and as divided/. In fact it receives certain kind of hidden subsidies. On the other hand, its new investments are proportional to its part in the creation of the national income.

The third theoretical element of the regional structure is the transformation of the regional economy into itself. The question raised here may be formulated also in another way, i.e. to what degree is the intensity and development of the regional economy self-induced? At the same time the extent to which this economy is transformed into itself may serve as a measure of the total integration of regional structure, resulting in the existence of the economic region, as defined in my former paper.

On the basis of the description of the area so far presented it is easy to infer that such an inverted transformation is in our case extremely weak. In support of this it may be stated that the internal transport by rail amounted in 1959 to about half million tons one way, i.e. 25% of the very low, in fact the lowest in the country, interregional railroad transport. Obviously there are several factors which limit the possibility of self-induced intensification and growth of the regional economy. The amount of domestic economy, still persisting among peasants seriously diminishes both the volume of the demand for industrial consumptive goods and the amount of specialised agricultural products supplying locally the needs of industrial and urban population. Then the regionally open production cycles for the most important products of the region diminish the possibilities of employment and of earning higher wages among the non-agricultural population and at the same time impede the spread in the community of higher technical culture which in turn lowers qualifications and efficiency of all workers whether from agriculture, industry or other branch of economy. It is very characteristic for these conditions that all elements of self-induced integration in the regional economy beside being generally weak are rather small-scale ones and territorially not very extensive. In fact, individually they do not involve more than from one to three coun-

ties /poviats/ and never cover the whole area of the voivodship. Among those elements several should be at least enumerated such as territorial production complexes of forests and wood industries /forests of Białowieża and plants of Hajnówka, forests around Augustów and others/, of textile industries centred around the city of Białystok, then the tourist subregion in the northern part of the voivodship, perhaps also the extensive fens of the Biebrza Valley with its developing stock-breeding economy. Altogether the problems of self-induced development are at present more important for the internal divisions of the area /subsets of economic relations and activities/ than for its integration as clearly defined economic region. These, however, are at present more connected with its past economic and political divisions between Prussia, Russia and the so-called "Congress Kingdom of Poland" than with anything else.

Short notice should be introduced in this place on the structure of the settlement network as developing at present, in particular on the overconcentration of economic activities and in result of the whole population in the main urban centre - in the city of Białystok. Such a concentration, comparatively speaking, the highest on regional scale in Poland is very characteristic for underdeveloped areas all over the world. It certainly impedes the balanced development of the whole region. Another characteristic feature of the urban network, but in particular of smaller towns, is their lack of various communal facilities and very poor housing conditions.

The last element in the analysis of the economic regional structure is the tracing of the present economic boundaries, both interior and exterior.

The voivodship of Białystok is separated from outside world in the North and the East by the state frontier between Poland and the USSR /Federal Republics of Lithuania and White Russia/, an obviously well defined and stabilized economic boundary, and in the West and the South by comparatively clear, based on distinct physiographical features, economic divisions. In particular in the West there are Great Mazurian Lakes together with a large forest complex of Pisz and Kurpie and in the South, so far undeveloped river Bug, one of the main if not the main tri-

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butary of the Vistula which, moreover, for the last hundred and fifty years was an administrative and sometimes even political, therefore economic boundary. However there exist some close economic ties between areas situated on the both sides of the frontier separating the voivodship of Bialystok from other neighbouring voivodships of Olstyn and Warsaw. These are: transfer of sugar-beets to the nearest sugar factories in Kętrzyn /Olstyn/ and Sokołów /Warsaw/ and in the area of Kurpie /Warsaw/, the tourist traffic between Great Mazurian Lakes and the lakes in the vicinity of Augustów and Suwałki /in the northern part of the Bialystok area/. The proposed development of the European waterway between the USSR and Central Europe across Poland of which the river Bug is to be an important link will also tend to change present low intensity of economic life - in this case on the southern border of the voivodship. In result its present boundaries, although comparatively well defined, cannot be considered as completely stabilized.

In this analysis several important themes were altogether omitted. This is due mainly to the lack of information and statistical data. Among those omitted, the specially important ones are problems of the invested capital /obviously deficient in the region/ and of the emigrating manpower /retarding economic progress within the region/.

