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THE EIGHTH BRITISH–POLISH GEOGRAPHICAL SEMINAR ON RECENT DEVELOPMENTS IN METHODOLOGY, PLANNING AND SPATIAL POLICY, JULY 6–12, 1986

The Seminar took place in London with 24 participants including 11 Polish and 13 British scientists. Altogether 24 papers were presented, out of which 19 contributions are published in this volume of Geographia Polonica.*

Unfortunately only seven Polish participants arrived on July 6th as anticipated. Professor P. Korcelli became ill suddenly and was unable to travel at all, whilst four other participants did not obtain British visas in time in spite of several interventions from both British and Polish side. They arrived at mid-day on the 8th of July, having missed one and half days of three days paper sessions. Despite this unhappy event, the programme, however altered, was successfully completed.

For most of the Polish guests and British participants from outside London the Seminar began on Sunday 6th of July with an informal reception at the W. B. Morgan home in South Croydon.

The paper sessions were held at the Royal Geographical Society's house in Kensington Gore, with accomodation for non-resident members of the Seminar in the nearby Imperial College Summer Accomodation Centre.

There were six working sessions preceded by welcome addresses by two heads of delegations professors W. B. Morgan and J. Kostrowicki in which the history of British–Polish seminars started in 1959 was reminded. The papers provided a great deal of original thought and material and provoked considerable discussion. Although there were many obvious differences in both methodology and subjects of geographical research and planning, nevertheless there were clearly many aspects on which mutual understanding and profitable exchange of views could be achieved.

It was important for the Polish geographers to obtain first hand acquaintance with social and economic changes and geographical methodology in Britain as it was for the British geographers to get insight into the problems studied and research methods applied in Poland.

The best witness that those problems and methods are not entirely unfamiliar to the other side are two British papers concerning Polish problems and one Polish paper about Britain. Eight of ten papers had urban themes, five were on rural topics, five were on regional and national policy and the remainder two on welfare, one on coastal planning and oil and gas exploitation, one on pollution and one on transport problems.

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* The remaining 5 papers were presented by: D. Diamond – Some spatial implications of counterurbanization – a case of applied geography, M. Frost – Worktravel and the changing labour market in London, M. Jerczyński – Urban systems in transition: recent components of population changes in Poland, B. Robson – Urban policy in UK, and A, Wróbel – Economic changes and regional inequalities in Poland.

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The range of papers of topics within the main theme was therefore quite wide, perhaps too wide, reflecting today's view of the many aspects of spatial problems, policy and planning. Professors D. Diamond and K. Dziewoński gave two introductory papers on the central themes of space, planning and objectives. Most papers given to the Seminar kept closely to the central themes.

It was decided, that as usually, the papers will be published in English in Poland and professor W. B. Morgan has accepted the task of editing them. It was also agreed to held the ninth British-Polish Geographical Seminar in Poland in 1990.

Thanks were expressed by the Seminar participants to the Institute of British Geographers and the Polish Academy of Sciences for sponsoring the meting, to the British Council, the Economic and Social Research Council for providing the funds, to the Royal Geographical Society for freely hosting the Seminar and its considerable help during the meeting, to the Imperial College Summer Accomodation Centre for providing the visitors with lodging, meals and excellent dinners, to the Polish Cultural Institute for its evening reception, to Dr Frost (King's College, London) and Mr. Church (Queen Mary College, London) for leading an excellent field visit to the docklands , to professor D. Diamond and the London School of Economics staff for the computing display, to professor Mallin (Head of the Astronomy Department, Greenwich Royal Observatory) for guiding the party round the Old Observatory, and finally to Dr. Damesick (Birbeck College, London) who put a great deal of effort in organizing the early stages of the meeting, who in the end was unfortunately unable to take part in the Seminar.

Professor Jerzy Kostrowicki

Professor William B. Morgan

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CHANGING GOALS OF SPATIAL POLICIES AND PLANNING IN POLAND

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To avoid misunderstanding a short review of the most important concepts and terms to be used in the following comments seems to be necessary. They are: spatial economy and system of spatial economy, spatial policies, goals and instruments of such policies, among them spatial planning, as well as geographical space, whose elements and structures are objects in spatial policies and planning.

The term "spatial economy" in its wider usage describes the whole sphere of practical human activities in which the heterogeneous character of geographical space and/or the overcoming of physical distance play consciously or unconsciously a significant role in making and implementing involved decisions. However its meaning may be considerably narrowed by identifying such activities with those of social character only. The concept and term are then limited to "social spatial economy" which obviously is only one part or at best one aspect of the whole national economy. The "system of spatial economy" forms therefore only one subsystem within the system of national economy, which is based in its actual status on the binding laws and bye-laws in addition to the culture, customs and traditions of the given country.

The state authorities within the system of spatial economy develop "spatial policies", implementing specific goals. Identification of the character and role of such goals in spatial policies is of great importance and significance for the understanding of the basic problems of spatial economy and policies.

Usually the primary goal of spatial policies is defined as the maximization (or optimization) of space utilization, specifically land utilization (with natural resources included) for satisfying the needs of society/national community and its members, without destruction of stability and balance in the environment, especially in the natural environment. However in the deeper analysis the varying and changing character of social needs has to be taken into account. As a result, transformation taking place in the effective use of space and in the environmental equilibrium has to be recognized. A goal or goals understood in this way have therefore to be defined each time in detailed form, and with the passage of time this process leads to considerable variation in those goals. Hence the need for the formulation of goals which may be achieved in the given economic, social and political conditions in addition to being achieved in a comparatively short period of time.

One of the reasons behind the mistakes and disappointments in spatial policies may be found in the numerous conflicts in the dichotomy existing between variation in time of the goals and the stability of geographic space, i.e. the material (physical) environment which if even changing (and in the policies such changes may be intended)

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is, with exception of environmental catastrophes, changing extremely slowly. As a result, the material environment usually contains patterns from past policies, and current spatial policies strive after its transformation according to current and future needs. Here another conflict is born: one between satisfying the needs of the present population and providing reserves for future generations.

SPATIAL POLICIES IN POLAND IN THE YEARS 1918–1939

The resuscitation in 1918 of the Polish state faced two problems from the beginning: defining the state territory and developing the internal integrated territorial structure. The first was solved (for the interwar period) by 1923 and will not be discussed here; the second became – among others – an object of spatial policies until the beginning of the Second World War in 1939 and should be discussed here in greater detail.

The spatial structure of the country inherited from the past was extremely heterogeneous. It represented parts of three different imperial structures developed, mainly at the end of the 19th c. The differences may be easily identified for example by the patterns of transport, specifically of railway routes, but they also involved different stages in the processes of industrialization and urbanization, as well as the level of development of the social services and communal works.

The first task undertaken in spatial policies consisted of the reconstruction of the transport network. It is difficult to realize now that in Warsaw in 1918, the capital of the country did not even possess a direct railroad link with the then existing major regional centres except Vilno. By 1939 this task was practically completed. The second task was concerned with creation of a unified territorial division for the country, together with the restructuring of urban functions at the regional and supraregional levels. The lack of fully qualified administrators – reflecting the policies of occupying powers – led to the creation of rather large regional units – voivodships in addition to the concentration of executive powers at the next level of local government, i.e., in poviats (districts), supervising large rural communities, with the administration of the larger urban centres excluded and dependent directly from either the central or – in case of smaller towns – from regional authorities. However the actual territorial division had to take into account the old frontiers, created by the Congress of Vienna in 1815. This was due to the international treaties and conventions imposed in the process for the recognition of the state boundaries. The third task – to make full use of the obtained, rather narrow access to the Baltic Sea, emerged slowly, together with a growing awareness of the inimical attitude of Germany toward Polish foreign trade. The construction of a new seaport (Gdynia) was begun in 1922 and proceeded at an increasing rate after 1926, together with so-called "coal line" connecting Upper Silesia directly with the Bay of Gdańsk and running through Polish territory only. An important role in its realization was played by the steadily growing export of Silesian coal to the Scandinavian countries.

