RECENT POPULATION MOVEMENTS IN THE EAST EUROPEAN COUNTRIES

AKADÉMIAI KIADÓ, BUDAPEST

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Studies in Geography in Hungary, 7

Edited by B. Sárfalvi

The authors of this book have set themselves the task of examining how industrialization of the mid-twentieth century influences the agricultural population in the East European countries. The problems raised have been approached from diverse points of view. For example, the features of social restratification have been discussed by Yugoslavian investigators in three studies dealing with the conditions of Croatia, Slovenia and the Adriatic coast, respectively. Two papers by Soviet geographers report on the relationship between industrialization and urbanization processes. Recent demographic changes in the villages of Poland are described by an expert of the related branch of science, while problems of inter-territorial migration in Hungary by a British specialist. Formation of new industrial centres in Hungary and concomitant changes in her rural settlements are specially discussed by two competent papers in the book. The concluding study is an attempt to draw a sketchy outline of the historical and socio-economic restratification of Europe.

Settlement geographers, demographers, etc. will certainly find useful material in the book as it supplies food for thought to everybody interested in the post-war development of the East and Middle European socialist countries.

AKADÉMIAI KIADÓ

Publishing House of the Hungarian Academy of Sciences

Budapest

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Geographical Research Institute
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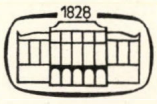

AKADÉMIAI KIADÓ, BUDAPEST 1970

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Printed in Hungary

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INDUSTRIAL DEVELOPMENT AND URBAN-RURAL REDISTRIBUTION OF POPULATION: THE EXPERIENCE OF THE SOVIET UNION

by

V. V. POKSHISHEVSKI

1. The Soviet conception of human geography affirms that the pattern of settlement is defined by the character and the spatial organization of production. Of course there is no exact correlation; the geography of services and other non-material functions always has an important influence on the territorial distribution of population. However, in all parts of any given country, these non-material factors modify the correlation between geography of production and geography of population in the same degree.[1]

2. Thus, it would seem possible to find the correlation, with some variations, between indices of industrial growth and the increase of urban population. Furthermore, we may expect this relationship to apply in all the major territorial units within each country. If this dependence can be determined, it may constitute a very important tool of prognosis for planning purposes by giving us approximate, but nevertheless fairly accurate, estimates of the extent to which the urban population of a given region will increase with a given growth of industry.

The purpose of this paper is to analyse the possibility of such a correlation and to determine its necessary conditions using data for the USSR.

3. Let us designate the volume of industrial production at the beginning of the time period by P_0, the volume at the end of it by P_1, the urban population by U_0 and U_1. Then we may write: $\frac{U_1}{U_0} = k. \frac{P_1}{P_0}$ where "k" is a coefficient indicating the ratio of production growth to population increase.[2] P_0 and P_1 are expessed in terms of gross value of industrial production, this being the index most used in economic statistics of the USSR.[3]

We assume for the sake of simplicity that all industries are concentrated only in urban places and that all population employed in industry lives in these urban places. Later we will note the corrections necessitated by this simplification.

[1] Below in point 7 a correction will be made for territorial units with extremely difficult conditions of living. These corrections are needed, perhaps, only for the USSR and not for other socialist countries of Europe.

[2] The value "k" is associated indirectly with the growth of labour productivity. It is interesting that the index of industrial labour productivity for 1965 is 3·72 (1940 = 1); in construction the index is 3·68, in railway transport, 2·96. The values 3·72 and 3·68 are very near to the value of 3·8 for "k" estimated in the text. But the connection between them is not direct and this "quasi-coincidence" should not be overrated.

[3] The growth of industrial production may also be estimated by the value of added production. If we were to use for this purpose the number of employed persons, it would be necessary to make corrections to changes in industrial labour productivity.

The sources for the further estimates are the data of the 1959 Census Volume, "USSR", and the Statistical Annual, "National Economy of USSR in 1965".

4. In the years 1940–1965 the volume of gross production of industries in USSR increased almost 8 times, the production of 1965 being 791 per cent of that of 1940. For almost the same period, January 17, 1939—January 1, 1966, the urban population increased from 60·4 to 124·8 mill. persons, i.e. 2·07 times. Thus the approximate value of the "k" for the USSR as a whole is:

$$k \sim \frac{P_1}{P_0} : \frac{U_1}{U_0} \sim \frac{7{\cdot}91}{2{\cdot}07} \sim 3{\cdot}8$$

5. In Tables 1 and 2 the ratios $\frac{P_1}{P_0}$ and $\frac{U_1}{U_0}$ are checked for: (1) the Union Republics of the USSR, excluding those occupied by German-Nazi troops during World War II; (2) the Autonomous Soviet Republics, also excluding the ones in which the events of the war period might have caused a considerable deviation.[4]

TABLE 1

Union Republics	Urban population (in mill. pers.)		Ratio $\frac{U_1}{U_0}$	Increase of gross industrial production for 1940-1965 P_1/P_0	Ratio $\frac{P_1}{P_0} : \frac{U_1}{U_0}$
	17. Jan. 1939 (U_0)	1. Jan. 1966 (U_1)			
Russian SFSR	36·30	75·07	2·05	7·15	3·5
Uzbek SSR	1·47	3·73	2·54	6·30	2·5
Kazakh SSR	1·69	5·79	3·42	12·01	3·5
Georgian SSR	1·07	2·14	2·00	5·47	2·7
Azerbaijan SSR	1·16	2·33	2·00	4·02	2·0
Kirghiz SSR	0·27	1·02	3·79	10·36	2·7
Tadjik SSR	0·25	0·92	3·57	6·64	1·9
Armenian SSR	0·37	1·21	3·18	12·36	3·9
Turkmen SSR	0·42	0·94	2·23	4·51	2·0

In Table 1, the value "k" in the last column varies from 1·9 to 3·9, i.e. is almost everywhere lower than the average value computed for the USSR as a whole. This may be easily explained by the fact that in those western Soviet Republics which joined the USSR later, and are not included in Table 1, the ratio between $\frac{P_1}{P_0}$ and $\frac{U_1}{U_0}$ was higher because at the time of reunion they had not very industrialized urban places. Thus, the growth of industrial potential in the urban places of these republics took place without great migration from the rural areas by the transfer of people employed in commerce, in handicraft

[4] The smaller territorial units ("oblasts" in RSFSR, Ukrainian SSR, etc.) are not suitable for analysing the ratio between $\frac{P_1}{P_0}$ and $\frac{U_1}{U_0}$ because their limits changed several times during the period under study.

industries and other such pursuits to work in the big plants within the urban centre itself.[5]

TABLE 2
(indices as in Table 1: U_1 and U_0 in thousands)

Autonomous republics	U_0	U_1	$\frac{U_1}{U_0}$	$\frac{P_1}{P_0}$	k	Urban population (per cent)	
						1939	1966
Bashkir ASSR	540	1672	3·10	26·00	8·4	17	38
Tatar ASSR	614	1486	2·39	17·00	7·1	21	42
Udmurt ASSR	312	733	2·29	12·26	5·3	26	44
Yakut ASSR	112	352	3·18	10·23	4·8	27	49
Chuvash ASSR	131	368	2·81	12·98	4·6	12	24
Mari ASSR	76	237	3·10	12·41	4·0	13	28
Daghestan ASSR	220	460	2·10	5·91	2·8	22	30
Buryat ASSR	167	334	2·00	4·98	2·5	31	41
Mordvinian ASSR	82	297	3·62	7·08	2·0	7	18
Abkhazian ASSR	88	188	2·14	4·09	1·9	28	37
Nakhichevan ASSR	23	46	2·00	3·08	1·0	16	30
Adjar ASSR	76	138	1·82	2·28	1·3	38	45
Karakalpak ASSR	58	197	3·34	3·10	0·9	12	27
Komi ASSR	29	624	21·40	10·78	0·5	9	59

The values of coefficient "k" vary in Table 2 more than in Table 1, from 0·5 to 8·4, and with this variation it is impossible to speak of a stable degree of dependence. There are even inversions, $k < 1$, i.e. the growth of urban population is faster than the increase of industrial production, especially in the Komi ASSR.

6. As a general conclusion from Table 2 we may note that (1) in small territories the deviation of "k" may be more than in big ones; (2) the magnitude of the values of "k" undoubtedly depends to a great degree on the character of economic development, particularly the composition of industries.

7. The second conclusion is especially important, and is easy to confirm. The value of "k" is highest in the republics with industries absorbing the least manpower, such as petrochemical and chemical industries in the Bashkir and Tatar Autonomous Republics, or where the volume of the products is very high, and in the diamond and gold industries of the Yakut ASSR, or where manufacturing is highly mechanized and automated as in the machine building of the Chuvash and Udmurt Autonomous Republics. It is also very important where growing industries are located outside urban places; for example, many of the gold mines in the Yakut Autonomous Republic, oilfields in the Bashkir or Tatar Autonomous Republics where the settlements often have not achieved urban status.

At the opposite pole are the republics where industries with low value products are developed and where mechanization is also low, as in the coal and

[5] Indeed the estimate of "k" for the Ukrainian SSR gives the value 4·0, for the Belorussian SSR — 5·4, for the Moldavian SSR — 8·0, for the Estonian SSR and Latvian SSR — 9·7, for the Lithuanian SSR even 11·2.

timber industries of the Komi ASSR. In these republics the rate at which towns are formed from rural places is more rapid than the average in the USSR, and urban status is often given to settlements with small populations, which are not highly industrialized.[6]

It is significant that inversions, $k < 1$ in Table 2, are observed in the republics with extremely difficult living conditions. There, the productivity of industrial labour is less, and a larger part of the population living in urban places is occupied in services (Pokshishevski, 1967).

It is also useful to compare the value "k" with the figures in the two right-hand columns of Table 2. For instance, this value is sometimes particularly small where the level of urban population was low in 1939, for example in the Komi ASSR where most urban places were formed after 1939.

8. The growth of urban population, $R = U_1 - U_0$, is not equivalent to the flow to urban places of former rural inhabitants which we will designate R_m, i.e. "R migrant". There are two further sources for this growth: natural increase R_n, i.e. "R natural" and the growth of the urban population as the result of some rural places receiving urban status, R_a, i.e. "R administrative". In Table 3 one may see the proportion of these elements for inter-census periods[7] (Davidovich, 1959).

TABLE 3

Periods	Growth of urban population (R)	Its sources		
		Natural increase (R_n)	Rural places receiving urban status (R_a)	Migration (R_m)
A. Million				
1926—1939	29·8	5·3	5·8	18·7
1939—1959	39·4	~ 8	~ 7	~24–25
B. Per cent				
1926—1939	100·0	18	19	63
1939—1959	100·0	~20	~18	~62

In the period 1959–1966, the growth of urban population in the USSR was 28 million. Since in this period the birth rate and natural growth decreased, we may suppose that the rate of R_n also decreased. Probably new urban places were formed more rapidly than in 1939–1959, especially in comparison with the war years when this process was hindered; the migration flow in towns and

[6] For the Karakalpakian ASSR a certain role is played by the more "liberal" rules for forming urban places from rural ones under the laws of the Uzbek SSR of which the Karakalpak ASSR is a part (see, for example, Lizogub, 1966).

[7] A fourth source may be theoretically the flow to the cities of people coming from abroad. However, in the USSR as a whole international migrations form an insignificant quantity and may be disregarded. Only for certain individual republics should it be taken into account (e. g. the repatriation to the Armenian SSR, where an important part of the immigrants settled in the cities). Domestic, interrepublican, interregional or interoblast migration is a very important source for the growth of urban population. It is necessary to take careful account of it when studying the various territories separately. But here the rates R, R_n, R_a and R_m are estimated only for the country as a whole.

cities also increased. The recent proportions of R_n, R_a and R_m may be estimated as 15, 20 and 65 per cent of R, i.e. $R_m = 2/3R$.

9. It remains to estimate how much of R_m is made up of agricultural population. In the framework of this paper, the author cannot analyse this problem in detail, including the relationship between indices of income level in rural and urban places and migration, etc. But *a priori* one may suppose that the greater part of R_m is formed by persons formerly occupied in agriculture—due to mechanization and to the growth of services in rural places which permit transference of the population to other spheres of economy.[8]

10. This paper also has a certain importance for explaining the changes in the population occupied in agriculture. However, the increase of the urban population is not equal to the exodus of the rural population and for the USSR as a whole $R_m = 2/3$, $U_1 - U_0$. Some corrections are also necessary in understanding the coefficient "k". For the numerator to be related only to the population flowing to urban places from rural ones, and not to all urban population, we must multiply "k" by 3/2. Thus the average ratio $\frac{P_1}{P_0} : R_m$ for the USSR becomes $\frac{3{\cdot}8 \times 3}{2} = 5{\cdot}7$. Since $R_m = R - (R_n + R_a)$, regional variations in the natural increase of the urban population and the differences in the administrative policy in forming urban places from rural ones must have some influence on the value of "k" in different regions.

11. The whole problem of determining the correlation has thus great regional variations. For a country as big as the USSR, the average correlation can only serve as a reference point for measuring deviations. For other socialist countries, where the geographical differences are fewer, the indices for each region would probably be nearer to the average. In these countries it is possible to define several local types and to determine for each type the measure of deviation from the average correlation ratio.

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[8] The migration of rural population to urban places in the USSR is often preceded by the migrants receiving in their home villages "urban" profession, such as chauffeur, building worker, shop assistant, etc., and then going first to an adjacent small town. Afterwards they may go to a great city or to some great construction project.

THE EFFECTS OF INDUSTRIALIZATION ON THE LOCAL DISTRIBUTION OF MANPOWER IN CROATIA

by

I. CRKVENCIC

During the socialist development of Yugoslavia since the Second World War, agriculture has been abandoned to a great degree and the rural labour force has diminished considerably. During a relatively short period of only 13 years (1948 to 1961) the Yugoslav village was abandoned by over 2 million people or about 500,000 more than the natural increase of the rural population.[1]

During the socialist period this numerical decrease in the Yugoslav rural population has been the consequence of three causes: (1) the inherited rural overpopulation which was worse in 1948, (2) the industrialization of the country which created new jobs and the possibility of employing a great part of labour force in non-agrarian activities, particularly in secondary industries, and (3) the socialization of agriculture which has led to the transfer of considerable amounts of individually owned farm land to collective farms.

These socio-economic processes have markedly changed the structure of the labour force, chiefly in favour of an increase in secondary and tertiary activities, and also its local distribution. This report will present only one aspect of the local distribution of manpower in Croatia, namely the relationship between places of residence and employment, or the commuting of workers. It is hoped that this will contribute to the knowledge of the differentiated development of the rural exodus in Yugoslav regions because the present distribution of manpower is to a considerable degree the consequence of the postwar abandonment of farming.

The Yugoslav census of 1961 contains data on the labour force in communal areas in the following categories: (a) residing and employed in the same settlement, (b) employed outside the place of residence but in the same communal area, and (c) employed in other communal areas. These data were collected to discover the number and local distribution of daily commuters.[2] Unfortunately the census does not show the number of workers employed in one communal area and residing in others. Thus the available statistical data only permit the determination of commuting by residents of a communal area to places of employment, or daily emigrant commuters, but not commuting in the opposite sense or the daily immigrant commuters.

[1] Livada, S. (1965) Mješovita gospodarstva u Jugoslaviji (Mixed Homesteads in Yugoslavia), *Sociologija sela*, **7–8**, p. 27, Zagreb.

[2] Popis stanovništva 1961 (National Census of 1961), Document EC No. PS–1–61/429, *Savezni zavod za statistiku*, Belgrade, 1964.

TABLE 1

The places of employment of the Croat labour force in 1961[3]

Sex	Total Number	Employed in all Croatia					
		The place of residence		The home communal area but outside the place of residence		Other communal areas	
		Number	%	Number	%	Number	%
Both	1,954,269	1,582,960	81	136,800	7	234,509	12
Male	1,220,157	939,524	77	97,610	8	183,023	15
Female	734,112	638,668	87	29,368	4	66,876	9
Croatia without cities with intra-urban commuting							
Both	1,600,219	1,392,191	87	112,015	7	96,013	6
Male	1,001,144	820,938	82	90,103	9	90,103	9
Female	601,075	571,021	95	24,043	4	6,011	1

Table 1 shows that in Croatia in 1961 as much as 81 per cent of the labour force were employed in their places of residence, which means that daily commuting was generally small and involved only 19 per cent of the labour force.[4] The male labour force commuted more (23 per cent) than the female workers (13 per cent). Commuting to other communal areas was stronger than to other parts of the home communal area.

If, however, the numbers of the labour force in the four largest urban districts (Zagreb, Rijeka, Split and Osijek), characterized by strong intra-urban commuting, are disregarded, the picture for the rest of Croatia is somewhat different.

In the rest of Croatia as many as 87 per cent of the labour force work in residential communal areas and only 13 per cent commute daily. The number of the commuters is considerably smaller, particularly of the female workers (5 per cent). The number of workers commuting within communal areas is bigger (7 per cent) than of those commuting between communal areas (6 per cent).

The intra-urban commuting of the labour force is characteristic only for the four above-mentioned biggest urban districts. It differs markedly from the situation in the country as a whole. Table 2 shows that 59 per cent of the labour force reside and work in the same communal area, and 40 per cent of them commute to jobs in other communal areas chiefly of the same urban district. Only a small part of the urban labour force work in one and reside in another

[3] Popis stanovništva 1961 (National Census of 1961), Document EC No. PS–1–61, *Savezni zavod za statistiku*, Belgrade, 1964.

[4] The term "daily commuter" covers all workers employed outside their places of residence without regard to communal area borders. The Yugoslav communal areas are considerable territorial units (in Croatia with an average of 17,000 inhabitants and 27 settlements), and limiting the term daily commuter only to workers employed outside the communal area of their residence would produce a wrong picture of the daily commuting. We underline that this table also covers the whole farm labour force and that all workers on privately owned farms are shown as labour employed in their place of residence.

TABLE 2

The labour force of the four largest urban districts in Croatia in 1961[5]

Sex	Total number	Employed in all Croatia					
		The communal area of residence		The own communal area but outside the place of residence		In other communal areas of the own urban district	
		Number	%	Number	%	Number	%
Both	352,050	203,524	59	6,395	1	141,089	40
Male	219,013	127,088	58	4,648	2	86,700	40
Female	133,037	76,436	59	1,747	1	54,389	40

part of the same communal area of the urban district and these are chiefly at the outskirts of the city.

If the numbers of the labour force commuting within the largest four urban districts of Croatia are disregarded, the number of the daily commuters (225,537) in the rest of Croatia (Table 1) approximates that of employees and workers (230,883) employed outside their places of residence (Table 3), which would mean that daily commuting is done chiefly by the people who in the Yugoslav census were classed under the heading of "Workers-employees".

TABLE 3

Employees and workers employed in various activities outside their places of residence in Croatia in 1961[6]

Total number of people employed outside their places of residence	Activity groups[7]					
	Primary		Secondary		Tertiary	
	number	%	number	%	number	%
230,883	19,974	9	146,399	63	64,518	28

Table 3 also shows that the daily commuting is done by people mostly employed in secondary activities (63 per cent) and then in tertiary activities (28 per cent). Only a small number of the daily commuters (9 per cent) are employed in primary activities.

The daily commuting of the labour force differs from region to region. To determine the present differences the communal areas have been grouped into types according to these two criteria: (1) the places of employment of the labour force of the communal areas, and (2) the occupational structure of the commuters of the communal areas.

[5] Popis stanovništva 1961 (National Census of 1961), Document EC No. PS–1–1961, *Savezni zavod za statistiku*, Belgrade, 1964.

[6] Popis stanovništva 1961, Radnici i službenici po mjestu rada i djelatnosti (Table 2–04) (National Census of 1961, Workers and Employees with their places of employment and their activities), *Zavod za statistiku SR Hrvatske*, Zagreb.

[7] The primary activities comprise the labour force employed in agriculture, forestry and fishery; the secondary in mining, industry, construction and trades; and the tertiary in the remaining activities.

Since in this report the classification of communal areas into types rests exclusively on quantitative data, this classification has been based on the percentage of the labour force employed outside their places of residence and on the percentage of daily commuters employed in various activities. Based on these two indicators, the communal areas have been grouped into the following types:

(A) Communal area types based on the location of the labour force and on the degree to which commuting is developed.
  (1) Communal areas with little developed daily commuting. Up to 9 per cent of the labour force work outside their places of residence.
  (2) Communal areas with moderately developed daily commuting; 10 to 29 per cent of the labour force work outside their places of residence.
  (3) Communal areas with well developed daily commuting where 30 per cent to 49 per cent of the labour force work outside their places of residence.
  (4) Communal areas with local commuting of the labour force within the urban district.
  (5) Urban communal areas with much commuting of the labour force but chiefly within the communal areas of the urban district and within the places of residence.

(B) Communal area types based on the proportion of the daily commuters employed in various activities.
  (I) Communal areas where the daily commuters employed in primary activities dominate numerically with
    (a) 76 per cent and more
    (b) 50 per cent to 75 per cent
    (b–1) Among the rest of the daily commuters those employed in secondary activities dominate numerically.
    (b–2) Among the rest of the daily commuters those employed in tertiary activities dominate numerically.
  (II) Communal areas where the daily commuters employed in secondary activities dominate numerically with
    (a) 76 per cent and more
    (b) 50 per cent to 75 per cent
    (b–1) Among the rest of the daily commuters those employed in primary activities dominate numerically.
    (b–2) Among the rest of the daily commuters those employed in tertiary activities dominate numerically.
  (III) Communal areas where the daily commuters employed in tertiary activities dominate numerically with
    (a) 76 per cent or more
    (b) 50 per cent to 75 per cent
    (b–1) Among the rest of the daily commuters those employed in primary activities dominate numerically.
    (b–2) Among the rest of the daily commuters those employed in secondary activities dominate numerically.
  (IV) Communal areas where the ratio of daily commuters in the above three categories do not amount to 50 per cent of all total daily commuters.

(a) The numerical differences between the commuters employed in individual activities are smaller than 20 per cent.

(b) The numerical differences between the daily commuters employed in individual activities are bigger than 20 per cent.

The territorial extent of the daily commuting can be examined (a) according to the place of employment and (b) according to the activities of the daily commuters.

(a) In Croatia, of 234 communal areas (1961)[8] as many as 46 per cent belong to the type of *little developed daily commuting*, and 44 per cent to the type of *moderately developed daily commuting*. The latter group was dominated by (55) communal areas where the daily commuting to jobs outside the areas was greater than within them. The communal areas with *well developed daily commuting* amounted to only 6 per cent of all the areas in Croatia, and their group was dominated by those areas (13) where the commuting was greater between the areas than within them. Second place was taken by the communal areas (2) where the daily commuters to jobs within the areas was greater than between them. Seven communal areas incorporated in the four above-mentioned largest urban districts showed the characteristics of intra-urban commuting and they are therefore separated into a special communal area type.

(b) The daily commuters employed in *primary activities* dominate numerically only in 3 per cent of the communal areas, and those in *secondary activities* in as many as 60 per cent. The last group contains 34 communal areas where among the daily commuters those employed in secondary activities dominate numerically with 76 per cent and more and 108 communal areas where among the daily commuters those employed in secondary activities dominate numerically with 50 per cent to 75 per cent. The daily commuters employed in *tertiary activities* dominate numerically only in 12 per cent of the communal areas, with 76 per cent or more in 9 communal areas, and with 50 per cent to 75 per cent in 20 communal areas. The communal areas where the daily commuters in the specified categories do not amount to 50 per cent of all the daily commuters cover the rest (25 per cent) of these territorial units.