Summing up all the elements of our analysis we have to decide whether to recognize the area under discussion as already existing separate economic region? In my opinion the answer should be positive. The voivodship of Bialystok although rather poorly endowed by nature, of low intensity of economic life, underdeveloped and badly integrated may and should be considered, in result of its role in the national economy, as a separate economic region. At the same time the cursory analysis of its structure clearly revealed the most promising directions to be explored for its economic and social growth. These are: /1/ increase of commercial economy in agriculture at the expense of domestic economy, together with further progress in the intensity and specialization of agricultural production; /2/ the highest reasonably possible

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closure within the regional territory of production cycles for food, wood, textile and leather goods, when produced for other parts of the country; /3/ closure of regional production and consumption cycles for all goods based on raw materials and produced within the region, together with adaptation of production to modern, raising standard of living; /4/ further increase in the spatial integration of the regional structure by proper location of the investments involved in the closure of economic cycles mentioned in the points /2/ and /3/; finally /5/ further improvement in the proper use of natural resources especially in agriculture /economical use of water/, forestry /proper cutting policies, more economical use of wood/, industry of building materials, and tourism /proper use of lakes and forests/.

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Turning back to the theoretical concepts presented in the first part of the paper it seems proper to reflect on their practical value as shown in the just concluded analysis of the Białystok region. Some may feel disappointed. After all the analysis did not bring out any problems which could not be established within the framework of traditional concepts and methods. But it seems to me that the results of the analysis were obtained in much simpler, more understandable and - last but not least - quicker way than with the use of old, intuitive and rather haphazard methods. Further development, especially better definitions of various economic activities in mathematical terms should allow us to obtain not only qualitative improvements but also a truly quantitative approach to the problems of regional economy both in the theory and in practice.

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URBANIZATION IN CONTEMPORARY POLAND

Phenomena of urbanization, growth of towns both in number and in size are not anything new in Poland which possesses a long social and economic history and old traditions of urban life. However the present stage of its town development, although typical and similar to that in other countries, has also some points of interests. For these there are two reasons: first, the present rate of growth is comparatively higher than in the most of other countries, passing through the same stage /see Table 1/; second there are some very definite planning efforts to control and to direct those important changes. A short analysis presented here tries to establish the character and causes of the present trends of urbanization and to check on the success and effectiveness of the official policies.

I. Growth of urban population in Poland, past and present.

The growth of urban population in Poland throughout the XIXth and in the XXth centuries /see Table 2/, although several times interrupted by great wars and other social and economic upheavals was developing steadily and at an increasing rate. In the last ten years^x it was specially strong and it was the direct result of the planned industrialization of the national economy. In fact greater growth was observed only in the Soviet Russia in the years 1926-1939, and there beside the industrialization it had been caused by the collectivization of the agricultural economy. In the years 1950-1960, the increase of urban population amounted in Poland up to 450 thousand persons annually, while in the years 1870-1900 to about 75 thousands only. The present increase was practical

x/ I exclude from my analysis the years from 1945 till 1950 because at that time the general migrations of population, an aftermath of the war, were much stronger than these due to urbanization. In the statistical data those last are completely submerged by the first.

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cally equal to the total natural increase of population while in the inter-war period it was below 50% and at the end of the XIXth century - below 36% of the total natural increase. Moreover in the pre-war years about 100 thousand inhabitants /mostly from the country-side/ were leaving Poland i.e. the emigration abroad was then greater than the immigration from the rural areas to the towns. At present the emigration is practically non-existing, the average number of persons leaving the country being per saldo limited to several thousands annually. Only in the years 1957-1958 the amplitude both of the emigration and of the immigration was definitely larger. In this way the processes of urbanization are at present larger than in the past two different processes of internal urbanization and external emigration taken together.

A French geographer, Pierre George in his book "La ville, le fait urbain à travers le monde" /Paris 1952/ classified countries on basis of percentages of urban population. Countries with urban population under 20% of the total ^{population} are defined by him as territories of old, agricultural civilizations, where urbanization is just beginning. In the class of from 20 to 40% of urban population are the European agricultural countries as well as other countries where industrialization of the economy has already started. In the class of over 40% of urban population George found three separate groups of countries: traditional industrialized states of Western Europe /indices from 40-60%/; new countries whose development takes place in form of the growth of new, big towns and finally, the USSR where the urbanization is connected with strong industrialization. On this comparative basis it may be stated that in the last ten years Poland has passed from the class of European agricultural states to the class of the USSR, that is to the class where urbanization is closely connected with new industrialization.

II. Structure of urban growth

However the present urban growth is heterogenous in its origin and structure. Generally speaking, it is composed of three elements: natural increase, influx from country-side

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together with repatriation from abroad and change of the administrative status /i.e. change of urban boundaries and creation of new towns/. Data collected and published for the years 1950-1959 indicate that natural increase was responsible for 40,9% of the total urban growth; rural immigration - for 19,0%, external immigration for about 1,0% and changes in the administrative status for the remaining 40,0%.