In the late twenties a new goal in spatial policies was defined – firstly in social concepts and then by the national government in the from of levelling or at least diminishing the very large differences in economic and social development between the regions of, roughly speaking, western and eastern Poland or so-called Poland "A" and "B". With the eccentric location of the largest industrial region – Upper Silesia – in relation to the whole national territory it was recognized that the eastern regions had no chance for rapid and successful industrialization. To overcome this the ceration of an intermediate centrally located industrializated region was planned in the thirties and an active policy undertaken for investment. In 1939 the firs factories were already producting and additional factories were under construction. Some communication investments were also undertaken.

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SPATIAL PROBLEMS OF POST-WAR RECONSTRUCTION

The shift of the national territory which had taken place as a result of the Second World War raised once more the problem of spatial integration,but this time the whole social and spatial structures were significantly improved. The former multinational state became almost uninational – any national minorities became rather insignificant within the national community which, as a result of the vicissitudes of war, became strongly integrated. The industrial region of Upper Silesia was completely reunited (both before 1914 and 1939 it had been split by international boundaries) and was now located well within the country. Access to the sea was now strongly based on a very wide stretch of the coast between the estuaries of the rivers Odra and Vistula. However this shift of territory involved very large transfers of population, as well as the settling of the majority of peasant migrants into a more urbanized environment. As a result it led to the emergence of strong regional differentiation in so far as the demographic social and agricultural structures were concerned.

Resettlement and integration of the recovered territories were, however, only part of the more important task. The whole national economic life was practically at a standstill, with agriculture and industry in total ruin. The restarting of industrial production had to take place wherever in spite of war-time destruction there were either the necessary equipment or reconstruction was comparatively easy. Spatial policies in such conditions were simply useless, although some effort to make reconstruction spatially rational and selective were undertaken. All efforts in spatial planning were concentrated on the long term objectives.

THE ERA OF FORCED INDUSTRIALIZATION

With the process of reconstruction well advanced and the possibilities for a rational rebuilding of past structures exhausted the time for a fresh approach to investment had arrived in the late forties. New investment had to be based on some wider rational concept of location. At the same time an ambitious programme and plan for social and economic development was formulated, based on a policy of forced industrialization to be carried out within the system and forms of a socialist economy. A second parallel goal was included, defined as the elimination of the spatial and social class differentiation through the more uniform distribution of the productive forces. It is easy to observe that the first goal (industrialization) contained only indirect implications and tasks for spatial policies, while the second (elimination of regional social class differentiation) involved such policies directly and specifically.

In the initial optimism and enthusiasm aroused by the undertaking of large-scale social and economic development, it was assumed that both these goals were well harmonized. In the implementation of the whole plan, however, differences and even dialectic conflicts very quickly emerged. Soon the first goal, forced industrialization, gained complete ascendancy and primacy over the second. The reason behind this primacy was that the implementation of the whole plan was undertaken at a time of great capital shortage and of shortage of other investment resources. In consequence forced industrialization had – at least in the beginning – to have priority over all investment in other branches of the economy, practically over all services, at the expense of renovation of the existing fixed assets and accompanied by the slowing down of improvement in living standards and conditions.

However, during the thirty five years since the formulation of the still valid goal of industrialization, policy has been modified several times. Such modifications were expressed by changing the identification of the more detailed partial goals included in the short-range plans. In the beginning the whole concept of industrialization was based

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on the priorities given to the means of production, i.e. to the metallurgy and machine industry and in part also to the chemical industry. Later, with growing difficulties in the implementation of proposed investments due to shortages of building materials a high priority was given to them. Similarly, the needs of the whole socialist camp during the Korean war led to a further increase and change in production profiles of the machine industry at the expense of light industries. After 1956 when the industrial investments of the six-year plan (1950–1955) went at least partly into production, resulting in a strong increase in the national income, the first efforts to correct the growing disparities and to develop a more complex economy were undertaken. Then the significant interdependence between the efficiency and the effectiveness of labour and the standard of living were recognized together with priorities, corrected by including production for agriculture (machinery and fertilizers) as well as durable consumer goods. A more ambitious programme for housing construction was also introduced.

The sixties witnessed a return to very large investments, this time in the extractive industries (production of hard and soft coal, sulphur and copper) together with a great increase in the production of electricity and the extension of the energy grid. As a result, new mining regions emerged (around Konin, at the confluence of the Vistula and San rivers, in Lower Silesia) and some existing areas were extended and significantly enlarged. The construction of new coal and oil terminals in the port of Gdańsk was also included.

In the seventies there was a pronounced return of priorities for metallurgy (iron and steel plant "Katowice" in Upper Silesia, copper extraction and processing in Lower Silesia), machine industry with shipyards included, and chemical industries but new construction at this time was based on foreign (Western) loans and credit. Again a parallel programme for housing was proposed. The serious underestimation of real costs (or perhaps too optimistic estimation of building potential), the prolongation of actual construction over planned time limits, delays in starting full production, together with very unfavourable changes in the costs of foreign loans, led then – as it is well known – to a serious economic and social crisis. Its consequences still have to be suffered and dealt with.

Naturally all these fluctuations of goals, policies and priorities in the whole process of industrialization were also reflected in spatial policies by directly quickening or delaying the implementation of the second goal, one of more even distribution of productive forces, and indirectly by their impact on the structures and processes of urbanization. When in the late fifties it was realized that an even level of industrialization in all regions was neither possible nor desirable, then this second goal was modified and superceded by regional equalization in the levels and conditions of living (including an equal opportunity for individual development).

The delay in general, but especially in the infrastructural aspects of urbanization, in relation to industrialization processes was the specific consequence of the economic and social policies adopted. Some effort was made in the sixties to alleviate the situation in the largest urban and industrial agglomerations by restraining their growth. The whole action was at that time described as "industrial deglomeration" and involved the transfer of some, mostly small, industrial plants to smaller cities and in a few cases even to rural villages. It called also for some limitation of rural to urban migration. After several years it turned out that this policy (only partly successful) led in larger cities to serious shortages of manpower and the underutilization of productive potential in industrial plants most of which were concentrated in those areas. The entire policy was either scrapped completely or significantly reduced.

The seventies on the other hand witnessed the proclamation of a rule or principle of moderate concentration both in industrialization and in urbanization, with a polycentric structure in the network of main urban centres. However, the implementation of such a goal was rather slow, though it corresponded more or less to the current

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structure of the urban network. The main locational decisions with regard to big industrial combines to be constructed and other associated investments had been already taken in the sixties and in almost all cases the actual building started. Their construction was proceeded with throughout the seventies and is going on even now, consuming the majority of investment resources and independently of changes in economic and spatial policies. Simply the capital already tied up is too large to be completely abandoned. In fact, it is a rather good example, that in the field of spatial economy the voluntarism in decision making is not advantageous and may easily become detrimental. The field of free choice is now limited by the former premature decisions. Danger to and deterioration of the natural environment caused by forced industrialization and intense, although delayed, urbanization were not originally taken into account, partly because their extent was not fully realized. Later on they were disregarded and preventive measures and investments pushed aside for future implementation, as was the case with various services. Lack of information and understanding of industrialization and urbanization processes, especially large-scale ones, was associated here with undue optimism about the capability for absorption and the self-purifying potential of the natural environment. In spite of the fact that quite early some large investments connected with water conservation had to be undertaken (mainly to supply water for large industrial plants and for the population of rapidly growing urban agglomerations), they were not taken as signals of the need to include problems of environmental protection and rational utilization of natural resources among the basic goals of spatial policies. However, their importance for the whole economy was never completely denied.

