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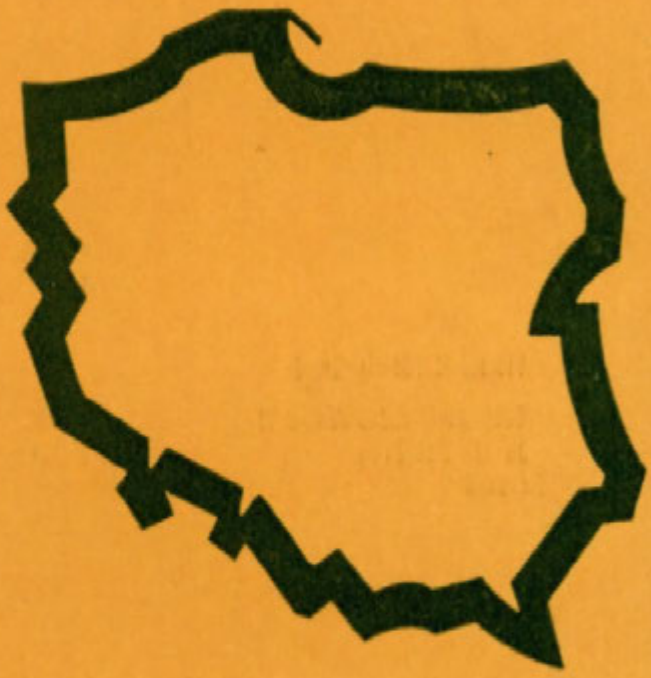

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URBANIZATION AND SETTLEMENT SYSTEM

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CONTENTS

PREFACE

This volume — the 39th of "Geographia Polonica" — presents a series of papers pertaining to the problems of urbanization and settlement systems. They represent the results of the work and studies carried out within the framework of the Commission on Processes and Patterns of Urbanization of the International Geographical Union functioning in its second term of office between the years 1972–1976, as well as the preparatory materials for another commission, the Commission on National Settlement Systems established by the General Assembly of the Union in July 1976 in Moscow.

The volume is divided into three parts; the first one contains the report on the Symposium K.20 on Processes and Patterns of Urbanization held from July 21st to 26th, 1976 in Leningrad, organized as a part of the 23rd International Geographical Union, teogether with several papers presented there; the second part is composed of the national reports on urbanization in selected countries prepared during the years 1972–1975 for the IGU Commission; finally the third part presents three papers read during the last meeting of the IGU Commission in Leningrad. They were intended to serve as the basis for the establishment of a new Commission on National Settlement Systems. The terms of reference, list of members and guidelines for the reports on settlement systems of individual countries as approved during the first meeting of the new Commission (from 4th to 7th January 1977 in Bochum, Western Germany) are also included.

PART I

URBANIZATION PROCESSES

REPORT ON THE SEMINAR ON PROCESSES AND PATTERNS OF URBANIZATION HELD FROM JULY 21ST TO 26TH, 1976 IN LENINGRAD

The Seminar on processes and patterns of urbanization was held in Leningrad from July 21st to 26th, 1976 as a part of pre-Congress activities by the Organizing Committee of the 23rd International Geographical Congress and the Commission on Processes and Patterns of Urbanization of the International Geographical Union. The papers to be presented during the Seminar were grouped around four main topics: (a) The role of urban agglomeration in the contemporary processes of urbanization, (b) Urbanization and its influence on forms and trends in settlement, (c) Prognosis and plannig of urbanization processes, and (d) Problems of the socio-economic structure of cities. In addition, one day during the Seminar was set aside for the General Meeting of the IGU Commission on Processes and Patterns of Urbanization where the topics and a programme for comparative studies on national settlement systems were to be discussed.

Out of 24 papers accepted for presentation during the Seminar 7 were omitted as a result of the authors' absence. During the first session in the afternoon of July 21st, 1976 papers by B. N. Semevsky on the principle of agglomeration and its influence on the urbanization processes, by G. M. Lappo on the effect of agglomeration from the point of view of urban geography, by M. Blažek on new aspects of urbanization in Czechoslovakia and by M. Mookherjee on trends of urbanization in a developing country (India) were read and discussed. B. N. Semevskiy's paper is published below, the paper by S. M. Lappo was published separately in "Soviet Geographical Studies" (Moscow 1976) and the report by M. Mookherjee is included in the second part of this volume. During the second session in the morning of July 22, 1976 papers by Yu. L. Pivovarov on recent trends in urbanization and settlement, by M. I. Strongina on forms of settlement development and their regulation in the USSR, by O. P. Litovka on contemporary problems of urban development and morphology, by M. Jedidi on the urban growth of Sousse in Tunisia and by R. E. Sinclair on spatial changes and the urban landscape were presented. The papers by Yu. L. Pivovarov and R. E. Sinclair are included below.

On Saturday July 24th, 1976 the General Meeting of the IGU Commission on Processes and Patterns of Urbanization took place. During the morning and afternoon sessions three reports were discussed: by K. Dziewoński and M. Jerczyński on concepts, methods of research and development of national settlement systems, by N. Hansen and P. Korcelli on the development of urban agglomerations within national settlement systems, and by P. Schöller on the role of the capital city within national settlement systems. These reports form the third part of this volume. They

were widely discussed. Especially lively discussion developed around the topic of depopulation of the largest urban agglomerations in the highly developed countries of Europe and North America. Both the phenomenon itself, a characteristic of recent years, and its interpretation were the subject of very divergent views. Another topic raised in the discussion was the need for analysis of the impact of central and regional services on urban development and settlement systems, along the lines of the analysis applied to the role of capital cities.

During the morning session on July 26th, 1976 papers by N. P. Agafonov and S. B. Lavrov on interrelations between urbanization process and social organization of production, by M. V. Borshchevsky, B. A. Petrov and S. V. Uspensky on cities within the socialist planning system and by V. I. Nudelman on improving the forecasting of urban development within a settlement system were presented. Of these the first paper is included below.

In addition, two papers on the socio-economic structure of cities (J. Kenyon on the integration of population in Western cities: dimensions, patterns and progress in integration and D. R. DiMartino on residential mobility in a pluralistic society) were discussed. Because of their narrow character the discussion was rather limited in scope although the problems raised were of great interest to those present.

Several excursions were organized for the participants: to Petrodvorec in the afternoon of July 22nd, to Novgorod on July 23rd and (through Leningrad) to the Karelian sea coast on July 25th. The participants visited the USSR Geographical Society (where they had the opportunity to learn about and look over its magnificent collections and archives) and the Geographical Faculty of Leningrad University (where they were informed of the courses and teaching methods developed there).

The late professor B. N. Semevskiy, chairman of the Organizing Committee of the Symposium K.20 was the gracious host of the Seminar and dr Yu. L. Pivovarov its hardworking Secretary.

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THE PRINCIPLE OF AGGLOMERATION AND ITS ROLE IN THE PROCESS OF URBANIZATION

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Historians inform us that at the beginning of the 15th century there were only four cities in Europe — Paris, Constantinople, Venice, and Milan — which had more than 100 thousand inhabitants each, and that up to the last quarter of the 18th century there were no cities with a population of one million or more (we are not concerned here with Antiquity). In the middle of the 19th century only two cities — London and Paris — had more than one million inhabitants, but at the beginning of the 20th century there were ten cities of that size, six of which were in Europe. About 1950 the number of cities with more than one million inhabitants had already reached 51, and at present, at the beginning of the last quarter of the 20th century, there are about 140 such cities. If we consider the uninterrupted growth of large cities of more than 100 thousand inhabitants each — and there are already more than 2500 such cities — as well as all other processes which come under the heading of 'urbanization', we will understand why Mankind cannot but feel disturbed when facing such problems as where the process is leading to, and how it can be, and should be, directed if we are not to be confronted with insurmountable difficulties.

Quite obviously, when studying processes and types of urbanization, we are not allowed to disregard social problems. We should base our research upon objective economic laws of social development, and only by discovering them and relying on them can we arrive at reasonable decisions and recommendations.

Every socio-economic era is characterized by a specific population law, acting only in the conditions of a given formation; it determines the movements of people engaged in production, the areal distribution of population (including the differentiation between the urban and the rural settlements), migrations, and, as a final result, the natural movement of population.

In capitalist societies, under the influence of the universal law of capitalist accumulation, the growth of relative overpopulation is a continuous process. It has its roots in the growth of the organic composition of capital which brings about a diminishing demand for labour force, as well as an increasing exploitation of workers, the destruction of the small enterprise, and an increase in the reserve labour force. As a result, while in the cities appears a growth of unemployment in its undisguised forms, in rural areas, where the peasants live, one can observe an increasing number of poor peasants and farm workers who tend to move into the cities in search of employment.

Under the socialist system of production the population law is quite different. The aim of socialist production is to satisfy the growing material and cultural needs of the population. Under the rule of planned, proportional development of the national economy the causes of spontaneous labour movements are eliminated, a planned distribution of the labour force is introduced, and the transfer of workers from villages to towns thus assumes an orderly, well organized character. The socialist economic system, being a planned one, is able to achieve full employment in conditions of accelerated scientific and technological progress.

Nevertheless, there are some regular features in the process of urbanization which are common both to capitalism and socialism. We are referring here to such features as, for instance, the objective trend towards agglomeration in production and therefore to the agglomeration of population. We see in the principle of agglomeration an objective law of economic geography which came into force simultaneously with the birth of industrial production, its separation from the rural economy, and its concentration in towns. This principle expresses the tendency of production to concentrate within limited areas and is a specific economico-geographical form of the tendency to overcome spatial discontinuity between different elements of production. The concentration of production has to be viewed as one of the basic causes of agglomeration.

In its initial forms, the effects of the agglomeration principle appear even in the pre-capitalist formations making, for example, craft enterprises concentrate in towns; its full effects, however, are observable only in the capitalist era and have not entirely disappeared from the socialist society.

It was Alfred Weber, a German bourgeois economist and sociologist, who first gave a convincing analysis of the functioning of the principle of agglomeration. As is well known, in 1909 Weber developed a theory of industrial location (the industrial *Standort* theory) in which the choice of a site for an industrial plant was made first by investigating which site was the most appropriate from the point of view of the sources of raw materials and the labour force market, and thus guaranteed the entrepreneur the lowest possible outlays. In his theory, Weber was concerned only with the capital and working funds, ignoring the surplus value. He was far from considering the real historical processes of the development of social division of labour and of the formation of economic regions, and disregarded the objective laws ruling the location of industrial plants in the capitalist system. However, there were also positive aspects in his work: he used mathematical methods in analyzing economico-geographical phenomena (although, in doing this, he started with wrong initial conceptions) and — what is of particular importance — he was the first writer to establish not only the concepts of 'resources orientation' and 'labour orientation', but also the important role of agglomeration processes, i.e., of the tendency of industrial plants to concentrate in individual, separate centres. But Weber was a far cry from even trying to find out the causes of this tendency and to establish the objective rules that are inherent in it. Thus he fell short of discovering the principle of agglomeration — and there is nothing fortuitous in this failure of his. To Weber, the historical and social changes specific to a given epoch were linked to the irrational nature of the cultural process, and the process itself had the intellectual elite as its motive force. Thus, according to Weber, the development of human society is steered by an interplay of mental forces. Taking up such an idealistic stance, he denied the existence and the proveability of objective laws governing the development of human society.

A few decades after Weber, E. Hoover (1948), W. Isard (1956) and other authors devoted a good deal of serious work to the problem of agglomeration, without, however, discovering its laws. I. Bain (1954), on the basis of his computations concerning metallurgical plants, came to the conclusion that, in a developing society, all plants tend to concentrate in a single, specialized centre. This would be an extreme manifestation of the principle of agglomeration; Bain, however, also failed to formulate it. McCarty, Hook and Knox, writing about agglomeration processes in the USA and the locational behaviour of industry concluded by making use of a proverb "... birds of a feather flock together".[1] It may be witty, but, of course, can hardly be considered an attempt at formulating the principle of agglomeration.

After having discussed different points of view, P. Hagget reached a very pessimistic conclusion: "The problem of the random nuclei around which so much of our industrial enterprise within developed countries has grown remains an intriguing byway in locational research" (*Materialy...*, 1962, p. 142). In other words, Hagget refuses even to recognize the principle of agglomeration and, in fact, acknowledges its inscrutability.[2]

From what we have just written, it is quite obvious that, lacking a true scientific methodology, and the sway of idealistic philosophical conceptions being all too powerful, it is more or less impossible to make worthwhile generalizations and to discover the laws of development, even though goodwill is not lacking, and abundant factual data are at the disposal of the investigators.

In the USSR the problem of agglomerations was dealt with in the works of P. I. Dubrovin (1959), V. G. Davidovich and G. M. Lappo (1964), V. G. Davidovich (1967), D. I. Bogorad (1967), and other scholars. According to their opinions, agglomerations are most developed and intricate forms of group settlement, most often centred around the largest cities which thus become the cores of agglomerations. Pursuing this line of thought, the economic nature of agglomeration can be identified by studying the settlement systems, blending with the notions of 'conurbation' and 'megalopolis'. However, some regular features of the agglomeration processes should be brought out: (1) the areal concentration of industrial production and labour, (2) the spontaneous, unrestrained character of agglomeration formation under capitalism, (3) the control of agglomeration growth by the methods of regional planning under socialism. These features are manifestations of more general laws of political economy.

D. G. Khodjayev and B. S. Khoryev (*Problemy...* 1971) have convincingly demonstrated how, in the USSR, the share of the largest cities in the population's total is gradually decreasing; this is perhaps an example of how the effects of the principle of agglomeration can be partly overcome in a planned socialist economy. The share of seven 'old' cities of more than one million inhabitants each (Moscow, Leningrad, Kiev, Tashkent, Baku, Kharkov, and Gorki) in the total population of large cities changed as follows: 1926 — 60%, 1930 — 40.7%, 1959 — 29.4%, 1970 — 23.4% (*Problemy...*, 1971, p. 23). When interpreting these data, we should bear in mind two circumstances: (1) the

[1] Quoted after *Materialy...*, 1962, p. 141.

[2] Translator's note: There seems to be some misunderstanding here, because the Russian translation of Haggett's text is somewhat different from the original. The Russian translation, when re-translated verbatim into English, would sound a shade more forceful: "The causes of the formation of the random nuclei around which so much of industrial enterprises within developed countries have grown remains, now as before, an enigmatic field in locational analysis".

rise in the share of the population of large cities which fall below the one million mark (a fact which is also an effect of the principle of agglomeration), and (2) the growth of the population in the conurbations formed around the previously named largest cities is chiefly explained by population changes in their peripheral areas which administratively are not included in these cites and, therefore, are not reflected in their population statistics. Elaborating the idea of a unified system of settlement (USS), the authors emphasize: "Within the framework of the conception of the USS there is no room whatsoever for contrasting the large cities and agglomerations with the small forms of urban life" (*Problemy* ... 1971, p. 29), which means that here, too, the concept of agglomeration can be reduced to that of a settlement system. In the same book N. T. Agafonov, S. B. Lavrov, and B. R. Pavchinski advance, to my mind, a more precise concept of the agglomeration understood as an areal concentration of enterprises: "The agglomeration of production appears to be a regular outcome of all the aforementioned forms of the social organization of production acting simultaneously" (*Problemy*... 1971, p. 63), i.e., it is a result of concentration, specialization, cooperation and integration. The authors even write about the effects of the agglomeration principle as if it were in fact operating (*Problemy*... 1971, p. 69), but unfortunately fail to formulate it. To understand, as they do, the agglomeration as an agglomeration of production (but not of population) is, in my opinion, fully justified. The same can also be said of the conception promoted by F. D. Zastavniy (1972, p. 151); in his opinion an 'agglomeration effect' is the 'attraction' that brings together industrial plants and other economic objects which are areally linked with them. V. U. Tarmisto (1975, p. 193) also sides closely with this understanding of agglomeration.

It is to be regretted that among 46 papers read in the Section on Urban Geography at the 22nd International Geographical Congress (Canada, 1972) there was none dealing with the theoretical aspects of agglomeration. Villard Miller's paper (1972) gave a conscientious analysis of relative changes in the distribution of industry in the USA megalopolises between 1954 and 1967; although there can be no doubt that these changes were primarily effected by the principle of agglomeration, the principle itself, its essence and influence, were not considered. H. Kohl and A. Zimm (1972, pp. 861–863) dealt with agglomerations from the point of view of recreation only.

All that we have just said proves that in economic geography — and in other sciences too, for that matter — terms are used without sufficient precision. Often the same term is used by many authors who each endow it with a different meaning. This is so in the case of the term 'agglomeration'. O. P. Litovka (1976) presented us with a wide review of current definitions of what an agglomeration seemed to be. Having analyzed a variety of written material, he himself is of the opinion that the most characteristic feature of the modern urbanization process is qualitative changes in the forms of settlement; namely those changes which cause isolated, compact settlements to be replaced by structures which are at the same time compact and articulated. The latter are a result of growing functional dependency among the settlements that were formerly autonomous, but of late have been growing larger and larger each year and have thus become a fundamental form of settlement. Those urban organizations which are both compact and articulated, O. P. Litovka is willing to call agglomerations. To him, a conurbation is a policentric agglomeration.

So, as things stand today, in modern economic geography the term 'agglomeration' is mostly understood as a definite system of settlement. To some

extent this may be justified, but by thus limiting the scope of the term we lose a good deal of its meaning and are by no means delivered from the necessity of considering it in a more fundamental, theoretical sense.

A rather satisfactory formulation of the principle of agglomeration is given by N. T. Agafonov and S. B. Lavrov (1973, p. 30). From among the principles and laws that govern the location of industry under the conditions of socialism, they bring out the principle of agglomeration of production as the one that expresses the tendency of production to accumulate in a limited area.

In my opinion, the principle of agglomeration is one of the universal laws of economic geography; its effectiveness grows with the development of capitalist relations and it also preserves its force, although in a modified form, under socialism. The essence of this principle consists in the fact that — within the framework of more general laws of political economy and under the influence of technological factors in the location of industry — the highest economic effect is obtained through maximum spatial concentration of production.

Consequently, what we have to deal with is the agglomeration of production and not that of population or of the forms of settlement. However, as, quite obviously, there is no production without men and women, the distribution of population is closely related to the location of industry. The phenomena are interacting and interdependent. It is the principle of agglomeration that effects the maximum spatial concentration of production and this, in turn, effects the concentration of population in cities and sets in motion all the interwoven processes called urbanization. These two notions, i.e., the agglomeration of production and the agglomeration of settlement, should be kept mentally separated, despite their being denoted by the same term.

It can easily be envisaged that, if the process of urbanization proceeds at the same pace as in the last decades, in some remote future there looms large the danger of a single overgrown giant megalopolis extending over the whole land-mass of the Earth. That is what one could expect in the very remote future on the strength of the tendencies shown by the effects of the principle of agglomeration under capitalism. However, this tendency will never reach its apogeum for the era of capitalism is historically limited in time, and also in space.

In a socialist society the principle of agglomeration is manifested first of all in a tendency to spare the effort of labour necessary to overcome the spatial hiatus between elements of production; this tendency is subject to correction and regulation by means of the planned, balanced development of the national economy. In some cases two contradictory trends are in evidence: concentration — the result of the principle of agglomeration, and decentralization — the result of the rule of planned, proportional development of the national economy. The contradiction, however, is not an absolute one but dialectical, and in the end an equilibrium is reached between the optimum dimensions of conurbations and the intermediate rural and recreational areas.

However, the urbanization process will not vanish completely. Under socialism the opposition between town and village is being eliminated. The documents of the Communist Party of the Soviet Union point the way to the further development of the so-called rural settlements: "Gradually the kolkhoz villages will become enlarged settlements of urban character endowed with modern living quarters, communal services, welfare institutions, cultural and medical establishments. Eventually the cultural and welfare conditions of the rural population will be brought up to the level of those of the urban inhabitants" (*Materialy...*, 1962, p. 384). Such being the case, the notion

of 'urbanization' embraces not only the growth of cities and their increased role in the life of the nation (or of a region), but also, and first of all, the concentration of urban types of acitivity, the spread of the urban way of life, the creating of new forms of settlement. Y. L. Pivovarov (1975) has dealt very conscientiously with the problem. Much attention should be paid to finding out what are the optimum dimensions of urban settlements. To this end methods can be applied that have been proposed by N. I. Blazhko, S. V. Grigoriev, and Y. I. Zabotin (1970). Finally, the problems of the relationship between the city and the natural environment are of the utmost importance.

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MODERN URBANIZATION AND SOME TRENDS IN SETTLEMENT

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The rapid rates of the process of urbanization and its unprecedented scale are a characteristic feature of our times. From a historical point of view it should be noted that in the second half of the 20th century the process of urbanization reached a turning-point under the influence of the development and concentration of the forces of production stimulated by the scientific and technological revolution. The urban ways of life and activity are becoming prevalent throughout the world, above all in the more developed countries and regions. Between 1950 and 1970 the urban population in the world had almost doubled; as a result, by 1970 urban settlements contained almost 40% of the earth's total population (Table 1). According to the forecasts made by UN demographers, at the end of the century the cities will comprise more than 50% of the world population, i.e., more than 3000 million people. Thus, in the

TABLE 1. The dynamics of world urban population, 1800–1970

Year	Total population (million persons)	Urban population (million persons)			The share in the total world population (%)		
		total	out of which in cities		Total urban population	city population	
			of 20 thousand and more	of 100 thousand and more		20 thousand and more	100 thousand and more
1800	906	29.3	23.5	16.6	3.0	2.4	1.7
1850	1171	80.8	54.3	29.0	6.4	4.3	2.3
1900	1608	224.4	151.8	90.8	13.6	9.2	5.5
1950	2400	706.4	566.7	406.0	28.2	22.7	16.2
1960	2995	994.0	807.0	592.0	33.0	26.9	19.7
1970	3628	1399.0	1169.5	863.9	38.6	32.2	23.8
1975	4000	1650.0	—	—	41.0	—	—

Compiled from: *The Study of Urbanization*, 1965, p. 524; *Urbanization in Asia* ..., 1957, p. 53; K. Davis, 1972, p. 51, 56, and other sources. For 1800–1900 the urban population includes all settlements of 5000 and more inhabitants. For 1950 and later the number of the urban population is given on the basis of national criteria as they are accepted in individual countries. The discrepancies due to the two different methods applied for computing urban population are not too great: in 1950 the urban settlements of 5000 and more inhabitants embraced 27.2% of the total world population, and the urban population according to national criteria numbered 28.2%; for 1970 the relevant figures are 37.6% and 38.6% respectively.

last 30 years of our century the increment in the urban population will be greater than the total urban population in 1970.

Because of its highly dynamic development and its multi-faceted character, urbanization is particularly well suited to investigation by complex methods, both within the framework of the system of geographical sciences and as an object of interdisciplinary effort. It would seem that, among very important tasks facing the geography of population there is also that of taking a closer look at the growing interdependence between urbanization and the distribution of population.

The study of these interrelations by the methods of the geography of population opens up a wide range of possibilities in solving theoretical and practical tasks pointing to more perfect forms and spatial structures in settlement.

Having analyzed the matter from this point of view, we are led to the conclusion that at present it is urbanization which increasingly determines the trends in the distributon of population in general, and the evolution of its forms and spatial structures in particular. This paper aims at substantiating this opinion. In view of the fact that there are wide discrepancies in the very definitions of urbanization, we must start by bringing more precision into our understanding of the phenomenon.

MODERN URBANIZATION — A DEFINITION

Relatively so far in Soviet scientific literature, the study of urbanization was essentially limited to a few particular problems and external forms: the increase in the share of urban population, the appearance of new towns, the improvements in the technical equipment of urban territories, and so on. No systematic research was devoted to urbanization understood as an important complex problem; often it was considered only from a narrow regional point of view.

In the last years, however, urbanization in the USSR, has been consistently treated in its broader aspects as a world-wide historical process closely related to the development of the forces of production and of the forms of social relations (Akhiezer, Kogan, Yanitski, 1969; *Urbanizatsiya* ..., 1972; *Problemy Sovremyennoy Urbanizatsii*, 1972). It has been emphasized that urbanization cannot be reduced to a simple mechanical growth of modern cities, to the concentration of population within-town boundaries, and to an increased role played by cities in the life of the nation. Urbanization is related to the deep socio-economic changes that occur in towns and villages under the impact of the development of industry, transport, various kinds of services, and the penetration of the urban way of life into the remotest regions of the country. The essence of urbanization is in 'urban relations' to borrow K. Marx's expression with all their wide social implications (Kogan, Listengurt, 1975).

It is very important that more theoretical consideration be devoted to the peculiar, 'two-in-one' character of urbanization. The results of such kind of study may be of great assistance in coming to a better understanding of the mechanisms that determine the development of different forms of urbanized settlements. The process of urbanization has two aspects related, on the one hand, to the development of the leading centres of greatest and most dynamic activity, and on the other, to the spread of the achievements of these centres into the peripheries. By fostering the concentration of economic and cultural potential in the large cities, urbanization constantly produces differences between the centres and their peripheries; at the same time it has a persistent ten-

dency to do away with these differences, to raise the peripheries to the level of the centre. This constant 'pulsation' is a very important feature of the mechanism of urbanization. The determining factor in this process is the role played by the leading centres (Akhiezer, 1974, pp. 176–179).

Soviet authors have also demonstrated that the attempts to consider urbanization as an independent historical process, allegedly determining the entire development of society, are wholly unjustified. Urbanization is not a primary cause, but merely an aspect of socio-economic development; at any given moment of time it can be seen as both an effect and a premise of this development. Thus, urbanization is conditioned by general laws governing socio-economic formations (Arab-ogly, 1972). At the same time, urbanization is determined also by its peculiar, inherent laws of development; their effects can be observed with striking clarity at the present stage of history.

Bearing in mind the very divergent interpretations of urbanization in world literature, we have suggested two schematic definitions of urbanization which correspond to two principal phases in the development of the process, i.e., when urbanization goes, so to say, in breadth and when it goes in depth (Pivovarov, 1972).

With reference to the first stage of urbanization, when the share of urban population is still far from reaching its critical limits and when the quantitative aspects of the process are, as a rule, more essential, it is fully justified to put a stronger accent on the traditional notion of urbanization, taken in the narrower sense of the term (the growth of cities and the increased role they play in the life of a nation).

However, such an approach to the problem is quite unsatisfactory at the present stage of development, when in the most developed countries the process of urbanization is characterized, above all, by qualitative changes. It is imperative to define urbanization in its larger sense as a multifaceted process. This is why, while we fully acknowledge the importance of different aspects of urbanization being studied by various sciences (economics, sociology, geography, demography, etc.), we nevertheless deem it necessary to emphasize the unity of the object being investigated and, consequently, the importance of analyzing urbanization as a single socio-economic process. This is also in line with the increasing tendency of scientific disciplines towards integration when they are confronted with complex problems to be solved.

In our opinion the process of urbanization is closely related, on more than one plane, to the concentration of activities (or production, in the wider meaning of the word) which is characteristic of most countries in the world today (Pivovarov, 1976). Referring to what we said before, we can specify the following particular traits of modern urbanization taken in the wider sense of the word:

(1) the concentration, intensification and differentiation of urban types of activities (or functions);

(2) the spread of new forms and spatial structures of settlement;

(3) the spread of the urban way of life together with its peculiar structure of human relations, culture, systems of value, orientations, etc.

We believe that the two definitions of urbanization in the narrower and the wider meaning of the word reflect two historical stages in its development as in a process which determines the organizational forms of urban life. The first stage (the 'urban' one, *sensu stricto*) of urbanization is mainly related to the extensive factors of development (the increase in the share of urban population, the spread of the urban network, the growing role of large

cities, etc.). The characteristic feature of that stage is that the advantages presented by the large city as a form of population concentration were widely used, and largely exhaused.

At the second stage, in the conditions created by the scientific and technological revolution, the role of the intensive factors of urbanization is greatly enhanced and is related to the internal differentiation of the process itself. At first limited to towns, the sphere of urbanization now spreads over the rural areas and engulfs society as a whole. In the modern world the spatial differentiation of the process of urbanization is being intensified; in this respect, the peculiarities of different countries stand out clearly (*Problemy urbanizatsii i rasselenia*, 1976, pp. 5–36; *Essays* ..., 1975). The forms of urbanized settlement also change: the large city is being replaced by an urbanized area, within which two tendencies appear, interrelated and developing in opposite directions — the concentration of production and population, and their deconcentration through translocations within the whole area (from the centre to the periphery). In this sense one can say that at its modern stage urbanization is characterized by a greadual fading away of the large city as a fundamental form of population concentration; modern urbanization presents a dialectical negation of the early, classical urbanization (Pchelintsev, 1972). It is therefore reasonable to link the perspectives of urbanization with the appearance and ever wider spread of new forms of settlement.

In view of what has been said above, any definition of urbanization should take into account that modern urbanization, while superseding the traditional city as a fundamental form of settlemen, is even more associated with concentration of activities in the socio-economic space. The scientific and technological revolution stimulates a new redistribution of labour (and, consequently, of population) from less effective forms of labour input to more effective; this trend can be observed both in the branch structure of economic activities and in their spatial pattern. As a result, and taking into account the global scale of urbanization processes, their nuclei, relatively small in number and limited in area, play a crucial role.

And so, urbanization can be conceived as a process of spatial concentration of activity in relatively few areas and centres where labour is most effective.

TRENDS IN SETTLEMENT. SOME WAYS OF APPROACHING THE PROBLEM

High rates of urbanization are accompanied by qualitative changes in the organization of all sectors of urban life. In particular, these changes increasingly emphasize the historical limitations of the city as a settlement form, and its organic weaknesses — the excessive burden of over-investment within the city area, a chaotic confusion of dwellings, industrial plants, transport lines and similar constructions, a congestion causing a lack of reserve areas, etc.

For centuries the compactness of city lay-outs, the lack of functional zoning over the urban territory, the fact that workshops, dwellings and places of recreation could be found in close neighbourhood — all these were important advantages of cities. Thanks to them the cities could stand out against and dominate their rural surroundings.

As the forces of production developed further and the cities steadily grew, the advantages of the compact form of urban settlement turned into disadvantages, making life and production more difficult for the inhabitants. The

intensification of the process of urbanization under the impact of the scientific and technological revolution has made the problem of the spread of new social patterns of settlement particularly urgent.

Although the notion of the city as a perennial form of settlement has not yet been entirely abandoned, nevertheless the fact of the city's metamorphosis into an agglomeration has been widely acknowledged in scientific literature. It is obvious, however, that the agglomeration is not an ultimate form of settlement either. This is why it is particularly timely to bring more precision into our concepts of the settlement patterns of the future.

Our approach to the matter must therefore be a dynamic one and we must realize that, with the forces of production developing at a steady rate, the settlement follows a complicated track leading up from lower forms to higher ones. This process, which ensures a permanent reorganization of settlement in favour of more progressive forms, does not find its fulfilment either in small cities or in large ones or even in agglomerations.

The dynamic approach is of great importance when we have to establish a scientifically justified basis for developing and perfecting settlement in a socialist society. In the USSR, the improvement of settlement starts with the formulation of basic socio-economic tasks by the 15th Congress of the Soviet Communist Party. In order to intensify comprehensively production and increase its effectiveness, it is necessary to find out such forms of settlement as ensure the most effective spatial organization of production. This is why in the USSR in the foreseeable future efforts should be directed towards the development of planned and controlled formation of settlement systems. The basis of such systems is found in the already existing urban agglomerations and other inhabited localities, in the growth of industrial complexes, as well as in smaller and larger villages transformed into modern well-equipped settlements participating in these systems on equal terms (Fomin, 1974, p. 47).

In this connection, more theoretical precision should be brought into the notion of what is the character of the interrelations that integrate the spatial organization of production (in its wider sense, i.e., including the non-productive sphere of activity) and the distribution of population in a developed socialist society.

On the one hand, it is important to abandon a simplified treatment of settlement as being solely a function of the distribution of production; in the past such notions were chiefly responsible for the widely held conviction that the distribution of population can easily be regulated by merely redistributing material production. On the other hand, even the growing role of the already existing settlements as a factor in the location of the forces of production, the relative autonomy of the laws governing settlement development, and some sort of 'inertia' (to borrow V. V. Pokshishevski's expression) of the earlier forms of settlement — all these are not sufficient grounds for considering the role of population distribution in the spatial organization of production as something absolute and standing by itself.

Obviously, we have to deal with ever closer and more complicated interrelations between production and population distribution, we have to pay due attention also to feedback existing in the system 'production — population distribution'. At the present stage it is just as impossible to rely on an 'automatic' adaptation of the population distribution to the areal forms of productive and non-productive activities, as it is impossible to regulate population distribution without planning the location of the forces of production (Mints, Ignatiev, 1974, p. 129).

Analyzing the evolution and future development of settlement in the USSR, one should take into account the high level of growth of the national economy and the determination of the Soviet people to make it yet more intensive; this is reflected in the greater concentration of production in the centres and areas of high economic efficiency, in weakening the relative role of new constructions as a means of securing production growth, in reducing the share of raw material production in the total structure of the economy, in strengthening integration processes apparent in the nation's productive and non-productive activities, etc.

As in the process of development of the entire national economy, settlements are also, by the laws of social development, bound to pass from a stage of extensive, quantitative expansion (the fast growth of settlement networks, the increasing density and size of settlements, etc.) to a stage of intensive, qualitative development which includes the appearance and spread of new, more complicated forms and spatial structures of settlement.

In order to get a better view of perspectives in the development of settlement in the USSR, it is important to bear in mind the following facts: (a) that settlement patterns are being affected more and more by the above mentioned strategic tendencies in the national economy; (b) that the economic and social efficiency of settlement forms is increasing; (c) that the socio-economic 'self-sufficiency' of cities and the isolation of rural communities are being overcome (also in planning); (d) that the forms of settlement are growing in size, and their spatial structures are becoming more complex.

THE EVOLUTION OF SETTLEMENT FORMS: A SCHEMATIC PICTURE

At the present stage of urbanization in the USSR, as well as in other economically developed countries, one can observe the emergence of extensive urbanized areas embracing whole districts and even larger zones. This is related to the fact that concentration and spatial differentiation of production and population are assuming new forms which cover large areas instead of developing at specific points.

The future more complex forms and spatial structures of settlement should, therefore, be considered in close relation to sufficiently extensive urbanized areas (districts, zones, etc.); their spread is the result of overcoming the autonomy of traditional cities, both in socio-economic life and in administration and planning. This is why in a developed socialist society the centre of gravity of complex areal organizations of production and settlement shifts gradually from customary taxonomic units (an economic district, a town) to the areas characterized by a higher level of urban settlement concentration and greater economic potential (Listengurt, Naymark, 1973), i.e., to the intensely urbanized areas.

This process, which strengthens mutual ties linking individual settlements together and causes new settlement forms to emerge, is, despite external similarities, basically different in countries with different social systems. The specific forms of settlement may be also very different according to the country or region. This is what makes the typology of these forms such a difficult task (granted: with a very high degree of generalization). Finally, there is also a great divergence of views in evaluating these new forms of urban settlement; this is explained not only by different scientific approaches, but also

by the contradictory character and complexity of the problems posed by the emergence of new forms of settlement.

On the basis of a preliminary study we can outline four main forms of urban settlement in the USSR together with their hierarchical structure; these will be probably the mainsprings of future changes in the spatial structure of settlement over the whole country:

(1) The compact large city — the fundamental form of settlement at the beginning of the scientific and technological revolution.

(2) The agglomeration — an elementary form of a developed group settlement. In a growing number of instances, it is understood as a stage of transition between an autonomous large city and a new, more complex settlement form, such as an urbanized district, a city of a regional scale, etc. The transitional character of the agglomeration as a form in the evolution of settlement has apparently caused a great controversy as to how it should be evaluated — opinions range from a negation of the very existence of urban agglomerations (and their influence on national economies) to the recognition as the absolute and final form of settlement.

(3) The urbanized region — the main structural element of settlement in the future. It is to be conceived as a rather extensive urbanized area, the nucleus of which is an individual, powerful enough agglomeration or several agglomerations together with their surroundings, the whole in each case presenting a unity stemming from common morphological and functional features. It is a new (but not the only possible) form of settlement, at the roots of which lie specialization and spatial separation of functional zones as well as an elastic planning of vast areas. Its development can be viewed as a means of overcoming the old urban forms and slowing down the growth of large cities.

(4) The urbanized zone — a basic component (itself consisting of several elements) in the future spatial structure of settlement over the country as a whole. As a rule, it embraces several urbanized regions and is characteristic only of countries with a high level of urbanization.

At the present stage of settlement development, the trend is away from the city towards the urbanized region or zone, pasing on its way through the stage of agglomeration. In this process the city in its traditional form is the basic element of the settlement system at the initial stages of urbanization. Usually, the development of large urban agglomerations is characteristic of regions with a medium level of urbanization. As yet, more complex forms and spatial structures are clearly visible only in countries with the highest level of urbanization. Following this line of thinking, urbanization as a process of concentration of activities cannot be considered as having reached its apogeum when this or that form of settlement has been fully developed. It is, therefore, important when studying different countries and regions to pay due attention to all the varied forms of organization of urban life and their combinations. This is even more true when we are discussing development trends.

The objective tendencies leading to the concentration of production result not only in a strengthening of multiple links within agglomerations, but also in determining the growth of relations between agglomerations (the inter-system links). As a result, ever more complex forms of settlement come into being. This is easily seen when we turn to the data for the USSR.

For instance, vast urbanized regions spring up within the boundaries of the Central, Donets-Dnieper, Volga, and Ural economic regions, which according to the 1970 census, had more than 10 million urban inhabitants each.

In the Centre, the country's largest urbanized region is about to form — in the future it may become a huge urbanized zone. The main factors contributing to its development are: the closing of the gap between the Moscow agglomeration (which is one of the largest in the world) and that of Tula: the intensive growth of the Ivanovo and Vladimir agglomerations; the growing integration of the network of towns around Kalinin, Yaroslav, Ryazan, and others. The goal-directed regulation of settlement development will strengthen the tendency to lower the share of Moscow in the total urban population of the region — to 30.4% in the foreseeable future as compared with 39.4% in 1959. As has been suggested, this aim can be achieved by regulating the population distribution in the Centre, both within the limits of the Moscow settlement system (which stretches to about 150 km from the capital city) and in a larger zone, extending from 150 to 500 km in which the growth of Moscow is to be contained.

The Ural area is an example of a vast urbanized zone being created by strengthening the links between ten agglomerations (though, in fact, they are not so big as those in the Centre). The modern spatial pattern of the Ural urbanized region consists of two belt-like settlement structures dotted with nuclei and extending along the western and eastern slopes of the Ural Mts.; in the West the region's main nuclei are the Perm, Izhevsk, Sterlitamak, and Orenburg agglomerations, and in the East Nizhniy Tagil, Sverdlovsk, Chelyabinsk, Magnitogorsk, Orsk.

A few conclusions can be drawn from the trends that come to the surface in the population distribution in the USSR, as well as in other socialist countries (Pivovarov, 1976), and also from the study of the concepts and schemes of future settlement which have been worked out in different socialist countries.

First, in the most urbanized countries, settlement trends are particularly clearly linked with the emergence of large urban agglomerations and urbanized regions; consequently, the role of the latter as nuclei or links in the concentration of production and settlement is growing.

Second, scientists and experts in the socialist countries are more and more aware of the fact that in the process of urbanization the forms of settlement are constantly growing in variety and moreover — and this is of particular importance — are of different value as bearers of progressive tendencies in urbanization. Therefore, it is a very characteristic feature of the concepts of settlement that they attempt to tie the perspectives of urbanization with such new forms and spatial structures of settlement that leave far behind the traditional notions of the contemporary cities and agglomerations.

Third, all these conceptions are unified by an important common trait, namely a definite tendency to correlate the development of the settlement network with the concentration of production and population that seems to be the most reasonable in view of the actual conditions of a given country. In Poland such a concentration is described as a moderate policentric concentration; it consists in exploiting to the highest possible degree the advantages of concentration and, at the same time, in neutralizing its negative aspects.

Fourth, in outlining perspective schemes of settlement for different countries, more and more attention is being devoted to determining the nuclei (centres) and belts (axes) around which the economic development concentrates in space (in contradistinction to the concept of 'uniformly dispersed' settlement). These nuclei and belts determine in many ways the future framework of urbanized settlement — its spatial structures.

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SOME CONNECTIONS BETWEEN URBANIZATION AND THE FORMS OF THE SOCIAL ORGANIZATION OF PRODUCTION

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In the process of the development of production four historically conditioned forms of social organization of production stand out clearly: specialization, cooperation, concentration and integration. Through the social division of labour, they determine the entire development of modern society, the processes of urbanization not excepted.

The interrelations between urbanization, taken both as a whole and in its different aspects, and the forms of the social organization of production are extremely complex, multifaceted and contradictory. For the sake of theory and practice they must yet be investigated more and more closely. However, the amount of knowledge already accumulated thanks to the efforts of political economy and other similar scientific disciplines enables us to come to some preliminary conclusions.

Urbanization is related to the concentration of production more than to anything else. There are two kinds of relations which are quite apparent and beyond any doubt: (1) the appearance of new urban settlements based upon new enterprises, solitary or grouped together; (2) the appearance of new big enterprises (or a significant enlargement of the already existing ones) in many cities, and consequently, the growth of the latter. Either of the two kinds of relations, and their variations, is well enough investigated by urban planners, economists, and economic geographers studying the development and distribution of production.

The concentration of production can be explained by the advantages that large enterprises have over the small ones. The concentration of production, as distinct from agglomeration (i.e., spatial accumulation),[1] manifests itself first of all in the growth of the productive capacity of individual enterprises (in some cases it may be due to the increased capacity of individual production aggregates).[2] In practice, concentration influences the localization of produc-

[1] The agglomeration of production is a regular result of the combined activity of all the noted forms of social organization of production. For a more detailed treatment, see below.

[2] The economic nature of concentration is well known. Only one of its forms is noted here — that which most clearly shows the difference between concentration and agglomeration.

tion primarily through increases in the absolute dimensions of transport expenses (while the relative inputs of labour are being reduced). The following trends bearing directly upon the development of towns and the formation of urban systems and networks are the geographical results of the concentration of production:

(1) There is a trend towards a radical change in the distribution of mining industries, since, production having been more concentrated, it is seldom convenient to exploit numerous but minor sources of raw materials, fuel, and energy, even though they may be advantageously located. At the same time the concentration of production permits the exploitation of even less accessible mining resources (sometimes of low quality), provided they are large enough. On the whole, this is a progressive tendency. But one should not overestimate it; the concentration of production leads not only to the opening up of new resources in new regions, but also to neglecting small deposits, even though they may be of high quality and located near at hand, simply because of their small volume. Consequently, one of the results of concentration in the extractive industry can be an increasing spatial gap between mining and processing. Thus, changes in the distribution of the extractive industries have two main characteristic features: (a) a gradual shift towards the regions of high spatial concentration of natural resources where the possibilities of creating very large mining enterprises are greater; (b) in the most developed regions the opening up not only of high and medium quality resources, but also of the reserves of low quality deposits. As a result, the average capacity of mining enterprises in newly developed regions is greater than in the old industrial areas. This explains why, in the recently developed regions, mining is one of the most important factors contributing to the emergence of new towns: the magnitude of the enterprises and the large numbers of workers they employ contribute to the development of new towns which reach a size of more than 20 thousand inhabitants in most cases. In the old industrial regions it is much less often that mining forms a sufficient basis for urban development, but when it does the towns usually have less than 20 thousand inhabitants.

(2) The concentration of production tends to create a gap in area between the labour-intensive and capital-intensive branches of industry. Despite the influence of some other factors acting in the opposite direction (the migrational mobility of the population in particular), this tendency comes to the fore because, with the growth of the concentration of production, the distribution of labour-intensive industries is ever more dependent on the distribution of labour resources; the capital- and raw material-intensive branches do not depend so much on this factor, but even here this dependence increases with a growing concentration of production.[3] All this suggests that in the foreseeable future the growth of the concentration of production in all industries will make labour a more important factor in their distribution. Of course, this tendency will be counteracted by the increase in the efficiency of social labour, but it cannot be entirely neutralized for a long time yet. These circumstances

[3] This is true also when we consider the achievements of scientific and technological progress. Despite an increase in labour productivity and a relative decrease in labour input, the absolute number of those employed in individual enterprises continues to grow. As a result, those branches which were traditionally considered to need little labour, now are characterized by a considerable increase in the numbers of people they employ and a high spatial concentration of workers. This takes on practical importance in sparsely populated areas where the development of new industrial plants usually requires the bringing in of a lot of outside labour, and thus entails great expense in maintaining these new workers on the spot, in other words, in stabilizing the demographic potential.

must be born in mind when one considers the location of production in general, but they are of particular importance when one is analyzing the distribution of large enterprises, in which relative labour costs are very high. The labour factor spontaneously, as it were, attracts such enterprises to the most densely populated regions, and within those to the large and largest towns; the overcoming of these tendencies meets with considerable difficulties which, in particular, stand in the way of the economic activation of the majority of small towns.[4]

(3) The concentration of production draws basic processing closer to the places of extraction (production) of raw materials, fuel and energy (both in the USSR as a whole and in its zones and macroregions). This refers, first of all, to the refining of mineral raw materials and also to the basic processing of the raw materials originating in agriculture and forestry. As far as the urban network is concerned this factor appears to be supplementary to and concordant with the first factor already considered.

(4) Concentration in one branch of the national economy leads to concentration in the others, and vice versa-the effects are interdependent. Thus, such development in the manufacturing industry inevitably engenders an analogous process in transport, agriculture, construction, and non-productive activities. Similarly, these branches, individually and collectively, influence the manufacturing industry as a whole and one another in the same way. The effects of concentration in different branches of the manufacturing industry are no less interdependent. Essentially, this is what should be considered the objective cause of the concentration of town-forming factors, of the spatial concentration of population, and ultimately, of the rapid growth of towns. At the same time this process transforms a rather small number of suitably located large cities into centres of agglomeration or gravity (in poorly developed areas, local systems of towns evolve around these centres of gravitation); in regions settled long ago with well devoloped transport networks, regional systems are born.[5] In this way the number of the existing cities with considerable locational potential is reduced.[6]

All these trends are strongest in the manufacturing industry which is the main town-forming factor determining in many respects the degree and character of regional (national) urbanization, the structure of urban network, the growth of individual urban setlements, etc. These trends, however, affect each industrial enterprise in a different way. Therefore, all industrial enterprises can be divided into two groups: first, those which, with the growth of concentration, perceptibly improve their economic indices, and second, those in which concentration does not result in significantly improving their indices.

A classic example of enterprises in the first group is iron and steel works where increase in the capacity of individual aggregates brings about a sharp improvement in the technological and economic indices. The effect is that

[4] The size of available labour reserves in individual small towns and even in many medium size towns, is too insignificant to act as a gravitational factor for large modern enterprises.

[5] Some problems concerning the gravitation of production are discussed in F. D. Zastavny's book *Ekonomicheskiye problemy razvitiya territorialno-promyshlennykh kompleksov* (Economic aspects of the development of areal industrial complexes), Lvov 1969.

[6] On the potential of distribution, see B. R. Pavchinski, O problemakh razvitiya malykh i srednikh gorodov yuzhnykh oblastei Severo-Zapadnogo ekonomicheskogo rayona (Problems of the development of small and medium size towns in the south *oblasts* of the NW economic region), in: *Doklady otdeleniy i komissiy Geograficheskogo Obshchestva SSSR*, 11, Leningrad 1969.

the metallurgical enterprises show a tendency to grow in size. At the present time the newly established enterprises in iron and steel production and in some non-iron branches of metallurgy, in power production, petroleum refining and several other industries are mostly huge plants employing thousands and even dozens of thousands of workers. It is quite obvious that each such giant is by itself a powerful town-forming factor.

On the other hand, there are numerous industries in which the increase in the scale of enterprises is not related to the increase in the capacity of individual aggregates, but is the result of increasing the very number of aggregates (e.g., the dress-making and knitting industries). As a rule, in such cases the growth of enterprises does not improve the economic indices very much.

Enterprises of a rather small size are characteristic of numerous industries such as furniture manufacturing factories, chemical plants based on hydrolytic processes, most chemical, timber processing plants, linen and cotton mills, sugar refineries, mills, dairies and others. This is because they either use raw materials which can hardly stand transportation, or produce goods having the same characteristic.

Concentration as an economic tendency is apparent not only in industrial production but also in agricultural production. In the latter field it actively contributes to the strengthening of the processes of urbanization in villages, catalyzes such changes, and, in particular, is a powerful factor in transforming some rural settlements into urban ones.[7] In the USSR new towns and urban type settlements which have grown out of villages are most typical of regions where the concentration of agricultural production and, consequently, of rural population is greatest (Black-soil Centre, North Caucasus, the steppe regions of the Ukraine, North Kazakhstan).

There is still another relationship: the concentration of production brings about the agglomeration of material production as well as that of non-productive social activities. This leads to an accelerated growth of large cities and, first of all, of regional, organizational and economic centres. This explains why in most regions there is a great gap between the size of the regional and economic centre and the size of the remaining cities. This gap can be clearly seen also outside the USSR.

All this appears to be a very important aspect of the influence of concentration on the processes of urbanization. A better knowledge of it may provide a clue as to how the growth of cities can successfully be regulated. On the strength of the available data, the authors believe the following practical conclusion is justified: an important instrument for controlling the growth of large cities and, particularly, that of the largest ones, can be found in bringing an influence to bear upon the non-manufacturing branches of the economy, in intensifying and rationalizing them. This way of controlling the

[7] By the urbanization of villages we mean the spread of urban relationships into rural settlements. Thus, the nature of urbanization consists, first of all, in the industrialization of the rural economy, in the creation of industrial labour conditions in villages. Some other aspects of urbanization must also be introduced: raising the material and cultural well-being of the rural population to a higher level, creating proper conditions for the functioning of the law of alternate work in rural settlements, etc. All these aspects of village urbanization are inseparable from the concentration of agricultural production and from the integration of this production with industry.

cities is particularly important in regions where there is an increasing shortage of labour.[8]

Specialization and cooperation are two inseparable and interrelated forms of the organization of production. The influence they exert on urbanization processes is also twofold.

On the one hand, they increase the economic advantages of concentration, and strengthen the spatial centralization and agglomeration of production. In so doing, they accelerate the rates of increase of large and very large cities. On the other hand, they make small and medium size specialized enterprises more efficient and weaken the trend towards agglomeration; thus they help a lot of small and mean towns to survive.

There is still another aspect of the contradictory influence that specialization and cooperation bring to bear upon urbanization. Specialization in producing finished goods helps production to agglomerate, and brings forth large industrial enterprises and complexes — that is, it weakens dynamic vectors in the localization of the forces of production. Specialization in semi-finished goods and accessories and technological specialization are mostly linked with small and medium size enterprises; a certain 'freedom' of location can be allowed in their case for there can always be found numerous variants of approximately equal value. Specialization is often the outcome of establishing a large main enterprise, which specializes in producing final items of goods, and several cooperating enterprises, the dimensions of which are usually relatively small (as examples one can mention the motor-car and machinery construction complexes in which the number of cooperating enterprises may go into dozens). In most cases, these cooperating enterprises can be located at a great distance from each other and from the main works. This creates numerous fully acceptable variants of the localization of such plants and, consequently, of regulating and limiting the agglomeration of production — in other words, of steering the growth of cities.

At present, specialization is a characteristic feature not only of material production but also of the non-productive sphere of activity. This results in the extension of networks of towns with narrowly specialized functions (e.g., health resorts, scientific centres, etc.).

Integration makes the spatial concentration and agglomeration of production still more intense. Combines may be of different size, but it is integration which contributes to the emergence of very large enterprises. The role played by combines is strengthened by the fact that, by force of the law of agglomeration, they (and the largest ones in particular) attract a whole series of enterprises which, because of the nature of their production, do not go into the making of the combines.

The economic advantages of integration are so great that they usually considerably diminish such negative effects as, for example, the growing transport costs. Integration therefore allows more freedom in locating the combines at their initial stage when they are first created. Later on, however, large combines in their own right become the strongest agglomerators of production. That is why integration is the cause of the rapid growth of many cities.

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[8] According to the authors' computations, the investments needed to concentrate the municipal and welfare economy and urban transport in the largest cities of the USSR would contribute to laying-off from two and a half to three times more employees than similar in size investments needed to concentrate the industry.

There are, however, many manufacturing industries which are practically 'indifferent' to integration. If integration is very effective in metallurgy, in some branches of the chemical industry, and to some extent also in power production and in mining, in many other industries it has almost no effect. This is true in the case of industries such as electrical and radio engineering, precision apparatus construction, clothing, knitting, and other branches of manufacturing. As a result, for many enterprises belonging to one of these industries the possibilities of choice between numerous variants of localization are greater.

Thus, concentration, cooperation, specialization and integration acting together determine the spatial structure of production, make it more complex, and engender trends towards agglomeration and disagglomeration. Bearing in mind their cumulative effects, one is justified in rejecting categorically the abstract notion of an 'optimum city', for at a given stage of social development each functional type of urban settlement has an optimum (or to put it more precisely, rational) dimension of its own.

We may now bring our argument to a conclusion: To steer the processes of urbanization properly we must above all bear in mind what is a rational spatial unity of the forms of social organization of production. Today science is not yet ready to propose a practical system for bringing the urbanization processes under control. We are, however, witnessing the gradual emergence of such a system. It is based not only on theory, but also on what we have learnt from practice.

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SPATIAL CHANGE AND THE URBAN LANDSCAPE

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Similarities among different waves of spatial change are well documented in the diffusion literature.[1] Studies dealing with the landscape patterns associated with such waves are less frequent. Yet waves of spatial change have profound and often deleterious effects upon the landscape. For example, in many American Metropolitan areas, ghetto expansion releases forces of deterioration which often become an inherent part of the racial transition process. Processes associated with renewal leave large parts of cities in a state of deteriorating limbo. Urban expansion frequently creates large stretches of vacant wasteland. In aggregate such areas comprise a substantial part of the metropolitan scene, and are the local of many major social problems.

This paper attempts to show first, that many aspects of the urban landscape and its associated problems can be incorporated into the general concept of diffusion. It is suggested that many urban spatial patterns can be understood that might not be well explained by more static models of urban structure. Second, the paper implies that many sorts of spatial change can be brought under a single conceptual framework. Similarities among different waves of change are well documented in the diffusion literature. This paper points out similarities in landscape and human conditions in areas affected by diverse and unlike kinds of change. The procedure is to present a system of simple conceptual statements linking spatial change processes with resulting landscape patterns. This system is then applied to a number of specific processes taking place in American metropolitan areas.

THE ANTICIPATION FIELD

Landscape change can be thought of as a gradual process, taking place along a continuum. This continuum can be looked at temporally or spatially. Temporally, the sequence of change occurs in one location through a pe-

[1] The likening of diffusion to a wave phenomenon goes back to the earliest works in the diffusion literature. See T. Hagerstrand, *The propagation of diffusion waves*, Lund Studies in Geography, Series B, No. 4 (Lund: Gleerup, 1952). Attempts to specify the form and properties of diffusion waves include those of Richard L. Morril, in: Waves of spatial diffusion, *Journal of Regional Science*, Vol. 8, No. 1 (1968), pp. 1–18, and The shape of diffusion in space and time, *Economic Geography*, Vol. 46 (1970), pp. 259–268. Work dealing with metropolitan expansion as a wave-like phenomenon includes R. R. Boyce, The edge of the metropolis: the wave theory analog approach, *British Columbia Geographical Series*, No. 7 (1966), pp. 31–40; H. Blumenfeld, The tidal wave of metropolitan expansion, *Journal of the American Institute of Planners*, Vol. 20 (1954), pp. 3–14.

riod of time. Spatially, the sequence is distributed throughout an area (or field) at any one point in time. The impact of change diminishes with distance from the place where change is most complete. Morphological studies have referred to pre-cursive (preceding the crest of the wave of change) and recursive (behind the wave crest) elements within the continuum.[2] This paper concentrates upon the former.

The full significance of the spatial change process is to be found by looking, not at the place of actual change itself, but at the situation well in advance of change. Change, no matter how complete or drastic, seldom takes place without warning or foreknowledge. At some point in time and space, well ahead of the actual change, people become aware of it. Gradually this awareness becomes anticipation. The intensity of anticipation, which eventually becomes certainty, increases as the change is more imminent. It is at its greatest at the place where the change itself is occurring. The change continuum, as manifested in space, can be thought of as an anticipation field. This field is the spatio-temporal framework for looking at the diffusion of anticipation, for examining what is happening as a result of the change process, and for measuring the effects on the landscape.

A general sequence of events is contained within the anticipation field.[3] The awareness of change, initially fed by rumors, brings a reaction of uncertainty and insecurity. This emotional reaction can lead to several kinds of response. A positive response, attempting to take advantage of the situation, often is associated with a high degree of speculation.

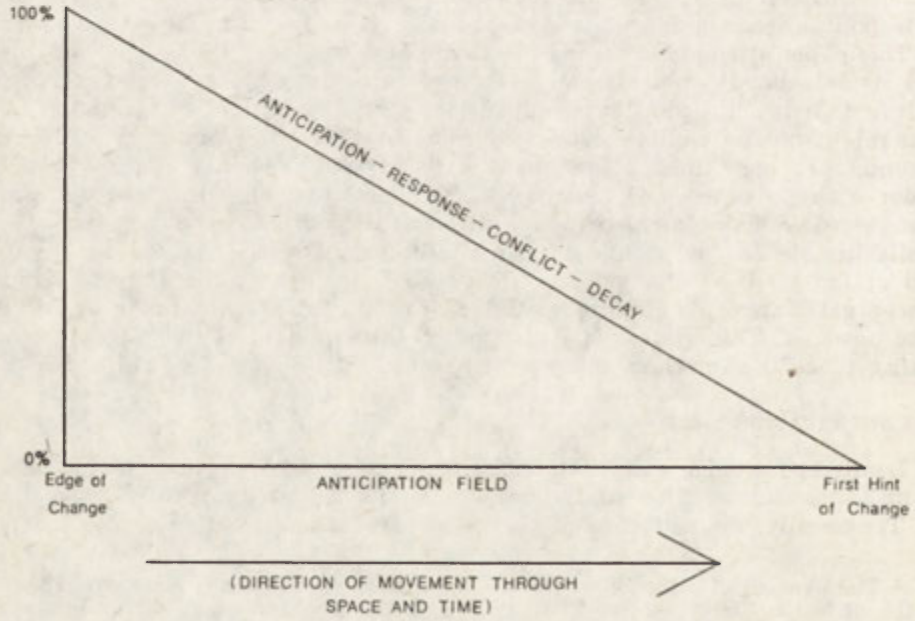

Fig. 1. Spatial change and the anticipation field

[2] These terms are suggested and discussed in Boyce, *op. cit.*

[3] The sequence described here is not necessarily deterministic. Conceivably the impending change might be fully understood, bring about a rational re-action, and lead to an appropriate and planned response. The point made here, substantiated by the evidence of most behavioral studies. is that such a rational sequence rarely takes place.

A defensive response, again because of uncertainty, is likely to be confused and irrational. Lastly, a passive response, doing nothing in the face of impending change, can be just as meaningful as an active one.

Whatever the response, it often results in rivalry and conflict. The general atmosphere of insecurity attracts unscrupulous elements. The novelty of events is out-of-phase with established patterns of behavior and administration, so that bureaucratic delays and blunders become numerous. Tensions arise between conservative and progressive elements. Where change means the arrival of new people, human conflict increases. In sum, the over-all situation brings out the weaknesses of human beings and their institutions. These weaknesses find their expression on the landscape in the form of deterioration, which might range in degree from direct physical destruction to the simple neglect of property in the face of increasing uncertainty about the future.

The sequence described operates within the anticipation field, with an intensity that decreases with distance from the place of complete change. That is, uncertainty, response, and physical decay emanate from the locus of change though space (or time) to a point where the change and its possible effects remain unperceived. The anticipation field is, in effect, a model applicable to many, if not all, waves of spatial change (Fig. 1).

THE IMPACT OF SPATIAL CHANGE

The major consequence of the spatial change model is that the pattern of decay in the anticipation field is independent of the type of change taking place and the conditions which that change eventually brings about. Conflict and decay occur whether the change leads toward some eventual improvement or toward some adverse condition. Waves of improvement, rejuvenation, and renewal bring about decay in their anticipation fields. Moreover, the intensity of decay is greatest at the edge of the upgrading activity. It is further suggested that conflict and decay created in the anticipation field often may be of greater import than the eventual benefits of the change itself.

The pattern in the anticipation field contradicts certain models of urban structure derived from a more static situation. In a stable situation, where no spatial change is occurring and where there is no anticipation field, the impact of a source of influence is assumed to conform to the concept of distance decay. That is, where the source is of an upgrading or superior kind, the resulting beneficial conditions are at their greatest close to the source of influence and decline with distance.[4] The landscape described by the spatial change model is the reverse of that described in such models. Influence still declines with distance, but in the dynamic case of the spatial wave, conditions are at their worst next to the source of influence and improve with distance.

THE SPATIAL WAVE STABILIZED

Comparing the dynamic and static situations leads to a phenomenon of significance and some paradox. By its very nature the dynamic case depends upon the advancing spatial wave. However, waves of spatial change are not

[4] In a sense, the effect of a high status area 'rubs off' upon adjacent areas. This is implied, for example, in the Hoyt and Harris-Ullman models of city structure. It should be noted that a positive, or beneficial, influence source has been assumed. Where this source is negative, the distance decay function in a stable situation would bring about a reverse pattern.

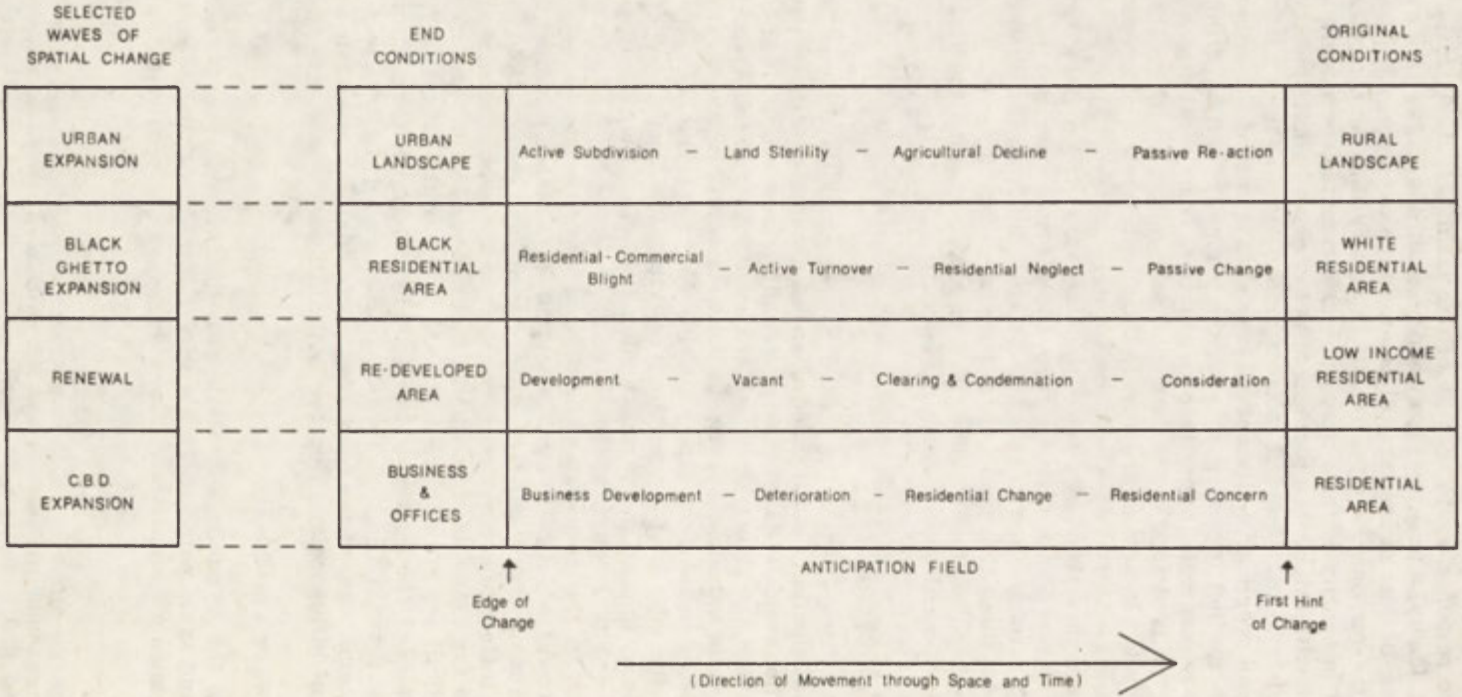

Fig. 2. Selected forces of spatial change within a space-time framework

constant. Their movements fluctuate. Their progress may be slowed. They may become stationary for shorter or longer periods, or even indefinitely.

The stationary phase of a spatial wave is in no way similar to the situation described by static models. For no matter how long the stationary period, conditions in the anticipation field remain those described by the dynamic model. Although the pattern is brought into being by the dynamic quality of the spatial wave, it is not disrupted when the dynamic process slows down or stops.

The explanation is found in the events taking place in the anticipation field. At any place within this field, the psychology of the situation has set into motion processes which sow the seeds of their own perpetuation. Uncertainty and insecurity have spread and led to a variety of reactions. Commitments and decisions have been made which cannot be reversed. Conflicts have arisen which quickly become unrelated to their root cause. Decay is under way. The chain of processes initiated by the original anticipation of change remains in effect and appears to be irreversible as long as there is any possibility that the progression of change may become dynamic again. Indeed, because of inertia, it would seem that those processes, and the conditions associated with them, may remain even when that possibility no longer exists.

The implications are profound. Where the progression of change at any one place (in the anticipation field) is slowed down, the place may undergo a long and uncertain period of instability and decay. Where the progression is interrupted, the place may be condemned indefinitely to the conditions of the phase at which the interruption took place. Where the movement of the spatial wave is stabilized, the anticipation field, and the spatial pattern of instability and decay within it, may prevail over the landscape of an area for a long time.

SELECTED FORCES OF SPATIAL CHANGE

Spatial change is readily incorporated into a space-time framework, depicting the transformation of an area from its original condition to its end condition (Fig. 2). This framework is divided into successive stages between the point where change is first suspected to the point of complete change. Spatially these stages can be considered zones arranged in sequence throughout the anticipation field. Four well-known forces of urban spatial change (urban expansion, urban renewal, racial change, and Central Business District expansion) are selected to illustrate the sequence. These have been described fully in the literature, and several have been presented as examples of spatial diffusion processes. Here, the forces are looked at within the perspective of the system which has been discussed.[5]

URBAN EXPANSION

One of the most widespread and persistent forces of spatial change is urban expansion, the conversion of rural land to urban use. The advantages of likening the urban expansion process to a spatial wave have long been recognized.[6] As with other forms of spatial change, urban expansion has an impact well beyond the urban edge, as people respond and rural areas undergo the long

[5] Discussions in this section take the form of idealized constructs. However, ideas for those constructs are derived from empirical findings in the literature and from field research.

[6] Boyce, *op. cit.*, Blumenfield, *op. cit.*, R. Morill, Expansion of the urban fringe. A simulation experiment, *Papers of the Regional Science Association*, No. 15, pp. 185–202; H. Moellering, *Spatial lag and the growth of the urban edge*, Unpublished paper, Geography Department, Univ. of Michigan, 1968.

transition period before actual urbanization takes place.[7] For convenience this transition can be divided into the four stages outlined in Fig. 2.

The first stage is one of Passive Reaction, in which there may be no noticeable change in rural activities, but there is increasing awareness that change is pending. Often this phase is accompanied by an aging farm population, as younger family members turn away from farming and find employment in non-rural pursuits. Many essential farm services and facilities have left the area. On the landscape, there is increasing evidence of non-rural land uses such as concentrations of non-farm residences and recreational amenities for metropolitan residents.

Gradually the area enters into the stage of Agricultural Decline. Agriculture remains the dominant land use and activity, but it is directly influenced by the threat of urbanization, with accompanying high land values, increasing taxes, speculative offers of land purchase, continued competition for farm labor, and nuisances associated with careless urbanites. Although some farmers compensate temporarily by producing highly intensive specialities, and others lease their land to more enterprising and generally more distant farmers, the overall area goes through a slow process of decreasing agricultural intensity, as less time, labor, and capital are invested, particularly in those activities which provide a long-term financial return. Gradually farmers shift to the most extensive and short-term economic activities, as they wait for the right offer for their land or continue farming on land already committed to a speculator.

In time the area enters the stage of Land Sterility, a period in which agriculture virtually has disappeared, but urbanization (in the form of built-up structures) has not yet taken place. Some extensive interim farming might continue. Some land is rented to urban groups for recreational purposes. However, the dominant landscape feature is idle land, characterized by vast stretches of neglected grass, weeds, brush, trash and derelict farm buildings, owned either by speculators or by farmers intending to sell land at the most opportune time.

Eventually this period of idleness and inactivity is ended as the area enters into the stage of Active Subdivision. At this stage the different actors in the land conversion process (speculator, developer, builder, realtor, utility worker, homeowner, politician, planner) go through the rapid succession of negotiations, decisions, and conflicts which result in 'development'. The landscape shows the full brunt of change, as land is cleared, utility ditches are dug, bulldozers utilized, and the shells of future buildings begin to appear. Eventually subdivisions are completed and new occupants arrive. The area becomes suburbanized and the change is complete.