The most characteristic of these indices is that of natural increase. Usually it is assumed that the index of natural increase for urban areas is well under the same index for rural areas and in result under the average one for the whole country. This was certainly true for pre-war Poland when the urban index was no more than one half of the rural one /8,4% in relation to 16,7% in the years 1931-32/. But in the post-war years indices for both urban and rural areas were practically the same. That is only in the last few years that the rural index again gains over the urban one although the difference so far is not as great as before the war /in 1960: 15,0% and 16%/. This high natural growth is due to several causes. Among them such as fall in death^{rate} - the result of the improvement in sanitary conditions and post-war compensation increase in number of births should be mentioned. However the economic factors should not be omitted. In fact they are probably the most important. The general raise in living conditions due in the beginning to the changes brought about by the social revolution and later additionally increased through the great progress in the industrialization of the country played indeed the decisiverable. A specific influence was exerted by the educational policies of the present government. When practically all the costs of education on all levels are covered from social funds the parents are released from otherwise very heavy financial burdens and worries.

The growth of towns in result of the influx of rural population was according to the statistical data comparatively small. Part of it is hidden by inclusion under the heading of the change in the administrative status. It was still great enough to take from the rural areas all natural increase of manpower. In future it is expected that this will continue, probably at an even in-

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creased rate. However there exist obvious limits to such migrations. At present, in spite of war losses, in Polish agriculture, specially in the central part of the country, there is a very definite overemployment /or hidden unemployment/. It has already diminished and with farther emigration of rural population the stage will be reached when this overemployment will turn into underemployment. The advent of difficulties due to deficits in the manpower will be probably the starting point for stronger mechanisation and socialization in agriculture. However it also means that the importance of this factor of urban growth will further diminish in future.

The most discutible, although obvious and potent source of increase in indices of urbanization are the changes in the administrative status, especially in the municipal boundaries. Nevertheless they should not be omitted. At the worst these legal changes were nothing else than a recognition of already established realities. Their inclusion in statistical data has been in fact overdue. The urbanization had taken already place. In the remaining cases the change of the administrative status marks new developments in town construction or at least in urban housing. In future those later cases will easily dominate over all others.

III. The structure of urban network and its present evolution.

This picture of the progress in the urbanization of Poland would be incomplete if the description of general growth of urban population is not followed by the analysis of the structure of urban network and its present evolution.

As in all other countries the urban population in Poland is not evenly spread. There is a great diversity of towns and cities of various function, character, status and size. Many geographers tried to establish certain regularities and to bring some order in what seemed to be at the first glance only an accidental grouping, loosely connected with the road and railroad networks. For that purpose they used one or ^{among various} other theories of settlement - of W. Christaller or of A. Loesch, of Homer Hoyt, E. Ullman and Ch. D. Harris or ^{or} B.J. Berry and W. L. Garrison, of W. J. Dawidowicz, and many

others. Although in the interpretations of realities observed in smaller areas these theories and related concepts proved to be servicable and fairly satisfactory tools of analysis, nevertheless for whole Poland they fail to provide a reasonable basis of comparisons. In fact divergences between regional settlement networks, palimpsests of various historical periods and processes seem to raise certain serious questions as to the validity of their theoretical assumptions.

The most satisfactory tool for analysis on both national and regional level was found by me in the so-called "city rank-and-size rule" as developed by several American sociologists and geographers. This is an empirically established rule and there exist several divergent interpretations of its meaning ranging from the opinion of G.K. Zipf who sees in it the reflection of "unifying/i.e. centralising/ power" to the opinion of B.A. Simon, supported by B.J. Berry and W.L. Garrison, that it is a curve of probabilities of distribution, in fact a result of the law of entropy. Graphs for Polish towns, colated nationally and regionally on double logarithmic scale, according to this city rank-and-size rule, demonstrate rather remarkable regularities and characteristics. First of all the graph for all Polish towns in 1960 has exceptionally regular shape, forming almost a straight line. According to probability interpretation of Simon this marks an ideally balanced structure of urban network without almost any influence of strongly deforming forces. In fact the same graph for 1950 shows some evidences of the underdevelopment /decentralization ?/ at the left end of the curve. It is a reflection of the destruction of Warsaw and of its uncompleted reconstruction.

N. Ginsburg in his recently published work "Atlas of Economic Development" presented among others some comparative maps of urban population. In particular the second one deals with the problem of the primacy of the largest city. The measure used is the ratio of the largest city to the total population of the four largest cities in the given country. The data on which the map is based shows that Poland takes the fifth place /after Italy, Saudi Arabia, Bechuanaland, Syria

and before Canada, Spain and Yugoslavia/ among the countries with the least developed primacy of the main urban centre.