In the early eighties the preservation of the natural environment and the rational utilization of resources were included among the major goals of spatial policies. This was due on one hand to the dangerously increasing deterioration of the environment in a large number of regions and on the other to certain international initiatives and pressures (U Thant Report, Convention on the Preservation of the Baltic Sea, recently the problem of acid rain). Earlier all references to these problems amounted to no more than lip service. Even now the effect of better informed policies is still meagre.

During the thirty or more years of forced industrialization and its dominance in the national economic and spatial policies, some new spatial disparities and disproportions emerged which are now strongly influencing the whole spatial economy and its system. It is not the purpose of this paper to analyse in detail the mechanism which led to/or enlarged those negative phenomena. The statement that disparities in investments which could be considered rational as temporary measures should never be extended over the whole period of postwar economic and social development should be sufficient for the following comments.

Such disparities from the most general to the more specific, from those of national importance to regional and local, are expressed as infringements of ecological equilibrium and deterioration of the natural environment, decapitalization of fixed assets, underdevelopment of all services (in particular of communal services and housing — indeed of the whole settlement infrastructure) in comparison to productive facilities in addition to underdevelopment of agriculture and transport in relation to industry, of industries producing commodities in relation to processing. In all those fields there exist also strong regional and local disparities, which lead to additional differences and disproportions in the development of various regions and their parts and between urban and rural areas.

To overcome these disparties a restructuring of the whole economy is necessary, involving better and stricter implementation of already declared spatial policies as well as preparation of a programme for their systematic elimination. Such a programme should provide on the one hand a significant improvement of conditions in the areas and regions where the disparities expressed in the ecological deterioration and in the

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declining value of the existing fixed assets are the greatest, and on the other the protection of the remaining areas from the growth of new disparities.

However, the introduction of such policies meets with serious difficulties and even with resistance. The present shortage of investment means is now – due to the very heavy foreign debts – proportionately larger than at any other time. Proportionately because the social and economic growth of the country and its development are much more advanced than before. This surely is one of the gains and successes of the socialist economy and of the proindustrialization policies. At the same time, presently developing needs are also much higher. In such conditions the pressure for a return to former policies of forced but extensive industrialization and simplex investments in industry at the cost of cutting off unavoidable complementary investments and of the reduction in value of existing fixed assets may easily develop. Such a return, however, would lead this time to catastrophic consequences in social relations, in the economy and in ecology. Yet such a return in upheld by habits and ways of thinking acquired during the recent years, besides the fact that we are burdened by the necessity of finishing the already advanced industrial investments of the sixties and seventies, underestimented and badly planned as they are. This increases the already existing disproportions. In consequence realistic spatial policies have to face the fact that the future investment programmes and plans will have a very little leeway for choice. The majority of investments will be constrained by the current needs – economic, social, ecological as well as political. It is therefore important that alongside the powerful industrial "lobby" there should also function another, equally strong social and political lobby watching over and defending investments for the improvement of living conditions as well as the protection of the natural environment.

Spatial policies defined in this manner have to be reflected during the coming years in goals, methods and forms of spatial planning and plans. Nevertheless we may still ask whether and when conditions will arise for stronger and faster economic growth allowing for a greater freedom of choice and making the implementation of a more ambitious programme possible, Such a situation may emerge out of internal or external events or even from both simultaneously. Among the forseeable events two perhaps should be mentioned. First – an internal one – would consist of a radical improvement in the efficiency and productivity of labour. This would involve a great change of heart in the community and systematic education based on a very high moral standard of work. In present conditions significant progress in all production technologies can be achieved only with parallel progress in culture and morality. Second – external and not quite impossible – fast and fundamental improvement in international relations between West and East which would open new credit lines and at lower rates of interest, increased exchange of technical and technological novelties as well as dynamic growth in foreign trade. It is important to remember that during the last ten years the general economic situation in the world for Poland has been unfavourable.

GOALS OF SPATIAL POLICIES IN THE NEAR AND MORE DISTANT FUTURE

Let us now review in more detail the goals and tasks which now, and probably in the more distant future, will be the object of spatial economy, policies and planning. However, right at the beginning, it should be stressed that they differ very much regionally and locally.

It is already clear that further social and cultural progress depends on increase of production and this implies additional stress being laid on industrialization. But this time it has to be different. The extensive character of the whole economy has to become more intensive. Such a change involves a complete restructuring. It will have to be based

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on the better use of resources (i.e. saving materials and energy as well as available manpower), raising standards of work and living, overcoming far-advanced decline in value of fixed assets, preserving the natural environment and the cultural heritage.

The process of restructuring the economy will also bring the need to establish new priorities in investment. However, these will have to be regionally differentiated. The identification of spatial implications and regional conditions of restructuring will now become the major task for spatial policies and planning.

When, in the late forties, the goal of regional equalization was formulated, it was understood – perhaps in an oversimplified way – as the elimination of differences between well developed and underdeveloped regions and areas. Now such differentiation seems to have been much more complex.

All elements possess different spatial patterns of their own. I refer here to geographical (natural and man transformed) demographical (age, sex, natural increase and migrational rates, educational and professional qualifications) environments current differentiation of the agricultural economy, industrial locations, pattern of settlement network and the distribution of the reduction in capital value of the whole economy – but specifically in the transport and settlement infrastructure – which are integrated together in the total spatial structure of the country. Their individual implications for restructuring and future development also vary.

Practically all these problems come to the fore in the Upper Silesian industrial region. Consequences of the extensive exploitation of mineral resources and of the transition to more efficient and intensive mining have to be faced. Reduction in value of fixed assets in all fields is advanced. Problems of air and water pollution – the most visible aspects of the ecological, almost catastrophical deterioration, are very large indeed. The problems of manpower are here especially complicated with present shortages made more difficult by decrease in rates of inmigration from other regions and perspectives of a large future unemployment due to technological progress. Finally there is a need for better services, specially in culture and education.

The new mining regions have to face problems of the better, more intense and complex exploitation of deposits together with increased and effective preservation of natural environment.

Problems of the largest urban agglomerations (of Warsaw, Cracow, Wrocław, Poznań, Gdańsk and Szczecin) also vary. In fact they will have to be treated individually as all have difficulties of their own. However the future of the smaller members of this group seems to be enhanced by the proposed restructuring of industry.

The western and northern regions, although in the best demographic situation, have to deal with problems of decline in value of the settlement infrastructure, while the future of central and eastern regions, still underdeveloped, depends on overcoming the already pronounced phenomena of depopulation. Finally the southern regions have additional difficulties in the preservation of natural environment (acid rains) and the existing overconcentration in recreational and tourist movements.

This short but surely oversimplified picture of variations in regional spatial problems and their consequences for spatial policies was presented here at the end to show that spatial policies and planning of Poland should shift their attention from the national to regional and local levels.

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THE CHANGING ROLE OF LOCAL GOVERNMENT: A POLITICAL GEOGRAPHIC PERSPECTIVE*

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INTRODUCTION

Since the return of the Conservative Government in 1979, local government in Britain has experienced a period of considerable change in its basis, role and importance. Among the significant changes which have occurred are alterations in local government finance, structural reorganizations, and developments in the ways by which services are delivered. Measures such as ratecapping, the abolition of the metropolitan county councils, and the facilitation of a closer relationship between the public and the private sectors form the substance of the changes; at their root lies the ideology of the current Conservative Government, with its emphasis on efficiency, competition and market forces. This emphasis is often at variance with a local government system and tradition developed, for the most part, during the twilight period of consensus politics in the late 1960s and early 1970s. The extent to which the wishes of central government have been accepted by local government carries with it profound consequences for the relative roles of the two levels of government.