No attempt is made in this paper to analyse the local distribution of daily commuters in detail, but only to stress the most outstanding regional differences and to point out the principal areas of well developed daily commuting.

Three principal regions of well developed daily commuting stand out, and they occur around the three biggest cities in Croatia.

Zagreb is surrounded by the biggest number of communal areas with well or moderately developed daily commuting, particularly in the immediate neighbourhood of the city, and in the region consisting of the Croat Zagorje, the upper Drava valley and Medimurje. Except for three communal areas with little developed daily commuting in the peripheral part of Medimurje, all the communal areas of this region show moderately or well developed daily commuting. In all the communal areas near Zagreb the daily commuting between communal areas dominates and is chiefly directed towards Zagreb. Also in all

[8] In 1961 in Croatia there were 245 communal areas but in this report the 11 communal areas of Zagreb are included in a unified city district.

the communal areas of the Zagreb region without exception the daily commuters employed in secondary activities dominate numerically. In absolute terms, the Zagreb region shows the most developed daily commuting because the number of daily commuters is considerable in all communal areas of the region.

In the Zagreb region the daily commuting is caused by both the agrarian overpopulation of the region and by the complex functions of Zagreb as the capital city of Croatia whose leading industrial and commercial role is significant not only for Croatia but for all Yugoslavia.

Rijeka takes second place as an important centre surrounded by communal areas with moderately or well developed daily commuting, particularly in its immediate neighbourhood, followed by Istria, the Gorski Kotar, the nearby islands and the northern part of the Velebit littoral. Except for two communal areas with little developed daily commuting, all the communal areas of the Rijeka region show moderately or well developed daily commuting. Rijeka itself and the three adjacent communal areas are so closely linked by their labour force that they are characterised by intra-urban commuting. In contrast to the Zagreb region, the Rijeka region is not numerically dominated by daily commuters employed in secondary activities. Here the activity structure of the daily commuters is much more complex, and the share of tertiary activities is bigger. The absolute total number of daily commuters is smaller than in the communal areas around Zagreb, which can be seen from the commuters' numbers of the individual communal areas.

Daily commuting in the Rijeka region is the consequence of relatively unfavourable natural conditions not only for the further development but even for the maintenance of agricultural production. This is related to the easier conditions of employment in non-agrarian jobs, and to the role of Rijeka as the principal Yugoslav port and as a strong industrial and administrative centre. The relatively greater number of daily commuters employed in tertiary activities is obviously the consequence of the touristic importance of the region.

The third in the order of centres surrounded by communal areas with moderately or well developed daily commuting is Split. Its region covers the Croat coastal region from Sibenik to Makarska with the neighbouring islands. Except for three communal areas with little developed daily commuting in the interior of the region, all the communal areas show moderately or well developed daily commuting. The communal areas where the number of commuters employed in secondary activities dominate are numerous but there are also communal areas where the employees in tertiary activities dominate numerically, although they are fewer than in the Rijeka region. Otherwise the daily commuting is absolutely more developed in the Split region than in the vicinity of Rijeka, as can be seen from the numbers of daily commuters in the individual communal areas.

Daily commuting in the Split region is the reflection of the city's function as a principal administrative centre of the central and southern parts of the Croat coastal region, and of its maritime and industrial importance. Furthermore, in the surrounding coastal and island parts of the region, the rural population are abandoning farming in great numbers and seeking employment in non-agrarian activities.

In addition to the three mentioned principal regions of well developed daily commuting, the map shows two more regions with relatively less developed daily commuting: they are the regions of Osijek and Zadar.

The Osijek region covers the lowland of eastern Croatia and contains only communal areas with moderately developed daily commuting. There is no communal area where commuting is well developed and the commuters are chiefly employed in secondary activities. Because of its great economic potential and its administrative importance for a considerable part of eastern Croatia, Osijek shows well developed intra-urban commuting.

Devastated during the Second World War and connected by rail with the inland as late as 1967, Zadar has not yet developed its industrial potential to a degree requiring intra-urban commuting, but the communal areas around the city show well or moderately developed commuting because the rural population is abandoning farming in the Croat coastal region. In the Zadar region most of the daily commuters are employed in tertiary activities.

In the rest of Croatia, the farming of regions with only moderate daily commuting is perceptible, particularly around Slavonski Brod, Sisak and Karlovac, i.e. near smaller administrative and industrial centres which are still in the developing stage. Otherwise the rest of Croatia counts communal areas with little developed daily commuting, particularly in northern Croatia, the Kupa valley, the Kordun, Lika and part of the Dalmatian hinterland, the Zagora. These are the areas where employment opportunities for considerable numbers of the population in non-agrarian activities have not yet been created.

THE MIGRATION OF POPULATION AND THE INDUSTRIALIZATION OF SLOVENIA

by

VI. KLEMENČIČ

Industrialization is accompanied by the decay of the old classic agrarian structure. This decay finds its expression in the demogeographic, economic, and physiognomic elements of the structure of space. The process is conditioned by several factors: the growth of industry, its spatial distribution and its level of technical development, the development of communications, and the technical development and commercialization of agriculture. These factors are later reinforced, particularly at a higher stage in the formation of an industrial society, by another: the development of tertiary activities, including particularly trade and handicraft-services as well as production which are developed in response to the constant increase in the demands of consumers. This process of decay in the demogeographic, economic, and physiognomic elements of the old agrarian structure and the gradual prevalence of the same elements of the industrial structure also depend on the character of the particular agrarian structure, including the social-landownership structure, the size of land parcels, the spatial distribution of land parcels, and natural conditions. In this process East-European countries differ significantly from those of West Europe. In West European countries, the development of the technological, economic, and social effects of industrial techniques has been spread over a longer period. Besides, these effects have developed in a different order. Owing to a different relationship of the elements of technological development in industry, agriculture, and communications, differences are also apparent in the structure of the individual phases of the decay of agrarian society and of the formation of industrial society.

In West European countries, the elements of industrial technique first came to the fore in industrial production, next in communications, and finally in the agricultural economy. In East European countries, where industrialization is a comparatively new phenomenon and has come to the fore as the predominant economic branch only in the decades after World War II, the possibility of economic parity with West European countries permits the development of industrial technique in all components of industry, in communications and in agricultural technology at the same time.

Each phase in the decay of the old classic agrarian structure and in the advance of the industrial structure is accompanied by specific types of migration. These can be regarded as the regulators of the gradual decrease of the agrarian overpopulation and at the same time as a factor in the disappearance of old and the appearance of new social groups which differ among themselves with respect to mobility, with respect to their role in production, and their whole way of life. Migrations also open up previously self-contained agra-

rian areas. Migrations make for the reduction of agrarian overpopulation, for changes in the structure of families, and for changes in the attitude of families towards the agrarian economy and land. And migrations likewise make for the formation of a semi-agricultural society in a great variety of forms.

In a purely agricultural society the family is considerably bigger and composed of three groups: close members of the family (landlord, his wife, children, parents), family relatives (unmarried brothers or sisters, uncles, aunts), and hired labour (farm-labourers).

With regard to the degree of reliance of the landlord's family on land and on the agricultural economy, we identify purely farming families (all members of the family are employed in farming, income outside farming is negligible in comparison with the total income of the family), and a series of transitional forms of mixed structure—families where only a younger member of the family is employed outside farming—usually the younger son who is not intended to be the heir to the farm; families where all grown-up sons are employed outside farming; families where the landlord as well is employed outside farming; and families where women in addition to men are employed outside farming. Families can also be classified according to the age-structure of their members; thus families composed of mostly old members, families composed of middle and old generations, and families composed of persons of all generations. The various forms of agricultural families and the different forms of dependence on the land reflect the various phases of the decay of the old agrarian classical structure, and are accompanied by the various types of migrations.

The population emigrates for good, for the season, or migrates daily from the place of living to the place of work. In the initial phase of the decay of the agrarian structure and of the opening of the agrarian countryside in the direction of industrial areas, seasonal forms of migrations are predominant. Adult members of big families of all three types (close members, relatives, and hired labour) seek additional income in seasonal work in forestry, the building industry, or in seasonal industries. During this phase, the structure of the family with respect to both age-structure and reliance on land does not change significantly, and the income from seasonal work which is combined with employment at the time of the highest agricultural production (Arbeitsspitzenzeit) is no more than a supplement and a comparatively minor part of the total income of the farming family.

The second phase is already accompanied by the daily migration of labour to more or less distant places of employment, as well as by permanent emigration of population. However, besides the permanent daily migrations we still find various forms of seasonal emigration. This is a phase during which the agrarian territory comes closer to the place of employment, or rather, when the influence of the employment centres is more intense in a variety of ways. During this phase the agricultural hired labour emigrates for good, individual members of agricultural families are included in the daily migration, mostly in areas which have traffic connections with the employment centres sufficiently good to allow, in addition to work on the land, daily travelling and work outside of farming. On such territories younger members of the farming family who are not planning to take over the farm are increasingly less reliant on land. Older people find it more difficult to take part in the daily migration, in work out-

side farming, or to leave for good, but the family or property do not play any part in this.

On territories farther away from the employment centres, the population is permanently employed in the building industry, in other kinds of industry, as well as in various other economic branches, and workers return home weekly, monthly, or at longer intervals.

The inclusion of agrarian territory in the sphere of daily commuting (Pendelwanderungsbereich) means at the same time the alienation of families with agricultural income from the land. This is heightened by the intensification of industry, particularly with the inclusion of agrarian regions in urban areas with highly developed and varied industry. In areas of daily migrations, which are hierarchically centralized and which have a number of secondary centres in addition to the main one, non-agrarian economic branches offer employment to workers with most kinds of qualifications, of all ages and both sexes, and for that reason the occupational re-orientation of families with small land holdings is extremely rapid. Usually, in a very brief interval of time, the first to find employment is the hired labour and the adult members of the farming families who are not planning to take over farm, next the landlords and the heirs, and finally a part of women. These are the areas of daily commuting, where the dependence of small land-owners and their families on land is decreasing. On such territories all adult members of the farming family are employed outside farming, and a large part of the land is in the hands of non-farming families.

The character and the role of migration on territories with only one industrial centre and one-sidedly developed industry, however, are wholly different. Here only one part of the population with a particular professional qualification and one sex find employment (in regions with heavy industry, or in mining areas, men only), and so the dependence of families with farming income on land is greater. Likewise the number of adult members working on the land is bigger, and for that reason the families with small holdings usually remain half dependent on agriculture.

Social changes in the farming population and the intensification of daily commuting in the developed areas are due to the well-developed means of communication (a dense network of traffic arteries—railways and roads, with a densely developed and frequented railway, bus, and car traffic). In such areas, apart from the trends in permanent migrations from the agrarian hinterland towards the town and more intensive daily commuting of population of various professions and of both sexes we can also trace the reverse trend of permanent migration of the town population to the countryside. Through building new residential quarters (in blocs or villas) or by adapting farming homes in country areas which have good traffic connections with the employment centres, this kind of population plays a role in the trend of daily commuting and in the transformation of agrarian settlements.

In this individual phase and regionally, the industrialization of Slovenia was accompanied by various types of migrations. In the formation of these types, a decisive role was played by the land tenure system, by the geographical variety of Slovenia, by the effects of industrialization and by the influence of Western Europe and other continents, as well as by the centres of the borderland

(Trieste, Graz). Small land holdings, predominantly estates with 2–4 hectares in sub-Pannonian Slovenia and in the regions near the seaside, and from 5 to 10 hectares in the Alpine and sub-Alpine territories and on the woodland of Karstic Slovenia—with small and scattered and widely distributed parcels of land, even in the pre-industrial period were not providing a minimum subsistence for the large majority of farming families.

Since the land-ownership structure has not changed until recently and since such property offered no opportunities for the development of modern farming, mechanization, and a market economy, most of the areas in Slovenia have retained a multi-crop system; and there has been only partial re-orientation of regions closer to towns or traffic arteries. The industrialization of Slovenia, which started in a very modest way in the middle of the last century, did not provide enough new jobs to meet the natural increase of the population; hence most of the increase of male labour coming from the farming families had to look for work by permanent or seasonal emigration into foreign countries.

In the period before the building of the railway, interregional seasonal employment, as well as home handicrafts, provided additional income for a large part of the farming population. Owing to the big physical-geographical differences, the inhabitants of the sub-Pannonian region which is largely hilly and devoted to vine-growing, and those of the mountainous stock-breeding pre-Alpine territories, for instance, found work at the busy season on the plains and in the basins. Lower karstic territories closer to the sea, and the woodland karstic territories of Notranjska got labour by means of seasonal migration at the time of hay-making. Similar seasonal migration took place at the time of intensive work in the fields throughout Slovenia and on its borderland.

Industrialization in Western Europe and the related building of railways resulted in the seasonal migration of population from the karstic areas of Notranjska and Dolenjska in winter to the woods in Slavonia and Croatia to prepare oaken slabs for railways. Most of the men, older than 16 and capable of work, took part in the movement.

By the end of the 19th century this form of seasonal work had been largely eliminated because of the development of more advanced techniques. Permanent and seasonal migrations in the second half of the 19th century were oriented towards the rapidly developing Rhineland, to Austrian Styria, particularly towards Graz, but also towards Trieste, and were combined with emigration to the USA. Seasonal farming work had been very much restricted by the end of the 19th century owing to modest advances in the technology of the farming production. This was largely the result of permanent emigration or seasonal migration to non-farming work. Only the hop-picking in the valley of the Savinja river has been preserved to the present day. The direction of seasonal migrations of farm labourers from Prekmurje, which before World War I was intensively oriented towards Hungary, changed in the inter-war period towards France and Germany.

Up to World War I and in the inter-war period, Slovene industry developed too slowly to have a major effect on migration trends from the agrarian parts of Slovenia. The modest industry in Gorenjsko, on the territory of Ljubljana, Maribor, Celje, Ravne and the coal-mining in Zasavje, and mining in Mežica could barely offer employment to the natural increase of

the adult population of their own respective territories. The beginning of the formation of the gravitation centres for the daily migration of labour occurred in the period between the first and the second wars. Daily commuters from the immediate surroundings of the employment centres were mostly members of farming families who were not to be the heirs of the family farm. In Slovenia, owing to the above-mentioned emigration to the USA in the first years after World War I and to Western Europe during the last years before the beginning of World War II, agrarian overpopulation was growing. In 1931 the density of the farming population per 1 km² of arable land (fields, gardens, orchards, vineyards) was 190, or per 1 km² of all farming surface 84 people. Moreover, the percentage of the population in farming at the beginning of World War II was more than 70 per cent.[1]

During this period, land was cultivated which was ill-suited for farming. The poorer farmers were acquiring land by the primitive method of burning down forest. Productivity was low, the multi-crop, subsistence system was predominant, work was done manually, and artificial fertilizers were hardly used at all.

The end of World War II meant in Slovenia the beginning of the decay of the agrarian society. Rapid economic development, accompanied by rapid industrialization and the development of other non-agrarian activities, is related to new and regionally differentiated migration trends. Seasonal and permanent migrations of unqualified agrarian people from the agrarian areas, and the daily commuting of less qualified labour from the closer surroundings of the employment centres were replaced in the first postwar years by permanent migration from the whole of agrarian countryside towards the employment centres and daily commuting which, apart from the most peripheral and mountainous regions, have affected all of Slovenia.

During recent years, however, the migration of town population into the surroundings of towns is growing; seasonal migrations to Western Europe are continuing, and migration to Slovenia from other parts of Yugoslavia is beginning.

The development of migration trends is also accompanied by the improvement of qualifications and the decreasing reliance of the migrant-members of farming families on the land. Already in the first postwar decade most of the adult population under forty that was no longer bound to the soil moved into towns and town regions. In the countryside, those farming families remained who owned land and had children who were intended to be heirs. The first to migrate in the first decade after the war were the grown-up sons of farmers, next the landlords, and during recent years also the daughters, and in places closer to towns, a part of the younger farming housewives. Thus, in places in the zones of daily commuting, which are farther away from employment centres, the mixed type of "working-farming" families predominates, and in places closer to the employment centres, the non-farming type of family is increasingly predominant.[2]

[1] These data refer to that part of Slovenia which belonged at that time to Yugoslavia.

[2] According to the classification of Zavod za statistiko (Institute for Statistics) those families are classified as of mixed type where the income of family members employed outside farming is approximately the same as the income from farming. Non-farming families are those families where the income from outside the farming activities represents the major part of the total income of the family. These are farms that no longer have active labour.

The movement of seasonal migrants into Western Europe is likewise rapidly changing. In particular, the percentage of semi-qualified workers and of migrants from urban settlements is growing.

During recent years, the movement of the town population to the countryside has been growing, so that in 1966 most of the Slovene towns had already more emigration than immigration. This is a result of the well-to-do population, provided with cars, withdrawing from the town bustle and the poorer air into the surrounding countryside, where they build villas, or in places adapt old farm homes as modern flats. As a result of the improved education of the agrarian population and of the partial movement of non-qualified workers to Western Europe, there is a new movement of seasonal and mostly unqualified workers from Croatia, Bosnia and Herzegovina, and Serbia. Labour of this type largely finds employment in the newly created socialist production units called "agrokombinati", which have come into existence through the consolidation of former farms and through the changes in the occupation of former farmers.

Spatial distribution, intensity, and the demogeographic structure of migration are very significant indicators of the degree of the development of industrialization and of socio-economic-spatial differentiation. The decentralized process of industrialization and the development of traffic arteries, and of other means of communication are the basic factors in the formation of the gravitation areas for the daily migration of labour. These are also the factors which have, together with the opening of the border, given rise to the migration into Western Europe. Owing to the rapid changes in the qualification of the Slovene population, the deficit of labour in Slovenia has to be made up for by unqualified labour migrating to Slovenia from other republics. The forms of migration discussed above, together with the trends in the permanent migration of the population from the countryside into towns, the moving of town population into the countryside and inter-urban movements, are already characteristic of urbanized or highly industrialized territories.

The low percentage of families in farming, the average number of slightly more than three people per family, the fact that the daily commuters make up more than a quarter of the labour force, and that almost one third of the total number of daily commuters are women—all these are indicative of a high degree of "deagrarization".

Slovenia is developing in all its areas equally and has to be divided with respect to the degree of development into several types of areas, into nuclei of employment, areas of daily commuting, and areas which have not been affected by daily commuting. Areas not affected by daily commuting are mountainous, demogeographically exhausted, and old people predominate. As regards intensity and intermixing, the areas of daily commuting can be classified into broader and narrower zones. The broader ones supply the employment centres with labour from semi-farming families, while the natural increase of the adult population moves towards the employment centre. In the narrower zones of daily commuting, which are almost identical with the suburban zones, permanent migration is bringing the natural increase from the broader periphery, from the town, and from other republics. These are also the areas, where "agrokombinati" are developing. In Gorenjsko, in the surroundings of Ljublja-

na, in Maribor between Koper and Piran, where these migrations are move intensive, the suburban areas are growing into a unified urbanized territory. The variety of industry, go od traffic connections, and the development of other non-agrarian functions, offer possibilities for employment to people of various ages, both sexes, and of various professions and qualifications, and so such territories acquire the character of an economically stabilized and industrialized type of region.

Deagrarization has removed young population from the countryside into non-agrarian occupations and left private farming to older farmers and to the middle generation of the semi-farming population, thus presenting problems for the agricultural economy in the immediate future.

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THE INFLUENCE OF SOCIO-ECONOMIC CHANGES ON THE MIGRATION AND STRUCTURE OF THE RURAL POPULATION IN THE ADRIATIC REGION OF CROATIA

by

MI. FRIGANOVIC

In Yugoslavia socio-economic changes and the process of postwar industrialization since the Second World War have greatly influenced the migration and structure of the rural population. The victory of the national revolution and the introduction of socialist elements have further contributed to the acceleration of these changes. The process, however, differs regionally because of the geographical variations in individual parts of the country, their various cultural traditions and economic development.

The extent of postwar industrialization can be seen from the fact that from 1921 to 1938 in Yugoslavia the proportion of the rural population decreased from 78·8 per cent to 74·9 per cent, or only by 0·23 per cent a year on the average, while after the war from 1948 to 1961 it diminished from 67·4 per cent to 49·4 per cent of the total population or by an average of 1·39 per cent a year.[1] The new era has caused fundamental changes but has also imposed special problems, particularly regarding the migration of the rural population, its age and economic structure, and most recently, it has resulted in considerable labour force problems. The flow of labour from country to town, caused by the industrialization, is also illustrated by the fact that from 1949 to 1960 over 2 million people left their native villages, considerably more than the natural increase of the population during that period.[2]

The migration to towns, however, was not the only way in which agriculture was abandoned. Many farm workers have found employment in non-agrarian activities, such as mining, industry and municipal services. They travel to their work either daily or weekly but reside permanently in their native villages. The farm census of 1960 showed that of the total farm labour force of 4,738,000 as many as 1,306,000 did not work on their own farms. This phenomenon is a consequence of industrialization and represents a transition stage. A fairly wide-spread type of so-called mixed households has developed which retain their farmland while a number of the household members work outside their villages in non-agricultural pursuits. The above-mentioned census counted 874,000 such mixed households. Their number has certainly grown considerably, together with the number of rural people, such as students and workers, who have definitely left agriculture and deserted their villages. This has al-

[1] Markovic, D. (1963) Poljoprivredno stanovnistvo Jugoslavije u proteklih 40 godina (The Agrarian Population of Yugoslavia during the Last 40 Years). *Sociologija sela*, **I.** (1), July—September, 1963, p. 44, Zagreb: Agrarni Institut, Zagreb.

[2] Friganovic, MI. (1964) Sociogeographical Consequences of the Depopulation of Agrarian Areas, *Proceedings of the First Yugoslav Symposium on Agrarian Geography*, Maribor, 3rd to 5th December, p. 145.

tered the age and sex structure of the remaining rural population. The rural population in general and the farm labour force in particular are thus characterized by aging and a surplus of women.

In 1961, only 26 per cent of the farm labour force was between 15 and 34 years old, and on farms 55 per cent of the labour force were women. Only 30 per cent of the farm housewives did only housework while the remaining 70 per cent worked both in the house and on the land. This reflects a shortage of good-quality male labour in agriculture. About 15 per cent of all the farms were managed by women, but this is the consequence of a shortage of males rather than of progress in equal rights for women in the country.

In Croatia this process has advanced even farther than in Yugoslavia as a whole. In this Republic in 1961 about 50 per cent of the rural labour force was older than 40, and only 22 per cent of the young men enrolled in the armed forces named farming as their occupation!

Thus industrialization on the one hand and the abandonment of farming on the other have led to a general shortage of young workers on the farms. In 1960 in Yugoslavia, 8·2 per cent of the farms were without workers. The regional differences varied between 14 per cent in the Vojvodina and 7 per cent in the Kossovo and Metohia. In the same year, 3 per cent of all Yugoslav households consisted only of old people, with the regional differences varying between 2 per cent in Macedonia and 5 per cent in Montenegro and in the Adriatic region of Croatia.[3] In some smaller areas, particularly in the Dinaric karst land, this percentage was considerably higher. Between 1953 and 1961 in Yugoslavia the proportion of the rural population decreased by an average of 1·45 per cent a year, from 60·9 per cent to 49·4 per cent; most in Croatia, by 1·90 per cent, from 56·4 per cent to 41·2 per cent, and least in the agrarian Kossovo and Metohia, by 1·05 per cent, from 72·4 per cent to 64·0 per cent. In Croatia the process of giving up farming was strongest in the karstic regions, particularly in the Adriatic area which, for this reason, is dealt with here in some detail.