The regional graphs may be grouped into three classes: /a/ the regular ones characteristic for areas of evenly developed urban network and with slight preponderance of the main urban centre /voivodships of Katowice, Cracow, Poznań, Wrocław and Szczecin/; /b/ the skewed ones characteristic for areas where the main urban centre is growing at the expense of others, especially the middle-sized towns /voivodships of Warsaw, Łódź, Gdańsk, Bydgoszcz, Lublin, Białystok and, in smaller degree, of Rzeszów, Olsztyn and Opole/; and finally /c/ the irregular ones characteristic for areas without clearly crystallized main urban centre /voivodships of Kielce, Koszalin and Zielona Góra/. In fact, in these last areas the largest city is not the seat of the voivodship administration. In result within the generally balanced urban network certain areas of smaller and greater irregularities may be distinguished.

Geographically, central, eastern and northeastern parts of the country show marked growth of the largest cities at the expense of smaller towns. Areas without clearly crystallized main urban centres are located between or on the peripheries of the regions of the well-balanced urban network.

Parallel problems to that of the primacy of the largest city are those of density of towns of various types and classes of importance. This density is however extremely variable. Variability is in fact so big that it is impossible to explain it within the framework of Christaller's theory. For instance, the general density of towns varies by voivodships from 11,6 to 36,8 per thousand sq.km. /average density being 22,7/ and the density of towns over 5 000 inhabitants from 6,0 to 27,4 /average 12,5/. The largest densities are characteristic for the western and southern regions, the smallest for the eastern, northern and central ones. Greater densities of urban network are clearly connected with areas of stronger intensity of regional economy and also with wealth of natural resources, both mineral and agricultural.

An additional aspect of the urban network is found in the

journeys to work. Partial analysis of statistical data indicate that this phenomenon is extremely complicated. Along the cases where the longer journeys to work mark the areas of special type of interrelations between urban settlements, there are other ones where the journeys to work represent only the first, passing stage of urbanization. Usually there where the present large industrial plants concentrated in few and larger centres have grown out of formerly dispersed manufactures and /or/ even older industrial trades and handicrafts i.e. in the southern parts of the country, they form a permanent feature of the urban settlement. On the other hand, in the south-eastern, central and northern parts the second type prevails. There the journey to work is perhaps a temporary phenomenon, which will vanish in future when the housing difficulties in the towns are completely overcome and the industrial population moves from the country-side to newly developed residential districts. The western parts of the country, especially Lower Silesia are characterized by almost complete lack of the phenomenon of the journeys to work.

Among many differentiations of towns the sociological ones should be mentioned as of special importance. The present state of research allows for the time being only limited, rather loose conclusions. Four basic types of urban societies are however clearly defined. They result from the general division into young and old communities, varying in the age structure of population, its origin and integration. This basic division is clearly connected, on the one side, with great post-war migrations and, on the other side, with migrations of rural population to urban areas. In consequence these four types of urban societies and of towns in general may be defined, as follows: /A/ towns comparatively well developed and invested, inhabited by population of stabilized age structure, typical for slow and evolutionary urban growth; /B/ towns well developed and invested, inhabited by young population, in majority newly arrived from the country-side, passing through processes of social integration, with age structure typical for new urban centres; /C/ towns underdeveloped and badly invested, inhabited by population forming stagnant urban society, deformed

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by the emigration of the more active elements /of the age group from 20 to 40 years/ and finally /D/ the new towns still under construction with mixed population, in majority of rural origin, passing through processes of social integration, with age structure typical for young urban societies. Type B is characteristic for almost all towns in the western and northern territories recovered after the war. Type A is dominant among larger cities of central and southern Poland, while type C prevails among the small rural towns and also among towns of the old industrial district of Łódź. Type D is connected with new industrial developments of the last ten years especially in the belt around the Upper Silesian Industrial District and in the south-eastern part of the country.