Political geographers' traditional concerns have touched little on such material. The preference for those whose concern has been with local government political geography has been with the analysis of voting (Taylor and Johnston 1979), the distribution of public services (Kirby 1981; Moon 1982; Pinch 1985) and jurisdictional partitioning (Johnston 1979). With some exceptions (eg. Dickens, Duncan, Goodwin and Gray 1986; Boddy 1983; Borchert 1985) few geographers have explicitly considered the spatial aspects of legislative developments in the context of changing power relations. The current changes in local government provide an opportunity for this deficiency to be remedied and for a reformulated local government political geography to be developed with central-local relations as its focus.

In this paper a preliminary overview of this theme will be presented. Initial attention will focus on the context and nature of local government change in Conservative Britain. Major reforms relating to finance and organization will be identified and their correspondence to Conservative, or "new right" ideology discussed. Attention will then shift to a consideration of geography embodied in the changing local government. A predominantly regional perspective will be taken but reference will also be made to local geographical impacts. Finally, an evaluation of general and specific explanations for local government change will be set out indicating the functionality of change for Conservatism.

* This paper was produced for the British–Polish Seminar on Recent Developments in Methodology, Planning and Spatial Policy, Royal Geographical Society, July 1986. The authors acknowledge the funding of the ESRC for the research upon which the paper was based.

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LOCAL GOVERNMENT IN THE 1980s

For decades local government, like political geography, could justifiably have been termed a "moribund backwater". Little change or reform occurred to alter a system which had evolved in an *ad hoc* fashion from the work of the nineteenth century poor law commissioners. In the mid-1960s this situation began to change with the reorganization first of the local government of London, and later of the rest of the country. The eventual outcome was a two-tier system of county and district authorities sharing the many functions which had, over the years, become the responsibility of local government. With the completion of the reorganization programme in 1974, it might have been expected that the pace of change would again slow. This has not however been the case. There has been a continued recognition that reorganization has not necessarily resulted in reform, and a succession of reports and committees have recommended further financial change and organizational change. This process has been particularly marked since 1979 with the coming to office of a Conservative Government committed to a radical break with the policies of previous administrations. It has been during this most recent period that the recommendations of the numerous post-reorganization committees have begun to be translated into action.

The major landmarks of local government in the 1980s can be placed into three categories. First, several measures have been concerned explicitly with financial matters. The basis of local government finance has been altered significantly with the old rate support grant (Bennett 1980) being replaced by the block grant. A complicated system of penalties has been introduced in an attempt to ensure that a local authority does not spend in excess of a target expenditure determined by its grant related expenditure assessment (GREA). The latter is itself derived from an extensive calculation taking into account such indicators of potential need for government financial support as the number of miles of road or children attending school in an authority (Tanner 1985). The rates based element of local government income has also been altered, at least partially so that local authorities cannot attempt to make up any shortfall from grant income by increasing rates. A penalty system in the form of imposed rate ceilings has been instituted, and several authorities have experienced this "ratecapping" process. For the practice of local government, these financial constraints have served to limit the effectiveness of service delivery to respond ahead of need. The finance no longer exists to employ the necessary numbers of workers and service developments, such as new housing starts, are inhibited. Organizational change is a second characteristic which has distinguished local government in the 1980s. Two examples can be cited. The abolition of the metropolitan county councils and the Greater London Council with effect from April 1986 is the better known. This action effectively removed one tier of the two tier system of local government in selected areas and replacted it by a series of alternative bodies. In some cases these were the local district councils, but in many cases they were non-elected, appointed boards or committees (INLOGOV 1986). The functions of fire, police and public transport services were transferred to joint boards with appointed representatives from the constituent district authorities, and the myriad other metropolitan county functions, for example structure planning, were transferred either to districts themselves, where they were interested, or to appointed joint committees. Overall some 70% of functions became the responsibility of non-elected bodies, and the democratic aspect of local government was sacrificed as were the enhanced possibilities for service coordination and strategic planning which had previously existed. Harris (1986) remarks that it is hard to resist the notion that the abolition of the Labour-run metropolitan county councils by a Conservative Government was a political act.

Another example of the theme of organizational change concerns the fortunes of the "Big Eleven", the eleven largest non-metropolitan districts. The creation of this grouping predates the return of the Conservative Government, but its significance has been considerably enhanced by the creation of single tier local government in the old

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metropolitan county areas. The "Big Eleven" lost substantial powers to the county council level in the 1974 local government reorganization; with the abolition of the metropolitan counties they see an opening to regain their lost status, arguing that many of the new all-purpose districts are smaller, indeed Bristol with a population of some quarter million has effectively the same powers as the City of London with five thousand (Travers 1985). Whatever their future turns out to be, the arguments put concerning case of the "Big Eleven" illustrate the key point that local government reorganization is now considered as a continuing process, and it is likely that if returned at the next general election, a Labour Government would embark on another round of change.

A third category of local government change since 1979 concerns the growing dissolution of the boundaries which previously existed between the public and the private sector concerning the delivery of services. It has been argued (Coopers and Lybrand Associates 1981) that services can be delivered in six ways, all of them consistent with the statutory requirements of local authorities to provide adequate services to all. The private sector can become involved through buying, permanently, the right to supply a service, through entering into temporary, renewable contracts to supply a service, or by providing a service free from regulatory control by the public sector. Alternatively, the public sector can retain complete control of service delivery or arrange for another public sector body to become involved. There are relatively few examples of outright sale of local government service functions to the private sector; contracting-out and deregulation are more common (Moon and Parnell 1986). The former has particularly affected environmental services such as street cleansing and refuse collection, while examples of the latter include the case of long distance and municipal public transport (Farrington 1985). In a general sense, deregulation can also be extended to include legislation facilitating increased private sector activity, for example the sale of entire housing estates and the opening up of the Green Belt to private developers.

The background to local government change in the 1980s is undoubtedly the current ideology of Conservatism. Drawing on the influential thinkers of the "new right", the works of the right wing Adam Smith Institute, and the *Journal of Economic Affairs*, this thought espouses the concept of the strong minimalist state. The Adam Smith Institute, for example, has identified no fewer than 22 potential ways in which state activity can be decreased and the private sector encouraged (Adam Smith Institute 1985). There appear to be three aspects to this approach. First, local government should be efficient in financial terms; it should offer value for money. Arguably such a tactic calls into question the altruistic welfare basis of much of British local government, replacing it with a suggestion that service users should pay full economic costs (LeGrand and Robinson 1984). Second, local government should be the subject of strong informed management in the same fashion as private industry. Substantial movement towards this goal has already been attained in the case of the National Health Service. Finally, wherever possible, the provision and delivery of services should be governed by the operation of the capitalist free market economy; the consumer should be able to choose a service on economic grounds, and the continued provision of that service should be predicated on similar criteria. The presumption in this case is that, in most situations, the private sector, free from the perceived restraint of state ownership, will be more effective.

THE CONTEMPORARY GEOGRAPHY OF LOCAL GOVERNMENT CHANGE

It is inevitable that there is a geographic dimension to the developments discussed above. Regional and local geographies can be distinguished, with the former indicating the broad patterning of local government change with some authorities and certain

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Fig. 1. The Metropolitan Counties: 1 – Tyne and Wear, 2 – West Yorks, 3 – Merseyside, 4 – Greater Manchester, 5 – South Yorks, 6 – West Midlands, 7 – Greater London

localities being disproportionately affected. The local dimension gives a greater indication of the impact of the various developments.

The distribution of the metropolitan authorities together with the Greater London Council (Fig. 1), the "Big Eleven" (Fig. 2), and the ratecapped authorities (Fig. 3) exhibits considerable overlap. All the ratecapped authorities are either metropolitan or London authorities, or members of the "Big Eleven" with the sole exception of Thamesdown; they are also all Labour controlled with the exception of Portsmouth. The "Big Eleven", representing the extension of urban England away from the metropolitan heartlands, also normally posesses a Labour majority. Although there are exceptions, the distribution of the authorities affected by local government change is very closely congruent with the geography of Labour control. It would appear that those authorities which have been penalized, abolished or restrained from functioning as they believe they should, and in the past have, are those which are politically in opposition to central government.