The Adriatic region of Croatia, which covers 84 per cent of the area and contains 88 per cent of the population of the entire Yugoslav Adriatic region, is the part of Yugoslavia with the oldest and strongest migration of the rural population.[4] This is the region of Yugoslavia where the effects of the classical industrial revolution in the western countries during the second half of the 19th century can be best studied. In the same way, the effects of the industrialization of socialist Yugoslavia since the Second World War on the migration and structure of the rural population are apparent.

The political division of the present Yugoslav national territory up to the end of the First World War was one of the factors affecting migration and related processes in the Adriatic region. Shipping, fishing and agriculture offered a livelihood to a great part of island and coastal population. The capitalist development and the growing importance of the North Atlantic region

[3] Markovic, P. (1963) Stracka domacinstva na selu (Rural Old People Households). *Sociologija sela*, **I.** (2), October—December 1963, p. 22, Zagreb: Agrarni Institut.

[4] Friganovic, M. (1966) Neke demografske karakteristike i problemi primorja SR Hrvatske (Some Demographic Characteristics and Problems of the Croat Coastal Region). *Glasnik Srpskog geografskog drustva*, **XLVI.** No. 1, p. 11, Belgrade.

diminished the importance of the Mediterranean during the last century. This led to a regression of overseas trade in the Yugoslav coastal region. Furthermore, by the end of the 19th century, there was a crisis in grape-growing, and the vineyards deteriorated. This caused emigration from the islands and the coast overseas to the New World. It first began in the island settlements, continued in the coastal settlements and much later affected the hinterland, called the Zagora. However, the impulse to this emigration up to the Second World War was given not only by industrialization in other countries but also by the economic crisis in the country itself. Thus emigration continued more or less intensively until the Second World War.

After the war a considerable change occurred. A period of industrialization began in socialist Yugoslavia, attracting labour to the inner, continental parts of the country. This process drew numerous workers from the economically passive Zagora into the interior of the country, stopped the overseas emigration from the islands and the coast, and permitted a considerable number of surplus labour to find employment in ports and industrial plants on the coast either in existing, developing or newly founded plants. Consequently, it can be stressed that the giving up of farming is oldest on the islands where it has been least influenced by the industrialization in the country, that the process in the coastal zone is younger and somewhat linked with the industrialization, while in the Zagora it is youngest and most closely dependent on industrialization. The process of regional differentiation and specific migratory flows is thus visible even in a relatively small region such as the Croat Adriatic region with its three longitudinal zones: islands, coast and the Zagora.

During the postwar industrialization and the period of socialist development, the agriculture of the Adriatic region, particularly grape growing, was neglected. One of the fundamental reasons for this was the physiographic (karstic) character of the region, which makes it unsuitable for large collective farms, while the small landowners lost interest as their labour force left the farms for better-paid jobs in non-agrarian activities. After 1945, the abandonment of farming proceeded so quickly that in 1961 the rural population of the Adriatic region represented only 35·6 per cent of its total population. This was about 6 per cent less than in all Croatia and 16 per cent less than in Yugoslavia as a whole.[5]

This ranks the Adriatic region as the part of Yugoslavia where farming has been given up most. From 1953 to 1961, the farm labour force decreased by 18·4 per cent. If we suppose that this process has gone on at the same rhythm since 1961, although in fact the quickly developing tourist industry and maritime activity have accelerated it, then the conclusion is reached that from 1953 to 1966 the farm labour force of the Croat Adriatic region decreased by about 30 per cent.

But this process is not the same in all the Adriatic region. In some zones the truly rural population has almost disappeared, although a considerable number of mixed households have survived because the inhabitants whose occupation

[5] Suvar, S. (1964) Interdependence between Agricultural Production and Social Mobility in the Adriatic Region of Yugoslavia. *Sociologija sela*, **II.** (4), April—June 1964, p. 24, Zagreb: Agrarni Institut.

is no longer only farming have retained their homesteads and land. This process is strongest round ports and coastal industrial centres. Thus, for example, in the environs of Rijeka only 1 per cent of the population is agrarian, while in the municipal areas of Pula, Opatija, Senj, etc., the corresponding figure is less than 10 per cent. The majority of the earlier rural settlements around these towns have turned or are turning into so-called dormitories of people employed in industry or other urban activities. Exceptions are to some degree those towns which are surrounded by considerable acreages of good agrarian soil, such as Zadar, the Kotari, Split, Kastela and Poljica, Sibenik, Donje, Gornje Poljes, Dubrovnik, Konavli and the Zupa. In contrast to this situation along the coast, the Zagora still has a considerable portion of agrarian population, nearly 70 per cent, because until a short time ago it was almost entirely an area of extensive livestock farming without urban settlements and industry. In this respect the islands with 55 per cent of agrarian population stand between the coastal belt and the Zagora.

Thus the agrarian population of the Adriatic regions as a whole shows rather greater concentration of farming in the Zagora, less on the islands, and least in the parts of the coastal belt round the bigger ports and industrial centres. However, the most recent processes are even depopulating the Zagora.

The socio-economical transformation in general and industrialization in particular have produced numerous so-called mixed households in the Adriatic region. About 20 per cent of the total population lives on farms without being part of the farm labour force. During the last 20 years a quarter of the total labour force of the farms has abandoned agriculture in the Adriatic region of Croatia.

The share and importance of mixed households in this region can be seen from the following information of 1960; only 74 per cent of the farms were operated by their owners, the remaining 26 per cent by hired workers or employees. Thus more than a quarter of the farms in Dalmatia and the region round the Quarner were not operated by their owners. If to this proportion the 5 per cent of farms are added that are run by old people without young labour, then about a third of the farms of the two regions will in the future contribute to the non-agrarian rather than the agrarian labour force. The high degree of abandonment of farming is the obvious and direct consequence of the socio-economical transformation and industrialization of Yugoslavia after the Second World War. The scale of the process is also proof of the changes in the economic structure of the rural population in the Adriatic region of Croatia. The consequences of these processes are also strongly felt in the migration of the agrarian population, in the so-called rural exodus. The flow of young workers from Dalmatian and other villages is one of the most important and characteristic postwar processes.[6] It contributes to the aging of the remaining rural population and causes the spreading of half cultivated, temporarily cultivated or uncultivated agricultural land. The emigration from the Adriatic villages, particularly from those on the smaller islands and in the Zagora is so intensive that the population loss cannot be made up by population concentrations round ports and industrial coastal centres, such as Rijeka,

[6] See Footnote 2.

Pula, Split, Zadar and Sibenik. This can be seen from the fact that from 1953 to 1961 the population of the Croat Adriatic region grew by 75,000 while the natural increase was 110,000, a net loss of 35,000 people through emigration.[7]

The Adriatic region in general, and its villages in particular, have been the scene of an exceptionally strong postwar emigration which was strongest after 1950, but within the region a characteristic regional differentiation is clearly noticeable. Three zones can be distinguished—the islands, the coast and the hinterland. The emigration from the islands is oldest and has advanced so that the age structure of the population is very unfavourable, the emigration from the coast has been and is even today considerably smaller due to the attraction of the coastal towns and the increased tourist value of this zone in recent times, while in the Zagora, emigration began last because of its geographical isolation and its inhabitants' strong attachment to traditional extensive livestock farming. However, during the stage of intensive industrialization, particularly after 1950, the emigration of labour from the Zagora surpassed absolutely and relatively the emigration from the islands. Thus, today the Zagora is the zone of the most impressive rural exodus of the Adriatic region and probably of all Yugoslavia.

After the Second World War the chief directions of emigration were first, to the industrial urban regions of the interior, secondly, to the ports and industrial centres at the coast, and thirdly, abroad.

Since 1964, the immigration to the interior of the country has weakened while it has become stronger to the coast where the tourist industry has been developing very quickly, and to Western European countries for temporary employment. Many settlers are those who, returning from work abroad, invest their savings in building family houses at the coast. Thus recent years have witnessed an intensive economic and population revival in the coastal belt outside the towns. This has been favoured by the new coastal road and the increasing orientation of the coastal zone towards the tourist industry. This makes it reasonable to speak of a specifically new kind of population and new economic processes in the Adriatic region and of a so-called zoning of the region in which the Zagora and the islands continue to lose their agrarian population, the Zagora more than the islands, while the coastal belt becomes the zone of an increasing concentration of former rural inhabitants, of denser population, of a more active and complex economy and of modern settlements. In this most recent process, the industrial role of the coastal towns diminishes, while the tourist industry with its associated economic activities becomes the chief incentive to migration and structural economic change among the agrarian population in the Adriatic region of Croatia. This is the particular characteristic which distinguishes this region from all the other parts of Yugoslavia.

[7] Friganovic, M. (1965) The MS of a study for the Geographical Institute of the School for Natural History and Mathematics in Zagreb.

DEMOGRAPHIC AND SOCIAL CHANGES IN POST-WAR POLISH VILLAGES

by

M. DOBROWOLSKA

The object of this paper is a synthetic comprehension of basic processes going on at present in Polish industrialized regions, with special attention to five southern voivodships (Cracow, Opole, Katowice, Rzeszów and Kielce). The information in it is derived from my personal observations, and also from individual and team investigations by the scientific workers of the Higher Pedagogical School in Cracow.

The central problem is the gradual transition from agriculture to industry, the change of rural population into industrial workers, and of villages into towns and urbanized areas.

1. The process of disintegration of village communities, which had been held together by local ties welding them into integrated homogeneous units in both a socio-economic and cultural sense, had begun in capitalistic times under the influence of industry. As a result, a marked discord developed between the disoriented urbanized areas of industrialized regions and the villages with their historical social bonds.[1] The transformations of the village community in People's Poland took place at different rates and varied in spatial extent.

The nationalization of industry and of other branches of the national economy, a purposeful investment policy, the progress of heavy industry, including hitherto neglected branches, and at the same time the tendency to search for new technical solutions all combined to bring about rapid economic development.

The basic socialistic principle of uniform distribution of productive forces finds support in the discoveries of considerable new raw material deposits and sources of energy: copper, sulphur, gas, oil and lignite. Great investments have been made in the metallurgic, chemical, sulphur, aluminium, oil and machine industry in Nowa Huta, Lublin, Tarnobrzeg, Plock, Pulawy, Turoszów and Konin; and industry has been developed in Czestochowa, Oswiecim, Kedzierzyn and a number of other new regions. These developments make possible the planned direction of the outflow of rural population, the purposeful distribution of the labour surplus and the governing of the urbanization processes.

The planned economy, owing to the concentration in its hands of the means of investment and the possibility of final decision, has an important effect on

[1] Dobrowolska, M. (1967) Czynniki integracji i dezintegracji społecznoterytorialnych struktur osadniczych wsi (Integrational and disintegrational factors influencing the areal structure of the rural settlements). *Roczniki Socjologii Wsi.* Warsaw — Rajman, J. (1962) *Rozwój ośrodków przemysłowych nad Małą Panwią* (The development of industrial centres on the Mała Panwia). Instytut Śląski w Opolu. Katowice.

the course, the direction and the importance of change. This relates not only to the localization of new industrial establishments, but also to employment policy, wages, salaries and the raising of standards.

2. The social consequence of these processes is the ever increasing rate of urbanization. It finds expression in the growth of urban population from 40 per cent of the total in 1950 to 50 per cent in 1965 (in 1931 it was 30 per cent) and in the simultaneous assimilation into non-agricultural employment of large masses of the village population. In 1965, those engaged in agriculture were only 34 per cent of all employed (in 1950, 47 per cent). The number of workmen employed outside of agriculture grew to 3·6 mln, including 2·4 mln engaged in industry (1961). Among 8·8 mln persons employed in the communal economy (excluding individual agriculture) 3 mln were of rural origin, and in addition 1·5 mln commuted to work from the countryside.

3. In the conversion of rural population, migrations in search of earnings —regular, seasonal and casual—play a vital part. It is this process which forms new patterns of labour division and differentiates the demographic and socio-professional structures of separate regions, including

— industrializing and urbanizing zones, to which the waves of migrating population are flowing;
— declining areas where the population is aging at an increasingly rapid rate.[2]

Urban and industrial centres of industrializing regions with their rural hinterland are appropriate places for social transformations. They have absorbed about 2·5 mln of the peasantry who migrated towards the newly opened attractive labour markets which offered an alternative to agricultural work. In several of these trading centres where we studied the inflowing labour, sons of peasants and peasant-workmen commuting from the countryside amounted to 60 per cent of the staff. In these newly localized or in developed former centres—such as Nowa Huta, Oswiecim-Dwory, Kedzierzyn and others—the process of forming a new working class is gaining moment. Widely used facilities for completing education in socialist economics and for generally raising qualifications, together with mass professional schooling open, up opportunities for rapid advance to working people. Workers may be classified as (a) unqualified workers immigrating from the countryside and engaged mainly in labouring, transport and building; (b) workmen acquiring qualifications during the course of employment or by taking courses; (c) workmen, who have gained full qualifications by correspondence courses, in many cases rising to the degree of engineer; (d) managers by promotion, mostly chosen from among workmen, mainly in administration, to a lesser extent in production, with the greater part having studied by correspondence; (e) a special category composed of peasant youths, normally graduated from a general basic school, technical or higher schools. They start as clerical workers and advance to managers' posts.

[2] Dobrowolska, M. (1960) Functions of Industries in Shaping Socio-Economic Regional Structure. *Polish Geographical Review*, **XXXII.** Supplement.

The magnitude, mechanism and results of these processes have been presented in our publications.[3] It is appropriate to mention here that mainly as a consequence of these mass migratory moves of labour forces, the population of towns with about 200 thousand inhabitants increased 3-fold after the Second World War, the smallest towns of 3 thousand having been reduced by 1/3 and 124 settlements having gained urban status.

These processes develop rapidly as a result of the absorption into the towns and industrial centres of neighbouring areas of the rural hinterland. The process of semi-urbanization is rapidly set in motion by a change of demographic and socio-professional relations as a result of commuting to work or by the growth of *in situ* employment outside of agriculture.

4. Mass commuting—this is characteristic for the transitory period of the socialist community and is common to employment in industry, transport and building. It still exists as a consequence of the diffuse peasant agrarian structure and the marked overpopulation in the countryside.

In 1964, the total number of commuters was about 1·5 mln, i.e. about 20 per cent of total employment. It is especially marked in South Poland, in the Katowice, Cracow, Opole, Rzeszów and Kielce voivodships where commuting rises to 35–40 per cent. In these parts 70–80 per cent of commuters to towns and industrial centres are villagers. These facts indicate the magnitude of socio-demographic changes in agricultural regions.

Industrialization and the parallel progress of urbanization inhibited the process of proletarization in the countryside by allowing an outflow of surplus population and by changing the owners of dwarfed farms into peasant workmen. The number of peasants affected in Poland is estimated to be about 900 thousand.

Together with the Upper Silesian labour market which is consistently most important (1245 thousand employed in towns and settlements in 1960, including 240 thousand commuters), the highest demand for outside labour occurs in the Cracow, Kielce, Opole and Rzeszów voivodships, where the number of employed in other than agricultural branches of the socialized economy was about 2·5 mln, including 330 thousand commuters. They reached, according to separate voivodships, from 27 per cent (Opole) to 38 per cent (Rzeszów) of the total number of employed. The most prominent components were commuters to industry and related branches such as transport, communications and building.

5. Parallel with the progressive concentration of industry and the urbanization of the Upper Silesian hinterland, as well as of some large urban centres, the tendency to decentralize industry in a spatial sense was apparent after the Second World War. This influences the new pattern of territorial division of labour. As a consequence the participation of labour engaged in industry in the

[3] Herma, J. (1967) *Napływ ludności do miast w regionie siarkowym jako współczynnik procesów urbanizacji* (Migration to the towns in the Sulphur Region as a factor of urbanization process). Książka i Wiedza, Warsaw — Herma, J. (1961) Wpyłw przemysłu na zróznicowanie struktury zawodowej w ośrodkach produkcyjnych województwa krakowskiego oraz w ich zapleczu poprzez codzienne dojazdy do pracy (The influence of commuting on the occupational structure in the production centres and hinterland of the Cracow voivodship). *Sprawozdania Komisji Odziału PAN w Krakowie*, Lipiec-Grudzień.

voivodships of Biatystok, Lublin, Olsztyn, Szczecin, Koszalin, Zielona Góra has increased greatly (the index of rate of change being 500–700 in 1950–1962).

An analysis of the spatial structure of the territorial division of work and of the localization of the main demand for outside labour shows considerable diffusion compared with the interwar period, and also the general tendency of industrial establishments to locate in formerly declining centres. On the territory of Southern Poland's four voivodships (from among those investigated by us) there existed in 1960 about 400 greater and smaller centres of industry and services employing about 15 per cent of out-of-town labour, excluding the great Combine of the Upper-Silesian industrial basin which has 45 towns and settlements and leads in employment.

The industrialized zones forming in the hinterland of theses centres are the main object of our researches.[4] Their spatial structure and localization which are obviously related to the network of railway and motorbus lines are shown on the maps worked out by J. Herma on the basis of our studies.[5]

A thorough analysis of socio-economic changes, carried out in the course of our investigations in separate differentiated industrial regions, has afforded the possibility of singling out separate phases of industrialization which reflect the gradual transformation of the agricultural community into industrial worker settlements.

The quickened tempo and greatly advanced nature of the urbanization process are characteristic for the Upper Silesian Coal Basin, united with its neighbouring districts (Bielsko, Rybnik, Częstochowa and Cracow) in one great industrial complex.

The metallurgical industry, developed in relation to the one hundred and fifty-year-old coal and zinc mining, demanded a considerable amount of outside labour and led naturally to the concentration of peasants and peasant-workers all around these districts, and to the development in time of urbanized settlements. The continual shortage of labour in this industrial complex, which requires additional outside workmen, is a uniting factor in a wide circle of villages of the Cracow, Opole and Łódź agricultural regions. Even as far as 50 km from the Silesia-Cracow industrial centres there are still numerous peasant and peasant-workers' villages from which several hundred persons commute to their places of work and are steadily employed as qualified mining, metal or textile workers.[6]

[4] Dobrowolska, M. (1965) Kształtowanie się Regionu Siarkowego. Kryteria i mierniki delimitacji strefy uprzemysławianej (The development of the Sulphur Region. Criteria and value indices of delimiting the industrial zone). *Zeszyty Badań Rejonów Uprzemysławianych Komitet Badań Rejonów Uprzemysławianych PAN.* **13,** Warsaw — Rajman, J. (1965) *Uprzemysłowienie a przemiany ludnościowo-osadnicze województwa opolskiego* (Industrialization and changes in the settlement and demographical conditions in the Opole voivodship). Instytut Śląski w Opolu, Katowice.

[5] Herma, J. (1966) Dojazdy do pracy w Polsce Południowej, 1958—1961 (Commuting in Southern Poland, 1958—1961). *Prace Monograficzne Wyższej Szkoły Pedagogicznej w Krakowie* **5,** Cracow.

[6] Dobrowolska, M. and Rajman, J. (1965) Socio-Economic Structure and Dynamics of the Suburban Zone. *Geographia Polonica* **7,** Warsaw.

Unlike the crystallized forms of industrial settlements in the Upper Silesian hinterland which have developed into settlements of productive groups, the countryside of the newly industrialized regions is only in the initial phase of the urbanization process. In the Nowy Targ hinterland these processes are resisted by the highlander's unwillingness to engage himself in steady industrial work in view of the possibility of additional gains from tourism and services, while in the Tarnobrzeg Combine such processes are accelerated by hard conditions of life in the overpopulated villages.

As a result of differentiated conditions of labour demand and supply, whether for qualified or unqualified, male or female, steady or seasonal work, there is a similarly differentiated demographic and socio-professional structure in the industrialized regions. Therefore the pattern of employment and the processes of change have also considerable differences, as well as features in common.

The urbanizing regions in the rural hinterland resulting from commuting are the objects of careful attention from the economic planning institution. From the point of view of the agricultural economy concern is caused by the decrease of profit brought about by the continual breaking up of farmland owned by peasant-workers. In connection with the surviving individual farming a series of unfavourable processes are taking place, such as parcellization for building by peasant-workmen and the abandoning of intensive field work. Such facts as these induce a careful analysis of the course of existing processes and of the newly formed demographic and socio-professional structure. These requirements necessitate the studies taken up on the initiative of the Committee of Research of Industrialized Regions of the Polish Academy of Sciences having as their main purpose the analysis of industrialization processes and of their effects in agricultural areas.[7]

The essential importance of the consequences of industrialization lies in defining development tendencies and regularities as a basis for the construction of theory and of practical plans. Therefore, I stress the establishment of the comparison within the framework of the mentioned 5 voivodships of the typical phenomena which occur independently, and also of specific phenomena which occur locally as a result of specific conditions.[8]

In the light of our empirical investigations the characteristic marks of all industrialized zones, irrespective of their genesis, period of development, infrastructure, or type and size of industrial production, are as follows:

(1) A growing compactness of population in the direction of the centre;
(2) Growth of other than agricultural professional activity, particularly among younger men;
(3) The accompanying growth of women's employment in agricultural work, and the employment of the peasant population who are over productive age;

[7] Cf.: *Zeszyty Badań Rejonów Uprzemysławianych*, 1962—1967 **1–18.** Warsaw.

[8] Dobrowolska, M. (1959) Przemiany społeczno-gospodarcze wsi małopolskiej (Socio-economic changes in South-Polish villages). *Przegląd Geograficzny* **XXXI.** — Jarowiecka, T. (1965) Praca pozarolnicza ludności wiejskiej w zapleczu niektórych ośrodków przemysłowych Małopolski (Non-agricultural activity of the rural population in the surroundings of the South-Polish industrial centres). *Problemy Ekonomiczne*, Cracow.

(4) The grouping of workmen and peasant-workmen predominantly within the isotherm 1–1·5 hrs;
(5) The predominant participation of peasant-workmen in relation to workmen, decreasing in the direction of the centre in favour of workmen's households;
(6) The simultaneous tendencies toward the accumulation of workmen and peasant-workmen in villages of the hinterland, grouped rather in sections than circularly, with surviving agricultural villages at the same time having an insignificant percentage of peasant-workmen's farms, even near the industrial centre.

Spatial patterns of socio-professional structures seem to destroy the thesis of circular concentrations of such agglomerations in suburban zones. They are rather divided in sectors, at the same time showing a strict dependence on the fertility of ground and also on the shape and density of railway and bus lines.

The results of our studies allow us to form the final judgment that decisions concerning peasant-workmen households ought to be taken only on the ground of thorough local investigations, and not based on schematic statistical computations.