All these differences in the urban network are further complicated by the disparities in the urban buildings, communal equipment and their use. Natural resources as basis for production of the building materials, varying regionally and locally, have deeply influenced the morphology of Polish towns. Areas poor in building stones and richer deposits of clay, suitable for brick-making, have preserved traditions of wooden construction in housing right up to the last war. In result their towns are characterized by low and widely dispersed development. These tendencies were greatly enhanced by the historical processes of settlement. At the present moment - in spite of great changes brought in by the planned effort in reconstruction of towns - the differences are still easily visible. The towns in the areas of the ancient so-called Congress Kingdom /the central and eastern part of the country belonging from 1815 till 1917 to the Russian Empire/ are still poorly equipped and only loosely integrated into coherent urban entities. The towns in southern, especially south-western industrialized regions are on the whole more densely developed /both in percentages of built-up areas and in heights of buildings/ than in any other part of the country but the good quality of its communal equipment and services /sewage, water supply, gas and electric grid, mass urban transport/ ensures here satisfactory, sometimes even good living conditions, while industrial towns of central Poland

/around Łódź and elsewhere/, lacking the necessary communal services, were always characterized by very bad housing conditions.

As already mentioned, the diversified network of urban settlements is changing and the changes are not proportionally or evenly spread. Although there are no areas where urban population diminished /there are however few sporadic cases of small towns with decreasing population/, the whole central part of Poland /the voivodships of Łódź, Katowice, Poznań, Bydgoszcz, Opole and Warsaw/ in comparison with the remaining areas is characterized by slower, below the average, rate of growth. This geographical picture of changes is the opposite /negative/ to the picture of changes up to 1939, especially in the XIXth century when the progress in urbanization was the strongest in the central areas, i.e. in the Upper Silesian Industrial District and around Warsaw, Łódź, Poznań and Bydgoszcz. Moreover the changes as between towns belonging to particular classes of importance and size varied in different regions. In some the development of all towns was parallel, in fact balanced, in others towns of specific class, whether large, middle-sized or small, were growing faster. In result the final distribution of growth was more diversified than at the first glance it would seem to be possible. Generally speaking, the proportional growth of towns of all classes was evident in the territories recovered after the war /in some areas the growth of small towns was even stronger than that of larger ones/; in the eastern voivodships the urban growth to a very high degree was concentrated in the main city and the middle-sized towns developed the most in the south-eastern regions. There were several reasons for these differences. First, the planned industrialization created possibilities of development for specific areas and centres; secondly, the rates of natural growth varied with regions, western and northern ones having the highest indices, finally the differences in housing and, generally speaking, in living conditions diversified the attractiveness of various areas and towns.

One additional fact should also be noted. The southern voivodships of Katowice, Opole and, at least partly, of Cracow

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formed together an integrated economic region and their urban network developed in a characteristically interrelated manner. There three concentric zones can be distinctly distinguished. The central core composed of at present nineteen cities of about 1,5 million inhabitants forms a classical mining and industrial conurbation - the traditional Upper Silesian Industrial District - already quickly slowing down in its well under the national average, growth. The first ring or belt includes areas of the greatest, present development - mining, industrial and urban. This development is not however territorially continuous but takes place in series of middle-sized towns and industrial settlements. Within this area new satellite towns for the overspill population from the central area are under construction. The third zone, the second or outer belt is composed of several large districts all developing around their own large main urban centre of distinct industrial and cultural character. Here the planned industrial development is the strongest and the urban growth also very distinct and well over the average although smaller than within the inner ring.

Similar development takes place in the metropolitan area of Warsaw but there the full stage of decentralized development is not yet reached. So far only two concentric zones can be distinguished - the central core, the city of Warsaw itself, and the suburban zone. But already there are signs of new developments in the outer area - some subregional urban centres such as Plock and Siedlce are showing signs of increased, in comparison to other similar towns, rate of growth.

The complex processes of urbanization especially in their geographical structure result from past migrations and are the basis for future migrations. The study of those migrations is not in Poland sufficiently developed. The statistical data are scarce and often confused. The materials of the National Census from 1960 correlating the places of habitation in 1950 and 1960, when published will certainly add much to our knowledge. Certain conclusions may be reached on the basis of other materials such as data on the journey to

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work or on the place of origin of students at the universities as well as some monographical studies. We already know that those migrations are more complex than it is usually assumed. Parallel to the movements from rural to urban areas there exist strong migrations back to the country-side and between various towns, industrial settlements or agricultural communities. Migrations take also time. This may be observed within such social groups as families and sometimes involves more than one generation.

A cursory analysis of the geographical distribution of migrations shows that in contemporary Poland there are at least three distinct forms of movements from rural to urban areas. First, we have these migrations which are the consequence and an extension of the post-war resettlement, in particular in the recovered territories. The familial and cultural relations between the places of former and present habitation last and influence migrations in spite of distances. There exist, for instance, strong mutual migrations, both temporary and permanent, between the voivodships of Wrocław and of Kielce, Lublin and Rzeszów although all these are not adjacent to the former and are separated by very distinct and attractive migratory area of the Upper Silesian and Cracow Region. The second form of migration is the local one to the developed industrial towns and settlements from the adjacent rural areas. Sometimes the first stage of such migration takes the form of the journey to work. The third form of migration is originated within the areas characterized otherwise by the strong deficit in manpower. There the recruitment has to be organized from more distant places, in particular from those parts of the country where there still exists the overpopulation in agriculture. It should be stressed that this last form is usually an organized one and that economically and socially it is rather costly.