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Fig. 2. The Big Eleven

The geography of contracting-out indicates the reverse situation (Fig. 4). Authorities which have contracted-out refuse collection services, or given serious consideration to such a move, are predominantly Conservative and located in rural areas or the South East. Contracting-out is an aspect of local government change which is effectively chosen by the authorities concerned, although compulsory open tendering exists for some services. Those authorities which have contracted-out are therefore those who most clearly subscribe to the prevailing Conservative ideology of central government. Despite apparently fairly extensive interest, it is noticeable that few authorities have actually, in the final analysis, adopted contracting-out. A comprehensive survey of contracting-out in England and Wales (Moon and Parnell, 1986a, 1986b), together with surveys conducted by *Local Government Chronicle* (Hardingham 1983, 1984; Whitehead 1985) suggest that the impact of this aspect of local government change may be characterized in two ways. First, very little contracting-out has actually taken place. Approximately 12% of authorities had contracted out a service by 1983; this figure rose to 16% in 1984 but has remained steady since. Second, many of the services concerned have been relatively small in scale. Of the more substantial services, contracting-out has

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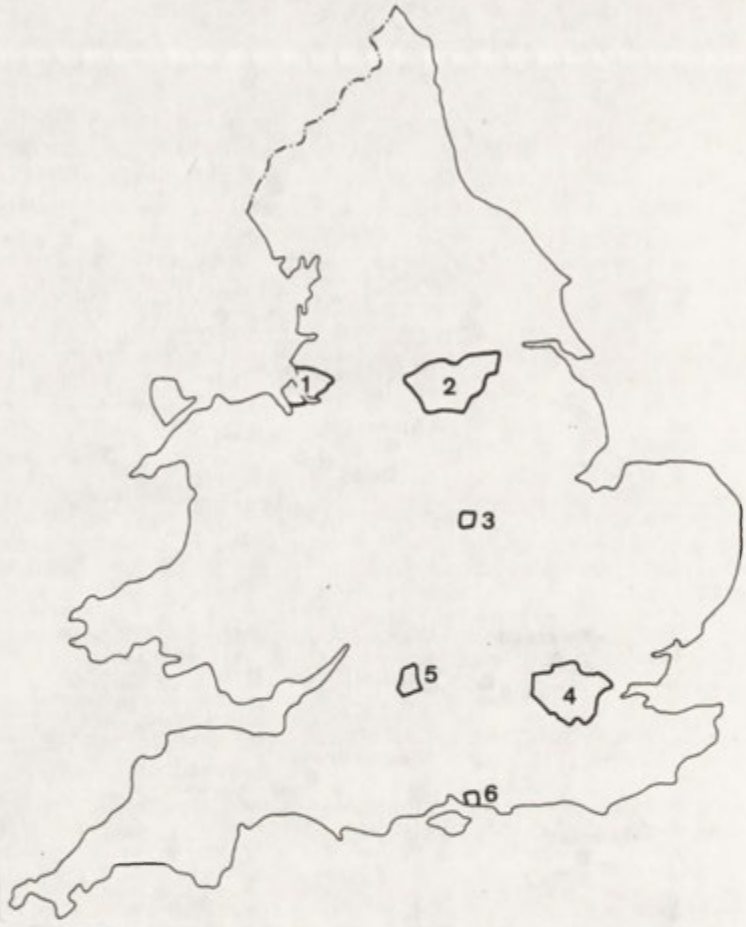

Fig. 3. The Ratecapped Authorities: 1 – Merseyside, 2 – South Yorkshire – Sheffield, 3 – Leicester, 4 – Greater London: Basildon, Brent, Camden, Greenwich, Hackney, Haringey, Islington, Lambeth, Lewisham, Southwark, 5 – Thamesdown, 6 – Portsmouth

affected mainly environmental services, yet even in this case approximately 95% of authorities have not contracted-out refuse collection, and 75% have not even given consideration to the possibility.

The geography evident in the adoption of contracting-out for refuse collection is repeated if consideration is extended to the contracting-out of other services (Table 1). It remains broadly the case that has been little activity outside the Conservative heartland of South Eastern England. Few councils have contracted-out more than one service, and only in London, the South East and, unusually, the North West are there authorities where over four services have been contracted-out. For those authorities contracting-out a single service, there is a concentration in the South East, South West and East Anglia; this situation is replicated if attention is shifted to councils which have merely seriously considered contracting-out (Table 2).

The superficial explanation of the distribution of contracting-out as a reflection of the geography of Conservative support can be extended by considering the relationship,

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Fig. 4. Local Government and contracting out. Refuse collection-districts: 1 – contracted out, 2 – considered contracting

TABLE 1. The decision to contract out: numbers of services actually contracted

Standard region	No. of councils	Number of Authorities contracting			
		one service	two services	three services	four + services
GLC	32	3 (9%)	3 (9%)		2 (6%)
South-East	98	16 (16%)	7 (7%)	3 (3%)	2 (2%)
South-West	47	6 (13%)	1 (2%)	3 (6%)	
East Anglia	20	4 (20%)	1 (5%)		
East Midlands	40	3 (7%)			
West Midlands	36	4 (11%)			
Wales	37	1 (3%)			
Yorks & Humbs	26	2 (8%)			
North-West	37	1 (3%)		3 (8%)	2 (5%)
North	29	1 (3%)		1 (3%)	

Source: Hardingham (1983, 1984).

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TABLE 2. Councils considering and subsequently rejecting contracting out

Standard region	No. of councils	Contracting out rejected for one service	two services	three services	four + services
GLC	32	3 (9%)	2 (6%)	1 (3%)	1 (3%)
South-East	98	24 (24%)	9 (9%)	3 (3%)	4 (4%)
South-West	47	12 (26%)	6 (8%)	1 (2%)	4 (4%)
East Anglia	20	7 (35%)	1 (5%)	3 (15%)	
East Midlands	40	4 (10%)	4 (10%)		
West Midlands	36	8 (22%)	4 (11%)		2 (2%)
Wales	37	5 (14%)	1 (3%)	1 (3%)	
Yorks & Humbs	26	2 (8%)	1 (4%)		1 (4%)
North-West	37	3 (8%)	2 (6%)	1 (3%)	
North	29	4 (14%)		1 (3%)	

Source: Hardingham (1983, 1984).

at the inter-authority level, to factors such as rate debt, marginality, labour force statistics, and even pure geography. In the latter case, examples from the field of contracting-out include local service delivery histories, the diffusion of the "innovation" of contracting-out, and the congruence of contracting-out with typologies of local authorities such as that of Webber and Craig (1978). Peterborough District Council has had a long history of a contracted service in one part of its area, there is some evidence of contracting spreading out from early developments in such authorities as Southend in 1981, and it is in suburban and commuter dominated or deep rural authorities that most initiatives have been recorded.

The local, intra-jurisdictional, geography of local government change provides an indication of the impact of the changes as experienced by service consumers and providers. Case studies of authorities tend to substantiate fears that one such impact is that which affects job opportunities. For example, when Exclusive Cleaning won the contract for refuse collection at Southend only 180 of the original 232 strong workforce were re-employed. The abolition of the metropolitan authorities is estimated to have involved approximately 3500 job losses with the majority in London (c. 2000) followed by Merseyside (741).

A second local impact concerns the effect of changing management structures. For the service consumer it is no longer clear who is responsible for a service; it may be a joint board, the district authority, another district authority, or even a private sector organisation. The correct authority to receive a complaint about service quality is now often less evident than previously had been the case. Similarly for the service provider there may be spatial changes in the local organization of service delivery; contracting-out for example has been used in several authorities as a form of efficiency audit designed to facilitate internal reorganization of service provision and rationalization of patch-based delivery systems. In other authorities, such as Basingstoke District Council, there have been periods of labour unrest and inadequate service while private sector contractors have adjusted to the demands of providing a service.