In attempting to discern the complexity of industrialized zones, we have submitted to a detailed analysis the diversity of structures and of trends with particular reference to farmwork bonded with establishments of work. Special attention is given:

(a) to profit-making work of the head and members of the family in various lines of the national economy (particularly industry) and also to the number and professional qualifications of these groups,
(b) to the number and spacing of the types of families—such as farmless workmen, peasant-workmen and those making their living only by agricultural work (including size and quality).[9]

These investigations reveal strong spatial differentiations among industrial regions and also among separate villages in the course of intensified processes of change. This is of prime importance especially in reference to:

(a) differences in population compactness and age structure;
(b) the percentage of men engaged in agriculture on 100 ha of arable land;
(c) the percentage of aging farms;
(d) the raising of workmen's qualifications.

In the trends of change an important part is played by the increasing requirements and demands for qualified workers in industry, particularly chemical and electrotechnical. In consequence, an impetus toward completing

[9] Jarowiecka, T. (1962) Struktura zatrudnienia mieszkańców woj. krakowskiego (Occupational structure of the population in the Cracow voivodship). *Rocznik Naukowo-Dydaktyczny Wyższej Szkoły Pedagogicznej* Cracow — Dobrowolska, M. (1964) Strefa podmiejska. Procesy demograficzne i społeczno-osadnicze (Suburban belt. Demographical processes in the settlement movements). *Rocznik Naukowo-Dydaktyczny WSP*, *z.* **22/23,** Cracow — Dobrowolska, M. (1963) Studia nad zagadnieniem chłopów-robotników w Polsce południowej (On the problems of the double-occupied population in Southern Poland) *Wieś Współczesna* **1** — Jarowiecka, T. (1965) Społeczno-zawodowa struktura rodzin wiejskich (Social-occupational structure of the rural families). *Zeszyty Badań Rejonów Uprzemysławianych PAN* **13.**

their qualifications is conspicuous even among heads of peasant-workmen's families, especially among members of the younger productive age. The gaining of such qualifications associates such workman and his place of employment and is a stabilizing and accelerating factor in the urbanization process.

Conclusions of the research discussed above concerning the structure and development of peasant-workers' farms, commuting to work and migration, provide the basic information for a planned economy, supported by statistical indices and cartographic material related to the following urgent problems:

(1) Restrictions of commuting to work and of spontaneous migrations;
(2) Solution of the peasant-workman problem in relation to local conditions, including local investment;
(3) Education of workmen's staffs;
(4) Aging of the rural population.

A STOCHASTIC MODEL FOR INTER-TERRITORIAL MIGRATION IN HUNGARY

by

P. COMPTON

Of the three vital processes, fertility, mortality and migration, the last is the most important factor determining differential population growth in Hungary. The northeast portion of the country, Hajdú-Bihar, Szabolcs-Szatmár and the rural parts of Borsod counties, has consistently contained the highest rates of natural increase while the number of people living there has drastically declined in the last two decades. On the other hand, during the past ten years deaths have slightly surpassed births in Budapest but the population of the capital has still grown enormously. Although the rate of population growth there has not been the highest in the country, the absolute increase in population has been greater than anywhere else and this includes the provincial cities and the new socialist towns. In these two examples the decisive factor influencing population growth has been migration, and if one cares to examine other regions and settlements within the country, the same pattern emerges. The reasons for this vast territorial turnover of population are in broad outline well known, although as yet no multivariate studies have been undertaken to assess the relative importance of the various operative factors. Suffice it to say that the process is intimately linked with the rapid industrialisation of some towns resulting in more pronounced regional contrasts in the level and possibilities of living and in the desire of the population to maximise them. This is a situation which is characteristic of not only Hungary but of most other developed and in some instances of developing countries in the world. A clear manifestation of this is the great increase of urban population throughout the world.

We find in demography, however, that the degree of sophistication that exists in the analysis of births and deaths is no far lacking in the study of migration processes. Description is very difficult in most countries including the United States of America and Great Britain, two countries with a long demographic tradition, owing to the lack of migration data. Consequently, statistical analyses are even more difficult to undertake. Fortunately, the situation in Hungary is more favourable, where an excellent system of data collecting and tabulation exists, but even so, little is known about the present migration processes apart from the basic facts of territorial migration rates, the distribution of migrants by age and sex and some of the more obvious trends in gross and net migration. Under the stimulation of the Hungarian data, the writer of this paper has outlined a method of analysing the effects of migration on a closed population system which does give a realistic picture of how population can be expected to develop, provided certain conditions are held constant within the system, and their implications fully

realised.[1] The principal drawback in accepting this method as a possible way of making population forecasts is that new births and deaths are completely ignored. It does, however, give a succint picture of the influence of migration on a given population distribution and the method can thus provide new and meaningful migration indices to supplement existing types. Methods have been outlined for studying migration processes within an open population system, i.e. where births and deaths are included, but the addition of the latter masks the effects of migration while the method is of little use in population forecasting since only crude birth and death rates for the whole of the population can be used if the analysis and forecast technique is not to become unduly complicated. If age specific rates could be utilised, then the open system could be used with greater facility and confidence.

The principal aim of this paper is to obtain a picture of how the annual territorial patterns of migration between 1959 and 1965 woud have influenced the populations of Budapest, the provincial towns and the counties of Hungary later on, provided the migration probabilities computed were held constant within each system. Secondarily, trends which take into consideration the interaction between the size of the population within each territory and migration will be computed. In so far as these interactions are taken into account, it is the writer's considered opinion that such indices are not only superior to but also supplement the trends computed on the basis of the migration balance and of gross in- and out-migration. The trends which will be computed in this paper are trends in the so-called limiting population distributions obtained from the iteration of a matrix of interterritorial migration probabilities.

THE ANALYSIS

The model adopted in this analysis assumes that any given migration system duplicates the properties of a Markov chain. It is thus a probabilistic or stochastic model. The fact that a Markov chain progressively develops through time and reaches a limit after which it does not change is the most useful property of this model. The model is best formalised in terms of matrix algebra.

The first step in the analysis is to construct a data matrix, D, containing a cross tabulation of migration between the areas to be examined, where D is of the form

$$D = \begin{bmatrix} d_{11} & d_{12} & \dots & d_{1n} \\ d_{21} & d_{22} & \dots & d_{2n} \\ \cdot & & & \\ \cdot & & & \\ \cdot & & & \\ d_{n1} & d_{n2} & \dots & d_{nn} \end{bmatrix}$$

[1] Paul Compton: A régiók közötti vándorlás vizsgálata matrix módszerrel (Interregional migration studied by matrix method). *Demográfia*, Budapest, 1966, Vol. 9, No. 4, pp. 475–496.

The elements in each row of the matrix D contain the absolute figures of out-migration while the elements in the columns contain the corresponding figures for in-migration. Each element along the principal diagonal is the population that will remain in the given area after out-migration. If each element in each row of the matrix is divided by the number of population in the area represented by the row, then the data matrix D is converted into a probability matrix, P, where the rows of the matrix contain the probabilities of out-migration from a given region, while the columns contain the probabilities of in-migration to a given region. The sum of the elements of each row is unity. Matrix P is of the form

$$P = \begin{pmatrix} p_{11} & p_{12} & \cdots & p_{1n} \\ p_{21} & p_{22} & \cdots & p_{2n} \\ \cdot & & & \\ \cdot & & & \\ \cdot & & & \\ p_{n1} & p_{n2} & \cdots & p_{nn} \end{pmatrix}$$

where $p_{11} = \frac{d_{11}}{N_1}, \ldots p_{n1} = \frac{d_{n1}}{N_n}$ etc., $N_1, \ldots, N_n$ being the populations of areas $1, \ldots, n$.

If we pre-multiply matrix P by a vector v_0 where v_0 is the population distribution for areas $1, \ldots, n$, we shall then obtain a new vector v_1 representing a new population distribution for the areas $1, \ldots, n$ after one step or in more practical terms after one time interval. The length of one interval of time is determined by the time period for which the matrix P is constructed. If itis for one year then vector v_1 represents a population distribution one year later than that represented by v_0, but if on the other hand matrix P is computed for a five year period then v_1 represents a population distribution five years later than that given by v_0. In this manner a whole series of new vectors can be obtained from P, representing population distributions which result from the development of the migration system through time, up to a limiting vector v_s, since $P \rightarrow \lim$. Thus $v_0P = v_1, v_1P = v_2, \ldots, v_{s-1}P = v_s$. To facilitate computation on an electronic computer, however, the system is best viewed in terms of the development of matrix P where, since $v_0P = v_1$ and $v_1P = v_2$, v_2 is also given by v_0P^2. Thus $v_0P = v_1, \ldots, v_0P^s = v_s$. The limiting matrix and vector are most easily calculated by this second method, since by squaring the matrix, then squaring the result and so on, P^{256} can be reached after nine iterations of the matrix P. This latter matrix operation is of great use to us since we shall be most interested in the limiting matrix and limiting population in the succeeding analysis.

A detailed description of the analysis is as follows. For each year between 1959 and 1965 inclusive, a separate migration probability matrix was computed. The basic data for these computations were obtained from Table 9.12 in the 1959 Demographic Yearbook, from Table 9.16 in the 1960, from Table 9.22 in the 1961, and from Tables 8.22 in the Yearbooks between 1962 and 1965 inclusive. These tables contain a cross tabulation of permanent migration between the counties, the provincial towns and Budapest for each indi-

vidual year. Temporary and temporary return migration were not considered in this analysis. The migration probabilities were calculated from the mid-year populations of these territories, on the assumption that they represented a close approximation of the populations exposed to the possibility of migration during one year. Thus for instance, the migration probabilities for the year 1961 were computed on the basis of the June 1st 1961 populations of each territory. The resulting seven probability matrices were then iterated to stability on the Mercury electronic computer at Sheffield University, England, and the transitional probability matrices relating to each matrix iteration and the corresponding vectors were printed out. Results were thus obtained for $P, P^2, P^4, P^8, \ldots, P^{1024}$, the latter being the limit for each matrix. In every case the initial vector adopted was the population distribution for January 1st 1966. This renders the results from each migration system strictly comparable.

RESULTS

Two types of information are obtained from the analysis. First, for each separate migration system from 1959 to 1965 we can trace how the population of every area develops from the initial to the limiting population. We are thus viewing changes through time in this instance. Secondly, we can take a cross section of corresponding results from each system relating to a given time or in other words relating to the same stage of matrix iteration. So for example, we can compare the size of the limiting populations, or any other populations we may think interesting. In this manner, we can compute population trends within the country for every territory, relating to a given time, where the trends demonstrate the changing effects of the annual migration systems on population redistribution.

Seven separate sets of results are obtained from the analysis each relating to the annual migration systems for the period 1959 to 1965. In the ensuing discussion we shall be referring to a demographic situation that would occur if each system were allowed to run unchanged to its limit. This is naturally a very idealised and hypothetical condition since the territorial patterns of migration are always changing and we cannot expect the migration probabilities computed for each system to remain constant through time. Additionally births and deaths have been left out of the analysis and any population distribution relating to the future that is given in this paper must not be regarded as a population forecast. The term conditional projection is preferred, the routine having but one object, to analyse the implications of migration under certain very strict conditions.

Table 1 shows the expected development of populations of the counties, provincial towns and Budapest on the basis of the 1965 territorial pattern of migration. The initial vector is the January 1st 1966 population. The limit is reached at the 1,024th iteration of the matrix, which converted into years is 1,024 years hence. This result can be regarded as an invariant characteristic of the 1965 migration system. We must note, however, that the approach to the limit is comparatively rapid and is closely approximated at the 256th iteration of the matrix that is 256 years hence. The results for the other migra-

TABLE 1

The development of the 1965 migration system from the initial population to the limiting population as shown by the population vectors v (in 1,000s)

	v_0	v_2	v_4	v_8	v_{16}	v_{32}	v_{64}	v_{128}	v_{256}	v_{512}	v_{1024}
Budapest	1,952	1,977	2,002	2,049	2,136	2,282	2,490	2,702	2,821	2,847	2,849
Debrecen	148	151	154	158	163	167	161	147	138	137	137
Miskolc	171	174	178	185	196	212	226	229	220	215	214
Pécs	136	142	149	161	182	210	238	251	253	252	252
Szeged	116	119	121	126	134	145	156	160	157	155	155
Baranya	278	274	271	265	255	245	234	230	228	228	228
Bács-Kiskun	563	558	552	542	524	495	460	432	423	423	424
Békés	443	437	431	420	400	369	328	294	282	281	281
Borsod-A.-Z.	593	590	586	579	565	543	511	475	448	439	438
Csongrád	320	318	316	311	303	291	274	259	249	247	247
Fejér	385	389	393	401	415	437	463	484	492	494	494
Győr-Sopron	400	400	400	400	400	399	398	398	398	397	397
Hajdú-Bihar	367	358	350	335	310	275	239	213	204	203	203
Heves	342	341	340	337	332	323	309	292	282	279	279
Komárom	299	303	307	315	330	353	384	412	425	427	427
Nógrád	236	236	235	235	233	230	226	221	218	217	217
Pest	849	860	870	889	921	969	1,023	1,065	1,086	1,092	1,092
Somogy	362	359	356	352	343	329	311	295	288	288	288
Szabolcs-Sz.	552	540	529	507	471	416	354	311	298	297	297
Szolnok	443	436	429	416	394	360	319	287	278	277	277
Tolna	256	253	250	244	235	220	203	192	189	189	189
Vas	276	274	272	269	261	249	230	208	192	188	187
Veszprém	410	411	411	412	413	414	414	413	410	409	409
Zala	263	261	258	253	244	229	209	190	181	179	179
Total*	10,160	10,161	10,160	10,161	10,160	10,160	10,160	10,160	10,160	10,160	10,160

* Differences in the totals are due to rounding errors.

tion system are comparable, each attaining stability at the 1,024th iteration of the matrix. Therefore, if we wish to characterise the development of each system through time we can state that the initial changes are extremely rapid but decelerate with time.

Three distinct patterns of territorial development emerge, which are as follows:

(a) Places where the population increases in size continuously from the initial vector to the limit, namely Budapest, Pécs, Fejér, Komárom and Pest.

(b) Places where the population initially increases but later decreases in size, namely Debrecen, Miskolc, Szeged and Veszprém. Three out of the four provincial towns fall into this category. They are each surrounded by counties which are experiencing a rapid population decline, and since the majority of their in-migrants come from these counties, their populations are intimately influenced by what goes on in the immediate surroundings. Further, in the case of Debrecen and Veszprém, the limit is smaller than the initial population.

(c) Counties where the population continuously decreases from the initial vector to the limit, namely Győr-Sopron, Nógrád, Baranya, Heves, Somogy, Csongrád, Bács-Kiskun, Tolna, Borsod-A.-Z., Zala, Vas, Békés, Szolnok, Hajdú-Bihar and Szabolcs-Szatmár.

The classification of population development which we have arrived at on the basis of the 1965 migration system generally holds for the other migration systems as well with only Győr-Sopron and Veszprém changing categories. The greatest changes occur in the magnitude of population decrease for counties in category three. The migration systems for 1959, 1963 and 1964 are more or less identical with that of 1965, but the 1960 system shows only Borsod-A.-Z. as having a population decrease of less than 25 per cent of the initial population. Similar differences are indicated by the 1961 and 1962 migration systems. The development of the territorial populations within each migration system could also be considered in detail, but for reasons of space and from fear of repetition this has not been done.

After this short consideration of how the population of each county develops through time, the writer would now like to go on to compare the cross-sectional results from every migration system. In this section, we shall be most interested in the limiting population from each system. They are considered first of all meaningful indices of migration and secondly they demonstrate in a readily understandable manner the implications of each system of migration on a closed population distribution. Cross-sectional examinations could be made for every other stage of matrix iteration, although it must be stressed that it is the limit that is important as an index.

The information with which we shall be dealing are vectors computed from the transitional probability matrices associated with a given matrix iteration. These vectors, however, only give an idealised and conditional picture of how migration will affect the initial population distribution, but since the probabil. ities contained within each transitional probability matrix are independent of any initial vector, the matrices contain information about the effect of migration which is uninfluenced by the use of either a closed or an open population system. It is only the vectors and not the transitional probability matrices

that are affected by the vital processes. As an example of this property, an excerpt from the transitional probability matrix P^{64}_{1959} from the 1959 system is included here as Table 2. The rows of the matrix contain the outgoing and the

TABLE 2

The P^{32} transitional probability matrix from the 1959 migration system

	a	b	c	d			
a	0·5292	0·0081	0·0089	0·0107	*	.	.
b	0·1956	0·2017	0·0212	0·0118	.	.	.
c	0·1390	0·0140	0·3165	0·0091	.	.	.
d	0·1574	0·0051	0·0074	0·2727	.	.	.
	.	.	.	.			
	.	.	.	.			
	.	.	.	.			

a = Budapest
b = Debrecen
c = Miskolc
d = Pécs

The rows contain the out-migration probabilities and the columns the in-migration probabilities.

columns the incoming migration probabilities. Thus if the 1959 system had run unchanged for 64 years, we would have expected only 53 per cent of the population residing within Budapest during the 64 year period to have remained non-mobile. 19·5 per cent of the population of Miskolc would have come to Budapest, while 0·8 per cent of the population of Budapest would have gone to Miskolc. All the other elements within this matrix and every other matrix can be interpreted in a similar fashion. For obvious reasons of space we cannot print every transitional probability matrix from every migration system, but other results can be obtained from the author.

The limiting population vector is of interest to us in so far as it demonstrates the ultimate implications of a migration system on a given population distribution. It must once again be stressed that neither the limiting vector nor any intervening vectors calculated from iterations of the transitional probability matrices are to be taken as population forecasts. They are simply illustrative of a very conditional and theoretical situation but because their computation involves the interrelationships within the migration and the population system, they are meaningful migration indices.

On the basis of the limiting vectors, we can classify the counties, etc. of Hungary into two groups:

i. Those where the limiting population is generally larger than the initial, namely Pécs, Budapest, Miskolc, Szeged, Fejér, Komárom and Pest.

ii. Those where the limiting population is usually smaller than the initial population, namely Debrecen, Baranya, Bács-Kiskun, Békés, Borsod-A.-Z., Csongrád, Győr-Sopron, Hajdú-Bihar, Heves, Nógrád, Somogy, Szabolcs-Szatmár, Szolnok, Tolna, Vas, Veszprém and Zala.

Győr-Sopron and Veszprém counties fluctuate between the two categories.

When on the other hand, we made a similar classification from the average net migration balance between 1959 and 1965 we arrived at a somewhat differ-

ent result with Debrecen, Győr-Sopron and Veszprém being grouped with those counties experiencing a population increase through migration. The difference arises because first of all the analysis takes into account the interactions that exist within the migration and the population system, and secondly because gross migration is used in the computations. The limiting populations computed for each annual migration system are given in Table 3.

TABLE 3

The limiting populations computed from the annual migration systems 1959–1965 (in 1,000s)

	1959	1960	1961	1962	1963	1964	1965
Budapest	3,061	3,387	3,187	3,351	3,026	2,823	2,849
Debrecen	126	134	130	129	133	142	137
Miskolc	210	223	218	240	229	222	214
Pécs	235	234	199	223	242	244	252
Szeged	123	141	144	144	165	163	155
Baranya	266	209	206	216	228	228	228
Bács-Kiskun	413	377	381	360	394	415	424
Békés	246	215	256	252	283	287	281
Borsod-A.-Z.	499	448	447	442	499	491	438
Csongrád	205	182	197	202	246	232	247
Fejér	418	407	434	410	426	448	494
Győr-Sopron	405	414	409	400	385	379	397
Hajdú-Bihar	186	177	185	176	189	202	203
Heves	309	241	275	269	254	273	279
Komárom	379	379	382	379	385	426	427
Nógrád	226	173	197	186	198	203	217
Pest	1,058	1,103	1,148	1,094	1,029	1,062	1,092
Somogy	269	250	258	254	275	288	288
Szabolcs-Sz.	277	250	295	288	317	323	297
Szolnok	290	285	315	278	282	311	277
Tolna	183	175	168	167	186	184	189
Vas	192	191	187	187	180	200	187
Veszprém	408	406	382	355	410	420	409
Zala	177	160	160	158	200	195	179
Total*	10,161	10,161	10,160	10,160	10,161	10,161	10,160

* Differences in the totals are due to rounding errors.

The magnitude of the country-wide population redistribution which would result from each system if it were allowed to run unchanged can be readily assessed by comparing the limiting populations with the initial distribution.

Ignoring first of all the magnitude of the limiting populations, the territories can be grouped into four separate categories on the basis of the trend patterns. These are as follows:

i. Limiting populations initially stable but later increasing in size, namely Debrecen, Fejér, Hajdú-Bihar and Komárom.

ii. Limiting populations at first decreasing but later increasing in size, namely, Baranya, Bács-Kiskun, Csongrád, Nógrád, Pécs, Somogy, Tolna, Vas, Veszprém and Zala.

iii. Limiting populations initially increasing in size but subsequently decreasing, namely, Budapest, Békés, Miskolc, Szeged, Szabolcs-Szatmár and Győr-Sopron.

iv. Limiting populations fluctuating in size but by and large stable, namely Borsod-A.-Z., Heves, Pest and Szolnok.

The counties in group ii. are contiguous geographically with the exception of Nógrád, and occur in Trans-Danubia and in South-Alföld. The same is true for group iv. where the counties are confined to the northeast and centre of the country. Group i. is divided into two geographical areas namely the contiguous counties of Komárom and Fejér, and Debrecen, and the surrounding county of Hajdú-Bihar. Group iii. is completely scattered and includes such unlike places as Budapest and Szabolcs-Szatmár, but as an examination of the graph shows, this is the least homogeneous group as far as trend patterns are concerned.

A classification based on both magnitude and trend pattern of the limiting populations results in six groups. These are as follows:

i. Limiting populations lie between 46 and 74 per cent of the initial population where the overall trend is for the limiting populations to increase in size. Namely, Békés, Csongrád, Hajdú-Bihar and Szabolcs-Szatmár.

ii. The limiting populations lie between 60 and 90 per cent of the initial population, where the difference between the limiting population for 1959 and 1965 is never greater than 9 per cent as shown by the two year running means. The trend pattern of this group is either fluctuating stable (Group iv. above) or initially decreasing followed by an increase in size (Group ii. above). Counties within this group are, Baranya, Bács-Kiskun, Borsod-A.-Z., Heves, Nógrád, Somogy, Szolnok, Tolna, Vas and Zala.

iii. The size of the limiting population fluctuates around the initial population, or is never less than 12 per cent smaller, namely Győr-Sopron, Veszprém and Debrecen.

iv. The limiting population is always larger than the initial population, being stable between 1959 and 1963 but subsequently rapidly decreasing in size, namely Fejér and Komárom.

v. The limiting population lies between 105 and 145 per cent of the initial population and the trend pattern is either fluctuating stable or at first increasing and later decreasing in size, namely Miskolc, Pest and Szeged.

vi. The limiting populations are never less than 145 per cent of the initial population, namely Budapest and Pécs.

Categories i. and ii. correspond very satisfactorily with geographical areas. Counties in group i. are confined to the extreme east and southeast of the country and are agricultural in character. This latter fact provides the key as to why the limiting populations there are so small in this area. The counties are still very little industrialised and so cannot be expected to retain all their population. A promising aspect for the planners, however, is that the results of the present analysis indicate that this area as a whole is increasingly able to retain its population. With the discovery of natural gas, coupled with its full exploitation, it is likely that the population situation in the area will steadily improve in the future and retain the favourable trend that has emerged from the present work.