To sum up all these materials and conclusions it is possible to define present trends of urbanization in Poland, as typical for countries of already developed traditions of urban life, passing through a period of a very intensive modern industrialization characteristic for the planned socialist develop-

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ment of the national economy. However they are more rational and structurally more balanced than in other countries. This is expressed in limited growth of the main urban centre - the capital, and in the existence and development of numerous large and middle-sized towns as well as in the vitality of small towns. Moreover there are some specific characteristic elements both in the existing network and its present changes. Those are caused by: /1/ the variability of the geographical environment, especially in the distribution of natural resources, /2/ the varying in time development of the settlements especially from the point of view of the density of the settlement network; this network, based on the distribution of "gród" /burgh/ organisation dating from early Dark Ages, was fully developed in Silesia already in the XIIth, XIIIth and XIVth centuries, in Greater and in Little Poland as well as in Pomerania between XIIIth and XIVth centuries, in Masovia in XIVth, XVth and XVIth centuries and in Podlasie and Mazury in the XVIth or in some areas even in the XVIIIth century; /3/ the strong differences in the functions and sizes of towns as between various regions, due to the development of industrial towns and settlements dating from the second half of XVIIIth century right up to our times; /4/ the division of the whole territory of Poland into parts incorporated for about hundred and fifty years into the three states completely different in their political, social and economic structure and life; and finally /5/ the differences in the population structure of various parts of the country, resulting from the post-war resettlement and recent migrations.

All these problems find their final expression in the regional structure of the urban network both as existing and as dynamically developing. Certain definite settlement regions and in other cases separate zones of settlements may be distinguished. They are: /I/ The Upper Silesian and Cracow Region with already described specific territorial structure; /II/ the heterogeneous zone of the slowed down /below the average/ urbanization including the voivodships of Łódź, Poznań, Bydgoszcz and Warsaw; in this zone the whole metropolitan area of Warsaw is included; /III/ the

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zone of the great intensity of urbanization, including three different types of areas: /III₁/ of balanced development of urban network /the western and northern voivodships/; /III₂/ of the largest growth of middle-sized towns and limited growth or even stagnation of small towns /the voivodships of Rzeszów and Kielce as well as the eastern part of the voivodship of Cracow/, and /III₃/ of increasing concentration of urban population in the main urban centre /the voivodships of Białystok and Lublin/.

IV. Effectiveness of planning policies in the field of urbanization

This, obtained by analysis, rather positive picture of contemporary urbanization of Poland involves certain additional questions: to what degree it is a result of planning policies and in what it is due only to the spontaneous growth, perhaps even impeded by the planned intervention. To answer those questions it is necessary to describe, at least shortly, the proclaimed aims of planning as well as means used for their fulfillment and then to confront them with the results obtained in reality, i.e. with the present position and its inherent trends.

The programme of the balanced economic and social decentralization as well as some kind of unification between urban and rural ways of life were - as is well known - among the principal assets of the ideology of early Utopian socialists, such as Owen or Fourier. Here perhaps it should be reminded that the indebtedness of Ebenezer Howard in his formulation of the "Garden-city" idea to the Utopian socialists is, I understand, fairly easy to trace. This preference for the decentralized development passed through Frederic Engels to the Marxist socialism. Although in the USSR the construction of the socialist society and economy involved the necessity of originally opposed use of a very strong and centralized state organisation, the ideological postulate of decentralization was never abandoned and may easily be found in all the statements and plans concerned with the develop-