A final local issue benefiting from a geographical perspective is that of accountability and local democracy. Local control of service provision is inhibited by the increased involvement of central government in (the limitation of) local government finances, and by the growing role of non-elected bodies in service delivery. Mandates to protect and enhance public sector services are increasingly under threat from statutory legislation encouraging private sector activity.

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EFFICIENCY, CENTRALIZATION AND CONSERVATISM

A full understanding of the current changes in British local government and their geographic manifestations requires the linking of empirical evidence concerning the imposition or adoption of change and a more theoretical perspective. Dearlove (1979) provides a broad framework within which developments can be placed. He argues that two factors have, together, been important. First, there has been an emphasis on efficiency. This, as argued earlier, has been central to Conservative ideology and has been linked to demands to limit local government finance and to the advocacy of the private sector. Second, the idea of rationalization has also been important. In the context of local government change, tiers of local government which are perceived as unnecessary are removed. The rationale for rationalization is efficiency; the result is often to enhance the dominance of Conservatism through the weakening of Labour.

An indication of the particular importance of the theme of efficiency can be gained by studying the reasons which have been cited by local authorities for considering the contracting-out of refuse collection (Table 3). The responses, taken from a survey of all authorities known to have expressed any interest at all in the contracting-out of environmental services, suggest that cost and efficiency is clearly the most important factor influencing a local authority; an open admission of an influence by central government beyond that of existing legislative requirements is less common. The extensively reported experiences of contracting-out in other authorities were cited as an influence by 22 councils, and 13 councils claimed that industrial relations problems with their workforce had led them to consider utilising the private sector for service provision.

TABLE 3. Reasons for considering contracting out refuse collection

	No. of Authorities (n = 102)
Cost/efficiency	93
Central Government encouragement/legislation	41
Examples elsewhere	22
Industrial relations	13
Approached by contractor	3
History of contracting	2

The suggested general importance of the theme of efficiency, and its empirical substantiation as a local influence, indicates the impact which Conservative ideology has been having on local government change. This impact has profound consequences for central-local relations, with the power of Whitehall being increased at the expense of local autonomy. Efficiency in local government has been the catalyst for this change, but its outcome has been a concerted attack on municipal socialism. The Local Government, Planning and Land Act (Part III), for example, has been used to control the ability of local authorities to employ large manual workforces (Direct Labour Organizations), to maintain services, and to compel an increased consideration of the use of private sector contractors (Flynn and Walsh 1982). Extensive powers have been granted to the Secretary of State for the Environment to intervene in local affairs to ensure that the correct doctrines are followed.

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Recent change in local government has been undeniably functional for the Conservative Government. The rationalization or dismantling of the state apparatus for service provision are manifestations of the Conservative solution to the current fiscal crises. Contracting-out, for example, allows the reduction of labour costs through the employment by the private sector of non-union labour at low wages and with longer hours and fewer benefits; it also contributes to a transfer of capital from the public to the private sectors. Ratecapping and the GREA similarly provide examples of the restriction of local autonomy and the monetarist response to fiscal crisis. There is, of course, a geography to this analysis. Authorities respond differentially to the attack of the central state on their autonomy. While some authorities respond enthusiastically to contracting-out, others, like Lewisham, develop strategies to enhance their public services; some authorities, for example Portsmouth, passively accept ratecapping, while others, notably Liverpool and Lambeth, attempt to resist central interference in their financial affairs as long as possible.

CONCLUSION

The analysis of contemporary local government in Britain requires a development and refinement of local government political geography. It is now essential that consideration is given to the dynamic nature of power relations and the changing relationship between the central and local state. Such a consideration is necessary if any convincing understanding is to be reached concerning the considerable volume of change now being experienced by local government. With continuing uncertainty over the number of tiers of local government which are required, the limits to the local government financial base, and the optimum level of private sector involvement, it is not hard to understand the problems facing both the consumers and providers of local government services. It is equally hard to resist calls, similar to that recently made by the Town and Country Planning Association, for an official investigation into the future of local government.

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GEOGRAPHIA POLONICA 56, 1989

STATE PLANNING AND SPATIAL POLICY IN SOUTH AFRICA

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Consideration of spatial policy on the part of national governments is usually predicated on the assumption that state planning is directed towards some general welfare objectives. While any planning strategy is likely to benefit some people in some places more than others elsewhere, it is not often recognised that the beneficiaries of spatial policy may be a small and perhaps unrepresentative minority. It is even less frequently the case that state planning and spatial policy has as its objective the perpetuation of some form of society which most if not all other nations find morally repugnant, but such is the case with South Africa under *apartheid*. In these circumstances, South Africa provides an unusual as well as an interesting illustration of state planning with a strong spatial component, with important implications for the process of uneven development in this deeply troubled land.

Core-periphery differentiation is a repetitive feature of uneven development within nations. However, the manner in which core and periphery are related is subject to considerable variation, reflecting the historic process of development as well as specific contemporary economic, political, social and cultural conditions. This paper takes the case of South Africa to show how core and periphery are drawn into a distinctive relationship under the government's *apartheid* policy. It will be shown that black labour supply is the key to understanding the particular form of domination of periphery by core in a country where uneven development has strong racial overtones. Some specific outcomes expressed in the process of urbanization will also be examined, and there are some concluding observations on the significance of the present phase of "unrest".

BACKGROUND

The major core of the South African space economy is represented by the Pretoria–Witwatersrand–Vereeniging region, centred on the city of Johannesburg, which accounts for about three-quarters of total GNP (see Fig. 1). The secondary metropolitan areas of Cape Town, Port Elizabeth, East London and Durban comprise detached parts of the core in terms of economic status if not in a strict geographical sense. The periphery is made up of areas displaying a gradation of intensity of economic activity and prosperity, from the inner periphery around the core areas, through a wider intermediate periphery, to the outer periphery of largely agricultural areas. The distinction between core and periphery in South Africa takes on a particular political form under the policy of *apartheid*. At the national level, *apartheid* ("separate development" or "multinationalism" in the official euphemisms) involves the designation of ten

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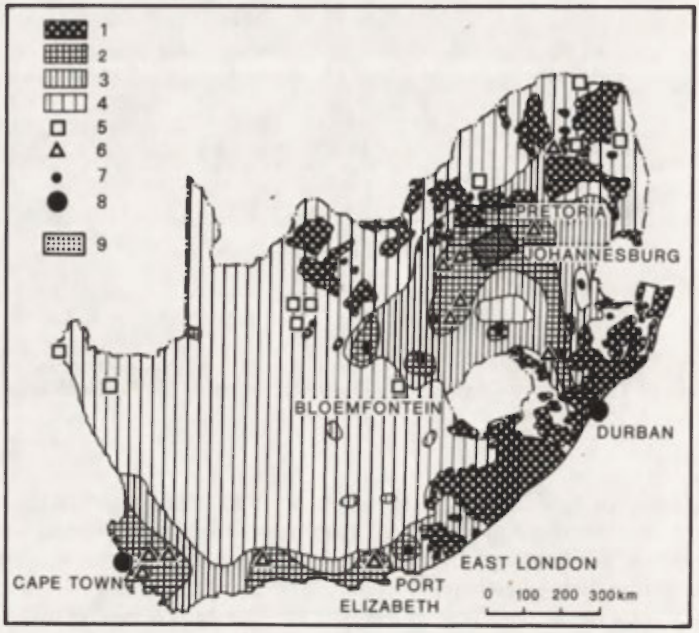

Fig. 1. The spatial structure of the South African Economy (Source: Smith 1985, Fig. 5.1, based on Fair 1982, Fig. 5.5): 1 – Black "homelands", 2 – Inner periphery, 3 – Intermediate periphery, 4 – Outer periphery, 5 – Resource frontier, 6 – Other major urban centres, 7 – Minor core, 8 – Major core, 9 – Principal Metropolitan Region

so-called "homelands" (sometimes referred to as "Bantustans") for the majority black or negroid population. These comprise just over 13% of the total area of South Africa, for about 24 million blacks or over 70% of the population. The remaining 87% of land is for the 4.8 million whites (14.8%), along with the 2.6 million so-called coloureds and almost 1 million Asians – mainly Indians – who have been conceded limited political participation with the whites under constitutional changes in 1983.