The most important aspect of the whole urban expansion process is the uncertain time period involved at all stages. Although development sometimes takes place rapidly, normally there is a period of years, and often decades, between the beginning of agricultural decline and final urban development. This time period can encompass many events and developments, such as economic recessions and booms, changes in mortgage rates, changes in zoning ordinances, new governmental land use regulations, gasoline crises and a complex of other

[7] A summary (with bibliography) of the literature on the effect of expanding urbanization on rural areas is contained in R. J. C. Munton, Farming on the urban fringe, Chapter 10 of J. H. Johnson, *Suburban growth. Geographical processes at the edge of the western city* (London: Wiley and Sons, 1974). Studies focusing particularly upon the role of anticipation in the urbanization process include R. Sinclair, Von Thünen and urban sprawl, *Annals of the Association of American Geographes*, Vol. 57 (1967), pp. 72–87; C. R. Bryant, The anticipation of urban expansion, *Geographia Polonica*, Vol. 28 (1974), pp. 93–115.

factors which not only influence the rate of progression from one stage to another, but also whether that progression and eventual development ever take place.

When the stages of the urban expansion process are looked at spatially, the overall picture is one of mounting human insecurity and increasing landscape deterioration throughout the anticipation field from the place where urbanization first is anticipated to the edge of the built-up area. In areas where there has been a relatively even spread of suburban land use into flat, productive, and relatively intensive agricultural land, an ordered sequence of the different stages is apparent. Elsewhere, where conditions are not as regular, and the expansion process more uneven, the sequence might not be as readily discernible, but the underlying order is present.

Certain aspects of the conceptual framework presented here are illustrated in a study of urban expansion in a 130 sq. km. strip of land stretching twenty-four kilometers northward from the Detroit city limits in southwest Macomb County, Michigan (Fig. 3).[8] In 1948 a field study was made of this area, comprising a detailed land use map, and a description of the contemporary urbanization processes.[9] At that time, the edge of the built-up area was the Detroit city

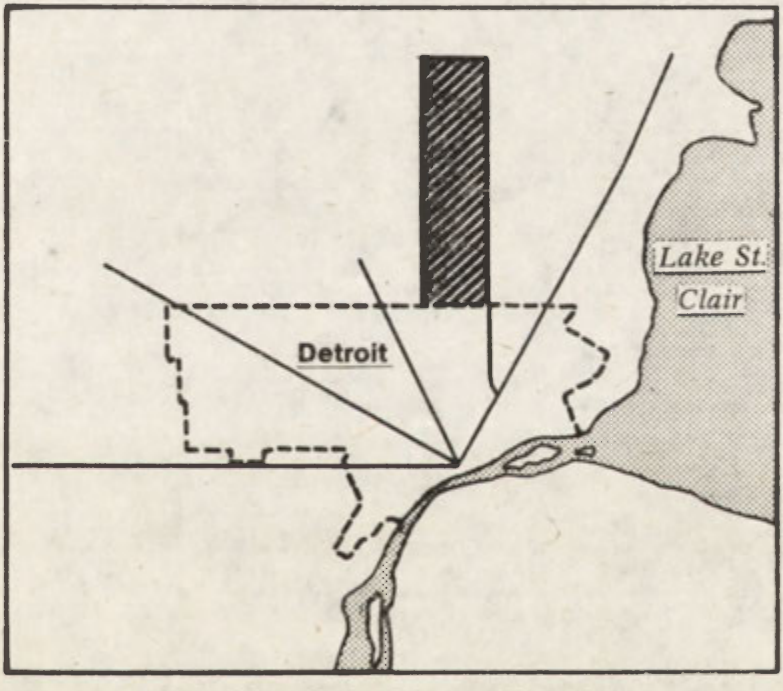

Fig. 3. Macomb Co., Michigan Study Area

Source: R. Sinclair, R. Shipton and H. Willis, A case study of urban expansion in southwest Macomb county, Michigan, *Michigan Academician*, 4 (1971), 2, pp. 161–181

[8] The SW Macomb County study was not carried out with the object of illustrating the spatial change concept. None the less, it illustrates certain aspects of the framework presented. Only pertinent aspects of the original study are summarized here.

[9] F. E. Stilgenbauer, Settlement expansion across Detroit's northern metropolitan rim into southwest Macomb County, *Papers of the Michigan Academy of Science, Arts, and Letters*, Vol. 35 (1949), pp. 219–234.

limit, the southern edge of the case study area. Virtually all of the case study area was still in a semi-rural or rural state.

In the twenty years after the study was made, the area was engulfed by urban growth. Population increased three-fold, most of the area was built up, and previously rural townships became incorporated suburban units. In 1968 a field study was conducted in the same area, utilizing mapping procedures identical to those used in 1948. The result was a land use study directly comparable with the 1948 study, making it possible to examine the spatial variation of the urbanization process at two different time periods.[10] Based upon the insights gained from this analysis six stages of the ongoing urbanization process were identified. Those stages were arranged in both temporal and spatial sequence (Fig. 4).

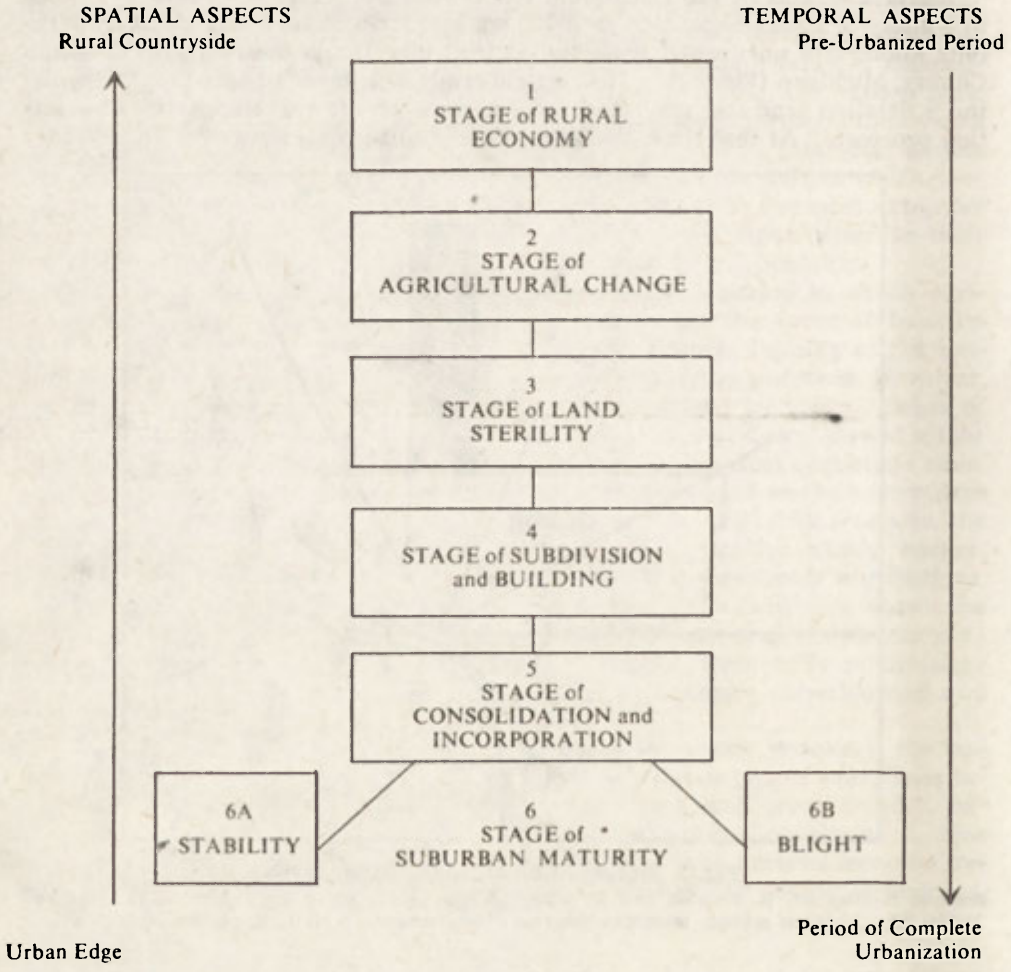

Fig. 4. Stages of ongoing urbanization in Study Area
Source — cf. Fig. 3

[10] R. Sinclair, R. Shipton, and H. Willis, A case study of urban expansion in southwestern Macomb County, Michigan, *Michigan Academician*, Vol. 4, No. 2 (1971), pp. 161–181.

The six stages of this model were then examined within the framework provided by the 1948 and 1968 situation in the study area (Fig. 5). In 1948 all stages except the final estage are represented in a fairly regular pattern. In 1968 the southern half of the area had been built up (Stage 6), the remainder was under construction or idle (Stages 5, 4, and 3), whereas Stages 1 and 2 had long since disappeared from the study area. General observation indicated that Stage 3 continued to dominate the landscape for up to thirty kilometers north of 21 mile Road, Stage 2 had engulfed practically the whole area beyond the Flint and Port Huron area, and Stage 1 was to be found only far into the hinterland of southeast Michigan.

	1948			1968			
21 Mile							Mile 21
20	1	1	1	4	3	4	20
19	1	1	2	3	3	4	19
18	1	1	1	3	3	3	18
17	2	2	2	3	3	4	17
16	2	2	2	3	3	3	16
15	2	2	2	3	3	4	15
14	2	2	2	4	4	3	14
13	2	2	3	5	5	4	13
12	2	3	3	5	3	5	12
11	2	3	4	6A	6A	6A	11
10	2	3	5	6A	6A	6B	10
9	4	4	5	6A	6A	6B	9
8	4	4	5	6B	6B	6B	8

Fig. 5. Stages of urbanization applied to Study Area, 1948 and 1968
Source — cf. Fig. 3

Essentially, the stages (other than Stage 6) appearing in Fig. 4 represent different degrees of instability and decline taking place throughout the anticipation field of an advancing edge of urban expansion. The anticipation field had shifted considerably during the time span of the study. Moreover, its extent appears to have increased geometrically as the urbanization process developed and became more powerful.

In sum, forces generated in advance of the wave of urban expansion have subjected large areas to a lengthy stagnation process. Although at any one place the process might be considered transitory, this transitory period can be long and uncertain. Moreover, the aggregate of areas involved at any one time is substantial. The extent of such areas in many industrialized countries is great. Throughout large areas agriculture has become less intensive and less productive. In the vicinity of many North American metropolitan areas idleness is the most widespread type of land use (or non-use). Waves of urban expansion exact a heavy toll in both human and physical terms.

RACIAL CHANGE

One of the clearest examples of spatial change is racial transition as it has occurred in many United States cities. The transition seldom is marked by integration, but rather by the contiguous spread of the black ghetto. Various authors have recognized and described this as a diffusion process.[11] As with other forces of spatial change, racial transition is a long process with repercussions far beyond the limits of black occupance. In a sense the beginning of this process is impossible to specify in that long-term factors like white suburban migration and aging white population might well be incorporated. For convenience here, the proces has been divided into four phases, beginning with Passive Change in an all-white neighborhood (Fig. 2).

The passive change phase is one in which there is no open and direct recognition of impending change, but rather indications that residents, consciously or unconsciously, are aware of the possibility of such change. White immigration into the area still takes place, but it consists largely of families without children, or families who do not intend to make the area a permanent home. The population has a higher than average proportion of older persons. Some traditional service and retail establishments on nearby commercial streets leave for outlying areas of the city, to be replaced by other businesses like automobile service stations, temporary professional offices, or nothing at all. Community councils and homeowners societies are formed or reactivated to promote neighborhood consciousness and stability. The formation and activities of those groups often create a 'self-fulfilling prophecy', which hastens the approach of the next phase, Residential Neglect.

At this stage residents become aware that change is imminent and react in various ways. Young families with children, worried about schooling, move to the suburbs. Other residents are concerned about declining property values, confrontations in racially changing schools, and numerous other threats that often are more exaggeration than fact. Those insecurities frequently are promoted by real estate agencies, many of which already have set up offices in the neighborhood. Generally no substantial long-term investments are made in the homes. Rumors and speculation are widespread, and are reinforced by evidence of deterioration of the commercial structure.

The Turnover period is characterized by the rapid influx of black families, the blossoming of 'for sale' signs, and often questionable real estate practices, including pamphlet-spreading, blockbusting, and the encouragement of panic-selling. The instability of the Turnover phase has an effect on property upkeep which remains long after.

The Residential-Commercial Blight phase occurs in the wake of the Turnover period. Although some neighborhoods retain their original character, with little change other than that of occupance, in most cases the uncertainties and turmoil of the previous stages have taken their toll. Reduced long-term investment and upkeep by original owners, departure of many supporting services and institutions, neglect during the turnover process and the financial inability of some newcomers adequately to maintain property, have all had their effects on neighborhood. Quite often the impact of other forces such as declining city services and the presence of abandoned H. U. D. houses create additional pro-

[11] R. L. Morrill, The Negro ghetto: problems and alternatives, *Geographical Review*, Vol. 55 (1965), pp. 339–361; H. A. Rose, The development of an urban subsystem: the case of the Negro ghetto, *Annals of the Association of American Geographers*, Vol. 60 (1970), pp. 1–17; H. A. Rose, Spatial development of black residential subsystems, *Economic Geography*, Vol. 48 (1972), pp. 43–65.

blems.[12] The legacy of those complex events is a blighted physical condition and a changed socio-economic fabric.

At any point in time, the spatial distribution of the phases of racial transition is a pattern of increasing individual insecurity, property neglect, and general physical deterioration from the place where persons become aware of the possibility of change to the place where the area becomes largely black. Moreover, because the change is one of occupancy rather than a direct physical change, the after-effects can be observed on the landscape far behind the actual edge of complete change.

In sum, the impact of the wave of racial transition is felt over a broad zone. Although the transition at any one place might be temporary, the total area undergoing the process at any one time is great. Large sections of many United States cities have gone through the instability and conflict accompanying racial change. Even larger areas have gone through the long period of uncertainty, tension, and neglect which precedes the actual transition. In addition, much blight in central city ghettos can be attributed to earlier transition processes. Often, the result is all too apparent on the landscape.

BUSINESS DISTRICT EXPANSION

Another force of urban spatial change is business expansion into adjacent urban land. Most notable is the expansion of the Central Business District. During the postwar era, for example, in many European cities there has been strong demand for office space and the CBD has remained the prime location for that space. The resulting pressure on adjacent residential land has been great. The impact of expansion is felt well beyond the place of business construction or occupation (Fig. 2).

The process in any affected area begins with general Residential Concern, brought on by soaring land values and taxes, rumors, newspaper reports, and the evidence of change in nearby areas. Residents are in a state of uncomfortable awareness and might begin to discuss their mutual concerns in newly activated neighborhood councils. The phase of Residential Change is introduced as the area becomes the focus of activities for the different businesses which comprise the urban property industry.[13] Impressive financial offers are made to some property owners, whereas different types of legal and political pressures are put upon those who are reluctant to leave. Conflicts occur between resident groups, development concerns, city planners, and city hall. There is a gradual increase in non-residential land use, which leads to a decline in the residential quality of the neighborhood.

The area enters the phase of Deterioration when many original residents have left, but development has not taken place. Because this is an area of high land values, high rents, and correspondingly high taxes, remaining owners are prompted to make an income as their property deteriorates. Often this is done by providing slum accomodations for the poor, rooming house accomodations for transients, and space for activities (cheap nightclubs, welfare missions, and "soup kitchens") that are prohibited or unwanted in other parts of the city. In

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[12] The relationship between racial change and housing abandonment is clearly expressed in Center for Community Change — National Urban League, *National survey of housing abandonment* (New York; National Urban League Inc., 1971).

[13] For incisive, though perhaps exaggerated, accounts of the urban property industry in Canadian cities, see J. Lorimer, *A citizen's guide to city politics* (Toronto: Lewis and Samuel, 1972); J. Sewell, *Up against city hall* (Toronto: Lewis and Samuel, 1972).

some European cities many illegal, fugitive, foreign workers are housed here in crowded and degrading dormitory conditions.[14] Eventually the area enters the Development Phase as the "development-management mechanism" clears, converts, builds, rents, and manages the new extension of the Central Business District.

In sum, CBD expansion creates a zone of uncertainty, tension, and decay beyond the edge of business use. However, the process is full of intangibles. Its progression depends upon such variables a general economic booms and recessions, interest rates, availability of mortgage money, and the condition of the local economy. Any one of these variables can cause a halt at any stage of the process. When this happens the area retains the character of the phase at which the process was halted.

The Zone of Transition in the Burgess model of city development exemplifies this process.[15] High land values and rents in this zone probably originated with the anticipated expansion of central business uses.[16] Landowners and investors needed to derive an income from their property to compensate for those land values and taxes. At the same time, they had no incentive to maintain property which has to become part of the expanding business district. The resulting land use mixture and associated conditions are well known and it is no wonder that this area also has been called the Zone of Deterioration.

What happened in most US cities is that the anticipated expansion of the Central Business District did not take place. In many cases, changing economic conditions led to a decreased demand for additional business space. In other cases the CBD, rather than expanding laterally, expanded vertically in the form of skyscrapers. Eventually business uses leaped outward over the Transition Zone to outlying business ditricts and to the suburbs. It is most significant that cessation of the CBD's outward expansion was not accompanied by the disappearance of the Transition Zone. Conditions created by that one-time expansion in the Zone of Transition remained, and a long period of inertia set in. Many aspects of the Zone of Transition remained relatively unchanged for decades after Burgess incorporated the zone into his model in 1924. In some cities the first significant change in the landscape of the zone came in the form of urban renewal projects of the past two decades.

In sum, a celebrated and longstanding zone of the American urban landscape appears to be associated with the anticipation field of a former wave of spatial change which long since has become stationary. Today, in many booming cities of the world, similar waves of business' and institutional expansion are responsible for much turmoil, conflict, and decay.

RENEWAL

In many American und European cities, one of the most significant forces of change during the last few decades has been that of renewal. In US cities, for example, the most important examples are federal urban renewal, freeway construction, and institutional expansion. Although difficult to conceptualize as

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[14] See, for example, R. Koch, Das Verhalten der Gastarbeiter am Wohnungsmarkt, *Baumeister*, Vol. 6 (1971), p. 633; H. G. Hartel, Wanderungsbewegung der Gastarbeiter in City-nahe Gebiete, *Bauwelt*, Vol. 47 (1970), pp. 1834–1836.

[15] E. W. Burges, The growth of the city, Chapter 2 of R. E. Park, and E. W. Burgess, *The city* (Chicago: University of Chicago Press, 1925).

[16] This interpretation of the formation of the Zone of Transition is not original and has been similarly described in: A. H. Hawley, *Human ecology* (New York: Roland Press, 1950), pp. 280–281.

a wave, renewal constitutes a process of change which has engulfed and threatens to engulf ever larger amounts of urban space.

Like other forces of spatial change, renewal has an impact well beyond the area being rebuilt or redeveloped. Indeed renewal is the end-product of a long, complicated, contradictory, bureaucratic process. Although that process differs according to the type of renewal taking place, it generally involves a number of successive phases (Fig. 2).

The most devastating aspect of the renewal process is the long and uncertain period of time during and between each phase. Most federal renewal projects take at least ten years, some have taken as long as twenty years, and many have not been completed. Similar time periods are involved in freeway construction. Stated in other terms, the time lag is the equivalent of three or more different federal and state administrations, several city administrations, and innumerable changes in the make-up and attitudes of actors on the local scene. The time also encompasses changes in the national temperament, including changes in the philosophy of renewal itself. As a result the process may be stopped abruptly. When this happens, the area does not revert to its initial condition, but instead remains as it was when the process ceased.

When looked at spatially, the renewal lands of any city and the areas around them can be considered a large anticipation field, patterned into the different stages of insecurity, conflict, and deterioration which occur between initial consideration and the eventual completion of construction. Although the total area involved in renewal is small compared to the vast extent of many metropolitan areas, renewal projects and freeway construction tend to be concentrated in specific areas where their visual impact is overwhelming and where their effects on nearby areas are extensive. The inner parts of many cities virtually have been chopped up by converging expressway systems, and many remaining and neighboring parcels are in a state of decay. Many residential neighborhoods have become areas of personal uncertainty, group conflict, and property neglect due to impending change. Certain areas of our cities present a picture either of residential decline, or of empty shells of buildings or of vacant land, or of disruption brought about by developments in various degress of completion. Whatever the final result of renewal, the effects of the renewal process are all too visible on the city landscape.

In sum, the wave of renewal, which is intended to rejuvenate areas of our cities, brings about a certain amount of deterioration and conflict within and around the areas about to be renewed. Often it appears that at any one time the amount and extent of this deterioration is greater than the amount and extent of eventual rejuvenation.

CONCLUSION

The forces of spatial change described in this paper are only a few examples of the waves of change which engulf the urban landscape. In spite of the diversity of these examples, it is not difficult to find similarities in the landscape conditions which they create. The 'land in limbo' resulting from the renewal process in central cities has similarities to land in rural areas affected by the process of urban expansion. The 'blight by announcement' which describes many renewal lands has many similarities to the 'self-fulfilling prophecy' resulting from attempts to counteract the adverse effects of racial transition. The 'time lag' emphasized in the discussion of land consolidation reminds us of the 'time lag' which is so characteristic of the renewal process. Inept bureaucracy, personal disruption, and group conflict crop up in all examples. It would seem

that the isomorphisms among different types of diffusion waves, so much emphasized in the diffusion literature, carries over onto the landscape. The most important of those isomorphisms is the general pattern of disruption and deterioration found across the anticipation fields of different waves of change. These patterns have been described separately. But in many metropolitan areas these waves of spatial change impinge upon an area simultaneously. When this is the case, the aggregate amount of conflict and deterioration can be great. By incorporating these different kinds of spatial change and their associated landscapes into a single conceptual framework, it is felt that many urban problem areas might be more clearly understood.

PART II

REGIONAL CASE STUDIES

In 1975 a volume under the title "Essays on World Urbanization" (R. Jones, ed.) was published by Philips and Son Ltd in London containing the 28 reports on urbanization in various countries of the world (9 on European countries, 1 on the Soviet Union, 6 on Aziatic countries, 3 on African countries, 7 on North, Central and South American countries as well as 2 on Australia and New Zealand) together with several topical articles based on these reports. They were prepared in the years 1968–1972 for the Commission on Processes and Patterns of Urbanization of the International Geographical Union. In the following years a number of other reports were undertaken on the basis of the somewhat changed and extended programme. Due to specific difficulties these were not fully discussed and some of them were not even fully finished. Twelve of them are published here. Their selection was made on the following basis: they present problems of countries not included in the former publication (Denmark, Portugal, Southern Africa, Spain, Sri Lanka), they give additional important information or they represent a new, synthetic, complex and deeper review of the state of urbanization in the given country (France, India, Ireland, New Zealand, United Kingdom and Venezuela). The limited size of this volume did not allow us to publish all the reports but it was obviously better to publish a selection of reports almost in full than to present them all in very severly shortened versions.

GEOGRAPHIA POLONICA 39, 1978

URBANIZATION IN DENMARK *

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HISTORICAL DEVELOPMENT OF THE URBAN PATTERN

Almost all Danish towns with a present population of 10,000 or more belong to the system of towns that developed in the Middle Ages. In particular, the 12th and 13th centuries seem to have been a rich period of town founding. In most parts of Denmark where the morphology and soil is well suited for agriculture, market towns serving an agricultural hinterland developed with intervals of usually about 30 km, most of them being also ports. In central and western Jutland where the soils are sandy and the agricultural population was very thin, only few towns grew up.

From the 16th to the mid-19th centuries, the number of towns was remarkably stable. The only important change in the urban pattern of Denmark was the growth of Copenhagen — in the Middle Ages just one in a number of equally big towns — to a size about tenfold that of any other Danish town. The background was partly the development of trade, based on the excellent situation of the port on the Sound, partly the policy of kings with absolute power to concentrate administration and industry in their capital. (It should be remembered that the monarchy administrated from Copenhagen during most of this period included the present southern Sweden, Norway, and parts of northern Germany).

In the second half of the 19th century industrialization gained pace in Denmark. At the same time, the agricultural population changed from a mainly self-subsistence economy to an economy of exchange, selling almost all their production and buying almost all their consumption. These changes gave rise not only to a rapid growth of all existing towns, but also to the development of a new generation of urban settlements situated between the older towns. The reason was that the service activities needed to serve the commercialized agriculture had to be located near the farms, because of the poor means of local transport. Usually the new urban settlements developed at railway stations. In central and western Jutland the heathlands were colonized and reclaimed, and the new urban settlements became more numerous and bigger than elsewhere.

During the 20th century, industrialization and the development of service activities continued, and the capital, other old towns and new urban settle-

* This paper was written in 1974. In spite of the changed economic conditions since that year, with heavy unemployment, the regional development in Denmark has followed the same lines as in the preceding years. The Copenhagen region has even suffered a loss of population in absolute terms, while small towns and villages have increased their share of the population growth.

ments grew steadily — most urban classes showing more or less the same growth rates. On the fringes of the medium towns and major cities, suburbs developed rapidly.

In 1960, the urban system of Denmark could thus be described as consisting of: (a) a primate city, Copenhagen, containing almost 1.5 million or half of the country's total urban population and being about 8 times as big as the second town; and (b) a series of towns between 200,000 and 1000 inhabitants, the three biggest ones distinguishing themselves clearly from the rest. Only after 1960, this pattern of urbanization has changed radically.

ADMINISTRATIVE STRUCTURE AND URBAN PATTERN

Before describing the present state and processes of urbanization, it is necessary to say a few words about the bases for the statistical information.

Most data are only collected by administrative units. Until 1970, the basic units were about 1400 'communes', usually consisting of one or two church parishes (dating back to the early Middle Ages). The old towns (and a small number of new urban settlements) had a special administrative status as 'boroughs'.

The pattern of urbanization had made it necessary for the statistical agencies to make most data available also for other territorial units. Suburbanization had made all big and medium towns grossly 'underbounded', and in many cases data for the total built-up area were collected. On the other hand, many more settlements than the official boroughs had acquired an urban character, and some statistical data for them were made available. At the censuses of population, the statistical agencies in the Scandinavian countries have agreed to regard all settlements of more than 200 inhabitants as 'urban'. However, in Denmark most settlements of 200–1000 inhabitants have no clear urban character neither morphologically nor functionally. A criterion of 1000 inhabitants would be more appropriate.

In 1970, the local government system was re-organized, and the number of communes reduced to 275. Apart from the Copenhagen region, the guiding principle was 'one town — one commune'. This means that for towns of 10,000–250,000 inhabitants, there is now in most cases good correspondence between the administrative unit and built-up area (including the nearest commuting field). Urban settlements with less than 10,000 inhabitants are overbounded, as they are included in communes with a good deal of rural population, and often several urban settlements. In the Copenhagen region, the contiguous built-up area is divided between some 20 communes. And the total commuting area (including the area up to 50–70 km from the city centre) consists of 3 counties and some 50 communes; a special metropolitan council for this region was established in 1974.

THE HIERARCHICAL SYSTEM OF CENTRES AND SPHERES OF INFLUENCE

Although it is not easy to find criteria for the degree to which the towns of a country are effectively integrated into one national system, there can be no doubt that the urbanization of Denmark can be characterized as a strongly developed hierarchical system of centres and spheres of influence.

A number of studies on different sorts of interaction have allowed us to form a general conclusion concerning the spheres of influence. The studies

have dealt with retail trade, journeys to work, telephone traffic, mail sendings, railway journeys, migration, and newspaper subscription.

Figures 1 and 2 show the local spheres of influence of some 70 towns, the regional spheres of influence of Århus, Odense and Ålborg (including the areas up to 60–70 km from these regional centres), and the national influence of Copenhagen. An interesting feature is that western and southern Jutland does not belong to the regional sphere of influence of any regional centre, but has more interaction with Copenhagen than with the major provincial cities.

Figure 3 shows the journeys to work crossing the new commune boundaries, the thickness of the arrows corresponding to the intensity of out-commu-

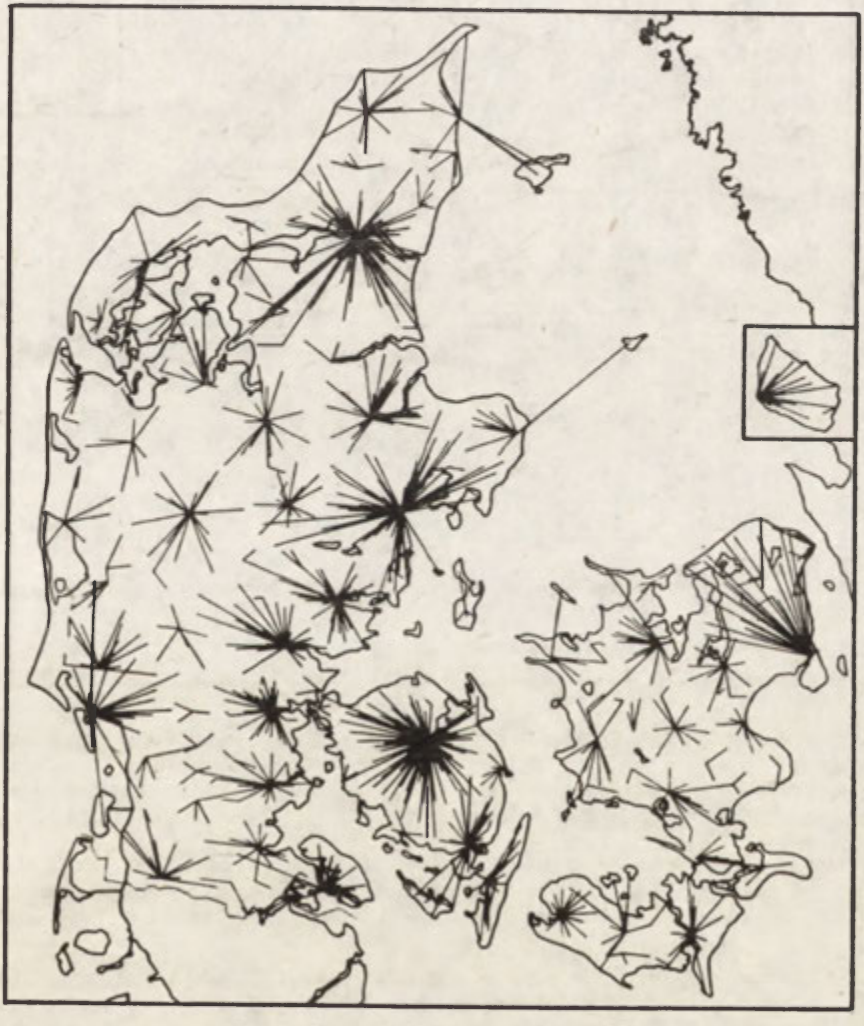

Fig. 1. Amount of mail carried, 1967
From every rural branch post office a line has been drawn to the principal destination of pieces of mail carried. Copenhagen has been excluded except as a destination of North Zealand branch post offices from which more than four and a half times as many pieces of mail were sent to Copenhagen as to the second most important destination.

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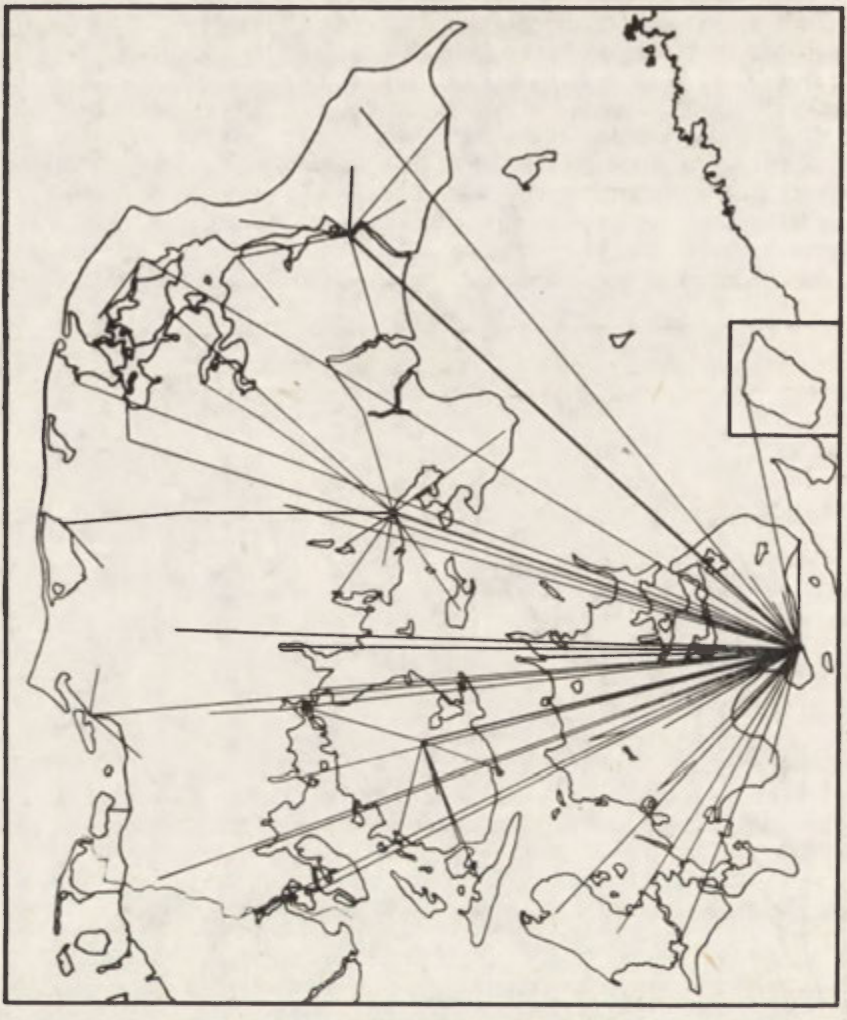

Fig. 2. Amount of mail carried, 1967

From every urban post office a line has been drawn to the principal destination of pieces of mail carried. Copenhagen has been excluded except where it was the destination of more than four and a half times as many pieces of mail as to the second most important destination
Published earlier as H 8 in the series: *Thematic maps of Denmark*

ting from the commune of residence (the Copenhagen region is excepted). The spheres of influence or labour markets revealed correspond closely to the local spheres of influence of Figure 1, usually reaching 15–20 km from towns of more than about 5000 inhabitants.

The location of central functions has also been the subject of a number of studies, allowing us to classify the centres of Denmark into a series of hierarchical levels. The function of Copenhagen as the supreme centre for all activities is unquestionable. Århus, Odense, Ålborg (and, in an embryonic stage, Esbjerg) clearly stand out as regional centres. On the lower levels, there are no clear-cut hierarchical steps. The functions are typically found in about 70 centres serving more than 20,000 people. Other functions are found in even smaller centres. For instance, schools, communal offices, libraries, ci-

Fig. 3. Out-commuting, percentage of economically active persons with known working place, by commune of residence

nemas, dentists, and the most common shopping goods retailing usually occur in urban settlements with more than 1000–1500 inhabitants and serving at least 5000 people altogether. A few functions, especially convenience shops, are found in even smaller settlements, but in declining numbers.

CURRENT DEVELOPMENTS IN URBAN ACTIVITIES

The changes that currently take place in the urban system may be described as the results of:

(a) changes in the location of private enterprises, including differential growth or decline of existing enterprises.

(b) changes in the location of public institutions, including differential growth or decline of existing institutions.

(c) changes in the choice of residence of households, including house-building and abolition of dwellings.

The location, expansion and contraction decisions of private firms, households, and the public sector interact in a variety of ways, and the causes and effects on the national scale are different from their interaction on the local scale.

On the national scale, government does only indirectly influence the location of private firms and house-building. From this point of view, residences must be close to work-places (whether private firms or institutions) and to a number of services. But it is not always easy to see which locational decisions are causes and which are effects.

On the local scale, the location of private firms and house-building are subject to public restrictions based on planning legislation, which gradually has been enacted since 1938. There is no necessity for residences, work-places and services to be quite close to one another. It should be mentioned that planning policies in Denmark have not aimed at any injection of new towns into the urban system. To some degree, the comprehensive development of the south-western 'finger' of Copenhagen may be said to have the character of a new town.

In the following section, the results of a shift-and-share analysis of the 1960–1970 development in primary, secondary, and tertiary activities and of the number of people in non-active groups are recorded. Employment in agriculture was strongly decreasing, which was a main cause for the decline in rural population.

Employment in manufacturing, etc., was increasing in all size-classes (actually, most of the growth took place in the construction industry). However, a considerable shift took place, as employment in cities of more than 100,000 inhabitants grew much less than it would have done, if the growth rate had been the same as the national one. On the other hand, employment growth over the national average took place in towns of less than 100,000 inhabitants and rural areas. Other studies show that this decentralization of manufacturing industries mainly took place in low-wage, labour-intensive branches (e.g., textile). The most important reason probably was the search for low-wage labour in this period of almost full employment. The government's regional policy, offering various incentives for industrial development in peripheral regions, also influenced the tendency.

Employment in the service sector increased rapidly, by and large proportionately with the former distribution of service employment, which means that the major cities received a large share of the growth, small towns and rural areas only a small share. From other studies it is known that in rural areas and villages with less than about 1000 inhabitants, services — especially shops and primary schools — are rapidly declining. The reason is that increasing specialization and economies of scale force both local governments and private firms (retailers) to concentrate their activities. On higher levels in the urban hierarchy, concentration also takes place in some services (e.g. hospitals), but in other branches the increasing amount of activity has made decentralization possible (e.g., secondary and higher education).

A few words may be added about the development in the non-active population groups. The number of children has been increasing in medium and big cities and decreasing in rural areas, which probably is due to immigration and emigration, respectively, of people in the parental age bracket.

The number of young people in educational institutions has increased rapidly, especially in medium and big cities where most secondary and higher educational institutions are located.

The number of housewives has decreased rapidly. The decrease has been slower than the national average in Copenhagen, where the number of non-active housewives was already relatively low; the decrease has been drastic in rural areas, where until recently almost all married women were housewives. The number of retired people has increased in all size-classes of towns.

Summing up these tendencies, the total population growth of Copenhagen has been smaller than its share of the various employment and non-active groups should have justified, especially because of the shift away from Copenhagen of manufacturing employment. In most classes of medium and small towns, the total population growth has been bigger than their shares would have justified, the main reason here being the positive shift in manufacturing.

Of course, this analysis refers to the general changes in urban activities. Individual towns often develop in a quite different way than the class to which they belong. The reason may be exceptional growth or decline in the manufacturing economic base, or local dominance of some special activity (fisheries, hospitals, educational institutions, military bases, and ferry-ports may be quoted as examples, whereas tourism hardly anywhere plays more than a secondary role).

CURRENT POPULATION CHANGES IN THE URBAN SYSTEM

Returning to the local scale, we have since 1960 observed a sprawl of house-building in the areas surrounding all big and medium cities; people who move out into this area of urban sprawl in most cases still work in the contiguous built-up area.

The reasons for this process are complex. Suffice it to say that an increasing number of households demand one-family houses, but are unable to afford the land-prices in the contiguous built-up areas; that the increasing car-ownership is a condition for combining residence in a village and work in a city; and that the communes — anxious for immigration of good taxpayers — very often have facilitated the process through their planning policies.

The consequence of the sprawl tendencies is that the definition of a city or a town becomes very blurred. In Fig. 4 we have chosen to include into the population of each town the immediate surroundings from where an intensive commuting takes place; the criterion is to include parishes where the population growth is above the national average. In the Copenhagen areas the urban field thus defined contains the whole region under the Metropolitan Council.

Figure 4 shows the distribution of population growth between various size classes of towns and urban settlements. It should be noted that since the population of the rural areas is decreasing, the growth in urban population equals the growth in the country as a whole plus a growth component corresponding to the rural decrease (the area below the thick horizontal line).

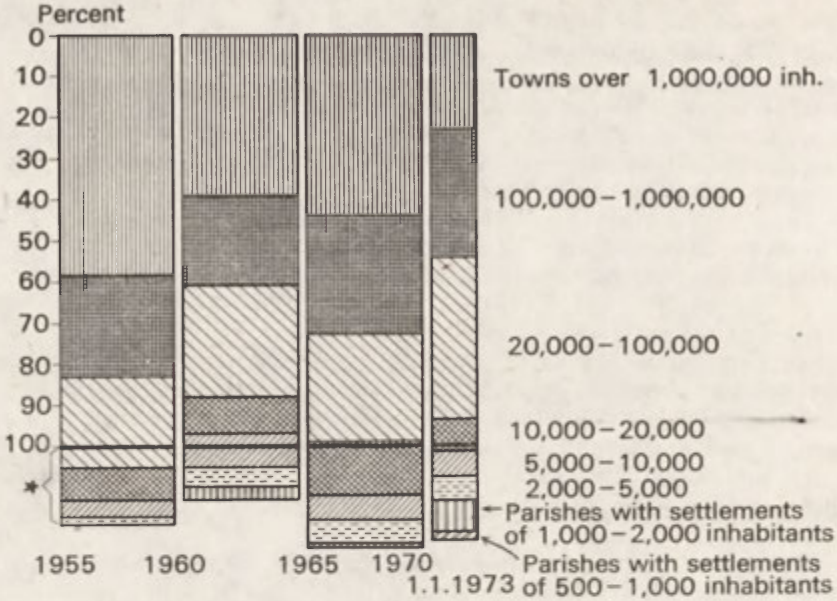

Fig. 4. Distribution of total population growth 1955–73 between size-classes of towns
Town sizes 1970, including surrounding parishes with population growth above the national average 9 Nov. 1970–1 Jan. 1973
* The area below the thick horizontal line corresponds to population decline in parishes without settlements of at least 1000 inhabitants

The figure shows that in 1955–1960, Copenhagen received about half of the total population growth, which — as already mentioned — had been the normal situation during almost a century. The regional capitals and towns with 10,000–100,000 inhabitants shared the remaining growth almost equally, whereas towns with less than 10,000 inhabitants only received a small part.

In the early sixties, the distribution of urban growth changed markedly; and, after a certain reverse development in the second half of the sixties, the early seventies have witnessed an even more drastic change, compared to the traditional growth pattern. Now, the Copenhagen region receives a much reduced share of the total growth. The share of the regional capitals has oscillated around a fourth. The shares of medium and small towns have increased tremendously.

It should be noted that this growth has taken place in the existing medium and small towns. Except for a few new developments in connection with the construction of new harbours and the exceptional growth of some formerly rural manufacturing plants, the elements of the urban system are the same as in the beginning of the century.

REGIONAL VARIATIONS IN URBANIZATION

Figure 5 shows the degree of urbanization in trade districts (each consisting of a shopping goods centre and its zone of influence); the definition applied is the share of the total population that lives in built-up areas with more than 1000 inhabitants.

The Copenhagen and Århus districts, and a few districts containing towns with virtually no zone of influence, are almost completely urbanized. The

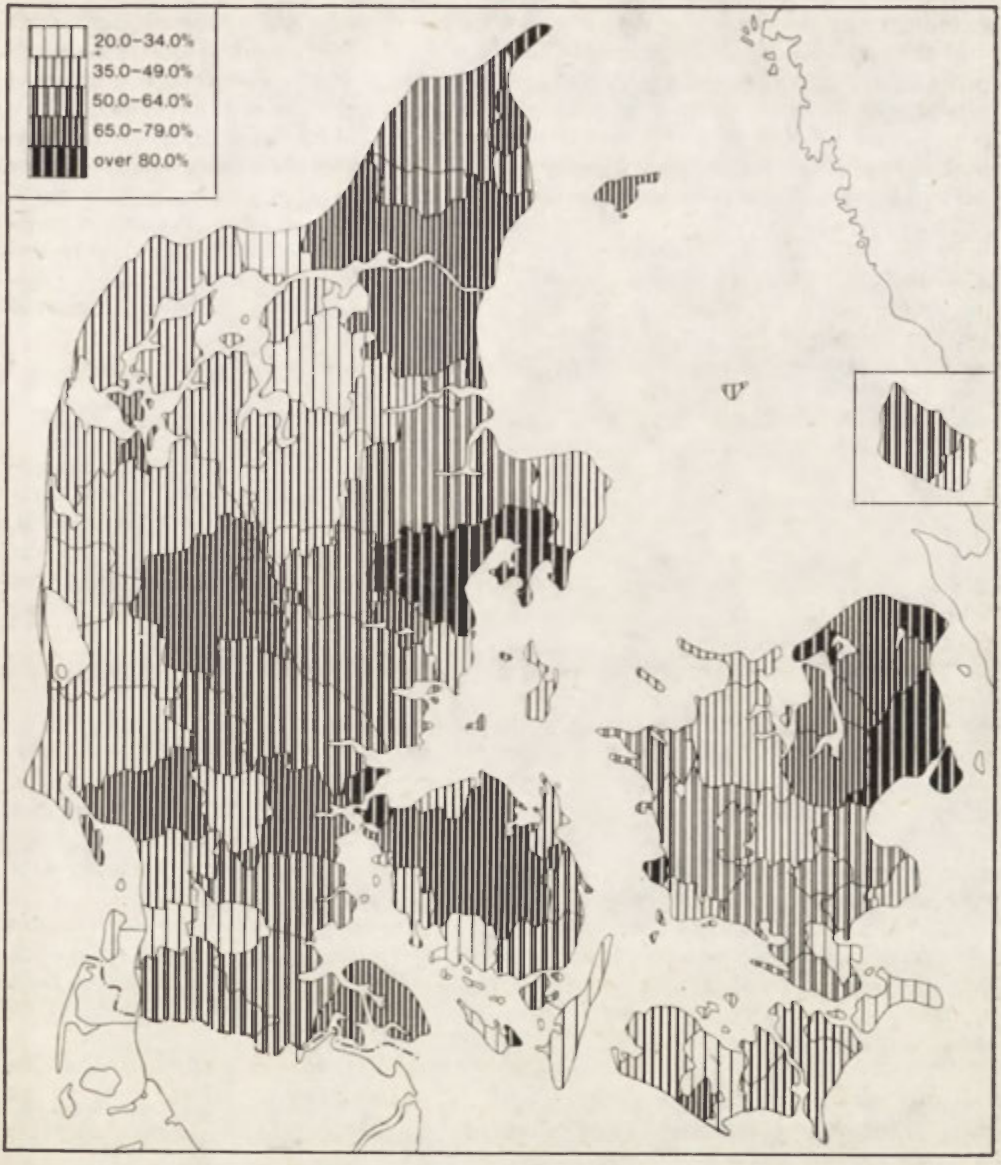

Fig. 5. Degree of urbanization in trade districts, 1970
Population in towns with more than 1000 inhabitants, as per cent of total population

other districts in the Copenhagen region, and the districts containing the other most important provincial cities, show 65–80 per cent urban population, corresponding to the national average. As regards the rest of the country, the degree of urbanization is over 50 per cent in most parts of eastern Jutland, Funen and Zealand; whereas it is between 20 and 50 per cent in most parts of western Jutland and the smaller islands to the south.

The moderate degree of urbanization in western Jutland is a reflection of the almost total absence of towns in this part of the country a century ago.

Although, as described above, the development of urban economic activities and the urbanization has proceeded with considerable speed since then, western Jutland still lags somewhat behind most parts of the country. The amount of commuting from rural to urban areas is also moderate in this region of low population density and relatively long distances. Thus, according to this criterion, the countryside is also less urbanized in western Jutland than in other parts of the country. In the islands south of Zealand and Funen, the rural population density was high and the number of boroughs considerable a century ago. However, the development of manufacturing has been below average. The small size and relative isolation of these islands, the early mass emigration, and the low fertility have reduced the local population base for economic development.

DEMOGRAPHIC CHARACTERISTICS OF THE URBANIZATION OF DENMARK

Figure 6 shows the age composition of the population of the new communes. The number of children is generally higher in rural than in urban communes, due to higher fertility. Town-country differences are over-shadowed, however, by the south-east/north-west variation (also due to fertility differences); and by the central-peripheral variation within the urban regions best seen in the Copenhagen region — which reflects the distribution of young couples.

The map of the relative number of young people retains some of the south-east/north-west variation. More important, however, is the concentration of young people in the urban areas — especially in their central parts — where most institutions of secondary, vocational, and higher education are located.

The relative number of aged persons is low in urban areas (except for their central parts) and high in rural communes, which reflects areas to and from which younger persons have migrated in large numbers. The very high numbers on the southern islands show that in this region of low fertility and high emigration, the remaining population has a high mean age.

The relative number of people in the economically active age brackets (25–64) is high in all urban communes and low in rural communes, reflecting the net migration of young people from country to town. The share is particularly low in western Jutland, due to the high proportion of children in this region.

The age composition in 1971 reflects the migration and fertility factors in the preceding period. In Figures 7 and 8 the most recent information about demographic processes is shown, covering 1971–73 (these processes, of course, are in their turn influenced by the age composition).

The surplus of births over deaths is small in the country as a whole, the fertility rate having decreased by 20 per cent since 1966. The geographic variation of birth surplus is considerable. In general, the natural population growth is above average in urban communes and below average in rural communes, due to the different age composition. A variation between suburban communes, with a very high natural increase, and central city communes with a natural decrease, is well marked in the Copenhagen region. It may also be observed that in Jutland, there is almost everywhere a birth surplus, whereas many communes in the south-eastern islands have a surplus of deaths, caused both by low fertility and by an unfavourable age-composition.

The internal migration pattern (Fig. 8) shows big contrasts within the major urban regions, the central communes having heavy migration deficits

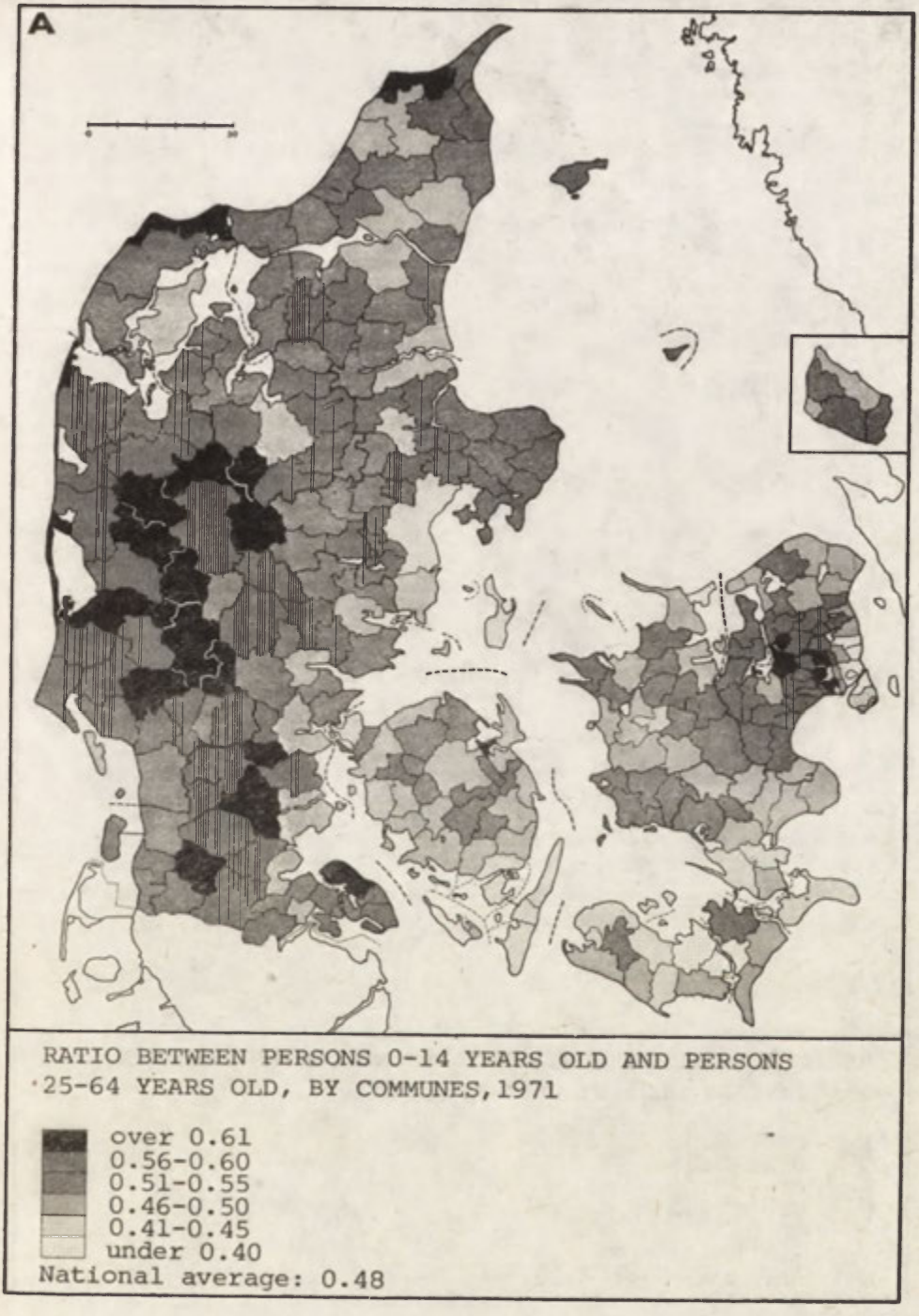

Fig. 6 A

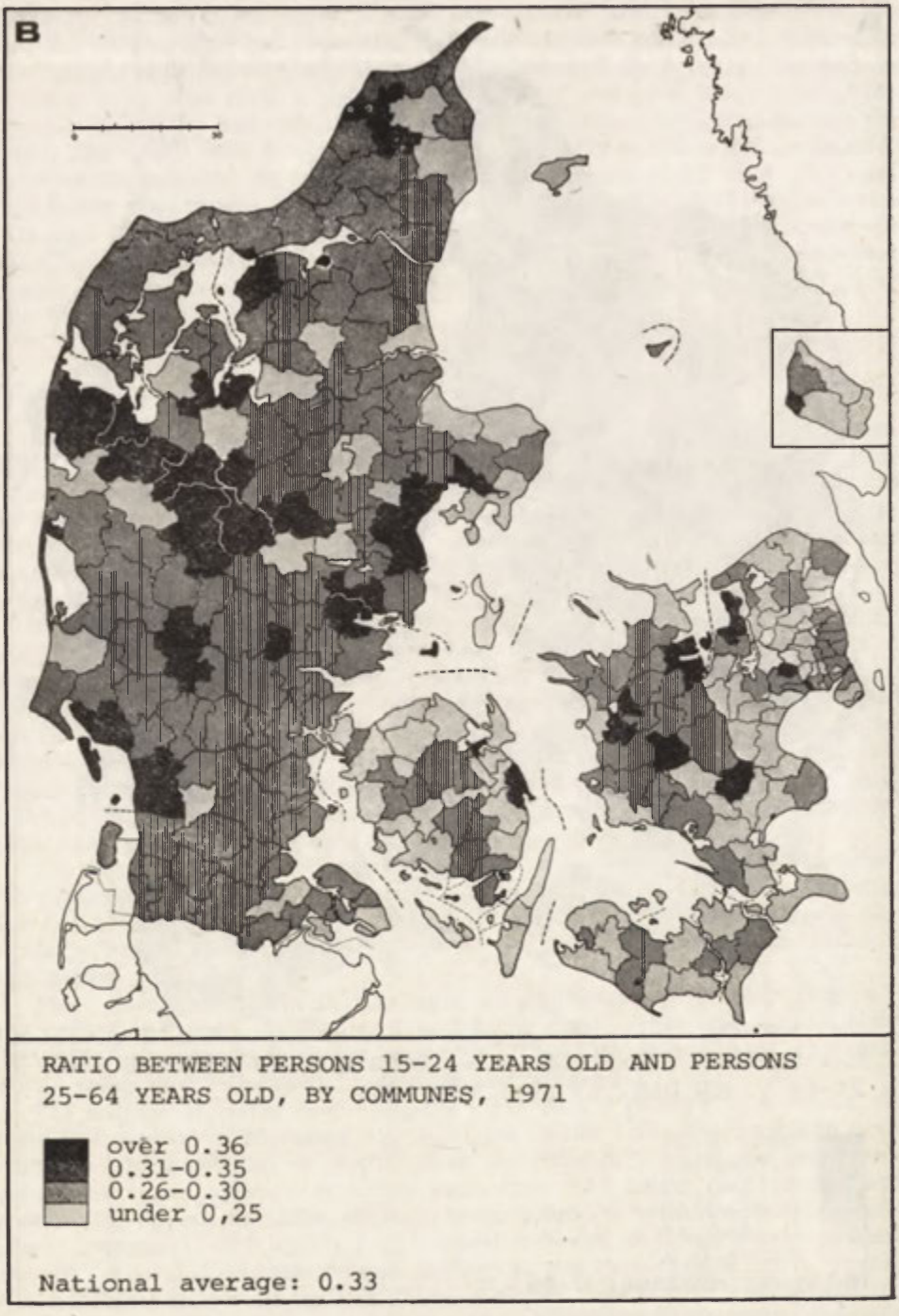

Fig. 6 B

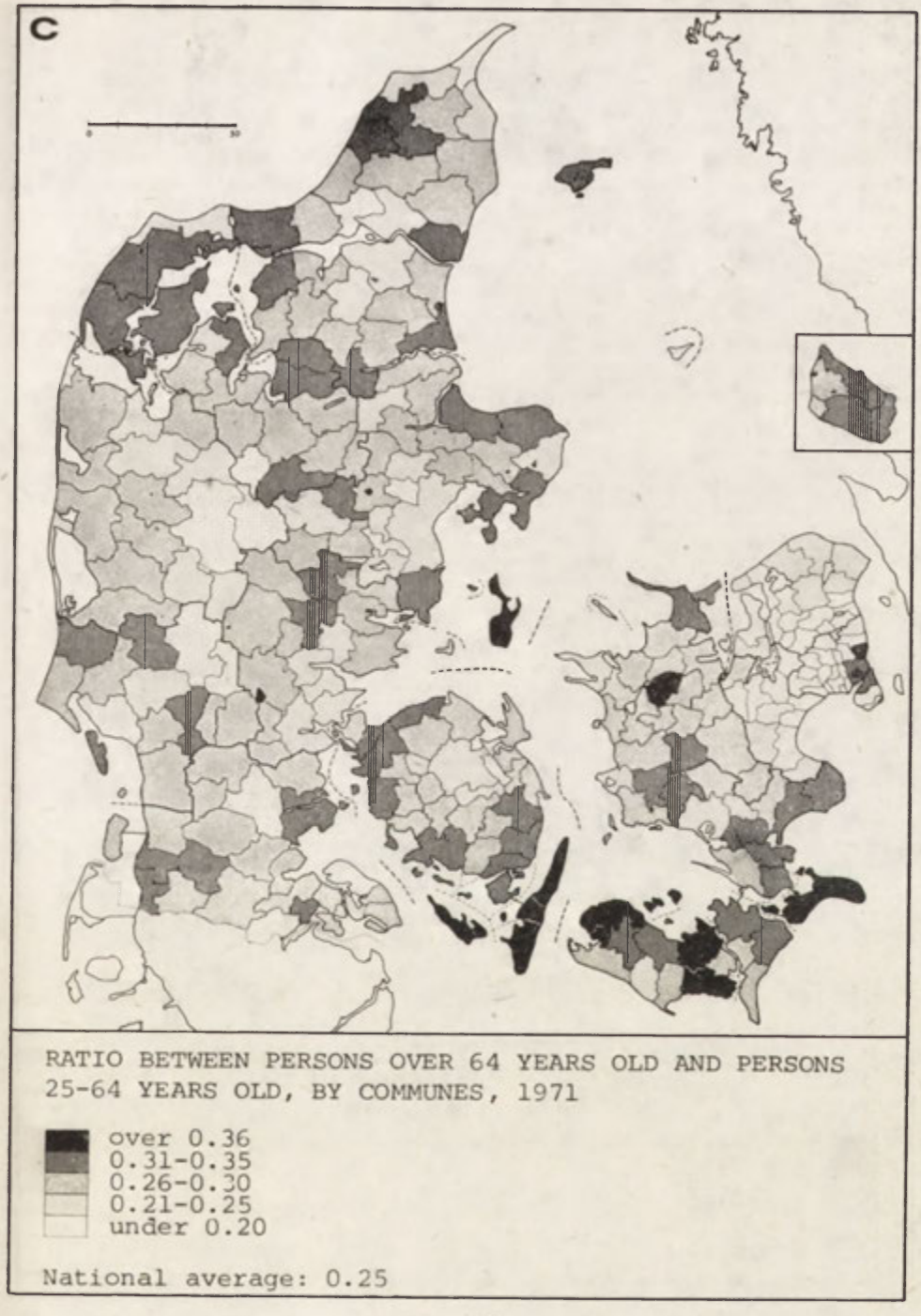

Fig. 6 C

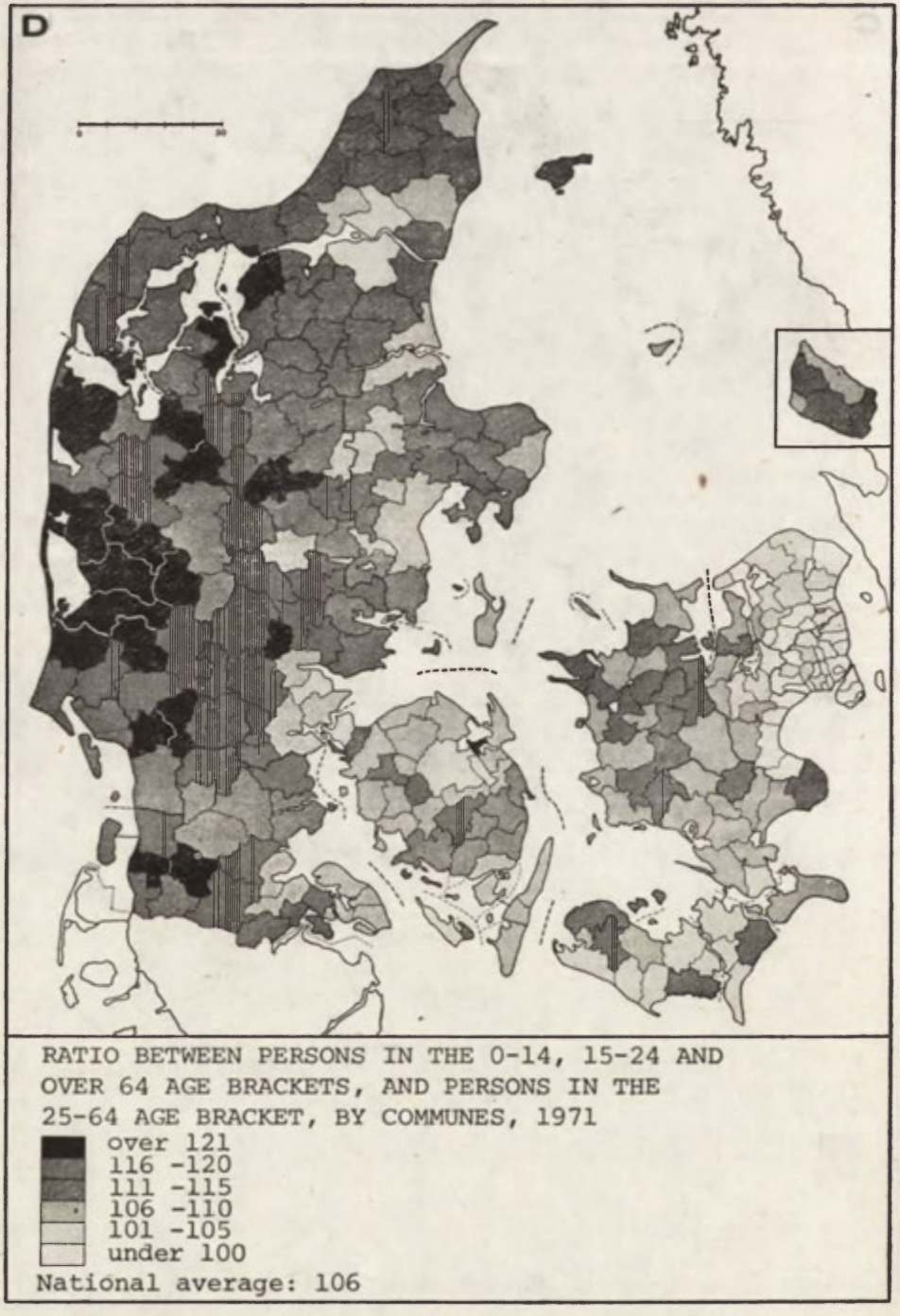

Fig. 6 D

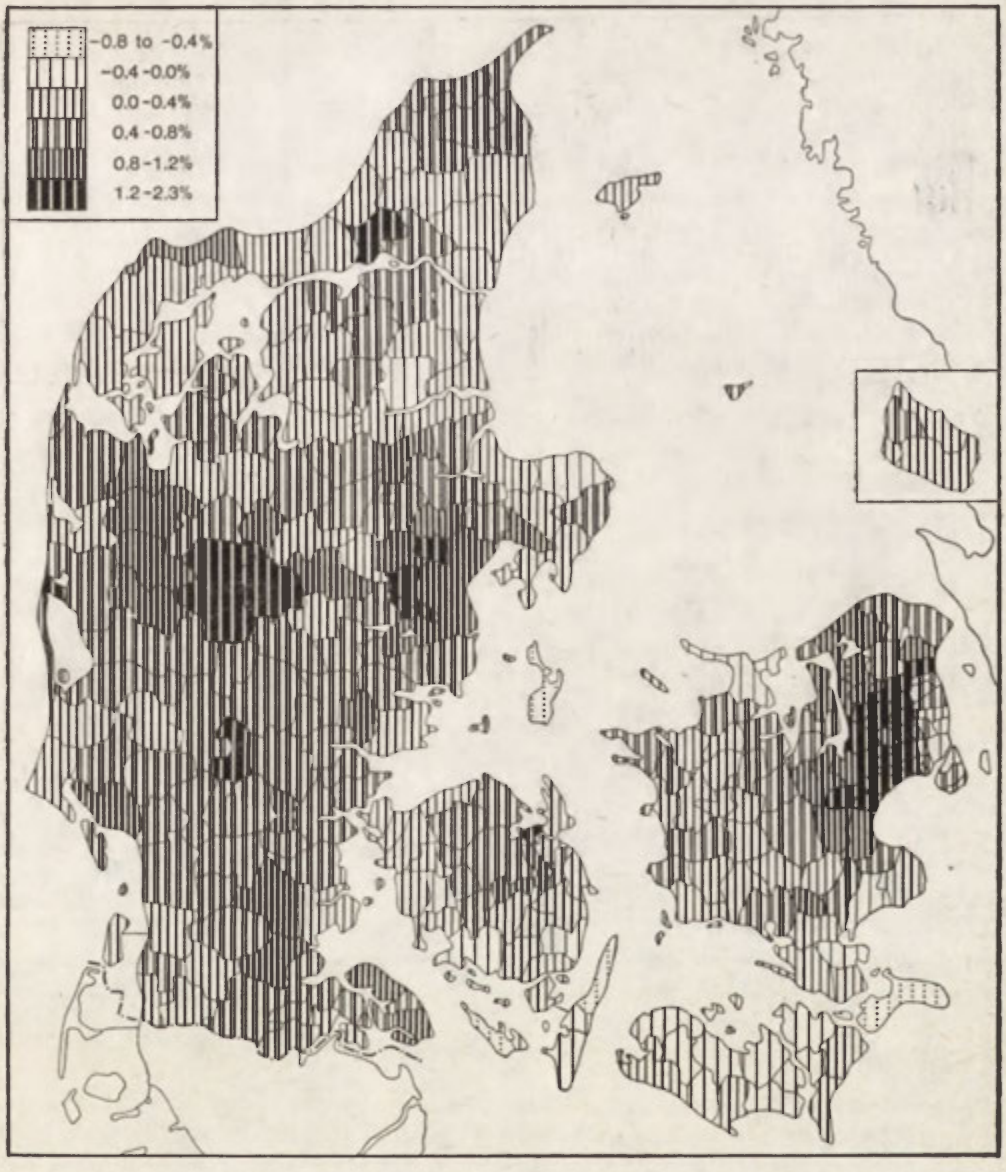

Fig. 7. Annual birth surplus, by communes, 1971–1973

and the peripheral — and even distant — communes considerable migration gains. This means that the dispersal tendencies in urban regions continue (however, in 1970, the Act of Urban and Rural Zones has prevented isolated housebuilding in the open countryside, so that since then dispersed development has taken place in planned urban zones, often connected with existing small towns and villages). As a whole, the major urban regions had migration balances close to 0. In the rest of the country, the variations were relatively small in these years. Still most urban communes — especially in Zealand and eastern Jutland — showed net immigration, and most rural communes — espe-

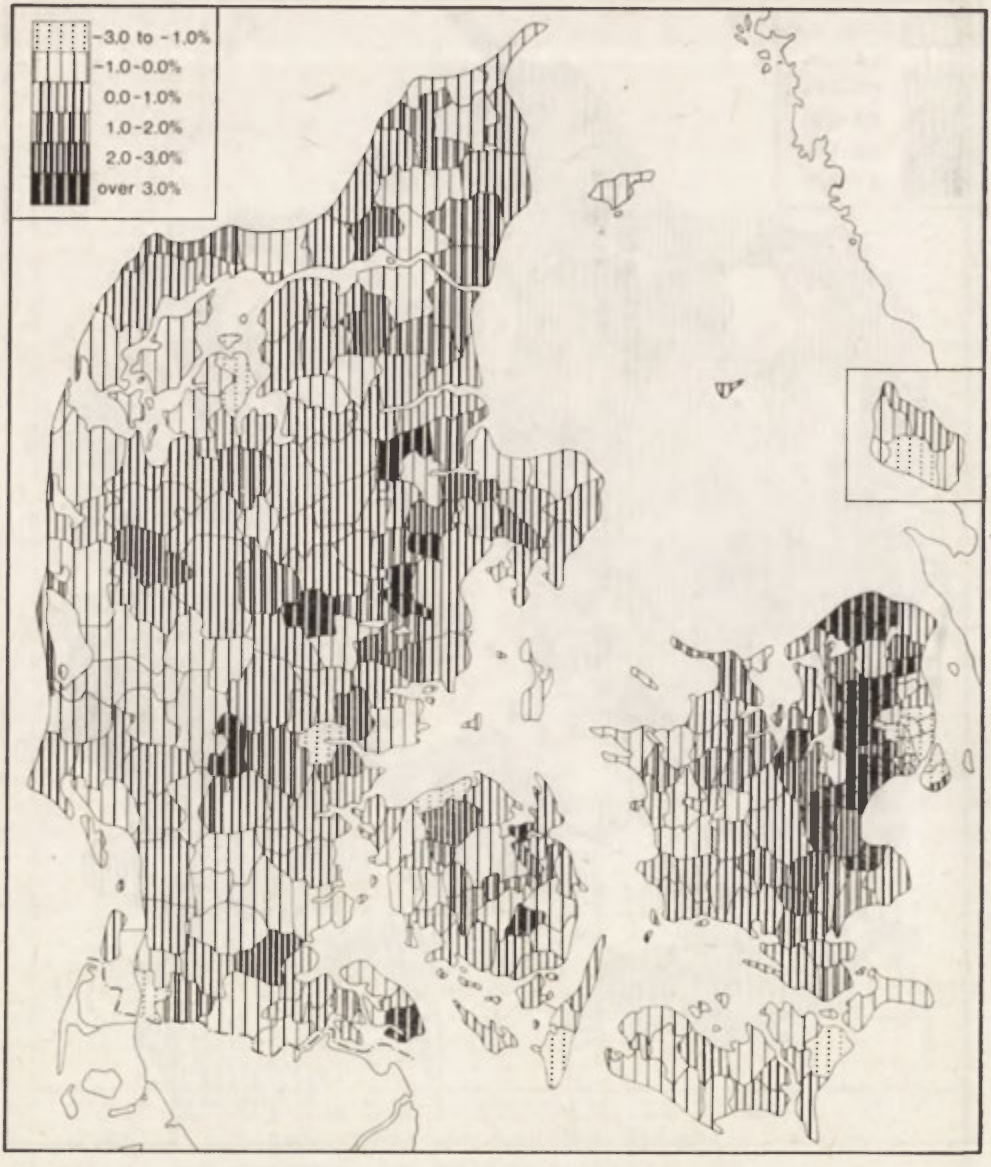

Fig. 8. Annual net migration, by communes, 1971–1973. Per cent of population 1 July 1972

cially in western Jutland and the south-eastern islands — showed net emigration.