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ment of national economies in the USSR and after the II World War in other socialist countries. However the needs for the existence and preservation of big cities, especially national capitals, was in later times tacitly admitted and in some cases their further development ardently supported. Starting from such ideological basis the Six-year Plan for the Development of Polish National Economy prepared and approved in the years 1947-1949 contained on one side a very ambitious programme for the decentralized industrial development involving complete transformation of many backward areas and smaller urban centres and, on the other, the easily understandable in Polish conditions proposals for complete reconstruction of Warsaw which in result of war destruction had been reduced to one-third of its former population and had its central areas and all industrial plants completely destroyed. So already in the plan itself were included two opposite tendencies: for the development of backward or retarded areas and for the very strong concentration of new investments in the capital. As the main and perhaps the only means for the realization of the aims of the plan the erection of new industrial plants was assumed, and all other investments, especially in the services with housing in the first place, were to be secondary, following in the wake of new industries. However the following years 1950-1955 and later, in which the implementation of the Six-year Plan was undertaken and pursued, brought the necessity of some very serious modifications and corrections in the original concept of the plan itself. First, it was found that the proposed programme of production could be achieved in many cases on the basis of modernization of existing plants, without costly new ones. A very definite tendency to build larger and larger plants was also dominating. Then the general difficulties in organizing big constructional enterprises and finding qualified labour for new factories far from the existing centres led to the revision of the formerly adopted locations. Moreover the adopted rule that new services, especially new housing are to follow the new industrial developments led to strong pressures for changes in industrial

locations on behalf of the existing large towns and other concentrations of industrial population. A good example of such exacted shift is the final location in Warsaw of big steel works formerly foreseen for one of smaller towns in the radius of about 100 km from the capital. In result the whole programme for the decentralization of industry and more balanced urban development was seriously reduced or at least transferred to the next years of further future. On the other hand, when it was found that rapid influx of population into the largest industrial and urban agglomerations tends to worsen living conditions and in particular the already very difficult housing conditions certain means for control of the growth of those cities were introduced. To these belong strict limitations in the admittance to large towns of new inhabitants, establishment of correlation between the number of new jobs and that of persons to be admitted for permanent habitation as well as a very strong reduction in the number of government offices and officials. Further modifications of policies were connected with the political changes of 1956. General readjustment of proportions in economic plans led to increase in funds provided for the development of services as well as to certain weakening in the application of the rule: new industries first, then the services. This diminished pressure from the existing agglomerations for new industrial developments. Moreover to correct obvious faults and mistakes of centralized planning it was limited to the macroeconomic problems and many powers and corresponding funds were transferred to regional and local authorities. This evolution, started about 1956, and is still continuing although at somewhat slower rate than was originally provided. At the same time an increase in number of experienced planners led to better prepared, more realistic plans and proposals. However the consciousness that the economic reality of the late years does not conform to the original programme and promises left certain malaise both among planners and in the whole community. This in turn led to critical reevaluation of aims and means in the field of regional planning which is still at present under discussion.

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But in the light of our analysis of the processes of urbanization the results obtained are far from completely negative - in fact they are on the whole positive. The positive assessment of the present position and trends raises a number of important questions, such as: whether in the generally advantageous picture there are no dark shadows and dangerous possibilities for the future? whether changes for the better are big enough? and whether they are stabilized and will last in next years? Let us start with the first question. Among all changes already described or at least enumerated only one - in my opinion - should be considered to be negative. This is the growing concentration of population in the main urban centres parallel to the stagnation or limited development of smaller towns, characteristic for eastern parts of the country. It will be quite difficult to counter it within the framework of present policies. With limited funds provided for the improvement of communal facilities and housing as well as for the development of local transport the concentration of investments and, in consequence, a rule of thumb followed by the central authorities, which have no time for on the whole minor problems, as well as by the regional ones which are rather eager to develop their own capital city. Some may say that with general improvement and progress in the development of national economy a part of investments will become easier and cheaper in future, that the time of smaller towns in these underdeveloped areas will still come. But meanwhile the growing disproportions will gain stronger foundations and achieved changes in the urban network will then become irreversible or at least extremely difficult to overcome. This brings us to the next question: although the general trends are on the whole positive, are they big enough? After all, the observed changes were measured only by relative indices and at that the differences between those indices were not very large, sometimes even quite small. This question is rather difficult to answer as for the assessment of the rate of growth, some measuring standard is necessary. In other words, we should possess

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some more definite idea of the postulated urban network which will be accepted as the major long-term planning aim. Only then we can measure the rate of progress. It is not my object to discuss here various abstract opinions, most of them very subjective ones, concerning the ideal, or at least optimal future structure of urban or even settlement network. I will only venture to express my personal opinion that since the present network of Polish towns is in comparison to other countries less centralized and it is widely considered to be advantageous for economic and social integration and development it should be carefully preserved or even strengthened. From that point of view the present state and trends represent only some kind of precarious balance between centralizing and decentralizing forces. Their stronger stabilization and extension into the future demands careful control of the location policies. These, in turn, more and more seem to depend on improved analysis of all factors involved in planning and mature judgement in decisions.