Figure 2 shows the spatial arrangement of the "homelands". Officially there is a distinction between the four which are now "independent republics" in the eyes of the South African government, and the black "national states" which have yet to be granted independence and thus remain *de jure* part of the Republic of South Africa. In *apartheid* theory, the "homelands" provide a territorial basis for the emergence of free and independent black states, leaving the remainder of South Africa as a Republic with a white population majority. However, the size, location, lack of resources and general poverty of the "homelands", along with the geographical fragmentation characteristic of most of them hardly provide a basis for viable nations. The designation of the "homelands" and their geographical disposition is therefore frequently interpreted as the expression of a policy of divide and rule on the part of the whites, with a process of "Balkanization" splitting up the black areas as a whole as well as individual "homelands". Associated with this is the not inconsiderable achievement of providing some legitimacy to the deprivation of the franchise for blacks in "white" South Africa: in their "homelands" the blacks are supposed to enjoy the same rights as do the whites in their territory. Black political power, in the formal sense, is thus transferred from core to

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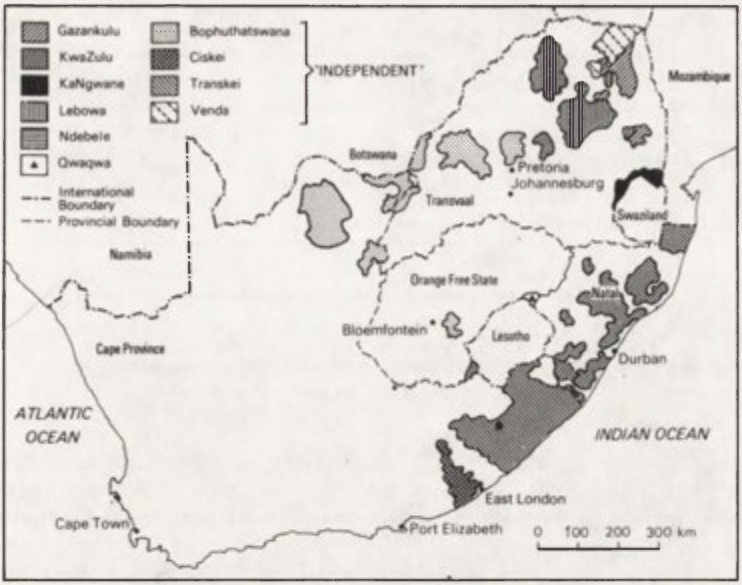

Fig. 2. South Africa's "homelands" (*Source*: Smith 1985, Fig. 1.1)

periphery, where it poses less of a threat to continued white control of the economic heartland.

The position of the "homelands" in their discontinuous crescent around the core region of Pretoria – Witwatersrand – Vereeniging is crucial to core-periphery relations in South Africa. The strategic significance is implicit in the potential threat that a unified and aggressive group of black "national states" or "independent republics" could pose – underlining the grounds of the divide-and-rule strategy. But it is economic relationships which have to be understood as the primary means of integration whereby the "homelands" remain dependent appendages of the white-dominated core responsible for their continuing underdevelopment.

THE GEOGRAPHY OF BLACK LABOUR SUPPLY

There are three ways in which blacks are employed in "white" South Africa: as permanent residents, as migrant workers , and as so-called frontier commuters (Table 1). Each represents a different way of capital appropriating black labour at a lower cost than would be the case under normal market conditions. Each is also a response to the need for black labour without conceding the vote – to the imperative of economic integration without political and social integration, on which the survival of a white-dominated capitalist system in South Africa depends. The three forms of employment also differ in their geographical expressions (as the terms used to describe them imply), and entail different forms of urbanization.

About 10 million blacks live permanently in "white" South Africa. In *apartheid* terminology, they are "permanently absent" from their homeland. The actual number in employment is uncertain because some aspects of *apartheid* legislation encourage evasion of official records, but the usually accepted black activity rate of about one-third of total population gives something approaching 3.5 million permanently

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TABLE 1. Spatial forms of Black African Labour in "White" South Africa, 1982–1983

Spatial form	Numbers (m)
Permanent residents	(approx.) 3.50
Migrants: from homelands	1.40
from foreign countries	0.36
Frontier commuters	0.77
Total	(approx.) 6.00

Source: based on figures in *Race Relations Survey 1984*, South African Institute of Race Relations, Johannesburg (1985) and *South Africa 1985*, Official Yearbook of the Republic of South Africa, Department of Foreign Affairs, Pretoria.

resident black workers in "white" South Africa. These are largely the inhabitants of the "townships" which punctuate the urban landscape with their orderly institutional rows of identical single-storey houses, the monotony relieved only by individual initiative manifest in some improvements to the structure or an attempt to maintain a small garden. The best-known of these settlements is Soweto – the "South West Townships" of Johannesburg (see Fig. 3), with a population estimated at well over a million including many there illegally. The permanent black labour force of "white" South Africa also includes those employed on the farms, though the mechanization of agriculture in recent years has reduced their numbers.

Geographically, a permanent resident workforce is the most convenient as far as employers are concerned. The workers occupy much the same kinds of location as they would in cities elsewhere, the only differences being segregation on racial rather than socio-economic grounds and a more peripheral location which leads to longer journeys to work. However, this form of labour is increasingly a problem for state policy and the government seek as far as possible to reduce its volume in favour of the other two forms. The cost of permanently resident black labour is kept down by low levels of wages and social service provision, along with inferior urban infrastructure, which can be justified only by regarding blacks as different (implicitly inferior) from other people. This position is increasingly difficult to sustain, however, in the contemporary world where human rights are a major issue, and the evident permanence of the people in question as *de facto* residents of "white" South Africa undermines the plausibility of the argument that they do have a meaningful citizenship and franchise elsewhere – in their "homeland". The state is thus faced by a problem of the plausibility of a fundamental feature of its policy. In addition, the permanent black population pose threats to social order, as demonstrated by the regular disturbances in Soweto and other townships which are seen by the authorities as possible breeding grounds for urban terrorism if not outright revolution. Thus there is a conflict between the economic efficiency of this form of labour and its inconvenience in other respects, which the state seeks to resolve by minor dispensations towards the resident blacks (in the form of limited property rights and some local political participation), while encouraging the use of other forms of labour.