It should be added that from 1959 to 1973, Denmark received a net international migration surplus, probably due to the high employment rates in this period. It is particularly the Copenhagen region that has benefited from this international net immigration. Were it not for the migration flow from abroad, the Copenhagen region would have showed an even smaller growth rate than it actually had in those years.

L'URBANISATION DE LA FRANCE

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Le phénomène d'urbanisation, dont s'accompagne le développement industriel de nos pays, est un fait majeur de notre époque. Cependant, il ne revêt pas d'un espace à un autre, d'un pays à un autre, les mêmes caractères spécifiques; l'analyse de son mécanisme de fonctionnement, même s'il résulte en grande part d'un processus général comparable d'Etat à Etat, doit tenir compte, pour être saisi dans sa complexité, des facteurs locaux particuliers et plus largement de l'histoire économique et sociale qui a modelé l'espace rural et urbain français.

Pendant des siècles l'organisation de la société française, son fonctionnement, ses institutions, se sont appuyés d'une part sur les villes, lieux privilégié du rôle politique et de la fonction marchande, et d'autre part sur la société agricole et rurale qui tenait dans l'économie une place prépondérante. Jusqu'à il y a quelques décennies, la société française était modelée essentiellement par une économie agricole; sous l'impulsion des mécanismes de la croissance industrielle, les villes, les agglomérations et zones urbaines sont devenues le cadre principal des activités économiques, de l'habitat, de l'action des institutions, donc de l'organisation économique sociale et politique française.

L'urbanisation, en tant que processus de concentration des hommes et des activités économiques est le produit de l'évolution des forces industrielles, elle même prise dans une dynamique qui se situe à un niveau dépassant progressivement les frontières nationales. Par la poussée industrielle, puis tertiaire "l'urbain" change de forme et de contenu.

De tous temps, le contenu de la société globale a déterminé le contenu des villes; les sociétés militaires, religieuses, marchandes ou agricoles ont défini des formes, des contenus urbains différents, des rapports sociaux spécifiques à ces villes; il en est de même pour toute société industrielle. En France, l'évolution des villes se situe bien dans ce cadre-là. Et pourtant, ce pays se caractérise encore par un nombre important de villes se différenciant de façon sensible par leurs structures — économique, sociale, politique, idéologique, par leur histoire et leur mode d'insertion dans les processus économiques globaux. Cette richesse, cette variété de formes et de contenus urbains qui traduisent la complexité de l'organisation sociale globale sont un facteur fondamental que tout analyse de l'espace français et des villes qui s'y inscrivent ne peut négliger. Pour les prendre en compte, les différentes études faites se réfèrent à des grilles de lecture de l'espace variées et s'appuient sur un certain nombre de coneepts, les uns à valeur descriptive, les autres dont l'ambition est de permettre la saisie de mécanismes de fonctionnement, au niveau spatial, de l'organisation sociale. Sans être exhaustif, il semble bon d'en pré-

ciser quelques uns dans la mesure où les définitions qui peuvent en être données d'un pays à l'autre diffèrent souvent.

Nous ne nous arrêterons ici qu'aux définitions concernant l'espace urbain mais encore faut-il en préciser les limites; l'espace rural, qui lui est complémentaire, renvoie le plus souvent à un type d'économie agricole, à un mode de vie marqué par des valeurs très traditionnelles, à un mode d'habitat dispersé et à un type de rapports sociaux résultant de la confrontation des structures de l'exploitation agricole et des structures de la famille; c'est donc dire qu'il se réfère à un mode d'organisation sociale plus qu'à un découpage démographique; sans être homogène en tout lieu, il est relativement facile à saisir dans sa complexité. L'espace urbain, par contre, est bien plus diversifié dans sa composition, son fonctionnement. Aussi est-on plus tenté de se référer, pour le définir, à un contenu démographique. Vont donc composer l'espace urbain toutes les localités dont la population agglomérée au chef-lieu atteint au moins 2000 hab. Cet espace urbain n'est donc pas un espace continu. Eparpillées sur l'ensemble du territoire, ces communes drainent cependant la majeure partie de la population puisque en 1968 un peu plus de 70% de la population totale française y était concentrée. Ce pourcentage ne fait que croître laissant apparaître le phénomène très fort de l'exode rural. Devant d'ailleurs la diminution relative très importante de la population rurale, bon nombre de textes se réfèrent aux communes de plus de 5000 hab. pour tenter de mieux sérier l'évolution et les modifications de l'espace urbain.

En 1968, 33 millions d'habitants vivaient dans 752 villes ou agglomérations de plus de 5000 hab. Ces 65,6% de la population totale se répartissaient ainsi:

l'agglomération parisienne	16,4%
les 8 métropoles d'équilibre	11,6%
les grandes villes de+de 100 000 hab.	13,8%
les villes de 20 000 à 100 000 hab.	14,2%
les petites villes (5000 à 20 000 hab.)	9,6%

Le taux d'urbanisation (% de la population urbaine par rapport à la population totale) diffère fortement d'une région à l'autre, traduisant ainsi les spécificités agricoles de chaque zone et la pénétration industrielle. Si il atteint 95% dans la région parisienne et dépasse 70% dans le Nord et en Provence-Côte d'Azur, il est par contre faible en Bretagne et dans tout le centre de la France (inférieur à 50%). Les villes de plus de 50 000 hab. connaissent la plus forte croissance. Les villes de 20 000 à 50 000 hab. ont également connu une forte croissance; ce sont, pour la plupart, des villes situées dans l'orbite directe d'une grande ville et profitant de son développement qu'elles favorisent par ailleurs; d'autres sont isolées et tendent, en se développant, à combler des lacunes du réseau urbain. L'ensemble des villes de moins de 20 000 hab. est très hétérogène et tend à prendre relativement moins d'importance.

Si ces quelques précisions démographiques sont utiles, elles ne permettent pas l'analyse du phénomène urbain et des mouvements migratoires de villes à villes. Une partie importante des études urbaines ont donc tenté d'analyser ce "tissu urbain" comme un "réseau de villes" ou comme une superposition de réseaux de villes. Il s'agit, dans cette optique, de classer les villes selon les niveaux de services qu'elles offrent et leurs foyers d'activités afin de dégager leurs zones d'influences, mesurer ainsi leur pouvoir de commandement local ou régional et établir, dans un espace délimité, une hiérarchie entre plusieurs villes. Au centre de ces réseaux, vont se trouver des villes dites "attractives" et dont on peut considérer qu'elles sont des "pôles de croissance" potentiels ou réels de la zone. Si le réseau est dense, on dira

souvent qu'il définit une "zone urbaine" et si il constitue globalement une force d'attraction pour les activités économiques nationales on le qualifiera de "zone de polarisation urbaine", bien que ces deux dernières notions aient été élaborées dans le cadre d'analyses économiques différentes.

Essayons maintenant d'être plus précis en apportant quelques réponses aux questions posées.

ANALYSE DESCRIPTIVE

1. Partant des définitions ci-dessus, on peut donc déterminer en France un certain nombre de réseaux ou de systèmes hiérarchisés de villes. Mais en définir le poids relatif et le pouvoir d'attraction suppose que l'on traite auparavant du rôle de Paris dans la hiérarchisation de l'espace.

On ne peut dire de la France qu'elle est le support d'un système de villes hiérarchique unique; ce serait nier l'importance d'autres grandes capitales régionales dont l'aire d'influence couvre une bonne part du territoire. Cependant le réseau national des villes françaises s'articule bien autour de Paris. C'est la capitale qui indéniablement détient le pouvoir de commandement économique et financier, c'est là que s'y définissent les institutions et que s'y forge l'idéologie dominante. Les autres villes, et peut être plus directement les capitales régionales et les huit métropoles d'équilibre sont en relation de dépendance face à Paris. En sont les témoins les réseaux de transports et les trafics centralisés sur Paris qui marquent prioritairement l'espace français.

Ce vaste réseau des villes françaises de grande taille qui s'articule autour de Paris ne signifie cependant pas que le système hiérarchique de villes soit unique. A un niveau économique moindre d'autres réseaux existent et s'articulent autour d'autres villes. Avant de les préciser il faut noter que Paris est également le pôle d'un autre réseau, plus restreint spatialement, et qui est celui de la région parisienne, urbanisée à 95%. Dans cette région parisienne, ponctuée de villes de taille relativement importante, la pression de Paris est telle que le réseau centré sur la capitale est entièrement dominé par elle, et que les villes qui sont dans son orbite sont sous son pouvoir de commandement direct. Au croissance numérique, rapide pour la plupart, elles n'ont elles-mêmes qu'une aire d'influence restreinte, Paris gardant un pouvoir d'attraction principal sur elles. Donc un réseau relativement simple autour de Paris; dans un rayon d'une centaine de kilomètres les villes n'ont qu'une aire d'influence propre négligeable, l'influence directe de Paris se faisant sentir nettement à 200 kms, bien qu'à cette distance les villes connaissent une certaine influence sur un environnement immédiat déjà moins urbanisé (donc à niveau de service faible) et plus marqué par une exploitation agricole ou de petites entreprise industrielles. Il n'en est pas de même dans les autres régions; si la capitale régionale connait une prépondérance sur des villes proches qui lui sont dépendantes, elle n'est pas le centre d'un réseau unique régional. Les villes moyennes qui l'entourent se constituent le plus souvent en réseau autour d'elle, mais elles n'entretiennent que peu de relations entre elles; elles ont par contre une petite aire d'influence étant donné l'environnement essentiellement rural qui les caractérise.

Dans des régions marquées historiquement par une industrialisation, les relations de villes à villes existent parallèlement aux relations avec la métropole, et sont assez fréquentes; elles sont dues aux échanges liés à la production (sous-traitance, réparation, ramassage de main d'oeuvre...). Il y a donc

là constitution de réseau de villes hiérarchisé à l'échelle régionale; c'est le ces dans le Nord, l'Alsace, et la Lorraine, les régions Rhône-Alpes et Provence Côte d'Azur. Ailleurs, là où l'espace est marqué par une économie à prépondérance rurale, il y a une multitude de petits réseaux articulés autour de villes moyennes dont la zone d'influence dépend de l'importance des services qu'elles offrent. Il n'y a donc pas en France un système hiérarchique national unique à proprement parlé, malgré la prédominance de Paris, mais un ensemble de systèmes discrets séparés, dans certaines régions, par des

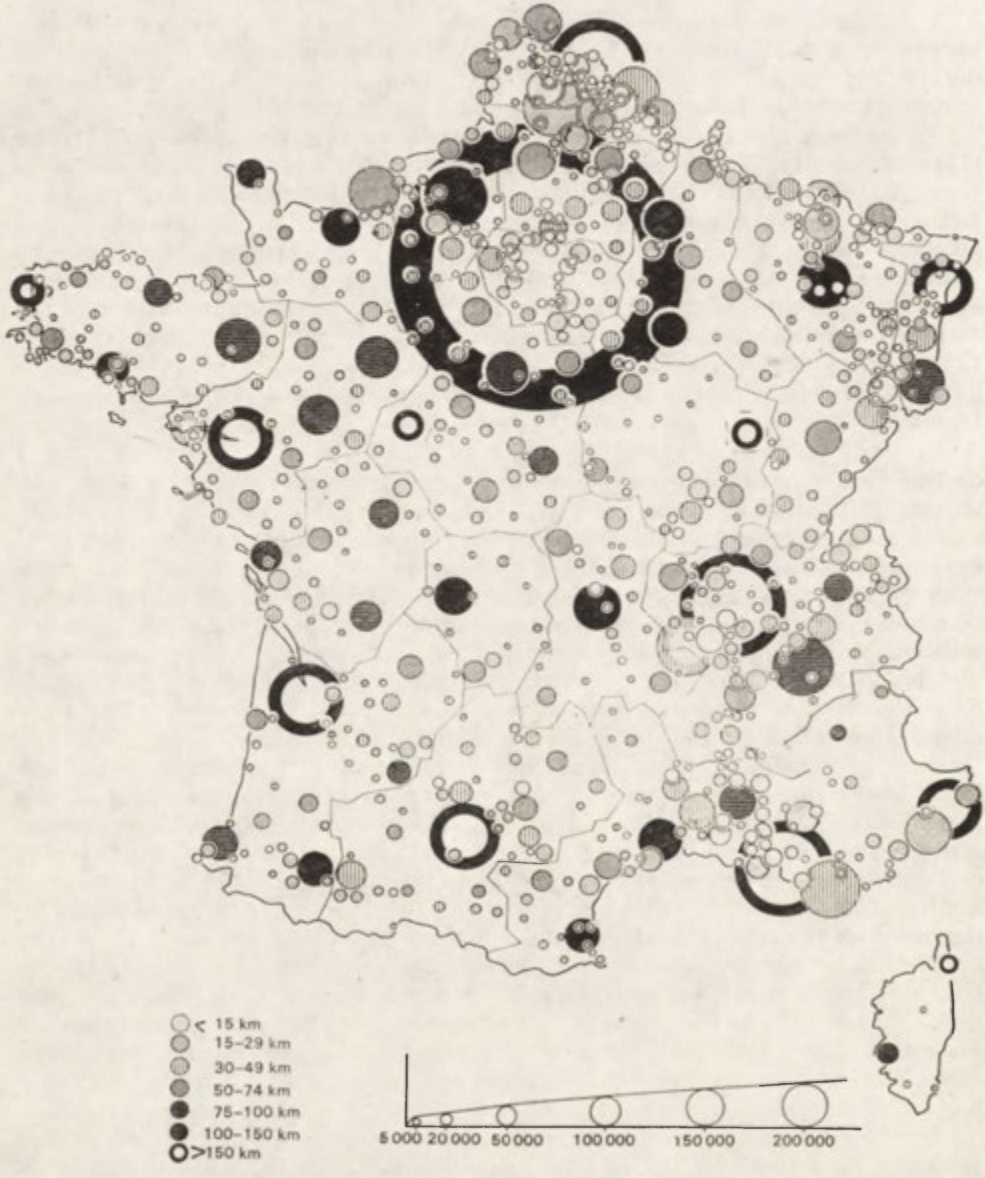

Fig. 1. Rayons de prépondérance des villes d'après leurs populations en 1968
Villes premières en population jusqu'à la distance indiquée par la légende: de moins de 15 km jusqu'à plus de 150 km. Source: Centre de Recherche d'Urbanisme

zone rurales, ensemble dans lequel dominent une dizaine de systèmes métropolitains. Les deux cartes données en annexe précisent les répartitions de ces systèmes sur l'espace (Fig. 1 et 2).

2. Dans ce contexte de développement économique — industrialisation, commerce — et d'évolution de la production — passage d'une économie agraire à une économie industrielle, l'évolution des marchés va modifier les hiérarchies entre

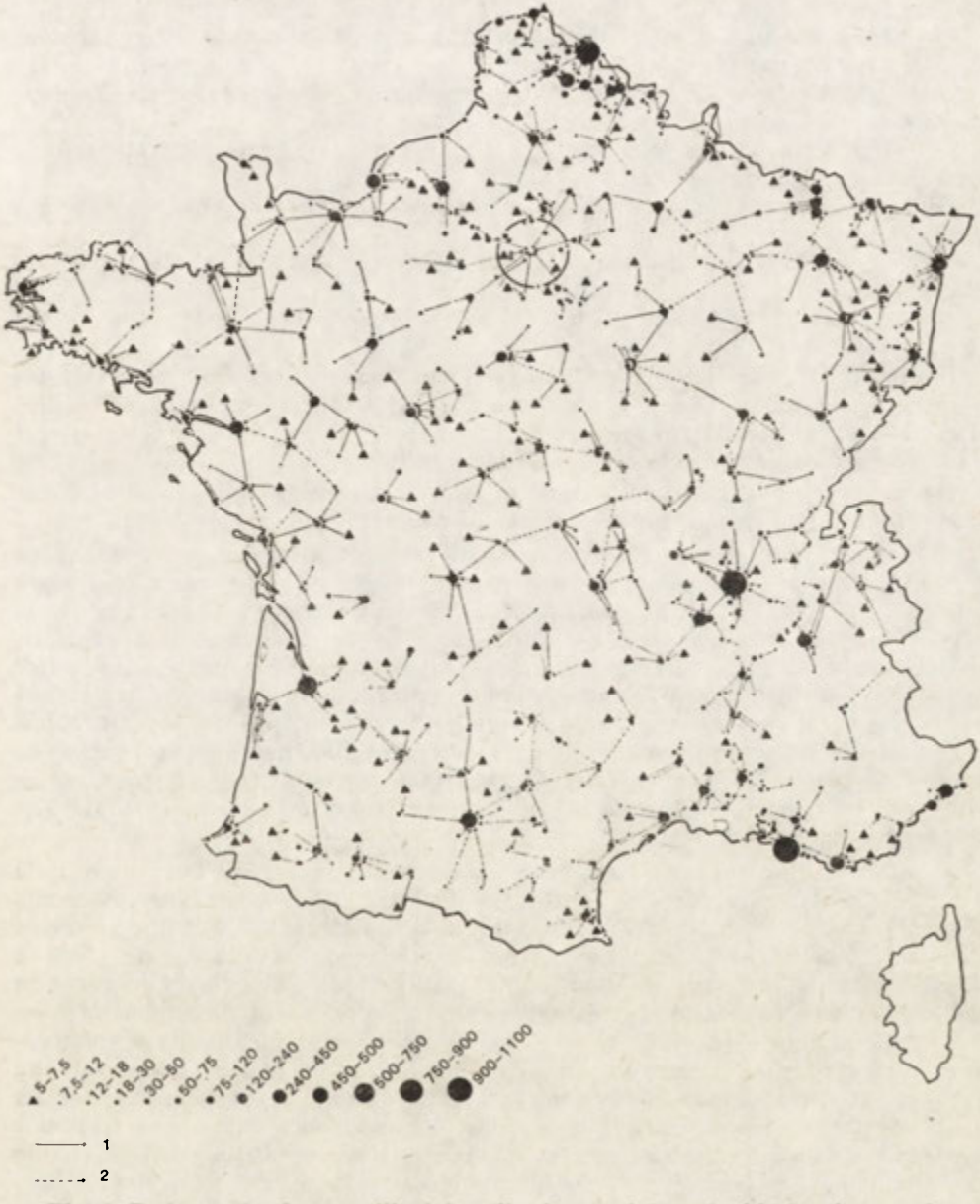

Fig. 2. Distance de chaque ville à la ville de population double la plus proche
Populations en 1968 en milliers d'habitants. Flèches: 1 — première ville de population double, dépendance probable; 2 — autres cas, dépendance possible. Source: Centre de Recherche d'Urbanisme

villes ou plus précisément élargir ou diminuer les zones d'influence de certaines villes. Elle va surtout complexifier les relations entre villes en créant des nécessités d'échanges entre plusieurs villes selon les services de plus en plus spécialisés nécessaires au fonctionnement économique. La modification des réseaux — de façon très générale — va donc se marquer de la façon suivante:

— renforcement des relations avec les capitales régionales, elles-mêmes en liaison avec Paris, donc accroissement de leurs zones d'influence;

— renforcement des villes de taille importante, relais régional en fonction des services spécialisés qu'elles offrent;

— multiplication des villes satellites sans qualification servant au développement des villes relais;

— accroissement des échanges à l'échelle régionale mais séparation forte entre les différents réseaux.

Plus précisément on peut essayer de classer les types de changements qui peuvent intervenir.

La grosse industrie, en se développant marque le système urbain sur lequel elle s'appuie en:

— accroissant les échanges entre les villes proches de la localité où elle est implantée;

— induisant une dépendance totale des communes voisines qui sont soit des réservoirs de main d'oeuvre (ramassage ouvrier quotidien), soit des villes dortoirs dont la population va soudainement croitre sans que l'on note un réel développement du niveau de service des localités;

— accentuant le rôle de (ou des) villes relais proches qui vont bénéficier d'une plus forte demande de services spécialisés.

L'industrie minière, en régression dans les zones historiquement marquées par elle, structure également l'espace par un réseau de villes assez complexe; mais cette régression suscite dans les villes minières un réservoir de main d'oeuvre et les inscrit ainsi dans de nouveaux réseaux: leurs zones d'influence décroissent et elles e trouvent, pour la plupart, dominées par de nouvelles villes dans la mesure où celles-ci s'industrialisent et ne sont pas trop éloignées. Cette modification du rôle et du poids économique de ces anciennes villes minières s'accompagne le plus souvent d'une stagnation, c'est à dire au niveau de l'ensemble des villes françaises d'une certaine régression. Ainsi se chavauchent plusieurs types de réseaux suivant les phases historiques auquelles ils ont correspondu.

L'industrie de production de biens finis marque également l'espace où elle est implantée; cependant ses contraintes de localisation étant souvent moins fortes que pour la grosse industrie, elle va s'implanter le plus fréquemment dans une localité qui lui permettra de bénéficier des avantages de réseaux déjà existants. Cette implantation, dans la plupart de cas, choisie en fonction principalement du bassin de main d'oeuvre va donc contribuer à renforcer les relations déjà existantes entre villes du réseau local; mais elle a relativement peu d'incidence, tant qu'elle n'est le fait que de peu d'entreprises, sur l'expansion régionale, en dehors de la création d'emplois qu'elle suscite. En effet il est rare que son marché soit local et, en dehors d'une sous traitence qui peut être locale, les entreprises qui sont en amont d'elle dans la chaine de production ne sont pas nécessairement dans la même zone territoriale. D'où peu d'échanges nouveaux entre villes mais un certain renforcement des réseaux existant, au profit généralement de la ville ayant déjà la plus forte aire d'influence. Certes si l'entreprise s'implante en milieu rural et offre un nombre important d'emplois, elle peut favoriser la création d'un petit réseau

autour de la localité d'implantation par le drainage de la population active et l'expansion du tertiaire urbain d'accompagnement.

Les transformations de la production agricole et de modes de vie ruraux qui l'accompagnent, provoquent elles aussi des changements au niveau spatial. Elles libèrent une main d'oeuvre et ceci se traduit par un exode rural mais aussi par l'élargissement du bassin de main d'oeuvre local, d'où deux conséquences immédiates:

— diminution absolue, ou relative, des petits centres urbains en milieu rural au profit de villes offrant des emplois; ce mouvement va renforcer les réseaux déjà existants en les séparant de plus en plus par des zones rurales peu habitées;

— insertion des villes concernées par cette régression des emplois agricoles dans des zones d'influence de villes avec lesquelles elles n'avaient auparavant que peu de relations (migrations quotidiennes).

La pénétration de l'espace rural par des modes de vie urbains va se traduire par une demande de services plus spécialisés et intensifier par conséquent les relations entre les petites villes et les villes moyennes à niveau de services supérieur, voire avec les capitales régionales.

L'évolution du tertiaire urbain, services d'accompagnement de la croissance urbaine, concerne donc essentiellement les villes déjà centres d'une aire d'influence assez importante ou les villes dont la population croît rapidement du fait de l'expansion industrielle. Parmi ces services d'accompagnement, les équipements de loisirs constituent un des facteurs d'attraction dont l'importance n'est cependant pas très grande quant aux équipements de tourisme de taille nationale et internationale si ils sont un stimulant de l'économie locale, ils ne s'accompagnent généralement d'aucune modification notable de réseau urbain; une exception, cependant, la Côte-d'Azur dont le réseau de villes s'est constitué historiquement sur ce rôle touristique.

Les seuls facteurs d'évolution des réseaux urbains français ne sont pas cependant réduits à l'évolution industrielle, aux changements de modes de production agricole, à la pénétration de modes de vie urbains ou au développement du tertiaire que nous venons d'indiquer. L'Etat, en tant qu'agent économique, et par sa politique d'aménagement du territoire national, intervient fortement sur la structuration de l'espace. Les principaux éléments de sa politique qui favorisent le renforcement des systèmes urbains résident en:

— aide à la décentralisation des activités industrielles et implantation du tertiaire supérieur, soit dans des capitales régionales, soit dans des villes moyennes dont on veut faire des relais importants du développement urbain;

— décentralisation et spécialisation de l'enseignement et particulièrement des Instituts Universitaires de technologie;

— construction des infrastructures de liaisons renforçant les relations entre capitales régionales et le réseau étoile à partir de ces capitales.

Ces points s'inscrivent dans la politique générale des métropoles régionales d'équilibre, politique dont les supports institutionnels se sont portés garants et qui est renforcée par la régionalisation et la politique des villes moyennes, ce qui semblerait vouloir développer à l'intérieur des principales régions de programme des réseaux hiérarchisés analogues au réseau centralisé par Paris sur le plan national. Ces ensembles de mesures tendent à renforcer le poids économique et institutionnel des grandes villes et à donner aux villes moyennes des zones déjà bien urbanisées un rôle de relais important, certaines de ces villes étant d'ailleurs appelées à jouer à terme le rôle des capitales régionales dans un espace plus restreint. Cette politique est surtout active

dans les zones déjà développées, alors que l'espace rural et les réseaux simples qui les structurent tendent à s'affaiblir.

3. On peut reprendre et synthétiser ce qui vient d'être dit. Une remarque, cependant, qui nous guidera pour l'enoncé de ces conclusions: la France est de plus en plus partagée en deux: d'un côté les zones marquées par l'industrialisation et l'urbanisation et qui connaissent un processus de croissance, de l'autre des zones à spécificité agraire et qui, en déclin relatif, s'urbanisent beaucoup plus lentement. Dans les zones développées il y a élargissement de la région affectée par l'influence urbaine et régression des zones rurales. Cet élargissement spatial résulte en grande partie d'un accroissement de la population urbaine mais est aussi le fait d'une pénétration des valeurs urbaines en milieu rural et de la création de nouveaux besoins qui ne peuvent être satisfaits par le niveau de service des petits centres urbains. Ces tendances se matérialisent par:

— la valorisation et la croissance des grandes villes et des villes moyennes relais,

— la stagnation des centres de moindre importance (sauf lorsque s'y implantent des industries; dans se cas il s'agira alors dans un premier temps de croissance numérique, le niveau de service ne s'améliorant qu'ultérieurement);

— peu de nouveaux centres de croissance urbaine dans le modèle préexistant à l'exception des "villes-nouvelles" créées comme lieux d'équilibre de la croissance autour des capitales régionales en forte croissance (Paris, Lyon, Marseille) dont la capacité d'accueil en logement est inadaptée aux besoins.

Il va en résulter une complexité croissante des différents réseaux hiérarchisés de villes (intensification des relations internes au réseau et intensification des relations entre réseaux). Ces relations induisent l'amélioration des réseaux de transports et de communications.

Dans les régions moins développées les transformations sont plus simples. La diminution relative de la population se traduit par:

— un renforcement du rôle de la capitale régionale dont l'aire d'influence s'accroît sensiblement;

— l'expansion de quelques villes moyennes assez éloignées de la capitale régionale et qui du fait de cet éloignement bénéficient à une échelle plus restreinte d'un certain pouvoir d'attraction sur les petites villes en régression (relative ou absolue).

Ces mouvements créent dans ces régions de faibles réseaux constitués d'une ville et des petites villes qui sont dans son orbite, réseaux sans grandes relations entre eux et séparés par de zones de faible densité.

LE CONTINUUM URBAIN-RURAL

Ce qui vient d'être dit dans la partie précédente montre que l'espace français n'est pas structuré de façon analogue dans toutes ses parties. Le découpage en deux types de zones — zones développées à fort taux d'urbanisation et zones essentiellement marquées par un type de production agricole et un grande partie rurale — est le découpage minimum dans lequel on peut tirer quelques remarques générales quant à l'organisation urbaine. Encore faut-il se garder de masquer par ces caractéristiques générales les spécificités urbaines propres à chaque région.

Beaucoup d'études ont tenté de faire, à partir du repérage des réseaux de villes l'analyse des relations entre les villes et leur environnement et de sai-

sir le phénomène des migrations. Ce phénomène, particulièrement complexe, ne peut être saisi et surtout expliqué de façon homogène sur tout le territoire. Pour tenter d'en donner quelques aspects on se situera tout à tout dans le cadre des deux hypothèses:

— la France est pour partie structurée par des systèmes hiérarchisés se chevauchant, ou contigus;

— elle est, pour l'autre partie, composée d'une gradation de villes allant de villes métropolitaines à des petites villes diffuses au milieu d'un espace essentiellement rural.

Une remarque générale cependant pour donner les limites de l'exposé: le phénomène de migrations quotidiennes ou définitives a été beaucoup étudié; cependant, et cela montre sa complexité, au delà de l'analyse descriptive les thèses d'explication du phénomène sont le plus souvent réduites et incertaines et les quelques conclusions que l'on tentera de reprendre ici peuvent être contestées.

Contrairement a ce qu'énoncent un grand nombre de thèses élaborées à partir des analyses faites en termes de réseaux, le schéma d'une "hiérarchie urbaine" filtrant les migrations régionales, constituée d'une succession de villes d'importance et d'attractivité croissante par laquelle passeraient nécessairement les migrants avant d'arriver à la grande agglomération, est erroné. Les émigrants ruraux ne séjournent pas dans les villes moyennes avant leur passage à la grande ville, il y vont directement. Le rôle de ville moyenne — ville sas est fictif. Cette constatation impose que l'on délimite bien l'utilisation d'une analyse — en terme de réseaux de villes. Repérer des systèmes hiérarchisés de villes signifie que l'on classe les villes en fonction de leurs niveaux de services et que l'on repère les zones d'influence de chacune d'entre elles et les relations qu'elles entretiennent avec leur environnement. Cela ne signifie pas que le repérage d'un tel système implique nécessairement des relations d'ordre entre les différents points de l'espace et que cet espace soit hiérarchisé, imposant pour tout échange, quel qu'en soit la nature, passage nécessaire du niveau le plus bas (les petites villes) au niveau le plus élevé (grandes agglomérations) par un niveau moyen nécessaire (les villes moyennes).

Une telle remarque est une évidence pour les flux de marchandises; elle est tout aussi justifiée par les mouvements migratoires. Pour s'en persuader il faut reposer le problème des motifs de migrations et constater que si les migrants quittent leur région d'origine c'est avant tout pour aller dans une localité qui leur permettra de trouver un emploi tout en leur offrant la possibilité de se loger. Le niveau de services n'est qu'un facteur secondaire; ce n'est pas ce niveau qui va déterminer leur choix mais bien le fait de se situer proche d'un bassin d'emplois. Certes l'offre d'emploi prévisible est plus élevée dans une agglomération de taille importante et le niveau de services est souvent un facteur de cette importance. Aussi peut-on constater que la migration est correlée aux niveaux de services. Mais on ne peut en tirer de conclusions quant à l'orientation des mouvements migratoires.

Dans les zones économiquement fortes, marquées par l'industrialisation, on peut distinguer deux cas de figure:

(a) Entreprises localisées dans des agglomérations ayant une capacité d'accueil suffisante. Ces entreprises ne sont en général pas en centre-ville. Leur implantation peut entrainer la constitution de zones d'habitation en périphérie urbain si le centre est saturé. On notera donc les mouvements migratoires suivants:

— émigration définitive drainant la population rurale régionale, avec implantation en périphérie (croissance urbaine);

— mouvements migratoires journaliers entre les petites villes et l'entreprise dans un rayon allant de 30 à 50 km (relations ville-campagne);

— mouvements migratoires journaliers centre-périphérie industrielle;

— mouvements migratoires journaliers entre la zone d'habitat et l'entreprise d'autant plus faible que la capacité d'accueil locale est forte.

(b) Zones industrielles importantes à proximité de grandes villes (métropoles ou villes portuaires essentiellement): très fort taux d'émigration définitive à l'échelle nationale (voire internationale, émigrants étrangers) avec renforcement des communes situées dans un rayon allant jusqu'à 30 km — création de zones d'habitat périurbain et dans ces localités (ZUP). Les migrations alternantes quotidiennes sont donc très nombreuses et très étendues; elles sont pour l'essentiel des relations villes-campagne ou villes moyennes-petites villes. Les relations centre-périphérie quotidiennes sont moins fréquentes et le fait de population à haut revenu. Les déplacements vers le centre de la grande ville où le niveau de services est renforcé se multiplient. Ces déplacements sont bien sûr liés à la densité de la population mais également à la structure des emplois locaux.

Dans les zones historiquement rurales ponctuées de quelques villes moyennes où se localisent certaines entreprises l'exode rural est important. Ce mouvement de dépopulation rural s'accompagne en partie d'une relative croissance des zones urbaines actives. Mais l'implantation dans ces villes n'étant lié qu'à l'offre d'emploi, la totalité de la population locale rurale d'origine ne s'y retrouve pas. Le plus souvent cette population quitte la région et de plus la croissance urbaine peut drainer une population venant d'autres régions. Suivant l'importance des implantations industrielles on peut donc distinguer dans des zones de dépopulation rurale quelques zones à croissance moderée. Aussi les différences de densité dans ce régions sont-elles fortes et appelées à s'intensifier. Cela induit donc également des disparités de niveaux de services dans ces régions qui vont donc favoriser les déplacements occasionnels entre communes rurales ou petites villes et villes moyennes.

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URBANIZATION IN INDIA

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In a country of vast territory with a low urbanization rate (20% of the people living in towns) it would be pointless to expect an effectively integrated hierarchical system of urban settlements. The urban tradition of India, until Western Culture made its impact, centred around capitals, religious sanctuaries and fortified sites. The integration of transport, a result of British rule, superimposed a strong regional hierarchy of cities and towns ranging from the provincial, district to smaller (taluka) seats of administration. Even before the process of modern industrialization gathered momentum, a dual pattern was introduced into the Indian urban system; that in the Princely States with age-old capital seats and traditional commercial centres, and in British India where district and taluka towns acquired new importance as administrative centres attracting educational, economic and professional activities. The first major impact of modern industrialization was seen in Bombay and Calcutta. In the remaining areas, industry as a factor contributing to the urban growth, was limited to certain cities like Jamshedpur, Asansol and others where mineral extraction and transport were specially advantageous. By and large, however, the growth of industrial cities as such is of recent origin.

The large size of the country and the uneven economic progress of its various parts explain the present spatial urban network. Instead of an evolution towards a single hierarchical national system there exist three sub-national systems centering round the metropolitan cities of Bombay, Calcutta and Madras, with a possible fourth emerging around Delhi. These metropolitan regions reveal: (a) a strong intra-metropolitan growth, (b) an outer ring of supporting towns that are in the process of absorption into a larger conurbation, and (c) a wider hinterland where the metropolis exercises its influence trough main railway and road links. A significant point in this spatial growth of urban centres is that the growth runs along 'corridors' of transport linkages, and tends to leave the regions away from the transport lines and their junction cities economically and socially backward. The hilly region in the neighbourhood of Greater Bombay is such a case.

The other regional patterns that are evolving throughout the country may be classified as (a) strong individual isolated growths such as of Hyderabad, Bhopal, (b) a wide network of moderately sized towns as in Bihar, Eastern Uttar Pradesh and Tamilnadu, with more as service centres to larger agrarian areas than active nodes of industrial production, (c) a quickly growing urban

network as in Punjab and Haryana, a result of both agricultural and industrial prosperity, and (d) stagnant or decaying towns as in Konkan and Kathiawar, partly the result of the increasing metropolitan influence of Bombay on Konkan and withdrawal of the feudal patronage as in Kathiawar.

Altogether, it may be said that outside the metropolitan areas and individual isolated industrial and commercial cities (like Hyderabad, Bangalore, Madurai, Jamshedpur) the urban process is slow, widely spread, mainly service-oriented and loosely tied up in its urban structure. They act as regional and sub-regional centres with social and administrative facilities; their influence on economic activities being limited to 'planned' economic inputs. The influence of metropolitan centres and other cities on the regional structures is increasing to the advantage of those larger units and to the detriment of the rural areas, the Indian city acting as a parasite on the countryside.

The development of the urban hierarchy in India in terms of contiguous or overlapping urban fields shows two contrasting forms: (1) the metropolitan regions with a strong influence on their surroundings, and (2) the largely administrative influence of towns such as district centres or tahsil headquarters. In the case of cities like Bombay, the influence of the metropolitan city has been at the expense of smaller centres. Such were the consequences of the improvements in transport and communications linking even distant areas with the metropolis. Consumer goods originating from the city reach the small settlements directly without passing through several levels of collection and distribution centres. This is particularly true of the Konkan region of the Maharashtra industrial and mining centres, while new ones are relatively few and, because of their situation in the midst of extensive underdeveloped areas, are isolated from the surrounding areas (e.g., Bhilai, a steel town in Madhya Pradesh). New towns have also been formed either to serve as State capitals (e.g., Chandigarh), rehabilitation centres for refugees (e.g., Nilokheri in Haryana), or as tourist centres. These centres have still to be joined together in the national system by a process of integration at several regional levels.

Nevertheless it seems that the broad pattern of urban hierarchy was already laid during the colonial rule. Thus Calcutta, Bombay and Madras developed with strong economic incentives from the imperial rulers. This early momentum received a further stimulus with the location of the manufacturing industries in Calcutta and Bombay and also to a limited extent in Madras (which explains why this city has not grown into a metropolitan region as the other two have). In the post-independence period international links have grown, but the nature of foreign trade and passenger transport has changed vastly. The links with Great Britain have understandably weakened; and there has been a great deal of diversification concerning trade with the United States, the USSR, and East Europe and to a lesser extent with the West European countries (France, Sweden, the Netherlands) or Australia. The emphasis in imports is on machinery, sophisticated instruments needed for the promotion of the indigenous manufacturing industries, but for some time this was seriously impaired by the dire necessity of importing wheat (principally from the USA). There is also an increase in the export of sugar and other agricultural raw materials to the European markets as well as of manufactured goods (mainly textiles and engineering products) to the Middle East and South East Asia. An interesting case of specialization is that of Marmagao Port which exports iron ore and manganese, particularly to Japan. This increase in the volume of foreign trade, including oil imports from the Middle East, is reflected in the recent expansion of port facilities at Bom-

bay and Calcutta, with a further development of satellite ports — Nhava Sheva (Bombay) and Haldia (Calcutta). Thus the new pattern of international trade contacts has further added to the process of urbanization in these areas. The pattern of passenger traffic has vastly changed with airborne components claiming a major share in Indian contacts with the Western countries as well as the Middle East and South-East Asia. However, seaborne passenger traffic continues to be a significant element. The development of airports has added to the expansion of metropolitan areas, altered the landscape and promoted tourist and hotel industries in these three cities as well as in Delhi, the national capital.

In the country as a whole there is no unified urban system, but regional systems are emerging. These may be identified as (1) metropolitan regions (Bombay — Poona — Nasik, Calcutta-Howrah) characterized by extensive urban sprawls, heavy suburban growth and absorption of neighbouring towns and progressive loss of urban individuality, (2) single metropolitan areas (Delhi, Kanpur, Hyderabad-Secunderabad, Ahmedabad, Bangalore) with the original city still retaining its hold and the urban sprawl spreading around it, (3) individual mining and industrial centres, often located in the heart of rural and tribal areas (e.g., Jamshedpur, Bhilai, Drug), (4) loosely knit networks of towns — service centres for the surrounding regions (Eastern Uttar Pradesh, Bihar, Tamilnadu, Punjab-Haryana, Gujarat), (5) isolated urban centres (Rajasthan, Madhya Pradesh and West Coast and East Coast port towns) which have not shown equally rapid growth, and finally (6) isolated industrial and agricultural towns (as in Maharashtra and Uttar Pradesh).

The process of spatial expansion and functional diversification in the Indian cities and towns reveals the following largely common features:

(1) With the exception of very few industrial towns, almost every town has burst out of its older core, and is occupying an increasing amount of space partly by planned expansion, but mainly by haphazard growth under immigrant pressures; this process is seen at its worst in the slums of Calcutta and Bombay.

(2) While the territorial expansion of a city takes place to absorb the rural fringe, the adverse effect of its expansion lies more in the damage it does to the rural life of the surrounding areas. Except for the few opulent beneficiaries of market gardening and dairying, the city induces an exodus of manpower from these areas and attracts it to itself in an uncertain and economically unstable form. This may be seen more clearly in the metropolitan cities. Elsewhere it can be said that the Indian City not only attracts rural manpower but seriously depletes the economic and social potential of the non-urban regions.

(3) Rapid population growth is a characteristic feature of the larger Indian cities and towns, but medium and small sized towns have relatively slow growth and in some cases they show some traces of stagnation. It may be said that rapid population growth is almost the sole feature of the larger Indian city; there is hardly any diversification, and existing services (civic, economic and social) are highly inadequate. At the other end of the size scale, the smaller towns — mostly district and taluka administrative centres — have developed their functions as a result of economic and social inputs under the five-year plans.

(4) Addition of an industrial function — by location of new industries — is a common feature of all growing towns in India. New industrial units usually located in the marginal belts cause urban expansion and add to the urban population growth. Injection of new centres of urban growth may be said to

have taken place to some extent in and round about the major metropolitan areas where planned townships provide the local nuclei and account for urban spread within the larger metropolitan landscape.

(5) In the recent urban process, the over-growth of the metropolitan cities and larger towns, and the comparative stagnation of the smaller towns are striking features. This last phenomenon reveals the poorly balanced structure of the Indian urban hierarchy and its uneven spatial development. The largely haphazard growth of Indian cities and towns both in space and time is more an expression of the desperate rush of population to these urban centres than an indication of the country's urban and regional-economic development or social well being.

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URBANIZATION TRENDS IN INDIA

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URBAN PATTERN

India, the second most populous country of the world, from a simple spatial perspective is overwhelmingly a rural nation, as only one out of every five persons live in urban areas. Yet, the general trend of urbanization as shown in Fig. 1, indicates that India has doubled its urban population during this century. During the post-independence period, although the degree of urbanization has shown only a gradual upward rise, the relative concentration of urban dwellers has increased significantly in cities of over 100,000 population. As Table 1 reveals, over half of India's urban [1] population resides in such centres. These cities have gained nearly nineteen million people over the past decade, and on the national basis also exhibited the highest rate of growth among all other urban size groups.[2] A discrepancy between urban growth rate and degree of urbanization is worth noting in the case of the towns below the 100,000 size groups. Whereas most of the smaller size classes experienced a decrease in their share of total urban population during 1961–71, in most cases their urban growth rate actually increased or, as in the case of the class V centres, in spite of a loss in the number of towns in this group, urban decline lessened during the same decade.[3] The statewide distribution of urban population in various size groups for the last decade is shown in Fig. 2.

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[1] Throughout this paper the term 'urban' is used to refer to a place having certain urban characteristics as defined in the *Census of India, 1971*. Urban places are grouped according to population size: class I towns (cities) — 100,000 and over; class II — 50,000–99,999; class III — 20,000–49,999; class IV — 10,000–19,999; class V — 5,000–9,999; class VI — less than 5,000. For details, see *Census of India, 1971* (1971, pp. 3–7).

[2] In regional terms, however, the relationship between the absolute urban population growth and urban growth rate between the various size classes was not quite systematic. Generally, cities tended to have the biggest additions to their population owing largely to their initial broad population base, although smaller urban classes in some states have shown much higher growth rates.

[3] Although a comparison of the urban growth rate on an aggregate basis ('current class' method) may point toward a state of stagnation for the smaller urban size classes, on individual consideration ('individual city' method), the 'decline' or 'stagnation' of some size groups in some states or regions may appear to be more statistical than real in nature. For example, the decennial growth rate for the class V towns in Andhra Pradesh during 1961–71 is indicated to be −43.7 in the census. In actuality, however, these towns experienced a rather modest growth, whereby eighteen towns moved up to the next higher hierarchical category, four of them with a growth rate above 50%. For a discussion of these two methods in terms of true representation of the urban growth characteristics, see Davis (1972, pp. 91–98); also Bose (1973, p. 90).

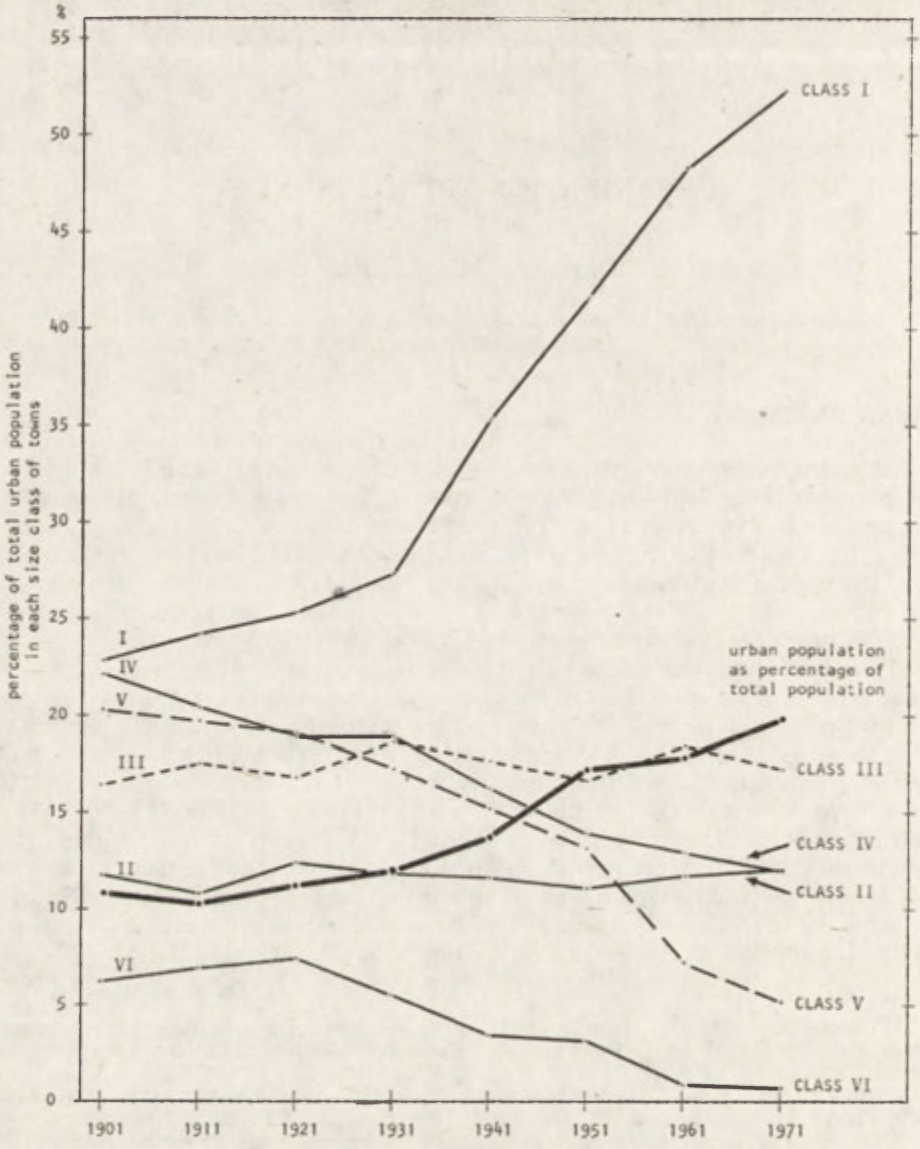

Fig. 1. India: trends of urbanization

The "accelerated tempo of urbanization" of the past decade may generally be explained by the age-old phenomena of migration and natural increase. It has been suggested that forty to fifty per cent of the urban population growth during the 1961–71 period was due to migration from rural areas (Gosal, 1974, p. 196). Even when the urban to rural 'turnover migration' (Bose, 1973, pp. 146–147) is taken into account, migration appears to be a major force in the urbanization process. Also, as many a scholar has pointed out, contrary to the Western experience, urban fertility in the Third World is not much lower than rural fertility (Berry, 1973, p. 78; Davis, 1972, p. 310; Abu-Lughod, as cited in McGee, 1971, pp. 22–23), and in the case of India in particular it may be as high as, "or

TABLE 1. Urban population pattern of India by size classes (1961–1971)

Urban class	No. of towns		Population (millions)		Per cent urban		Per cent change	
	1961	1971	1961	1971	1961	1971	1951–61	1961–71
I — 100,000 and over	113	142	38.18	57.02	48.36	52.41	44.47	49.35
II — 50,000–99,999	138	198	9.39	13.22	11.89	12.15	39.26	40.86
III — 20,000–49,999	484	617	14.63	18.88	18.53	17.36	40.14	29.10
IV — 10,000–19,999	748	931	10.29	13.10	13.04	12.04	18.23	27.30
V — 5,000– 9,999	761	756	5.71	5.70	7.23	5.24	−30.07	−0.09
VI — Below 5,000	218	272	0.74	0.87	0.95	0.80	−62.30	16.18
Total	2462	2921	78.94	108.79	100.	100.	26.41	37.83

Source: *Census of India, 1971* (1971).

even a bit higher" than rural fertility (Mandelbaum, 1974, p. 47). Coupled with a lower mortality, this could have contributed significantly to the rise of urban population. The reasons cited by Davis (1972, p. 310) for the high urban natural increase in the 'less developed countries', namely, a higher proportion of young adults in the urban areas with the resultant increase in the crude birth rate and decrease in crude death rate, and a better public health standard leading to lower mortality, may also be applicable to India. However, any precise evaluation of the role of migration and natural increase in the urbanization process of India must await the availability of detailed data on individual urban centres or at the least, on the various urban size classes on a regional basis.

Among other socio-economic and developmental factors, economic planning with all its ramifications, particularly industrialization, revitalization of small scale and cottage industries, and decentralization efforts by the government, as well as the initiatives towards mass communication and education stand out as vital in shaping the urban pattern of India. In the sphere of industrialization, the shift in the occupational structure from primary to secondary to tertiary sector, that has traditionally been considered as an indicator of economic development associated with urbanization, and long since been argued to be inapplicable in the developing countries (McGee, 1971, p. 27; Abu-Lughod 1965, p. 313; Hauser, 1957, pp. 6–7; Bauer and Yami, 1951, 1954), has not come about in India. This was to be expected. The unexpected to us was the drop in the proportion of male workers in the secondary and tertiary sectors accompanied by a rise in the primary sector particularly in the urban areas (Table 2). However, the trend during the last few years towards a more capital intensive industrialization in the metropolitan cities (Ambannavar 1970, pp. 128–146), as well as the 'changes in the concept of work' in the 1971 census (1971, p. iv) should be borne in mind in this context, as either of them singly, or in combination with the other, can offset the validity of any inference drawn from the changes in the urban occupational structure. Perhaps a more realistic picture of the change during the last decade can be obtained when only the male workers in the working ages (15–59) are taken under consideration, "for which the results would be less sensitive to changes in concepts" (Krishnamurti, 1973, p. 1511). Viewed this way, the proportion of the male working force in the secondary sector remained almost constant in the urban areas and actually gained a little on the national level. The decline in the tertiary sector has been solely in the 'other services' category, and as Krishnamurti suggested (1973, p. 1513) may be the result of the virtual elimination of the unspecified element from this category in the 1971

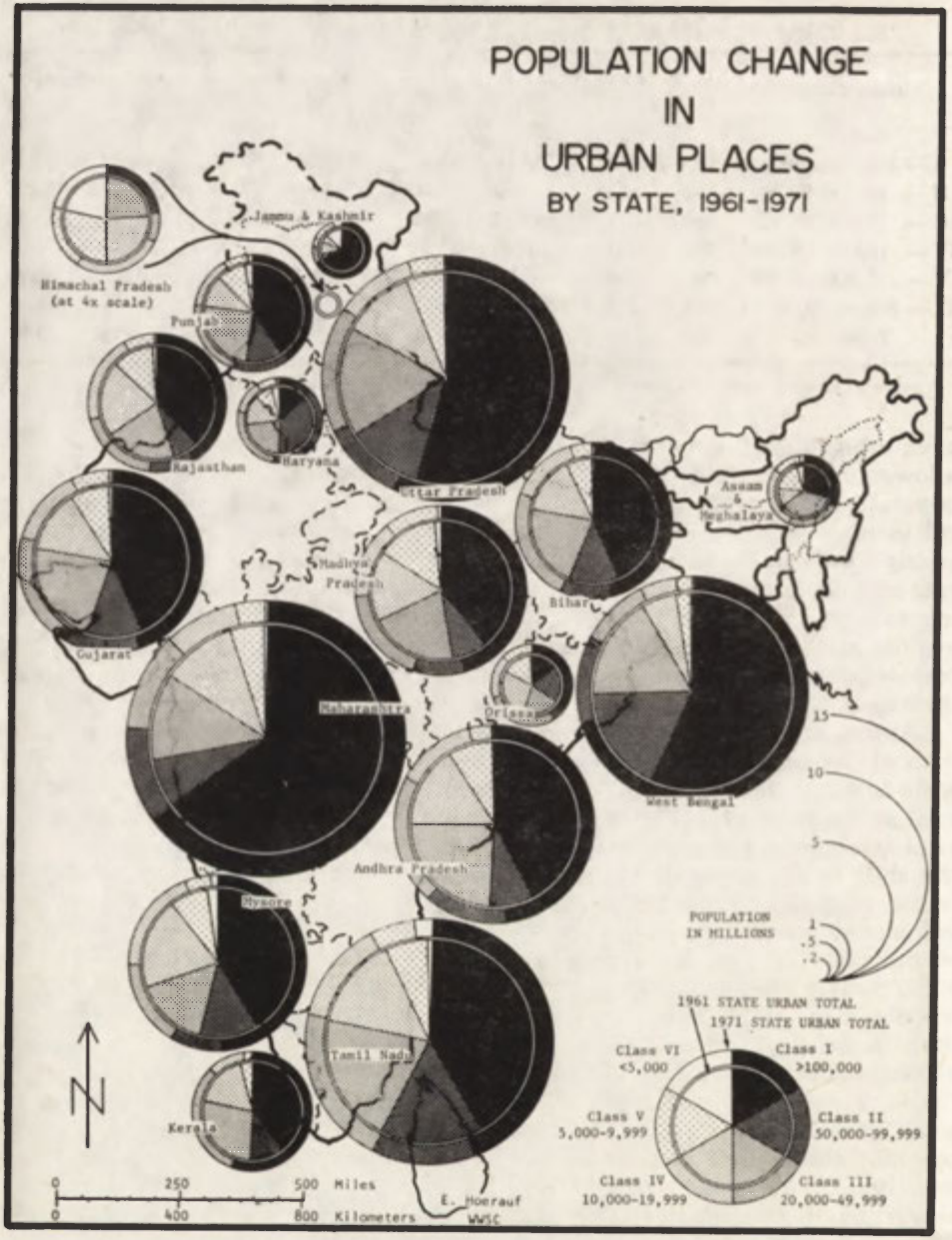

Fig. 2.

census. The figures in parentheses in Table 2 indicate what the proportion of workers in the tertiary sector would have been in 1961, had the estimated unspecified workers been eliminated from the other services category in that census.

During the 1961-71 decade, India witnessed the Third Five Year Plan, three consecutive Annual plans, and the first two years of the Fourth Five Year Plan, all of which considered various industrialization programs for

TABLE 2. Per cent distribution of total and urban male workers by the three industrial sectors of India (1961–1971)

Workers (100)	Primary		Secondary		Tertiary	
	1961	1971	1961	1971	1961	1971
Total male[a]	67.98	70.37	12.68	11.32	19.34	18.29
Urban male	10.24	12.50	32.57	31.29	57.18	55.51
Total male (15–59)[b]	67.50	68.30	11.70	12.10	20.70 (16.30)	19.70
Urban male (15–59)	9.90	11.70	32.40	32.30	57.70 (51.20)	56.10

Source: [a] *Census of India, 1961* (1962); *Census of India 1971* (1972a), [b] Krishnamurti (1973).

creating more economic opportunities as among their objectives. Two of the 'immediate aims' of the Third Five Year Plan, for example, were to:

"expand basic industries like steel, chemicals, fuel and power and establish machine-building capacity, so that the requirements of further industrialization could be met within a period of ten years or so mainly from the country's own resources; [and] to utilize to the fullest possible extent the manpower resources of the country and ensure a substantial expansion in employment opportunities." (Government of India, 1971, p. 221).

In an interesting study Alagh *et al.*, 1971 (pp. 795–802) examined the relationship between industrialization, as indicated by the percentage of NNP (net national product) from the manufacturing sector, and the degree of industrial diversification as measured inversely by a specialization co-efficient, and came to the conclusion that "a diversified industrial structure is a concomitant of a high level of industrialization of a region" (1971; p. 802). These two indicators of industrialization, juxtaposed to the degree and scale [4] of urbanization reveal a close relationship between the two processes on a regional basis (Table 3), with a significantly negative correlation ($r = -.78$) between the specialization co-efficient and either of the two measures of urbanization, and a positive correlation ($r = .55$) between urbanization and NNP from manufacturing. In view of the efforts by the government for industrial development during the post-independence years, and particularly in the Third Five Year Plan period, this positive association between urbanization, industrial diversification, and level of industrialization is obviously of considerable significance.

However, industrialization is only one among the multitude of factors that has broadly been termed 'societal', overlapping but not quite encompassing all other forms and levels of socio-cultural, economic, and demographic factors that may be associated with the urbanization process. And the crucial

[4] An alternate measure to the degree of urbanization, the scale of urbanization points also to the urban structure of size classes. As Gibbs (1966, p. 171) put it, "in general the greater the concentration of the urban and total population in a large size class, the greater the scale of urbanization." Thus, a positive relationship between the scale of urbanization and industrial diversification, as well as level of industrialization, may be interpreted as an indication of the attraction of the industries to those states with a heavier share of the larger urban centres.

TABLE 3. Relationship between indices of urbanization and industrialization by states

State	Urbanization		Industrialization[a]	
	degree (71)[b]	scale (71)[c]	specialization coefficient ('65)	per cent NNP from mfg. sector ('65)
Andhra Pradesh	19.35	.817	.47	3.12
Assam	8.39	.257	.70	3.79
Bihar	10.04	.408	.46	7.98
Gujarat	28.13	1.134	.33	11.94
Haryana	17.78	.662	—	—
Jammu and Kashmir	18.26	.706	.50	2.05
Kerala	16.28	.684	.59	4.57
Madhya Pradesh	16.26	.623	.30	3.71
Maharashtra	31.20	1.462	.16	18.37
Mysore	24.31	.974	.30	7.01
Orissa	8.27	.289	.53	5.88
Punjab	23.80	.924	.27	5.21
Rajasthan	17.61	.668	.40	2.58
Tamil Nadu	30.28	1.188	.19	9.65
Uttar Pradesh	14.00	.616	.35	3.58
W. Bengal	24.59	1.224	.23	19.04

Source: [a] Alagh *et al.* (1971),
[b] *Census of India, 1971* (1971),
[c] Calculated by author.

point that we have noted earlier but would hopefully bear repeating is, that this association is by no means universal or invariable, but one that changes according to time and space, and as such necessitates constant surveillance.

RESEARCH FRAMEWORK

The present paper sets out with the following objectives: (1) to determine the relative importance of a selected group of variables in accounting for the degree of urbanization in the various urban size classes of India in 1971 and (2) to examine the pattern of variations of urbanization characteristics, if any, in the light of a similar study on the 1961 urbanization pattern (Mookherjee and Morrill, 1973).

For the initial analysis of urbanization, seventeen states and nine union territories were used as units of study.[5] However, in the subseqent analyses, the union territories had to be dropped for lack of pertinent data. Eighteen

[5] All of the states, except Nagaland (Andhra Pradesh, Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Mysore, Orissa, Punjab, Rajasthan, Tamil Nadu, Uttar Pradesh, West Bengal), and eight of the union territories as they appeared in the Provisional 1971 census were taken as units of study in the preliminary analysis. We included Nagaland among the union territories. Some of those union territories were reported as states in subsequent census volumes. Due to the changes in boundaries and political status of some of the units, the 1961 and 1971 data are not strictly comparable.

socio-economic and demographic variables were selected as independent variables [6] for the analysis (Table 4).

In the 1961 study we had come to the conclusion that "the degree of urbanization in states was found to be very significantly related to the level of commercialization" (1973; p. 57). However, the continued emphasis on industrialization in the Third Five Year Plan, as well as the close association between urbanization and industrial development, led us to hypothesize in the present study that the degree of urbanization, particularly in the larger cities (class I) of India in 1971 would reveal a strong association with industrialization as reflected by such variables as occupation in the secondary sector and 'sheds' in the Industrial Estates. On the expectation that the governmental efforts to disperse industrial activities spatially and to create urban and industrial infrastructure and economic incentives in the medium and smaller urban centres were of reasonable success, we postulated that

TABLE 4. Independent variables

Variables[a]	Code
1. Per cent secondary male workers	SMW
2. Per cent tertiary male workers	TMW
3. Per cent non-agricultural male workers	NMW
4. Per cent 'sheds' in urban areas (of total sheds in Industrial Estates)	SHE
5. Per capita consumption of electricity	ELC
6. Per capita income at current price	PCI
7. Per capita bank credit	BAC
8. Per capita financial assistance utilized by IDBI[b]	FAU
9. Value of mineral production per thousand population	MNR
10. Shops and commercial establishments per thousand population (1967)	EST
11. Surfaced and unsurfaced road density	RDD
12. Motor vehicles per thousand population	MTR
13. Hospital per ten thousand population	HOS
14. Educational institution per thousand population	EDI
15. Newspapers and periodicals per ten thousand population	NWS
16. Fertility: urban females age 15–49 as per cent of urban population (1970)	FER
17. Urban natural increase (1968)	NIN
18. Degree of urbanization (1961)	DUR

[a] Unless otherwise noted data for all variables are for 1971 and are expressed as proportion of State total population.
[b] Industrial Development Bank of India.
Source: Census of India, 1971 (1971); Census of India, 1971 (1972); *Eastern Economist* (1974); Reserve Bank of India (1972); Times of India (1971, 1973); Government of Punjab (1971); Brahma (1974).

[6] Based on our previous research experience, a number of new variables (bank credits, financial assistance utilized, mineral production, Industrial Estates), that we had not used before for 'explanation' of urbanization, were included in the present analysis. A problem of intercorrelation among some of the variables, particularly among the three occupational variables, was encountered. The occupational variables considered in this study were male workers in the secondary sector (household and non-household manufacturing, and construction); same in the tertiary sector (trade and commerce; transport, storage and communication; and other services); and a combination of the above two as an index of total non-agricultural activities. Despite the intercorrelations, we decided to retain these variables because of the inherent differences in their makeup. However, this factor has to be kept in mind in any interpretation of the research findings.

industrial as well as commercial (occupation in the tertiary sector, commercial establishments) and financial (bank credits, financial assistance) variables should account for a considerable proportion of the variations in urbanization in these groups of towns (classes II, III, and IV), whereas developmental variables (such as roads, electricity, hospitals) were expected to be of primary relevance to the smallest size groups V, VI). However, on the contention that the basic patterns of economy and urban occupational structure have not undergone significant changes over the past decade, we further hypothesized that the association between the tertiary industrial sector and the overall urbanization level in India would be significant as in our previous research. A series of stepwise multiple regression models were undertaken for the analyses.[7]

FINDINGS AND CONCLUSION

As Table 5 indicates, industrialization appears to have a strong association with urbanization on the state, as well as on the city level, accounting for eighty per cent of the total variance in the states. However, when in the initial analysis the union territories were included with the states, bank credit (BAC) alone accounted for ninety per cent of the variation in the degree of urbanization.[8]

Unlike in 1961, when the variables associated with urbanization in the class I and class III centres appeared to be primarily commerical, industrial, and developmental in nature, the 'explanatory' variables in these groups in 1971 may be termed as demographic. However, whereas the degree of urbanization of the states in the previous decade (DUR) may be expected to reflect on the big cities, the emergence of this variable in accounting for urbanization in the class III towns is rather curious. This may be suggestive of an alteration in the urban structure in the relatively more urbanized states. It is to be noted that natural increase of population (NIN), while determining twelve per cent of the variation in urban level in the class I centres, showed a negative association ($r = -.57$) with the dependent variable. Is this an indication of the so-called "saturation level" in terms of further concentration of population and activities that many had forecast for the urban giants, or that of the effects of the family planning programs initiated in the metropolitan cities? Whatever the situation or the reasons may be, apparently the same do not prevail in case of the class III towns where both natural increase and fertility (NIN, FER) make a positive contribution to the regression equation. What Mandelbaum (1974) said in the course of his research on fertility in India may be noted in the context of the above findings for both the large cities and the smaller urban centres:

"The evidence now available points to higher income and education as the critical factors in lowering average fertility in cities and towns as well as in villages. Because educational opportunities are generally greater in urban areas, because health facilities are somewhat more available, and because governmental urgings can be more effectively communicated, it seems probable

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[7] Fortran Program — BMDO2R: Stepwise Regression (Health Sciences Computing Facility, UCLA), 1973.

[8] Apparently there exists a disproportionate concentration of bank credits in some of the union territories. It is also to be noted that bank credit was highly intercorrelated with occupation in the tertiary sector in this model.

that more urban than village people will shift to patterns of lower fertility and will make the shift more rapidly". (1974, pp. 57-58).

Elsewhere in the book, citing a study on the state of Mysore, he stated that "The subsequent shift by prospering people to patterns of lower fertility is made more quickly in a large city and more slowly in middle-sized [10,000-25,000] towns..." (1974, p. 48). As to the prospect of the stated probabilities coming true, or the Mysore results being applicable to the rest of India, one can only conjecture at this time, although they appear to conform to our find-

TABLE 5. Stepwise multiple regression of selected variables associated with urbanization in India by states and size classes, 1971

Dependent variable[a]	Highest r's with dependent variable[b]		R		R^2	Increase in R^2
Urbanization: States	SMW	.86	SMW	.86	.73	.73
(N = 17)	BAC	.81	SHE	.91	.84	.11
	NMW	.80				
	ELC	.78				
	EST	.70				
	TMW	.67				
Urbanization: Cities (I)	DUR	.86	DUR	.85	.73	.73
(N = 16)	BAC	.85	NIN	.92	.85	.12
	SMW	.77	BAC	.94	.89	.04
	NMW	.70				
	NWS	.68				
Urbanization: Towns (II)	PCI	.75	PCI	.75	.56	.56
(N = 16)	EST	.67	EDI	.81	.65	.09
	NMW	.62	RDD	.87	.76	.11
	DUR	.62	TMW	.90	.82	.06
			NWS	.95	.91	.09
Urbanization: Towns (III)	DUR	.66	DUR	.66	.43	.43
(N = 17)	FER	.63	NIN	.81	.66	.23
	ELC	.63	FER	.92	.84	.18
	SMW	.62				
	EST	.62				
	MNW	.61				
Urbanization: Towns (IV)	EST	.63	EST	.63	.39	.39
(N = 17)	DUR	.56	NWS	.72	.51	.12
			FER	.79	.63	.12
			PCI	.84	.71	.08
Urbanization: Towns (V)	PCI	.47	PCI	.47	.22	.22
(N = 17)	EDI	.47	EDI	.75	.56	.34
			RDD	.78	.61	.05
Urbanization: Towns (VI)	EDI	.55	EDI	.55	.30	.30
(N = 17)	NIN	—.55	SHE	.71	.50	.20
			PCI	.81	.66	.16
			MTR	.88	.78	.12

[a] Urban population of the state and each size classes (I-VI) expressed as percentage of state total population.