As a fit conclusion to the whole description of urbanization in contemporary Poland presented in this report, a short commentary on the importance of regional factor in such an analysis seems to be proper. In this description we have arrived at a very complex picture of the geography of urbanization in Poland. The existence of series of urban regions and zones, the fairly strong regionalization of the processes of urbanization are the facts which should be taken into account in the work on a plan for future development of towns and on an ideal, standard model of urban network for Poland. In formulating what should be postulated it is necessary to take into account also the ways and means by which the proposed goal will be reached as well as the starting point, i.e. the existing state of network and the trends in form of present processes of urbanization. All efforts to change radically or even completely the present network evolved within the framework of specific geographical environment and, in result of historical development, will lead to less efficient, both socially and economically, and therefore more costly proposals. However if the

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whole effort in planning is to be concentrated not on the preparation of the idealistic schemes but on the realistic programmes of improvement and rational development of the existing network it becomes obvious that - in face of the established regionalization of the present urban network and the transforming processes of urbanization - the plan and the policies should be regionally diversified or even regionally evolved and defined. On the national level they should be brought together and coordinated in proper balance sheets, such as of ~~population~~ ^{and manpower}, of living conditions, of investment funds, of building organization and materials, and others, similar. In this way, decentralization of planning will guarantee the proper development of urban network, conserving the positive sides of the present state and eliminating the negative ones by careful use and direction of the inherent social and economic processes and trends.

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Table 1
Population and urban population of Poland in the years 1800-1960

Specification	1800 estim.	1850 estim.	1870 estim.	1897- 1900 Gen. Census	1910 estim.	1921- 1925 Mat. Gen. Census	1931- 1933 Mat. Gen. Census	1937 estim.	1946 Prov. Census	1950 Mat. Gen. Census	1960 Mat. Gen. Census
A. Poland within the frontiers of 1937											
Total population	9.0	13.6	16.9	25.1	29.7	27.2	32.1	34.5	-	-	-
Urban population	.	.	.	5.0	.	6.7	8.7	.	-	-	-
Urban population in %	.	.	.	19.9	.	24.5	27.4	.	-	-	-
B. Poland within the frontiers of 1960											
Total population	.	.	17.5	23.748	.	26.618	29.796	32.1	23.930	25.008	29.731
Urban population	.	.	4.1	6.321	.	8.722	10.588	.	7.462	9.605	14.112
Urban population in %	.	.	23.2	26.6	.	32.8	35.5	.	31.8	39.0	48.1

Sources: 1/ for Poland within the frontiers of 1937 - Encyclopaedia of Social Sciences III. Population Table 13, p.633. Central Statistical Office. Concise Statistical Yearbook for 1939.
2/ for the years 1870, within the frontiers of 1960 - compiled by F. Ossowski
3/ for the years 1897/1900, 1921/1925 and 1931/1933, within the frontiers of 1960 - compiled by K. Fudko-Falenska
4/ for the years 1946, 1960. Central Statistical Office. Statistical Yearbook XXI, Warsaw 1961, Table 1 /21/

Table 2

Percentage of urban population in various countries.

Year	U.S.A.	England and Wales	France	Sweden	Denmark	U.S.S.R.	Poland within the frontiers of 1960	Poland within the frontiers of 1937
1850	15.3	50.2	25.5	10.1	20.9	/1851/ 7.8	.	13.6
1860	19.8	54.6	28.9	11.3	23.4	/1863/ 10.6	.	.
1870	25.7	61.8	31.1	13.0	24.9	.	23.2	16.9
1880	28.2	67.9	34.8	15.1	26.1	.	.	.
1890	35.4	72.0	37.4	18.8	33.2	.	.	.
1900	39.7	77.0	40.9	21.5	38.2	/1897/ 11.5	/1900/1897/ 26.6	/1900/1897/ 25.1
1910	45.7	78.1	44.2	24.8	40.3	.	.	29.7
1920	51.2	79.3	46.3	29.5	44.2	/1917/ 15.6	/1921/1925/ 32.8	/1921/1925/ 27.2
1930	56.2	80.0	/1926/49.1	32.5	43.9	/1926/ 17.9	/1931/1933/ 25.5	/1931/1933/ 32.1
1940	56.5	.	/1946/53.2	/1945/42.3	47.4	/1939/ 32.8	/1946/ 31.8	/1937/ 34.5
1950	59.0	/1951/81.0	/1954/56.0	48.0	.	.	39.0	-
1960	.	.	.	/1959/51.0	.	/1959/ 47.9	48.1	-

Sources: Gist and Halbert, Urban Society, New York 1938; W.S. Woytinsky and E.S. Woytinsky, World Population and Production, New York 1953, p.124, and others.