Group ii. contains by far the largest number of counties. With the exception of Baranya, Borsod-A.-Z. and Nógrád they are all mainly agricultural counties although not so underdeveloped industrially as the counties in Group i. It is interesting that most of the counties in this group show a sharp drop in the size of the limiting population between 1959 and 1960 or 1961. There is no apparent reason as to why this should be so. It cannot be linked to any of the factors that usually influence population movement, although this period did mark an increase in the tendency of the population of the capital to grow. Since 1960 or 1961, most of these counties have shown a slow but continual increase in the size of the limiting populations. In many cases this can be adequately explained by postulating that the populations are recovering from the earlier decrease in size and are once again tending to the size of the limiting population of 1959, although in some cases this had not been attained by 1965, for example in Baranya, Nógrád, and Vas counties in this group are by and large stable. In some instances, however, the latter growth in size can be attributed to more tangible factors. The continuous increase in the size of the limiting population of Somogy county is related to the development of the Balaton regions of the county. But some anomalous patterns still remain. Baranya is one of the more industrialised counties of the country but the size of the limiting population for 1965 was lower than that for 1959. This can be attributed to the rapid decrease in the growth rate of the new socialist town of Komló. Borsod-A.-Z., on the other hand, has had a limiting population which has fluctuated in size from year to year, although it has an economic structure closely resembling that of Komárom and Fejér counties. Yet the trend pattern and the magnitude of the size of the limiting populations of Borsod is completely different. Fejér and Komárom counties are closer to Budapest, however, and although Borsod county is the seat of a provincial capital, this contrast may have some explanatory powers in accounting for the difference.

The last four groups are much smaller than the first two, and at most contain three counties. We cannot place much emphasis on their geographical location therefore. Similarities in this respect and also in economic structure do occur within these groups however. Győr-Sopron and Veszprém counties are both located in northern Transdanubia and both have industrial localities within them, e.g. the aluminium industry, although their populations are still largely agricultural in character. Debrecen is the other place grouped with these counties and for a provincial capital would appear to have very atypical population and migration tendencies. It is, however, surrounded by regions which are rapidly losing population, and from which it attracts many of its in-migrants. But as this surrounding area declines in population size, migration to Debrecen must be intimately affected by this fact. The Markov chain process demonstrates this interrelationship and shows very succintly that if present general migration processes continue, a stage will be reached when in-migrants to Debrecen are exceeded by out-migrants, although the present migration balance is positive.

Komárom and Fejér counties have such similar economic and social structures that it is not surprising that their limiting populations are similar in both magnitude and trend pattern. The migration tendencies for Komárom are slightly more favourable than those for Fejér, but the former is more indus-

trially developed. It is again not unnatural that Pest county and the provincial towns of Miskolc and Szeged should fall into the category. Pest county in which large areas are dormitory regions for Budapest is in structure not unlike a town. The apparent slowing down of population growth migration in Miskolc and Szeged can be linked to the population upsurge shown by counties in Group ii. Budapest and Pécs have been linked together in one group, strictly on the magnitude of the limiting populations and not on their trend patterns. In this latter respect they are very unsimilar. With the physical restrictions that exist on migration to Budapest and with the rapid development that is going on in the countryside, it is not unexpected that the size of the limiting populations of Budapest should decline in time. The present analysis does show that the declining rate of population growth of the capital is an underlying tendency and not something that may change as the territorial pattern of migration develops. Why Pécs should have a growth tendency so much larger than the other provincial towns is not readily apparent. The relationship, as far as migration is concerned, of southern Transdanubia with the rest of the country is not so developed as in other areas. So although there is very high mobility within this part of Transdanubia, the in- and out-migration rates to and from this part of the country are generally lower than those between other regions. In this respect, we can view the population growth potential of Pécs as something peculiar to southernmost Transdanubia.

This paper has tried to examine migration from a new and possibly unusual viewpoint. Markov chains are a very powerful mathematical tool, however, which will probably be increasingly used in demography and other social sciences in the future. This paper has been dealing with only one of the vital processes determining population growth and so any results are not to be interpreted as population forecasts. The examination of open population systems by this technique is just beginning and as yet is not suitable for forecasting the future. But with further development and sophistication and with the great increase in machine facilities for data processing and analysis, similar techniques will result in increasingly more reliable information in the field of population forecasting, although even at this early stage it provides us with an insight of how spatial migration processes work.

GEOGRAPHICAL ASPECTS OF DUNAÚJVÁROS

by

F. BOROS

1. DUNAÚJVÁROS'S PLACE IN THE NETWORK OF HUNGARIAN TOWNS

Industrialization, which was undertaken with great energy in the fifties, brought impressive changes in the spatial distribution of labour in Hungary. These changes resulted from profound structural changes in the economy as a whole. In the first ten years of socialist industrialization, the relatively rapid development of industries turning out basic materials and of those supplying energy was a particular feature of development. As a result, new industrial bases emerged partly in the already established industrial concentrations, partly in outlying areas—mainly in those which were richer in sources of energy and other raw materials. The establishment of new production bases was usually accompanied by the planned construction of new urban centres.

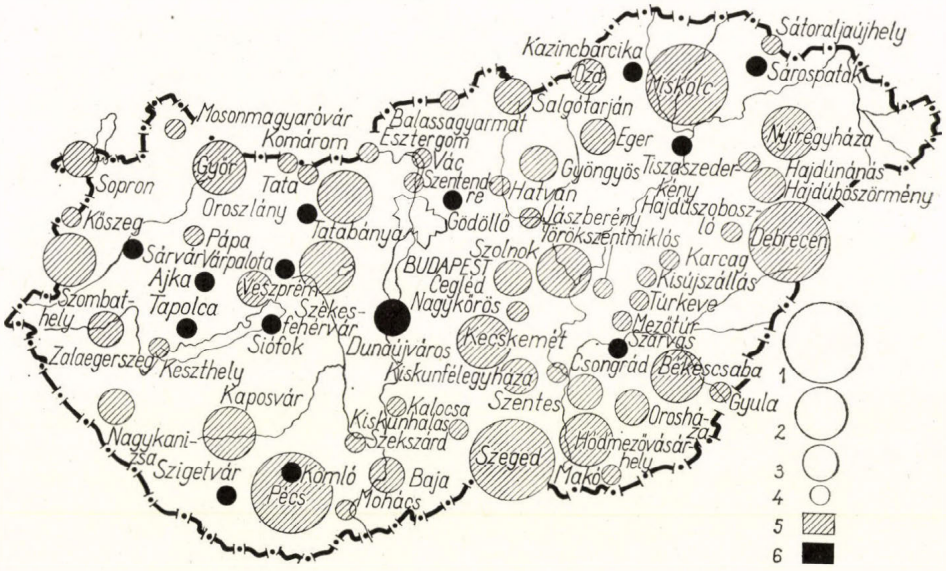

Fig. 1. The extension of the Hungarian urban network since 1950

1 = towns with inhabitants over 100,000, 2 = 50,090 to 100,000, 3 = 30,000 to 50,000, 4 = below 30,000, 5 = municipalities existing before 1950, 6 = municipalities developed after 1950

This industrial development—hitherto unparalleled as regards scale and intensity—induced changes in the spatial distribution of the power production, and of the population. The upswing of coal mining, power production, ferrous metallurgy and engineering meant a revolutionary change for industry as a whole. The growing demand for manpower in the areas involved in the process of industrialization exercised a permanent attracting effect on the areas of purely or almost entirely agricultural character. The mobility of the population increased, resettlement took on massive dimensions, seasonal migrations became intensive and—owing to a separation of domicile and place of work—commuter traffic also considerably increased.

This process was accompanied by a strengthening of urbanization, the occupational restratification of the population and, in the final analysis, by the transformation of the whole structure of settlements.

In the areas with rapidly developing industries the population also increased rapidly; the population of the already established towns was augmented; and owing to the local concentration of population in the new industrial centres, new towns emerged. (Fig. 1.)

Some of the agrarian villages were also strongly affected by urbanization. The population of tiny villages—mainly because of the emigration of people of working age—steadily diminished; the population of larger villages and agrarian townships at least stagnated, but some of them lost a significant part of their population. At the same time, a fundamental change took place in earlier agrarian villages which were close to great towns, partly because of immigration and partly because their population of working age found jobs in the nearby towns. The share of agricultural earners gradually decreased and an urbanized belt emerged in the shadow of the urban agglomerations.

During the industrial upswing beginning with the fifties a particularly interesting new element in the network of towns appeared—the socialist towns. They have many common features which distinguish them from the historically developed towns. Most of them grew up as a result of the location in the countryside of one or several new, modern plants; they were purposefully constructed; their population is dynamically growing and is being supplied mainly by immigration; they exercise in respect of manpower a considerable attractive force on their immediate or more remote surroundings; in the composition of their wage earners the weight of those working in industry is preponderant and the urban functions effecting their wider surroundings are restricted to the attraction of manpower.

Among the socialist towns, Dunaújváros is of outstanding importance as regards size, dynamic development, and level of urbanization; it now has 43,000 inhabitants. Its rank and importance among the socialist towns may be attributed mainly to its favourable situation.

The majority of settlements attaining urban rank in this period were organized near existing, historically important towns, one might say in the shadow of these older towns, as for example, Komló, Oroszlány, Várpalota, Ajka, Tiszaszederkény and Kazincbarcika. Others, however, fitted into the network of towns mostly by rising from small villages growing in rank and population and by becoming local centres of smaller regions as Tapolca, Szigetvár, Gödöllő, and Szarvas.

2. DUNAÚJVÁROS'S PLACE IN THE NATIONAL DIVISION OF LABOUR

One of the reasons why Dunaújváros occupies an important place in the order of Hungarian socialist towns is its significance from the point of view of the division of labour. The economic importance of this industrial town lying about 70 km from Budapest is due to the metallurgical combine located

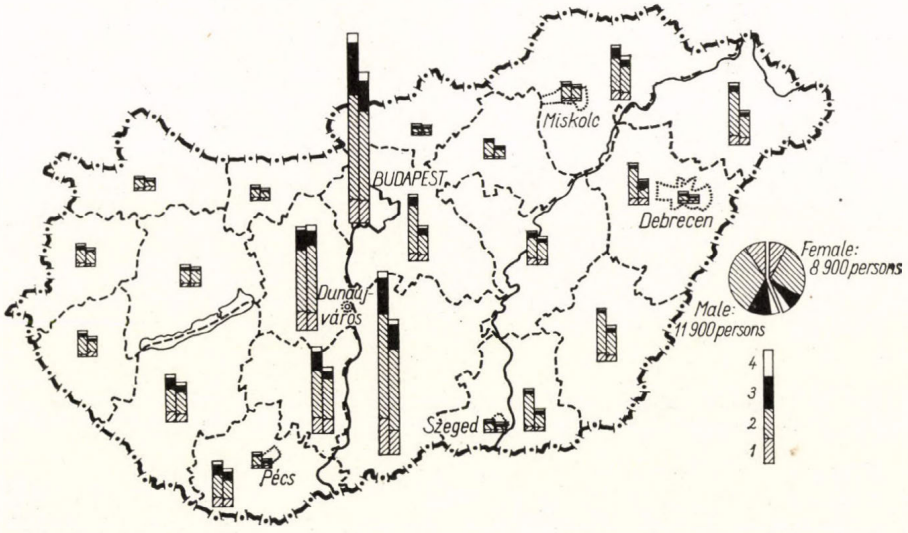

Fig. 2. Population migration to Dunaújváros, between 1949 and 1960

1 = below 20, 2 = 20 to 39, 3 = 40 to 59, 4 = over 59 years. The dotted lines show increase of population in some towns for comparison's sake

there on the high loess plateau on the right bank of the Danube. In the decision on the location of the plant, which today employs more than 10,000 workers, the Danube, as a route of transportation and as a source of meeting the considerable water requirements, played an important role, as did the relative proximity of coking coal deposits and the labour reserves of the agricultural surroundings.

The plant processes iron ore transported from Krivoy-rog via the Danube with the aid of coke processed from the nearby hard coal of Pécs. It is a vertically integrated plant where the foundry and open-hearth steelworks are complemented by hot and cold rolling mills. In 1960, more than 40 per cent of the pig iron output and almost 20 per cent of the steel output of the country were supplied by this plant. In 1965, more than half a million tons of steel-making iron and almost 700,000 tons of steel were produced. The hot rolling mill turns out nearly 400,000 tons of finished products annually, of which 75 per cent are thick and medium sheets and sections, and 25 per cent thin sheet. The cold rolling mill began production in 1965.

The coke plant turns out more than half a million tons of coke-oven coke and about 130,000 tons of other coke for industrial and household use. From part of the gas created as a by-product, fertilizers, sulphur and benzoic products are processed, while another part is used to supply households with gas through local and national pipelines.

Beside the metallurgical vertical plant which is of national importance, Dunaújváros has today considerable light industry as well, including a cellulose plant processing the straw of the Great Plains and southern Transdanubia. The paper mill is to be supplemented by a plant turning out other paper products.

3. POPULATION AND DEMOGRAPHIC FEATURES

The population of the town has grown to its present size essentially during the last ten or twelve years and as a result it is now classed as medium-size. Its dynamic growth is reflected also by the pattern of occupations and the distribution by age of the population and its relative growth may be seen in the following figures:

TABLE 1

Population growth in various categories of towns, between 1949 and 1966

Category	1949	1961	1966	1961	1966
	January 1st, thousands			as percentage of 1949	
Budapest	1,590·3	1,843·9	1,951·5	115·9	122·7
Towns, total*	3,364·0	4,056·1	4,406·7	120·6	131·0
Socialist towns**	42·2	125·7	174·1	298·1	413·0
Dunaújváros	4·0	31·0	43·4	775·0	1,085·0

* Including Budapest.
** Ajka, Kazincbarcika, Komló, Oroszlány, Várpalota, Tiszaszederkény, Dunaújváros.

The table also hints at the transformation of the structure of towns in Hungary and within that to the population dynamics of the socialist towns. It appears from the table that the population growth in Dunaújváros was the most dynamic of all categories of settlements. It is only natural that this growth of population should differ from the similar data of other urban categories as regards its sources:

TABLE 2

Sources of population increase, 1949–1960

Category	Natural increase		Immigration		Actual increase	
	thousands	per cent	thousands	per cent	thousands	per cent
Budapest	84·8	5·3	129·5	8·2	214·3	13·5
Towns, total	178·4	10·1	201·5	11·4	379·9	21·5
Socialist towns	14·5	34·3	69·0	163·6	83·5	197·9
Dunaújváros	2·6	65·5	24·4	618·9	27·0	684·4

Thus, the source of population growth in Dunaújváros is mainly immigration. The attractive power of the town in respect of manpower (and population) covers almost the whole country, if not to the same extent. More than half of the total immigration originated in the surrounding counties: Fejér, Tolna, Bács, Pest and the capital: Budapest. The high share of immigration

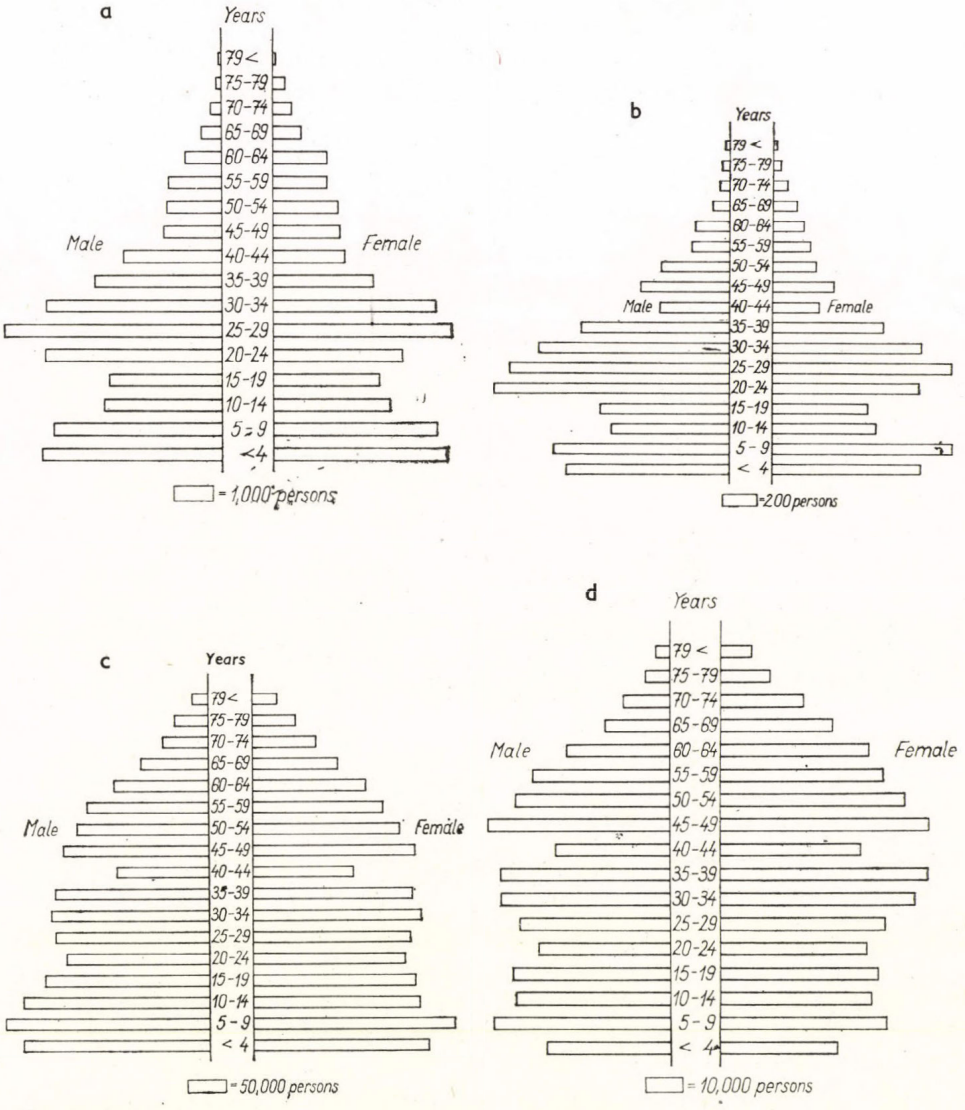

Fig. 3a–d. The distribution of the population by ages in 1960

a = industrial towns of recent foundation (socialist towns), *b* = Dunaújváros, *c* = Hungarian towns, *d* = Budapest

from Budapest—almost 3,000 people in absolute numbers—is justified by the high number of skilled workers needed at the very start.

An ample source of immigration were the industrially underdeveloped, purely agricultural counties in the Great Plains where the earners released from agriculture on account of the social restratification process could no more be employed locally. The majority of immigrants were in the working age. The population younger than 20 and those above the working age came mainly from the surrounding counties and the capital. With the growing distance from

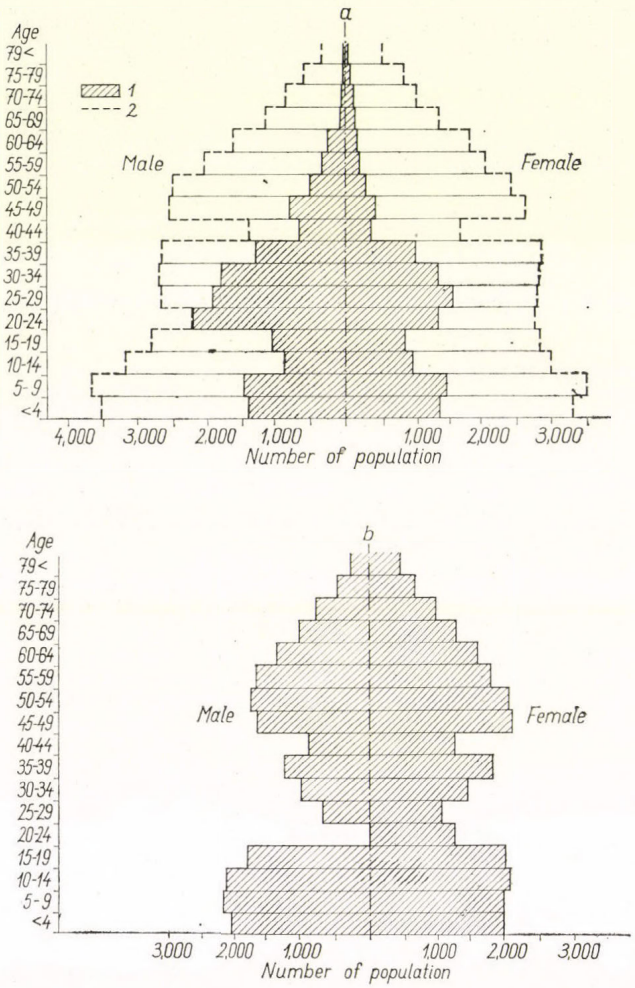

Fig. 4. The distribution by age of the population of Dunaújváros 1960

a: 1 = actual population of the new town, 2 = hypothetical age structure of the population
b: = difference between the age structure of the population of Dunaújváros and of the hypothetical age structure, 1960

Dunaújváros, the share of people of working age within the immigrants is also growing.

An important part of immigrants (32 per cent) were women. They came mostly from the surrounding counties and the industrially more developed ones. As regards County Fejér, immigration of females from there was stronger than that of men. Of course, this is connected with smaller distances and with the fact that the geographical mobility of women is smaller than that of men of the same age. (See Fig 2.)

The major part of immigrants consists of people between 20 and 40 years of age. This particular demographic feature makes Dunaújváros a *juvenile town*. The age distribution of the population is most favourable and, in comparison with other towns, it shows significant differences.

TABLE 3

Percentual age distribution of the population in 1949 and 1960

Categories	Age groups								Total
	0–14		15–39		40–59		60 and over		
	1949	1960	1949	1960	1949	1960	1949	1960	
Budapest	18·0	19·7	41·2	36·7	29·4	28·5	11·4	15·1	100
Towns, total	24·0	24·7	39·0	38·9	24·9	23·3	12·1	13·1	100
Socialist towns	27·7	29·9	42·6	48·2	21·3	16·2	8·4	5·7	100
Dunaújváros	27·5	28·4	35·2	51·4	24·3	15·2	13·0	5·0	100
Hungary, total	26·3	25·4	38·9	36·8	24·1	24·0	10·7	13·8	100

The above data reflect a conspicuous demographic inversion. As against the general *demographic ageing*, the age composition of the population is characterised by the dominance of the relatively young people in the socialist towns. Among them, Dunaújváros is one having the most favourable age composition: average age of the inhabitants was 26·5 years in 1960 and it is 25·7 years at present. The favourable pattern may be attributed mainly to the fact that the bulk of immigrants consisted of population in the propagative age, and also natural increase is well above national average. Development of natural increase by types of settlement categories is shown by the following figures:

TABLE 4

Natural increase per 1,000 inhabitants

Denomination	1960	1961	1962	1963	1964	1965
Hungary, total	+4·5	+4·4	+2·1	+3·2	+3·1	+3·0
Budapest	−1·3	−1·2	−2·3	−1·6	−1·3	−1·5
Dunaújváros	+10·3	+10·1	+7·6	+8·8	+8·0	+8·2

Owing to the favourable natural increase and age distribution the share of wage-earners is 58·2 per cent of the population, i.e. about 4 per cent higher than the national average. However, the participation rate of women within total employment is nearly 5 per cent lower, reflecting the heavy industrial character of the town.