[b] Zero-order correlations significant at .05 level; those of R^2 for the F test are significant at .01 level.

Source: As in Table 4.

ings, and may at least provide a partial explanation for the nature of association between the demographic variables and urbanization in the two size groups.

As in 1961 (Mookherjee and Morrill, 1973, p. 47), a relatively high level of per capita income stand out as a significant factor 'explaining' urbanization in the class II towns. A combination of cultural, developmental, and economic (EDI, RDD, TMW, NWS) variables, indicative of a general commercial-non-agricultural orientation of these centres, add another thirty-five per cent to the explained variance. On a relatively minor vein we might note that while in 1961 we stated that "these centres tend to have the highest ... literacy" (1973, p. 47), educational institutions in 1971 indicate a negative association ($r = -.57$) with urbanization level in the class II towns. However, when one considers the widely diverse connotations of the two variables in a country like India, the results do not appear to be as contradictory as they might seem.

Models for the rest of the urban size groups were less successful. The correlates of the class IV towns, a combination of commerical (EST) and demographic (FER, DUR) factors, do not differ significantly from the results obtained in the earlier study. As in class II, per capita income and educational institutions (PCI, EDI) seem to be of relevance to the class V group. However, unlike the class II centres, the class V towns do not reveal any association with either the secondary or the tertiary sector to explain the income level. The negative association of most of the variables with urbanization in the class VI size group seems to indicate a general state of underdevelopment of these centres.

In the light of the hypotheses we had suggested, the following points seem to be of relevance:

(1) Industrialization appeared to be of primary importance in 'explaining' the degree of urbanization at the state level. A high positive correlation between the dependent variable and occupation in the secondary sector was also noted in the class I cities.

(2) Contrary to our expectation, bank credit appeared to be of significance only at the state level and in the class I cities.[9]

(3) Our hypothesis regarding the importance of the industrial-commerical variables in the medium and smaller urban centres was partially substantiated in the class II towns, but not in the III and IV size groups.

(4) The tertiary sector was associated with the urbanization process of India on the state level (including union territories) as expected, but except for a small contribution (.06) in the class II group it did not emerge in the regression either at the state level or in any other size classes.

(5) Urbanization in the class I and III urban centres, and to some extent in the class IV towns, appeared primarily to be a function of the demographic, rather than industrial, commercial, or developmental variables. Notably centres at the highest and lowest extremes of the urban hierarchy appeared to be associated with a negative natural increase.

(6) Finally, developmental variables appeared to be of relevance not only to the two smallest urban classes as we had anticipated, but also to the class II towns. However, it was observed that, in some cases (educational institutions in class II, road density in classes II and V, and sheds in Industrial

[9] This seems to point toward a gross intra-urban inequality in the distribution of bank credits. For a research report on some of the major factors related to the regional distribution of bank credits in India, see Basu (1973, pp. 176–184).

Estates, and motor vehicles in class VI centres) the direction of the association of the variables with the dependent variables was negative.

The implications of the findings, as we interpret them, may be briefly noted in conclusion.

Despite the planning goals of decentralizing industrial activities and developing medium and small-scale, and labour-intensive industries away from the large urban places, it appears that industrialization, as indexed by occupation in the secondary sector, has not spread yet to the smaller centres. One has, of course, to be aware of the possibilities of new technology and innovations in industrial production that might have affected the volume of the labour force in India. Viewed in this light, occupation in the secondary sector alone may not be considered as a reliable indicator of industrialization. However, with certain exceptions, it is unlikely that such large-scale capital-intensive industrialization would have anchored in the smaller urban centres.

The rather indiscernible role of the tertiary sector in accounting for urbanization in the various size classes in this study may be partly explained by definitional changes in the census. The other services category has always constituted a major segment of the tertiary sector. As discussed earlier, the unspecified element of the labour force, traditionally a sizeable portion of the other services, was eliminated in the 1971 census. The resultant deflation in the volume of workers may be reflected on the results. On the other hand, the service sector has rightfully been considered to be "perhaps the most conspicuous and pervasive example of loosely organized, if not totally unorganized, type of economic activity" (Sharma, 1968, p. 487). The elimination of the "unspecified" category, it may be hoped, would at least reduce this component of the service sector and thereby portray the true characteristics of employment in this category. The role of the tertiary sector that emerged in this study, unspectacular as it was, could then be considered to be more representative of the tertiary economic activities in India, rather than as simply pointing toward a vast underemployed labor force (Mookherjee and Morrill, 1973, p. 60).

The association of some of the demographic variables with urbanization in the largest as well as in some of the smaller size classes is significant as this suggests a need for further strengthening of the family planning programs. Also, in view of the importance of higher income and education, better health and effective mass communication facilities in relation to fertility, as noted earlier in the paper, a more synthesized and better integrated approach encompassing all these fronts would perhaps be more successful. However, in the context of an overpopulated developing country like India, the enormity of such a venture is not to be underestimated.

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PROCESSES AND PATTERNS OF URBANIZATION IN IRELAND

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INTRODUCTION

The literature upon urban development in Ireland repeatedly describes the urban structure as being 'weak'.[1] This term is taken to refer to the very dominant role of Dublin, the national capital, in the urban system, the absence of regional level centres in many parts of the State and the dependence of large parts of the country upon towns of less than 5,000 population for the provision of goods and services. Table 1 presents a picture of the distribution of urban places over 200 population by size and their changes over time. Table 1 shows that 58.7% of the total population in 1971 resided in towns of over 200 population: 351 of the 465 urban places existing (1971) had populations of less than 1500 persons and towns under 1500 accounted for only 6.4% of total population in 1971 as compared to 7.3% in the same size categories in 1956.[2] By contrast the towns and cities of over 10,000 population have increased in number and account for a growing proportion of all population: 15 towns over 10,000 in 1956 accounted for 34.2% of population: the 17 towns in this size grouping accounted for 40.2% of the total in 1971. In particular, an increasing share of total population now resides in the Dublin Sub-Region which by 1971 contained 850,000 population or 28% of the population of the State.

Figure 1 shows that this population growth in larger towns or cities is confined mostly to the east coast of the island while Table 2 gives a breakdown of urban population by town size for each region in 1971.[3] The urban pattern of Ireland can be described as distinctly 'primate' with the population of the second largest city, Cork, being approximately one-sixth the size of the population of the Dublin Sub-Region. The proportion of the active population in Dublin, the increasing concentration of high status and decision-making functions, in the Sub-Region, and Dublin's increasingly important function as the principal focus for the sale and purchase of durable goods,

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[1] See, for example, C. Buchanan and Partners, *Regional studies in Ireland*, An Foras Forbartha, Dublin 1969.

[2] All population figures derived from *Census of Population*, Government Publications Office, Dublin 1956, 1961, 1966 and 1971. For a review of the growth trends in town size see P. Commins, Recent population changes analysed by community size, *Irish J. Agric. Econ.*, Research vol. I, 2, 1968, pp. 195–206.

[3] The term "region" refers to the nine planning and development regions set up in 1964 (See Fig. 4).

TABLE 1. Population by size of urban place

Size of centre	1956		1961		1966		1971		% change	% of total population in each in 1971
	No. of towns	population	No. of towns	population	No. of towns	population	No. of towns	population	1956–71	
200–499	261	80,648	255	78,709	256	78.296	199	63,988	−20.7	2.1
500–1,499	154	129,816	156	131,122	157	131,432	152	129,348	−0.4	4.3
1,500–2,999	47	104,735	46	104,333	48	107,296	44	95,431	−8.9	3.2
3,000–4,999	23	90,927	21	84,139	22	88,743	29	110,119	+21.1	3.7
5,000–9,999	17	105,285	17	106,311	19	122,684	24	152,243	+44.6	5.1
Over 10,000	15	990,109	15	1,004,364	15	1,100,341	17	1,197,821	+13.1	40.2
Rural Areas	—	1,396,708	—	1,309,363	—	1,255,210	—	1,229,298	−12.0	41.3
Total Population	—	2,898,264	—	2,818,341	—	2,884,002	—	2,978,248	+2.8	—
% Rural	—	48.2%	—	46.6%	—	43.5%	—	41.3%	—	—
% in towns	—	51.8%	—	53.4%	—	56.6%	—	58.7%	—	—

Source: *Census of Population*, Dublin Stationery Office 1956–1971.

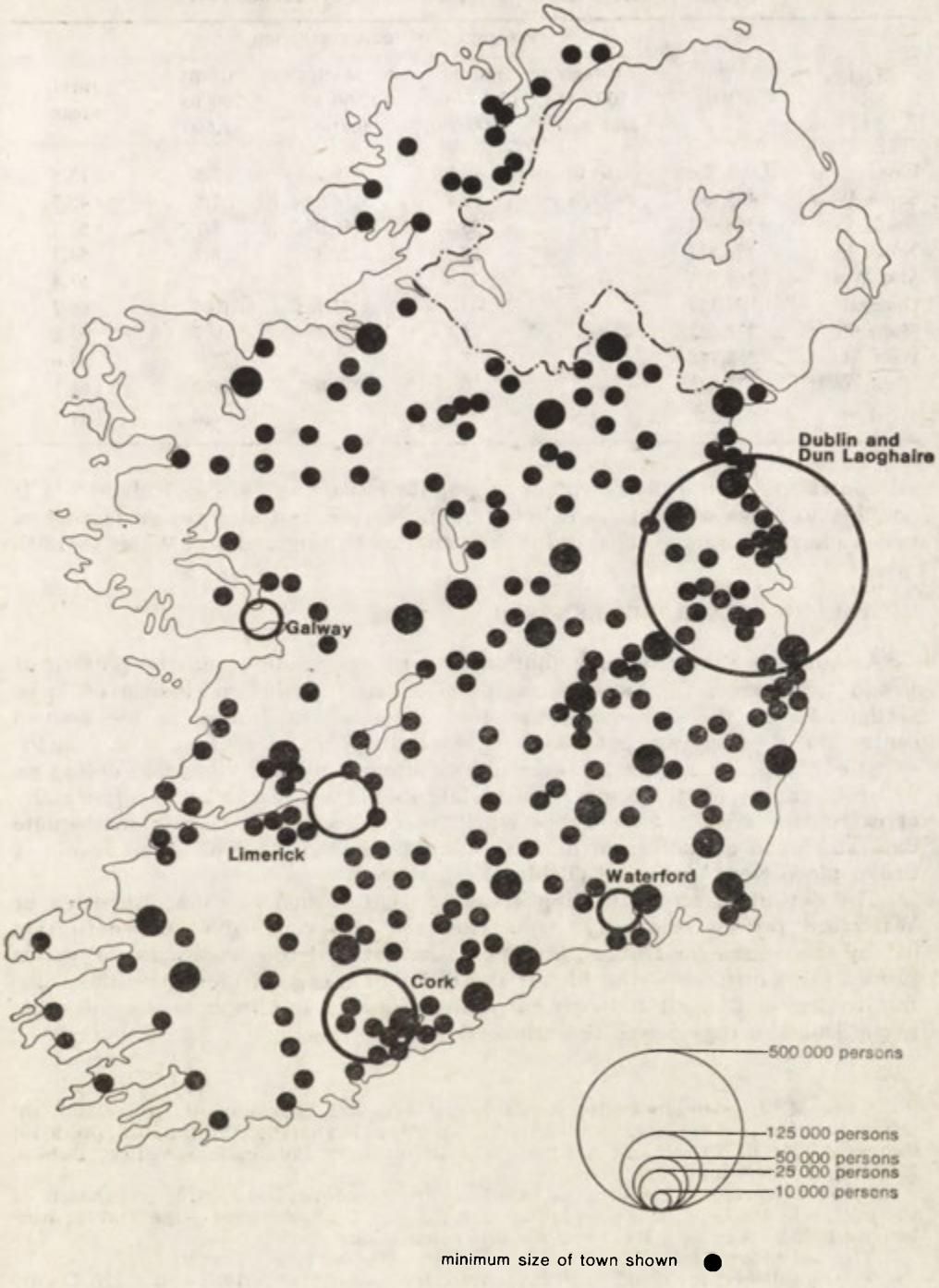

Fig. 1. Size of towns, 1966

TABLE 2. Percentage of urban population by regions, 1971

Region	Total population	Percentage of total population in: towns 100,000 and over	towns 10,000 to 100,000	towns 1,500 to 10,000	towns 200 to 1,500	rural areas
East	1,062,220	64.0	10.8	9.2	2.5	13.5
South West	465,655	28.9	2.8	14.9	7.5	45.7
South East	328,604	—	25.2	13.0	8.1	53.7
North East	173,811	—	25.1	12.3	8.1	54.5
Mid West	269,804	—	27.4	10.7	9.5	52.4
Donegal	108,344	—	—	13.7	16.6	69.7
Midlands	232,427	—	5.1	21.5	9.7	63.8
West	258,748	—	11.4	12.2	7.9	68.6
North West	78,635	—	18.4	1.9	11.2	68.5
Total	2,978,248	27.3	12.9	12.0	6.6	41.1

all contribute to the degree of demographic imbalance within Ireland.[4] It is possible to make a comparison between the spread and size categorization of urban places in Ireland today with the situation in England and Wales in 1800.

HIERARCHICAL ARRANGEMENTS

As outlined above, the distribution of urban population and the pattern of urban trade areas are both strongly influenced by the dominance of large settlements on the east coast, the unrivalled role of Dublin as the centrol centre and the local as opposed to regional alliegence of centres in the north--west of the State. Figure 2 represents an attempt by this author to define an urban hierarchy for the State and to relate this urban hierarchy to a hierarchy of catchment areas — an attempt which was based on extremely inadequate data and upon a number of delicate assumptions.[5] A total of seven levels of urban place were identified (Table 3).

The definition of the trading areas of centres such as Cork, Limerick or Waterford proved relatively straightforward and conclusive: the definition of any trade area for Dublin, in view of its national role and 'primate' status proved most difficult — the higher the order of the good the wider the Dublin trading area until for cultural, entertainment and high quality durable goods Dublin's region was the whole State.

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[4] See M. J. Bannon, Office location and regional development in Ireland, in: *Office location and regional development*, An Foras Forbartha, Dublin 1973, pp. 9–19; *Census of Retail Trade and Distribution*, Government Publications Office, Dublin, 1956/9 and 1966/9 and 1971.

[5] The hierarchy of centres is based on the theoretical shopping population of the centre in 1966, i.e., the population of town and its hinterland — the Dublin hinterland being taken as a local one for this calculation.

The definition of trade areas was dependent upon two sources:

(a) published material, J. P. Haughton, *Irish Geography*, 1950 and P. N. O'Farrell, *Administration*, 16, 1968.

(b) catchment area boundaries were drawn to coincide with breakpoints in the inter-urban traffic flows based on a survey of traffic flows in 1963. See *Regional studies in Ireland*, op. cit., pp. 43–49.

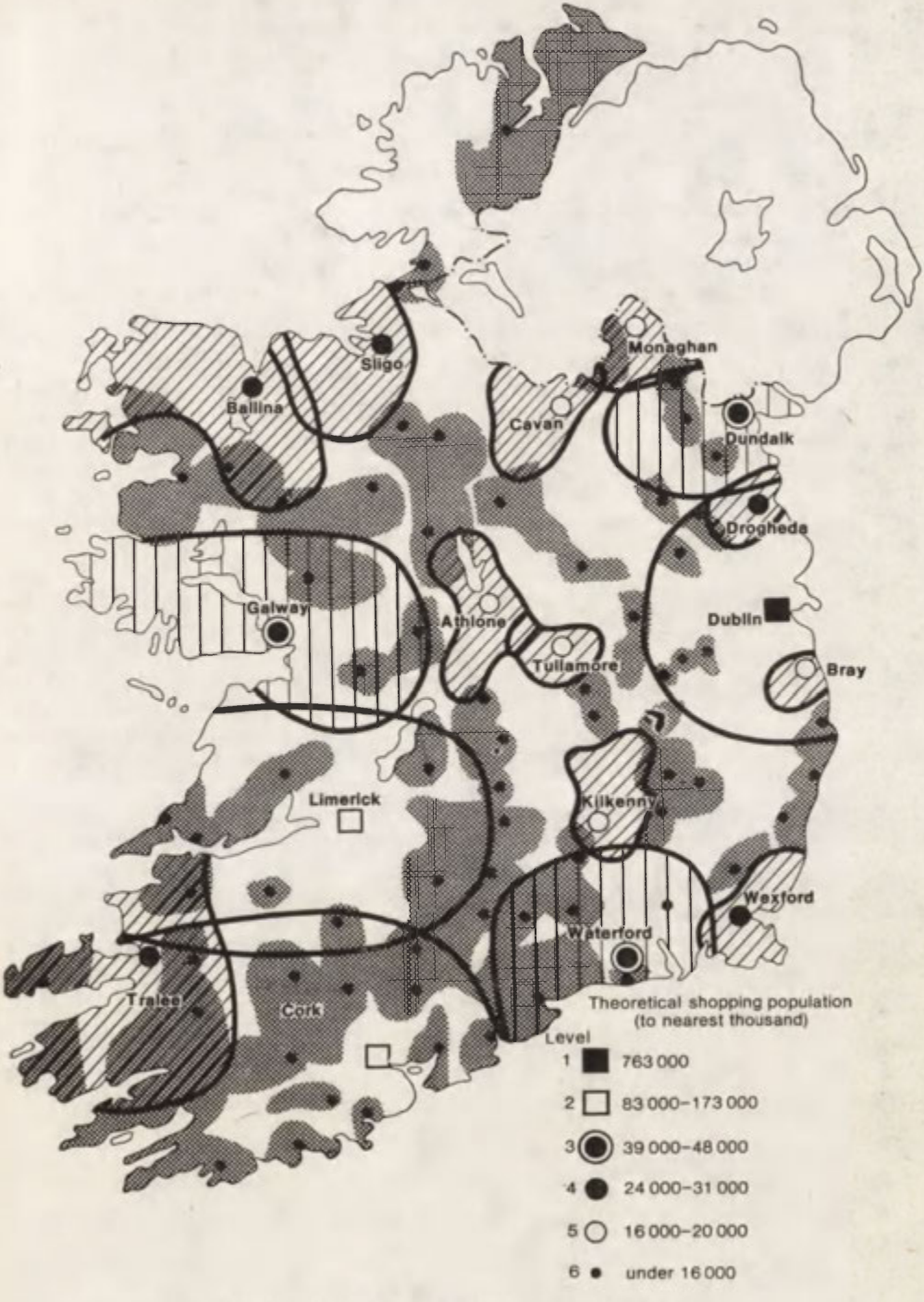

Fig. 2. Hierarchy of towns as retail centres

TABLE 3. Hierarchy of urban centres, 1966

Type of centre	No. of centres	Population
1. National	1	762,000
2. Provincial	2	127,800
3. Regional	3	43,166
4. County (i)	5	27,640
5. County (ii)	6	18,200
6. Local	15	12,290
7. Neighbourhood places	—	—

The urban pattern of Ireland may be divided (very loosely) into three broad categories as evidenced by Fig. 2.

(A) Area 1, the Dublin area and a tract of countryside within approximately fifty miles where so far, medium sized towns or centres of regional alliegence have failed to emerge. Thus, with the exception of Drogheda (20,000) no urban centres of over 12,000 population have emerged in this area and the centres that do exist are dependent largely upon the provision of local markets and survive by meeting the weekly and regular needs of the population. This area includes almost all of the province of Leinster.

(B) The second broad settlement type is to be found in the south and south-east of the country in those counties where Norman colonization established a large number of strategic settlements which have subsequently evolved into a well developed hierarchy of urban centres.[6] This area includes the fertile farmland of south and south-east Ireland and is arranged around the regional capitals of Waterford, Cork, Limerick and to a lesser extent Galway. In part of this area O'Farrell has identified a four-fold hierarchy of towns exclusive of the regional capitals which lay outside his study area.[7] Figure 2 defines the role of regional capitals in this part of the country — a pattern supported by the geographic spread of the readership of local newspapers.[8]

(C) In the northern part of the Republic, and in the isolated western and north-western parts of the country, political, topographic and economic factors have militated against the development of an integrated hierarchy of urban places or the growth of large scale urbanization. In the north and west of the country, there exists a pattern of lower order centres in isolation from one another and an absence of higher level centres.[9] This area includes counties Mayo, Roscommon, Leitrim, Cavan, Monaghan, Sligo and Donegal.

Thus the settlement pattern of the country falls into three roughly distinct areas where (i) the settlement is dominated by Dublin; (ii) where a nested hierarchy of settlements exist and (iii) a large part of the territory arranged around small towns with an absence of higher order central places.

[6] For a review of the historical development of Irish towns see: R. A. Butlin, Urban genesis in Ireland 1556–1641, in: *Liverpool essays in geography* (eds. Steele & Lawton) especially map on p. 214.

[7] P. N. O'Farrell, *Central places analysis in Co. Tipperary*, unpublished Ph.D. Thesis, T. C. D., Dublin, 1967.

[8] J. P. Haughton, Irish local newspapers: A geographical study, *Irish Geogr.*, vol. II, 1950, pp. 52–57.

[9] *The Gaeltacht Studies*, An Foras Forbartha, 1971, did a study of the settlement patterns of such areas in Counties Donegal, Mayo and Kerry. See also: J. Forbes, Towns and planning in Ireland, in: *Irish Geographical Studies* (Eds. N. Stephens & R. E. Glascock), Queen's University, Belfast 1970, pp. 291–311.

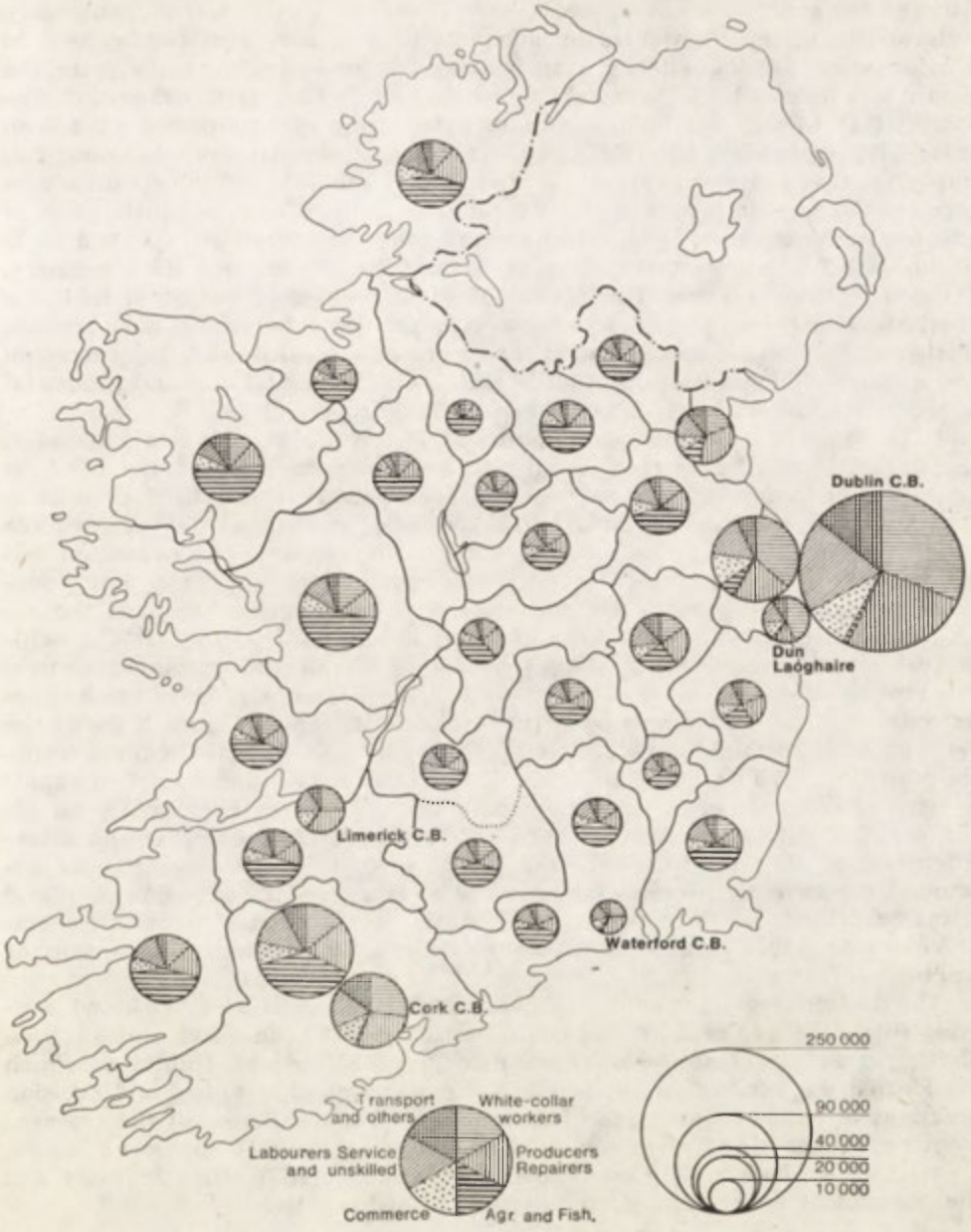

Fig. 3. Structure of employment by occupation, 1971

CHANGES IN THE URBAN SYSTEM

The predominant feature affecting the Irish settlement has been the contraction of the agricultural labour-force since the inception of the State in 1921. Persons engaged in agricultural occupations have declined from 512,109 in 1951 (40.6% of total occupied population) to 288,753 in 1971 (25.8%). The prio-

rities of the successive governments have been the prevention of involuntary emigration and the creation of an adequate base of non-farm employment to provide work for those leaving agriculture. A protectionist policy from the 1930's was followed by the establishment of an Industrial Development Authority (I.D.A.) and the financing of manufacturing and industrial expansion from 1952 onwards.[10] By 1973 the Government's objective of obtaining full employment at home and correcting the regional imbalance of job opportunities between the regions is fostered by a wide programme of grants, construction of advance factories, training facilities and tax relief on industrial exports designed to attract foreign industrialists to Ireland and to expand Irish industry. These incentives are scaled in favour of those regions of the State with the greatest unemployment and socio-economic problems but these aids are not related strictly to the urban system. The work of the I.D.A. and the promotion and expansion of industry has increased the number in mining and industrial production occupations from 149,000 in 1951 to 163,405 in 1971.[11]

In recognition of the growing importance, in terms of employment expansion and urban growth, of what is called 'service sector employment' the I.D.A. is now offering limited grants to selected service firms whose final product is non-industrial; the Irish Government is becoming aware that the motive force behind urban growth is not only manufacturing employment expansion but what it calls "service sector" growth.[21] In practice, however, the major force behind urban expansion and the growth of employment has been the rapid expansion of white-collar occupations, especially in Dublin. White-collar occupations are of increasing significance in all the economic sectors; the growth of white-collar occupations has, until recently, been masked by the failure to examine employment in occupational terms. Figure 3 shows the very great importance of white-collar occupations in the labour-force, especially in the Dublin area. Within the white-collar sector, there exists a rapidly expanding group of occupations where the work-place is normally an office — office employees. The growth of office employment derives from a restructuring of all three sectors of the economy: in 1971 office occupations accounted for 15% of the total labour-force as compared to only 6% in 1946.[13] A major urbanizing force within the country is the expansion of office employment and this is a principal cause behind the continued expansion of Dublin.

The Dublin region (Counties Dublin, Meath, Kildare and Wicklow) contains fifty-nine per cent of the 170,000 office jobs in the State and an even higher percentage of professional and managerial office jobs. Dublin, in which are located the head offices of farming organizations, the control and decision functions of major industry, the financial centre of the State, all the Government departments and all commercial and most other State sponsored bodies, owes much of its recent growth to the expansion of the office industry and the consequent generation of employment in office activities.

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[10] See *Industrial Development Act, 1950; Underdeveloped Areas Act, 1952; Industrial Grants Act*, 1956.

[11] For a review of progress in the manufacturing sector see: *Regional Industrial Plans 1973–77*, I. D. A., Dublin 1972. In these plans the I. D. A. set out to create 38,000 net additional manufacturing jobs before 1977.

[12] See *Third Programme for Economic and Social Development 1969–73*, Stationery Office, Dublin 1969.

[13] M. J. Bannon, *Office location in Ireland: The role of Central Dublin*, An Foras Forbartha, 1973.

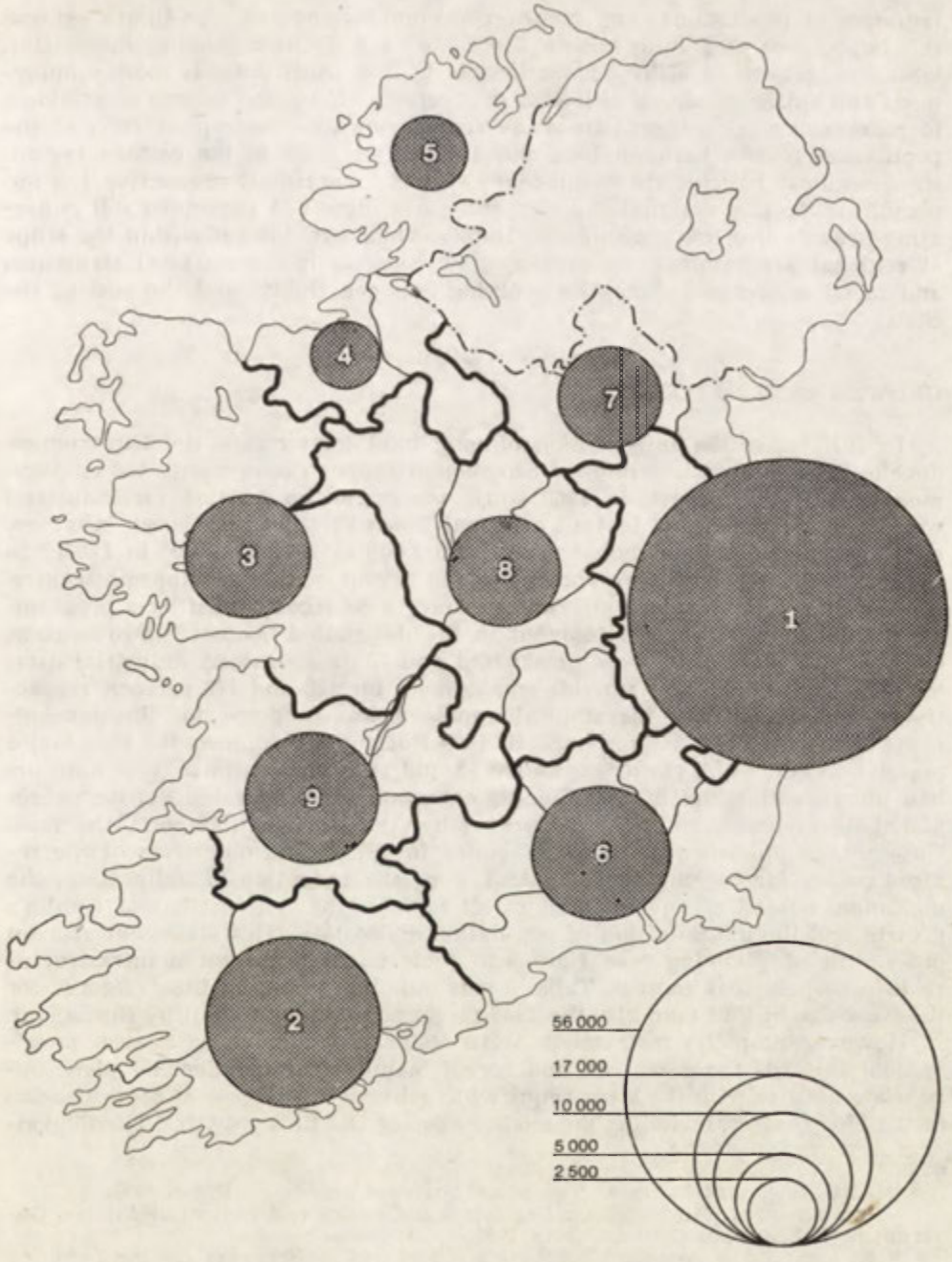

Fig. 4. Regional distribution of professional and managerial workers, 1971

Between 1966 and 1971 there was a net loss of 16,680 jobs outside the Dublin Sub-Region: within Dublin employment grew by 18,007 jobs and this was a result of a growth of 14,636 office jobs as well as growth in commerce and a very slight expansion in 'blue-collar' work. Figure 4 shows the regional dis-

tribution of professional and managerial employment and this figure reflects the importance of Dublin within the State as a decision making focus. But, while the growth of office occupations in Dublin leads towards more employment and better standards of living, it adversely affects the success of attempts to redress migration trends from the regions towards the capital. 80% of the population growth between 1966 and 1971 was located in the eastern region: since regional policies are designed to attract 'blue-collar' productive job opportunities to the 'designated areas' and since there is a continued self generating growth of office type jobs in Dublin which are not yet within the scope of regional programmes, an even greater contrast in occupational structures and social opportunities may be evolving between Dublin and the rest of the State.

GROWTH CENTRE POLICY

In 1958, after the introduction of long haul jet aircraft, the Government developed an industrial estate of Shannon Airport to compensate for employment loss at the airport. In 1960 work was begun on housing for industrial workers at Shannon and in 1962 a formal Town Plan was prepared. It is now envisaged that Shannon should grow from 3,600 in 1971 to 25,000 in 1986.[14] In the mid 1960's the Irish Government was in favour of the 'development centre' concept and these development centres were to be accompanied by a programme of industrial estate development in the designated centres: [15] two centres, Galway and Waterford, were designated and State sponsored industrial estates were built which now provide employment for 933 and 773 persons, respectively. Subsequently, a hierarchical approach was proposed for the development of the Limerick region [16] and in 1969 Buchanan recommended that major population and employment expansion should take place primarily in nine urban places within the State.[17] Consequent upon a considerable debate on regional development priorities generated by 'the Buchanan Report', the Irish Government published a review of policy in 1972.[18] The objectives of the revised policy for regional development were the reduction of emigration, the maximum spread of development in all regions, the containment of Dublin's growth and the minimization of population dislocation. This statement also set out a scale of 'planning base' figures to guide in the provision of infrastructure in nine principal centres. Table 4 sets out the "planning base" figures for these centres in 1991 (and also the 1986 target populations set out by Buchanan).

However, no policy instruments were designed or announced to steer development towards these centres, and recent manufacturing industrial plans appear at variance with the steps required to achieve this degree of concentration in the nine centres, including the modification of Dublin's growth.[19] The Region-

[14] A. G. Sheppard-Fidler & Associates, *Shannon new town*, Epsan 1972.

[15] See report of Committee on *Development Centres and Industrial Estates*, Government Publications Office, Dublin 1965.

[16] N. Lichfield & Associates, *Advisory report and outline plan for the Limerick Region*, Dublin 1967.

[17] C. Buchanan & Partners, *Regional studies in Ireland*, An Foras Forbartha, Dublin 1969.

[18] *Review of regional policy*, G. I. B., Dublin 1972.

[19] *The Regional Industrial Development Plans* suggest that only 52% of manufacturing jobs will be encouraged into these nine centres: Buchanan felt that these targets required a concentration of at least 75% all new manufacturing employment in these same centres to achieve the same scale of growth.

TABLE 4. Population of larger urban centres, 1971–1991

Centre	1971 population (estimated)	1986 population (Buchanan)	1991 population range (Gov. statement)
Dublin	850	1125	1125–1200
Cork area	175	250	300–360
Limerick—Shannon-Ennis	79	190	165–175
Waterford	33	55	55–60
Galway	29	47	55–65
Dundalk	24	44	40–45
Drogheda	20	35	36–40
Sligo	14	25–30	30–35
Athlone	11	18	16–20
State	2971	3498	3600–3800

al Industrial Plans propose the creation of 38,000 net additional manufacturing sector jobs between 1972 and 1977. It is proposed to distribute these jobs between 47 clusters of towns containing a total of over 200 urban places: only 52% of these jobs would go to the nine centres listed in Table 4. At the present time, apart from these planning base figures, regional policy only relates to manufacturing employment and industrial assistance is not related to the development of a national urban system but to the socio-economic requirements of local areas.

OTHER FACTORS

The development of the peat milling industry necessitated the construction of a number of worker villages in areas of sparse population during the 1950's. These villages were pre-planned and well served with open space and amenities.

The development of other heavy industries (e.g., at Navan or Cork) has served to expand existing centres rather than to create new urban places: similarly tourism has proved a boost to existing service centres such as Bray, Killarney, Kinsale, Galway. On the other hand, the decline of rural populations and the reduction in the farming labour-force has led to the decline of the importance of local service centres. Though this aspect is poorly documented, while small towns have maintained population, there is evidence that trade is being increasingly transferred to higher order centres at the expense of hamlets and villages.[20]

TOWN BOUNDARIES

In Ireland there is an almost universal discrepancy between the administrative boundaries and the functional units and the geographical pattern of socio-economic organization. Thus large and rapidly growing centres may be under-bounded while small towns may be greatly over-bounded. Some places may be over-bounded and under-bounded simultaneously.

[20] *The Gaeltacht Studies, op. cit.*

The best examples of under-bounded situations are provided by Dublin City,[21] Cork City, Waterford, Drogheda, Athlone and Limerick. In Dublin the built-up area now includes parts of territory administered by Dublin City, Dublin Port and Docks Board, Dun Laoghaire Borough, Dublin County, Bray Urban District and Wicklow County Council while overspill into County Meath and County Kildare is also taking place.

There are examples of 'over-bounded' towns also. Naas U.D. (Co. Kildare) is only 14% built up and there are many lesser examples of over-bounding. The discrepancies between the built-up area and the administrative areas result in an urban population density range of from 12,744 persons per square mile in Dublin City down to 336 in Granard, Co. Longford (1971 population 1,054). Sligo U.D. and Galway U.D. provide examples where the municipal boundary incorporates a large amount of open sea (the boundary having been drawn as a circle) which is unusable while the municipality has had to seek land for housing expansion in neighbouring municipalities. For statistical purposes these discrepancies have been overcome by the Census of Population which provides data for 'environs' as well as the administrative unit.

In the particular case of Dublin a strong case has been made for one regional authority which would at least deal with planning requirements of thirteen different authorities.[22] A White Paper on Local Government Reorganization envisaged the replacement of the present system of 27 County Councils and 60 Urban Authorities (together with 28 town Commissioners) with:

(a) A system of Advisory Regional Authorities,

(b) A statutory framework of county based Authorities — reducing the role of Urban Authorities,

(c) Area Committees based on towns and hinterlands (advisory),

(d) Local Advisory Community Councils.[23]

The implementation of these or related proposals would go some way in bringing administrative arrangements into line with physical realities and help alleviate some considerable planning difficulties. While the foregoing is an accurate description of the administrative failure to keep up with urban growth, Ireland does not possess the squatter type urban fringe developments common to other countries of rapid urbanization and considerable informal co-operation exists between municipalities on planning matters.

THE URBAN-RURAL CONTINUUM

Figure 5, Population density 1966, reproduced from Regional Studies in Ireland, shows that much of the State had a population of less than 55 persons per square mile. In 1971 only the Dublin area, Waterford, Limerick and County Louth had over 100 persons per square mile. Continuing emigration up to 1960, the reduction of farm employment, and the absence of early industrialization have resulted in a very sparsely populated countryside. The pattern on rural decline, in contrast to urban growth for 1946-1966, is well seen in Fig. 6 (after Buchanan). Population loss has been especially heavy in the poorly urbanized north west, west and border areas with overspill from Dublin leading to growth in the east coast counties of Dublin, Kildare, Meath and parts of Louth.

Population loss has so affected County Leitrim that the existing population has entered a state of natural decline. Parker has shown that all counties except

[21] J. P. Haughton, The urban-rural fringe of Dublin, in: *Irish Geographical Studies*, Belfast 1970, pp. 360–372.

[22] Myles Wright, *The Dublin Region*, 1967 proposed such a Regional Authority.

[23] *Local Government reorganisation*, Dublin, Stationery Office, 1971.

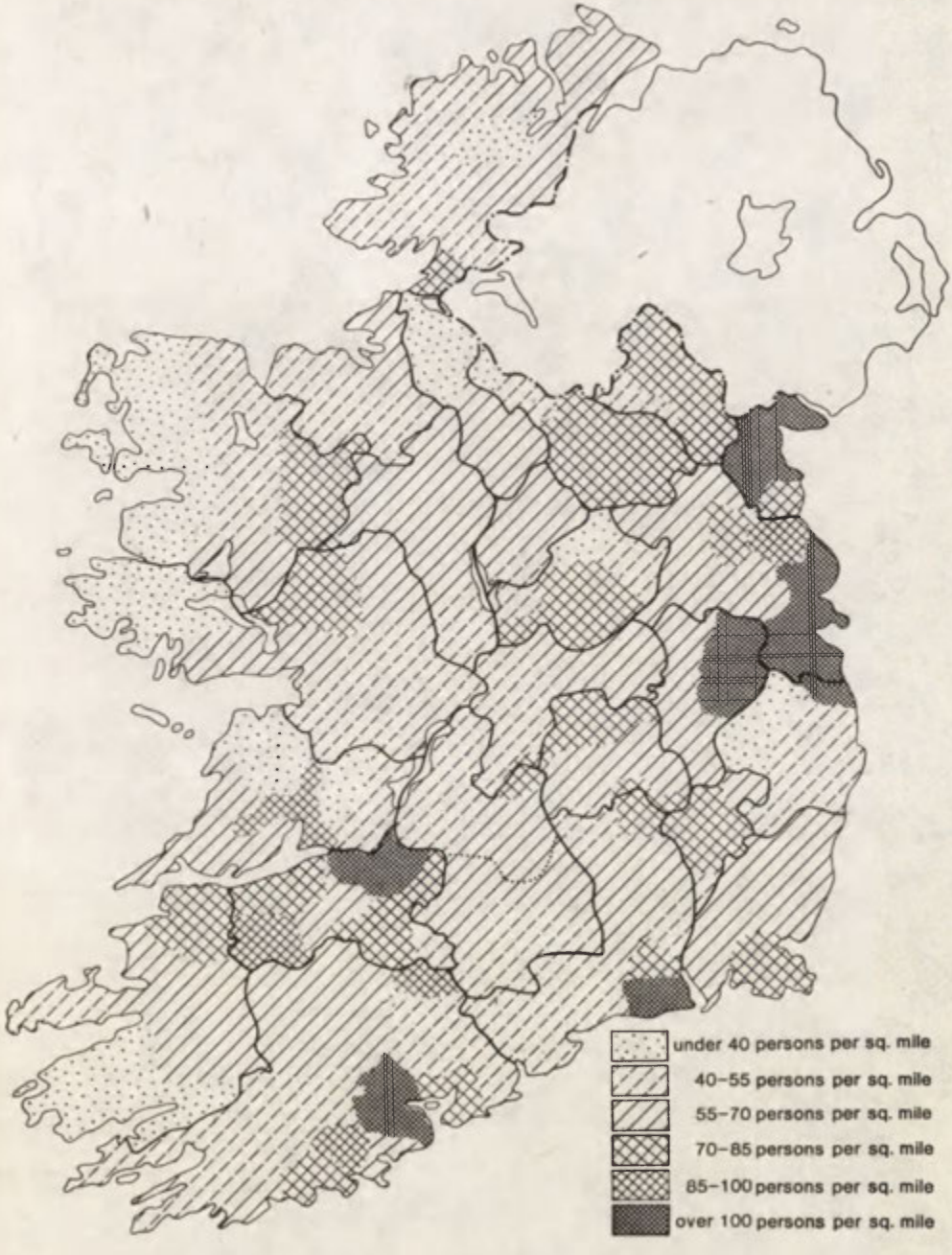

Fig. 5. Population density, 1966

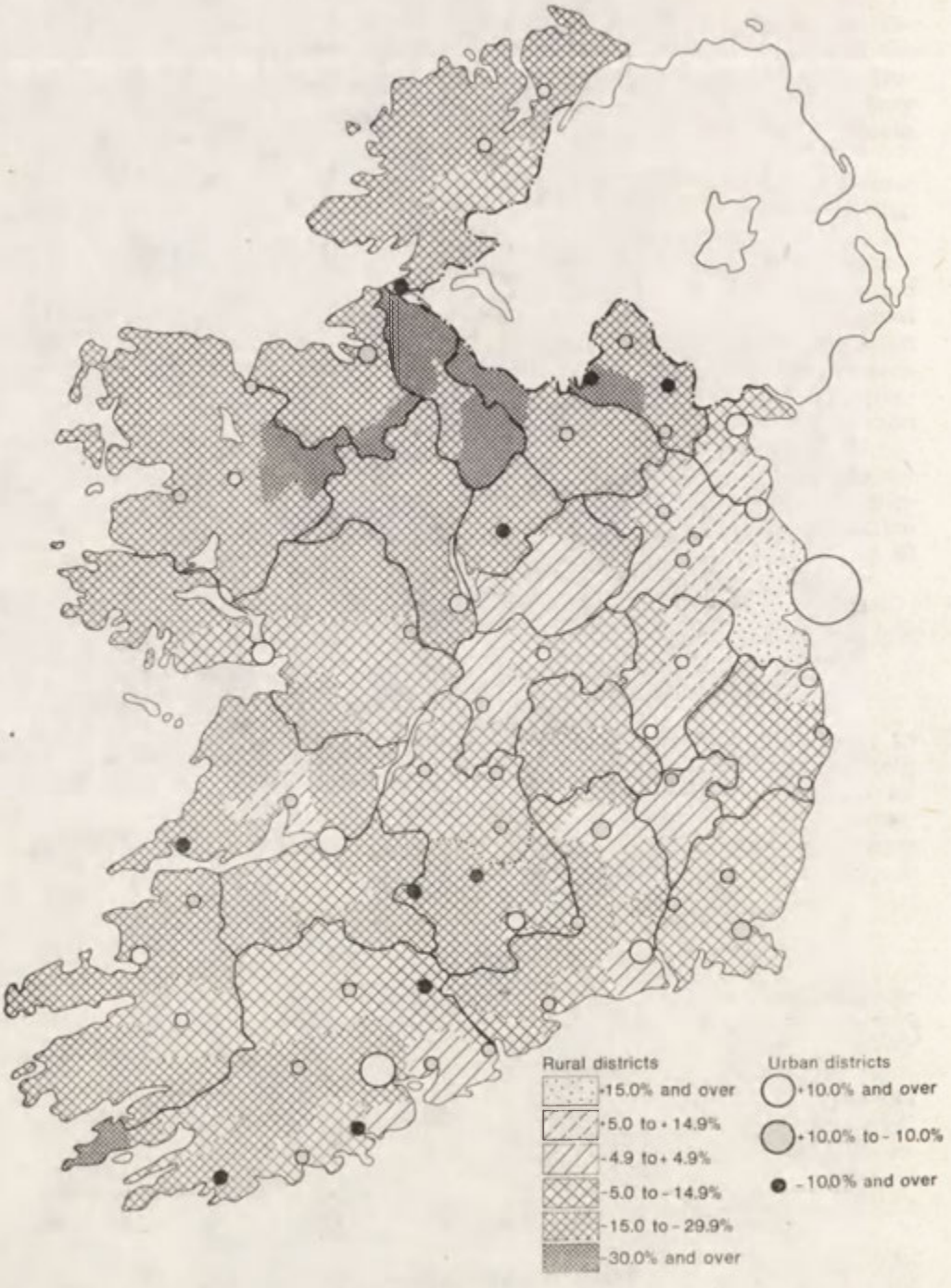

Fig. 6. Population change, 1946–1966

County Leitrim witnessed a natural increase of population between 1966 and 1971.[24] The rate of natural increase was greatest in Dublin and neighbouring counties and was least in those western areas with a lengthy history of emigration and population loss. (See Fig. 7B). Figure 7A (after Parker) shows that only three counties adjacent to Dublin together with County Waterford experienced net immigration. Net emigration from Counties Mayo and Leitrim was at a rate of over 12 per 1000 population and many counties had a net emigration rate of over 8 per 1000 population.

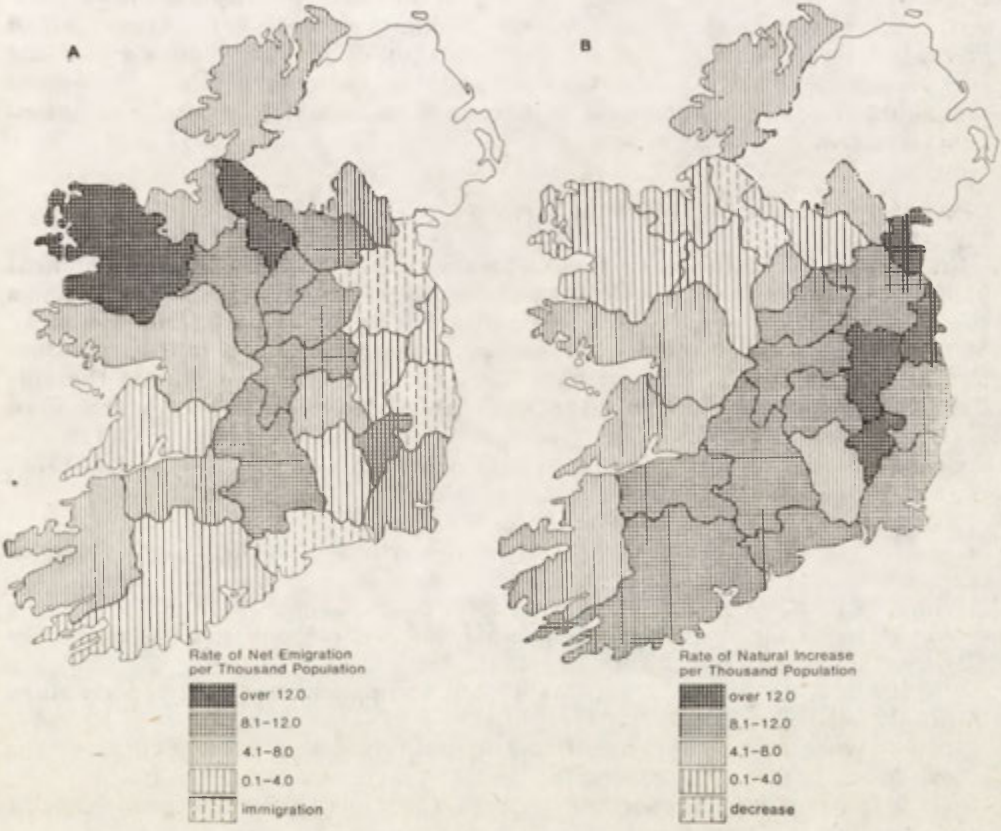

Fig. 7A. Net emigration by county, 1966–71
Fig. 7B. Natural increase by county, 1966–71

The natural changes, migration patterns and the rapid rate of occupational restructuring have led to a clouding of the simple distincton between what is urban and what is rural. The limited amount of research material available does indicate that, as Irish society becomes more mobile and affluent, the place of residence and place of work are increasingly separated. Thus, a study prepared for Donegal County Council shows that a commuting distance of six to eight miles is commonplace in respect of employment in the small towns of that county.[25] The Gaeltacht Studies assumed the feasibility of a ten mile jour-

[24] A. J. Parker, Ireland: A consideration of the 1971 Census of Population, *Area*, 4, 1972, pp. 31–38 (Based on 1971 Preliminary Census Results).
[25] *Donegal Development Plan*, Draft Variation 1972, Map No. 4.

ney to work pattern.[26] Lucey and Kaldor established a six mile radius commuting pattern around two western towns with industry.[27] A commuting radius of up to ten miles has been established for Kileshandra, County Cavan and Killarney, County Kerry, but where the commuting patterns are co-ordinated and organized as in the case of Shannon, industrial workers have shown a willingness to travel up to thirty miles each way.[28] The Cork Sub-Regional Study proposed that the future expansion of Cork City should be spread out over a number of satellite towns involving at least a fifteen mile journey trip to the centre of Cork.[29] A study of the journey to work patterns of office workers in central Dublin showed that many office workers were travelling in excess of twenty miles to work.[30] In view of the increasing mobility of urban workers and the blurring of the urban-rural distinction An Foras Forbartha is currently undertaking a study of urban generated housing in rural areas.[31]

CHARACTERISTICS OF GROWTH TOWNS

A number of studies have sought to objectively establish the development potential of towns and to scale towns in order of potential. A factor analysis study of 96 towns using twenty one variables produced a six-fold hierarchy of towns.[32] This ranking did in fact show a close correlation with population size in most instances. More recently Geary has attempted to isolate the statistical characteristics which have been associated with towns which have grown or have been absent in the case of declining towns since 1961.[33] The study, by means of correlation analysis, identified 'Growth Towns 1961-1971'. A growth town had the following characteristics:

(i) It also grew in period 1926–1961.

(ii) It has a low percentage of elderly, confirmed by high percentage of children.

(iii) It had a low dependency ratio 1961, confirmed in 1971.

(iv) It has a high percentage of young married persons and has markedly increased in this percentage in 1961–1971.

(v) It has a low percentage in lowly-paid occupations and a high percentage in professions.

(vi) Percentage unemployment low in both 1966 and 1971.

(vii) It is high in manufacturing and low in commerce.

(viii) It has a high proportion of large dwellings and a low proportion of large families.

(ix) A high proportion of dwellings were built since 1961.

(x) It is high in its proportion of rented dwellings.

(xi) Proportion of dwellings with baths, cars, telephones, television and other amenities is high.

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[26] *Gaeltacht Studies, op. cit.*

[27] D. Lucey & Kaldor, *Rural industrialisation*, Chapman, London 1969, 208 pp.

[28] U. I. Kupper, Socio-geographical aspects of industrial growth at Shannon, *Irish Geogr.*, vol. VI, 1, 1969, pp. 14–29.

[29] F. Gillie, *The Cork Sub-Regional Planning Study*, An Foras Forbartha 1971, p. 82.

[30] M. J. Bannon, *Office location in Ireland, op. cit.*

[31] *Urban generated housing*, An Foras Forbartha unpublished.

[32] *Regional Industrial Plans, Appendices, op. cit.*, 1972.

[33] R. C. Geary, *et al., Population growth and other statistics of midlle-sized Irish towns*, E.S.R.I., Dublin, 1976.

(xii) Probably there is more land for industry.
(xiii) It is probably near a large town or city.
Many of the growth towns were dormitory towns for large urban overspill and had a high proportion of white-collar labour-force.

CONCLUSION

In 1971, the majority of Irish population were resident in towns of over 1500 population: with a growing population and the importance of urban based jobs, there is great pressure for urban expansion and the conversion of land to urban use. The Local Government (Planning and Development) Act required the preparation and a quinquennial review of Development Plans for all of Ireland's 87 Planning Authorities. Through these plans, it has been possible to control the nature of urban expansion and to limit the exploitation of resources: however, the rapid urban expansion, especially in the Dublin area, has led to proposals for public control of the ownership of land in likelihood to be developed around the capital.

Apart from the physical growth of cities and towns, the increased levels of commuting and the availability of urban type standards of affluence to rural residents imply that the distinction between urban and rural is increasingly clouded. With the economic expansion in the early 1960's, Ireland has entered a phase of rapid change in all facets of its urban scene.

POSTSCRIPT

Since the drafting of this paper in 1973-4, there have been many changes in demographic characteristics and the distribution of population. While Dublin continues to account for a rapidly increasing share of the total active population, B. Walsh suggests that towns of 3,000 to 10,000 have also grown rapidly since 1971. Recently, the emphasis on the dispersal of manufacturing employment has shifted in recognition of the employment problems of larger cities, and, indeed, regional policy is now nationwide rather than concerned with problems of specific regions. While there have been few initiatives in regard to regional policy or local government reorganisation since 1972, there has been a growing volume of research work into the consequences of rural decline (Curry and Cummins) and into the growth of Service Sector and "non production" employment. (Bannon and Eustace).

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THE NEW ZEALAND URBAN SYSTEM

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New Zealand's role in the world economic system is as a highly efficient producer of primary products, notably from its pastoral industries but also increasingly from its native and exotic forests. It is, however, an urban country. The majority of its population live in towns and cities; some 74 per cent at present live in places with populations exceeding 1000. Approximately one-fifth of the country's three million residents live in its largest metropolitan area, Auckland, whose population is growing at around three per cent annually; a further 22 per cent live in the other three large urban complexes — Wellington/Hutt, Christchurch and Dunedin.

Statistical data for urban areas in New Zealand are truly representative of the country's metropoli and major provincial centres; below this level, they refer only to the, often-out-dated, administrative units.

INTEGRATION OF THE URBAN SYSTEM

New Zealand was probably first settled somewhere between the tenth and the fourteenth centuries, by Maoris from Polynesia. These peoples were organized into closely-knit tribes separated, but not isolated, from their neighbours. They were not urban, but most of them lived in nucleated settlements.

Urban settlements were introduced by Europeans, following Cook's rediscovery of New Zealand in 1769. At first, like the Maori, their settlements were isolated from each other. The difficult terrain made internal communications almost impossible. Most movement was by sea, and the settlements were often in as close contact with Britain, and with Australia, as with each other. Formal annexation of New Zealand in 1840 established a national government; abolition of the ten provinces in 1876 imposed a very centralized system of authority. Despite this, until well into the present century, the various urban regions (cities plus hinterlands) remained economically separate. There was some development of a hierarchical structure, as the four main urban centres — Auckland, Wellington, Christchurch, and Dunedin — established hegemony over their 'quadrants' of the national territory. Shipping services were rationalized and concentrated on these four centres, especially for the more diversified import cargoes; railways extended both farming hinterlands and the urban frontiers in from the coast.

For many decades New Zeland's was a traditional 'colonial enclave' colony, fostered by overseas capital to encourage production of needed pastoral goods in Britain. Although there was greater freedom for local enterprise and development than in other colonies, notably those in more tropical lands,

there was little encouragement to native industrial development to replace the imports from Britain, a situation exacerbated by the small local markets. While this economic relationship continued, there was little call for a nationally-integrated urban system. But during the twentieth century, and especially after the depression of the early 1930's and the election of the country's first Labour government in 1935, local import replacement industrialization was encouraged. The exigencies of a small market — a population of two million was only reached in 1952 — necessitated national economic integration. A national railway net was only completed in 1945 with the line from Christchurch to Picton, and thence via ferry (roll-no/roll-off since 1962) to Wellington; previously the link was by sea from Christchurch (Lyttelton) to Wellington, roll-on/roll-off since 1966 only. (Note that Nelson has never been connected to the national rail net, though it had its own regional line for some years; it is connected to Picton by a 'national railway', a road carrier service at railway rates.)

For much of its European history, therefore, New Zealand has been characterized by a series of discrete metropolitan regions only rudimentarily integrated into a national whole, despite the centralized administration. Although full national integration is now rapidly being achieved, despite the relative isolation of each of the four main centres, and the remoteness of several provincial towns, there is still much evidence of the regional independence. The country has no national daily newspaper, for example, and a national television network was established, to replace the four regional systems, in 1971 only. For many service functions, the four main centres are still independent; competition on their borderlands is slight because they are separated by thinly-peopled country. In some cases, provincial centres are developing in these border areas, as at Invercargill, Napier-Hastings, and New Plymouth, to produce a slightly more complex system of 'metropolitan' regions.

RECENT CHANGES

The main process within the urban system in recent decades has been centralization, on Auckland. This urban area has far outpaced each of the other three metropoli in growth rates. In 1901, all four were of about the same size; in 1936 the Auckland: Wellington/Hutt: Christchurch: Dunedin rations were 100 : 70 : 54 : 33; in 1951, they were 100 : 61 : 53 : 29; in 1971 100 : 47 : 41 : 17. Much of Auckland's relative growth has been by migration, both from other parts of the country (and especially of Maoris) and from overseas (notably of Pacific Islanders). It has attracted a large proportion of new jobs, particularly in import-replacement, consumer goods manufacturing, and a not inconsiderable number of firms has moved there from other centres, notably Dunedin, but also Christchurch and Wellington/Hutt. All of these enjoy the external scale economies of the expanding industrial matrix, the internal scale economies of serving the country's largest market, and accessibility to a prosperous and rapidly-developing hinterland.

Countering this centralization is difficult, because no other centre has the initial advantages of size and accessibility. While Wellington/Hutt and Christchurch have been able to maintain parity with Auckland in at least some manufacturing sectors (notably motor vehicle assembly in the former and the rubber industry in the latter) and Wellington houses the nation's capital and many important commercial offices, most of the provincial centres, including

Dunedin, have been forced to concentrate on a few specialisms. In large part, these are based on local resources and primary products. They do not generate much further growth through backward and forward linkages, nor through the indirect mechanisms of the urban multiplier. Some consumer goods industries may be attracted to such centres, perhaps by available (female) labour or local enterprise; they may be able to market nationally, especially if their product is readily moved by air freight, but most are locally oriented in their production. Consequently, although only Wanganui of the country's urban areas is not at present experiencing absolute population decline, these provincial centres are not challenging, and undoubtedly never will challenge, Auckland's growing control over the country's economy.

This pattern of 'northern North Island centralization' partly countered by 'local specialism' has aroused considerable debate in the last decade over the need for regional development policies to protect local economies. The National Government (1960–1972) did not favour any interference with free market forces, although it was committed to full development of all resources in the national interest, and it was bolstered in these views by a report which it commissioned from an independent research unit (McDonald, 1970). A major plank in the platform of the Labour Party prior to their election in 1972 concerned regional policy. Measures have since been introduced to provide loans and subsidies for industries in defined areas, and if necessary to give freight rate concessions. These refer only to manufacturing industries, however. To date, most investment has been in Otago (basically, Dunedin), with a little in Wanganui, Southland, and on the West Coast of the South Island. Other areas in the North Island are likely to receive support, but these policies will undoubtedly provide little more than a holding operation and will not counter Auckland's expansion, let alone drain some of it off.

Other central government actions have assisted developments outside Auckland. In some cases, this has been in coperation with private interests, in which the government may hold stock. Several 'heavy' industry developments have been financed, such as the oil refinery and fertilizer works at Whangarei, the iron and steel industry at Waiuku, south of Auckland, the Kapuni gasfield near New Plymouth and the Maui field off the Taranaki coast, and the Tiwai Point aluminium smelter near Invercargill, based on hydro-electric-power from Fiordland. By far the largest of such developments concerns forest industries. The planting of large exotic forests of pine since the 1920's, much of it initially as unemployment relief work, has been the basis for a rapidly expanding suite of industries. New government-planned towns were established at Kawerau, Murupara, and Tokoroa in the central North Island to house these industries, while the regional 'capital' of Rotorua has grown rapidly (it is also a major tourist centre). The port of Tauranga's trade has increased enormously, and a new rail link between it and the forests is being tunnelled. As other forests mature, more industries will be established; presently there are plans for large plants at Napier and at Nelson.

Local governments are relatively weak in New Zealand, but some have been able to assist local economic viability, as with the automated, all-weather meat loaders provided by Harbour Boards at Timaru and Bluff (Invercargill). Major port developments are nationally determined and much controversy has followed the decision-making process on the number and location of container terminals for overseas services. Finally, the settlement pattern is government-influenced in a number of other small ways. Realizing the power potential of the country's rivers and lakes has led to a series of ephemeral towns; at present there is one at Twizel (population 1851) on the Upper

Waitaki scheme, and another at Turangi (5994) on Lake Taupo. The government is also decentralizing some of its own offices, such as some of its data-gathering units. Its computer centre was opened at Wanganui in 1973 and there are moves to have the administration of the proposed national superannuation fund located outside Wellington.

The growing recreation demands and mobility of population, local and international, are having some impact on the urban system. International tourism is one of the most rapidly expanding economic sectors, though in number of visitors still fairly small. Most tourists are attracted to the main scenic areas, notably the 'geyserlands' of Rotorua and the Southern Alps at Queenstown and The Hermitage, whereas some are attracted to fishing in the Bay of Islands/Bay of Plenty or to hunting in the South Island interior. Only a few places benefit markedly from the tourist influx, and most tourists stay but a few days in any one place. Australians are attracted in considerable numbers to the country's ski-fields.

New Zealanders as tourists within their own country are relatively independent of the 'industry'. Some use motels in which they do all their own cooking (or eat at local restaurants); many use the dense network, coastal and inland, of camp and caravan sites. About four per cent of all households own a holiday home (usually termed a bach). Most of these are coastal (ten per cent of households own boats); some are well-appointed; many are not too far from home. Thus around most of the larger cities, as well as in other scenic areas such as the Marlborough Sounds, there is a rush of beach settlements. In some cases, expansion of the metropoli and the inflation of property values there, has led to conversion of these homes into permanent residences.

URBANIZATION OF THE NATIONAL TERRITORY

New Zealand is a totally urbanized country. All of the land surface which could be occupied for commercial agriculture or silviculture has been taken within the urban-focused economy; indeed the farming frontier has been retreating slightly rather than advancing in recent years. Beyond this, in the most rugged hill country — including parts of the large National Parks — the deer introduced for sporting purposes are 'farmed' by modern methods, including the use of helicopters.

Peasant agriculture has never been significant as an aspect of New Zealand rural life since Europeans became the dominant rural inhabitants. Farming is treated similarly to manufacturing industry in the constant search for greater productivity, so although many of the country's 60,000 farmers live in a totally rural setting, their approach is that normally associated with urban functions. New Zealand farms are highly mechanized; their owners and managers display much initiative in developing their industry, a task in which they are greatly assisted by government agencies, by research institutes, and by agricultural colleges. The government itself acts as land-developer and farmer in several areas. As well as an 'industrial' approach, a corporate approach is now being introduced, replacing individually-owned or leased holdings by company farms.

Only in a few districts, notably the densely-settled dairy farming districts of the Waikato, Taranaki, and Manawatu, has there been much development of a system of rural service centres. In most areas, a very rudimentary network of basic functions emerged, of small settlements with a post office, perhaps a store, a railway station, and an agent for an agricultural company. But the local population was never sufficiently large to generate much development

of other functions, although a vigorous social life based on school and church was quite common. The farmers were generally prosperous, and were able to spend much of their money in the larger urban settlements.

In recent decades, what rural service centres had been established and survived have been hard hit by the growing mobility of the population. (New Zealand now averages one car to every three persons; in rural areas, virtually every household owns a vehicle). Farmers' wives are able to bypass the local shop; farmers buy and sell in the large urban markets; local railway sidings have closed and stock are roaded to the towns. In many areas, only a school, an infrequently-used church, and perhaps a couple of houses mark the remnants of a once-operating, if never thriving 'village'. Even in the more densely-settled areas such as Taranaki, small towns are declining as, benefiting from the wide areas of milk collection by tanker, the local creameries and dairies are closed, to be replaced by larger 'urban factories'. Occasional settlements, usually relatively remote from the larger towns, have survived and retained some functions patronized by the local residents, but the general impression of virtually any rural settlement in New Zealand is decay.

Integration of New Zealand's territory into a single space-economy has been achieved, therefore, without the establishment of a network of rural service centres, arranged in a hierarchical spatial structure. The generally low population densities, the more-than-adequate system of lightly-trafficked rural roads, and the easy accessibility of large towns — in most cases within an hour or two's drive — has restricted any marked outward movement of businesses from the coastal cities, the original contact points between farming frontier and colonial consumer. The urban system is one of marked regional primacy.

URBAN AND RURAL

The basic urban-rural interrelationship, as described above, is between the countryside and a large, usually coastal, urban area. Between the two, there may be small towns or rural settlements whose businesses link country and city and whose social facilities act as foci for urban life. Most of the urban areas are part of a regional system, focused on one of the four main centres and, as already pointed out, increasingly the nationally focused on Auckland, politically on Wellington. Within this three-tier system, for most individuals only the lowest level is relevant; many will not shop, even rarely, outside their local urban area, very few will go beyond their regional metropolis.

This urban system is comprised of discrete rather than overlapping market areas, a pattern which results more from the country's topography than the imposition of a system based on the Christallerian administrative principle. The quasi-hierarchical space-economy has not produced a hierarchical grouping of urban sizes, however, since the population of each provincial centre is strongly associated with the size, prosperity, and density of occupance of its hinterland — all of which vary widely over the face of the country. There is considerable 'sameness' in the employment structures of the towns, as the main function of each is to provide the servicing infrastructure for the rural hinterland.

Population density tends to decline away from the urban areas. In large part, this reflects the location-decisions of the first settlers, who planted their planned towns close to most of the country's best soils. Away from these, as the soils become lighter or the pastures rougher, the land can support fewer

people, and farms are larger. Furthermore, these areas were settled later, in many cases after introduction of the railway and the development of labour-extensive farming methods, factors which were not conducive to high rural densities. (Prior to farm settlement, many inland areas were held in large, leasehold sheep runs).

A basic aim of town planning legislation in New Zealand (the major act was passed in 1953) is the protection of good agricultural land, and the zoning policies of town and county councils and of regional planning authorities have been enacted to ensure success in this. Such methods as an urban fence, which delimits the area in which subdivision can occur, thus prevent any gradual replacement of urban by rural, as an adventitious population spreads into the farming area, creating urban sprawl with its attendant problems. Nevertheless, urban residents in some numbers have been moving into the countryside, buying eithers subdivided farms or small properties, which they may operate as 'part-time farmers'. To counter this, many peri-urban county councils have restricted subdivision of land zoned for rural uses to minimum areas of ten, twenty, fifty, one hundred and, in at least one case, five hundred acres.

The rural areas close to most of the towns, because they occupy fertile soils, are major sources of perishable foodstuffs for those local markets. Orchards and market-gardens are thus common just beyond the urban boundary, many of them doing a brisk weekend 'farmgate' trade to passing motorists as well as supplying the fruit and vegetable market. Outside some towns, notably Hastings and Gisborne, large-scale horticultural and orchard production provides for national and international markets, and for the large canneries in those centres. Dairy farms, providing milk for urban consumption, also are located in close proximity to most towns. Since 1944, the companies organizing milk distribution in urban areas have contracted farmers to them to provide a year-round supply: it is clearly to their benefit to have a cluster of suppliers close to the urban market, and such a pattern of town-milk supply enclaves occurs close to most urban areas.

Rural depopulation has been a New Zealand trend for several decades, though perhaps not as extensively as in some earlier-settled countries since a large pool of potential out-migrants was never created. Indeed, much of the country's urbanization or population concentration has resulted from internal natural growth and international immigration, rather than rural to urban movement. Nevertheless, farm families have traditionally been larger than those of urban residents, as rural populations lag behind their city neighbours in the adoption of lower fertility norms; and as the farms have not provided jobs for all of the offspring, and especially the girls, migration to the towns has been necessary, for jobs and education, for social life and spouses. The small towns, too, have been unable to provide employment for all their progeny, and there has been a marked drift of the young and the able to the towns, a drift which seems to lead inexorably to Auckland. Thus in the areas beyond the zone of daily produce marketing, depopulation is the norm.

One very significant rural to urban movement has developed since about 1945 with the rapid urbanization of the Maori. After the Maori Wars of the 1860's, the indigenous inhabitants retreated to the more remote areas of the North Island which were relatively unattractive for farming. There, it seemed, they were destined to eventually become extinct, but in the twentieth century they have experienced a massive demographic resurgence, with one of the world's highest birthrates. Pressure on their communally-held land built up,

and after the second World War they began to move out for work, to forests and other rural areas, to local towns, and to Auckland, which now houses some 50,000 declared Maori. Some areas of Northland and the East Cape have been literally decimated of their Maori inhabitants.

Long-distance commuting is not usual in New Zealand cities and towns. Around most urban areas, formerly separate settlements have been 'invaded' by urban workers seeking a rural environment, but this has not been a major trend. As Auckland has grown, many of these places have been engulfed within suburbia, but that urban area does not have a surrounding ring of large commuter settlements. Wellington does, because its very hilly and restricted site has severely limited suburban expansion. Satellites have developed both along the Hutt Valley and into the Wairarapa in one direction, and along the Horowhenua Coast in another. Both suburban railway services and motorways are necessary to bring the large number of daily commuters into the city.

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URBANIZATION IN PORTUGAL

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TOWNS IN A HIERARCHICAL SYSTEM

(a) It can hardly be said that towns in Portugal are integrated into a single hierarchical system. For the administrative function we may speak of a single hierarchical national system, which is certainly not the same for education and health services, for instance, nor for retailing. In terms of the administrative function, towns are integrated into a national system, but we must not look at very specific functions (court justice, for example) which may have (and do have in the case referred to) their specific hierarchical system.[1]

(b) We can speak of only two metropolitan city systems: Lisbon and Oporto, which are not organized in administrative terms. However, they operate as metropolitan systems for almost all other sorts of functions.

(c) Areas corresponding to regions 1 and 6 (see Fig. 1) are hardly affected by towns other than rudimentary service centres which are connected with the life of the agrarian countryside. To a smaller extent, the same happens with region 4 (even with regions 3 and 7).

We cannot yet make any objective judgement on how developed the urban hierarchy is in terms of contiguous and overlapping urban fields of lower order centres. Again, some research is being done. The preliminary (and certainly *not* definitive) results point to a very weak hierarchy in those areas which are hardly affected by towns (regions 1 and 6). Only for the littoral areas, especially regions 2 and 5 (also to a smaller extent 3 and 7) some evidence has already been found of a few overlapping fields. But we must insist on the provisional character of these results.

The following data must be approached with caution because, as we have mentioned, the necessary research has not yet been carried out. However, it is possible to state that location of heavy industries and of important units for producing consumer goods was to be found practically only in regions 2 and 5 (more precisely, in the metropolitan regions of Lisbon and Oporto) thus emphasizing the primacy of the Portuguese urban system. The improvement of communications and government administration have done nothing but accentuate this imbalance in the development of the urban centres. Mining industries have not played any important role. Agricultural change has increased migration to metropolitan areas (and abroad), not to small towns and rural centres. Tourism has affected region 7 in terms of 'deforming' the settlement pattern of Algarve; centres lower down in the hierarchy have either been amalgamated

[1] Unfortunately, we cannot present results of our own investigation in this field since we have found inconsistency in some of the available data.

Fig. 1. Homogeneous regions.

Fig. 2. Population density, 1970

with higher ones (if they were located near the coast) or their importance has waned (if they were inland centres).

Government social and economic policies have been unable to improve spatial organization. We need only refer to one specific government decision to create a new town (with a population of 100 thousand) based on the promotion of a growth pole: Sines. However, it was not based on any specific study of spatial organization. To a certain extent we may say that the location of the new town was decided without considering the possibilities of improving the organization of the hinterland.

As far as economic considerations are concerned we can hardly find any Portuguese city geared to a supra-national system or determined in its development by international relations. The primacy of Lisbon has sometimes been explained on the grounds of the existence of colonial territories with their relations with Portugal, which certainly partially explains the existing gap between Lisbon and the second largest city (Oporto); but we cannot say that its

position is largely dependent on a supra-national system. On the other hand, if we look at the Iberian Peninsula we could think of Lisbon as a centre of secondary rank, taking Madrid into account. However, the fact that they are separated by national boundaries prevents their being treated as if they belonged to the same system.

International relations, expressed by tourism, have changed the character of the spatial pattern of the centres in the southern part of the country. However, the economic life of the most important towns of Algarve is still greatly dependent on manufacture and services which would have to exist even if tourism were no longer important. But, of course, the same does not happen with some rather small and highly specialized tourist centres.

THE URBAN-RURAL CONTINUUM

Variations in the settlement structure are different according to how the centres are placed in the hierarchy. In general, flows have increased either in terms of people or in terms of goods both for sale and for distribution, as a result of increased purchasing power and of the amelioration of the transportation system. For less important centres periodic shopping and demand for basic services are the most important determinants of the increase in flows. More important centres (we should say centres of the first order) are characterized by significant increase in daily commuting (which declines sharply in importance when we consider centres of the second order) and have registered a great increase in the movements of goods from the country, especially foodstuffs.

As far as lower order centres are concerned, intensity of flows has been in the direction country-to-town and has been determined by demand for goods and services (supply of goods by the country has increased at a much lower rate). For higher order centres flows have increased in both directions: rural-urban (buying and selling, though distances for selling are increasing more than distances for buying) and urban-rural (especially for recreational and tourist reasons).

Flows between centres of different orders have also increased in both directions though these increases are based on different grounds. Flows from smaller to larger cities are more important: they are determined by the demand for goods and services. The opposite flow has also increased but is generally less important: generally speaking it is connected with recreational attractions.

Intensity of flows is connected with purchasing power, i.e., with the degree of regional economic development — which is closely connected with the importance of non-agricultural activities. A higher degree of economic development implies attraction, i.e., migration which leads to growth in population densities. It has not been possible to calculate the existing correlation, since disaggregate data concerning employment by industries are not available from the 1970 Census, yet. However, such a correlation is certainly very high: population density values and employment structure are closely connected with increasing movement. The following table shows the average percentage values for employment in agriculture (1960) and the average percentage increase in population (1950–60) for groups of *concelhos* (communes) classified according to density of population in 1960: [2]

[2] Standard deviation values are also presented in order to have an approximate idea of how representative the average values are. Calculations were made on a sampling basis.

Density of population (inh./km²)	Percentage of		Standard deviation	
	agricultural employment	population increase	agricultural employment	population increase
More than 200	22.2	121.65	14.68	20.93
100 to 200	60.4	99.96	13.50	4.76
50 to 100	68.2	97.71	12.16	5.49
less than 50	74.9	93.84	5.81	4.54

The following correlation matrix based on *distritos* data [3] may also be relevant to the analysis:

Var.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1)	1.00								
(2)	.72	1.00							
(3)	−.41	−.55	1.00						
(4)	.57	.73	−.88	1.00					
(5)	.97	.66	−.48	.63	1.00				
(6)	.98	.68	−.46	.62	1.00	1.00			
(7)	−.89	−.89	.38	−.66	−.86	−.87	1.00		
(8)	.63	.83	−.47	.77	.64	.65	−.87	1.00	
(9)	−.55	−.60	.56	−.61	−.65	−.62	.57	−.56	1.000

Variables (1), (2), ..., (9) refer to:

(1) total population, 1970,
(2) % change in total population (1960–70),
(3) 'aging' population index, 1970,[4]
(4) 'vitality' population index, 1970,[5]
(5) population density, 1960,
(6) population density, 1970,
(7) % employment in agriculture, 1960,
(8) % employment in manufacture, 1960,
(9) total area.

As high population density is closely connected with the degree of urbanization, the degree of urbanization is connected with flows of migrations. Figure 2 (showing population density gives a clear idea of significant zones representing different degrees of urbanization. We may point *first* to the Oporto and Lisbon agglomerations; *secondly* to Aveiro and Setúbal cities, in the homogeneous regions where Oporto and Lisbon are included, close, if not within, their metropolitan areas; *then* Coimbra, in the central part of the country and almost all the Algarve region in the extreme south.

In Portugal there is a clear progression from two metropolitan cities to a rural area where the population is predominantly engaged in farming. Population densities decrease progressively and the same happens to the rate of population growth. Rural areas in fact show depopulation as a result of emigration; on the contrary, in the urban agglomerations (especially in metropolitan areas) population has ben growing faster as a result of immigra-

[3] *Distritos* are not homogeneous regions.

[4] The quotient represents the proportion: $\frac{\text{people older than 60}}{\text{people less than 20}}$

[5] This is the so-called G. Veyret and Verner index.

Fig. 3. Population growth, 1960–1970

Fig. 4. Population attraction, 1960–1970

tion. However, this cannot be said of all the most urbanized areas, because in the late sixties there was also some emigration from almost all areas, even metropolitan areas. In general, zones of absolute decrease, zones of modest increase (up to 5% in ten years) where natural increase was not completely offset by migration, zones of medium increase (up to 20% in ten years) and zones of higher increase (see Fig. 3) may be distinguished. Population attraction, of course, shows the same pattern (see Fig. 4).

Employment structure is closely connected with the above pattern of distribution and growth of population (see the above correlation matrix). Areas of depopulation are those where agriculture is the basic activity. Population growth is limited to areas where non-agricultural activities are important.

Tertiary activities are highly relevant in the metropolitan area of Lisbon (more precisely, in Lisbon itself).

Long-term migrations for employment are generally restricted to Lisbon and Oporto. The supply of relatively non-perishable products is generally limited to flows from the metropolitan areas of Lisbon and Oporto to other regions. At present inter-city relations based on the marketing of both perishable and non-perishable products cannot be assessed. It is generally known that such relations are especially important in the case of Lisbon. As far as non-perishable goods are concerned it is a one-way flow from the metropolitan areas which dominate. Some perishable goods (food products, particularly) originate flows into the metropolitan areas, but these movements are not necessarily and not generally originated in urban areas. The supply of urban products and services which involve reciprocal exchange does not seem to be relevant. The same applies to daily commuting which is generally restricted to metropolitan areas.

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PROCESSES AND PATTERNS OF URBANIZATION IN THE REPUBLIC OF SOUTH AFRICA

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INTERURBAN DISPARITIES

The Republic of South Africa is the most industrialized country in Africa. It has the highest rate of urbanization and possesses the greatest, richest, and most western cities of the continent. These great South African cities, however, are primate centres of development which concentrate most of the urban population and most of the national wealth. They are separated from each other by vast sparsely populated areas hardly affected by towns other than rudimentary service centres that are connected with the life of the agrarian countryside, or with dispersed mining or recreational activities. In addition, most smaller towns in the country are not integrated into discrete metropolitan city systems but are 'peripheral' to the great nodes of urban agglomeration. Green and Fair have pointed out that development in Africa as a whole has taken place and will continue to take place within a framework of social and economic 'islands' and their immediately surrounding tributary areas (Green and Fair, 1962, p. 10). The same is true for South Africa and will be for some time in spite of the country's relatively high degree of development and rate of urbanization.

The urbanized portion of South Africa's population increased from 23.8 per cent or 1.2 million persons in 1904 to an impressive 47.9 per cent or 10.2 million persons in 1970. However, 75.6 per cent of these urban residents or 7.7 million persons are concentrated in four great nodes and their immediately surrounding zones. By far the largest of these having the highest degree of primacy is the Southern Transvaal—Northern Orange Freestate complex with the Johannesburg-Witwatersrand conurbation as its core. It contains the 'metropolitan' regions of greater Johannesburg, Pretoria, Vereeniging, Germiston, Vanderbylpark, and Sasolburg, together with the smaller centres of the East Rand and West Rand.* The three other primate centres are greater Durban-Pietermaritzburg, greater Capetown, and Port Elizabeth-Uitenhage (Fig. 1).

* Officially, there are no metropolitan statistical areas recognized and defined in South Africa. The term 'metropolitan' is used in the literature and in common language mainly to describe a larger sprawling urban area. As a rule, South African cities are defined by their municipal boundaries. As an urban region grows, new subdivisions and suburban developments are annexed for planning and administrative purposes. In some cases additional undeveloped land is being annexed to allow for future growth. These 'greater' urban regions are usually defined by magisterial boundaries. As a result, built-up areas are seldom underbounded in that they usually do not extend beyond administrative areas. In most cases, administrative areas in particular magisterial areas remain in keeping with urban growth as new annexations occur. In some cases administrative areas overbound urban agglomerations to some degree as to allow for future expansion in particular directions.

The four major urban agglomerations of South Africa have steadily increased their share of the nation's population, as recorded by Fair (1965, p. 63-64), from 15.2 per cent in 1911 to 31.0 per cent in 1960 and 32.5 per cent in 1970. The Southern Transvaal—Northern Orange Freestate complex increased its share of the national population from 8.8 per cent in 1911 to 13.2 per cent in 1936, 17.8 per cent in 1960 and 18.5 per cent in 1970 (approximately 4 million inhabitants). The greater Durban-Pietermaritzburg area increased its share of the national population from 1.5 per cent in 1911 to 2.8 per cent in 1936, 4.3 per cent in 1960, and 5.6 per cent in 1970 (1.2 million inhabitants). The figures for greater Capetown are 2.7 per cent for 1911, 3.9 per cent for 1936, 5 per cent for 1960 and 5.2 per cent for 1970 (1.1 million inhabitants). The share of Port Elizabeth—Uitenhage of the national population increased from 1.0 per cent in 1911, to 1.8 per cent in 1936, 2.5 per cent in 1960, and remained 2.5 per cent in 1970 (500,000 inhabitants). (Figures for 1911, 1936, 1960 adopted from Fair, 1965, p. 64).

There are four other 'metropolitan' areas in the Republic which are relatively small and are located in isolated corners of the country with no spatial

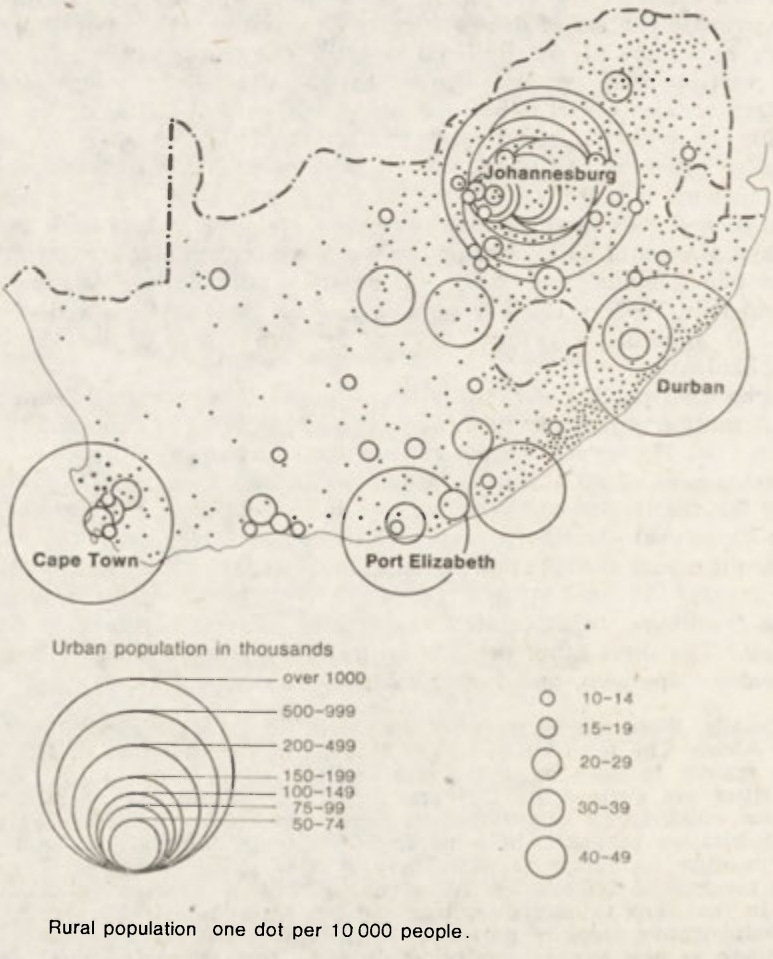

Fig. 1. Distribution of the urban and rural population in the Republic of South Africa
Source: Holzner, 1970, p. 80

or functional overlapping of their own respective spheres of influence and with no spatial contact with the above mentioned four primate nodes. These four smaller 'metropolitan' areas are: Klerksdorp, Kimberley, Bloemfontein, and East London.

Another method to measure regional trends used by Fair (1965) employs the 'shift' technique and records the relative size of the gains or losses in population per region against the national rate of growth (Fig. 2).

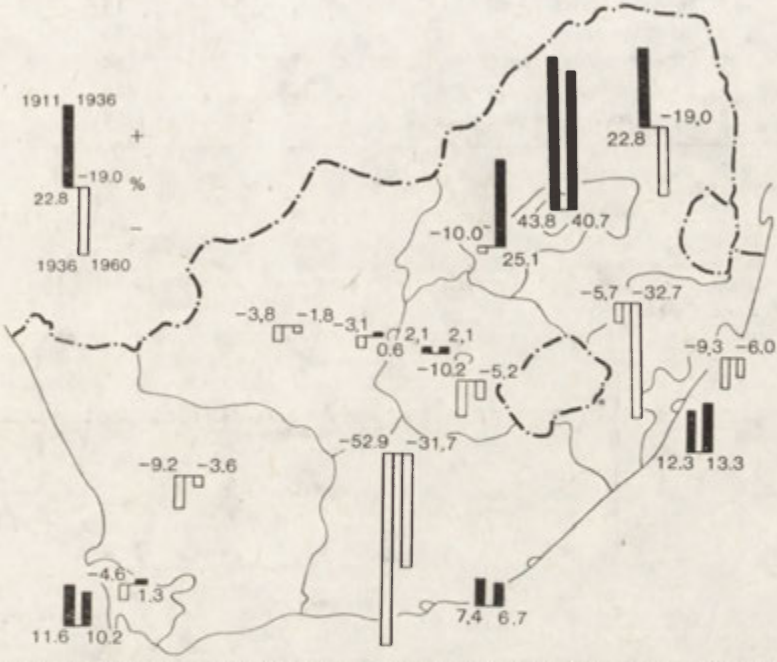

Fig. 2. Percentage distribution of net shifts in population, 1911–1960
Source: Fair, 1965, p. 66

During the period 1911–1936 seven major and minor nodes accounted for 77.2 of all the extra growth of population in the country. Between 1936 and 1960 the same nodes accounted for another 73.6 per cent of the upward shifts. The primate centres of the Southern Transvaal—Northern Orange Freestate, greater Durban, greater Capetown, and Port Elizabeth—Uitenhage had the bulk of this growth. Most of the remaining regions of South Africa showed a downward trend since their rate of increase was consistently lower than that for the nation.

Underlining the phenomenon of interurban disparity in the Republic of South Africa is the observation that the country's system of central places possesses too few small order service centres when compared with W. Christaller's $K = 3$ market principle (Table 1 and Fig. 3).

While orders 1 to 6 (primate metropolitan area, major metropolitan areas, metropolitan areas, major country towns, country towns, and minor country towns) correspond fairly well with Christaller's model $K = 3$ (market principle), significant discrepancies are evident in orders 7 and 8. Order 7 (local service centres) and order 8 (low order service centres) contain significantly fewer settlements than should be expected, although all non-agricultural settlements of

TABLE 1. Comparison of the number of South African urban places with W. Christaller's $K = 3$ hierarchy

Order	South Africa	$K = 3$
1. Primate metropolitan area	1	1
2. Major metropolitan areas	2	2
3. Metropolitan areas	6	6
4. Major country towns	19	18
5. Country towns	68	54
6. Minor country towns	174	162
7. Local service centres	128	486
8. Low order service centres	203	1358

Source: Davies, 1967, p. 13 and 17.

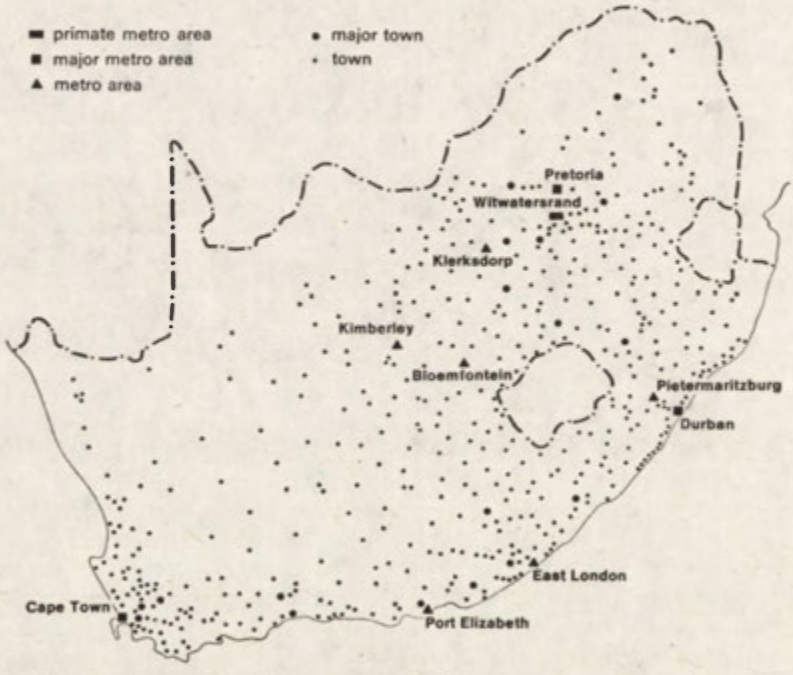

Fig. 3. The spatial pattern of South Africa urban hierarchy, 1966
Source: Davies and Cook, 1968, pp. 118–119

more than 100 inhabitants were included in the study here quoted (Davies, 1967). Only when orders 7 and 8 are combined does the index hierarchy correspond more satisfactorily with the model as suggested by Davies and Cook (1968). However, this statistical manipulation does not change the reality of the South African settlement pattern which Davies describes accurately in his 1967 study:

"With its less intensive settlement and rural development pattern, South Africa has never produced or required the dense network of villages and hamlets which characterize Europe. A pattern of fewer and more widely spaced

central places is more common and the relatively small number of lower order places is not unexpected in reality." (Davies, 1967, p. 18).

The primacy nature of the hierarchy of central places in South Africa becomes even more evident when the size categories of towns in the Christaller model and in the actual South African network of towns are compared. In orders 1 to 3, the average population size of cities is almost twice that of the equivalent cities in the model (Table 2).

TABLE 2. Comparison of the size of South African urban places with W. Christaller's $K = 3$ hierarchy

Order	South Africa	$K = 3$
1. Primate metropolitan area	2,180,914	1,000,000
2. Major metropolitan areas	754,352	300,000
3. Metropolitan areas	197,040	100,000
4. Major country owns	30,136	30,000
5. Country towns	11,131	9,000
6. Minor country towns	3,538	3,500
7. Local service centres	1,364	1,500
8. Low order service centres	1,047	800

Source: Davies, 1967, p. 18.

INTERREGIONAL DISPARITIES

The interurban disparity of South Africa is accompanied by an equally significant interregional disparity. With only 8 per cent of the area and approximately 6 per cent of the inhabitants of the continent, South Africa produces over 50 per cent of the steel and more than 50 per cent of the energy produced in all of Africa. The Republic possesses the highest per capita Gross Domestic Product in Africa with 593 Rand (835 US dollars in 1969). However, it must be emphasized that most of the industrial development and wealth of South Africa is concentrated in the few large urban agglomerations or primate urban nodes. Not unlike most other newly developing countries, South Africa possesses only a few islands of industrial development, however wealthy and successful, whereas the rest of the country is largely agrarian. Most rural areas are underdeveloped, frequently to the degree of stark poverty especially in the so-called Bantu national homelands, the reservations for African natives.

This disparity between 'core' and 'periphery' is illustrated in Fig. 4 (Fair, 1965, p. 62) which shows the significant spatial differences in the contribution to the Gross Domestic Product measured in thousands of Rand per square mile in 1960.

The primate urban nodes, especially the Southern Transvaal—Northern Orange Freestate region, Durban—Pietermaritzburg, Capetown, and Port Elizabeth—Uitenhage appear as islands of very high values and are surrounded and separated from each other by zones of rapidly decreasing values ranging from a contribution to the Gross Domestic Production of 100,000 to 1 million Rand per square mile in the so-called Inner Zones which are immediately surrounding the primate nodes, to a contribution of only 0–1000 Rand per square mile in the 'Outer Peripheries'.

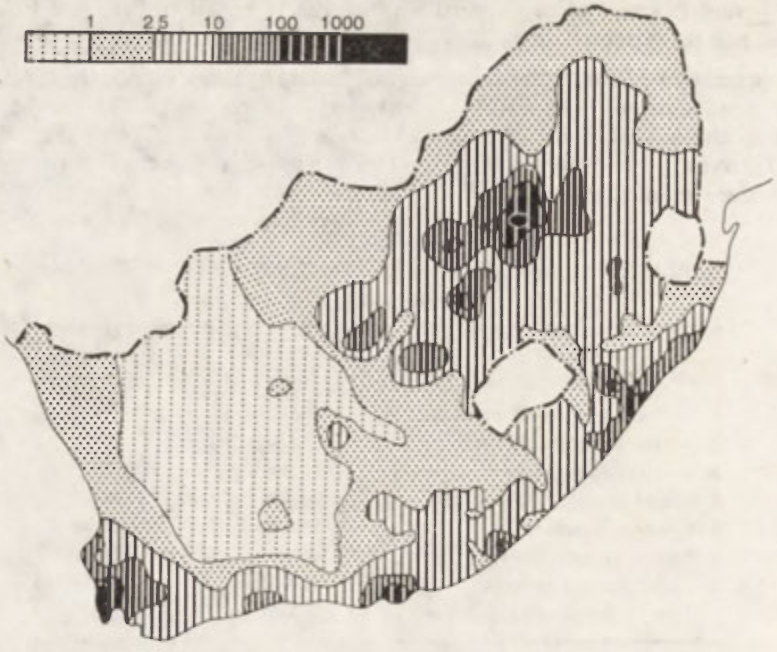

Fig. 4. Gross Domestic Product per sq. mile, 1960
Source: Fair, 1965, p. 62, Fig. 1

The great South African industrialized cities are in reality still 'parasitic' post-colonial foreign bodies in a largely exploited land. This situation, inherited from the colonial days and not much altered in the still white-dominated country, is illustrated by the fact that in 1970 the four primate nodes, together with their immediately surrouding tributary areas, contributed approximately 75 per cent but consumed an estimated 80–85 per cent of the Gross Domestic Product of the country. Much of the agrarian and mineral raw material production of the 'periphery' is processed in the primate nodes and either consumed there or exported to overseas markets to pay for the high standard of living of the white portion of the urban population. The periphery is further needed to provide vast armies of migratory labourers, mainly from the native Bantu reservations, without whom the prospering economy of the South African urban centres cannot be maintained.

The disparity between the urban core areas and the 'periphery' is additionally illustrated by the fact that the South African economy as a whole has retained certain post-colonial characteristics of a newly developing society. The majority of exported goods are agricultural raw and semi-finished products (46 per cent of all exports in 1969) and other raw materials, mainly minerals (24 per cent of all exports in 1969) without gold, while most of the imported goods are manufactured products, machinery, and transportation equipment (64 per cent of all imports in 1969) as well as pharmaceutical and luxury items, which are consumed largely in the primate nodes of the country. The trade balance has been negative over the last twenty years and has been balanced through the sale of gold (gold sales are not included in the official import-export publications of the South African Government) (Table 3). Thus it appears that, paradoxically, the most important 'basic' or 'city-forming' activities in the South

TABLE 3. Foreign trade of the Republic of South Africa, 1967–68 (millions rand)

Products	Imports		Exports	
	1967	1968	1967	1968
Food and live animals	89.2	70.5	323.6	370.8
Beverages and tobacco	15.8	14.8	11.7	13.4
Crude inedible materials except fuels	131.5	115.8	335.1	337.0
Mineral fuels, lubricants and related materials	112.2	122.9	61.3	78.0
Animal and vegetable oils and fats	8.8	9.4	6.0	7.6
Chemicals	156.7	157.9	46.1	52.2
Manufactured goods classified chiefly by materials	406.2	381.4	423.6	517.9
Machinery and transport equipment	803.7	825.5	75.3	91.0
Miscellaneous manufactured articles	141.5	158.2	19.6	17.0
Commodities and transactions not classified according to kind	48.3	24.1	59.6	15.2
Total	1,913.9	1,880.5	1,361.9	1,500.1

Source: *Die Standard Bank Review*, March 1969, Fiftieth Anniversary Issue, p. 43

African urban economy are mining and agriculture since it is these sectors of the national economy which bring most of the 'new money' into the country's major cities through which they can maintain their prosperous development. Equally paradoxically, most of the secondary and tertiary (urban) sectors of economy such as manufacturing, trade, transportation, financing, and other services must be considered 'non-basic' or 'city serving' since they largely serve the cities' own populations and bring little new money into the urban economic budgets. The dependency of the primate urban nodes on foreign trade most notably through the sale of agricultural and mineral products of the peripheral regions is a critical factor in the assessment of future developments of the South African urban processes. There is a potential decline in the gold mining industry since it has probably reached its peak. Also the production in the agricultural sector is limited by climate and topography. The average annual rainfall for the country is only 18 inches with large areas below this average. 74 per cent of the entire country are used as meadows and pastureland which are mostly too dry or too rugged as to allow anything more than extensive grazing. Only 9.9 per cent of the country are used for agriculture under permanent cultivation, some of it for native subsistence production only. 12.7 per cent are wasteland, built-on, unused but potentially productive, and other. Another factor is the ever-increasing population pressure in the native Bantu reservations which might some day force a reorientation of the flow of agricultural products away from the export markets to these underdeveloped regions to prevent massive starvation.

SOME CAUSES OF THE INTERURBAN AND INTERREGIONAL DISPARITIES

The reasons for the described interurban and interregional disparities in South Africa are numerous. They reflect the typical 'African' history, the climatic and general geographic situation, and the economic level of development of the country. Historically, South Africa has experienced what some writers

have termed an 'externally induced development' (Export-base Theory) as opposed to an 'internally induced development' (Sector Theory) which predominated initially in Europe (North, 1955; Tiebout, 1956; Perloff, *et al.*, 1960; Richardson, 1969; Hilhorst, 1971).

"Export-base theory explains the development of a region through external demand for its natural resources... As a response to this outside demand, export activities... will emerge. In early stages of a region's development these will tend to be producers of agricultural or mineral staple goods... In an underdeveloped region, penetration lines from outside are first established to facilitate the export of products out of the region and the movement of labor and capital equipment into the region ... Cities will form in the natural resource areas... and at trans-shipment points (usually between land and water)". (Stohr, 1974, p. 11)

The historical patterns of urbanization in South Africa conform very well to this theory of 'externally induced development'. Most cities in the interior were founded and/or developed only after the discovery of diamonds in 1861 at the site that was to become the mining town of Kimberley, and the discovery of gold in 1886 at the 'Witwatersrand' where Johannesburg and several other mining towns sprung up. Before that time there was very little urbanization in South Africa. In fact, there existed only 18 urban settlements with more than 1000 inhabitants in the total area of what is today the Republic of South Africa. Several of these towns were lined up along the coast and served as transshipment points and colonial strongholds for European powers in their endeavor of build and strengthen their African and Asian empires. The more important of these harbor towns were Capetown (founded 1652 by the Netherlands East India Company, under final British rule since 1806), Durban (1835), and Port Elizabeth (1820). Of the larger towns in the interior mention should be made of Bloemfontein (181,000 inhabitants in 1970) which was founded in 1846 as a fort and became the capital of the Boer Republic of the Orange Free State in 1854, and Pretoria (562,000 inhabitants in 1970) which was founded in 1855 and became the capital of the Boer Republic of Transvaal in 1860.

After the discovery of mineral deposits in the interior, mining towns developed rapidly and the harbour towns grew on account of the increasing import and export activities of the country. Land traffic between the harbour towns and the mining centres in the interior necessitated the foundation of a number of additional small urban centres along the main routes. These towns served mainly as transportation centres and as military and administrative bases. However, until 1936 "virtually the sole areas where new economic expansion and population growth was taking place on a substantial scale were the hard-core urban nodes" (Fair, 1965, p. 69) of the mining areas and along the coast. Thus did the 'externally induced' development of South Africa determine the location and subsequent growth of the few large urban agglomerations of the country. Under normal circumstances, no large cities would have developed in such locations, most notably at the Witwatersrand. The distances between the great cities of the interior and the coastal cities are very great. The connecting transportation routes lead through thinly populated agrarian areas, native Bantu reservations, or wasteland (Karroo). Also, in many cases the climatic conditions did not lend themselves to a more natural development of great cities based on a rich agricultural and urban-commercial settlement system.

Underlining the 'externally induced' growth of a few select harbour and mining towns is the observation that, originally, such growth was not accompanied by a substantial rural-urban migration of the indigenous white and black rural population. The Boers or Afrikaanders, descendants of the early

Dutch, Low German, and Hugenot settlers were strongly opposed to modern urban life which they considered sinful and detrimental to their inherited traditional ways of life. Also, the Bantu population hesitated for some time to exchange for good their rural life with that of the cities and most black mining workers came only as migratory labourers to this alien urban environment. Thus, as late as 1904–07, 54,000 Chinese coolies had to be imported to fill the ranks of the permanent mining workers especially in the Transvaal gold-mining towns of Johannesburg, Springs, and Benoni. It was mainly the English-speaking people of Southern Africa and immigrants from Britain who preferred to live in cities. In addition, numerous foreign Europeans were attracted by the prospects of the new mining industry. Thus, the British and other 'foreigners' or 'uitlanders' (outlandish people or immigrants) were the city-dwellers in South Africa while the Afrikaander and Bantu populations remained largely rural.

The first areal urbanization of the indigenous rural population started after 1902. This first large-scale rural-urban migration, however, was not caused so much by a positive attraction or 'pull' by the cities and their mining industry but on account of the vast devastations of the land, the farmsteads, and the herds during the Boer War, overpopulation in the native lands, cattle epidemics and long droughts. Also, the borders in the South African subcontinent had finally been drawn and native reservations laid out by the British so that the uncontrolled expansion of the Boer 'Trekkers' had finally come to a halt. As a result, numerous poor Afrikaanders as well as starving Bantu appeared in the cities because they had no other choice nor refuge. During the twenties and thirties, more rural Boers and Bantu flocked to the unprepared cities. Reasons for this additional 'push' from the land were the final breakdown of the old-fashioned exploitative economy of the white and the tribal subsistence economy of the black peasants, devastating cattle and sheep epidemics, a series of drought years, and the effects of the world economic crisis. In order to cope with this new urban proletariat, the largely uni-functional structure of the receiving cities had to be altered. With governmental help, legislation, and planning, aided by the demands created later by World War II, manufacturing industries were started on a larger scale which in turn attracted more rural people both black and white. Thus was strengthened the 'agglomeration economy' of the leading urban nodes which further led to "the piling up of more agglomeration upon existing agglomeration" (Perloff, 1963, p. 26).

A final reason for the interregional and interurban disparities in South Africa might be the country's level of economic development. Williamson maintains that interregional disparities are low in countries with primitive subsistence type economies with a low per capita income; that they are highest in developing countries with a middle per capita income and decline again in countries of higher per capita incomes (Williamson, 1965, pp. 14–15; also Stohr, 1974, p. 8). As for the interurban disparities, Berry and Horton and other authors (Berry and Horton, 1970, p. 73) assume that countries tend to reflect a change from "(1) a number of small towns scarcely interrelated and little differentiated from each other ... to (2) a primate city-size distribution to (3) a log-normal city-size distribution in a comparatively well-integrated national system..." (Stohr, 1974, p. 10). These assumptions seem to be born out in South Africa since this country occupies, on the international scale, a medium per capita income level and a place among the more successfully developing nations of the world which would explain the relatively high interregional and interurban disparities observed.

CURRENT DEVELOPMENT AND FUTURE PROSPECTS

The question remains whether South Africa will experience 'spread effects' or a major 'trickling down' of urban and industrial development from the few nodal centres to the periphery or whether 'backwash' or 'polarization' will continue to concentrate most growth at the few urban nodes "to the disadvantage of the peripheral areas" (Fair, 1965, p. 60). Recent trends seem to indicate that the present interurban and interregional disparities of the country may not be overcome in the near or more distant future as long as the current governmental policies of the ruling white minority to maintain and enhance 'apartheid' or 'separate development' of the races will continue to be operated uninhibitedly. These policies stifle further Bantu urbanization and reduce the status of the Bantu living in the 'white' cities to that of migratory labourers. In addition, 'apartheid' policies, intentionally or not, help maintain or even increase the economic gap between the prospering urban nuclei and the hardly growing or even declining peripheral areas through maintaining and enhancing the traditional 'dual economy' which Fair cites as the major reason for the observed interurban and interregional disparities in South Africa:

"A small white population leads the development of the modern economy with all its opportunities for productive work and is mainly urban oriented, while a large unskilled Bantu population of low earning capacity, many of whom still practice a subsistence economy, characterize much of the countryside". (Fair, 1965, p. 68).

It appears most unlikely that, without very substantial changes of the political structure of the country, a large-scale spilling over of urbanization and industrialization will get under way, 'trickling down' such development from the 'white man's reserves', the South African cities, into the peripheral areas, most notably the Bantustans.

The great South African cities have been industrializing rather late. During the 1920's, the largely unifunctional mining and harbour towns were totally unprepared to accomodate, to feed, and to employ within their existing economic complex, he numerous white, mostly Afrikaanders and non-white, mostly Bantu rural migrants who sought refuge and rescue from starvation. Up to forty per cent of all urban whites were living below the 'bread-line'. A comparable figure for the urban blacks, coloureds, and Asians does not exist. Many of the new white urbanites lacked education and skills that could be utilized in the cities. In addition, their traditional feeling of supremacy over non-whites made it difficult to charge them with menial tasks such as working in the mines, since this was considered below the white man's dignity. Also, many Bantu had been working in the mines before and had acquired considerable skills thus posing the 'threat' of white unskilled workers having to obey orders from non-white foremen. As a consequence, deliberate legislation and governmental financial assistance helped to establish a broader economic (manufacturing) base in the cities, mainly to create new jobs for the white urban 'proletariat'. A Coalition Pact Government was formed in 1924 which was born out of the crisis conditions and labour unrest of times. A department of labour was established whose primary function was the reservation for whites of trades and occupations on the national railway system, in the construction industry, and most significantly, in the newly developing manufacturing industries. The legislation further distinguished between higher wages for 'civilized' and lower wages for 'uncivilized' labour, denying all non-whites the former status and substituting these terms for 'skilled' and 'unskilled' labour of earlier times.

Bantu were also denied the right to reside permanently in the cities and urban life was considered a privilege of the white minority. As early as 1921, the so-called Stallard Commission stated:

The African "should only be allowed to enter the urban areas which are essentially the White man's creation, when he is willing to minister to the needs of the White man and to depart therefrom as soon as he ceases to minister" [Transvaal Local Government Commission 1921, Report TPI, (1922, p. 23)].

The former Prime Minister H. F. Verwoerd in his capacity as Minister for Native Affairs declared in 1961:

"Our attitude is that when the Native is employed in the White area i.e. urban area — even if he has been here for one or two generations — then he is here in the service of the white man whose territory it is... They cannot have permanent rights in Johannesburg, or Capetown, or in any other white city. They are there as long as they are employed there, and as long as the White man continues to accept them there". (Source: Clack, 1962, p. 254).

These convictions were basic to the concerted legislation during the post World War II period which was to stem and control the influx of Bantu rural-urban migrants and which, most recently, has succeeded in a decline of the proportion of the Bantu population urbanized from 35 per cent in 1968 to 33.1 per cent in 1970 (Table 4).

TABLE 4. Development of the urban and rural Bantu population in South Africa

Year	Urban (millions)	Urban (%)	Rural (millions)	Rural (%)	Total (millions)
1904	.361	11	3.129	89	3.490
1911	.524	13	3.495	87	4.014
1921	.658	14	4.039	86	4.697
1936	1.252	19	5.344	81	6.546
1946	1.902	24	5.928	76	7.831
1951	2.381	27	6.169	73	8.560
1960	3.471	32	7.457	68	10.938
1968	4.434	35	8.607	65	13.042
1970	4.984	33.1	10.073	66.9	15.057

Source: *Statistical Yearbook 1965*. Statistical News Release: Bureau of Statistics, Pretoria, Republic of South Africa 10/2/1969 and Census Statistics 1970.

The halting of Bantu urbanization was achieved through the measures of the 'influx control' legislation which rigorously denied any more rural Bantu access to the cities and gave authorities the power to force thousands of former urban Bantu to return to their native homelands or Bantustans. With very little urban development in the homelands, most of the remaining 4.9 million urban Bantu of South Africa (1970) live in the 'white' cities. Here, their residential status is that of migratory labourers with permanent residence rights in one of the rural native reservations.

The phenomenon of urban migratory labour is common to many African states and is due, in part, to the peculiar system of land tenure obtaining

throughout most of the continent. Basic to the system is its communal nature in which the division of property and land is held in trust by the tribal authorities, and is primarily the prerogative of elected chiefs and heads of kinship groups. An individual's rights to land in the tribal area are established by occupance and can be relinquished by continuous absence. While in many African countries this system is gradually being abolished, the South African government, against the expressed recommendation of the so-called Tomlinson Commission (South Africa, Republic of, 1955) has preserved it in order to maintain the temporary status of the urban Bantu and to force them to retain direct links with their homelands (Holzner, 1970, pp. 88-89 and 1971, pp. 221-222). The simple fact, as Elkan explains it, is that,

"if the future income of the farm, however small, cannot be capitalized, the farm must exercise a strong pull. So long as a man cannot obtain compensation for vacating his land and, on the other hand, cannot normally maintain his right to it unless he or his family are in actual occupation, he has no inducement to vacate it and he is therefore bound to regard employment as in some sense temporary". (Elkan, 1959, p. 195).

Further measures which are at least indirectly responsible to help maintaining the migratory labour status of urban Bantu are the wage control laws which keep wages for non-whites in the cities so low as to prevent the vast majority of urban Africans from becoming divorced from the rural subsistence economy maintained by their families in the reserves. In 1969, for example, the average monthly wage for whites was 115.65 Rand (133 US dollars) while that of Bantu was only 8.70 Rand (10 US dollars).

The forced return of thousands of Bantu, both from white rural areas, and from the cities, plus the great natural increase of the Bantu population as a whole, has swelled the population of the rural Bantustans from approximately 3 million persons in 1936 to 7.1 million persons in 1970, which amounts to one third of the total national population. With the tribal communal land system being preserved, no major land reforms are possible except resettlement schemes which force Bantu peasants to abandon their traditional small 'family' villages and settle in larger communal villages. Also, the South African Government prohibits white South African as well as any foreign entrepreneurs to invest in the native reservations except when investments are on a non-profit basis. These measures appear to have been caused by the fear that industries in the Bantustans could profit from the abundant cheap labour and create a severe competition for the industries in the 'white' cities.

New urban development in the reservations takes place in the form of strictly residential work-camp towns along some parts of the reservations' borders across which, on white territory, so-called border industries were founded. Most of these approximately 1,500 manufacturing establishments (1970) which are owned and controlled by whites, are located near the large white cities such as Pretoria, Durban, Pietermaritzburg, Port Elizabeth, and East London (Holzner, 1971, p. 222 and Best, 1971). They employ a total of approximately 180,000 Bantu. This does not relieve the mounting pressure of unemployment in the reservations where approximately 50,000 male Bantu are coming of working age every year.

These and other measures maintain the gap between the urban 'civilized' white and the rural 'primitive' Bantu economies. They were more or less born out of the fear of the white minority of being increasingly outnumbered in the cities, the very heartland of white 'supremacy', because even here, in the

so-called 'white man's reserves', he finds himself hopelessly in the minority (Table 5).

Of the 10.2 million South Africans living in cities, whites number only 3.2 million persons or 31.7 per cent. It is important to remember that this constitutes already the vast majority of the entire white South African population, namely 86.9 per cent. It is unrealistic to speculate that substantial numbers of new urban whites could come from the rural areas since most of the remaining 491,424 rural whites of the country (1970) are unlikely to abandon their farms and move to the cities in view of the important role of white agriculture in the national economy. The white minority in the cities is enjoying one of the highest standards of living in the world with the non-white majority, above all the Bantu, 'ministering to their needs'. Indeed, without the non-white labourers in the cities, not only the standard of living of the whites but the future growth, even the maintenance of present levels of the urban economic complex, appear in jeopardy. Already a shortage of labour is apparent and has been increased though the politically induced forced return of many Bantu to the rural areas. White net immigration of approximately 23,000 persons

TABLE 5. Racial composition of the South African urban population (1970)

	Urbanized population by race	Per cent urbanized population by race	Per cent of total South African urban population
Bantu	4,984,126	33.1	48.6
Whites	3,259,904	86.9	31.7
Coloureds	1,493,655	74.0	14.5
Asians	539,158	86.9	5.2
All Races	10,276,843	47.9	100.0

Source: 1970 Census.

a year is not sufficient to offset these losses or to allow further growth of the urban economy. The future expansion of markets for urban industrial products and services is also severely limited because the only highly sophisticated market in the country, that of the white urban population, appears saturated and the numbers of rural whites too small. Both the 2.9 million Bantu living in the 'white' rural areas and the 7.1 million rural Bantu living in the Bantustans are too poor as to constitute a significant market for such production or services. Thus the only possible expansion of the urban-industrial complex could be achieved through increasing export oriented production. Although some steps in this direction have been made, it appears to be a very difficult course since the basic structure of the South African urban economy, most notably in the manufacturing sector, would have to be altered. With the original goal to create and later maintain a high standard of living for the white residents of the urban 'islands' of development, the South African urban industries are oriented mainly to satisfy the local urban market. The great distances between the large cities stifle any large-scale exchange of industrial products. In addition, discrimination in the railway tarriffs favour the transport of raw materials to the places of consumption over the transport of finished products. As a result each of the great cities was led

to develop a kind of economic self-sufficiency especially in the manufacturing sector. Industrial specialization of individual cities, the 'division of labour' in the national urban-industrial system, could not develop in South Africa (see Holzner, 1972). As a result, the nature and composition of industries in the leading cities resemble each other to a remarkable degree (Fig. 5).

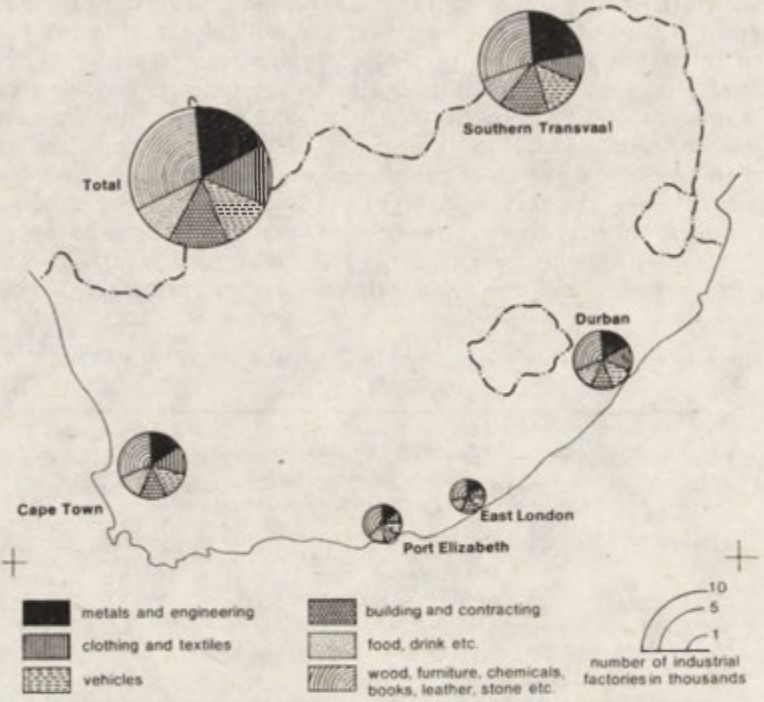

Fig. 5. Character and distribution of manufacturing industries in South Africa
Source: Niddrie, 1968, map 11

All these limitations for a possible decentralization of urban and industrial activities in South Africa have caused the concentration of the manufacturing industry in the major urban centres to increase steadily rather than diminish. In 1915/16 47 per cent of all manufacturing firms of the Republic were still located in other than the four major urban centres. In 1968/69 this figure was only 30 per cent while 70 per cent of the nation's industrial establishments were concentrated in the four major urban areas (Table 6).

In 1968/69 approximately 8,500 industrial firms or 42.5 per cent of the nation's total are located in the Southern Transvaal Northern Orange Freestate complex (22 per cent in 1915/16), 2,000 firms or 10 per cent in greater Durban (7 per cent in 1915/16), 2,500 firms or 12.5 per cent in Greater Capetown (20 per cent in 1915/16) and 1,000 firms or 5 per cent in Port Elizabeth — Uitenhage (4 per cent in 1915/16).

In conclusion, it should be repeated that South Africa shows an abrupt progression from a few great nodes of urbanization and modern-industrial development to vast areas of predominantly agricultural land use which, in the case of the 'white' rural areas, are served by a number of smaller and a few larger central places, while in the case of the Bantu regions, the num-

TABLE 6. Distribution of manufacturing industries, Republic of South Africa, 1915–1969

	1915/16		1935/36		1954/55		1958/69	
	No. of industrial firms	% of firms	No. of industrial firms	% of firms	No. of industrial firms	% of firms	No. of industrial firms	% of firms
Greater Capetown	816	20	1,471	16	1,868	11	2,500	12.5
Port Elizabeth—Uitenhage	139	4	266	3	663	4	1,000	5
Durban—Pinetown — Pietermaritzburg	282	7	727	8	1,322	8	2,000	10
South Transvaal (Greater Witwatersrand)	862	22	2,806	30	6,204	38	8,500	42.5
Rest of Republic	1,899	47	4,019	43	6,491	39	6,000	30
Total	3,998	100	9,289	100	16,548	100	20,000	100

Source: Moolman (1955); figures for 1968/69 estimates, Information Service, South Africa, Pretoria.

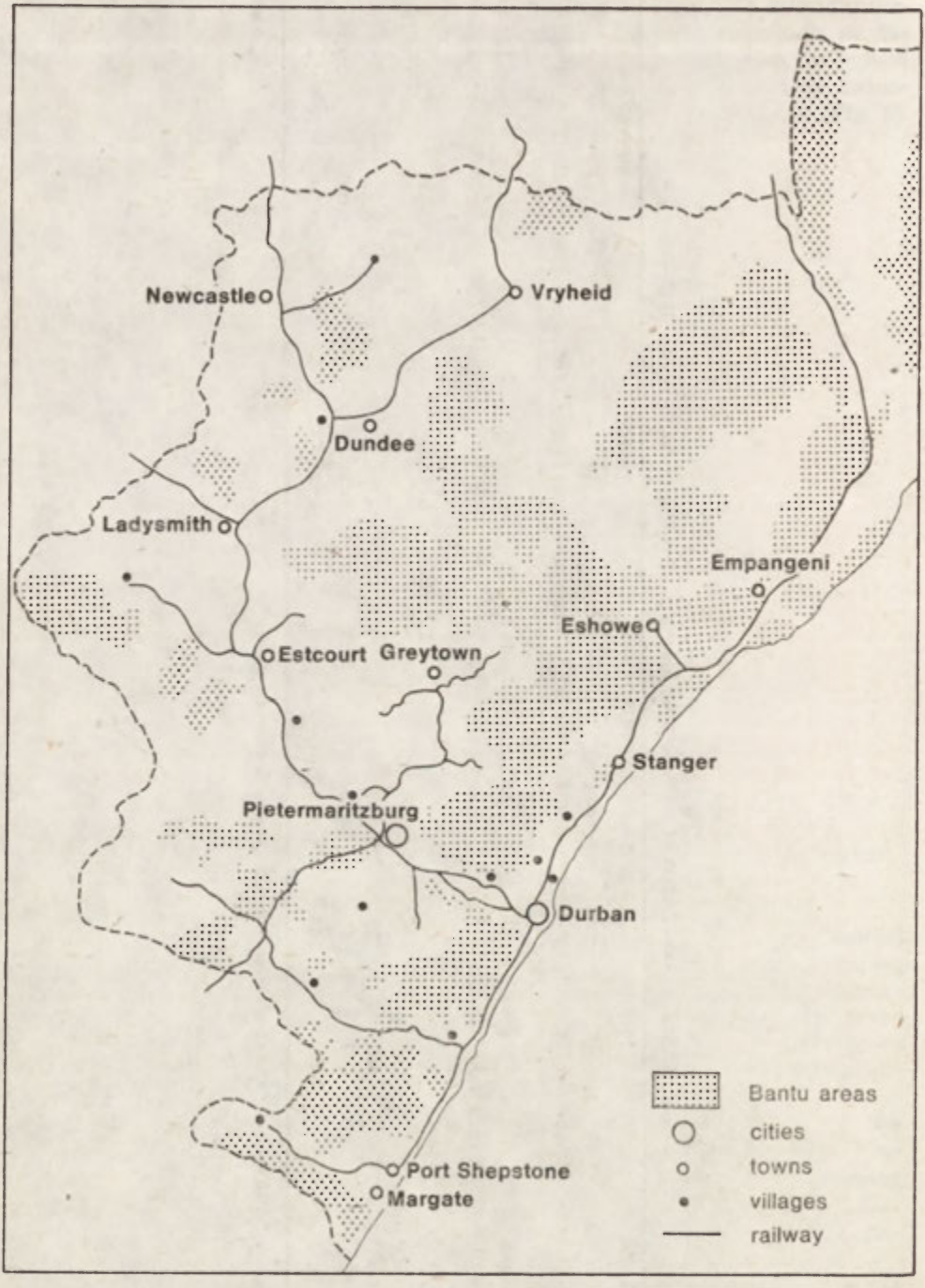

Fig. 6. Bantu areas and urban settlements in Natal

ber of urban centres is negligible. In fact, most Bantustans were laid out to exclude adjacent towns which remained on 'white man's territory', as for example in the Province of Natal (Fig. 6).

The break between the highly developed urban areas and their immediately surrounding zones on the one hand, and the rural periphery on the other, is obvious to the most casual observer. The network of highways and railways thins out immediately outside the urban areas. Intercity traffic is light. The vast areas of white controlled rural land are extremely thinly populated except for a few climatically favoured regions in the Southern Cape Provinces, along portions of the Indian Ocean coastline, and in Natal. Taken as a whole, the 'white' rural areas experienced a severe decrease in white population since 1902 to a point where the Government deemed it necessary to employ drastic and frequently extremely costly means of encouragement for white farmers and small town residents to stay. The recent 'repatriation' to the Bantustans of thousands of black residents formally living in the white controlled rural areas has aggravated the process of depopulation of these areas. At the same time, the rural Bantustans are becoming increasingly overpopulated with highest rural densities in the climatically more conducive zones of the Eastern Cape Province and Natal. The primitive subsistence agriculture, severe land erosion due to overgrazing, the poor quality of the herds, and the restrictive 'apartheid' legislation of the Government aggravate the problem of rural Bantu overpopulation and poverty. City relations in these areas are limited to long-term migration to the large cities for temporary employment and the supply of relatively non-perishable products such as blankets, clothing, hand tools and nails, bicycles, and transistor radios. Only near larger 'white' urban centres, for example Pretoria, East London, Pietermaritzburg, and Durban do city relations include shopping in the 'white' cities for perishable products as well as daily commuting to work either in the cities themselves or in the so-called border industries nearby.

GROUP AREAS OR RACIAL GHETTOS

All former slum districts in South African cities have been cleared and rebuilt to accommodate other structures or land use. All former squatter settlements in the outskirts of cities have also been cleared or remodelled. This was made possible through the forced concentration of the non-white urban population in so-called group areas or legalized ghettos (see Holzner, 1970 and 1971). The Group Areas Act (No. 41, 1950; No. 77, 1957) imposed countrywide control over inter-racial property transactions and called into being so-called 'defined' areas or separate quarters in the cities (also called locations or townships) in which members of only one race (Bantu, Coloured, Asian or White) could reside. A Group Areas Board allocated group areas in all towns and villages outside the Bantustans and the responsible Minister determined the date by which 'disqualified' including white persons must move out (Fig. 7).

The Prevention of Illegal Squatting Act (No. 52, 1951) specified that no one may enter any African location or village outside the Bantustans without permission. The Native Laws Amendment Act (No. 54, 1952) contained a concession allowing any African born in South Africa the right to visit an urban area for up to 72 hours without obtaining a special permit. At the same time, however, the powers of authorities to order the removal of Africans deemed to be 'idle or undesirable' were extended. In addition, the Native Act (No. 67,

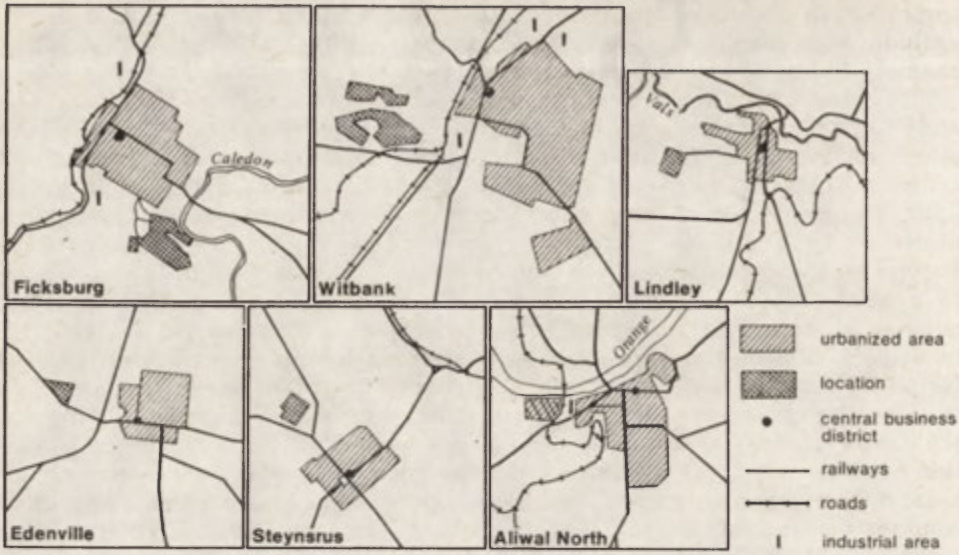

Fig. 7. Examples of Bantu locations in small South African towns

1952) required all Africans who had attained the age of 16 years to possess a reference book (or identity document in the case of foreign Africans). The majority of housing structures in urban Bantu locations are one family units with most multi-apartment structures reserved for unmarried male workers. Bantu may purchase or erect structures of locations but not the land on which they are built. The main function of the locations is residential. Commerical activities are limited to grocery stores, gas stations and breweries for Bantu beer. Most of the shopping including food is done in the 'white' cities. The largest Bantu location in South Africa is Soweto, Johannesburg (South-Western-Townships) with approximately 500,000 inhabitants (see Holzner, 1971). Most Bantu locations are separated from the 'white' cities by mining or industrial areas or vacant stretches of land, most preferably valleys or ridges.

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CHANGES IN SETTLEMENT PATTERNS AS A RESULT OF URBANIZATION IN SPAIN

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URBAN SYSTEM

In Spain a network of cities is not integrated into any contiguous system of urban interactions which in turn would integrate all the regional areas: national integration is achieved at the political-administrative level only, via the nation's capital, Madrid, and at the economic and financial decision-making level via Madrid/Barcelona and Bilbao. There exist networks of cities which are integrated into contiguous urban systems. These coincide especially with the areas of the periphery which are developed, or undergoing a rapid development process; here we can speak of several regional systems. Madrid is an 'original' system which occupies the geographical centre of the Iberian Peninsula.

The interrelations between the Basque-Periphery, Catalonian, and Aragonese systems are high, due to industrial flows. They are also high between the Catalonian and Valencian-Levantine systems. In turn, interrelations between these systems and Madrid are also high although the structure is not peripheral, but radial. There are some interrelations between peripherical systems, but the whole periphery has strong connections with the national capital.

TYPES OF METROPOLITAN STRUCTURES

In the case of non-integrated areas, and the networks, several types can be distinguished:

(a) monocentric overgrown: In this type there is a clear dominance of a governing urban agglomeration to the detriment of the remaining cities in the system. The urban network which surrounds Madrid is a case in point, with the capital being surrounded by a network of cities the majority of which have less than 50,000 inhabitants, so that the spatial structure as far as these settlements are concerned is that of an underdeveloped region. We are dealing with the 'Región Madrileña' (c. 4,000,000 inhabitants). This region is composed of the Metropolitan Area of Madrid and a series of 'corridors' which run along the lines of penetration. Among these, the Madrid—Torrejón—Alcalá—Guadalajara corridor stands out, including satellite nuclei of more than 50,000 inhabitants. The 'Región Madrileña' is a diffused city which organizes functional areas within the provincial sphere, and which determines the light industrial expansion of the small urban nuclei which surround it in the neighbouring provinces (within a radius of 80 km).

Fig. 1. Functional regions (after A. Aznar)
1 — Galicia, 2 — Astur-leones, 3 — Vasco—Periferia, 4 — Aragon, 5 — Cataluna, 6 — Valladolid—Salamanca, 7 — Madrid, 8 — Valenciano-levantina, 9 — Andalucia W., 10 — Andalucia E.

Madrid has been instrumental in slowing down the growth of other cities in the same region (the 'backwash effects' in Myrdal's terminology) during the entire period of time dating from the 1940's until the last decade. In the last ten years, however, the effects of diffusion of development emanating from Madrid (spread effects) have begun to be felt, affecting those provinces with the biggest potential for absorbing such impulses. The first was Guadalajara, Toledo next, and very recently Segovia.

Centrality is even greater in the case of the Aragonese system, with Zaragoza (c. 600,000 inhabitants) as the main urban centre and with a network of small cities[1] with fewer than 30,000 people, except for the city of Huesca. These two systems represent cases of primacy, which is hard to break, in spite of efforts towards decentralization. The case of the Asturian system, presided over by the Conurbation/Metropolitan Area of Oviedo—Gijon and Aviles (c. 650,000 inhabitants), and León, a midium city (c. 120,000 inhabitants) which hardly has any tertiary relations with Oviedo, is different. In spite of its monocentral structure, primacy is smaller.

[1] We consider as 'small cities' those which have between 30,000 and 100,000 inhabitants. 'Midium-size cities' are those which, although not forming metropolitan areas, have more than 100,000 inhabitants. Coincidently, on the functional plane, there are some cities with fewer than 30,000 inhabitants (*cabeceras comarcales* and small industrial centres) which constitute the basic network.

(b) monocentric balanced: In this type, between the governing city and the region some midium-sized cities function as intermediaries. Such is the case with the Catalonian system with its Metropolitan Area of Barcelona (c. 3,800,000 inhabitants) and a midium-sized city of 100,000 inhabitants (Tarragona), as well as three other cities between 60,000 and 100,000 inhabitants (Gerona, Reus and Lerida). The Valencian—Levantine system is similar to the Metropolitan Area of Valencia (c. 1,300,000 inhabitants), a network of two Metropolitan Areas (Murcia and Alicante) and of other midium-sized cities. To this type belongs also the Occidental Andalusian system, with its Regional Metropolis, Sevilla (c. 1,000,000 inhabitants), which has a similar although more populated structure.

(c) polycentric: In this type the governing city with regional economic and financial functions does not provide all the services for the region. They are shared among other cities. This happens in the Basque system, which is dominated by the Metropolitan Area of Bilbao (c. 850,000) together with the Metropolitan Areas of San Sebastian, Pamplona and Santander, and the midium-sized of Vitoria. The Valladolin-Salamanca system has a Metropolitan Area in the process of conversion into a Regional Metropolis (Valladolid c. 300,000 inhabitants), and a midium-sized city with a minor regional influence (Salamanca) and two lesser stagnating cities (Zamora and Palencia).

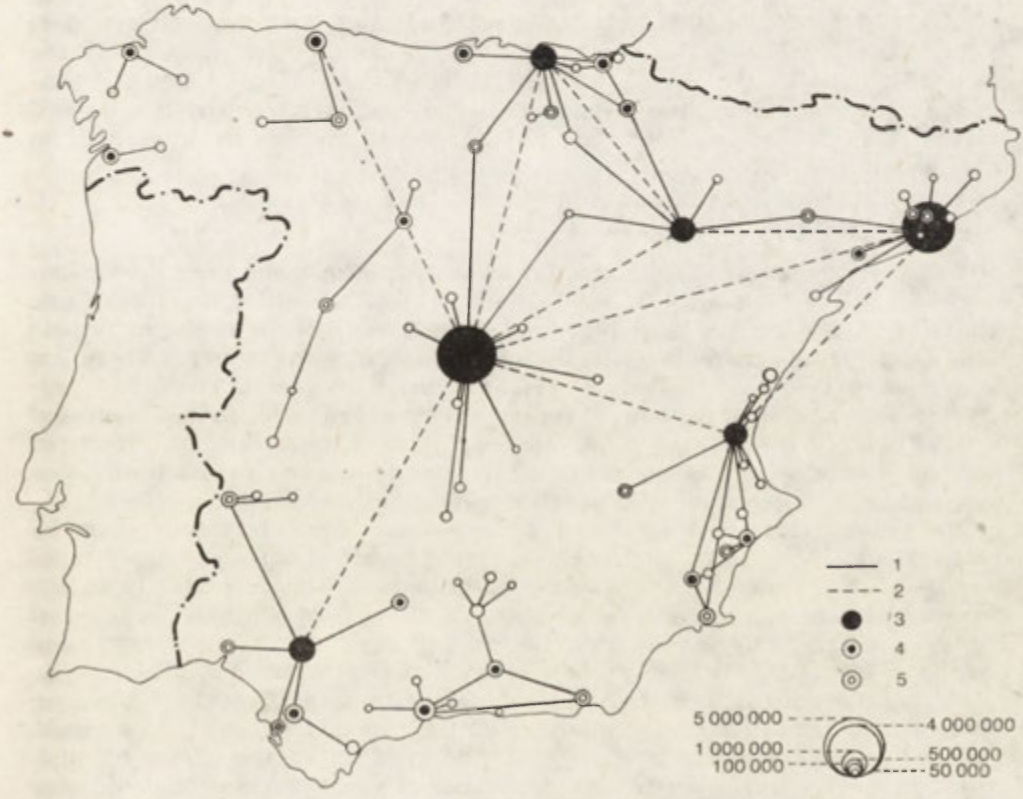

Fig. 2. Urban network and functional interconnections
1 — intraregional flows, 2 — interregional flows, 3 — great metropolitan areas, 4 — other metropolitan areas, 5 — medium-sized cities, 6 — small cities

(d) bicentric underdeveloped: This type is characterized by its connection with underdeveloped spatial structures. The hinterland areas are backward, not animated by their Metropolitan Areas, although these do possess some specialized tertiary functions which they share, hardly integrating the smaller cities of the network. Such is the case of the Galician Network, presided over by two Metropolitan Areas, La Coruña/El Ferrol and Vigo/Pontevedra. Another city in this network, Santiago de Compostela (c. 80,000 inhabitants) plays a leading role in the field of university education, but its dependence on the two Metropolitan Areas is largely undefined. The Oriental Andalusian system also has a bicentric structure, with its cities of Granada and Málaga.

(e) There are some areas lying between those systems and networks which are dominated by cities of a non-metropolitan character, hardly animating the rural areas because of their poor services, and low income level (the areas of underdeveloped Spain par excellence). These territories surround the Metropolitan Area of Madrid and form together the core of the whole country, although they may be found also in the South East. Such is the case with the Murcia-Almeria region in the South East with a strictly agrarian and rural structure, and one Metropolitan Area (Murcia) only partly included in the Valencian—Levantine system, as well as two middle-sized cities, Cartagena, and Almeria.