The high share of industry in employment, 61·5 per cent of the total, also stresses the dominant role of industry in the economy of the town. The structure of earners by occupations indicates that the urban functions of Dunaújváros which would affect its wider surroundings have not yet developed to the

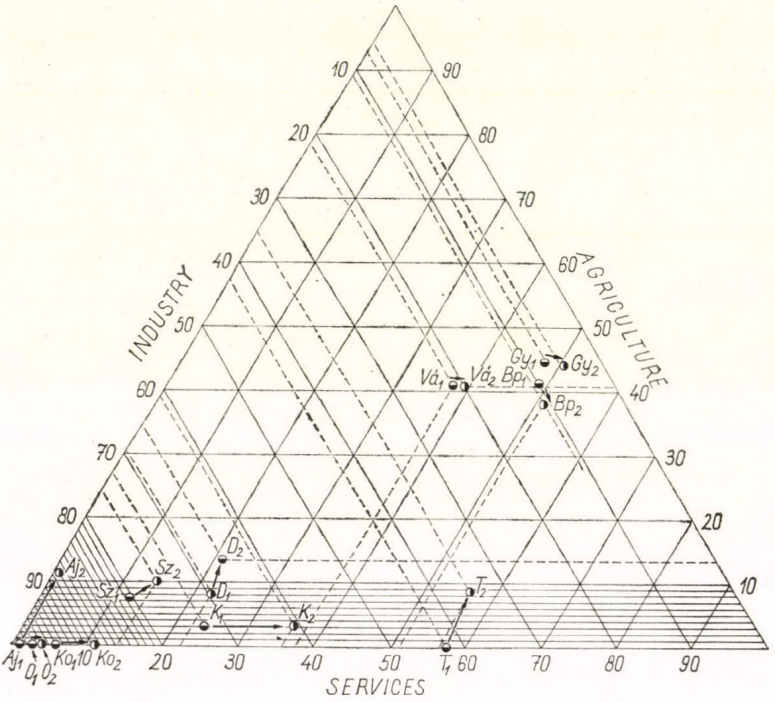

Fig. 5. Changes in the employment structure of the economically active population between 1949 and 1960

Bp = Budapest, Gy = Győr, D = Dunaújváros, K = Kazincbarcika, Vá = Várpalota, Ko = Komló, O = Oroszlány, T = Tiszaszederkény, Aj = Ajka, Sz = Szeged, 1 = 1949, 2 = 1960

same extent as in the historical towns of the same order of magnitude, but —according to the data available—it has already a leading role among the socialist towns.

TABLE 5

Distribution of earners by occupation in 1960 percentages

Category	Employed in					
	Industry construction	Agriculture	Transport	Trade	Other branches	Total
All towns (excl. Budapest)	38·0	17·4	6·6	7·8	30·2	100
Socialist towns	66·6	6·1	3·9	5·4	18·0	100
Dunaújváros	61·5	6·9	6·4	5·8	19·4	100

4. RELATIONS BETWEEN DUNAÚJVÁROS AND ITS SURROUNDINGS

The rapidly developing industry of Dunaújváros and its other urban facilities exert a great attractive influence on labour in the surrounding settlements. In spite of the favourable age distribution of the population, the able-bodied population of the town itself cannot meet the rapidly growing manpower requirements. A simplified manpower balance for the towns shows the permanent commuter traffic needed to fill the jobs in the town. (See Figs 3 and 4.)

From the chart showing how manpower needs are met, it can be clearly seen that the needs arising in the town by far surpass the size of the local population of working age and the supply must be complemented by the surrounding area. The attractive power of the town affects some 16 villages in the neighbourhood, mainly in county Fejér, on the right side of the Danube. Expansion of this power to the other side is hindered by insufficient transport facilities. The bridge over the Danube, connecting the two areas is about 25 km south of Dunaújváros.

Beyond the attraction of labour, the new town which is hardly ten years old, exercises its influence also in a wider area through its health, educational, trade and cultural functions. The extent and efficiency of its urban functions are rather difficult to measure. A suitable criterion by which to assess the importance of the town and its weight in its surroundings may be the attraction exerted in respect of trade. By a method similar to that used by Christaller, the added importance of a town may be characterized in respect of retail trade turnover with the aid of the following formula:

$$K = F_v - L_v \cdot \frac{F_m}{L_m}$$

where K = the added importance of the town
F_v = annual turnover in the retail shops of the town
F_m = annual turnover in the retail shops of the county
L_m = population of the county
L_v = population of the town

The actual turnover figures of the town comprise the purchases effected by the population of surrounding villages in the town. By using the above formula and substituting the corresponding figures for Dunaújváros, the added importance of the town on the basis of retail trade turnover may be put at 80 million Forints annually. With this value the town occupies the 24th place among Hungarian towns. [See: J. Major: A magyar városhálózatról (On the Hungarian network of towns). *Település-tudományi Közlemény*, No. 16. Budapest, May, 1964.]

For comparison we also list below the data of some other socialist towns, worked out on the same basis, i.e. using the retail trade turnover data of the town in question and those of the surrounding county. Budapest is shown only to illustrate the order of magnitude of the figures.

TABLE 6

Added importance of selected towns on the basis of retail shop turnover (thousand Forints)

Budapest	4,461·2	Oroszlány	15·3
Dunaújváros	80·6	Ajka	14·8
Komló	28·6	Várpalota	12·6
Kazincbarcika	21·0		

The enhanced role of Dunaújváros in respect of its surroundings is manifested also by the fact that its urban functions affect an area which is more densely populated than the other areas similarly affected by socialist towns. The following table gives figures of the area affected by the attractive power of the socialist towns in terms of population.

TABLE 7

Attractive power of selected towns

Town	Population		Degree of attraction
	in the centre	in the area of attraction	
	thousands		
Dunaújváros	31·1	84·0	2·70
Komló	24·9	48·0	1·92
Kazincbarcika	15·3	32·0	2·09
Oroszlány	13·1	14·0	0·07
Ajka	15·4	41·0	2·66
Várpalota	21·5	31·0	1·44

Dunaújváros is a modern town which meets the criteria of an up-to-date socialist town. Its outstanding urban character is illustrated by the fact that 72 per cent of the dwellings are equipped with all modern conveniences. The internal structure of the town is purposefully planned and organically linked to the nucleus of houses in the old town. The existing economic resources of the town provide a sufficient basis for further development and the important investments of future years provide a realistic foundation for strengthening and expanding the functions of the town with respect to surrounding areas.

THE EFFECT OF THE REGROUPING OF POPULATION ACCORDING TO OCCUPATION ON THE FUNCTIONS OF RURAL SETTLEMENTS

by

J. KOLTA

1. The well-known interaction of demographic and socio-economic processes, as a natural consequence of the industrialization following the liberation, transformed the composition of the population according to occupation in Hungary. The extent of this regrouping is shown by the following data:

(a) The proportion of the agricultural population in Hungary was 49·1 per cent at the beginning of the year 1949, and this proportion decreased by the end of the year 1959 to 35·5 per cent, that is by 13·6 per cent compared to the total population of the country. The change is even more impressive if we consider villages alone. The proportion of agricultural inhabitants in the villages was 75·2 per cent in the year 1949, neglecting the data of towns, but it was 54·9 per cent in the year 1960; the decrease was thus 20·3 per cent as compared to the total population, and 33 per cent as compared to the average number of the agricultural inhabitants. One third of the agricultural inhabitants changed their occupation during 11 years.

(b) The proportion of industrial inhabitants increased from 23·1 per cent in the year 1949 to 33 per cent, that is by 9·9 per cent.

(c) The proportion of other professions, such as trade, transportation, services and work in social, cultural and administrative institutions increased from 23·1 per cent to 24·8 per cent, that is by 1·7 per cent.

(d) The proportion of pensioners increased from 4·7 per cent to 6·7 per cent, that is by 2·0 per cent.

The regrouping of the population has continued since the 1960 census. The next census of 1970 cannot yet give any exact data about the present situation and it is not possible to show numerically the rate of change since 1960. Nevertheless, some detailed research on this question is necessary, partly because on the basis of our knowledge of the size and direction of change we are able to draw conclusions about the present situation which are indispensable for planning, and partly in order to facilitate and accelerate the proper evaluation of the results of the census of 1970 when they become available.

There are difficulties in such research because the demographic process is temporally and spatially differentiated according to various regions. Therefore, it has been necessary to go beyond the analysis of national data, and to study smaller regional units such as rayons, counties, districts and villages. It was this need which led to this study of Southeast Transdanubia. This paper presents a part of the results obtained, stressing especially those problems most important to settlement geographers.

2. The regrouping of the population according to occupation takes place in two ways:

(a) vertically, or by changing the dwelling-place.

(b) horizontally, without changing the dwelling-place.

These two processes—although both connected with changes in the occupational structure of the population—have different consequences and present different development problems. Therefore, both demand separate detailed analyses by demographic-geographical and settlement-geographical research workers in order to establish a scientific basis for planning.

The influx of the population, mainly from agricultural settlements, to the vicinity of industrial plants, and from undeveloped villages to the more developed centers is one of the typical demographic processes of our age and has therefore been at the centre of interest of the settlement-sciences for a long time.

Generally accepted terms such as "urbanization" and "migration to towns", and the less frequently used "Landflucht", are avoided here in describing this typical process of internal migration. Settlement-geographers have not defined the terms "village" and "town", in spite of many attempts. They are differently explained and this makes the comparison of results reached in different countries, and even within one country, difficult or even impossible. For example, the "town" is in Hungary exclusively a term of law, distinguished from the other settlements not by the higher number of inhabitants, by its special function, by its more developed economic or intellectual potential, but solely by its legal position and administrative organization. That settlement is a "town" which is declared to be one by the competent organ according to the provision of law, and the same organ is entitled to withdraw the legal status of "town" from the settlement. At the time of the census in the year 1949 there were 54 settlements declared to be "towns" in Hungary. Their numbers had increased by 1960 to 63, and by 1 January, 1967, to 68. Out of the roughly 10,200,000 inhabitants of the country, 4,400,000 or 43 per cent are living in "towns", and 5,800,000, or 57 per cent in villages. If the legal regulation had not given the status of town to 14 settlements since 1949, there would be a shift of 2 per cent in these proportions; 41 per cent would be the inhabitants of towns, and 59 per cent out of the population would live in villages. On the other hand, there are 51 settlements at present where the number of inhabitants is higher than 10,000 and most of them are performing important central functions. Clearly, they are geographically "towns". In spite of this, they are considered as villages because there are no provisions of law arranging for them to be declared towns. If there were a possibility of including these 51 settlements among the towns, the number of urban inhabitants would be not 43 but 51 per cent, merely on the basis of legal declaration without any change in the actual position.

The indefiniteness of the term "town" makes the work of planning organs more difficult, so that they apply new categories in a search for makeshift solutions, such as "urban villages", "rayon centrums". These new categories are naturally arbitrary as is the categorization of settlements generally. It would be useful therefore to continue the efforts of settlement-geographers to define the geographical concept of a town, or to produce at least some agreement on a compatible explanation of terms.

Nevertheless, the causes of the internal vertical migration of the population to the more developed settlements and the regularities of this process are generally well known, as are the consequences and requirements produced by it. There seems little need therefore to elaborate definition problems in this paper.

3. The regrouping of the population by occupation is not necessarily connected with a change of the dwelling-place, especially in the last two decades when traffic, mainly on the public road network, has developed considerably and movement between the working and dwelling-place has greatly increased. Consequently, the regrouping of population has been considerable, not only in the increase in the population of settlements with industrial factories, but also in villages previously almost solely agricultural in nature.

This paper is concerned particularly with County Baranya as an example. At the time of the 1949 census there were only 15 villages with less than 50 per cent agricultural inhabitants, or 4·6 per cent of all villages. However, in 1960 the number of agricultural inhabitants did not amount to half of the total in 73 villages or 22·6 per cent of all villages. In other words, in 58 agricultural villages in Baranya, 18·0 per cent changed over 11 years to settlements with a mixed or even with an industrial character. The rate of change was similar in the middle categories too. There were 201 villages in 1949 where the proportion of agricultural inhabitants exceeded 80 per cent, or 62·2 per cent of the total. By 1960 the number of villages belonging to this category was only 37, or 11·5 per cent of the total number. The number of villages where the agricultural inhabitants exceeded 90 per cent decreased from 46 in the year 1949 to 3 in 1960.

The role of socio-economic factors in this change is indicated by the fact that the proportion of agricultural inhabitants changed very little in the villages of the county before the transformation of the economic basis of the society which took place between the two censuses. In other words, these changes followed the liberation. The number of agricultural inhabitants of the county decreased in the first 50 years of the century by only 4·2 per cent but in the 11 years between 1949 and 1960 by 18·5 per cent. During the same period the percentage of industrial inhabitants almost doubled to 24 per cent at the beginning of the year 1960.

The "horizontal urbanization" of villages has not been taken into account so much as the process of migration into the town, although the change in the occupational composition of villages—as indicated by the data presented here —is quite large and significantly exceeds the proportion resulting from migration. The loss by migration in the villages of County Baranya was 11·0 per cent between 1949 and 1960, but the occupational structure of inhabitants remaining *in situ* changed by 20·3 per cent. Consequently, the degree of the "horizontal" regrouping of inhabitants without migration amounts to double the loss by migration. On the national scale loss by migration is 8·4 per cent and the degree of the change in the occupational structure without migration is 15·4 per cent.

There is thus no doubt that it is necessary to examine the "horizontal" urbanization of settlements in more detail and more carefully than previously since this process transforms not only the outer form of the

village, the spatial structure, form, ground plan and inner scheme of the buildings, but it also transforms the manner and rhythm of life, including the economic, social and cultural needs of the people. It forms their minds and shapes their consciousness; and all these things change the essential character of the villages and consequently alter their function.

4. The data presented here also indicate that the degree of transformation in Southeast Transdanubia exceeds the national average. This is related to the fact that, besides the national factors influencing these changes, regional circumstances also have an effect on their intensity and direction.

The character of the process of urbanization on a national scale is explained by the following factors:

(a) increasing mechanization decreases the demand for manpower in agriculture,

(b) increasing mechanization intensifies the characteristic seasonality of plant cultivation which results in seasonal unemployment, while in industry the possibility of work is continuous and incomes are higher on the average and in the aggregate.

(c) The agricultural producing co-operatives, established mostly in the period under consideration, were still struggling with their original difficulties in 1960 and a proper system for the distribution of incomes had not yet developed.

To these general factors must be added those of a local character:

(a) industrialization is more extensive locally than nationally. The large-scale increase in coal mining in the Mecsek mountain area at the time of the First Five Year Plan, and the beginning of ore-mining in 1954, combined with the establishment of some new factories and with the rising productivity of former plants, increased the attractive force of the towns, particularly the county seat, Pécs, and the mining town, Komló.

(b) Baranya is a county characterized by small villages, and the number of municipalities is the highest in the country. The average area of the villages and the average size of their population are the lowest. The economic, social and cultural facilities available to the inhabitants of these villages are below national standards, and this inhibits their growth.

The change in the occupational structure of the county's inhabitants on a larger scale than the national average is not altogether advantageous. In future planning this question must be carefully considered by the responsible authorities in two main respects:

(a) The natural geographical conditions, the relief, climate and the condition of the soils of the region are very favourable for developing agriculture, and they offer the possibility of intensive farming and of the successful introduction of new plants. The manpower shortage prevents the utilization of these favourable opportunities; it even endangers the present level of agriculture; and these handicaps will be worse in the future because of the unfavourable age-composition of the population arising from a low natural increase. Taking into consideration the increase in the population of the world and the growing shortage of food, it should be carefully considered whether it would be in the interest of the national economy—keeping in view the possibility of export—to develop the agriculture of Baranya, even at the cost of further industrialization.

(b) The rapid increase in the number of inhabitants in the towns causes difficulties in the supply of public housing. The population of the mining town of Komló increased from 6,955 to 24,820 between 1949 and 1960, that is more than three and a half times. The increase from migration has been about 30 per thousand in Pécs every year since 1959, that is twice as much proportionately as in Budapest and other Hungarian towns. This raises the question of the suitability of directing the movement of inhabitants so that instead of migrating into the towns, there would be increased commuting, even in the case of further industrialization.

These and similar considerations could lead to the conception of plans which would guide and influence the regrouping of the population. Such planning guidelines would only be of value if the details of migration structure and the relative importance of the various factors affecting it are known.

The following data concern the relationships between the size of village populations and their occupational structure.

The villages of county Baranya have been arranged into four categories, according to population, as follows:

Category I = villages with less than 500 inhabitants
Category II = villages with 501–1,000 inhabitants
Category III = villages with 1,001–2,000 inhabitants
Category IV = villages with more than 2,000 inhabitants.

The relation is quite definite between population and the proportion of agricultural inhabitants between 1959 and 1960, as well as with respect to migration as the following table indicates.

TABLE 1

Category	The proportion of agricultural inhabitants as compared to the total population		Difference	Difference resulting from migration	Horizontal regrouping and the difference resulting from migration combined
	1949 %	1960 %	1949–1960 %	1949–1960 %	%
I	94·3	66·2	—28·1	—20·3	—48·4
II	79·9	62·4	—27·5	—12·7	—30·2
III	74·3	54·4	—19·9	— 9·7	—29·6
IV	53·8	37·3	—16·5	— 4·0	—20·5
County average	75·2	54·9	—20·3	—11·0	—31·3

The average degree of regrouping of the population is thus 31·3 per cent. It is greatest in the small, undeveloped villages, where the proportion of decrease in the number of agricultural inhabitants approximates 50 per cent over 11 years. This figure decreases as the size of the village increases and the average for the villages with more than 2,000 inhabitants is 20·5 per cent.

Bearing this in mind, a plan for the rearrangement of the settlement network was made for County Baranya. The plan strives for the elimination of the

very small villages and for the development of those with more than 2,000 inhabitants. Initial steps are the formation of village-zones and the increased development of residence-villages, and these are now in progress.

In the course of the research concerning factors influencing the occupational composition of the population, villages were classed according to their transport potential in four groups as follows:

Category I = villages where there is railway and bus service,
Category II = villages with only railway,
Category III = villages with only bus service,
Category IV = villages with neither railway nor bus.

The research gave the following results:

TABLE 2

Category	Number of villages	The average population	The proportion of agricultural inhabitants		Difference	Difference resulting from migration	Regrouping combined
			1949 %	1960 %	1949-1960 %	1949-1960 %	1949-1960 %
I	64	1215	61·8	41·7	—20·1	—25·1	—25·2
II	25	1015	72·3	51·2	—21·1	—14·8	—35·9
III	153	757	85·2	59·6	—25·6	—23·7	—49·3
IV	81	408	83·7	67·4	—16·3	—22·8	—39·1
County average	323	749	75·2	54·9	—20·3	—11·0	—31·3

The composition of the population according to occupation changed most in the villages in Category III. The proportion of agricultural inhabitants decreased in these villages as compared to the total population by 25·6 per cent, the difference resulting from migration was 23·7 per cent, and in the final result vertical and horizontal regrouping together influenced 49·3 per cent of the inhabitants.

In Category IV the change was 38·1 per cent in villages with no transport facilities. The migrational difference in this category is nearly the same as in Category III but the occupational structure of the population changed least as a result of the lack of commuting facilities.

In Category II the results are similar but the components are the opposite. In Category IV migration is more than double the county average, but the decrease in agricultural inhabitants without migration falls behind the county average, but in Category II the horizontal change is higher and the proportion of migration is lower.

The change is least in Category I. About 20 per cent of agricultural inhabitants changed their activity without migration—which is explained by the good transport facilities—but migration is less than half the county average.

The factors influencing population and occupational changes in the villages are better understood if a consideration of transport facilities is combined with the numerical distribution of inhabitants.

The average number of inhabitants was 749 in the villages of the county in the year 1960. According to Table 2, the population of a village in Categories I and II is higher than the county average, and lower in Categories III and IV. The largest and most developed villages belong to Category I. "Social capillarity", the aspiration of people to ascend through the capillaries of society to reach a more rewarding and substantial life, could in these locations be achieved without changing dwelling places and migrating into more developed villages and towns. Therefore the migrational difference is the lowest in this category, but commuting as a result of the favourable transport facilities and changes in occupations were up to the county average.

The size of the population is less than 1,000 in the greater part of the villages belonging to Category II; social and cultural institutions are evidently not as well developed as those in the larger villages, and therefore migration is nearly three times as much as in the former, but is far behind the villages in Categories III and IV. Because of the favourable transport facilities commuting reaches the county average.

The average size of the population in the villages of Categories III and IV is below the county average. In these locations the factors permitting "social capillarity" are absent or nearly so and for this reason migration is more than double the county average. There is also a great difference in occupational structure. Traffic facilities allow some commuting in Category III and the decrease in agricultural inhabitants is fairly high but in Category IV, because of the shortage of transport, it is nearly 25 per cent below the county average.

Research has been started on the other factors affecting the occupational structure of the population, including the development of facilities in villages, the distance from the town, etc., as well as on the effect of occupational structure and natural demographical changes on the distribution of the population according to age and sex, and on cultural conditions.

5. More detailed research on the occupational composition of population in a smaller region reveals a number of phenomena which demand attention. Some of these are apparent in County Baranya.

The proportion of industrial workers—including those in mining and building—was 66·2 per cent of non-agricultural village inhabitants in County Baranya in 1949—including the mining and building industry too—employed mostly in factories. This proportion increased by 22·6 per cent to 88·8 per cent in 1960, and the proportion of independent craftsmen which was 30·7 per cent in 1949 decreased to 8·1 per cent.

There is no doubt that the development of manufacturing with more economical and better quality production reduces the reason for the existence of independent craftsmen. Nevertheless, the number of independent craftsmen in the census of 1960 reveals an important problem. At present craftsmen cannot satisfy the demand for services in a great part of the county villages. In 56 villages in Baranya—or 17·9 per cent of the total—there are no craftsmen at all; 68 villages have only one, and 38 villages have two.

6. In a short paper it is impossible to give an account of such a large theme as the "horizontal urbanization" of villages. This involves their transformation through changes in those socio-economic factors which influence the occupational structure of village inhabitants. It has not been my aim to draw broad

conclusions about this process, but rather to draw attention to the general theme which Hungarian geographers have not taken sufficiently into consideration. The transformation of rural settlements becomes more apparent every day. It changes the outer form and the inner character of the villages, as well as their social function. An important task for geographers is to study this change in order to recognise the factors and laws underlying it—both in theoretical and practical terms—as well as to provide a scientific foundation for the solution of problems arising from these phenomena.

COMMUTING AS AN ASPECT OF POPULATION GEOGRAPHY IN THE SOCIALIST COUNTRIES

by

Yu. L. PIVOVAROV

During recent decades commuting has become of increasing importance in many countries of the world and is attracting more and more attention as a much neglected topic of study. Commuting is caused by the development of interrelated settlements characterized by spatial gaps between places of residence and places of work. These gaps give rise to regular short (daily and sometimes weekly) journeys of the inhabitants between the place of residence and work places located in various settlements. These journeys from the place of residence to work and back are stable in time and space and are well known in the literature as "commuting". In its characteristics and mechanism, commuting differs substantially from migration which is essentially the aggregate of population displacement caused by changes in places of residence. Commuting is brought about by the spatial gaps between places of residence and work places, i.e., it concerns a certain way of life of the population characterized by regular labour trips without a change of the place of residence.