(f) There are some zones of metropolitan dominance superimposed upon other areas. The dominance of Madrid is superimposed upon the spheres of influence of the Valladolid—Salamanca network, and upon the southern part of the Basque-peripheral system. This last system in turn crosses also the Northwest parts of the Aragonese system. The Occidental and Oriental Andalusian systems overlap those functions which are excercised by Sevilla and Málaga. The Catalonian, Valencian and Aragonese systems in areas near to their boundaries also overlap.

FACTORS OF CHANGE IN THE URBAN SYSTEM

Modernization and re-location as far as the Asturian metallurgy is concerned have not achieved much change in the role of the cities involved. Ensidesa was created in Avilés in 1957, and Uninsa in Gijón in 1964, yet Oviedo continues to be the central city in the system, as far as services go. There has been a displacement of the urban 'weight' towards the coast. There is a project for a fourth siderurgy in Sagunto, Valencia Province, to be completed in 1982, with a capacity of 6 million tons of steel; however, the effects of such an enterprise are at the present time unknown. The recent installation of refineries in the coastal cities of some regions has had even less effect.

The industrialization itself has produced some effects in recent years by the increase in the spatial domination of some metropolitan areas, their rapid increase in population and a spectacular growth of services, usually to the detriment of the remaining smaller cities in the system. Such is the case of Zaragoza in the Aragonese system, Madrid in the centre of the country, and Barcelona in the Catalonian system. In the majority of cities which have an industrial tradition or which have only recently faced industrial development, a polarization effect was produced in the provincial capital. As a result, a change in the network is growing in the form of the disappearance of *cabeceras comarcales* which because of the accumulation of services and industry in the metropolitan areas of middle-sized cities were stagnating or ruralizing. This was also due either to the stagnation or to the impoverishment of the inhabitants in their area of influence, especially in the zones of very acute agri-

cultural crisis. In areas where the industrialization has been dispersed (e.g., Guipuzcoa and Navarra in the Basque system; Castellón and Alicante in the Valencian) there tends to be a multiplication of the number of cities of midium-sized and low rank, as well as small cities and small industrial nuclei (*cabeceras comarcales*). Hence, the zones of influence of the older urban network are reduced in area but not in terms of population. In the least developed areas of the country, where the process of industrialization has been concentrated mainly in the metropolitan areas or in the midium-sized cities, this has not occurred. The basic network is modified when the traditional *cabeceras comarcales* are stagnating or when they disappear; the spheres of influence tend to increase in size, and the governing nuclei become concentrated in the better served focal points, especially in terms of communication. This happens in marginal areas in Galicia, the South East, and the mountainous areas surrounding the region of Madrid which are not integrated into any of the described systems.

As a consequence of the construction of super-highways (the Basque Country Autoroute already joins Bilbao with San Sebastián; the Mediterranean Autoroute joins the French border in the North East with the southern limits of the Catalonian system), the strengthening of the administrative regional functions in the most important metropolitan area, and in the different cities through which the autoroutes run, is observed. Both the Mediterranean and Cantabrian Autoroutes favour the integration of the surrounding areas. In Galicia, the Atlantic Autoroute, already under construction, will probably lead to an accelerated integration of the internal network. Finally, the Ebro Autoroute will reaffirm the already existing flows between the Cantabrian and Mediterranean systems and will favour further integration. They will permit a spatial enlargement of the spheres of influence of the metropolitan areas incorporating into their respective systems previously non-integrated or only partially integrated areas.

The expansion of port facilities in some large metropolitan areas increases their dominance within the regional system, and even within the national one. The increase in cenralization has had repercussions in the national capital, as regards its capacity for spatial influence. Madrid, being a land-locked city, and one of the country's main industrial focal points, needed outlets to the sea, which were provided by Bilbao towards Northern Europe, and Valencia towards the Mediterranean and Eastern countries. In this manner, more intense interactions developed in relation to the systems which both these seaports govern. In the remaining parts of Spain, the concentration and improvement of the road-rail-port structures have not had any influence to date as far as the urban hierarchy is concerned.

Mechanization and agricultural improvements, as well as the introduction of a market economy into all parts of the country (the underdeveloped areas being integrated insofar as the provision of agricultural products and raw materials for the rest of the country are concerned) have had some effect upon hierarchical structure. Hence, at the lowest level, emigration and the loss of rural population has accentuated the already mentioned process of disappearance or stagnation of *cabeceras comarcales*. The most important fact related to mechanization (and also to the communications) has been the radical change which the traditional centres of *ferias y mercados*[2] have undergone. These centres, which were linked to a traditional agrarian economy on

[2] 'Fairs and Markets'; regularly scheduled markets, usually held outdoors, to which the farmers in surrounding areas would bring their produce for sale or barter.

a small scale commercial exchange basis, and which had a small radius of influence, have experienced a notable recession in the underdeveloped regions, and have disappeared completely in the developed regions. For instance, according to studies made by Casas Torres and collaborators the rural markets and fairs in Northern Spain for all practical purposes have now disappeared. The same process is now underway in the underdeveloped regions. In Castilla, the deterioration of the *cabeceras comarcales* in depopulated areas has been counterbalanced by improvements in the transportation network, and by the importance of merchants who peddle their wares on the road throughout the Castillian area.

The consequences of the massive exodus, of mechanization and of the ageing of that part of the population which is active in agriculture should be stressed. In the first place a spontaneous increase in the size of land holdings, as a result of migration, and the progressive use of tractors is evident; secondly, the structure of crops tends to be simplified and those crops that require a large labour force, for example, vegetables, grapes, olives and which are difficult for mechanization tend to diminish. Third, the land which was tilled with the aid of the faithful donkey up until 10 or 15 years ago is now being abandoned, as are the hillsides upon which tractors and reapers cannot be used. We also find a tendency towards the disassociation of farming and ranching, at least in the Meseta, where cattle are fast disappearing. In areas near the large cities of the Interior (Madrid, Zaragoza, Valladolid), a mixed way of life is led by urban workers (peasants who, although they do not entirely abandon their land, do not dedicate any time to it, but rather contract the services of a tractor and/or reaper operator). Fallow lands increase at the same time as do the residential areas.

Tourism, taken as a mass phenomenon, is strictly Mediterranean, and its origin is international. From the Costa Brava near the French border in the North East to Málaga in the South, urban locations have sprung up in discontinuous lines, strengthening the provincial capitals (Gerona, Tarragona, Castellón, Alicante, Almería, Málaga) as well as second-order nuclei and small cities, and even the traditional *cabeceras*, leading to the creation of linear micro-conurbations which have sprung up in the neighbouring rural areas. It must be said that interrelations with Madrid have also increased, since the Mediterranean zones (Costa Blanca and Costa del Sol) are at the same time seasonal recreational areas for the residents of the capital.

In the Northern coastal areas of Spain we find some cases of increased spatial power exercised by *cabeceras* or by historical nuclei, which have been converted into tourist centres, which in turn has led to increased services.

In the cities which possess large complexes of buildings of artistic and/or historical value such as Toledo, Granada, Santiago de Compostela, Avila, Segovia, León, etc., the character of tourism is essentially transitory, and it has not had much effect upon the spheres of influence of such cities.

The touristic use of the Pyrenees and the Cantabrian Cordillera (i.e. for winter sports) has partially integrated these mountain areas within their specific settlement systems. Likewise, the Central Cordillera is developing as one of Madrid's recreational areas.

Since 1964 the government policy of creating *Polos de Desarrollo* (growth poles) has had some impact on the urban hierarchy, namely an increase in the importance of some regional metropolises (Zaragoza, Sevilla, Valladolid), a counterbalance to the stagnation of some cities, and, above all, a collaboration in the integration of these *polos* into the urban system. In this respect

Burgos within the Basque system, and Huelva in relation to Sevilla, should be mentioned. The regional policy incorporated in the 3rd Development Plan is promoting a wider urban-industrial area in Galicia with the aim of integrating its regional economy.

The *polos* have revitalized interior cities and have organized regressive zones, diminishing distances as far as internal migrations are concerned, creating economic and industrial flows between national centres, for example Madrid and Bilbao, and new industrial cities. This appears to be the first step toward an integration of the national system.

It is still very difficult to talk about a regional socio-economic division of Spain. This is due to scarcity of available data and lack of coordination in research work. The State has not yet established such a division, and therefore we are left with the traditional historical-administrative division, which is as follows, from largest to smallest: historical region, with no geographical, economic, or functional value; province; *municipio*. The number and size of the *municipios* in a province vary greatly.

There exist some projects which are geared towards the creation of new cities in the urban region of Barcelona, and along the Bay of Cadiz. However, in general the policy of the State has been a short-term one limiting itself to the preparation of extensive urban land (residential and industrial) necessary to guide and control the spontaneous growth of cities.

SPATIAL CONTRASTS AND TENSIONS WITHIN THE URBAN NETWORK

There exists a clear dichotomy between two great zones of the country. Urban life is extended gradually in the developed regions (Cantabria, Levante) via industrial flows and personal migrations related to work, purchases, recreation, education, as the mixed way of life spreads in the rural areas. This is more intensive in Cantabrian Spain than in Levante, since the latter has a very specialized, commercial, and labour-consuming agricultural framework. Such integration of the rural and urban areas is helped by the improved transport infrastructure, and by the notable increase both in the number of private automobiles and the public transport services.

In the underdeveloped regions, whose size has decreased slightly in recent years, being confined to a large part of Galicia and the Meseta, East and Southeast Andalucía, rural life has been modernized on the technical plane, but the rural-urban structures are still similar to traditional ones; i.e., we find agricultural towns in Andalucía and the Meridional Meseta, *cabeceras comarcales* in Galicia, etc. The provincial capitals in those areas have not been able to urbanize or integrate the surrounding countryside, and therefore the urban-rural opposition is very pronounced.

Generally speaking, in the industrial regions such as the Basque Country and Cataluna, the urban phenomenon has encompassed the entire rural space, converting it into a rural-urban continuum with a mixed way of life. In the remainder of the country, and especially in the least developed zones, urban growth has been concentrated in the major cities, affecting the surrounding rural areas negatively, and provoking a diminution of its population and its activities. The Mediterranean Coast stands out as an exception. This is due to tourism.

In the essentially agrarian regions, population growth (1961-1970) has been minimal and varied. The following data are given on the regional level (Table 1). Here the services have not progressed very much.

TABLE 1. Population growth indices in the large non-capital *municipios*

Region	Population 1960	Population 1970	Index (1960–70)
Galicia	542,238	635,120	117.1
Duero Occidental	53,410	62,833	117.6
Meseta Meridional	302,233	317,468	105.0
Tajo–G. Oriental	63,989	59,080	92.3
Ebro Oriental	17,940	17,217	96.0
Andalucia Oriental	465,046	476,166	102.4
Andalucia Occidental	1,080,182	1,126,128	104.2

Source: G. Barbancho.

In the rural areas of the developed regions, on the other hand, such as in the Basque, Catalonian, and Valencian regions, in conformity with an increased standard of living, and with the spread of the automobile have improved substantially. However, even in this type of area the traditional centres which are not able to qualify for the next higher level in the hierarchical order become stationary.

There exists a clear contradiction between Spain's transport and highway systems, and the structure of the Spanish urban systems. The urban systems, as we have seen, tend to integrate themselves along the peripheral axes already mentioned. These chains are broken by areas which do not form part of, or are not integrated into, any urban system. For example, Occidental Andalucía is separated from the Mediterranean axis by Eastern Andalucía and Murcia—Almeria, and the Cataluña—Asturias axis stops at the Galician border.

The entire peripheral system experiences at present some difficulties in transport. This is because the antiquated communications network is now modified and superseded by the super-highways which are actually under construction. Such difficulties with the infrastructure (with the exception of communications by sea) are in marked contrast to the excellent network which joins the periphery with Madrid (road, rail, and air). The coast and the French border have exercised more influence upon the integration of the peripheral systems than the internal radial communications network, which covers an almost uninhabited Spain. On the other hand, this disposition of the transport network towards the nation's capital, Madrid, gives to that city the most privileged nodal location in the whole of Spain.

URBANIZATION AND THE URBAN NETWORK

THE URBAN HIERARCHY AT THE NATIONAL LEVEL

Metropolitan spheres of influence increase according to the centralization of tertiary and quaternary services. There are cases like Barcelona, Valencia, Sevilla, Zaragoza, Bilbao, and Madrid. The population of these larger metropolitan areas reaches about 11,550,000. Likewise, goods and services of lesser quality are grouped in 17 middle-sized metropolitan areas with a total population of about 4,855,000 people. The remaining middle-sized cities and smaller cities (16 and 73 in number, respectively), have a total population of 5,710,000 people, i.e., 16.3%. Finally, the population of *cabeceras comarcales* represents only a 9.1% of the total population (Table 2).

TABLE 2. Urban population in Spain

Level	Population mid-1976 (in 1,000)	Number	% of urban population	% of total population
Large metropolitan areas	11,550	6	45,6	33.0
Metropolitan areas	4,855	17	19.2	13.9
Midium-size cities	2,200	16	8,7	6.3
Small cities	3,510	73	13.9	10.0
Cabeceras comarcales	3,200	308	12.6	9.1
Total	25,315	420	100.0	72.3

COMMUTER MOVEMENTS

In Spain, the organization of work (working day split into two parts), the weight of family tradition and the internal urban structure, have so far limited the development of pendular movements. Nevertheless, they are beginning to grow in the larger metropolitan areas, and to a smaller extent also in the other ones. The socio-occupational and demographic structures, and the functional location pattern have the following characteristics: in the large metropolitan areas, central business districts are losing population; in the midium-sized cities there is a reduction of population densities and some processes of change in the socio-occupational sphere. In Madrid as in Barcelona, the transition from a mononuclear city to a polinuclear city is under way. In the old, deteriorating districts the middle classes are superseded by more modest social groups. Likewise, the age pyramids in those central areas change, due to the predominance of married people and elderly persons. In the periphery surrounding the central areas, i.e., in the remaining part of the city proper, there are still some middle-class residences. Then there is an exterior discontinuous ring, inhabited by the more modest groups (blue-collar workers) where industry is partly mixed with residential areas or is located in separate zones. Finally there is a suburban periphery made up of old villages converted into low-class 'dormitory nuclei', and located between focal points of industry. Sometimes these nuclei were expanded and modernized. Only exceptionally in this suburban area are there upper- and middle-class residential settlements.

Naturally, commuter movements develop between the periphery, the centre and the industrial areas. The intensity of these movements is much greater between the periphery and the centre than within the periphery proper, not only because of the attraction of the centre but also as a result of the redistributive character of flows there due to the relative absence of by-passing arteries and a proper street structure.

In the more developed regions or systems, some commuting develops also between the midium-sized cities, the small industrial nuclei, and neighbouring rural nuclei. In some underdeveloped areas, where industrialization is a recent phenomenon, as in the case of the new *Polos de Promoción y Desarrollo*, when and if the immediate rural densities are very high, some commuting tends to develop. Nevertheless, in these areas the urban settlement has not yet penetrated into the countryside from which the commuters travel daily. In the majority of the midium-sized cities there are no extra-urban commuter movements, since these have absorbed immigrants into the peripheral residential areas or into their historic city centres.

IMPACT OF URBANIZATION ON DISTRIBUTION OF POPULATION

The transition from metropolitan areas to rural areas varies greatly. The Basque—Littoral system is the one which has a more balanced gradation on the hierarchical plane, and in which the urban life-style penetrates more into the countryside. In the rest of the country, the dominant characteristic is a dearth of cities belonging to the intermediate levels of the hierarchy.

The map of densities per *municipios* drawn up by Casas Torres and collaborators (1960) shows that the densities are much higher in the periphery (an average of 100 people per sq. km) than in the interior (between 20 and 40 people per sq. km). This reflects not only the difference in the degree of urbanization and industrialization, but also a high degree of overpopulation as far as the less developed coastal regions (Galicia and Andalucía) are concerned, where densities above 300 people per sq. km are reached, e.g., along the non-urban Galician coast. In all the Metropolitan areas there is a gradation of densities, decreasing from the metropolitan centre towards the *municipios* which surround it. There are numerous areas whose population is decreasing.

Out of the total number of 487 *comarca's* (i.e., areas of spatial influence of lower-order urban centres), according to Garcia Barbancho, 324 are suffering a decrease in population. These correspond to 23 underdeveloped provinces, covering one half of the country. Between 1961 and 1970, 519 *municipios* of over 5000 inhabitants out of 8655 have participated in this loss.[3]

The provinces which have experienced the greatest losses are naturally those which have had the most massive migratory exodus; they are located in the south of the country, and are essentially rural.

The interior of the country has also undergone the same depopulation process. In both cases, almost all the remaining meridional and central provinces (except for Malaga, Cadiz, Sevilla, Murcia, and Almería, all of which are coastal provinces) had population losses, so that all of the centre and south-

TABLE 3. Depopulation in Spain, 1961–1970

Region	Population loss
Galicia	141,803
Cantábrico	86,108
Duero Occidental	238,194
Duero Oriental	124,235
Tajo-Guadiana W.	375,953
Tajo-Guadiana E.	107,007
Ebro Occidental	26,991
Ebro Oriental	139,195
Noreste	10,325
Levante	47,623
Andalucía Oriental	229,792
Andalucía Occidental	216,720
Canarias	17,392
Total	1,824,338

Source: G. Barbancho.

[3] We are dealing here with admistrative spaces, termed "Partides Sudiciales".

TABLE 4. Provinces with the greatest population loss (losses greater than 50,000 pople)

Province	Population in 1970	Loss. 1961–1970	Percentage
Badajoz	687,559	151,337	22.0
Córdoba	724,116	109,808	15.1
Cáceres	457,777	87,201	19.0
Jaén	661,146	83,538	12.6
Granada	733,375	81,264	11.0
Ciudad Real	507,650	76,298	15.0
Total		589,446	

Source: G. Barbancho

TABLE 5. Other provinces with losses of more than 50,000 people

Province	Population in 1970	Population (1961–1970)
Lugo	415,052	64,468
Oviedo	1,045,138	70,999
León	584,721	57,301
Zamora	251,934	50,373
Salamanca	371,607	58,824
Burgos	358,075	53,533
Toledo	468,925	61,117
Cuenca	247,158	68,380
Albacete	335,026	52,270
Total		537,265

Source: G. Barbancho

ern interior are areas of depopulation, in spite of some efforts towards industrialization (*Polo de Desarrollo* of Huelva, also with some population losses) which have not matured sufficiently to compensate the demographic and occupational pressures induced by the modernization of agrarian techniques.

It should be borne in mind that of the total number of emigrants which left for more attractive centres (3,276,788 people between 1961 and 1970), more than half came from *comarcas* which are losing population, that is from 324 of the total of 487 *comarcas* covered by the studies of Garcia Barbancho.

On the other hand, Spain is also characterized by a modest growth of rural areas, and areas of very strong urbanization. Of the modest growth areas, all belong to the periphery covering nine provinces with a growth of less than 10% between 1961 and 1970, some *comarcas* in Cataluña, irrigated areas and *comarcas* along the Valencian and Alicantine Coastal Plain, as well as some interior valleys and mountainous regions, rural *municipios* in Baleares, having a growth of 3.84%, the rural southern part of Navarra, and finally Canarias, in which approximately half the *municipios* grew by 10%, which was exceptionally high, revealing the level of overpopulation this region has reached. There are four large areas with strong urbanization processes.

Cataluña stands out in the forefront, with 15.4% of the Spanish population in 1970 and an urban population of 3,091,719 (an equivalent to 60.4% of the regional population). Between the census years 1960–1970, Cataluña experienced an average growth of 30.49%; its urban *municipios* [4] grew by 46.60%.

TABLE 6. Population losses and gains in provinces with metropolitan areas

1962			
Provinces showing a population gain	% of total internal migrations	Provinces showing a population loss	% of total internal migrations
Barcelona	22.6	Granada	3.7
Madrid	6.7	Córdoba	3.2
Vizcaya (Bilbao)	4.7	Sevilla	2.4
Valencia	3.4	Málaga	1.6
Guipuzcoa		Murcia	1.1
(San Sebastian)	1.8	Cadiz	0.9
Alicante	1.2	Valladolid	0.6
Tarragona	0.8	La Coruña	0.5
Zaragoza	0.4	Pontevedra	0.2
Navarra (Pamplona)	0.4	Asturias	0.2
Baleares (Palma de Mallorca)	0.4	Santander	0.2
Tenerife	0.0		
Las Palmas	0.0		
1970			
Provinces showing a population gain		Provinces showing a population loss	
greater then in 1962	%	greater than in 1962	%
Valladolid	1.0	Cadiz	0.6
Alicante	0.7	Pontevedra	0.1
Las Palmas	0.4		
Zaragoza	0.3		
Navarra	0.2		
Madrid	0.1		
Tenerife	0.1		
less than in 1962	%	less than in 1962	%
Barcelona	8.5	Granada	1.4
Vizcaya	3.0	Sevilla	1.2
Guipuzcoa	1.3	Málaga	0.9
Tarragona	0.4	Córdoba	0.9
Valencia	0.3	Murcia	0.5
Baleares	0.2	La Coruña	0.4
		Santander	0.1
		Asturias	0.0

Source: I.N.E., Madrid 1974.

[4] We consider as "urban municipios", those which contain more than 10,000 inhabitants, in agreement with the sources utilized, Floristan Samanes and Garcia Barbancho.

Another significant fact is that out of the 905 *municipios* in Spain which experienced a growth of more than 10% between 1960 and 1970, more than 30% were Catalonian *municipios*.

A second focal point of increasing urbanization is the northern part of the country; Vizcaya and Guipuzcoa possess 4.95% of the Spanish population (in 1900 2.73%), and both provinces have shown an intercensal growth of 38.30% and 31.92%, respectively. The urban population in Vizcaya reached 82.60% in 1970, and that of Guipuzcoa 78.36%.

The *municipio* of Madrid itself, which contained 9.30% of the Spanish population in 1970 (3,792,561 inhabitants), grew between 1960 and 1970 by 39.21%. However, the twenty-two *municipios* which make up its Metropolitan Area grew by 219.37%.

Valencia and Alicante (pop. 1970: 2,687,432) also experienced very high increases at the provincial level (24% and 26.61%, respectively). More than half the *municipios* in both provinces have grown by more than 10% between 1960 and 1970. In the rest of the Mediterranean Levante, the province of Castellón grew by 13.78% and the province of Murcia by only 3.9%, although the capital city, Murcia, grew by 54.2%. In 1970 40% of the total Spanish population. (i.e., 13,655,696 people) lived in these four focal points of increasing urbanization.

Lastly, it is important to observe the existence of some focal points or isolated cities located in semi-industrial, agrarian or depressed areas. Those nuclei had large population increases (above 30% between 1960 and 1970), especially those located in the interior or south of the peninsula. Such was the case with Vitoria (increase of 85.7%, the highest in Spain), Pamplona (50.3%), Logrono (37.8%), and Burgos (45.9%) in the south of the Basque region; Zaragoza (47.0%) and Huesca (36.1%) in the Aragonese System; and Guadalajara (49.9%), León (43.2%), and Salamanca (38.4%) in the interior. As for the Andalusian cities, the greatest growth has taken place in the Mediterranean Provinces (Almeria, Málaga, and Granada averaged 24.4%), as well as the Atlantic Periphery (average of 19.2%, in Galicia 17.2%), and finally other cities in the interior (growth of 12.7%).

In the country as a whole, between 1960 and 1970, services grew at a faster rate than industry. Increases in the employment of secondary and tertiary sectors have been significant for developing areas and at a minimum in the underdeveloped interior. Comparing such increases a notable disparity may be observed: in the underdeveloped areas of the interior and in the areas developing at present (Andalucia and Western Galicia, or Murcia), increases of employment in services were greater than in industrial production. However, there are certain areas where there is a clear dominance of population employed in the primary sector. Such is the case of Galicia, Asturias, part of the southern Meseta, Andalucía, Murcia, and the Canary Islands, where the percentages of those working in the primary sector oscillate between 30% and 50%. Naturally they are somewhat lower in the cities with the exception of Murcia, which is really a large 'rural city'.

INTERNAL STRUCTURE OF SPANISH CITIES

The traits common to the maj ority of Spanish cities can be summarized as follows: (1) *Cascos Viejos*, the old towns or historic cities dating from the Middle Ages, characterized by houses of three or four storeys which were reconstructed or renovated in the 18th and 19th centuries, with narrow streets in checkerboard, trapezoidal, rectangular or spinal patterns; (2) *Ensanches*

or extensions, which were started near the end of the last century and at the beginning of the present, with houses of five or six storeys closely built around interior patios, and streets arranged in a checkerboard pattern broken sometimes by diagonal axes, and always with some wider avenues; (3) *Ciudad Jardin* (garden cities), forming an addition to the *ensanches*, consisting normally of one and two storey chalets, and a yard varying in size according to the social group for which they were provided; (4) Peripheral worker settlements which only exceptionally have detached houses, usually with four or five floors cheaply constructed, and without regularly structured street networks; (5) Urban expansions constructed in the last thirty years, made up of brick houses of different heights (from five to fourteen or fifteen floors), on detached but intensively developed lots, usually with some small free spaces between blocks.

Programmes of urban renewal were few so far. Those that exist were spontaneously undertaken to increase population density in the old city and in its first expansions. Only a few isolated cases are worthy of mention, mainly those carried out by the State for the preservation of some of the ancient monuments.

Urban renewal has affected the historic cities and the first *ensanches* in two manners. First, tall buildings destined for services were introduced; these buildings, of different heights, were usually solid structures representing different influences, at times American ones. On the other hand, some old towns were preserved when given over to commercial, recreational or other functions, together with those noble buildings from the 16th to the 18th centuries (churches, palaces, etc.) representing Spain's cultural heritage.

In the large metropolitan areas the following units may be identified:

(1) Central city of central area with reconstructed Central Business District (usually in *ensanches*), resembling in its morphology typical European cities;

(2) Areas where traffic thoroughfares were constructed;

(3) Gradually transformed by the expansion of the CBD areas with its consequent functional changes in the immediate periphery and remaining parts of the Central City;

(4) The historic city — to be preserved;

(5) Urban areas growing in a haphazard way around the Central City absorbing other *municipios* with their secondary functions and partly modernized centres;

(6) Suburban areas where the urban and rural environments mingle with some intensive, high urban developments;

(7) Residential areas following the Anglo-Saxon pattern with detached houses, bungalows and low population densities, located in the best and most attractive sites.

Madrid can be taken as an example of such urban expansion. Functional characteristics with regard to the *municipios* around the large Spanish cities include also 'dormitory villages' representing the first stage of urban immigration; industrial estates, nuclei with multiple functions (serving as a dormitory for workers, as a location for industry, and as a location for services and agriculture). The chaotic character of the peripheral development, spreading like an 'oil stain' (*mancha de aceite*), the result of speculation and precipitated invasion of the rural environment, should be noted. The streets in many areas reflect the property divisions.

The midium-sized and small cities are characterized by a continuous morphological development which is historical and is not modernized. *Ensanches*

are mostly densely built over but have lower densities than in the metropolitan areas.

The *suburbios* are a feature of urban development further away from the large metropolitan areas; in this case they consist of a chaotic structure of peculiar morphology characterized by a high degree of deterioration, the *campesina* (peasant) house having one or two floors, in poor condition, and other similar buildings. Yet the shabbiest *suburbios* (shanty-towns with houses made of tin plate or lathes) are very rare in Spain.

Large towns in Andalucia and the Meridional Meseta have an agricultural character. They are built with the construction elements typical for rural Southern Spain. Finally, it should be observed that densities in the centre are lower when the same tertiary specialization develops, when the city is larger, and when its growth is fast.

The presence of the primary sector leads to smaller cities with lower population densities, less attractive to migrants and sometimes somewhat deall social classes, and due also to the street patterns which are not very convenient for traffic circulation, as well as to a greater functional diversification.

The presence of the primary sector leads to smaller cities with lower population densities, less attractive to migrants and sometiomes somewhat depopulated. The countryside is also less urbanized.

Acknowledgment

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URBANIZATION IN SRI LANKA

Y. A. D. S. WANASINGHE

In Sri Lanka all localities which are administered by local government bodies such as Municipal, Urban or Town Councils are regarded now as towns. Up to 1963 only those localities which were administered by Municipal and Urban Councils had urban status. At the census of 1963 areas administered by Town Councils were included with the result that the urban population in Sri Lanka increased by over 400,000.

In 1963 there were 54 Town Councils, 35 Urban Councils and 10 Municipal Councils in the island. By 1971 there were two new Urban Councils and 34 intensively developed areas under the jurisdiction of Village Councils had been elevated to Town Council states. Eight of these are located in the Colombo District.

Approximately 70% of towns in Sri Lanka can be classed as small towns (with a population of below 20,000). There is a proliferation of small towns; their number increased from 16 in 1871 to 101 in 1971. Of these, 40 have a population below 5000, e.g., Kadugannawa Urban Council and Rakwana Town Council had a population of 1562 and 1716, respectively. Large towns are few. Colombo is the only town with a population of more than 500,000. Most of the large and medium-sized towns are located within the Colombo District (Table 1).

TABLE 1. The distribution of towns by size, class and population

Type of settlement	Inhabitants	1963		1971	
		Sri Lanka	Colombo District	Sri Lanka	Colombo District
Small towns	below 20,000	73	8	101	10
Towns	20,000–50.000	13	7	26	13
Medium-sized Towns	50,000–100,000	5	2	5	3
Large towns	100,000–500,000	1	1	2	1
Metropolises	above 500,000	1	1	1	1

The population of these numerous small towns does not balance the population of the few cities. Hence the distribution of urban population in 1963, when expressed by a pyramid graph, was top-heavy. For a long time this concentration of urban population in large cities and metropolises persisted. However, a slightly different picture emerged in 1971. Due

to the ever-increasing number of small towns and the slowing-down of the rate of growth of Colombo, the capital city, the top-heaviness is no longer apparent.

It is questionable if all towns in Sri Lanka are urban settlements from a geographical point of view. A careful study of towns reveal that there are many variations in population size, areas and functional and occupational structure of towns. The most important towns in the island are localities administered by Municipal Councils. The largest is Colombo and the smallest is Nuwara Eliya (population 16,347 in 1971). Urban Councils are set up by ministerial order under section 2 of Urban Councils Ordinance No. 61 of 1939, which stipulates that "any area which is not a Municipality and which by reason of its development or its amenities is urban in character may ... be declared a town". The select Committee on Local Government recommended that "the chief town of a provice be an Urban Council irrespective of population" (Sessional Paper No. 36 of 1928). This the population and area of Urban Councils vary. The smallest is Kadugannawa (area — 0.2 square miles) with a population of 1569 in 1971; Moratuwa, the largest Urban Council, had a population of more than 96,000. The majority of the Urban Council areas possess basic urban functions and other urban characteristics.

Most of the localities administered by Town Councils, on the other hand, possess few urban characteristics and probably for this reason they were not classed as urban settlements till 1963. Even today the majority of Town Councils in reality do not qualify for urban status. The elevation of an intensively developed area in a rural setting to a Town Council is in the hands of the Minister of Local Government. Under Section 2 of the Town Councils Ordinance No. 3 of 1946 "any area which by reason of its development or its amenities is urban in character may by ministerial order be declared a town". The criteria for setting up a Town Council seems to be the urban characteristics of the built-up area, its amenities, revenue and population, but there is no definite procedure laid down by law. This flexibility has led to the elevation of localities that really do not qualify for urban status. There is no minimum population limit. Fourteen areas administered by Town Councils had a population below 2500. Teldeniya and Rattota are 0.22 and 0.5 square miles in extent. A former Commissioner of Local Government stated that most of the present Local Government areas are too small and are not viable, as the most developed area in a village becomes a Town Council. Further development of the village is then retarded.

As far as possible, natural boundaries are used as town limits. In most cases where natural boundaries were used, the town limits would enclose the built-up area as well as the surrounding agricultural areas. In the absence of natural boundaries, artificial boundaries are drawn joining permanent points like a junction or a culvert. Sometimes, two or three separate built-up areas in villages would be linked together and elevated to urban status. Dehiowita Town Council is a case in point. It consists of three built-up areas located at road junctions — Talduwa, Dehiowita and Atulugama. These are linked together by a narrow strip of agricultural land. The town is elongated in the shape of an inverted letter 'L'.

The majority of Urban Council areas are too large and do not correspond to real geographical units. Vavuniya Urban Council in the Dry Zone illustrates this well. Originally, the town was four square miles in extent with five wards. Today, it covers 8.65 square miles with eleven wards. Approximately 75% of the town area has a rural character. Villages like Velikkulam, Thandikkulam, Navalkulam, Pandarikulam have been annexed to the town. The

small built-up area is surrounded by reservoirs, paddy fields, teak plantations, etc. Avissawella Urban Council in the Wet Zone Lowlands is a junction settlement set amidst rubber plantations. The main built-up area extends along the road and railway and covers approximately 20% of the town area. The town has annexed the former village of Puwakpitiya so that there is another linear built-up area located in the south-western part of the town, separated from the main built-up area by agricultural land use. Approximately 70% of the town still remains rural or even agricultural in character.

TABLE 2. Effective urban population

Year	% of total population	% of total urban population
1901	7.9	68.0
1911	8.4	64.2
1921	9.6	67.9
1931	9.3	67.4
1946	11.4	74.3
1953	9.8	77.7
1963	13.0	74.5
1971	15.7	70.3

TABLE 3. Rate of growth of towns and small towns (below 20,000 inhabitants)

Intercensal period	Towns (%)	Small towns (%)
1901–11	23.8	46.7
1911–21	24.2	5.3
1921–31	14.7	17.3
1931–46	52.7	5.4
1946–53	21.7	4.8
1953–63	41.4	12.4
1963–71	34.0	61.0

According to official sources, the urban population in 1971 was 24.4% of the total population. This figure has increased from 14.9% in 1953 to 18.9% in 1963. It is generally accepted that the figure for the so-called efficient urbanization is a better indication. It is the percentage of the population living in towns of more than 20,000 inhabitants. Prior to 1953, efficient urbanization in the island had never gained any appreciable momentum: from 1871–1953 it increased from 7.4% to 9.8% (Table 2), but by 1971 it had increased to 15.7%.

Urban growth in Sri Lanka results from a combination of several factors: the opening up of plantations; the construction of roads and railways; the liquidation of malaria and the development of the Dry Zone; the establishment of administrative machinery in the important agglomerations and the development of trade and commerce led to the revitalization of old towns and the birth of new ones. Colombo, the chief port and capital of the island, has grown to be a city of primary importance. Other towns grew up in communication networks either in the form of collecting and distributing centres with administrative, cultural and socio-economic functions or as suburbs of Colombo.

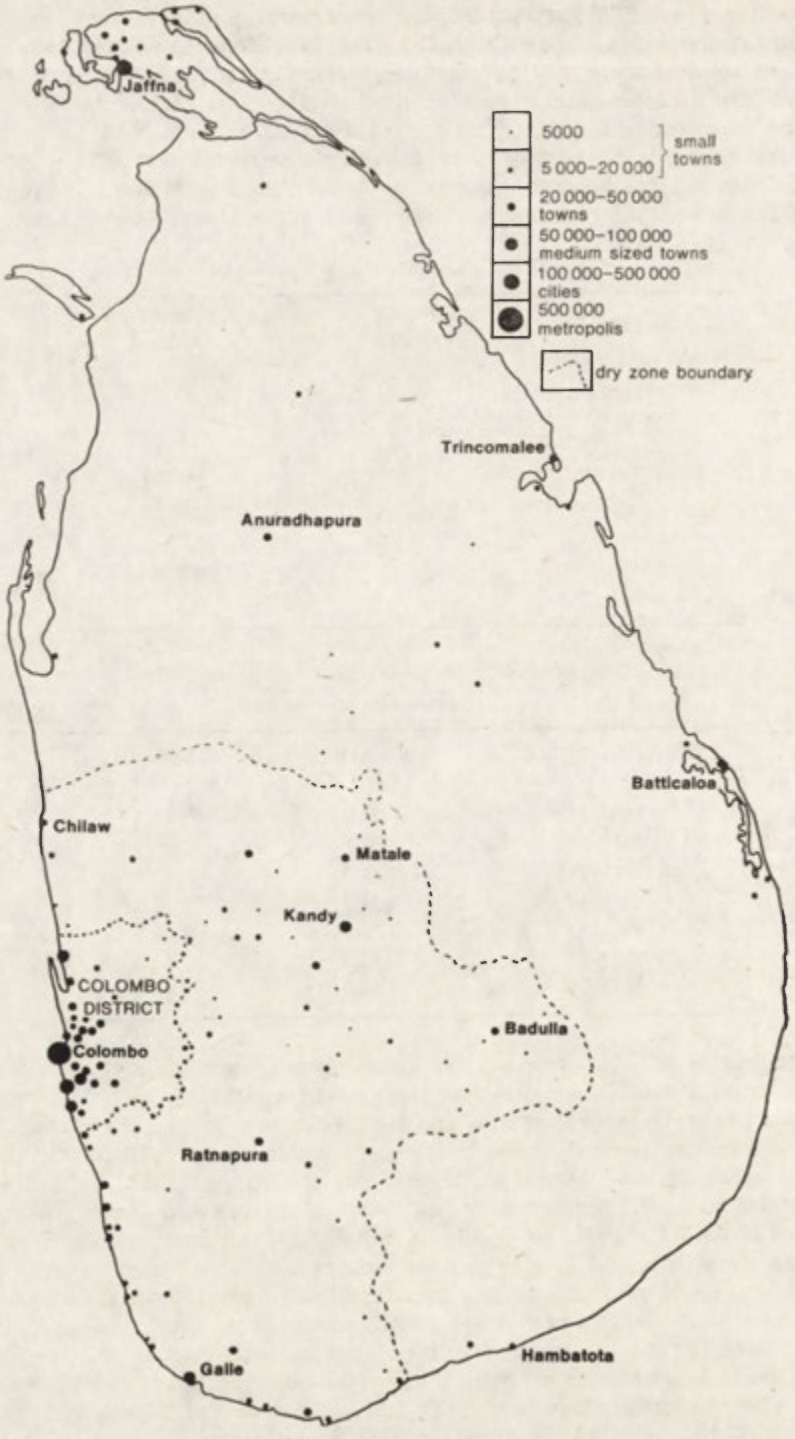

Fig. 1. Distribution of towns

The urban population is unevenly distributed. A large proportion of the urban population is concentrated in the Wet Zone (Fig. 1). More than 50% of the urban population live in the Colombo District. Of the 28 towns located here, the majority are large towns. The Dry Zone has a low density of both urban and rural population. In recent times (with the exception of the Colombo District) internal migration has been directed to development areas in the Dry Zone, chiefly to districts like Anuradhapura, Mannar, Vavuniya (Vamadevan, 1961). With the liquidation of malaria, natural increase also played a significant part in the population growth of this area. Less than 30% of the country's urban population currently live in the Dry Zone. Towns are few and the majority of these are small and administered by Town Councils. Few Dry Zone districts like Vavuniya and Polonnaruwa had a growth rate of more than 25% in urban population during the last intercensal period. The high urban growth rates in these agricultural and rural districts are due to the raising of some more intensively developed areas to Town Council status, to migrations and to the extension of urban boundaries. Vavuniya town in the Vavuniya District recorded a 100% rate of increase during the years 1963–1971 firstly, as a result of the extension of town boundaries and secondly as a result of migrations chiefly from the tea plantations in the hill country.

Very few districts have a degree of urbanization above the nation's average of 22.4%. Trincomalee, Jaffna and Batticaloa districts have an index of urbanization of 38,9 33.5 and 27.5%, respectively. However, the Colombo District does not reflect the low degree of urbanization experienced by the country as a whole. During 1963–1971, its urban population increased by 44%. Colombo, with its crescent of suburbs, is the most marked feature of the district.

The total population of Colombo increased from 95,000 in 1871 to 562,160 in 1971. Within 40 years (1871–1911) the city population had doubled and by 1953 it had doubled again. The city area expanded from 9.45 to 14.1 square miles. The density of population stands at present at 40,000 per square mile. The high rate of growth and the high population density in the city can be attributed to three factors, viz.: immigration, extension of city limits and natural increase. Immigration played an important role in the growth of the city prior to 1931 (Table 4). During the decade 1921–1931, the excess of births over deaths was very slight (birth rate 30.8/1000 — death rate 30.0/1000), and a natural increase of only 3267 was recorded. At the time, 91.8% of the population growth was due to immigration. From 1931 onwards immigration declined in importance. During 1931–1946, for instance, immigration contributed only 21.2% to the population growth of the city. The intercensal period 1946–1953 saw a further decline in the importance of immigration (19.6%). Today migrants are diverted to the suburbs and there is some migration from Colombo to the suburbs. Therefore from 1931 onwards the population growth of the city was mainly due to natural increase.

TABLE 4. Migration to Colombo

Year	People
1901–11	62,770
1911–21	44,602
1921–31	36,725
1931–46	16,586
1943–53	10,217

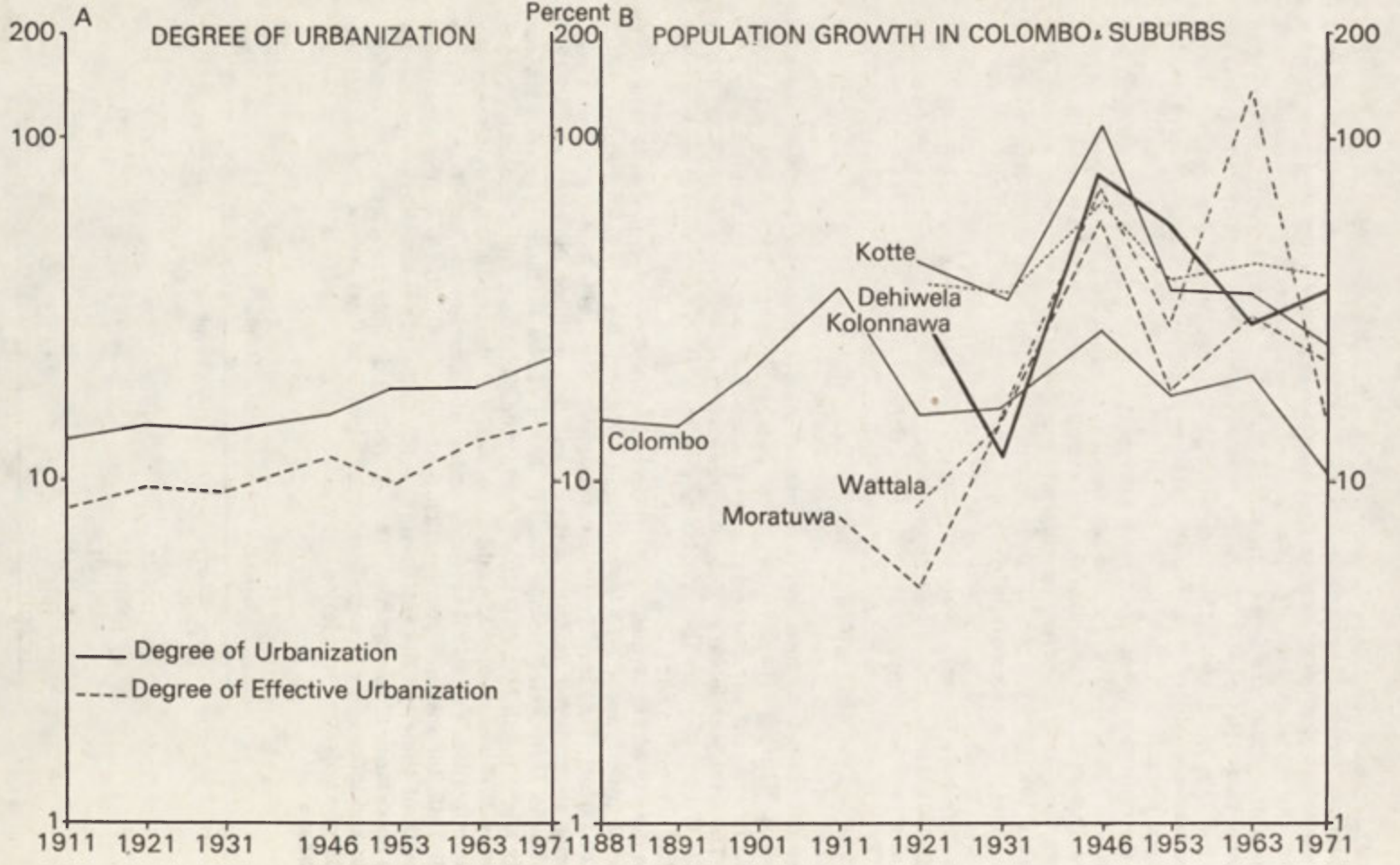

Fig. 2.

At the beginning of the 20th century Colombo had become an important port and the capital city of the island. It became the administrative, commercial, industrial, financial and educational centre of the whole land. This centralization of functions brought a daily influx of commuters to the city. They number approximately 250,000 daily. The city supplies jobs for thousands of outsiders. Sixty per cent of the commuters work in the city. A survey of road traffic in Colombo (Smith et al., 1966) revealed that 61% of the external trips by road were from the adjacent suburbs. Figures for commuting by train confirm this. The commuting of Colombo is limited to the urban-rural fringe, generally within a ten-mile radius.

Colombo and its suburbs form a vast urban area that has the appearance of a metropolitan area. Suburbanization in Colombo is essentially a 20th century phenomenon. Before, Colombo was a small town surrounded by villages and cinnamon plantations. In the 17th century the town was composed only of 'the Fort' and 'Pettah' (Perera, 1926). Separated from it by a weak wall built of mud and coconut trees, were the 'suburbs', viz. Mutwal, Wolfendal, Galle Face, Hultsdorp, Gintupitiya, Maradana, Suduwella, Borella and Welikada. With the development of the port and the expansion of the city during the period of British domination, these suburban areas were gradually built over and annexed to the city proper between 1865 and 1910. In the 19th century the present day suburbs were really only agricultural settlements with a low population density. In 1911, four of these settlements were declared towns. These suburbs along with two others today constitute the older or inner suburban crescent of Colombo. Within the last 15–20 years suburbanization has spread outwards from the older suburbs. There is a second set of suburbs making up the newer or outer crescent. Some new suburbs are separated from the older ones by a belt of rural land between half and one mile wide.

Recent trends in suburbanization are evident in the Colombo Metropolitan Area (CMA). It has been so designated by the International Research Unit on the basis of the density test (1959). In 1953, the Colombo Metropolitan Area contained the city of Colombo with its surrounding suburbs. By 1971 the Metropolitan Area had expanded to include Aluthkuru Korale South, Siyane Korale, Adikari Pattu and Hewagam Korale West as well. The Metropolitan Area is not completely built up. During 1963–1971 the total population of the CMA increased by 23.3%. The central city grew by 10.2% while the suburban population increased faster, i.e., by 115% (Table 5). However, the older suburbs that form the inner suburban crescent grew only by 30.5% (Table 5). From 1911–1963 the population of Colombo increased by 142% while

TABLE 5. Growth rates in population in Colombo and suburbs in the inner crescent

Unit	1953–1963	1963–1971
1. Colombo	20.0	10.2
2. Wattala-Mabole Peliyagoda	34.8	15.0
3. Dehiwala Mt. Lavinia	41.8	39.1
4. Kolonnawa	28.4	35.0
5. Kotte	34.8	25.0
6. Moratuwa	29.2	22.5

the growth rate of various suburbs was more than 500%. This high growth rate is a recent phenomenon. The population of the outer suburbs increased by 256% during 1963–1971. The rural crescent on the other hand shows a relative decline of 17%, but this is due not to the decline in population but to the contraction of the rural area.

Only 15% of the total population increase in the CMA during 1963–1971 was captured by the city itself. The suburbs had acquired 116%. The percentage of metropolitan population shared by Colombo declined from 34.1 in 1963 to 29.9 in 1971 while that of the suburbs increased from 23.6 to 41.3. Such a shift in the proportion of metropolitan population indicates decentralization or suburbanization but the suburbs are still mainly dormitory areas.

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THE UNITED KINGDOM: SETTLEMENT PATTERN AND CHANGE IN OPERATION

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URBAN SETTLEMENT AND ADMINISTRATIVE AREAS

From the early Middle Ages and the time of the Norman Conquest when the chartered borough was widely extended over the country, the basic definition of the town in Britain has been legal and administrative. Indeed, the chartered borough remained the formal urban unit until the early nineteenth century when the rapid changes which followed in the growth of industry revealed how completely outdated the whole system based on it had become. By that period some tiny settlements, indeed some which had disappeared altogether, still enjoyed municipal or urban status, whereas the new industrial towns, such as Birmingham and Manchester, did not. This anachronous situation was dealt with by the Municipal Corporations Act of 1835 which eliminated the decayed boroughs and allowed the new settlements to achieve formal urban status. In addition a Royal Commission on Municipal Corporation Boundaries aimed "to limit the borough to what would now be termed the 'continuous built-up area'. This meant extending the areas of some boroughs and reducing those of others" (Lipman, 1949, p. 67). In spite of this attempt at regularizing the status of urban areas even greater confusion followed, for the urban population increased even more rapidly, by 21.9 per cent in the decade 1851–61, 28.1 per cent between 1861 and 1871 and 25.6 per cent from 1871 to 1881 (Weber, 1899, p. 44). In order to solve the particular problems which this rate and extent of growth created, a wide variety of *ad hoc* bodies was created, each exercising authority over the new urban settlements. These bodies undertook such functions as administering the Poor Law, controlling public health and sanitation, developing education and providing roads. By the end of the nineteenth century, a complex mass of overlapping authorities had come into being, but with one outstanding principle, the separation of town and country for the purposes of local government.

The reorganization of these chaotic conditions was embodied in the two Local Government Acts of 1888 and 1894. These accepted the separation of town and country and set up three types of urban area. The first was the County Borough which was entirely autonomous in local government. The minimum population appropriate to this highest rank was greatly contested and proposals ranged from 150,000 to 25,000. Eventually a criterion of 50,000 population at the 1881 census was agreed. Below this, and sharing some functions with the administrative counties, came the Municipal Boroughs which were in principle the survivors of the old chartered boroughs but which in practice included a wide range of the newer towns of the nineteenth century. The members of the third

group were given the name 'Urban District'. These Urban Districts possessed no charter and were largely groupings of the new industrial settlements which had grown up during the century and lacked the clear nodal focus of the older towns. Very often they had been governed by the various *ad hoc* bodies. The whole administrative system was consolidated by the creation of these somewhat amorphous 'urban districts'. In England and Wales there emerged from this process some 302 Municipal Boroughs and 688 Urban Districts. Until 1974, with but minor boundary changes, these three elements remained to make up the urban population of England and Wales and were the areas for which population figures were returned in all the censuses of this century, including the latest, that for 1971. The consequence of the 1888 and 1894 legislation was to confirm an administrative definition of the urban population with but little provision for adjustment to change and including widely ranging populations from the Greater London total in 1971 of 7,542,346 down to tiny Urban Districts such as Newcastle Emlyn in Carmarthenshire (now Dyfed) with only 651 people. Once again the system established soon became outdated and owing to its lack of flexibility no consistent relation of physical settlement to administrative boundary was achieved. In response to this situation the Regional Plans Directorate

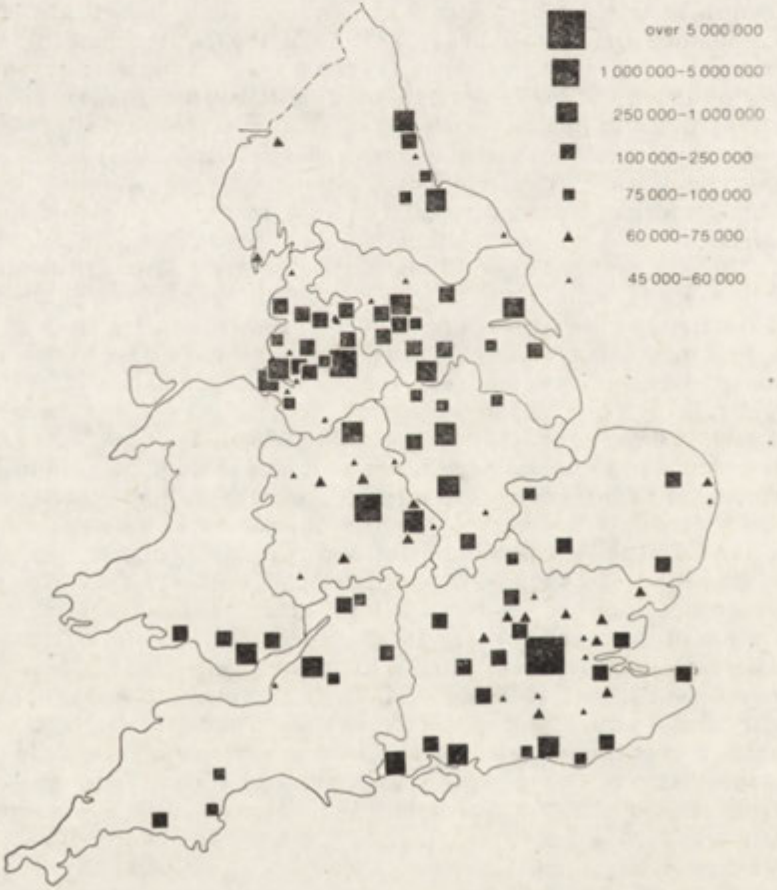

Fig. 1. *De facto* urban areas in England and Wales (after Dept. of the Environment)

of the Department of the Environment (Dept. of the Environment, 1974) produced an analysis called *De Facto Urban Areas in England and Wales*, 1966 (Fig. 1 and Table 1). This very valuable document identified 1333 physically separate urban areas using a total of 3000 and a density of 0.6 persons per acre as a qualification. They contained a population of 41.6 millions or 88.3 per cent of the total. This latter proportion varied regionally from 95.9 per cent in the North West to 62.7 per cent in East Anglia.

The situation in Scotland was slightly different. The historical basis provided by the medieval burghs remained largely relevant even after industrialization and it was not until the Local Government (Scotland) Act of 1929 that a major revision took place. By that Act four Counties of Cities were created, equivalent to the English county borough. These were Aberdeen, Dundee, Edinburgh and Glasgow. The remaining urban settlements were divided into 'large burghs' (21) and 'small burghs' (176) differentiated by their powers under local government. The same problems of a slowly changing administratively based system characterized Scotland also.

This late nineteenth century system has been completely reformed during the last decade. The London Government Act of 1963 established the administrative area of Greater London covering 1580 square kilometres and with a resident population of 7.3 millions. It is divided into a second tier of 32 boroughs, with populations ranging between 139,000 to 333,000 (the mean being 227,000), and the City of London, the historic business core, with an area of 2.6 square kilometres but a resident population of only 10,000 whereas some 400,000 travel in to work (Central Office of Information Ref. Pamphlet 1, 1975). This came into operation in 1965 and in April 1974 a new system came into being for the rest of England and Wales. The basic principle was to abandon the nineteenth century attempt to separate town and country so that the new areas are even less adjusted to the physical settlement and much more related to functional areas. The conurbations were constituted into six new metropolitan counties — Tyne and Wear (including Sunderland as well as Newcastle), West Midlands (Birmingham, the Black Country and Coventry), Merseyside, Greater Manchester, West Yorkshire (Leeds, Bradford) and South Yorkshire (Sheffield, Rotherham, Barnsley, Doncaster). These in turn are divided into a second tier of Metropolitan Districts, 36 in all. The remainder of the country is divided into Non Metropolitan Counties again with a second tier of Districts. Within the Districts there remain parish or community councils which may adopt the status of 'town'. Essentially the whole new system is primarily devoted to effective government based on functional regions and is therefore much less related to the physical extent of settlements than ever. In future actual urban populations will have to be built up from the smallest units for which population is returned, these being the wards or the parishes or alternatively, the grid square basis introduced at the 1971 census. However, in all the censuses in this century, up to and including 1971, populations were returned for County Boroughs, Municipal Boroughs and Urban Districts and these constitute the urban population as conventionally measured. This situation produces all the problems of both overbound and underbound areas associated with an administrative definition.

At this point, although it will be developed later, it is as well to introduce the notion that in an intensively urbanized and highly developed country, small in physical extent, the distinction between what is urban and what is rural now has little meaning. An English megalopolis has come into being, with a distinctive and integrated structure which replaces the older concept of a hierarchy of discrete urban settlements serving purely rural surrounding hinterlands.

THE URBAN HIERARCHY

In crudest terms it is possible to consider the growth of the city system in England in close relation to the administrative system outlined in the previous section. The earliest layer of towns in England was that made up by the Anglo Saxon burhs, many occupying the sites of former Roman settlements. By 1086 there were some 112 places (including Rhuddlan in Wales) recorded as boroughs (Darby, 1973). Of these London was undoubtedly the largest, probably followed by York, Lincoln and Norwich. In the early Middle Ages, after the Norman Conquest, this system was modified and extended. The growth of administration which was based on the shires and executed from the county town, the growth of commerce and trade and the plantation of new towns, all these served to fill out the system. A ranking of towns in the late twelfth century based on the average of the 'aids' levied during the reign of Henry II (1154–89) can be carried out (Donkin, 1973), as well as in 1334 and 1524 based on Lay Subsidies (Glassock, 1973; Baker, 1973). Although the data are incomplete, and unsatisfactory for rigorous comparison of ranks, nevertheless London can be identified at the top of the hierarchy, followed by York, Norwich, Lincoln, Newcastle on Tyne, Bristol and Exeter. By the early eighteenth century a complex system had emerged taking in the whole country and operating in a hierarchical fashion with a complete coverage of the country by larger provincial capitals and nesting smaller market towns. Again Darby (Darby, 1973) identifies the major centres, after London, as Norwich, York, Bristol, Newcastle and Exeter, adding that this was a situation much as it had been in 1600. It is possible to regard this system as not only long lasting, since it had emerged during the Middle Ages, but also as extremely adaptable for it has survived beneath the massive transformations of the nineteenth century and of the present. It is true that these are no longer in the highest rank of British cities, but along with county towns such as Oxford, Northampton, Gloucester, Shrewsbury, Hereford, Canterbury and Cambridge, they constitute the traditional provincial capitals, free standing towns serving well developed rural areas and developing not only trade but industry in consequence.

On to this system, emergent as it was from the Medieval period, were superimposed the great industrial centres which grew in the late eighteenth and early nineteenth centuries. This process was brillantly treated by Adna Ferrin Weber

TABLE 1. Percentage of population of England and Wales

Year	London	Other great cities	Cities 20,000–100,000	All cities 20,000+	Urban districts
1801	9.73	0.00	7.21	16.94	—
1811	9.93	2.08	6.10	18.11	—
1821	10.20	3.27	7.35	20.82	—
1831	10.64	5.71	8.70	25.05	—
1841	11.75	6.52	10.63	28.90	—
1851	13.18	9.40	12.42	35.00	50.08
1861	13.97	11.02	13.22	38.21	54.60
1871	14.33	11.50	16.20	42.00	61.80
1881	14.69	14.91	18.40	48.00	67.90
1891	14.52	17.30	21.76	53.58	72.05

Source: Table XIX A. F. Weber, *The growth of cities in the nineteenth century.*

as early as 1899 in his book, *The Growth of Cities in the Nineteenth Century* (Weber, 1899). In the section devoted to the United Kingdom, Weber showed how extensive the transformation had been. One table can be used to illustrate the major changes which had taken place (Table 1).

A similar transformation had taken place in Scotland (Table 2).

TABLE 2. Scotland. Percentage of population constituted by particular cities

Year	Glasgow	Cities of 10,000+	Cities of 2,000+
1801	5.1	17.0	
1851	11.5	32.2	51.8
1891	19.4	49.9	65.4

Source: Weber (1899).

The result was that by the middle of the century a completely new set of dominant towns had emerged occupying the rank immediately below London (Table 3). Only Bristol is common to this list and that for the early eighteenth century.

TABLE 3. Largest Cities in England and Wales, 1851

London	2,363,000	(Metropolis Management Act of 1855 area)
Liverpool	375,955	
Manchester. Salford	367,233	
Birmingham	232,841	
Leeds	172,270	
Bristol	137,328	
Sheffield	135,310	
Bradford	103,310	

Source: Harley (1973).

The great cities created by industry were not free standing towns serving the surrounding countryside but agglomerations created by the exploitation of point resources and backed by the new transport media of canal and railway. Even by the end of the century Weber had noted that the most rapid growth was not taking place in the large cities since population was already moving out to residential suburbs. Through the concentration brought about by industrial growth and the dispersal and extension due to suburban development, completely new forms of settlement emerged. These were named 'conurbations' by Patrick Geddes in 1915 (Geddes, 1915). "The neighbouring great towns are rapidly linking up by tramways and streets no less than railways while great open spaces ... are already all but irrecoverable ... Some name then for these city regions, these town aggregates, is wanted ... What of conurbations" (Geddes, 1915, p. 14). These new industrial conurbations were coalfield based and since the Carboniferous rocks were mainly northern and western in distribution, urbanization was extended to the previously thinner peopled areas of the country. By the interwar period, therefore, it was possible to consider the urban

structure of Britain as dominated by the industrial conurbations and this was tacitly acknowledged in the first post-war census in 1951 by the publication of a volume entitled, *London and Five Other Conurbations* (South East Lancashire, West Midlands, West Yorkshire, Merseyside, Tyneside). In 1959 T. W. Freeman interpreted the whole urban pattern in this way in his book *The Conurbations of Great Britain*, in which he recognized, in addition to the six of the Census in England and Wales, fourteen minor conurbations and seventy five smaller conurbations and towns.

Change which had been apparent during the 1930's became much more significant after the war. The basic industrial pattern of the decline of the heavy and traditional industries concentrated growth in the south east. Again the decline in coal as a fuel released the locational hold which the coalfields had exercised, while road transport and the motorway took over from rail. The result has been the emergence of the English Megalopolis. It is now apparent that there are three elements in the British urban pattern which can be identified and interpreted. The first is the conventional hierarchy, the second the industrial conurbation and the third the emergent Megalopolis.

It is still feasible to consider the city system in England and Wales as made up of a series of discrete and identifiable levels. As early as 1944 A. E. Smailes had proposed a hierarchy as in Table 4 (Smailes, 1946).

TABLE 4. The urban hierarchy in England and Wales, after A. E. Smailes (1944)

The Metropolis		London
Major Cities	egs.	Birmingham, Bristol, Cardiff, Liverpool, Manchester Newcastle, Hull, Norwich
Cities	egs.	Oxford, Preston, Wolverhampton, Swansea, Gloucester
Major towns	egs.	Bath, Chester, Canterbury, Dover, Shrewsbury, Burton, Halifax
Towns	egs.	Ashford, Bridgwater, Brecon, etc.
Sub Towns		A large number of small towns

This was an arbitrary and empirical division which recognized six orders of towns. Subsequent work and changes over time have altered this scheme in detail and local studies have also made modifications but it still remains as indicative of the patterning of the country in urban terms. To a considerable degree these orders of towns can be related to the six highest orders of the sevenfold classification of centres proposed by writers such as Philbrick and Carol and derived from Walther Christaller's original work. (Christaller, 1933; Carol, 1960; Philbrick, 1957). Even so each order is made up of a wide range of industrial towns, and there is no suggestion that there are any relationships at this stage which can be linked to the predictions of the central place theory as to the number and spacing of centres. It is possible to show, however, how the whole country is effectively integrated within a system of serving and controlling centres and covered by a complex of interlocking and overlapping urban spheres of influence.

At the highest hierarchical levels Kearsley has re-examined the levels identified by Smailes and has suggested a threefold classification below the level of London operating as the national capital (Kearsley, 1971). His assessment was based on two studies. The first was of a mass of data relating to high order functions which included retail, financial, social and administrative and professional functions as well as entertainment. The second was a principal com-

ponents analysis of thirty variables including such measures as the number of department stores, chain jewellers, insurance companies and chartered accountants. This was followed by a linkage study to provide rankings. The two studies gave similar results, an hierarchical array in which the *A* centres, as he designated them, included Birmingham, Manchester, Liverpool, Leeds, Newcastle, Nottingham, Bristol, Sheffield and Cardiff. These can be regarded as the organizing metropoles and linked to them were the *B* and *C* centres (Fig. 2) in a structure which indicates a series of sub-systems below the level of London, as capital, although London functions at this level also (Table 5).

If one of these sub-systems is taken, then the lower hierarchical levels can be indicated and the spread of the national hierarchy to the more rural and thinly peopled parts traced. Thus Figure 2 indicates that immediately below the *A* level centre of Cardiff comes the *C* level centre of Swansea. Figure 3 reinterprets this relationship in the spatial context of south and west Wales. Immediately below Swansea are the three regional market towns and administrative centres of Aberystwyth, Carmarthen and Haverfordwest. If Aberystwyth is taken as representative of this level, then it can be seen that its hinterland covers the western coastal section of mid Wales. At a lower level this splits into

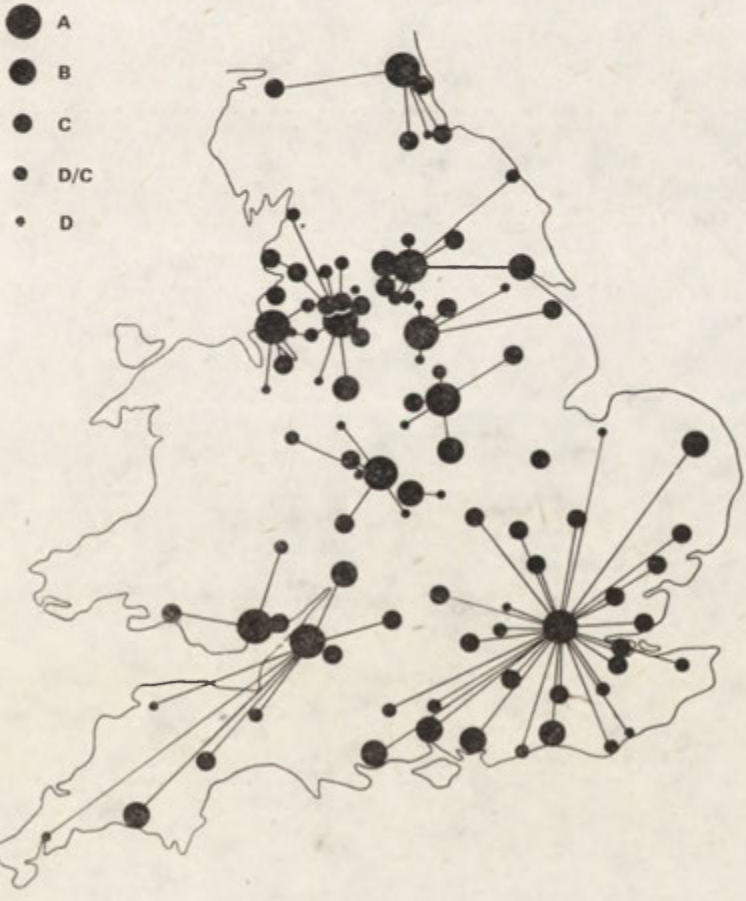

Fig. 2. The upper ranks of the urban hierarchy in England and Wales (after G. W. Kearsley). (See explanation in the text.)

TABLE 5. The urban sub-systems of England and Wales (see also Fig. 2)

Dominant Metropolis	Regional Association
London	S. E. England
Bristol	S. W. England
Cardiff	S. Wales
Birmingham	W. Midlands
Nottingham	E. Midlands
Liverpool	Merseyside and N. Wales
Manchester	N. W. England
Sheffield	South Yorkshire
Leeds-Bradford	West Yorkshire
Newcastle	Tyne-Wear

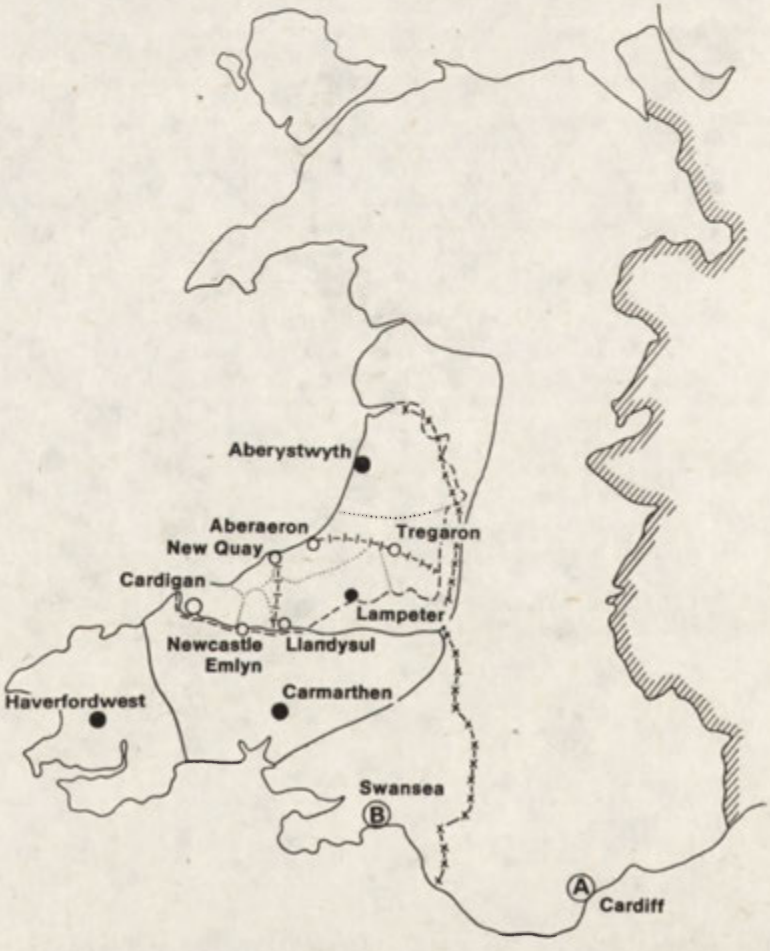

Fig. 3. The upper hierarchy in West Wales. (See explanation in the text.)

a northern area, served by Aberystwyth at a lower order, and a southern area served by Cardigan. Lampeter can also be considered to have functions at this level. At a lower order again the smallest urban settlements such as Tregaron provide the lowest order services to immediately surrounding areas. Thus one can conceive of a progression down a firmly nested hierarchy of centres which proceeds: London — Cardiff — Swansea — Aberystwyth — Cardigan — Tregaron, giving a sixfold stratification of centres. It is interesting to observe that local conditions create modifications. Wales consists of a thinly peopled upland

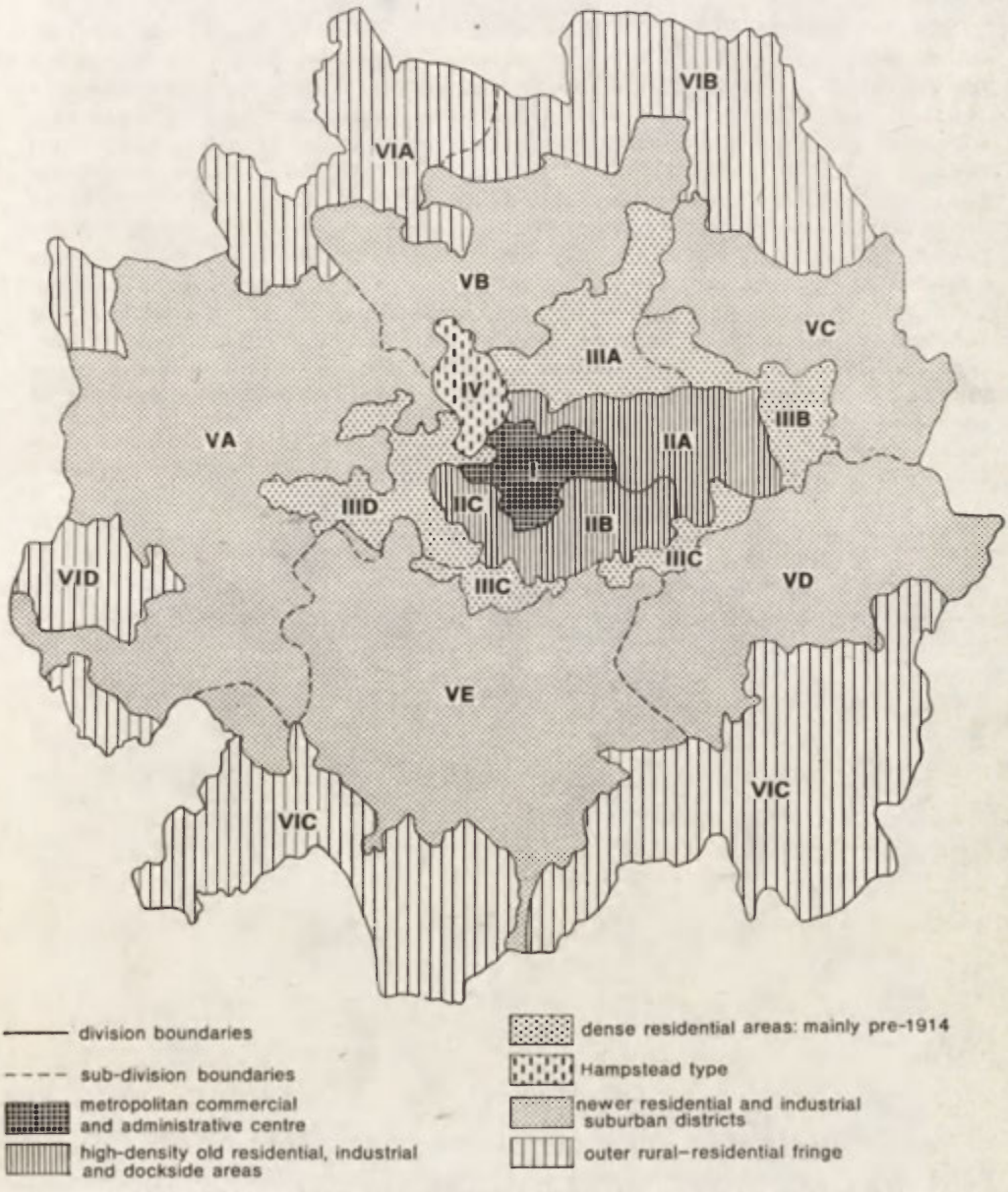

Fig. 4. Greater London: socio-economic divisions (after *Census, 1951*)

core with a narrow periphery. The result is that its regional centres have never had the opportunity to grow supported by extensive rural areas intensively developed. In consequence there is a level missing, from the above sequence, but a level which can be indentified in the *D/C* and *D* centres of Kearsley's ranking in the towns along the English border. The interpolation of a town such as Shrewsbury, between Swansea and Aberystwyth establishes an appropriate grade and a sevenfold system. Here then is a general view of urban hierarchy in England and Wales interpreted as being made up of discrete levels and effectively covering the whole country in a complex mesh of ranked centres and nested but overlapping tributary areas.

The existence of the notion 'conurbation', literally meaning a growing together of once separate settlements, indicates that treating the largest urban agglomerations as simple free standing settlements, as the concept of a hierarchy implies, is quite unreal. The structuring represented in Fig. 2 indicates that a complex situation exists which is not fairly represented by using such names as London or the Manchester conurbation or Merseyside. Each of these large scale urban agglomerations, each conurbation, demands individual treatment at the regional scale since the patterning of each is unique and a product of its growth history. This can be briefly illustrated from Greater London. Figure 4 sets out the structure of the metropolitan area in a very generalized fashion. (Census, 1951. London and Five Other Conurbations). The first region is the metropolitan commercial, financial and national administrative centre. It contains the City of London, the business and financial core as well as Westminster and the 'West End', the centre of government as well as the major complex of

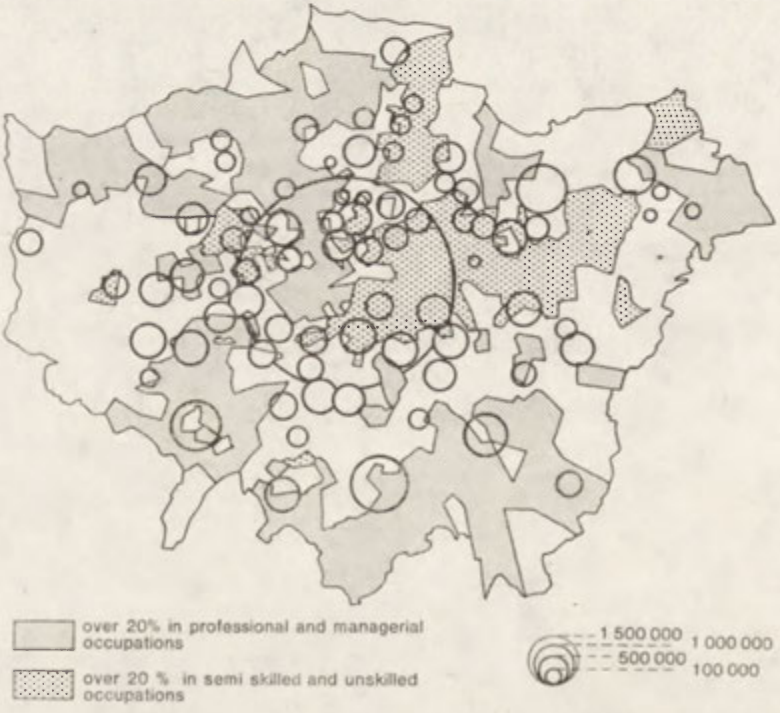

Fig. 5. Greater London: social areas and shopping centres (after *Social Atlas of Greater London*)

shops, hotels, restaurants and theatres as well as luxury residential elements. Region 2 is composed of high density old residential, industrial and dockside areas, bordering the first region but with a marked eastward extension along the Thames. The subdivisions contain contrasts, especially region 2C which differs quite considerably and has many 'West End' characteristics including shopping, cultural and residential areas. Region 3 was dominantly built up during the middle of the nineteenth century and lacks the metropolitan character of 2C and the industrial and commercial character of 2A and 2B. Especially marked is the northward extension in region 3A of high density, low quality housing along the Lea valley. Region 4, called the 'Hampstead Type' is a small but distinctive area of lower density, higher quality housing. This together with 2C, indicates the contrast, both in commercial and residential aspects, between those areas to the west and east of the core. Region 5 is one of fairly continuous suburban development but containing within it patches of older property where earlier free standing villages have been engulfed, and also containing more recent industrial establishments especially on the arterial roads. Finally region 6 covers the outer fringes where the suburban cover is discontinous and related more clearly to older nuclei of settlement.

The basic patterning of Greater London is reflected in social status (Fig. 5) for there are clear contrasts between east and west while the differences between north and south are also indicated. This brief account of the structure of Greater London is an essential background to considering the hierarchy of centres within it. Since most hierarchies are based on retail services, a map showing these is reproduced in Fig. 5. Floor space has been used as the measure and the various centres have been superimposed on the map showing a measure of social status (Shepherd, Westaway and Lee, 1975). The complete dominance of the central core is clearly displayed, but so also is a wide range of other centres. The interpretation of this distribution is dependent on four basic controls:

(1) distance from the dominant centre,
(2) ease of access to the centre,
(3) the pattern of suburban development,
(4) the socio-economic status of suburban development.

These controls can be seen to operate in a number of ways. The influence of distance from the centre is revealed in the fact that there are few large shopping centres immediately adjacent to it and, as a corollary, a clear ring of larger centres appears at the margin. This ring includes Bromley, Croydon, Sutton, Kingston, Hounslow, Ealing, Harrow, Wood Green, Walthamstow and Ilford. It clearly coincides with the suburban region(s) identified earlier and at the same time it is evident that it is much less well developed to the east and to the north where the quality of residential development is lower and socio-economic status diminished. It can also be argued that access to the core from the north and north-west is easier and this too has inhibited the development of the outer ring in these parts. Again there is an inner and very complex ring of smaller centres and here, too, there is a marked gap to the east demonstrating the operation of social factors.

There is no space here to trace the detail of London's growth and the way each of the centres is related to it. But this brief consideration will have emphasized that within the national hierarchy, each of the metropolitan areas has a distinctive internal structure which needs to be considered in any view of the British urban hierarchy.

The analysis of Greater London in the preceding paragraphs has been in itself restricted, for outside the administrative area the whole of south-east

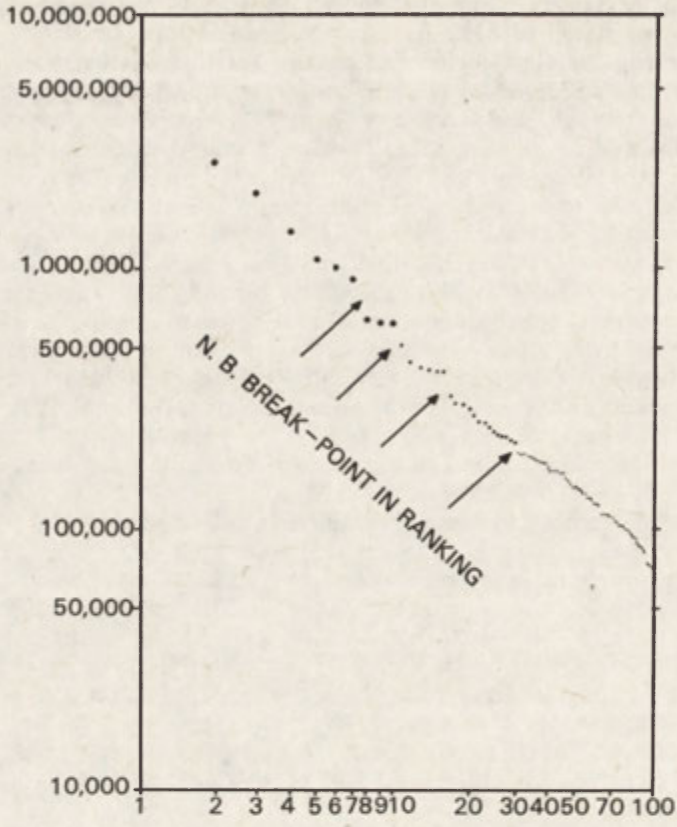

Fig. 6. Rank-size relations of Standard Metropolitan Labour Areas (after P. Hall)

TABLE 6. Standard Metropolitan Labour Areas ranked after P. Hall (1973)

	1. London	
	2. Birmingham	
	Manchester	
	Liveroool	
	Leeds	
	Newcastle	
	Sheffield	
3. Bristol		4. Stoke
Coventry		Leicester
Nottingham		Cardiff
		Hull
		Portsmouth
		Southampton

(compare with *de facto* urban areas, Table 1)

England has to be related to the organizing influences coming from London. Beyond the scale of the conurbation, therefore, lies metropolitan England or what can be called Megalopolis England. This does not imply continuous physical settlement but that the interdependencies and the interlinkages are such that functionally a massive area must be considered as one. The character and anatomy of this feature have been most clearly considered by Peter Hall (Hall, 1973). He constructs Megalopolis England from two basic functional building blocks. These are:

(1) The Standard Metropolitan Labour Area (SMLA) which is made up of a core containing administrative areas with a density of five workers per acre or a single administrative area with over 20,000 workers, and a ring comprising contiguous areas which send over 15 per cent of their resident employed workers to the core. To qualify the total population must be over 70,000.

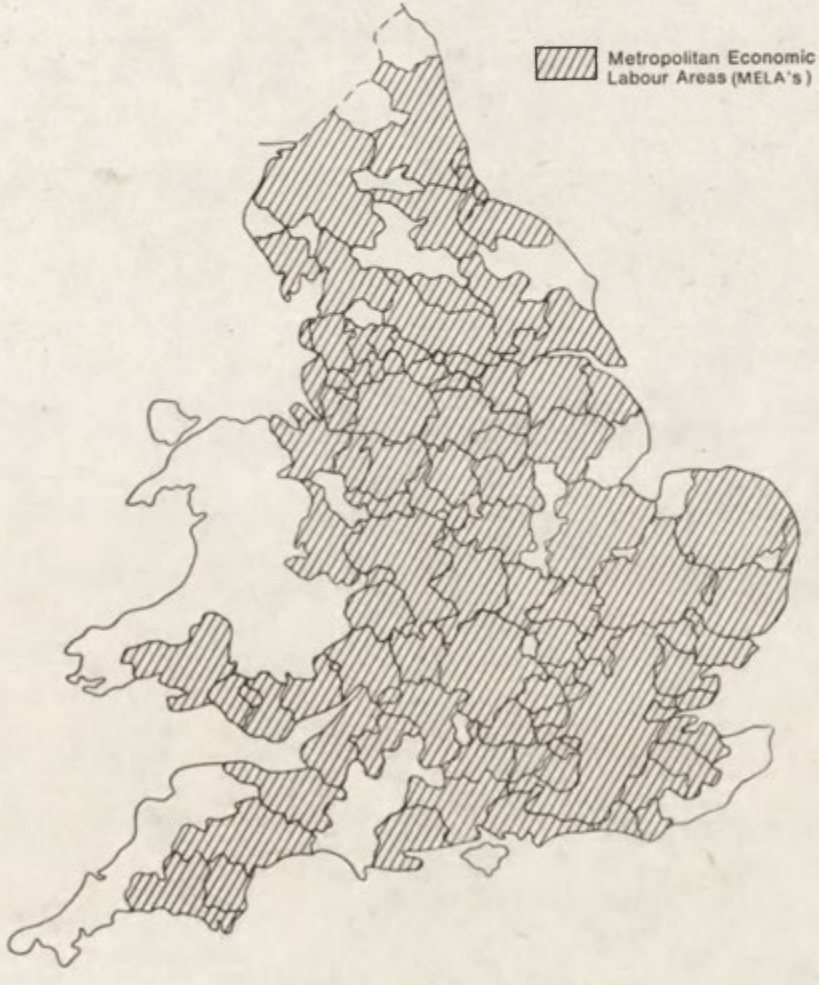

Fig. 7. England and Wales. Metropolitan Economic Labour Areas as defined by P. Hall

(2) The Metropolitan Economic Labour Area (MELA) which is composed of the SMLA plus contiguous administrative areas which send more of their commuting workers to the SMLA core than to any other core.

When the SMLA's are arranged in rank order (Fig. 6) and the break points identified ranks are identified as in Table 6. .

It will be noted that ranks 2 and 3, here defined on SMLA basis, correspond to the Grade *A* cities which were earlier seen as having been identified by Kearsley on a service basis. Figure 7 which indicates the MELA's shows how virtually the whole of the country comes within their compass and only parts of the south west and Wales really lay beyond their influence. With these building blocks established Hall proceeds to envisage Megalopolis England by constructing from the MELAs a set of contiguous areas which give the maximum concentration of people in relation to extent (Fig. 8). In 1961 Megalopolis England so defined contained 56 per cent of the population of England and Wales living on only 7 per cent of the land and at a density of 6336 per square mile or 16,410 per square kilometre. Again it must be stres-

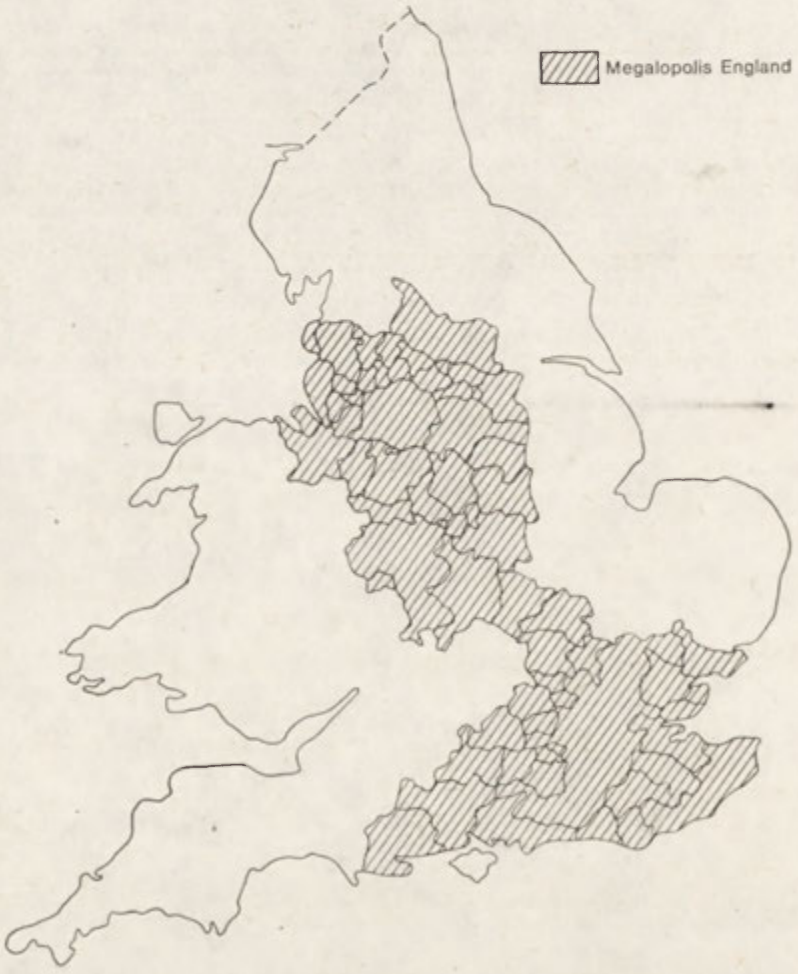

Fig. 8. Megalopolis England (after P. Hall)

sed that this is not an area dominated by urban building. "It is a giant urban area only in the sense that here is a large tract of the earth's surface where the great majority of people depend on urban jobs and urban services, and where the impact of these jobs and services, in terms of measurements like commuter zones, service areas and the exchange of goods and information, expands to involve each part of the area in a complex series of interactions with other parts" (Hall, 1973, p. 320).

The existence of this large scale feature has implications for the notion of a city system. Within it extensive commuting means that the town — country dichotomy becomes meaningless while ease of movement to service centres means that traditional hierarchies are likely to disappear. Out of town shopping centres in so-called rural surrounds and hypermarkets undermine the notion of conventional urban service centres. Above all it is characterized by mobility at all scales. Essentially, therefore, a large part of England and Wales must be thought of in terms of this embracing megalopolitan structure which overshadows and integrates the separate pieces of which it is composed.

CHANGES IN THE URBAN HIERARCHY

Like any other urban system, the British hierarchy of towns has been, and is being, subject to a number of processes of change operating at different scales both in time and place. Hall has summarized the two critical tendencies between 1951 and 1966 (Hall, 1974, pp. 170–1). The first, he argues, was a regional effect where the dynamism of south-east England and the Midlands was causing a general growth of the metropolitan areas in those regions whereas the sluggish tendencies in the regional economies in Lancashire and Yorkshire were giving rise to poor growth rates. The second tendency was a local decentralizing effect where areas peripheral to the Standard Metropolitan Labour Area cores were growing at the expense of the cores. From this summary of change it is possible to identify three points for discussion: the general pattern of changes in town rank; the role of new towns; the decentralizing process.

(i) *The general pattern of change.* Figure 9 depicts the crude pattern of change, irrespective of rank, within the urban hierarchy of England and Wales between 1938 and 1965 as identified by R. D. P. Smith (1970). He records that in England out of a total of some 606 centres recognized by Smailes (1944), some 138 places has risen in status and 78 declined. The general regional pattern of change confirms Hall's diagnosis of a dynamic south and a declining north. Three more specific conclusions can be derived from the map.

(a) Many of the towns which had lost status were based on the declining heavy industries and mining. This is particularly clearly illustrated by the East Pennine belt from Bradford south through Derbyshire to the Leicestershire coalfield. In that area 18 places had declined in status and only 6 gained, and of those 5 were very small centres. Again in South Wales the coalfield towns showed losses in status as did those of north-east England. In the peripheral rural areas, especially of Wales, many of the smaller market towns have declined in rank.

(b) Gains in rank were recorded generally by resort and retirement towns. The resorts of the south-west coast of England, as well as those of north-east Wales exemplify this trend.

(c) The decentralization process is well marked by the rise in status of towns on the margins of Greater London and also by those about the Grade 2 centres indicated on Fig. 9.

Fig. 9. Changes in the urban hierarchy in England and Wales 1938–1965 (after R. D. P. Smith)

It is difficult to abstract any further generalizations from the map other than it reflects the overall problem of the decline of peripheral areas in the country and of greater concentration in the megalopolitan core.

(ii) *The British New Towns.* The major new additions to the British urban system are the towns which have been established under the New Towns Act of 1946 or have been greatly increased in size by means of the Town Development Act of 1952 (Fig. 10). The new town idea in Britain in its modern form is the product of the Garden City Movement based on the notions of Ebenezer Howard. Only two new towns, however, were built as a consequence of the Movement. They were Letchworth and Welwyn Garden City, both within the London sphere (Purdom, 1949). After the Second World War there was a determined national move to established new towns and the powers were provided by the 1946 and 1952 Acts (Thomas and Creswell, 1973). The main purpose behind this phase of town founding was to provide the means of relieving overcrowding and congestion at the centres of the large cities without promoting further urban sprawl. The concept of a ring of new

towns outside a protected green belt was the dominant theme of early post-war planning (Abercrombie, 1945). This was certainly the *raison d'etre* behind the first generation of London new towns and for those in Scotland about Glasgow. Elsewhere, however, the motives were essentially *ad hoc* and related to the solution of local problems, as for example Cwmbran established in south-east Wales mainly to provide housing for the new industry locating

Fig. 10. British new towns (after R. Thomas and P. Creswell)
W.G.C. = Welwyn Garden City

in the area. Perhaps the most common reason was one which only slowly emerged and this was the use of new towns as growth centres in declining areas. Scotland's East Kilbride has been regarded as part of a growth point strategy and this reason has been cited more and more frequently as the basis for development. The new town has in this way become a major element in regional planning strategy and this is most clearly displayed in south-east England. However, the notion of a ring of medium size new towns outside a green belt has proved far too inflexible and it has been replaced by the notion of growth corridors with new and expanded towns of varying sizes and at varying distances from London. The major period of new town founding seems now to be over and development is more likely to be directed towards the expansion of existing towns. Even so the new towns have added a very distinctive element to the British city system.

(iii) *Decentralization.* The third distinctive change within urban Britain has been the transfer of population out of the conurbation, or SMLA, cores to the peripheral areas. This has already been noted both in relation to the general changes in town status and to the new town movement. Hall produces ample evidence to demonstrate this process and concludes, "the internal dynamics of population in the SMLAs then may be fairly concisely summarized. Both in the 1950's and the 1960's the dominant trend was toward decentralization of population from the core to the ring ... Among big SMLAs there seemed to be a cycle of progress from relative decentralization, to absolute decentralization to decline" (Hall, 1973, pp. 205-6).

RECENT AND CONTINUING DEVELOPMENT OF THE URBAN SYSTEM

The major changes in the British city system in recent times was considered in the last section. In this part an attempt will be made to identify the major stages through which the system had evolved to reach its present condition.

The first stage can be called one of *Separation* though in the absolute sense of the complete separation and the absence of interaction between towns it can hardly be identified. Even the Roman towns of Britain, as elsewhere in the Empire, were formally and hierarchically organized in the administrative system. But at a time when transport was rudimentary, competition, and the rank ordering which follows from it, was poorly developed and the structuring of the cities into a hierarchy was probably the consequence of the need for an effective system of government and law enforcement rather than of commercial rivalry.

The second stage can be more clearly seen as one of *Competition and Ordering.* As transport became somewhat more easy and especially as administration become more effective, so interaction between centres became operative. With interaction came competition and the sorting of cities into some rank order. These early rankings have already been outlined, but it was not until the period 1600–1750 that they become convincing in the modern implications of the concept of a hierarchy. If the highest ranked towns are considered — London followed by Norwich, York, Bristol, Newcastle and Exeter — two features stand out. These cities were centres of early industry and above all of commerce. They were seaports at a time when sea transport was so much easier and effective. They were the major points of assembly and dispersal both of goods circulating internally via the coastal trade and of overseas imports and exports. By the eighteenth century, with the improvement

in roads and the growth of a network of stagecoach services and of carriers to market the whole of England and Wales was effectively served by a hierarchy of free standing towns, the city system effectively took in the whole national territory.

The third stage can either simply be called *Conurbation* or one of *Revolution in Industry and Transport*. The so-called Industrial Revolution and the coming of the railway completely changed the older system. Both exerted a strong concentrating tendency largely based on the exploitation of point resources. To some extent also the railway permitted the major growth of inland centres though the ports still retained a dominant role. The result was the emergence of a number of conurbations owing little to service for rural hinterlands and superimposed on top of and reacting with the older hierarchy. The higher order towns of the earlier period were replaced by these new massive agglomerations based on Manchester, Birmingham, Leeds and Sheffield in England, Glasgow in Scotland and Cardiff in Wales.

The next, fourth, stage can be called one of *Integration*. During this the urban system based on the conurbations was gradually modified. By the period after the First World War heavy industry and mining was in a state of

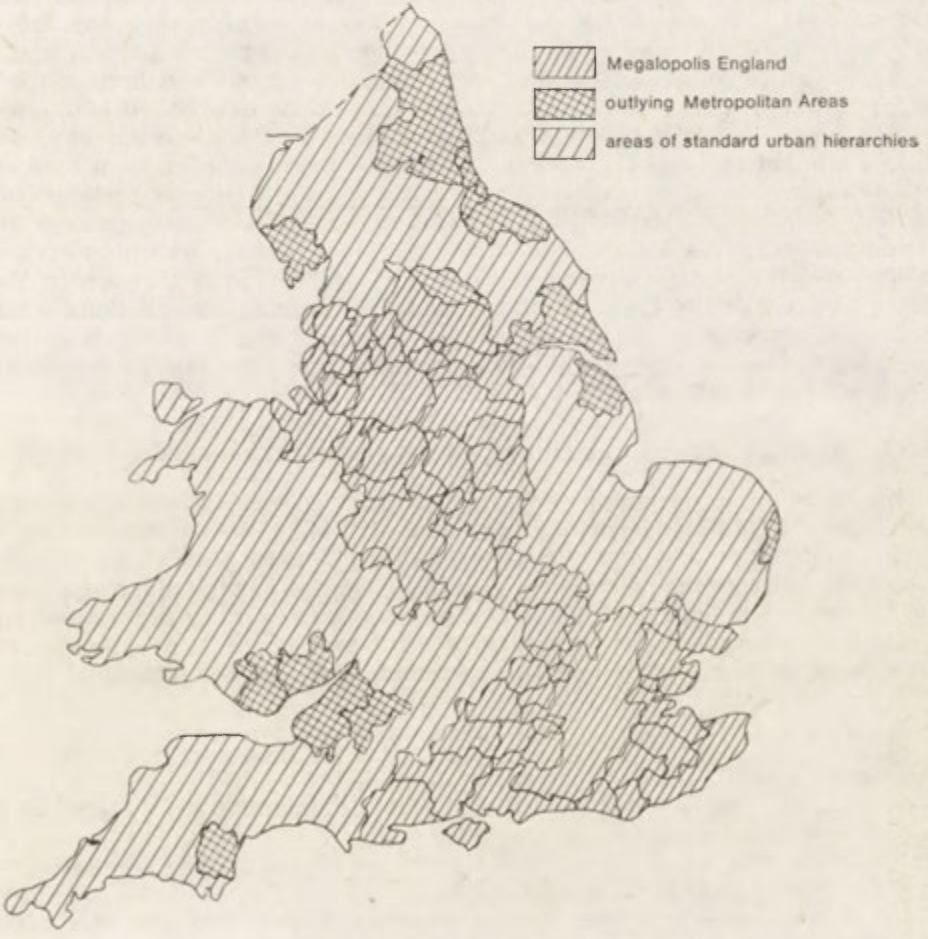

Fig. 11. The urban structure of England and Wales

decline while more flexible roal transport grew at the expense of the railway. The result was a confirmation of metropolitan dominance and in particular the relative loss of importance by the outlying and marginal conurbations, such as Tyneside or South Wales. This is a period when the country became dominated by the flow of population into what was called 'the axial belt' which extended from London to Manchester and which Smailes still identified in 1946 as an hour glass shaped feature containing the bulk of urban development (Smailes, 1946). In more local terms this phase corresponded with the beginning of the process of decentralization and suburban sprawl, some of which was contained in what were classified as 'suburban towns' (Moser and Scott, 1961). This marks the filling out of territory, within the axial belt in particular, by physical development and the thickening of the complex urban web.

The fifth stage which brings the process to the present can be called *Metropolis and Megalopolis*. It is dominated by the rapid growth in private car ownership and motorways so that its dominant theme is that of mobility. This vast increase in mobility produces a number of consequences. Place as such begins to lose its significance and people live, as Webber suggests, in a number of realms (Webber, 1964) which in some senses are aspatial, for contact with local community or a business contact many thousands of miles away are as easily maintained. In order to meet the demands of the mobile person, and to offset city centre congestion, out-of-town shopping centres and hypermarkets develop. These in turn contribute to the collapse of the established hierarchies and a move to specialization almost in the form of the dispersed city. The result is a broad regional organization of a much more complex form than the hierarchical notion of an earlier period. This transformation is certainly not complete even within Megalopolis England, but is the dominant process and is accompanied by the decline of the inner city. It is perhaps possible to regard England and Wales as composed of three areas. The first is that which Hall defines as Megalopolis England, the second the outlying conurbations where modifiction is proceding at a slower pace. The third area is made up of those remaining territories where organization is still based on ranked towns and nested spheres of influence (Fig. 11).

CONCLUSION

This contribution has attempted to sketch only in briefest outline a descriptive analysis of the settlement patterns of the U. K., mainly concentrating on England and Wales, and of the changes taking place. In general the situation is one where changes dependent on mobility have not reached the stage marked by parts of the United States, but are equivalent to many highly developed countries where the dominant theme is the emergence of Megalopolis but where parts of the country remain characterized by former systems.

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CHANGES IN SETTLEMENT PATTERNS AS A RESULT OF URBANIZATION IN LATIN AMERICA: THE CASE OF VENEZUELA

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Studies made in several research centres in Latin America make possible the development of a conceptual model for the structural analysis of the socio-economic area in this part of the world.

Latin America is characterized at present by a socio-economic structure which may be defined as peripheral capitalism. Its most conspicuous characteristic is the dependent, allochtonous growth of capitalist society due to the grafting of a capitalist economy onto earlier, precapitalist structures which are integrated and modified but not radically suppressed.

The introduction of allochtonous capitalist structures without the transformation of the previously existing pre-capitalist structures involves the coastal development of a vertical model of production-consumption. It is characterized by a general pattern of consumption, of great social contrasts, with two well defined subpatterns: one of conspicuous and waste consumption, and the other of underconsumption among underemployed and unemployed urban and rural population.

The first subpattern is transformed by the action of the mass media into the consumption model desirable for the whole society. Such an alienating model is in reality a mirror copy of the consumption patterns in the developed countries. For this reason the production of consumer goods tends to be organized on the basis of imported technologies involving the use of imported raw materials.

The subordination of production patterns to the import of technologies and raw materials leads to industry being concentrated on the coast. Population is also concentrated near ports.

In fact the urbanization of the coasts was prior to the process of implanted industrialization. Already during the colonial period, the dendritic-like pattern of intensive development was established as a consequence of the international division of labour. One of the results was the specialization of Venezuela in so-called colonial production (term used by A. von Humboldt): coffee, cacao, indigo, tobacco, cotton and sugar cane. When Venezuela became an exporter of tropical agricultural products and an importer of manufactured products, the ports and other key points located near the seaboard were transformed into transport nodes dominating the remaining settlements.

With the arrival of import substitution the dependent urbanization was consolidated, and the previous export centres (particularly the national capital) became poles attracting resources.

In 1920 Venezuela became an oil producing country and its production increased remarkably after 1941. An appreciable part of oil revenues is re-

ceived by the state. This factor brought about an important change in the situation previously described. The income is now reinvested in the technical infrastructure of Caracas and the most closely located cities. Bureaucracy and excessive consumption which have increased to an appreciable degree, also tend to be concentrated in the same area.

Thus conditions have been created which will allow industrialization — once import substitution arrives — to be concentrated in the area defined by E. Otremba (1954) as the central *Ballungsraum*. It is a territory situated mainly between Caracas—La Guaira and Valencia—Puerto Cabello. This area becomes the 'Centre', around which the remaining territory becomes peripherally related.

In the spatial organization of the national economy, the first recognizable difference between central and peripheral areas of the country (Centre and Periphery) is the one concerning the spatial structure of manufacturing. Let us see then, what were the towns that in 1971 had 20% or more employment concentrated in manufacturing, not including repair shops which were considered to be services. Let us also see, within that industrial employment, what were the percentages corresponding to traditional, intermediate, engineering and other industries (Table 1). This table reveals the existence of a group of cities having 30% or more employment in manufacturing, of which 10% is an employment in engineering industries: Guacara, La Victoria, Cagua, Mariara, San Mateo, Puerto Cabello—Moron, Maracay, Valencia and Villa de Cura. All these cities are situated in the Centre. Additionally, Turmero shows a smaller proportion of employment in engineering industries.

TABLE 1. Employment structure of cities in Venezuela having 20,000 or more inhabitants in 1971 and 20% or more employees in manufacturing*

City	Manufacturing as % of total employment	Of which in %			
		traditional	intermediate	engineering	other
Guacara	69.13	11.30	40.25	34.03	14.42
La Victoria	64.33	25.48	29.45	40.63	4.44
Cagua	64.00	45.11	8.70	43.12	3.07
Mariara	60.55	31.08	22.35	40.28	6.29
San Mateo	54.67	63.19	10.18	12.56	14.07
Chivacoa	44.29	94.78	1.89	3.13	0.20
Ciudad Guayana	39.50	8.15	82.13	8.84	0.88
Puerto Cabello—Morón	39.41	13.38	41.84	29.83	14.95
Maracay	37.84	44.78	16.00	27.36	11.86
Yaritagua	37.78	98.85	—	1.15	—
Turmero	36.15	81.67	11.36	6.30	0.67
Valencia	35.85	44.24	15.49	33.69	6.58
Punto Fijo	35.27	18.78	73.71	5.49	2.02
Villa de Cura	32.22	38.76	32.08	26.97	2.19
Caripito	30.08	7.47	89.94	2.59	—
El Tocuyo	26.54	98.06	—	1.24	0.70
San Antonio del Táchira	24.17	59.32	6.30	29.04	5.34
San Carlos del Zulia	21.97	91.91	0.21	6.02	1.87

* Cities of the Capital Region (Federal District and the State of Miranda), as well as a few cities of other regions, are not included.

The remaining cities appearing in the table may be divided into two groups: cities having 70% or more employment in manufacturing concentrated in traditional industries (essentially food industries): Chivacoa, Yaritagua, El Tocuyo and San Carlos del Zulia. All these are peripheral cities, but Turmero, located in the Centre, shows similar characteristics. No city in this group concentrates more than 60% of its total employment in manufacturing.

The second group of peripheral cities corresponds to those showing 70% or more of their employment concentrated in the intermediate group: Ciudad Guayana, Punto Fijo and Caripito. None of these cities concentrates more than 50% of its total employment in manufacturing.

Finally, San Antonio del Táchira, a city bordering with Colombia, is a unique case of a peripheral city whose employment pattern is similar to that of the cities in the Centre.

The previous data allow us to present a model of the Venezuelan socio-economic area. First, the Centre, having a more diversified pattern of employment in manufacturing, produces finished goods, including technologically complex products which compete well in the national market; then the cities semi-processing the most important natural resources of the country: oil (in Punto Fijo and Caripito) and iron (in Ciudad Guayana), but unable to diversify their economies in order to reach a more advanced stage of the technological process. In fact they are transformed into cities dependent on the national centre and the industrialized overseas cities. They receive inputs and later on become further industrialized. Thirdly, the cities located in areas of capitalist agriculture whose products are processed in big factories (sugar refineries in Chivacoa, Yaritagua and El Tocuyo), factories of pre-cooked maize (Chivacoa) and the slaughter-houses, pasteurising plants and powdered milk factories (San Carlos—Santa Bárbara del Zulia).

There is a fourth group, not recognizable from the data which served as the basis of Table 1 (where employment in extractive industries was omitted): the oil-extracting (like Lagunillas—Ciudad Ojeda) and mining cities (like Ciudad Piar).

The remaining towns are central places having smaller proportions of employment in manufacturing. Some of the largest Venezuelan cities (including the second in rank, Maracaibo) are included in this group. The definition 'incomplete metropolises', proposed by Milton Santos, seems to be valid when referring to them. Actually these cities have not utilized their comparative advantages, even those of size, to become industrialized: they are simply intermediaries between the national Centre and the regional hinterlands.

The correlation of manufacturing employment vectors in the Venezuelan cities (excluding those of the Capital region, which comprises the Federal District, and the state of Miranda) revealed a close spatial association of most of the manufacturing branches: foods, drinks and tobacco, textiles and dress, printing, chemicals and rubber, metallic products, metal mechanic and miscellaneous products. Only wood and basic metallic industries did not participate in the association. Analysis by taxonomic distance revealed that manufacturing, as a whole, was first linked to the ratio population/distance to Caracas, then to the population growth in the period 1961–1971.

Food, drink, tobacco, printing, chemicals and rubber, metal working, engineering, and miscellaneous industries are linked, to a certain degree, to the ratio population/distance to Caracas. Manufacturing of textiles and wood is rather related to the dynamics of urban growth and, finally, basic metal working industry reveals relationship with a pattern of sporadic location.

The fact that most industries are spatially linked to the ratio population/distance to Caracas reveals the existence of a socio-economic field which diffuses the industrializing process. However, this process is depending entirely on a mass of Caracas population. This represents a basic difference from gravity models applicable to other socio-economic areas, where the potential of a point (i) depends upon the mass or charge of the remaining ($j = 1, 2, ..., n$) points divided, for each related (j) point, by a decaying distance function regarding the original (i) point (d_{ij}). This is a consequence of the dependent character of the Venezuelan economy.

The geography of economic concentration in the Centre, as well as the nature of the relations between the Centre and the Periphery, have led to a process of megalopolisation which is presently at a very advanced stage. According to our estimates, this process will consolidate about 1980 and a belt of areas where urban population predominates, will extend between Puerto Cabello—Morón and Valencia to the west, and Guatire—Guarenas to the east. Several cities having 50,000 or more inhabitants will be located in the belt: Puerto Cabello—Morón, Valencia, Maracay, La Victoria, Los Teques, Caracas, the central coastal conurbation (La Guaira, etc.), Ciudad Losada (conurbation in the middle basin of the Tuy river) and Ciudad Fajardo (conurbation in the valleys of Guarenas—Guatire). Within the Megalopolis, the growth of Caracas will overflow to the satellite cities of Losada and Fajardo, while Valencia and Maracay will together have one million inhabitants tending to coalesce through Guacara, San Joaquin and Mariara.

This giant urban complex is already beginning to press the wind-ward shores of the states of Yaracuy, Falcón and Miranda, where the city dwellers seek rest on the beaches and in the mangroove forests. This process has often led to the degradation of landscape and to environmental pollution. It will be accentuated in the next five years if corrective measures are not undertaken.

Studies made in a part of the Megalopolis, more precisely the axis Puerto Cabello — Tejerías, by the Coordination and Planning Department of the Presidential Office of the Republic (CORDIPLAN) through the Programme for the Organization of the Industrial Area (PROEI) revealed that the Centre-Periphery scheme is repeated in the Centre itself. Small towns such as Guacara, San Joaquin, Mariara, Tejerías or El Consejo actually have a typical economy characterized by enclave industrialization. Industries organized by capitalists from Caracas or from overseas, have only a slight influence on local employment. The technical and managerial staff generally live in other cities, and the multiplier effect in the regional economies is minimized bringing an important marginalisation of population. Factories have invaded agricultural areas, forcing the marginals to occupy the neighbouring slopes. On the other hand, as there is no appreciable multiplier effect in the local economy, the nucleus of the cities tends to deteriorate.

Only the largest cities, Valencia and Maracay, and to a lesser degree La Victoria, have been able to reach some degree of regional autonomy by developing an appreciable endogeneous sector in their economies.

In the periphery, several processes can be witnessed. The urbanization, essentially based on central areas, shows well-defined axial features, following the most important routes. At the junctions of the urbanization axes, nodes are formed which often serve as seats of metropolises or conurbations.

A study made by Ceres Boada and Rosa Estaba de Pérez in the region of San Cristóbal (including the state of Táchira as well as the southwest of Barinas and the west of Apure) revealed some features which might be typical of the organization of the socio-economic area in a peripheral region.

First, the regional metropolis, a quasi-coalescing conurbation integrated by San Cristóbal, Táriba and Palmira can be distinguished. Around the conurbation there is a space, densely inhabited and rapidly becoming urbanized, including the second city of the state of Táchira, Rubio, as well as the towns of Capacho and Santa Ana. This group of cities also tends to suburbanize, as is revealed by the censuses of origin-destination. However, in spite of being the second city in the state of Táchira, Rubio is not able to become a centre of economic attraction. San Juan de Colón (a less populated city to the north of San Cristóbal) is, in this sense, relatively more important.

The counterpart of dynamic population growth in the above territory is the loss of its functional autonomy.

Towards the boundary with Colombia, San Antonio, the third city of the state of Táchira, keeps its autonomy. Ureña is a smaller town dependent on San Antonio.

On the other hand, to the north of the state of Táchira, two centres — the first one (La Fría) having economic functions, the second one (San Juan de Colón) social functions — are the nuclei of another socio-economic subspace. To the east, the western upper Llanos have as their centre the growing complex of La Pedrera—El Cantón—Guacas.

Contrary to the southwest Táchira, where a process of suburbanization occurs, in the north and the east of the region the most recent process seems to be that of 'satellitisation'. The growth of rural population, especially strong during the fifties, tends to decrease in the sixties. The cities have become more important in the regional economy, but they were unable to achieve autonomy, being reduced to the subordinate condition of intermediaries of San Cristóbal.

We do not know whether this process is repeated in other regions, but there is some evidence which points to it. Thus we conclude that a process of metropolisation occurs on the periphery, accompanied by processes of 'satellitisation' and 'peripherisation'.

It is evident that the schemes which foresaw the regional metropolises as potential growth points have not been vindicated by subsequent events. In fact, the resulting economic structure promotes the formation of new schemes which lead rather to the creation of new regional inequalities.

GENERAL AND SPECIFIC FEATURES OF THE URBANIZING PROCESS BETWEEN 1961 AND 1971

Between 1961 and 1971, a predominant process of stabilization or decrease rural population can be observed in the north along the line between the Andes and Southwestern Llanos and then along the course of the Bocono, Apure and Orinoco rivers. Some exceptions, i.e., settlement areas or areas where there is no emigration, are reasonably frequent, however. These areas are often formed by land inside the sphere of influence of the irrigation systems.

Southwards from the Apure and Orinoco rivers, only a few areas in the middle of the state of Apure and the Yuruari valley of the state of Bolivar are affected by the depopulation of the countryside. Eastern Apure is affected by emigration without losing population. The remaining areas, especially the Llanos of Barinas, eastern and southern Apure and the Orinoco banks are settlement territories.

In the northern area we witness the growth of large urbanized territories, including the already mentioned process of megalopolisation of the core area.

Apart from the core, the second area of multiple metropolisation is that of the Lake of Maracaibo. The city of Maracaibo is presently expanding to the north, south and west while on the other side of the strait the town of Altagracia, with the petrochemical complex of El Tablazo, is growing rapidly.

Southwards from Altagracia are Santa Rita and the cities on the oilfields of Bolívar and Mene Grande.

A third city complex is that of Barquisimeto, where urbanization is spreading mainly towards the valleys of the Turbio, Sarare and Cojedes rivers, pointing ahead to Acarigua—Araure and its neighbouring areas.

The most vigorous growth (in relative figures) is, however, that of Ciudad Guayana, a city located in the northeastern corner of the state of Bolivar (370.3% growth between 1961 and 1971).

In some other areas the extensive urbanizing process leads to the formation of urban clusters, notably in the island of Margarita, the valley of Yaracuy and perhaps between Carúpano and Cariaco, in the Northeast. Among these urban clusters, that of the Yaracuy valley is very important, San Felipe being the most important city. The metropolisation of this city as well as the important growth of other towns tend to create a 'bridge' which will unite the intensely urbanized areas of the central megalopolis and Barquisimeto.

The recent urbanizing process in Venezuela is characterized by strong regional inequalities. First, the presence of several areas of stagnant or decaying towns is evident. The first to be noticed among these are the oil cities. Some of them have lost population in absolute figures, while others maintain their level of population in spite of emigration thanks to natural increase.

Other emigration centres which, however, do not lose population (except in a few cases) are the Andean cities, especially those situated in the areas of coffee cultivation.

There are other areas of stagnation in some sectors of the states of Falcón and Lara, the mountains of Nirgua, between Carabobo and Yaracuy, the southern Aragua — northwestern Guárico area, the easternmost area of the state of Sucre and the mountainous areas in the sources of the Manzanares and Guarapiche rivers (between the states of Sucre and Monagas), Ciudad Bolívar, Ciudad Piar (a mining settlement), the cities of the Yuruari valley (in the state of Bolivar) and those of the Central Llanos in the triangle between Las Mercedes, Anaco and El Tigre.

Contrary to these are areas of very dynamic urbanization, like those situated to the east of the Maracaibo straits, those in the southern lowlands of the Maracaibo Lake basin, those of the Western Llanos and those of the space between Barquisimeto and Acarigua—Araure, as well as the west of the island of Margarita. In the centre, Maracay and Valencia show, among the large Venezuelan metropolises, the highest growth after Ciudad Guayana. Valencia has displaced Barquisimeto from the third place in the hierarchy of cities. In the Lake of the Valencia basin, however, the highest relative growth occurs in the axis situated between the two regional metropolises.

Among the areas having the strongest urban growth, the following are important:

(a) areas of land settlement (south of the Lake of Maracaibo basin, Western Llanos, the valley of the Guárico river),

(b) areas of industrial expansion (El Tablazo, Ciudad Guayana, the cities of the Lake of Valencia basin),

(c) areas of suburbanization, like those around Maracaibo, Barquisimeto, Caracas, etc.

The aforesaid scheme is similar to that of the previous intercensal period (1950–1961) when referring to growth in the areas of land settlement and suburbanization. However, the oil as well as the administrative cities lost their dynamic character and began to stagnate, while the manufacturing cities became important and dynamic centres.

Other changes result from metropolitan growth as well as from the evolution of land settlement. Thus, for instance, in Maracaibo, between 1950 and 1961, only the most central municipio, Bolívar, in which the commercial and administrative functions were centred, suffered a population loss, while between 1961 and 1971, as a consequence of the expansion of the central business district, the population loss was extended to other municipios: Santa Bárbara, Chiquinquirá and Santa Lucia. Something similar has occurred in other large cities. On the other hand, the areas having the strongest growth rates around Maracaibo are being displaced very far from the city nucleus to Santa Cruz de Mara and La Cañada. Similar cases are found in the remaining Venezuelan metropolises.

As examples of changes in the evolution of land settlement we should mention the displacement of the most dynamic setlement area in the Western Llanos from the north (state of Portuguesa) to the southwest (states of Barinas and Apure). The process of land settlement, which is accompanied by rapid urbanization, is simultaneously advancing from the main highway (following the Andes-Llanos line), in the upper Llanos, to the lower Llanos. As a result of the aforesaid process some villages have become small towns in the southwest and the lower Llanos (Santa Bárbara de Barinas, El Cantón, Ciudad Bolivia, Santa Rosalía de Turen, Libertad, Guanarito).

MARGINALITY AND THE INTRA-URBAN MARGINAL SETTLEMENT

At the intra-urban level the phenomenon of marginality is revealed. Its ecological manifestations are the *barrios de ranchos*. The appearance of the *barrios de ranchos* is a consequence of the vertical structure of production and consumption.

When a greatly expanding minority becomes separate and a large mass of people leave the labour market, a subsystem (or the so-called — by Milton Santos — 'circuit') of consumption is born. This subsystem is the result of the imposition, through the mass media, of consumption patterns which are accepted as ideal but are unattainable for the poor of the city. As a result a subsidiary pattern (or 'circuit') appears where the subsistence consumption is juxtaposed to the exaggerated consumption of durable goods, resulting from widespread debt.

The previous discussion leads us to one of the fundamental themes of Latin American social science: marginality.

Marginality (in Spanish *marginalidad*) has been the subject of notable contributions from the Peruvian scholar Aníbal Quijano, one of Latin America's social scientists. According to him, marginality is different from the poverty phenomenon which exists at all times and perhaps in every society. It is not the isolated or small group marginality too like the marginality of the *Lumpenproletariat*. The question is that important areas of population are forced out of the labour market and deprived of resources. This leads to the underconsumption of basic goods and the widespread contraction of debts in order to obtain costly durable goods promoted by the mass media.

As a consequence of the high rates of population growth, the marginal group becomes more evident in time. Marginality attains its ecological mani-

festation through the barrios *marginales*. They grow in number because of land speculation which is a normal phenomenon in a capitalist society, and a strong demographic pressure.

One result of speculation is the lack of cheap housing. Public agencies, such as the Venezuelan Banco Obrero, are not only unable to build enough housing, due to the continuous increase of the marginal group, but are condemned to seek land located farther and farther away from the urban nucleus, while in more central areas vacant land is concentrated in the hands of speculating landlords.

The *barrios de ranchos* are ecological units which result from large-scale squatting. They are located in areas which are critical from the geomorphodynamic standpoint: slopes affected by erosion or mass movements, creeks, terrace slopes, floodplains, poorly drained terrains, etc. These are locations which, according to Maruja Acosta, "even if they were private properties would be never exploited for profit as residential areas". In spite of the foregoing statement, we must point out that, in opposition to the Law, a group of proprietors (the so-called *rancheros*) making money from shack rentals has formed the *barrios*.

M. Acosta also points out some other factors which have indirectly influenced the location of the *barrios de ranchos*: (1) nearness to the main routes entering the city, (2) developments of popular housing which, at the beginning, attracted unqualified construction workers; these workers built *ranchos* (shacks) in the neighbourhood later on, taking advantage of infrastructure and communal services, (3) nearness of factories and other work places, (4) nearness of upper class housing, where *marginales* can obtain jobs, especially in personal services not requiring special skills.

R. Andressen, in a study on the variables explaining the population densities in the *barrios de ranchos* in Caracas, concluded that the main variables accounting for these densities in 1959 were topography (slopes between 40–60%) and the shortest travel distance to the city centre. Isolating other variables, he obtained a secondary coefficient of correlation for the first variable of 0.4325, for the second one of −0.4905. In 1966 only the second variable was of some importance, having a secondary correlation coefficient of −0.5208. There is no contradiction between the findings of Andressen and the propositions made on a more intuitive basis by Acosta. Andressen presents important evidence, however, to justify the belief that, at least during an advanced stage of city growth, the topographic factor is less important than it is generally held to be, while the distance, mentioned by Acosta as the first of the 'other factors', is more important.

The negative sign of the correlation would be, as pointed out by M. Acosta, a consequence of the increasing travel to the city centre when a site near the routes entering the city is obtained. When the city interstices are filled up, the *marginales* seek locations in the outskirts, as the vacant land in the neighbourhood of the residential areas is reserved for the upper class housing.

The *barrios* are initially formed by true *ranchos*, that is, houses built of such improvised construction materials as: galvanized iron-plates, cardboard, box pieces, etc. Later on improvements are made on the houses. However, a large number of dwellings in the *barrios de ranchos* is — strictly speaking — uninhabitable. Many houses are deprived of water supply, and sanitation, if there is any, consists of latrines. The absence of sewers has sometimes caused infiltration processes leading to catastrophic landslides.

Among the *ranchos*, the dwellings having one or two rooms dominate. Overcrowding as well as promiscuity is common.

TABLE 2. Cities having 20,000 or more inhabitants. Total population, growth rate and population percentage living in *barrios de ranchos*. Family members born outside the locality as percentage of family members (1970)

Cities	Total population	Average annual growth rate 1961–1970	Population living in *ranchos*	% 3/1	Family total	Members born aoutside the locality	% 6/5
1	2	3	4	5	6	7	8
			Cities more than 100,000 inhabitants				
Caracas**	2,167,653	5.4	905.592	41.8	399,974	311,442	77.90
Maracay*	196,252	3.9	95,226	48.5	36,874	31,629	85.54
Valencia*	286,917	3.8	126,760	44.2	53,250	26,856	70.53
Cabimas	101,065	5.4	63,366	67.3	17,601	13,704	77.85
San Cristóbal*	126,951	5.2	57,020	43.2	20,340	13,926	63.46
Maracaibo*	558,673	4.8	352,759	63.1	101,044	62,101	61.09
Barquisimeto*	277,983	4.2	141,248	50.9	46,211	35,094	82.36
Puerto La Cruz—Barcelona*	164,276	3.3	100,976	61.6	27,950	19,247	70.52
Ciudad Bolívar*	93,624	6.1	54,396	58.0	16,430	10,888	66.26
Cumaná*	99,859	4.6	46,867	47.0	15,563	5,482	35.22
Ciudad Cuayana	135,639	14.8	33,171	24.6	24,514	24,430	99.65
			Cities 20,000 to 100,000 inhabitants				
Puerto Cabella—Morón	75,020	3.4	42,980	57.3	13,481	1,042	77.30
Punto Fijo	87,750	1.8	36,887	12.0	13,872	13,583	97.91
Mérida*	69,634	5.4	33,179	47.8	10,720	6,393	59.63
San Fernando*	32,444	6.6	25,723	79.3	5,499	2,761	50.20
Maturín*	84,959	6.5	41,037	48.2	14,570	10,239	70.59
Valera	63,121	4.7	33,961	53.7	11,340	8,938	78.81
Acarigua-Araure	72,927	4.9	17,191	23.3	12,394	11,736	94.69
Coro*	57,460	2.2	23,387	40.6	9,547	5,799	60.74
El Tigre	43,961	2.9	13,105	29.8	8,211	7,796	94.94
Valle de La Pascua	31,695	5.1	19,726	32.3	5,430	2,725	50.18
Calabozo	29,382	7.1	16,105	54.9	5,102	3,174	62.21
San Juan de Los Morros*	29,934	4.5	14,491	48.2	4,772	3,575	74.91
San Felipe*	36,453	4.5	16,524	45.3	6,505	3,672	54.44
Carúpano	48,864	2.0	35,539	72.7	8,144	3,084	37.86
Guanare*	30,644	6.6	21,337	69.6	5,228	4,421	84.56
Barinas*	44,932	7.5	26,562	69.1	7,929	7,051	88.92
Anaco—Cantaura	44,972	2.2	19,067	42.3	7,730	6,818	88.16
Upata	23,029	5.8	16,803	73.9	4,034	2,433	60.00
Carora	28,033	5.2	15,363	53.5	4,737	2,648	55.90
San Carlos del Zulia	23,155	5.3	8,414	35.7	3,088	2,245	72.70
Porlamar—Pampatar	37,347	4.8	6,582	17.4	6,126	1,159	18.91

Source: Mercavi 70. Banco Nacional de Ahorro y Préstamo. Published by: Maruja. [1] According to the stratification of the sample Mercavi 70, zone 1 corresponds to *barrios de ranchos*.
* State capitals. ** National capital.

Previously described features of location and construction materials of the present *barrios de ranchos* differ significantly as compared with those existing before the 'urban explosion' which began by 1941. The travellers' descriptions pointed out that in the 19th century there were, in the outskirts of cities such as Puerto Cabello and La Guaira, districts composed of rural huts built up from *bahareque* walls, palm leaf roofs and earthen floors.* These were the dwellings of the city poor such as slaves, servants, porters, stevedores, etc. However, as we have previously said, a modern *barrio de ranchos* is built in the interstices of the city, in vacant areas, often unsuitable from the physiographical standpoint. The construction materials are residues of industrial civilization. The rural *rancho* (rustic dwelling or hut) is built of material obtained directly from the natural environment. Unsuitable sites as well as poor building technology in the *barrios de ranchos* are responsible for the fairly frequent occurrence of catastrophes, like floods, landslides, etc.

Table 2 shows the importance of the phenomenon of settlement in *barrios de ranchos*. The quantitative analysis revealed that no significant correlation exists between the percentage of population in *barrios de ranchos* and the total population of the city ($r = -0.0932$). No correlation exists either with the average annual growth rate ($r = -0.0504$) or with the percentages of family members born outside the locality ($r = -0.1762$). The critical value of the Pearson's correlation coefficient for $n-2 = 30$, for a degree of confidence even as low as 0.1 is 0.2960, that is, much larger than any of the aforesaid coefficients of correlation.

No correlation exists either between the percentage of population in *barrios de ranchos* and in the city capitals. The Mann-Whitney test taking N_2 as the capitals and N_1 as the remaining cities gave a U value of 107, while the critical value for $N_1 = 15$ and $N_2 = 17$, and for a degree of confidence even as low as 0.1 is only 83, that is much smaller than the U obtained.

In conclusion it has to be said that there have been very few geographical studies both on the subject of the *barrios de ranchos* and on the urban *marginalidad* in Venezuela in general. There is room, therefore, for a good deal more research in this field.

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* In the 1950's this kind of dwelling was still found in the outskirts of the Llanos cities, e.g., Barinas, Guanare and San Fernando de Apure. *Bahareque* is a kind of building technique consisting of the filling in with mud of a frame made of horizontally placed canes which rest on columns made from stems or branches.

PART III

SETTLEMENT SYSTEMS — CONCEPTS AND RESEARCH PROGRAMMES

During the Leningrad Symposium the last General Meeting of the IGU Commission on Processes and Patterns of Urbanization took place. The proposal and programme for a new commission "on national settlement systems" were discussed. The three introductory reports are published here to give the proper background to the comparative studies now undertaken by this Commission. The proposal for its creation was approved and the Commission on National Settlement Systems was established by the vote of the General Assembly of the International Geographical Union on July 31st, 1976 during the 23rd International Geographical Congress in Moscow. Its terms of reference were defined as follows: "To study the emergence, evolution and differentiation as well as the planning needs and possiblities of national settlement systems, in particular:

(1) to develop the theory and research methods of such systems with the identification of basic settlement units and subsystems in their interdependence and interaction;

(2) to analyze the role and functions of urban agglomerations and their changing structures within those systems as well as their regionalization;

(3) to analyze the role and functions of the economic, cultural, political and administrative centres, such as the national or regional capitals in the formation of those systems and their hierarchical structures".

The work of the Commission is to be based on the comparative studies of settlement systems of individual countries prepared by geographers, members of the Commission. Some topical reports along the same lines as these studies are also to be undertaken.

The Commission had already met in Bochum, Western Germany from January 3rd to 7th, 1977 and approved the guidelines for the studies of settlement systems of individual countries. These guidelines are included at the end of this volume. Other meetings in Paris (July 1978), Benin City (July 1978), Warsaw (June 1979) and Tokyo (Summer 1980) are envisaged.

The present membership of the Commission is as follows: chairman — Kazimierz Dziewoński (Poland); ordinary members: Manzoor S. Alam (India), Luis Fernando Chaves (Venezuela), Etienne J. Dalmasso (France), Larry S. Bourne (Canada), Georgii M. Lappo (USSR), Peter Schöller (FRG), Takashi Yamaguchi (Japan); corresponding members: Peter Scott, John McKay (Australia), Walter Stohr (Austria), H. van der Haegen (Belgium), Olga Maria Buarque de Lima (Brasil), James W. Simmons (Canada), Miroslav Macka (Czechoslovakia), Sven Illeris (Denmark), Mauri Palomaki (Finland), Frankdieter Grimm (GDR), Dietrich Bartels (FRG), Pal Belusky (Hungary), Michael Bannon (Ireland), Berardo Cori (Italy), Johannes G. Borchert, P. J. W. Kouwe (Netherlands), P. O. Sada (Nigeria), Marek Jerczyński, Piotr Korcelli (Poland), Antonio Simoes Lopes (Portugal), Vasile Cucu, Petre Deica (Roumania), Horacio

Capel Sáez, Manuel Ferrer Regales (Spain), Ivan Lindstrom, Olof Wärneryd (Sweden), Mohamed Fakhfakh (Tunisia), Erol Tumertekin (Turkey), Harold Carter, Ronald J. Johnston, Brian T. Robson (United Kingdom), David R. DiMartino, Lutz Holznar, Richard Morrill, Robert Sinclair (USA), Nikolai T. Agafonov, Vazha V. Gujabidze, Boris S. Khorev, Yurii L. Pivovarov (USSR), Igor Vriser (Yugoslavia).

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THEORY, METHODS OF ANALYSIS AND HISTORICAL DEVELOPMENT OF NATIONAL SETTLEMENT SYSTEMS

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THEORETICAL FOUNDATIONS AND METHODOLOGICAL ORIENTATION

Studies of settlement network problems carried out in different countries have in the past several years suggested that the long-established theoretical settlement models used up to now are less and less adequate to describe the actual situation they are supposed to represent. Hence it is more and more difficult to understand, interpret and explain the various complex aspects of the functional and spatial organization of settlement units, not to mention issues such as the forecasting of further changes or steering their course in some desired direction.

Generally, it can be said that attempts to solve such difficulties tend either to verify the known theories and models of the settlement network and to effect their integration, or to develop a theory of higher order.

The former of the two trends manifests itself in studies whose authors attempt to verify, modify and interrelate some aspects characteristic of various concepts of settlement such as: the system of central places, the urban economic base, the rank size rule, the growth pole, the territorial production complexes or others. It must be pointed out, however, that in most cases such attempts at integration are usually carried out in the domain of methods and techniques rather than in that of theory.

The other trend is manifested in the increasingly frequent attempts to pursue such aims within the theories and methods of system analysis; those venturing on the construction of higher order theories cherish the conviction — which they may or may not be aware of — that this is the only way toward the adequate exploration of as complex a category of phenomena as contemporary settlement patterns.

Such an approach needs some methodological reorientation, shifting the emphasis from the analysis of *urban networks* (normally viewed as a set of functionally isolated individual elements with specific characteristics, classified on the basis of structural similarities) to the analysis of *urban systems* conceived of as an integrated and organized set of settlement units, interdependent and interacting through multiple links and relationships.

The proposal to treat settlement networks as systems is based on the intuitive belief that they possess internal organization and certain properties of behaviour similar to those found in other complex systems (McLoughlin and Webster, 1970). However, such a decision implies the necessity to adopt a definite research procedure. The conceptual framework for such a procedu-

re may be found perhaps in the general systems theory and other related theories. Without discussing the nature, specific features and usefulness of such an approach, let us simply point out that to put those theoretical ideas into actual research practice in empirical spatial studies, at least at present, is an extremely complicated task. These difficulties lead to many simplifications, assumptions and constraints. As a result, the studies carried out are not systems analysis in the real sense of the term but only use some aspects of systems analysis.

The settlement urban system can be defined as a set of settlement units (as its basic components) which are interrelated and interdependent (through direct or indirect relationships of a social, economic and technical nature) in such a way that any significant change in the variables characteristic of one unit generates changes in the corresponding variables characteristic of one or more of the other units. Of course different towns and cities react with different intensity to impulses from outside. On the national level, the interdependence of the urban components varies considerably. Some urban units are more integrated into the system, others less. Our definition implies further that cities and towns are socially and economically dynamic and that they are organized. Their organization is based on various relatively persistent functional interrelationships that take the form of flows of population, commodities, capital, ideas and information. The satisfaction of various needs (a goal-oriented system) accounts for their functioning and development.

The settlement system as a whole develops within certain environments — political, economic, social and geographic. They affect the settlement system both in its form and in the direction of its growth and they may be either stimulating or restrictive. The settlement system itself is also an open one (though it is much more self-contained and closed than its components) whose development is at least partly dependent on the continued inflow of 'energy' from outside. This makes the 'entrance' elements of the system — seaports, transit stations, border crossings, international airports — particularly important for functional organization.

The functional-spatial organization of national urban systems is based on the social and territorial division of labour. This phenomenon, which results from a variety of factors, is the reason for the concentration of population and productive capacity in favourable geographic locations.

The organization of settlement units in space is strongly affected by socio-economic developments. The interdependence of economic and urban growth has been the subject of many hypotheses which claim that nationally (or regionally) socio-economic development is reflected in the structure of settlement networks, in the system of commodity flows and exchange, in the patterns of commuting and migration, and in the form and structure of urban influence (Friedmann and Alonso, 1964). Since, it is argued, each 'phase' of socio-economic development has its own specific model of functional and spatial urban organization, it is also possible that there is some optimal strategy for the development of the settlement system. In the case of the urban network, this development involves the functional and spatial organization evolving from less to more integrated structures which provide better conditions for the implementation of social and economic goals.

In spite of the growing interdependence among the constituent urban units it is impossible at present to analyze the growth and development of the national urban network in greater detail. This is so because the necessary data concerning various types of flows and interactions between the settlement units, in particular the cities and towns, are inadequate.

In consequence, systems theories and systems terminology are used mainly as conceptual frameworks for the logical organization of research and for the identification of isomorphisms between different phenomena. In such an approach the results are obtained by means of a relatively traditional method. The alternative is to analyze the scanty data with a more precise use of theory and with methods found in the systems studies as developed in cybernetics, information theory, operational research, etc. In adopting the concept of spatial organization as the overall framework for the analysis of changes in the national settlement system the stress is laid on the regularity and hierarchical organization of the urban network.

FUNCTIONAL AND SPATIAL ORGANIZATION OF THE NATIONAL URBAN SETTLEMENT SYSTEMS

Urban functions of different nature, rank and spatial character, furnish the foundation for different models of spatial organization of urban settlement.

Central (regional) functions are — in general — closely related to the size of towns and cities. Such activities have the character of continuous functions whose impact diminishes in proportion to the distance from the city (the extent of its zone of influence). If the central functions dominate over the others, spatial organization becomes hierarchical. In contrast, the specialized functions (supraregional) seem not to be directly related to size and their impact is not spatially continuous. Hence, if spatial organization is based on specialized functions, it is not necessarily hierarchical.

The above distinction is paralleled by the current theories of settlement networks. These relate either to the one or to the other general type of functional category, treating them as separate systems. Thus central-type functions are the foundation for theories of central places both in the classical formulation (W. Christaller, 1933), or in its numerous progenies (A. Lösch, 1940; W. Isard, 1956; D. L. Huff, 1963; L. Curry, 1964; B. J. L. Berry, 1967; J. Marshall, 1969). Functions of the second type find their fullest expression in Soviet theories which are based on N. Kolosovski's theory of territorial production complexes (N. I. Blazhko, S. M. Voskoboynikova, B. L. Gurevich, 1967).

In its original form, the theory of central places has — besides its essentially static character — two major weaknesses: (1) it neglects the horizontal functional links between settlements of the second or lower orders whenever they are not components of one subsystem (location in different regions), and (2) it neglects the horizontal functional links between settlements of the same order within one subsystem (towns of equal size within the same region). In this model functional interdependencies are assumed to exist between hierarchical levels only, and not within the system as a whole (A. Pred, 1973).

The provisions of the Losch model are much more realistic taking into account the second of the above requirements, but they also fail to cover the full range of interdependencies within the system.

The models based on the concept of territorial production complexes, are more consistent in embodying the assumptions of systems analysis, but they focus almost exclusively on production links and transport connections with scanty attention being paid to the service sector.