An idea of the scale of commuting may be obtained by considering the following data (relating to some monocentric systems of interrelated settlements) on the number of people working in large production centres but living outside these centres (1960, thousands of people):[1]

Moscow—within the boundaries before August, 1960	= 600
— within new boundaries	= 400
(as estimated for 1965	= 70)
Leningrad	= 140
Kharkov	= 125
Budapest	= 140
Warsaw	
Prague	= 77
Paris	= 790
New York	= 308
Chicago	= 328
Washington	= 213
Hamburg	= 100

Commuting as a form of complex relationship between the development of production and the movement of population has various economic and socio-

[1] The data on the USA include only that portion of the commuters who live within the limits of the Standard Metropolitan Statistical Areas, although commuting is engaged in by the inhabitants of the remote zones as well. See Vishnevskij, 1966; Golts, 1967; Pivovarov, 1966; Palotás, 1965.

logical aspects which are studied by geographers, economists, demographers, sociologists and others.

The geographical study of the commuting problem is particularly helpful in revealing the processes by which territorial systems of interrelated settlement are formed, in finding ways of exercising control over the growth of large agglomerations and cities, in improving the distribution of the population within local groups of towns and settlements, in studying the forms of suburban settlements, and in clarifying many other problems concerning the rational distribution of population for the sake of increasing the effectiveness of social production.

The study of commuting in the USSR is hampered by the shortage of statistics. For instance, the population census sheets still lack a question about the address of employment (Khorev, 1961), which makes it impossible to describe the settlement pattern of labourers relative to their places of employment. Nevertheless, in recent years a lot of publications have been based on the analysis of transport statistics (records of season-tickets on suburban lines, one-day records of passengers on suburban lines, etc.) which have made it possible to investigate the labour connections of the suburban population with Moscow (e.g. Blinkova, 1961; Golts, 1963); a special analysis of the primary materials of the census of 1959 related to suburban settlement and commuting in the Kharkov agglomeration (Vishnevskij, 1966) has resulted in obtaining rather accurate data on the size and direction of commuting and on the qualitative structure of commuters; an analysis of data (in administrative districts) on rural inhabitants employed outside of agriculture, and the like, has also been made. Recently, methods were also proposed for predicting the number of passengers on suburban lines (Golts, 1967).

Data on commuting is essential not only for developing a conception, and establishing the boundaries, of a particular agglomeration but also for revealing the spatial aspects of settlement processes, for working out a scientific typology of settlements, for studying the effect of the town on variations in the social, professional and demographic structure of the suburban population, and the like.

In recent years these and other aspects of the geographical study of commuting have been investigated on the basis of data pertaining to some European socialist countries where commuting is already widespread (see Pivovarov, 1966) and undergoing thorough study. Of particular interest is the investigation of E. Lettrich (1962) devoted to analysing in Hungary those large territorial complexes whose functional unity is cemented by labour trips. Recently S. Levinski (1966) employed the labour trip as a basic typological feature for the classification of Polish towns. Particularly interesting also is the attempt of M. Macka (1966) to show on the basis of Czechoslovakian data the correlation between the density of population and the intensity of labour trips.

The increase of commuting observed in the European socialist countries during the post-war period has been brought about, first of all, by their industrialization and urbanization. The development of industry and a network of towns in some countries is often accompanied by an increase of spatial gaps between industry and population, as the employment capacity of the

industrial centres and regions commonly increases while their dwelling capacity becomes less, owing to constant improvement in living conditions.

For instance, in Poland (1960) 90 per cent of the working positions in industry were concentrated in the towns and urban type settlements whose population comprised only 48 per cent of the whole of the population and (74 per cent of the non-agricultural population of the country (Lijewski, 1965). It is quite evident that such a gap between the location of the working positions in industry and that of the population necessitates intensive labour trips by rural inhabitants to the towns.

As far as Czechoslovakia is concerned, an excessive commuting mobility of the population is found in Slovakia involving more than 30 per cent of the whole population of the country but only 20 per cent of its industry.

Thus, industrialization is closely connected with the process of social-professional differentiation of the rural population and, in particular, with the transference of an ever-growing portion of the rural population to non-agricultural occupations, commonly through a stage of combining work in the agriculture with income from the non-agricultural occupations. The growth of these intermediate groups of the population—the peasant-worker and worker-peasant—living mostly in rural localities, as well as the growth of the ever-increasing group of "hidden town-dwellers" who live in rural localities but work in the towns,[2] is one of the most important reasons for the increase in labour trips, especially trips by rural inhabitants to the towns.[3]

Equally, commuting in turn effects the development of production, particularly its territorial organization. Commuting and the system of suburban settlement become, for instance, important factors in controlling the growth of large cities in the socialist countries.

The limiting of town growth is based on a complex estimation (for the specific town at the given stage of its development) of two controversial tendencies. On the one hand, there is a tendency toward the territorial concentration of production which gives considerable economic profits, and on the other hand, there is a tendency toward the dispersal of the population as a result of the specific of the drawbacks of the large city as a form of settlement. The latter tendency leads to a remarkable rise of suburban forms of settlement around large cities and slows down the growth of the central city. Hence, only a fun-

[2] A brief review of an investigation of this "rural non-agricultural" population in the USSR and an analysis of its geographical features based on data from the Volga-Vyatsk region, have been made by B. S. Khorev (1961).

[3] Thus, according to data of the last population census in Poland (1960), more than 800 thousand of people are employed simultaneously in agriculture and outside it, most of them living in rural localities. In Yugoslavia, almost 40 per cent of the active agricultural population are occupied outside their farms. This group of peasant-workers dwelling in rural areas but fully occupied outside of agriculture is constantly increasing. According to some estimates (Krasovec, 1966) in Yugoslavia the proportion of peasant-workers involved in common land ownership has increased from 1 per cent before the war to 35 per cent. In Hungary, according to estimates for the beginning of 1963, 2 million people (20 per cent of the whole population of the country) lived on mixed incomes (wages and income from the farm). This is a little bit less than the amount of the population (2·2 mln) who lived solely on farm profits (Mód, 1964). In Czechoslovakia, where a comparatively large group of worker-peasants was formed during the capitalist period, more than 50 per cent of the rural population is not now connected with the agriculture.

damental study of the problem can help to determine the threshold when further growth of the city becomes unreasonable from the point of view of the economy. At present, the necessity for limiting the growth of large cities is prompted by the realities of ever-growing difficulties in service and administration. In practice, the role played by commuting lessens these difficulties as part of the population working in the city settles in the suburbs.

By way of example, let us consider Budapest which is the largest industrial centre and city in the socialist countries of Europe (excluding the USSR). The Hungarian capital is characterized by a high degree of concentration of industry (50 per cent of the industrial production of the country) and population (about 20 per cent). The general plan of Budapest development provides for stabilization of the population (at a level of not over 2·3 mln) by shifting many enterprises out of the capital. Besides, a project for the long-term development of a network of settlements provides for a rapid development of several considerable regional centres (Miskolc, Debrecen, Pécs, Szeged, Győr and others) intended to ensure a more uniform development of the network of towns and to limit the growth of Budapest. However, all these measures to control the growth of the capital are planned for the long term.

As distinguished from these measures, commuting makes it possible at the moment to meet the requirements of the capital in manpower without a corresponding growth of the house-building and, in general, without further growth of the city. Therefore, the Hungarian capital is characterized by rather close labour connections with its surroundings. According to data provided by E. Lettrich (1964) for 1960, more than 50 per cent of the inhabitants of the 137 settlements which form the Budapest agglomeration are employed in enterprises in the capital. Commuters into the city comprise 12 per cent of all the employees in Budapest.

The foregoing discussion by no means covers all aspects of commuting as an object of geographical study. However, it does indicate the importance of such study in revealing the specific influence of commuting on the territorial organization of production in various socialist countries.

HISTORICAL AND GEOGRAPHICAL TYPES OF SOCIO-ECONOMIC RESTRATIFICATION IN EUROPE

by

B. SÁRFALVI

A. INTRODUCTION

The economic and social conditions responsible for the pattern and the rate of development of internal migration in Hungary have their closest analogies in the neighbouring countries. This is not surprising in view of the very similar historical development of these nations. For a correct interpretation of local processes, a regional review of the consequences of industrialization is essential. Therefore, we have to deal, on the one hand, with countries which are ahead of Hungary in the socio-economic restratification process; and on the other, with countries whose development is synchronous with, or has even lagged behind, that of Hungary.

However, it is not possible to trace accurately the process of internal migration in all of these countries even where there are identical conditions, much less where they differ. Therefore, because of the heterogeneity of the available information, the following regional review unavoidably contains some discrepancies.

What kind of results can be expected from such a review? Although most of the nations, industrially and socio-economically more advanced than Hungary, are under the capitalist system, the characteristics of their development may be instructive to the Hungarian student. It is important to recognize that the principal motivating forces and the main trends of these socio-economic processes are the same in both capitalist and socialist societies. Of course, nations with a planned economy have more efficient means for controlling the process, including continuous checking and measures for eliminating or, at least, modifying any apparent social or economic inconveniences.

In comparative studies the following questions must first of all be answered:

1. When did restratification begin?

2. Was it a harmonious, comparatively steady process, i.e.
   (a) Was the ex-agricultural population entirely absorbed by the non-agricultural branches?
   (b) Was the internal restratification coupled with immigration?

3. Was the process of social restratification disharmonious or unsteady, i.e.
   (a) Could the ex-agricultural population only be partly absorbed by the non-agrarian branches, or was a part of them forced to emigrate or to return to agriculture?

(b) Was the development of agriculture and of the other branches of the national economy asynchronous; was there any alternation of labour surplus and labour shortage; of emigration and immigration?

4. How much did the ratio of the gainfully occupied agricultural population decrease? What is the number of agricultural earners per 100 ha. of agricultural land?

5. What is the ratio of agricultural to industrial wage-earners and what is the share of agriculture in the national income as compared with industry?

6. Which type of social restratification is represented by the country under consideration, as interpreted from
(a) the historical, and
(b) the geographical point of view?

B. RELATIONSHIP OF THE SPATIAL DISTRIBUTION OF THE POPULATION AND THE PRODUCTIVE FORCES

The spatial distribution of the population, the most important and dynamic element of the productive forces, is directly or indirectly influenced by the distribution of the material forces of production. Of these, land is obviously static and has comparatively the most even spatial distribution; nevertheless, during the evolution of any society the focus of agricultural production is repeatedly relocated in response to its changing technical ability to exploit various physical conditions of soil, climate, drainage etc.

Economy as a whole always tends to be arranged in such a way that the satisfaction of the needs of the society and the development of the desired socio-economic conditions may take least possible labour. This territorial rearrangement will change with the evolution of the productive forces and the process is usually manifested in a migration of population, the material forces of production being largely raw materials, mineral deposits and fuels, and therefore less mobile.

Consequently, the spatial distribution of the population in general does not define the location of the material forces of production. However, any important change, or any development, in the spatial pattern of the productive forces will provoke a geographical rearrangement of corresponding magnitude in the population.

C. OUT-MIGRATION OF THE AGRICULTURAL POPULATION AS HISTORICAL CATEGORY

At a historically defined stage in the evolution of the society, when the product of labour becomes commodity, the commodity-producing economy must develop and progressively grade into a capitalist economy. Commodity production and the consequent development of capitalism are based upon the social division of labour.

A prerequisite for the advanced division of labour, based on the exchange of commodities, is the contradiction between city and village and, as stated by Marx, the whole economic history of the society is expressed by the development of this contradiction.

With the development of the social division of labour the various branches of the processing industry, combined as they had been in primary production, were gradually detached from agriculture. And this process caused more and more strata of the population to separate from agriculture. As the development of commodity production was accelerated, gradually increasing masses were transferred from agriculture to industry or, in smaller measure, to other non-agricultural sectors of economy such as commerce, communications, services, etc.

Directly connected with the social division of labour is the spatial division of labour, a peculiar product of manufacturing which has brought about large commodity-producing districts as regions have become specialized in the production of some particular group of commodities. This initial stage of the spatial division of labour did not provoke any massive change in the dwelling or working places of the population. It was a period of industrial development characterized, just like the previous one, by a long-lasting immobility of the population. An agent of small-scale production, the craftsman never did abandon the land, even in the most advanced industrial countries. On the other hand, the manufacturers, working in settlements with central functions, only attracted the agricultural population of the neighbouring villages so that the craftsmen were recruited from small areas only. Co-operation, if any, between widely spaced small-scale manufacturing units, industrial centres and districts was still quite insignificant.

This segregration was disrupted by capitalist wholesale manufacture. Industrialization necessarily mobilized the population and broader interregional economic relations developed at a fast pace. With the development of communication facilities the geographical isolation of the agricultural regions was eliminated, and the local and regional markets progressively merged with the national market. Large-scale manufacturing brought about new centres, whose explosive development usually gave rise to massive outmigration of workers even from remote regions.

Setting foot onto the road paved by capitalist production, agriculture in fact mobilized the population. Under the conditions of feudal agriculture based on serfdom a prerequisite for production was the immobility of the population. However, the appearance of the various forms of agricultural cash production, the development of its specialized zones, and the differentiation of labour demand by territories and production branches gave rise unavoidably to an internal migration of the population.

Consequently, a migration-induced increase in the industrial labour force at the expense of the agricultural population is an objective historical phenomenon which must take place in every society developing capitalist modes of production during its economic evolution. On the one hand, the industrial revolution would have been impossible without a large-scale movement of the population. On the other hand, the progress of agriculture has made a considerable portion of the peasants redundant.

Of course, not all migration can be ascribed to industrialization, to the division of labour between village and city. History has recorded plenty of large intra-territorial migrations which were independent of industrial revolution because they took place much earlier. These phenomena too were brought about by the breakdown in the relative harmony in the relations of forces of production. Such a failure may have been provoked by various causes. For instance, the formation of the original urban proletariat was connected with a rush of rural people to towns, but this process involved no labour division as it was due to a crisis provoked by changes in the intra-agricultural relations of production.

Also before the industrial revolution, the putting under cultivation of new areas led, in many cases, to considerable village-to-village migrations which were connected, again, with an intra-agricultural labour division. Out of the numerous known examples, let us quote Russia of the last century where masses of the agricultural population of the country's western areas migrated eastward along the chernozem belt. In the territory of the United States of America a similar migration took place in an opposite, western, direction, and the same happened—and is happening even today—in Argentina and Brazil. A similar phenomenon in our days is the breaking of the virgin soils of Western Siberia and Kazakhstan in the USSR, a process which has also involved a large-scale, village-to-village, or even city-to-village, migration.

Industrially induced migrations are characterized, unlike the above examples, by a continuity and by a largely village-to-city orientation, i.e. by a steady decrease of the agricultural population and by the parallel spatial concentration of the population. The classical migration process characteristic of the industrial revolution first began nearly 200 years ago in Western Europe in the most advanced countries of that time. Having intensified and gradually extended to almost the whole continent, it became the most important demographic factor of the time. Its earliest manifestation was in England, while on the Continent the rush of the rural population to centres of industrial development—mainly cities—first started in the Netherlands, and with the expansion of the industrial revolution, was soon extended to France. In the rest of the European countries the process developed according to the rate of socio-economic progress. In Germany, especially in its western part, it began as late as about 100 years ago, but then developed at once on a large scale.

By the middle of the 20th century, the 17th century wave of industrialization from England had invaded the entire territory of Europe, although it reached certain regions with more or less delay. In the course of this process economic activities were gradually concentrated in towns and cities or in regions of rapid industrial development. This had an immediate effect in the agricultural areas where, first of all, the inhabitants of the suburban areas began to rush to the city and the flow of migrants came from more and more remote areas.

Since the stage of labour division, implying a large-scale occupational restratification, took place at different times in various countries, they are at present naturally at different stages in the process.

D. THE BEGINNING OF SOCIAL RESTRATIFICATION IN DIFFERENT COUNTRIES OF EUROPE

According to the date of the beginning of occupational restratification caused by the social and territorial division of labour, four major types of European countries can be distinguished. Of course, "date" should be under-

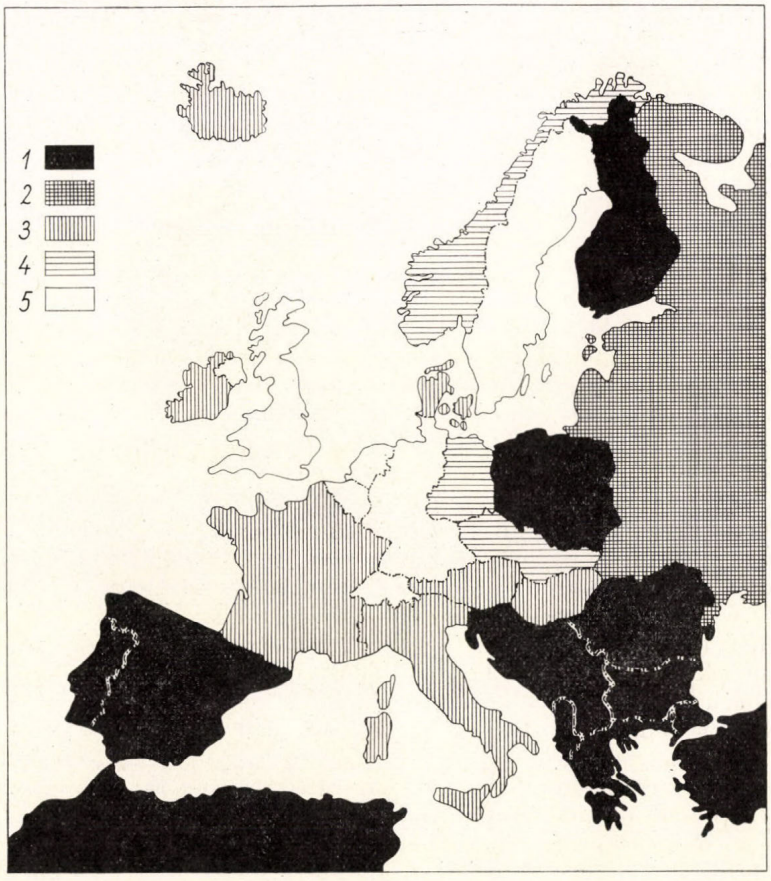

Fig. 1. The historical process of occupational restratification in Europe: the data of dropping below 50% in the ratio of the agricultural population to total population in various countries

1 = before 1800, 2 = 1800—1850, 3 = 1850—1900, 4 = 1900—1930, 5 = 1930—1960, 6 = actual ratio of agricultural population is over 50% (1960)

stood in the historical sense here, and indicates a stage of historical development. Such a stage may sometimes comprise a whole century.

The afore-mentioned four types are represented by the following nations:

1. Most advanced in the industrial revolution are Great Britain, Belgium, the Netherlands, and France, relying on original capital accumulation. In

these countries the occupational and spatial restratification of the population began as early as the 18th century and the ratio of the agricultural population dropped below 50 per cent by the middle of the 19th century.

This process of long duration was characterized by steadiness, progressiveness and by repeated inversion, or at least reciprocity, of demographic movement. This was due to the fact that in the 18th century the concentration of the productive forces was essentially confined to textile manufacturing, while this function was later taken by heavy industry. To be accurate, these industrial branches were in many cases interlaced, even territorially. In certain phases the rate of development was so high that it provoked immigration which, however, was coupled with a simultaneous, large-scale emigration.

2. The second type is represented by those countries of Europe, in which the bourgeois revolution was delayed or even abortive: Italy, Germany, Switzerland, Austria, inclusive of her former provinces, Bohemia and Moravia, Sweden, Denmark, and Norway.

Both the spatial rearrangement of the population and the industrialization responsible for it, were very rapid, at some stages stormy, processes so that more than half of the population found employment in the non-agricultural branches of economy before the coming of the 20th century. In these countries the demographic concentration was from the very beginning controlled by the development of heavy industry. Therefore, the concentration centres remained unchanged. A constant concomitant of the restratification process was emigration which was due to the insufficiency of domestic opportunities for employment.

3. The third type is constituted mainly by the countries of Eastern and Southern Europe: Russia, Poland, Hungary, Finland, Ireland, Greece, Spain and Portugal. Because of internal remnants of feudalism and partly because of dependence on other nations, these countries entered the final phase of bourgeois revolution and commenced industrialization as late as the 20th century. The expulsion of the peasantry from their lands began at the turn of the 18th and 19th centuries. However, because of the insufficiency of capital, these people were not absorbed by industry, but either emigrated or were forced back to agriculture. In smaller measure, this process was even characteristic of a few countries of the former category such as Austria and Germany.

Because of dependence on the leading imperialist powers, the industrialization of these countries was usually protracted, unsteady and rather limited; more than half of their populations were occupied in agriculture by the middle of our century.

Following the victory of socialism, the three socialist countries of this type have undergone a meteoric industrial development, in striking contrast to the slow and unsteady rate of their pre-socialist industrialization.

4. The fourth type is represented by the countries which remained either completely or for the most part agrarian until the middle of the 20th century. Most of these are socialist countries — Romania, Bulgaria, Yugoslavia, and Albania. With their rapid present-day progress they may shake off their agrarian character within a comparatively short time.

Naturally, these four types are based merely on a consideration of the historical date of the setting-in of industrialization. However, an examination of the present-day degree of industrialization and of the economic-spatial

restratification of the population of various countries shows convincingly that historical date differences in the setting-in of the process do not produce

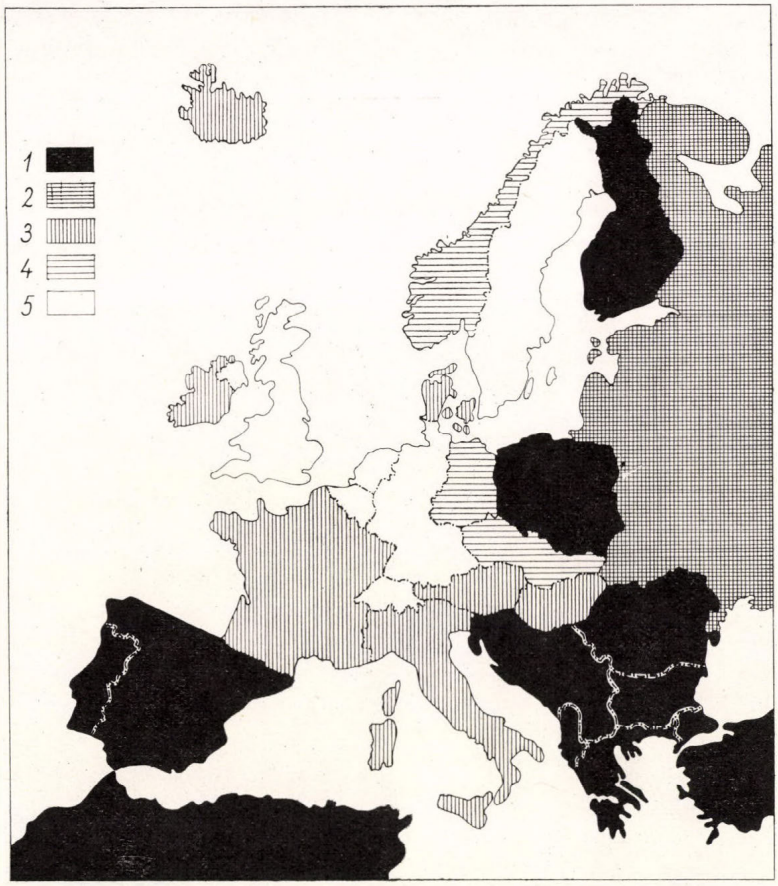

Fig. 2. The number of industrial employees in relation to agricultural earners, 1963

Number of agricultural earners = 100
1 = below 100, 2 = 110—200, 3 = 200—300; 4 = 300—600, 5 = over 1,000 per cent

a decisive effect on the subsequent development of a nation or a society, even though their manifestations are felt for a comparatively long historical time. In fact, by the middle of the 20th century the earliest industrialized countries had been caught up by, or even overtaken by, a number of nations which had commenced industrialization with a handicap of nearly one hundred years, such as Sweden and Denmark in Europe, and the USA, Canada and Australia overseas.