In view of the fact that in reality cities and towns represent functions of both types (regional and supraregional, central and specialized) it seems that at present the most realistic model of the national settlement system may

be obtained by integrating (a) the hierarchical model with (b) some elements of functional links of nonhierarchical character between urban centres of higher rank as well as between towns of smaller size.

Such a model falls into the category of dynamic models. It seems that when exposed to certain stimuli from the environment the components of the settlement system undergo definite transformations which are reflected in the spatial organization by changes in rank and structure of horizontal (geographic) and vertical (hierarchical) links. The largest urban units are less prone to all these changes (resulting generally in straight correlation between functional rank and size).

The growth of volume of transport and the appearance of new means of transportation constitute one of the powerful change-inducing factors in the development of specific forms of spatial organization. Spatial mobility is one of these factors, and population migrations (whether permanent, like rural-urban or inter-urban migrations, or seasonal, like recreational and tourist migrations) illustrate its impact well. The results of research seem to indicate that in a simple regular settlement network in areas of extensive industrialization and urbanization, with an underdeveloped transport network, rural people migrating to larger urban units tend to do so in stages. In areas with advanced industrialization and urbanization and with an efficient transport network interconnecting the settlements into a unified system, migratory movements are fluid and independent of the size of urban settlements, and migration by stages tends to disappear. Changes in the hierarchical model of spatial organization and the growing importance of nonhierarchical links appear therefore to be two aspects of the evolution of modern settlement systems.

The growing functional specialization of cities and towns and the increase in functional differentiation in the national settlement system reinforce the interdependence and interaction of settlement units over space. As a result the development of the spatial functional structure of the national economy consists of the transition from small, relatively isolated and functionally undifferentiated units into strongly interdependent, functionally integrated urban regions and agglomerations.

In general it is possible to assume that: (1) the settlement systems represent real human communities and habitats existing in space and time, i.e., they are both historical and geographical phenomena which at present are the most developed and integrated systems and even, at the national level, self-contained; (2) they belong to the class of complex social systems, which implies that they are: *adaptive* (rather than mechanistic), *learning* (adjusting in response to the generating factors), *open* (heavily dependent on relations with the environment, both social, political, cultural, economic and physical), of *extreme organized complexity* and with an extended capacity for internal substitution of functions. As they change, or, to be more exact, as they grow both in time and in space, their characteristics change (L. Bourne, 1975).

EVOLUTION AND MAIN TYPES OF NATIONAL SETTLEMENT SYSTEMS

On the basis of the analysis carried out so far and the theories developed it is easy to conclude that the really decisive and dominating factor in the growth of national settlement systems are the changes taking place within the whole range of socio-economic conditions, in which they are obviously implanted and of which, it may be even said, they are an important element. On the other hand, the impact and influence of the natural environment on the settlement

system is not so much formative as inhibitive to their capacity for development. Therefore the role of socio-economic formations and of political structures must be the starting point in the analysis of the settlement systems and their growth. In fact each formation possesses its own, characteristic settlement system, often in the form of patterns and structures typically adjusted to its needs. As a result there are throughout the world not one type but numerous types of settlement systems.

Within these terms of reference it is also possible to talk of the life-cycle of a settlement system, each system being a composite of two elements: society (with its activity) composed of local communities, i.e., its contents and physical equipment (infrastructure), representing its material form. Successive stages of such life-cycles may be roughly defined by the mutual relations between those elements. However, their development, both in time and in space, is in reality neither parallel nor simultaneous. The early stages are usually characterized by the emergence of a new kind of society with material forms crystallizing only slowly and with marked delay. With the maturity of a system a certain balance between society and physical equipment is established and in the last declining stages the material forms, usually petrified, sometimes even decaying, dominate over the society.

Generally speaking, in the birth and later in the development of a settlement system, two different phases may be identified. Either a system arises in a new territory without any more significant antecedents, or it evolves by transformation of an already existing one, developed in some earlier socio-economic formation. Such transformation involves an adaptation of the existing material forms to the new needs and uses. Naturally, there are some intermediary cases when a country was — for instance — conquered, its population more or less eliminated in one way or another or subjugated and a completely new settlement system established, without any greater consideration being paid to the already existing settlement patterns and structures. In such cases we face the coexistence of at least two (sometimes even more) separate settlement systems; one dominating and growing and the other subservient and receding. The situation may be sometimes reversed as in the case — for instance — of regained national independence. Another example of a faulting and sudden break in the evolutionary development of the national settlement systems may be found when the national territory is significantly changed, whether diminished, increased or only shifted.

In the history of mankind to date, it is possible to discern five major socio-economic formations: tribal, slave, feudal, capitalist and socialist. Each, in countries where it has prevailed, has developed its specific settlement system. But in addition there are also numerous regional varieties resulting from the differences in natural environment conditions and historical vicissitudes of specific nations. However, not all of these kinds of settlement systems still survive even in the form of relics. Others still exist, although strongly transformed under the impact of later formations and the corresponding settlement systems. Their history, with some notable exceptions, is not at present very well known. Among the better known are the feudal settlement systems of various European countries. Also comparatively well known are the early settlement systems of the Mediterranean countries, especially the Greek and Roman ones.

At present the settlement systems of only three out of the five formations are of evident significance. They are feudal, capitalist or socialist in character.

The first, the feudal settlement system, is already clearly receding, strongly influenced or even transformed under the impact of capitalist and/or socialist formations. In reality it survives under mixed formations only. The second, the

capitalist settlement system, is at present the most clearly crystallized and integrated in form although, at least in some cases, it is already in decline. The third, the socialist settlement system, is — it seems — quickly growing as a society but only slowly developing its final characteristic forms.

This triple division is not, however, sufficient even for a tentative classification and typology of the national settlement systems — a working hypothesis, needed for programming comparative studies. Moreover, all the additional classes lack clearly defined dividing lines. In all cases there are some intermediary forms. Even in the case of the above-mentioned types connected with rather well defined socio-economic formations, we are often dealing with transitory forms representing mixed formations. It is therefore necessary to remember that all classifications described here represent only rough generalizations based on the dominant characteristics. It seems that within these limitations the most important additional differences between various countries of the same socio-economic formation are created by the available reserves of land for new settlement. In other words, it makes a great difference for the evolving structure of the national settlement system whether its growth involves redevelopment of an already existing settlement network or its extension to new territories. This basic fact is reflected immediately in various characteristics of the whole system.

First of all there are differences in the population densities (urban population in particular) and the densities of settlement units (cities in particular). These differences may serve as a rough measure indicating to which class the settlement system of a given country should belong within the more general class of its socio-economic formation.

Another area of significant differences due to the intensity of land use and the existence of land reserves may be found in the variances to be observed in the patterns of settlement networks: monocentric, bicentric (polarized) or polycentric; transport- or administration-oriented. These are in turn reflected in the different shapes of rank-and-size distributions of cities and other settlements. These patterns may at the same time also represent the existence of specific settlement subsystems, quite often hierarchical ones but also functionally specialized. However, the problem of subsystems is usually extremely complex, especially in cases where these are connected and intertwined with the existence of several systems (different socio-economic formations), one superimposed on another.

The rate of transformation taking place within a system, whether it is growing, stabilized, stagnant or even declining, should probably be taken into account as an additional factor in the classification and typology, although this problem has not so far been more extensively tackled in research. It may perhaps be included and expressed in terms of successive stages of systems development. This approach has already been mentioned. The rank and size analysis contains some possibilities for its identification. But before it can seriously be faced some deeper theoretical and methodological thinking is evidently needed.

In conclusion to the preceding observations it is possible to assume, although schematically and in a very general way, that in the modern world we are faced with at least six classes of national settlement system: two for each socio-economic formation (identifiable in the present conditions), i.e., separate classes for countries with larger land reserves and for those already intensively developed, without such reserves. These, partly regrouped, are as follows:

A-1. Capitalist countries with settlement intensively developed in the earlier formations (e.g., countries of Western Europe, perhaps Japan);

A-2. Capitalist countries with settlement largely only extensively developed (e.g., countries of North America, Australia, New Zealand);

B-3. Developing countries, densely settled (e.g., countries of Southern and Southeastern Asia);

B-4. Developing countries, only sparsely populated and settled (e.g., most of the countries of Latin America and of Africa, also of the Middle East);

C-5. Socialist countries with settlement intensively developed in earlier formations (e.g., most of the countries of Central Eastern Europe and the Western parts of the Soviet Union);

C-6. Socialist countries with large areas only sparsely populated and settled (e.g., the Asian part of the Soviet Union, Mongolia).

A-1. In the capitalist countries with settlement earlier intensively developed, the following characteristics may tentatively be indicated: the largest city is usually at the same time its national political and economic capital (the few exceptions are due either to federal structure — Switzerland, or political history — Federal Republic of Germany); there exists on the whole a well-defined hierarchical system of cities more or less connected with past or present administrative divisions, on which in some regions a pattern of industrial functional settlement is superimposed, sometimes evolving into large conurbations. The amount of concentration in and around the national capital depends heavily on the political vicissitudes of the country but in comparison with other classes of national settlement systems it is clearly smaller. The sharp contrast between rural and urban areas still survives outside larger urban agglomerations. However, in some countries (England) a rural-urban continuum does develop.

A-2. In the capitalist countries with settlement largely only extensively developed, there is usually a characteristic polarization of the political and economic functions of the capital between two cities. As a result the national (political) capital is not the largest city in the country. The concentration of urban population in the largest urban agglomerations is in total stronger than in the first class and the intermediary group of the middle-sized cities, and the whole hierarchical structure of the urban network is underdeveloped. The whole system is clearly transport-oriented. On the other hand, contrasts between rural and urban areas are not so strongly defined, with a large number of intermediary forms. The settlements possess a strongly developed socio-ecological structure reflecting class and cultural divisions within the whole nation. In few countries such as those of Southern Africa, the settlement network and their internal patterns reflect the 'apartheid' divisions, imposed by the ruling classes.

B-3. In the densely settled developing countries, the concentration of population in the largest urban agglomerations is very heavy and is still growing; new districts shaped after European patterns are superimposed or exist alongside the ancient traditional areas grouped around the old cities which were usually on a much smaller scale. A specific role is played by large seaports and their urban agglomerations sometimes larger than the national capitals and representing connections with world trade and the past structures of colonial empires and economies. The hierarchical patterns, which are well developed, are at present undergoing strong changes, a result of newly gained independence and changes in the political and administrative divisions. The formerly balanced and stabilized settlement systems are now in a phase of great change.

B-4. In those developing countries which are on the whole only sparsely populated and settled, the suddenly growing concentration of population in and around the national capitals (sometimes also in a few regional ones) reaches astronomical proportions and their growth rate is very rapid indeed. The urban

network, usually transport-oriented, is obviously underdeveloped, at worst consisting of no more than road stations and junctions, local markets and isolated seats of local government and administration. The class contrasts between the central parts of cities (especially the largest ones) and the surrounding zones are very strong. The whole national settlement system is unbalanced, undergoing extremely rapid changes with the whole future rather uncertain, partly because of deficiencies in national urban policies and partly as a result of lack of experience, technical skills and money.

C-5. The socialist countries with settlement earlier intensively developed are transforming their traditional settlement structures into new ones based on a planned economy and far-reaching social changes. Already it seems clear that they will be marked by much smaller contrasts both in the concentration of population and size of different urban settlement types and in class divisions particularly between urban and rural areas as well as between various districts and units of the same urban complex. A definite tendency to establish a specific polycentric structure and the corresponding pattern of urban regions throughout the whole country may be easily observed.

C-6. In socialist countries with large areas only sparsely populated and settled (in reality almost exclusively in the Soviet Union), the whole settlement system, especially in new territories, is open to large-planning. At present the settlement system is obviously transport-oriented and developing in the form of industrial and urban regions based on newly developed natural resources. It is characterized by a lack of class divisions and by the construction of urban and rural settlements with similar standards of living conditions. Another characteristic is a well-defined network of social services, organized on several hierarchical levels. This obviously introduces the tendency to develop some kind of central place patterns within the otherwise functional spatial structure of the settlement system.

FURTHER LINES OF RESEARCH

Assuming this classification to be a viable working hypothesis, a comparative research programme on national settlement systems may be organized. First steps would consist of the preparation of reports on settlement systems of individual countries. Studies should deal with the emergence, development and structures of the national settlement systems, together with such additional specific problems as the role and position of urban agglomerations and of capital cities in these systems. Such reports should then form the basis for topical studies. After the completion of the national and topical studies, a general report would be prepared based on the knowledge obtained. It would present a revised and updated review of the theory and methods as well as a general picture of the actual state of national settlement systems throughout the world. The general report would be published together with national reports and topical studies. To expect such a publication to be produced in four years, i.e., for the next International Geographical Congress, may be too optimistic. However, the manuscript may perhaps be ready in four years for final discussion.

To implement such a programme the Commission on National Settlement Systems would have to propose some standard list of contents for the national reports. This would have to be done immediately after the setting-up of the Commission.

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THE DEVELOPMENT OF URBAN AGGLOMERATIONS WITHIN THE NATIONAL SETTLEMENT SYSTEMS

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INTRODUCTION

The general literature on urbanization and regional development has consistently paid considerable attention to processes and problems of metropolitan growth and the formation of urban agglomerations. Recently, along with the development of systems approaches to the study of human settlements, several hypotheses have been advanced portraying the role of urban agglomerations within national settlement systems. According to these hypotheses, urban agglomerations: (a) form subsystems, i.e., their mutual linkages are stronger than those between individual agglomerations and their hinterland; (b) perform the role of growth centres in regional economic development; (c) function as nodal points in the growth of regional settlement systems.

The first hypothesis mentioned is represented in the work of K. Dziewoński (1975) and A. Pred (1975). Dziewoński identified three major subsystems in the national settlement system, i.e., urban agglomerations which share nation-wide functions and strongly interact among themselves; regional subsystems based mainly on the centrality principle; and, finally, local subsystems organizad according to the daily or at least weekly activity patterns of the population involved. A. Pred, on the other hand, offers "a large-city focussed model of city-systems development" which emphasizes a circular and cumulative nature of the growth of large metropolitan complexes. Once emerged, these complexes tend to generate contacts and exchange goods and information with other similar units, thus maintaining high growth potential and high ranks in the settlement system at the national level.

The second hypothesis is embedded in the innovation diffusion approach to regional economic development, based on the central place theory. It is also to a certain extent implied in the typology of urban systems as presented by L. Bourne (1975). The latter author puts forth the concept of the national system of urban regions. This system is dominated by the largest metropolitan centres (urban agglomerations) and is characterized by a step-like population size hierarchy; it is composed of regional subsystems of cities, within which nest in turn the local, or daily systems. In contrast to the statements earlier referred to,

it is the regional dimension of linkages within the national settlement system that is emphasized by Bourne.

The third hypothesis is due to G. M. Lappo (1974) who portrays urban agglomerations as multi-functional centres of production, services, and decision-making, as well as transportation and communication nodes, forming the backbone of the national settlement system and organizing the patterns of linkages both between and within varied economic activities on the regional scale. This twofold role of urban agglomerations is especially pronounced in the case of newly developed and sparsely populated regions which have an economic base oriented toward resources.

Although a considerable amount of empirical evidence has been accumulated pertaining to the growth and structure of urban agglomerations, this evidence falls short of elucidating the basic questions posed above. To test those hypotheses, one should place them against the background of existing models and concepts related to settlement systems at a varied spatial scale.

In terms of spatial dimension, urban agglomerations occupy an intermediate position between the urban and regional scale. Their growth has frequently been described as a fusion of city and region. It seems therefore appropriate, when discussing theoretical aspects of the growth and structure of urban agglomerations, to review the relevant concepts and models which pertain to the regional scale on the one hand, and to the intra-urban scale on the other. These concepts will be briefly presented in the second and the third sections of the paper. Their discussion should result in the identification of some of the major gaps in the existing body of theory. On this basis, in the concluding section, some of the research prospects and demands, concerning the study of urban agglomerations and functional urban regions, will be outlined.

It is realized by the authors that the review of concepts that follows is highly selective and partial. This is due not only to the limited length of the paper, but also to the growing difficulty of keeping track of the rapidly expanding, multilingual literature on urban topics.

CONCEPTS RELATING TO REGIONAL SETTLEMENT SYSTEMS

TRADITIONAL APPROACHES TO REGIONAL ANALYSIS

A major characteristic of human settlements is the presence of many separate nodes or centres of concentrated activity. The central place theory attempts to explain the spatial distribution of cities in terms of their size and functions instead of focusing on the peculiarities of individual cities. Despite modifications that have been made to earlier central place schemes in order to explain better the typical spacing, size and hierarchy of settlements, the usefulness of the central place theory for human settlements policy is severely limited. The assumptions of the theory have some relevance to spatial patterns of mercantile centres but they are not applicable to most kinds of manufacturing activity. Moreover, the theory is essentially static; it provides little insight into development processes. Because it explains and evaluates localization from the perspective of the private firm it is not a very useful tool for coming to grips with the external diseconomies and social costs of agglomeration — major concern, of human settlements policy.

Similarly, it has been argued that it is desirable if a nation's system of cities — its urban hierarchy — corresponds to the rank-size rule, because this implies political and economic unity. Empirical evidence in this regard is not conclusive, but E. Böventer (1973) convincingly maintains on theoretical grounds that satisfactory economic growth and the well-being of a country's citizens

are compatible with a wide range of differences in the degree of spatial concentration of population and economic activity; particular rank-size distribution parameters are no help in national planning decision processes.

One of the most widely used tools of spatial economic analysis is the export base method, which emphasizes the importance of events outside a given area in determining the area's levels of income, employment and output. The major premise of the analysis is that exports play the most important role in the economic growth and well-being of a region, because basic employment generates income for local residents which is spent on goods and services that in turn generate service employment. The ratio between basic and service activities, usually measured in terms of employment or income, represents a multiplier.

The export base approach involves many theoretical and practical problems. Along with normal difficulties in obtaining reliable data, there are questions of the proper delineation of the area involved, the definition and measurement of the economic base, the assumptions that the marginal propensity to export are the same, and the assumption that exports are independently and autonomously determined. In addition, the economic base approach has been shown empirically to be a poor predictor of urban growth. It has been argued that long-run urban growth is more a function of the service sector than of basic activities; because the economic base changes over time, a competitive service sector is necassary to replace stagnating basic activities with vigorous new ones.

Whether one wishes to maintain that service activities in the broadest sense are induced or inducing, or that basic and service activities are mutually interdependent and co-equal in importance, it is still clear that analyses based on a distinction between basic and other activities or between service and other activities have not provided general explanations of why cities have grown the way they have. The determinants of urban growth are too complex to be handled within a framework which merely examines functional relationships between 'basic' and 'service' activities.

Input-output (I-O) analysis represents a considerably more sophisticated approach to regional and urban growth than the simple export base method. The popularity of regional I-O analysis is due largely to the fact that it is the only general equilibrium approach that provides a feasible means for examining interregional trade flows empirically. It also is possible to take distance into account in the form of transportation costs. The method is also essentially neutral from a policy viewpoint.

The most commonly expressed objection to I-O as a means of specifying city-system interdependencies and growth transmission channels is simply its impracticality. It has been argued, for example, that

"Input-output studies of the variety carried out for the Philadelphia, Seattle-Tacoma, and Stockholm metropolitan complexes are expensive and extremely time-consuming. Furthermore, such studies provide little locational information, only describing the relationships of an urban complex with 'the rest of the world' or, at best, 'the rest of the state'. Thus, in order to secure details sufficient enough to outline growth transmission channels at a large scale, i.e. in order to specify sectoral input-output relationships between several urban regions of a national city-system, it would be necessary to undertake a project of unprecedented dimensions. And, even if it were feasible to carry out such a gargantuan project, its results and utility would still be open to the critic-

isms — concerning changing input and production coefficients and other matters — often directed toward much more modest input-output analyses". (A. Pred, 1975, pp. 8-9).

There is also another fundamental problem when I-O is used to explain regional and urban growth. In practice I-O, like export base analysis, traces the effects of changes in final demand backward to the intermediate and primary supply sectors. In location terms this implies that demand orientation and backward linkages are all that matter; no attention is given to input orientation or to forward and complementary linkage effects. Yet the symmetry of an I-O table means that in principle it is neutral with respect to whether the initiating causes of regional growth are to be found in changes in final demand, in primary supply (e.g., changes in the quality of the labour force) or within the intermediate sector (e.g., technological changes that alter technical coefficients). Thus, in place of the usual demand-driven model one could just as well use a supply-driven model of regional growth that takes demand for granted and makes regional activity dependent on the availability of resources to put into production. In fact, the demand-driven and supply-driven models are each one-sided. They need to be combined to gain adequate understanding of real growth processes. Unfortunately, no existing analytic model adequately combines these complementary approaches.

In general, the main reason why central place theory, urban hierarchy studies, economic base analysis, input-output models, location theory, industrial complex analysis and gravity models have so often proven inadequate is that they have failed to take into account the changing nature of the actual determinants of location. The emphasis given in classical location theory to minimizing transportation costs, for example, may be contrasted to the decline in importance of shipping costs of heavy and cumbersome goods. Long-distance transfer costs have been significantly reduced, while the rapid movement of relatively light but highly elaborated products has increased in importance, as has the need to communicate information and intangible services. Moreover, whereas industrial location in the past was heavily influenced by factors such as energy sources, water, and transportation facilities, today it tends to be more influenced by external economies of agglomeration. Economic activity also has become increasingly footloose. It has been estimated that today only about 7 per cent of the labour force needs to be located close to natural resources, whereas only several decades ago 30 per cent was resource-bound. The trend is for the labour force to be potentially footloose and to locate in proximity to consumers, who themselves are relatively footloose. Economic opportunity, therefore, is increasingly associated with capital and human skills. Finally, a number of studies of the relative importance of various plant location factors from the viewpoint of industry have indicated the importance of markets (i.e., large urban agglomerations). This does not deny the importance of tertiary activities because market and tertiary factors are mutually reinforcing. Because they deal with such functions as communications, construction, trade, finance, government, the professions, and recreation, tertiary activities are, by and large, closely tied to markets, which are usually identical with large urban complexes.

GROWTH POLE THEORY

Growth pole theory emphasizes that international and interregional inequalities are an inevitable part of the development process. It maintains that analysis of sustained growth of total production should concentrate on the process by

which various activities appear, grow in importance, and in some cases disappear, and it emphasizes that growth rates vary considerably from sector to sector. Entrepreneurial innovation is given a prominent place in explaining the growth process, which takes the form of a succession of dynamic sectors, or poles, through time. A particularly regional flavor has been given to the pole concept by emphasizing that growth is concentrated in various spatial loci as well as in certain leading industrial branches. A great deal of attention is given in this context to the importance of economies of scale and to larger considerations of external economies of agglomeration. In the past two decades a large theoretical literature has evolved around these notions and growth centre policies (usually intended to induce growth in lagging regions) have been adopted by planning authorities all over the world, although the extent to which they have been influenced by the growth centre theory has varied considerably. Detailed examination of the history, nature, and significance of the growth centre theory and practice is beyond the scope of this paper, but such studies are available elsewhere (N. Hansen, 1972; A. Kukliński, 1972; M. Moseley, 1974). Suffice it to say here that the theory has been criticized for being poorly articulated and less general than the theory of innovation diffusion; and growth centre policies have not been notably successful in generating regional development.

J. Lasuén (1973) has attempted to re-establish the growth pole theory by giving it more of a systems orientation with respect to both economic organization and spatial-temporal development processes. He maintains that economic development results from the adoption of successive packages of innovation in clusters of establishments linked to a regional export activity. These clustered sectoral sets are also clustered geographically. The diffusion and adoption of successive sets of innovation follow similar patterns, resulting in a fairly stable system of poles. Over time, successive innovations demand greater scales of operation and larger markets; they also come at shorter intervals. Large cities, he asserts, are the earliest adoptees of innovations, which then diffuse to the rest of the urban system. As a consequence of this process, the system of growth poles becomes increasingly hierarchic in nature.

In essence, however, Lasuén presents an elaborated version of the hierarchical diffusion model and there is considerable evidence that the network of economic relations among cities is more complex than this approach suggests.

CONCEPTS OF INTRA-URBAN GROWTH AND STRUCTURE

The theory of urban growth and structure consists of several well-identified, basically self-contained and still weakly interrelated approaches. These include: (1) socio-ecological concepts, (2) urban land use theories, (3) urban population density models, (4) spatial interaction models, (5) settlement network theories applied to intra-urban scale, and (6) models of intra-urban diffusion processes. Since several state-of-the-art reviews of the field are available (for example: B. J. L. Berry and F. Horton, eds., 1970; M. L. Senior, 1974; P. Korcelli, 1974) which cover some or all of the above approaches, no attempt will be made here to discuss them in a systematic and detailed way. Instead, selected recent developments within each group of concepts will be noted and cross-sectional questions posed. Those questions pertain to: the feedbacks between individual approaches, both existing and postulated; the ability of various concepts to account for polycentric growth patterns; relations between the established con-

cepts and emerging research and planning problems, such as the problem of environmental protection and the determination of optimal paths and patterns of urban growth.

SOCIO-ECOLOGICAL CONCEPTS

There is every indication that the surge of factor analytical studies on socio-ecological patterns within urban areas, which constituted one of the major developments in the field around 1970, is now largely over. Factorial ecology has been able to accumulate voluminous empirical material on social patternings of cities and to represent that material in a synthetic manner. Its failures have mainly been of two kinds. First, factor ecological methods have proved to be rather poorly suited for comparative studies over space, as well as over time. Second, factorial ecology has been generally oriented towards earlier, outdated concepts, notably the social area model and the classical urban ecological models of the 1920's.

The social area concept could account for some aspects of the development of spatial variations within the Western city (although it has also been argued that social area depictions of residential structure grossly oversimplify the actual pattern); it disregards, however, crucial factors of a macro-social and institutional character. It also fails to make a proper distinction, as indicated by sociologists, between the notions of social groups and ecological groups. In the case of the socialist cities, as well as the cities of the Third World, the hypotheses offered by the social area concept are largely invalid. Thus, by failing to develop its own conceptual foundations, comparative factorial ecology was doomed to become a predominantly descriptive approach, although the rich material it accumulated can still serve as a basis for theoretical generalizations.

Parallel to factor ecological studies, there has been a notable expansion of research on intra-urban migration and spatial succession patterns. The life-cycle succession concept has been formulated and there have been attempts to relate the human succession patterns to housing and land-use succession cycles. It seems that the study of varied types of spatial succession processes could become one of the integrating elements in the development of theory of urban growth and structure.

URBAN LAND USE THEORY

The development of urban land use studies over the past ten years or so has run roughly opposite to that of urban social ecology. In the former case it was theory that was primarily emphasized, while empirical analysis lagged behind. The approach followed by W. Alonso (1964) and others, who view the spatial structure of the city in terms of the interaction of land and transportation inputs, has reached a high level of sophistication and abstraction. At the same time it has been heavily criticized on the grounds of its static-equilibrium nature, orientation towards market conditions only, and the highly unrealistic simplifying assumptions used. Some of the restrictions commonly raised include the lack of treatment of such locational variables as amenity, social and institutional factors; changing spatial accessibility patterns; and agglomeration economies. Unfortunately, no satisfactory alternative concepts explaining the structure of land use and economic activity within urban areas have so far been developed. Possibly, the land use succession models could provide some of the inputs required for such theory formulations.

URBAN POPULATION DENSITY MODELS

Despite its rather narrow scope, this research approach deserves separate treatment due to the very large literature and the wealth of alternative concepts available. Recent developments in urban population density studies include attempts to develop secular models of density change and to prove their usefulness from the urban planning perspective. In these efforts it is common to find density models strongly interacting with land use models and, more recently, with spatial activity allocation models. That is to say, the latter concepts have to a varying degree introduced the statistical rules of population distribution into their formulations and, in the case of land use models, they have attempted to explain the observed density patterns within the spatial equilibrium framework. Undoubtedly, urban density models have reached a fairly mature stage of development and it is rather difficult to speculate on their further evolution. Because of the inertia of aggregate patterns of population distribution and a high resilience of the negative exponential rule, it is unlikely that changing urban forms could have a pronounced impact on the models' formulations. Still, one might expect the extension of the models from intra-urban to regional scale to account for polycentric density patterns.

SPATIAL INTERACTION MODELS

These models are regarded as a relatively new addition to the literature on urban studies and are usually traced back to the work by I. Lowry (1964). However, the basic concepts of spatial interaction within cities were worked out years ago (see: V. V. Pokshishevski, 1935). Over the past ten years or so the interaction models of cities and regions have been considerably expanded; this has been mostly due to A. G. Wilson (1974) and his associates. One of the major factors in the models' development has been a growing demand for new planning tools. Yet it is generally acknowledged that such models are rather partial in that they are based on an oversimplified picture of the structure, interdependencies, and human activity patterns within urban regions. These shortcomings are now recognized by both the model builders and their critics. They postulate the development of a data base to test spatial interaction hypotheses.

One may anticipate three possible developments of the modelling framework. First, spatial interaction models have primarily considered two types of linkages, i.e., work and service trips. Other interactions, such as social contacts and recreational trips, have not been generally accounted for in the models' structure. Hypothetically, these linkages could be taken into account by including a social clustering term and a similar recreational dispersion term in the allocation formula. This, however, seems to be a partial remedy. Spatial interaction models should be more explicitly based upon the concepts of daily and weekly human activity patterns and the concepts of time-location budgets.

Second, spatial interaction models have not been able to account for the operation of feedbacks between endogenous and exogenous sectors. This is true partly because the knowledge of interdependencies among various economic activities within an urban region remains inadequate. It should be possible to introduce a more detailed sectoral disaggregation of the models. At present at least three different definitions of the exogenous and endogenous sectors are in use, but there is a tendency to include more and more activities in the exogenous category. This certainly does not enrich the models' structures; research should be undertaken on how to make activities which are now treated as exogenous an endogenous part of model-building.

Third, the role of the spatial accessibility variable in the interaction models should be counterbalanced by a more explicit consideration of other allocation factors, such as environmental factors. This especially applies to the residential allocation submodel. Detailed land use and environmental quality studies may result in the identification of systematic variations in the values of different allocation factors within urban regions.

SETTLEMENT NETWORK THEORIES APPLIED TO INTRA-URBAN SCALE

Urban land use and population density models have been criticized, among other things, on the grounds that they fail to account for polycentric forms of the large city. This issue becomes even more crucial when one deals with urban agglomerations since polycentricity is regarded as one of their most essential characteristics. In the 1960's it was common to analyze the internal structure of cities in terms of the central place theory. The widespread dissatisfaction with that theory in general marked a decline of the studies on intra-urban hierarchical patterns. The metropolitan dominance concept, which may be considered as an attempt to 'update' the central place theory, has also been largely abandoned in favour of other approaches.

The modern concepts related to physical patterns of settlement propose an integration of urban and rural settlement. This is the basic assumption in the theory of unified settlement systems (B. Khorev 1971; D. Khodzhaev and B. Khorev, 1973). It is also present in the concept of urban fields (J. Friedmann and J. Miller, 1965), frequently referred to in the recent literature. Another approach which incorporates the notion of polycentric forms involves sequential models of urban growth. These models rely heavily on evolving transportation and spatial mobility patterns as factors in the transformation of a monocentric city into a polycentric city-region. In the case of mining-industrial regions, a specific growth sequence was observed by D. Bogorad (1968) and K. Dziewoński (1975). In particular, it has been proposed that different spatial forms tend to converge, i.e., single-centred cities grow towards polycentric city-regions, while the amorphous urban areas develop a more discernible spatial pattern, with one of the initial major centres assuming the role of the core.

MODELS OF INTRA-URBAN DIFFUSION PROCESSES

In the late 1960's, along with the rapid development of research on spatial diffusion processes, there were many attempts to apply a similar methodological framework to the study of urban growth. The two principal lines of study were: (a) the analysis of urban fringe development and, (b) the investigations into the patterns of territorial expansion of ethnic areas within cities. There are many indications that such simulation models are largely giving way to other modelling styles, particularly to spatial interaction modelling. This trend can be attributed to the relatively low level of theoretical content of the simulation models based on the spatial diffusion framework. For example, the UNC Model, which uses such a framework implicitly, has been largely replaced within the urban planning context by other types of models, including interaction models and econometric models.

Even a cursory, selective review of recent developments in the study of urban systems indicates that the theory of intra-urban structure will probably have to be composed of a rather large but still loosely interlocked set of concepts and models. Although the major approaches are well-established, their relative weight is subject to continuous change. Yet there are certain general trends that can be identified. These include:

(a) The growing emphasis on planning-oriented urban research. This trend applies both to the nature of general concepts proposed and to the operational models built. Since the notion of planning is closely associated with that of optimization, there has been a revival of interest in, as well as disputes over, the problem of optimum city size, and of the optimum structure of settlement systems. Since it is recognized that planning should provide for a possibly high degree of flexibility in the spatial patterns proposed, one can note a parallel development of optimization models and of simulation models designed to test consequences of a wide range of alternative decisions.

(b) The emergence of a new research approach concerned with environmental quality of urban areas (B. J. L. Berry, 1974; Y. Medvedkov, 1974). The development of this branch of urban studies may have some impact on the other research approaches, which have so far largely neglected amenity, energy use and pollution control factors as determinants of urban forms.

RESEARCH NEEDS AND RESEARCH PROSPECTS

As suggested at the outset, urban agglomerations occupy an intermediate position between the urban and regional scale. Although there are a number of concepts referring to either or both of the two spatial dimensions identified, some of the basic aspects of the growth of urban agglomerations remain poorly understood. For example, the population decline of major urban agglomerations (metropolitan areas) in the United States since 1970 (N. Hansen, 1976) cannot be satisfactorily interpreted within the existing theoretical framework. Also, there are few conceptual tools suited to the analysis of polycentric growth patterns which are characteristic of urban agglomerations, and of the still larger, recently emerging, urban complexes, sometimes referred to as megaregions.

On the applied side, the existing theory is not fully able to address a number of important policy questions. One such question, already alluded to above, relates to the efforts to curb the growth of large urban agglomerations, and of big cities in general. This issue is reflected in the rich literature on settlement policies in the socialist, as well as in the Western countries (see, for example: *National Settlement Strategies*, 1975).

The situation is even more complex in developing countries. There is a large literature deploring the dual economies associated with primate urban structures. The 'dependency' school argues that the political and economic systems in most developing countries exploit the rural and small town sectors; what appears to be high metropolitan productivity is in large part capital accumulation from rural and smaller urban areas. To make matters worse, processes such as the repatriation of profits by foreign companies and the deterioration of the terms of trade lead to the transfer of funds from developing countries to a relatively few world metropolitan centres. On the other hand, both cross-section and time series analyses indicate that there is a systematic relation between national development levels and geographic dispersion. Rising regional income disparities and increasing dualism tend to be typical of early development stages, whereas regional convergence and the disappearance of severe dualism are typical of the more mature stages of national growth and development. So long as the divergence-convergence syndrome can be expected to operate with respect to per capita regional incomes, there seems to be little point in slowing aggregate growth. To the extent that this position is correct, the attempts to inhibit, divert or even stop growth in large urban agglomerations may not always be correct. Clearly much more research is needed on the nature of

spatial-temporal development processes in developing countries; such studies, moreover, should not neglect the international setting that is so intimately a part of these processes.

In future research more care should be taken to separate the issue of *size* from that of *growth* (or decline). According to some arguments the growth of cities (or urban agglomerations) should be limited so that they do not become 'too big'; in this perspective some cities are regarded as too big whether or not they are still growing. In contrast, one might suspend judgement about issues of city size but point out that very rapid growth (or decline) may be undesirable for cities whether they be big, medium-size, or small. Employment and population growth well in excess of the national rate may lead to the overburdening of public facilities, congestion, housing shortages, and, in market economies, to local price inflation. However, slow growth or decline of population and economic activity often results in even more problems than fast growth. Stagnation and decline are phenomena that have usually been associated with certain rural areas, but in the future they may characterize many metropolitan areas of industrial countries — and not just their central cities. Because both very rapid growth and lack of growth are associated with difficult problems of adjustment, it is curious that the geographic and related literature on desirable rates of growth is so small in relation to the literature on urban size.

In these regards it is clear that any meaningful systems approach to human settlements and to urban agglomerations in particular, must be informed by knowledge about the nature and significance of human migration. A particular problem has been the tendency for demographers to make regional population projections under the implicit assumption that employment opportunities will adjust to people. Similarly, economists have made regional employment projections assuming that population would adjust accordingly. What is needed are models that simultaneously determine employment and demographic variables.

Moreover, although a great deal of lip service has been given to the increasing importance of factors such as increased mobility, telecommunications and amenities in determining residential choices and the location of employment facilities, a much greater effort is needed to incorporate them into human settlements research in a more systematic manner. Extensions of work already done with respect to contact systems and information flows should be encouraged. However, while these studies aim at increasing understanding of growth transmission processes, their essentially descriptive nature would be considerably enhanced if they were more closely linked to dynamic demographic and economic models.

Finally, the growth center theory and policy have come under attack in large measure because induced growth centres (which themselves often have not been able to maintain self-sustained growth) have failed to generate beneficial spread effects in lagging hinterland areas. Nevertheless, it would be erroneous to say that cities have no effect on their hinterlands. In some settings the hierarchical diffusion model, which postulates that economic growth trickles down through the urban hierarchy and spreads from urban cores to their respective hinterlands, may be relevant.

It is suggested that the development of theory of settlement systems requires, among other things, an increased amount of comparative research on the structure and growth of urban agglomerations. The studies to be undertaken should permit testing of the existing hypotheses which have been referred to at various places throughout this paper.

From the point of view of the IGU Commission on National Settlement Systems, it is possible now to put forth, in a general outline, a working program

of research on the growth of urban agglomerations and their role in the settlement systems. The basic ingredients of such a collaborative project should be the following:

(1) The preparation of a comprehensive survey of the existing concepts and generalizations concerning the structure and development of urban agglomerations within different social, political, and cultural settings. In such a survey the contributions of geographers, as well as other scientists, to the existing body of knowledge should be taken into account. It should be possible to tap the results of research done in a number of countries and reflected in the multilingual literature on urban topics. Clearly, such a task requires a major international collaborative effort, but it would greatly increase our understanding of the processes shaping the structure and interdependencies of urban agglomerations on the national and regional scale.

(2) The development of a common frame of reference, i.e., comparable sets of spatial units of analysis. From the point of view of systems-oriented research it is essential that spatial units are defined in terms of flows, or linkages. Recently, some attempts have been made to develop the concepts of functional urban regions, or daily urban systems. These are based on the notion of human activity patterns and use the range of commuting to work to the urban areas as an operational criterion to measure the extent of urban agglomerations (less urbanized regions may be defined in terms of weekly activity patterns). In every kind of spatial research the units of analysis strongly tend to influence the results; hence the question of a common frame of reference is fundamental.

(3) The development of case studies. The case studies should be selected on the basis of existing knowledge and expertise. Their objective would be to test major theoretical hypotheses concerning the role and structure of urban agglomerations within different settings. It is expected that the case studies would make use of the rich, although not fully comparable, data on urban systems that are available in a number of countries.

(4) The synthesis. The surveys and case studies referred to above should result in an attempt to integrate and further develop the concepts and models pertaining to urban agglomerations, their internal patterns, and the functions they perform within the regional and national systems of human settlement.

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THE ROLE OF THE CAPITAL CITY WITHIN THE NATIONAL SETTLEMENT SYSTEM

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INTRODUCTORY REMARKS

The time available for reviewing the literature relevant to this paper was limited. However, thanks to Dr. J. Beyer of the Department of Geography of Ruhr-University in Bochum, I learned two things: the increasing importance of the subject and the inadequacy of the existing literature. The words of Friedrich Ratzel in his *Politische Geographie* of 1897 are still true today: "The political-geographical aspects of settlement problems are neglected" (p. 404).

There has been a striking lack of attention given to the theory of the relations between capital cities and settlement systems; few generalizations seem to have been formulated. In handbooks on urban geography and political geography the chapters on national capital cities are very cautious; they mainly discuss outstanding examples of such cities and studies of individual states.

Older categories and concepts proved inadequate. The old distinction between 'natural' and 'artificial' capitals (Vallaux, 1911) and the traditional emphasis on 'central or peripherical location' (Kohl, 1874) of the capital cannot help towards a deeper understanding of the leading forces of political and urban life in our countries.

In such a situation, my preliminary paper may be seen only as an attempt to review the existing problems and as a first step towards a more systematic approach. We hope that discussion will help to develop ideas, and that some general conclusions will result from the international cooperation of geographers.

SOME REMARKS ON METHODOLOGY

For the development of methodological concepts an empirical approach has been used. 130 larger countries were examined according to the following data:

(1) The size, population and degree of urbanization;

(2) Constitutional organization of the country: federal or centralized government system;

(3) The level of development of the urban system as a whole;

(4) The monocentric or polycentric concentration of nationwide functions;

(5) The dominance of the capital as compared with other leading cities;

(6) Tendency to increase the role of the capital within the national settlement system.

It not the task of this paper to present in detail the results of such a statistical overview — which in fact could not exclude subjective evaluations — but by the analysis of these 130 countries a general view and several theories were obtained as a basis for further discussion. It may be worthwile stating that 84 countries have a monocentric, 24 a dualistic, 4 a trialistic, and 13 a polycentric pattern of leading national urban centres.

The main reason for the existence of urban systems with more than one nationally dominant city lies in the federal structure of the given countries which in reality does not result from the terms of the constitution only, but also from the actual internal power structure. Despite the differentiation between countries with old established, fully developed urban systems and others with less developed ones, a tendency towards the disproportionate growth of the capital cities seems to be in evidence.

As far as the types of national settlement systems are concerned we can agree in principle with the distinction introduced by K. Dziewoński and M. Jerczyński in their paper on *Urban agglomerations in the structure of national and regional socio-economic space*. But in relation to the capital cities we propose certain modification. Our types are as follows:

(1) Countries with long established and fully developed urban systems,

(2) Developing countries with fully established settlement systems,

(3) Developing countries with less or only partially developed settlement systems,

(4) Socialist countries with old and fully developed urban systems,

(5) Socialist countries with less or only partially developed settlement systems.

This paper stresses the general aspects of the problem, within which the different types of countries vary. These general features are:

(1) Concentration of functions,

(2) Policy of centralization — decentralization,

(3) Attraction,

(4) Representation,

(5) Integration,

(6) Innovation,

(7) International cooperation.

CONCENTRATION OF FUNCTIONS

The strongest indication of the dominating role of a capital within the national settlement system is found in the size of its population, which usually far exceeds that of all other cities in the country. Although population figures are not directly related to the distribution of functions within the urban system, the size of the capital should not be completely neglected. The empirical evidence supports the view that capitals, concentrating most of the leading national functions, are at the same time the largest cities in their respective countries. In contrast, capitals sharing these leading functions with other cities have smaller populations, sometimes even smaller than the other competitive urban centres.

The methodological approach of the 'rank-size rule' is based on the assumption that the visible hierarchy of cities ranked by size in the national urban system usually represents a fully developed settlement pattern. In its primitive formulation the rule states that the largest city (the primate city, a term intro-

duced by M. Jefferson) should be twice the size of the second largest city, three times the size of the third and so on. However, reality shows that many countries with highly developed urban systems do not follow this rule. Therefore we cannot altogether see population sizes as demonstrating the extent of dominance of the capital. Instead, it is necessary to differentiate and to valuate those functions which are significant for the capital and its role within the urban system.

The most obvious function of the capital is to serve as the centre for the political life of the country. With federal gevernment such political leadership is shared with state capitals, while in politically centralized countries the political function and importance of the capital city must be greater. The amount and intensity of governmental activities leave their impact on the political functions of the capital too. For example, in socialist countries the centralized planned economy probably increases the dominance of the capital.

The importance of a capital and the number of its functions are constantly growing. The functions of the state in the economic, social and cultural life of a nation have multiplied in modern times. In all countries and in all political systems the administrative institutions are expanding — more functions, more staff, more office space. The pressure towards centralization is growing even in the federal states. Only the amount of spatial concentration whether in one or more urban locations varies.

Capitals also play an important role as economic centres of their countries. The proximity to governmental agencies attracts the leading organizational activities in industrial as well as in financial affairs. In socialist countries the governmental economic institutions perform a parallel role and are usually even more concentrated. Therefore the entensity of political leadership in the capital leads also to its dominance in economic functions. However, in federal states the economic centre of the nation is quite frequently not identical with the political capital. In those cases we notice a division of leading national functions either according to economic and political activities or with an allocation of political as well as economic functions to several cities. This may be observed, for example, in countries with a federal system, e.g., West Germany, Australia or Canada.

The presence of the central government considerably increases the cultural activities of a city. Government-supported institutions for higher education, research and information, theatres and museums are strongly concentrated in the capitals and usually possess the best saff, equipment and finances in the whole country. A capital which is also the leading cultural centre attracts all kinds of 'cultural elites', further increasing its dominance over other cities. In a federal system the advantages of being in close proximity to governmental institutions favour several urban centres and allow them to develop relatively high-ranking cultural positions too. In centralized countries such as France, Great Britain, Hungary, Argentina or Thailand, the cultural level of the nation finds its expression mainly in their capitals.

Among the cultural functions are information services such as television, radio, newspapers and publishing companies. The location of these institutions strongly influenced by the location of places of political power and as a result their distribution among urban centres depends on the structure of government too. In socialist countries such information services are mostly concentrated in the capitals, because they are all nationalized. Corresponding to the tradition of a strong and well balanced cultural regionalism, the Federal Republic of Germany has an extremely dispersed network of leading information centres.

POLICY OF CENTRALIZATION AND DECENTRALIZATION

The different possibilities for dispersing or concentrating the most important national functions introduce the methodological question of the optimalization of the role which the capital should perform within the national settlement system. The centralization of the most important national functions in the capital possesses several advantages. The cost of governmental investments related to these leading functions are lowest when concentrated in one city — the capital. In this way a city is formed which can be easily recognized as the capitals — like Cairo, Mexico, Moscow, Paris, Teheran, Tokyo — are the unquestionable centres of their countries and symbolize the unity of the nation.

In many developing countries the governmental economic development policies favour centralized investments. In conditions of economic (and financial) stringency and relative shortage of skilled labour, the concentration in the capital may be the most promising strategy for developing the whole country (Santos 1968, Brutzkus 1973, Lühring 1974). The capital is seen as a huge growth pole for the whole country, which — in a later stage of development — may promote the growth of other cities too.

But the policy of centralization also includes two major disadvantages; an oversized capital and the effects of overcentralization on the national settlement system. The most noticeable problems of the oversized capital forming an urban agglomeration are traffic congestion, housing difficulties, infrastructural shortcomings (public transport, electricity, gas, water and sewage systems). These may easily be identified in such capitals as Seoul, Bangkok and Buenos Aires. The consequences may be even more severe in respect of the national urban system. In many centralized countries there is a distinct difference between the capital and the other cities. Regional life often suffers from the underdevelopment of regional centres and the regional disparities are increased. The peripheral regions suffer the greatest disadvantages. They may even endanger national unity when the people living there become dissatisfied and consider themselves to be neglected by the authorities in the distant capital. Several countries — France, Great Britain — try to decentralize functions from the overcrowded capitals and to reduce the regional imbalance by promoting regional capitals. But the slowness of the progress so far achieved shows the problems and difficulties of reversing existing trends. A national settlement pattern dominated by an overgrown capital, once established, hardly can be replaced by one with a different urban subsystem.

The cases of Paris and London demonstrate, that the success of decentralization policies is still rather limited. In both cases a sizeable number of industrial establishments and (on a smaller scale) offices were moved to locations outside the capital. But the leading administrative, economic and cultural organizations remained in the capital and in those functions the dominance of the capitals seems even to increase. In socialist countries policies of limiting the growth of the capitals — such as Moscow or Budapest — achieved some success but there too the centralization of administrative and economic planning institutions further supports the growth of the capital and the superiority in leading functions in comparison with other cities.

These examples show the *quantitative* growth of large capitals can be arrested or at least slowed down by consequent decentralization policy measures. On the other hand the *qualitative* dominance of the capitals seems constantly to increase despite all efforts towards decentralization. This phenomenon was not studied in depth and was not sufficiently dealt with in theoretical discussions or in comparative studies. A strong centralization of leading functions seems

to be accompanied by a self-sustained growth process and is hardly reversible. The developing countries, which assume a monocentric economic development strategy now, may have difficulty in establishing a balanced national settlement system in the future.

This irreversibility of overcentralization can be partly explained by two factors: in all political systems the central government refuses to transfer main political functions to lower administrative levels without establishing a corresponding, extensive control system; and such kinds of control imply that the final power of decision is still located in the capital. The other factor is the important role of an oversized capital in the economic life of a country. Restrictive economic policies for the capital — the enforcing of decentralization — can reduce the effectiveness of the economic system of the country.

Consequently, the search for a balanced urban system and for a controlled growth of the capital city is by no means widely recognized. In some developing countries, political scientists argue that only the largest urban centres bolster economic growth. A. A. Laquian (1966) estimated the considerations of urban geographers concerning the optimal size of cities, proposals for countermagnets, and the whole concept of new cities as 'anti-urban sentiments'.

ATTRACTION

The urban growth caused by the centralization of urban functions in the capital is closely bound to the migrational behaviour of the population. The hope for better jobs, or in some countries even for survival, for more personal freedom, for modern urban life and the attempt to be close to the national centre of decision making, are some of the features which attract people. In developing countries the migration of unskilled labour force to all kinds of services is mainly responsible for the disproportionate growth of the largest cities. In centralized countries this specific attraction of capitals is necessarily restricted to one fast-growing centre.

Banks, headquarters of corporations and — in socialist countries — institutions of economic planning and administarative agencies prefer or even need locations in the capitals. Not only the proximity to central government is favourable, but — in market-orientated economic systems — a complex concentration of business offers the optimal conditions for organizing new enterprises. Closeness to large business centres seems to be an even more important factor than the location of the government. If a new capital is built, the most important commercial activities mostly remain at their former locations (Brazil, Australia, Pakistan). If the centre of economic activity is identical with the political capital — as in most of the oversized capitals — a large potential for economic growth exists, despite traffic congestion and high rents.

The large capital cities have a considerable industrial population and are often (for example Paris or Buenos Aires) the country's most important centres for manufacturing industries. During the early stages of industrialization it was advantageous for factories to be located close to the seat of government because of the possibility of obtaining governmental contracts, the availability of credits, better information and traffic connections. A large capital is an excellent market for industrial products and fashion industries especially, prefer such locations. In centralized countries all those growth factors are directed towards the only large centre, all other cities lacking similar advantages.

The cultural attraction of the capital has similar effects on the urban system. If most leading cultural functions of the nation are concentrated in the capital, it determines the cultural life of the whole country. These attractions of the

capital city are important factors further increasing the discrepancy in the national settlement system beween large capitals and all other cities.

Comparing the relationship between the attractions of the capital and their impact on the national settlement system in different countries, it seems necessary to see the capital not only as a supraregional national centre, but also as a complex regional centre, serving as a central place in close functional relations with its umland and hinterland. Such regional interrelations and traditional links are important for the type and intensity of migrations. Capitals with regional functions promote more mobility, step-by-step-migration and return migration than specialized capitals without such regional links and roots. In this respect San Jose with traditionally strong central functions appears to be quite different from the more isolated Panama (G. Sandner, 1969).

REPRESENTATION

Public buildings, historic sites and cultural monuments are expressions of the national tradition and character. The power and unity of the state are demonstrated to the citizens of the country and to foreign visitors. In many cases historic events of nationwide importance took place in the capital, which therefore has a symbolic value for all the people. In former colonies and dependent states the capital is often a symbol of national independence.

In countries with a federal system the regional capitals express the regional traditions and show differences in cultural life compared with other parts of the country and the national capital. This may cause rivalries among the leading cities, but it also guarantees a wide choice of cultural attractions within a country.

Several capitals even have a supranational tradition and consciousness: Rome as the centre of the Catholic world, Cairo for its role in the Islamic culture, Brussels and Luxemburg as headquarters of important West European institutions. Moscow also is the head of the political and economic alliance of socialist countries. The examples of Luxemburg and Brussels show that supranational functions may increase the importance of a city considerably while attracting other similar functions too. So Brussels has become a favourite location for European branches of overseas international corporations.

In nearly all developing countries, the process of modernization was started in the capital city. Here new, often cosmopolitan architecture represents independence and the new era with the growing importance of all national functions. In contrast to the old city core, new planned city quarters are constructed containing newly organized governmental, administrative, financial and trade institutions as well as foreign embassies and consulates, modern residential areas, radio stations and information centers, airports and motorways, shopping centers and service stations. Here, the 'genre de vie' and the social value system changes first, influencing the rest of the nation later.

INTEGRATION

Several states formed around their actual capital and its surroundings, e.g. Moscow and Paris. These cities, situated in the core area of the country, have been the capitals for centuries; they are the unchallenged centres of their countries. In the national settlement system these capitals are the unquestioned leaders. Capitals which are located outside the core area — like Ankara — have since difficulty in gaining the leading role in the urban system.

In Central America, the capital cities are the only large cities. Therefore, the leading cities are in an exceptional position not only in the quantitative but

also in the qualitative sense. As long as no other large or medium-sized cities can promote the process of adjustment from traditional rural to modern urban life, the gaps between the different strata of society will widen and the dominance of the capital will grow.

Another approach used for measuring the extent of integration of the capital and other large cities is based on traffic links. Analyzing traffic networks and densities in different countries, monocentric and polycentric patterns can easily show the degree of dominance of certain large centres. A monocentric traffic pattern roads, railways, air links — like that of Spain, France, Argentina and Hungary — ensure the best connections for the capital but at the same time the links between other cities are less developed. Therefore radial traffic patterns favour large capitals located in the center with all other cities in unfavourable position. In polycentric networks the advantages of various locations are more balanced and evenly distributed among several large centres (USA, India).

Several developing countries have only a few modern traffic routes, which are usually concentrated in the coastal area and in the vicinity of the capital. In these conditions the traffic patterns reflect the type of national settlement system.

The disadvantages of monocentric traffic networks are seen in the danger of congestion at the central traffic node and in the acceleration of the 'pull' towards the capital. There have been examples of where improved accessibility has depressed the countryside as well as the local and regional centres by out-migration of people and initiatives.

One of the major tasks of the capital is to ensure the unity of the nation and to effect the social integration of all population groups in the country. In centralized countries, however, the inhabitants of peripheral regions often consider themselves to be neglected by the government in a distant capital. These problems become even more severe when the national minorities are involved. If these groups are greatly dissatisfied with the capital, a regional capital could form some kind of compensation. Regional dissatisfaction with the central government may therefore be intensified by an unbalanced national settlement system. In contrast, a decentralized or federal — the polycentric structure for urban and administrative systems seem to offer better possibilities for integration of the minority groups.

The capital city itself has to solve the problem of integration of the different population groups migrating from all parts of the country and from abroad. Most African countries, which became independent during the last decades, have multi-ethnic and multi-lingual populations; the capital plays an important role in the process of national unification. A feeling of national identity can be developed only by establishing contacts between the different groups. This process of integration is often slowed down or even interrupted by problems of segregation. Although segregation is not a problem of oversized capitals alone, a balanced urban system may improve the possibilities of integration, because migrations are not directed to one centre only.

INNOVATION

Cities in general are centers of innovation, but in capitals these processes are more distinct. In the capital influences from abroad are the strongest. It is in the center of information, also that more attention is paid to new developments both in the country itself and abroad. Because of the government policies, new technology will usually be applied first in the capital. New transport systems, street lighting and sewage systems are usually established in the ca-

pital first. Fashion and modern consumer good displays often take place in the capitals too.

Even if the capital becomes the pioneer of urbanization and industrialization, it may be still questionable whether capital cities can serve as points of departure for a change in social structure and as a key for socio-economic differentiation. In the diffusion of innovations to all parts of the country, the question arises whether the patterns of diffusion coincide with the hierarchical pattern of urban centres.

In some cases, it seems that the innovative functions performed by the capital depend on the extent of its dominance within the national settlement system. In countries with a polycentric urban system the process of diffusion of innovations is not always clear. In contrast, socialist countries show a very strongly concentrated process of innovation, according to a planned centralized economy and the state monopoly in information systems and media, but this is not necessarily connected with the national capital.

INTERNATIONAL COOPERATION

The international administrative institutions are usually located in capitals. There, international congresses and conferences frequently take place. Factors for choosing the capitals are: the availability of governmental aid and funds, modern congress facilities, a large number of hotel rooms and a wide choice of restaurants, cultural establishments and entertainment. The lack of these facilities and funds is one of the reasons why only a relatively small number of locations is choosen in practice. In addition, capitals mostly offer the best traffic connections. There are only a few small capitals without an international airport. However, in countries with a polycentric urban system some of the leading cities participate in the organization of major international meetings.

The capitals attract many visitors from abroad, the diplomatic personnel has become quite numerous, official delegations are frequent. Is there a cosmopolitan atmosphere developing? If we compare the more than 150 existing capitals of the world, the majority definitely cannot be called cosmopolitan. Even though most capitals dominate the national settlement system of their country, only a few of them can be called world cities. But are the traditional terms of 'world city' and 'cosmopolitan atmosphere' adequate for the international role of capital cities and their human environment in our times? Are there not new qualifications for capitals emerging — qualities connected with the more organized work of international cooperation? The world-wide air traffic increases the number and intensity of all international contacts, meetings of state delegations and supranational organizations, scientific congresses, economic conferences, sports events, fairs and exhibitions, tourist visits. Surely the capital cities will take the largest share of these new functions. In the future, too, a new network and perhaps a system of relations between certain capitals may emerge based on international cooperation.

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Explanation of symbols

(A) Core area and capital city
(B) Capital cities and the principle of rank-size rule
(C) Location and functions of capital cities
(D) Oversized capital cities and decentralization policies

(E) Foundings and transfers of capitals
(F) Studies of individual capitals

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GUIDELINES FOR THE CONTENTS OF INDIVIDUAL NATIONAL REPORTS ON SETTLEMENT SYSTEMS *

I. DEFINITIONS OF THE NATIONAL SETTLEMENT SYSTEM IN TERMS RELEVANT TO THE ACTUAL CONDITIONS OF A GIVEN COUNTRY

Comments: The concept of a 'settlement system' is often used very loosely. In consequence, numerous and widely differing definitions of its meaning are constructed and circulated. For the general purposes of the work undertaken by the IGU Commission on National Settlement Systems it is assumed that a settlement system is formed by a number of settlement units linked together by some significant interactions. Such systems are both open and dynamic, i.e., changing in space and in time, although preserving their basic identity. This implies that their definition in specific cases involves the identification of component units, of their mutual interactions (i.e., of the functional structure of the system) and of the relation of the whole system to its environment (including linkages with other settlement systems). If some subsystems can be identified, these should be specified because they obviously represent the structure of a system. Changes, the development of a system in space and in time, may involve its individual units, subsystems, interactions and environmental relationships.

It should be stressed that in all its meanings the concept of 'settlement system' is more general and at the same time more flexible and dynamic than the earlier used notion of 'settlement network', the latter being essentially static in character.

The fact that the Commission's task is to study national settlement systems in particular is due to the fact that national states currently represent the most fully developed and crystallized political and economic entities (regions) which tend to generate specific settlement systems of their own. Such systems can be formed or evolve historically out of some already existing systems, the regional or local ones which may ultimately be completely or partly transformed. The national systems can be planned and steered in their growth towards some preconceived model and pattern. Having these concepts in mind, the report should analyze critically the ideas and methods used by georgaphers, as well as by representatives of other disciplines, in the study and interpretation of the settlement geography of a given country. It should then proceed to the identification and definition of other concepts needed for the systemic description of the settlement. Here, full information should be given on the specific

* The following headings and comments should serve mainly as introductory questions to which materials and data as well as the phenomena to be described and explained should pertain. They are to serve also as a framework for the organization and editing of the final national reports to be published in the form of a book which will include some additional topical and synthetic studies.

spatial statistical units of reference and their changes in the successive periods, i.e., cities, towns, villages, in terms of their administrative status as well as urban agglomerations (including those established for census purposes). Regional units (statistical and others) shoud be also defined.

The external features and environmental problems of the settlement systems should be tackled with great care. Very few studies on the subject have so far been carried out, but some progress in this area would be invaluable.

The whole approach to the study of national settlement systems should be dynamic, i.e., taking into account the continuous changes taking place in the systems. Authors presenting reports are asked to supplement their comments by specific characterization of such changes and perhaps even by their typology.

Other questions should also tackled, for instance: What factors make the application of the systemic approach fruitful? What are the implications of its use for further research? How is the geographical environment and the actual distribution of natural resources reflected in the system? How is the economic and social structure of the whole country or nation linked with the settlement system (or systems)? What is the impact of foreign relations (foreign trade, political connections or alliances) on the settlement system? The identification of a set of indices and parameters which describe the national settlement system of a given country should be attempted — it may be used later for drawing up some comparative statistics on settlement systems. However, such indices should be pertinent to the system described and therefore divergences even large ones, between these indices have to be both expected and accepted. Among various indices which may be critically used (or rejected) are: (a) urbanization ratios, city size distributions, indices of stability and change in rank-size, primacy, indices of population concentration and spatial polarization; (b) differentiation and functional specialization, socio-economic characteristics, labour force, institutional differences, variations in income, social indicators of well-being and quality of life; (c) variations in urban population growth rates by city size, location, age, role and specialization, population movements and migrations, daily urban systems, functional urban regions should be tested. If used, their relation to the administrative division should be noted.

II. HISTORICAL GROWTH AND DEVELOPMENT OF SETTLEMENT SYSTEMS WITHIN THE TERRITORY OF A GIVEN COUNTRY

Comments: It is assumed that the growth and development of settlement systems is essentially an historical phenomenon. The present state of a national settlement system cannot be understood and explained without some knowledge of historical changes, indeed of specific evolutionary processes. The report should focus on the development occurring within the present territory of the country under analysis. However, it is understood that it may be impossible to describe historical developments within the present state boundaries only. To avoid misunderstandings the description of such developments may be accompanied by maps. If it is possible to identify some specific stages in the development of a national settlement system, these should be defined and described in detail. Special attention should be given to the impact of industrial revolution on the whole settlement system. Changes should be analyzed as occurring both in time and in space.

This section of the report should be preceded by a short overview of past research pertaining to the evolving settlement systems under examination.

III. PRESENT STRUCTURE OF THE SETTLEMENT SYSTEM

Comments: The following questions should be discussed in the succeeding sections of this chapter:

(1) What are the main settlement units and/or subsystems? An effort should be made to define subsystems in detail. How far is the division into rural and urban settlements still valid, and should it be used in defining subsystems? Is there a rural-urban continuum in the system? An effort to construct a typology of major components (settlement units and subsystems) should be undertaken.

Can the analysis of the national settlement system be limited to its urban subsystem? How far do the local (rural or rural-urban) systems influence the overall structure and pattern of the national settlement system?

What is the nature of linkages between large cities (in particular urban agglomerations) as opposed to the linkages with the surrounding regions? Can one determine the relative intensity or strength of those two linkage patterns? How do they evolve over time?

It should be remembered that within one settlement system several sets of subsystems, e.g., functional, hierarchical or others may coexist without forming an integrated and spatially consistent pattern.

This approach to an analysis (one of many possible approaches) would seem to be specially interesting and fruitful for the general studies undertaken by the Commission.

(2) Dynamics of population growth as measured by basic demographic indices (marriage, fertility, birth, death, natural increase, sex and age ratios) should be given for the whole country and discussed in terms of regional and other (e.g., rural and urban) variations. The question as to which phase of the population explosion the given country has reached should be analyzed as well as its possible consequences for the settlement system. Other questions to be discussed include: On what spatial scale (national, regional or local) do the processes of concentration and deconcentration take place? What are the differential rates of growth for settlement units in various functional and size categories? What form and extent do the migrational drainage zones of urban centres of different functions and size assume? What are the major types of migrations and their mutual proportions (e.g., interurban, rural to urban, urban to rural and rural to rural)? What is the scale and range (national, regional or local) of major migrational flows? Do migrations involve flows to and from abroad?

(3) Distribution of functions within the settlement system should be identified in the report, in particular of leading social and economic functions of large, medium and small-size settlement units and complexes. Questions should be discussed, such as whether the large and/or middle-sized cities may be considered to be growth poles (natural and/or planned) and the sources of the innovation diffusion? What are the relations between the administrative hierarchy of settlement units, their economic, social and cultural functions, and do the social and cultural functions of cities increase in direct ratio to their size?

Obviously the description and especially the measurements of interrelations and interactions in the settlement system will probably be a rather difficult task because of the lack of proper data. Although no quick answers may be expected here, some effort and progress are still necessary to establish the full validity of the concept of 'settlement system'.

Finally, an effort to interpret the collected materials within the framework of available settlement theories should be made to test the validity and adequacy of such theories.

IV. URBAN AGGLOMERATIONS AS SYSTEMS WITHIN NATIONAL SYSTEMS

Comments: Some of the questions raised in this chapter may be repetitious especially as regards Chapter III, but they are included to make the analysis of urban agglomerations and their problems easier.

(1) Urban agglomerations (metropolitan areas) within national settlement systems:

As urban agglomerations are comparatively new phenomena, quickly changing in time and not always fully crystallized in form, all problems and questions discussed in this chapter should be tackled from the evolutionary point of view. Such questions include the following:

What are the spatial relationships between urban agglomerations on the one hand, and the patterns of administrative, political, economic, cultural (ethnic) and planning regions on the other?

How does the pattern and spatial extent of urban agglomerations correspond to the pattern of labour markets? Can urban agglomerations be defined in terms of commuting-to-work zones, or are other definitions more suitable in the conditions prevailing in a given country?

In what fields are urban agglomerations dominant on the national scale? What are the functional linkages between individual agglomerations and how do they depend on physical distance? Which functions performed by urban agglomerations can be said to be on a regional and which on a local scale? What is the importance of each group of functions (i.e., those on a national, regional or local scale) for the growth and development of urban agglomerations?

What are the major demographic characteristics of urban agglomerations as compared to the country as a whole and to other urban places as well as to rural areas? What is the magnitude of immigration to and emigration from urban agglomerations? What are the prevailing distances of migrations? Are immigrants coming mainly from the surrounding region or from other regions, from urban or rural areas?

What are the major problems which urban agglomerations face at present? What are the national and regional policies toward the growth of urban agglomerations? How effective are such policies?

(2) Major intra-metropolitan patterns:

What are the locational patterns of places of work, residential areas and recreational areas within urban agglomerations? What is the basic pattern of service centres as well as centres of social and cultural life?

Are socio-ecological differentiations on a large scale, and if so, what are their main dimensions and spatial patterns?

What models of population densities seem to fit local conditions best? How do the population densities evolve over time?

What are the major spatial forms of urban agglomerations in terms of classical models of urban structure?

What are the major environmental problems created by the growth of urban agglomerations?

V. POLITICAL AND ADMINISTRATIVE FUNCTIONS AND CENTERS — THEIR ROLE IN THE DEVELOPMENT OF NATIONAL SETTLEMENT SYSTEMS

Comments: The aim of this chapter is to describe the role played by political and administrative functions in the growth of national settlement systems. From that point of view the role of national and regional capitals is of special importance.

(1) Political and administrative functions — their role in the development or the national settlement system:

What specific functions are included under the heading 'political and administrative functions'? What is their present importance in the growth of settlement systems?

How many levels of administrative centres have existed over the last century and what are the present trends and tendencies towards change? To what extent was the concept of centrality taken into account in the recent administrative reorganizations and what is its impact on the actual administrative divisions?

Are there regional differences in the administrative model? If so, are they based on historical or socio-economic differences in development?

What are the minimum standards (as regards size, institutions, services, equipment) for administrative centres at different levels?

What are the relations between the existing administrative units and what is considered to be their optimal size?

In what way is accessibility determined by the geographical location of the administrative centres and by the traffic conditions?

How far does the system for economic markets and service centres differ from the system for administrative centres?

To what extent are administrative centres of specific levels serving as growth poles?

Does the diffusion of innovations coincide with the hierarchical patterns of administrative centres?

(2) The role of the capital city and other nationally important centres within the national settlement system:

What criteria should be used for the identification of the degree of dominance of the capital city over other centres?

Does the geographical location influence the dominance of the capital?

Which of the capital's basic functions are decentralized or may be decentralized? What are the other nationally important centres? What are their functions?

What role was played by the capital as well as by the other centres (i.e., especially as growth poles) in the economic development of the country? How far are the functions of the capital accompanied by the functions of a leading industrial centre?

Which factors are important for the attractiveness of the capital and/or other nationally important centres? What are the living conditions there in relation to other cities? How do they influence migrations of population?

Are functions on a regional scale important for the capital?

In what way do the national and international functions influence the development and the image of the capital?

Is the dominance of the national capital favourable to the political, cultural, social and economic integration of a nation? How does it evolve at present?

Are there any indices by which the development of an international network or even system including some of the national capitals, may be measured?

VI. FUTURE STRUCTURE AND PATTERNS OF THE NATIONAL SETTLEMENT SYSTEM OF A GIVEN COUNTRY

(1) As resulting from the present conditions and expected changes.

(2) Postulated and formulated as the ideal by specific authorities, social groups and individuals.

Comments: Some discussion of future development is needed. However, it should be realized that there are two completely different directions and approaches. One attempts to construct a future settlement system on the basis of an analysis of possible and foreseeable changes. The other is concerned with defining what changes should take place, what is desirable and should become the aim of the whole community, of specific social groups and individuals. The approaches should be explored separately, although at the end it is advisable to discuss what implications each has for the other, and how they interact.

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