As believed by the French philosopher, Pierre Vilac, the ratio of the agricultural earners should drop below 50 per cent in order for a society to become

active, i.e. for the social restratification process to react upon the socio-economic progress. Naturally, this thesis cannot be considered a law. Nevertheless, as shown by statistical data, in the European countries a decrease in the percentage of the agricultural population from 70 per cent to 50 per cent took five times as much time as a decrease from 50 per cent to 30 per cent.

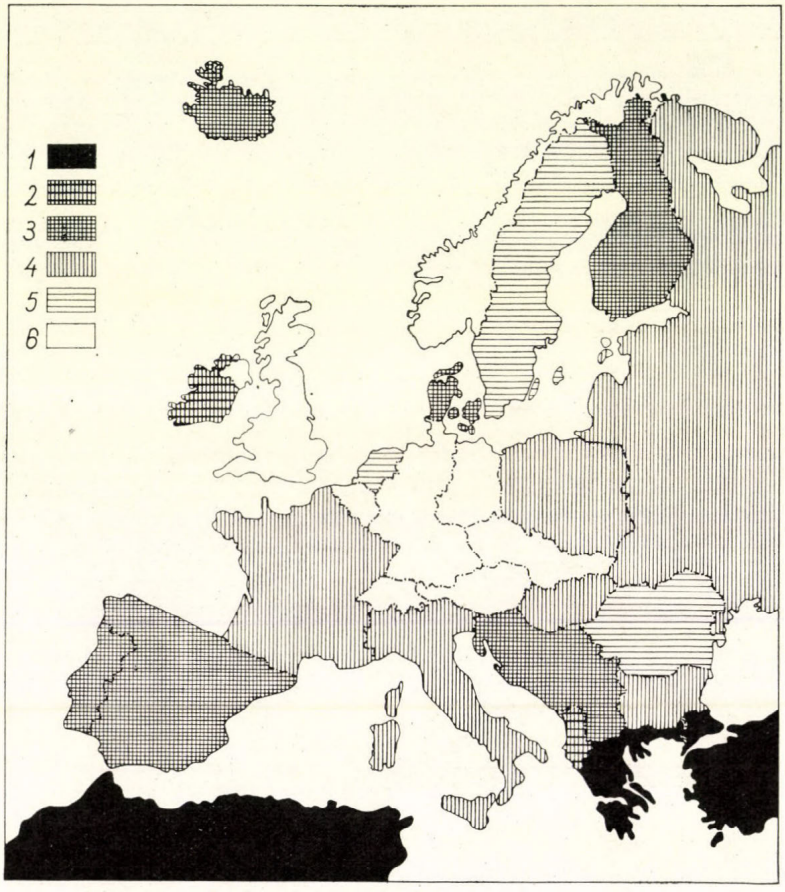

Fig. 3. The value of industrial product in relation to agricultural production, 1963

Production value in agriculture = 100
1 = below 100, 2 = 100, 3 = 110–200, 4 = 200–400, 5 = 400–500, 6 = over 600

E. HISTORICAL TYPES OF SOCIO-ECONOMIC RESTRATIFICATION

On the basis of the present-day levels of the individual countries and the ratios of three basic groups of the gainfully employed population—agriculture, industry-transportation, and "other" employment—five stages can be distin-

guished in the evolution of European countries. Although the impress of history is still apparent within individual types, some new features are also apparent. Among these are the achievement of, or approach to, the standard

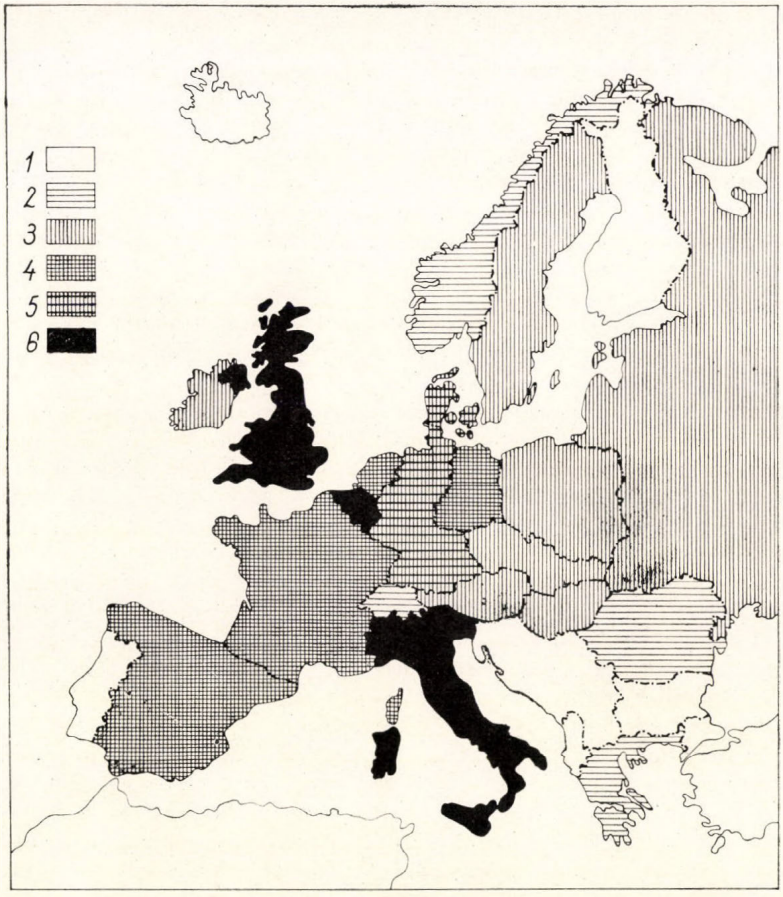

Fig. 4. Percentage of urban population, 1963

1 = below 30, 2 = 30–40, 3 = 40–50, 4 = 50–60, 5 = 60–70, 6 = over 70 per cent

of historically more advanced nations by most of the socialist countries, the sudden advance of a few other nations, and the standstill in the development of others.

1. In the countries of the first type, Great Britain, the GFR, and Belgium, migration has markedly slowed down already, for out-migration from agriculture has been practically completed. The ratio of the gainfully occupied agricultural population does not reach 15 per cent in any of these countries, and in some of them is even lower than 10 per cent. Despite this fact, the

number of people occupied in agriculture slowly goes on decreasing. In addition to this, the nations at this stage of development are characterized by the following features:

(a) the number—and, particularly, the percentage—of employees in both agriculture and industry tends to decrease, whereas, the number in the "other" category, including the service industries, increases at a very high rate;

(b) the percentage of industry-transportation employees is usually higher than 40 per cent, and that of the "other" earners, higher than 35 per cent.

2. In the nations of the second type the gainfully occupied agricultural population is still decreasing, although its proportion is lower than 25 per cent already. Parallel with this, both the number and percentage of industrial employees are slowly increasing, above 35 per cent, and the share of employees in the servicing and ancillary branches is increasing at a substantially higher rate. The latter account for 35 to 55 per cent of the total of the gainfully occupied population, and it is only in the GDR and Norway that this figure is below 30 per cent. It should be noted that, beside these two countries, France, the Netherlands, Sweden, Denmark, and Switzerland are also at this stage of development.

3. The third type is represented by countries in which in the course of the restratification process the non-agricultural earners have considerably outnumbered the agricultural whose share no longer amounts to 40 per cent and has even dropped below 30 per cent in some countries such as Czechoslovakia and Italy. This group of countries also includes the Soviet Union, Hungary, Austria and Ireland.

In some countries of this type the proportion of the industry-transportation employees has grown well above 40 per cent, for example in Czechoslovakia, Hungary, and Austria, whereas the "other" earners category shares as little as 20 to 25 per cent of the total.

In the socialist countries of this type, the restratification process has presently attained its highest rate of development. Against the background of the continuous decrease of the agricultural population, the amount of industry-transportation employees is still increasing, although at a very low rate. On the other hand, employment in the servicing and ancillary branches is rapidly expanding. A similar trend is apparent in Austria.

A quite special position is occupied by Ireland. Although the percentage of the agricultural earners has dropped below 40 per cent here too, the ratio of the industry-transportation employees is as low as 25 per cent, whereas the share of the "other" earners is again rather high at 36 per cent. A country of low-quality soils, Ireland has for 150 years been able to reduce—at a not too rapid pace—her agricultural population only by letting tens of thousands of persons emigrate each year. This is why the present-day occupational pattern of the population is rather rigid, changing very little, if at all, from year to year.

4. As for the countries of the fourth type—Poland, Finland, Greece, Spain, and Portugal—all that they have in common is restricted to the most basic features. The percentage of the agricultural earners varies between 40 and 50 per cent, that of the industry-transportation employees between 20 to 30 per cent, in all countries but Poland where it is less than 20 per cent.

The rate of restratification is much slower than in the former type, although in Poland it will surely be accelerated in the years to come.

5. The fifth type is representated by Yugoslavia, Romania, and Bulgaria, i.e. by those socialist countries in which the first considerable wave of industrialization was induced by socialist revolution. In these countries it is first of all the industry-transportation employees that have increased with a parallel reduction in the agricultural population. However, an expansion of employment in the servicing and ancillary branches is also expected.

In the countries of this type the agricultural earners account, in general, for more than 60 per cent of the total, the share of industry-transportation employees being 20 per cent and that of the "other" branches 10 to 20 per cent. With 22 per cent of its employees in industry and transportation, Bulgaria differs slightly from the rest of these countries.

F. THE DIFFERENT GEOGRAPHICAL PATTERNS OF SOCIAL RESTRATIFICATION AND INTERNAL MIGRATIONS

The ideal model of the restratification process supposes a spatially uniform distribution of the agricultural population overlain by a similarly uniform pattern of non-agricultural demographic concentrations, provided that the State territory under consideration is geographically homogeneous. Under such conditions, except for some local migrations, all the employment changes would take place *in situ*, as labour division would affect equally the entire State territory.

In reality, however, the social division of labour develops in a disproportionate spatial pattern, parallel with the growth of capitalist wholesale manufacturing. Thus the specialization of certain areas begins, and in this process the spatially uneven distribution of the material forces of production—agricultural land, mineral deposits, etc.—play a very important role.

Since the introduction of the steam engine, which opened up a new era in the history of industrial development, the location of industrial production has been primarily controlled by the location of coal—the most important and most common fuel and source of energy. The world's largest industrial complexes have usually been located in coal basins and, although the hegemony of coal is already broken, the spatial pattern of labour division is still basically controlled by coalfield-based industrial concentrations. The distribution pattern of industrial concentrations in a country defines the trend and even the mechanism of internal migrations induced by restratification.

In the countries of Europe the different geographical characteristics of the distribution of the means of production have brought about different patterns of spatial rearrangements or internal migrations. Naturally, these patterns may differ from country to country, yet the analysis of a few basic features allows us to distinguish some rather vaguely outlined types among them.

1. Great Britain and the German Federal Republic can be included in one type. Both countries are densely populated, both showing a comparatively even distribution of population. Strikingly set against this background are several large industrial agglomerations or conurbations in which the density

population is as high as 400 to 600 inhabitants per 1 km². Since the industrial agglomerations—supplemented by scores of secondary concentrations—have dotted almost the entire State territory, internal migration trends are very

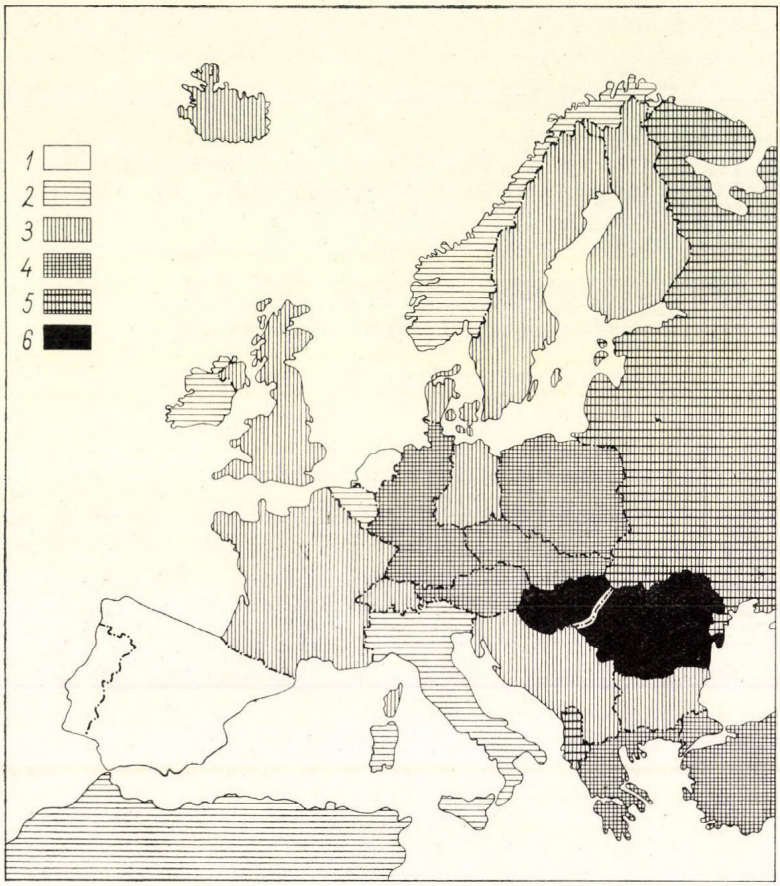

Fig. 5. The gainfully occupied population as a percentage of the total, 1963

1 = below 38, 2 = 38–42, 3 = 42–46, 4 = 46–50, 5 = 50–54, 6 = over 54

different. In this respect the conditions of the GFR are somewhat more disadvantageous, since the northeastern and southeastern areas of the country lie rather far away from the conurbation centres. It is also characteristic of both the countries, although in greater measure of Great Britain, that industrial concentrations are surrounded by areas destined for industrialization rather than by homogeneous agricultural areas.

2. The countries of the second type—Italy, Sweden, and Hungary—have something more in common. In these countries spatial division of labour shows a similar degree of polarity. The most extreme concentration pattern of in-

dustrial activity is in Italy and Sweden. In the former, the bulk of the nation's industry is concentrated in the northern one-third of the State territory, particularly in the western reaches of the Po Valley; in the latter, around two

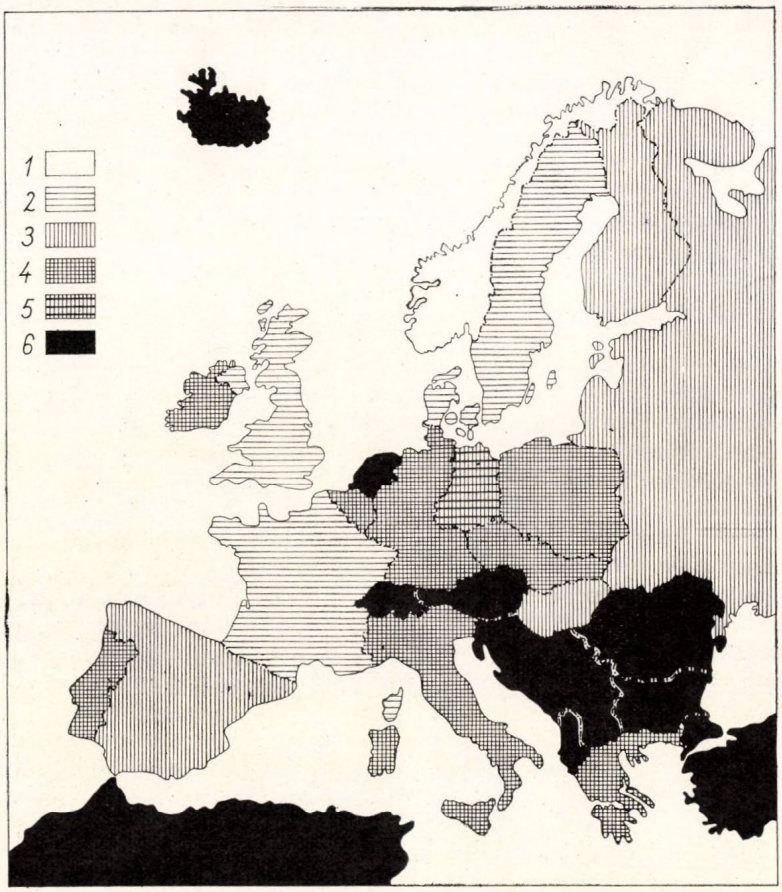

Fig. 6. Number of agricultural earners per 100 ha of arable land, 1963

1 = below 20, 2 = 20—30, 3 — 30—40, 4 = 40—50, 5 = 50—60, 6 = over 60

cities—Stockholm and Göteborg—which are relatively far south. In the case of Austria and Yugoslavia, industry is scattered over a somewhat larger area; between Vienna and Salzburg in the first case, and in Slovenia in the second, although a few substantial industrial centres have developed in the territory of Serbia and Croatia as well.

The uneven spatial distribution of industrial concentrations has defined the trends of internal migrations. It Italy and Yugoslavia the population migrates from south to north, in Sweden from the country's interior seawards, in Austria from west to north-east and north. Well-developed industrial concentrations

are contrasted with homogeneous agricultural areas, from which the ex-agricultural labour force migrates for great distances.

In Hungary most industrial activities are confined to the Hungarian Central Mountain belt which crosses the country in a SW–NE direction and includes the Budapest agglomeration. Consequently, internal migrations are directed toward this belt.

3. Ireland presents a unique form as there is no considerable industrial concentration at all. Because of the lack of domestic scope for restratification, the ex-agricultural population of the country, representing a substantial part of the evenly distributed population, emigrates constantly and at a high rate.

G. THE PRESENT STATE OF SOCIO-OCCUPATIONAL RESTRATIFICATION IN THE EUROPEAN COUNTRIES

Because of the insufficiency of available information, an analysis on a continental scale cannot be done in the same detail as for a few selected countries. To assess the state of restrification and the level of industrialization, the author has used the following five indices: (a) the ratio of industrial employees to the gainfully occupied agricultural population; (b) the value of industrial product versus agricultural product; (c) the urban population as a percentage of the whole; (d) the percentage of the population which is economically active; (e) the density of the gainfully occupied agricultural population.

The occupational pattern of the economically active population provides reliable information on the state of occupational restratification, whereas the structural level of national economies is indicated by the contributions of the two leading branches of national economy to the national income.

However, the patterns of the individual countries are, as defined by either of the two indices, rather different. As reflected by both of these indices, Great Britain, the GFR, Switzerland, Luxemburg, and Belgium are highly developed industrial countries. The majority of the agro-industrial countries—France, Italy, Hungary, Finland—also show the same pattern.

In terms of the gainfully occupied agricultural population, Romania, Bulgaria, Yugoslavia, Poland, and the countries of the Iberian Peninsula are onesidedly developed agrarian countries, although the contribution of industry to national income is higher than, or at least equal to, that of agricultural production. Although less marked, such a disparity is also revealed in the case of the Soviet Union. The up-to-date industry, which has developed at a rapid rate in the above-mentioned socialist countries, has clearly overtaken agriculture which used to be the leading branch of the economy. However, the occupational restratification has been slower than the rate of industrialization.

Because of the sluggish restratification process, the urbanization—or demographic concentration—process was also slow in these countries. In the highly developed industrial countries more than half, or even 3/4, of the population are townsfolk already. In Central Europe the ratio of the urban population reaches 30 to 40 per cent, but farther southeast this figure is as low as 1/5 of

the total population. It should be noted that an international comparison of the percentage of urban population is difficult because the criteria for city status are different in almost all of the countries. In most of them towns and cities must have definite administrative functions which may differ from country to country; in other countries settlements having more than 1,000, 2,000, 2,500, and 3,000 inhabitants, are taken to be towns or cities—classification being based upon the characteristics of local settlement patterns.

Where the restratification process was steady, the number and percentage of the economically active population gradually increased and attained at least 45 per cent of total population. It is in the socialist countries that the ratio of the active population is the highest—more than 55 per cent in Hungary and Romania, more than 50 per cent in the Soviet Union and Albania, and close to 50 per cent in Poland and Czechoslovakia. The lowest figure is found for the Iberian Peninsula, below 25 per cent, although it is not much higher in the Netherlands, Belgium, Italy, Norway and Ireland.

As a result of village-to-city migration, the agricultural labour force rapidly decreases. With the gradual expansion of mechanization, the scope of manual work is reduced and the importance of the role of management in agricultural production increases.

The density of agricultural earners is also related to the availability of arable land. Since in the countries of Europe the proportion of arable land varies from 2·5 to 65 per cent of the total area, it is obvious that, in addition to occupational restratification, this fact also greatly influences the density of the gainfully occupied agricultural population. However, had the present analysis been based upon a consideration of the total agricultural area, the results would have been distorted by the regionally very dissimilar utilization and qualities of meadows and pastures, as well as by the disparities in the proportion of vineyards and orchards.

In Norway and Sweden the density of agricultural population is as low as in the industrially most developed nations—20 to 30 agrarian earners per 100 ha. of arable land. In the countries of Southern, Central and Eastern Europe, this figure is 30 to 50, while in the Alpine nations, the Balkan Peninsula, and the Netherlands it is as high as 50 to 70.

In the last-mentioned country, as well as in Switzerland and Austria, these figures do not reflect the actual state of the restratification process, but rather indicate the importance of cropland with regard to agriculture as a whole.

H. CONCLUSIONS

(a) The earliest industrialized countries of Western and Central Europe, in which the national income is predominantly earned by industry and in which the structure of national income roughly corresponds to the distribution of employment, are the most mature from the point of view of socio-economic restratification. Accordingly, the density of the agricultural population is low, and the percentage of the urban population high; in other words, the spatial restratification of the population is either completed or at its final stage in Great Britain, the Netherlands, Belgium, the GFR, and Norway.

(b) An intensive restratification process is going on in a number of countries tending to reach the level of the nations listed above. On the basis of the degree of restratification, these countries—both socialist and capitalist—are divided in two groups at different levels; the higher level is represented by France, the GDR, Austria, Sweden, Switzerland, and Denmark; the lower by the Soviet Union, Czechoslovakia, Hungary, Poland, Finland, Italy, and Ireland. In these the spatial and occupational restratification of the population is now reaching its most rapid rate.

(c) At the initial stage of restratification are those countries in which the restratification process is only now gaining momentum—Yugoslavia, Romania, Bulgaria, Greece, Albania, Spain, Portugal and Iceland. In accordance with this, there is no harmony between the structure of national income and the distribution of employment, the percentage of urban population is low and that of the rural population high. The constant increase of production in the socialist countries provides a guarantee for the steady development of the restratification process, while the development of several capitalist countries, for example Portugal and Ireland, has been stagnating for decades.

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