The migrant labour system is in some respects an ideal alternative to a permanently resident black workforce, in so far as the whites are concerned. Migrant labour from other countries does not have to be conceded the franchise, and the South African authorities can point with self-righteousness to Western Europe in this respect. Migrant labour is also relatively cheap, as all that need be paid in wages is sufficient to keep the individual worker alive, fit and fairly content – with perhaps something to save and

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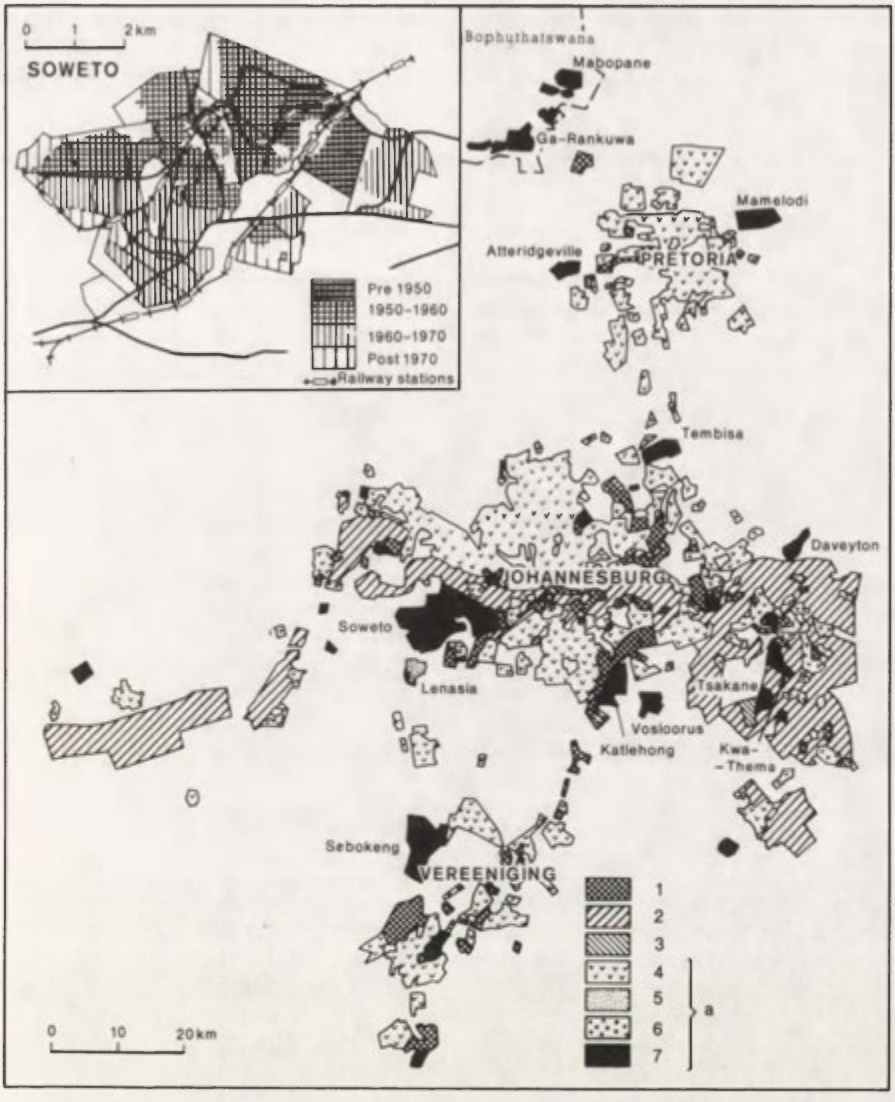

Fig. 3. The Pretoria-Witwatersrand-Vereeniging region, showing the location of major townships (*Source*: Smith 1985, Fig. 6.3): 1 – Industrial, 2 – Proclaimed mining ground, 3 – Central Business Districts; existing and proposed residential areas (a): 4 – White, 5 – Asian, 6 – Coloured, 7 – Black

take home at the end of the contract to make life a little better for the family left at home. The earnings of the migrant worker are unlikely to meet the full cost of living for those who remain in the area of origin, however, for they will have their own source of sustenance in the local economy. The "homelands", as former tribal reserves, still retain features of a system of economic and social relations which provide support for the families of migrants, and for the migrants themselves when between contracts or unemployed – thus relieving "white" South Africa of some of the cost of labour in its

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broadest sense, which includes the on-going cost of producing and reproducing labour. Another way of looking at it is that part of the product of labour in the "homelands" is transferred to "white" South Africa in the form of the capacity to work as a migrant at less than full cost.

The present scale of the migrant labour system is indicated in Tables 2 and 3. In 1982/1983 there were almost 1.7 million migrant workers in "white" South Africa, most

TABLE 2. Migrant labour from "homelands" to "white" South Africa

"Homeland" of origin	1970	1982
Bophuthatswana	150 000	236 000
Ciskei	52 000	59 000
Transkei	268 000	346 000
Venda	22 000	37 000
Gazankulu	40 000	64 000
KaNgwane	18 000	67 000
KwaNdebele	11 000	52 000
Kwa Zulu	270 000	294 000
Lebowa	140 000	180 000
Qwaqwa	4 000	60 000
Total	975 000	1 395 000

Source: 1970: RSA (1983, 249); 1982: SAIRR (1985, 258) – from original official sources.

TABLE 3. Migrant labour from foreign countries

Country of origin	1973	1983
Angola	42	68
Botswana	46 192	29 96
Lesotho	148 856	145 797
Malawi	139 714	29 622
Mozambique	127 198	61 218
Swaziland	10 032	16 773
Zambia	684	743
Zimbabwe	3 250	7 742
Total (excluding others*)	475 968	277 930

Source: RSA (1985, 220) – from original official resources.

* Note that "others" were 9132 in 1973 and 70 105 in 1983 when Namibia was included in these figures for the first time.

of them from the "homelands". Table 2 shows an increase of about 420 000 from "homeland" sources since 1970, compared with a decrease of 200 000 from foreign countries. This shift reflects both the reluctance of certain foreign countries to continue to supply South Africa with labour under present political conditions (e.g. Malawi, Mozambique), and the greater control which South Africa can exercise over the "homelands" even after their "independence". Housed in dormitories, often on the mine or factory compound, migrant workers are on hand geographically as well as being

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cheap. However, migrant labour also has its problems. For the employers, seeking more stable and skilled labour as work becomes more sophisticated, a permanent supply of tried and trusted employees has obvious advantages over the transience and unpredictability of migrant labour. For the state, it is difficult be defend a system which involves the separation of families for long periods and the privation of dormitory life, especially when external political support for South Africa is increasingly related to perception of the country's record on "human rights".

Frontier commuting offers a way of resolving the respective advantages and disadvantages of permanently-resident labour and the migrant system, combining what for South African employers and the state are the best features of both. Frontier commuters are blacks who reside in the "homelands" but travel daily to work in "white" South Africa. They thus commute across what in *apartheid* theory is now (in the case of "independent republics") or will eventually be (in the case of the remaining "national states") an international boundary of the same status as that between France and Germany, the USA and Mexico. Table 4 shows the number of frontier commuters from each of the "homelands" in 1970 and 1982, and highlights the enormous increase during this period.

TABLE 4. Commuters from "homelands" to "white" South Africa

"Homeland" of origin	1970	1982
Bophuthatswana	84 000	173 000
Ciskei	40 000	38 000
Transkei	3 400	8 000
Venda	3 000	6 000
Gazankulu	3 400	9 000
KaNgwane	3 000	44 000
KwaNdebele	–	12 000
Kwa Zulu	127 000	395 000
Lebowa	26 000	76 000
Qwaqwa	1 000	12 000
Total	290 800	773 000

Source: 1970 from Bureau for Economic Development, Cooperation and Research (courtesy A. Lemon); 1982: SAIRR (1985, 259).

The frontier commuting system has the advantage over a permanent resident workforce that the people involved are supposedly foreign nationals, for whom the question of the franchise where they work (in "white" South Africa) does not arise. Furthermore, major costs associated with the production and reproduction of labour can reasonably be expected to be met in the "homelands" where they live and not by the South African government: these include the costs of township construction, provision and maintenance of urban infrastructure and the supply of social services. Frontier commuting thus serves a similar function to migrant labour: it externalizes political rights and part of the cost of labour in so far as "white" South Africa is concerned. The more the "homelands" can be portrayed as truly independent states, the easier it is to claim that it is they and not South Africa who should bear the responsibility for the social support of their citizens, even if working in South Africa.

The major difference between frontier commuting and migrant labour is that the commuters live permanently with their families, in locations which, in the case of urban

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workers, form integral parts of the towns and cities themselves. This can be illustrated by the Durban metropolis (Fig. 4) which receives the largest commuter flows. Here the boundary of the KwaZulu "homeland" comes close enough to the city that its two major black townships of KwaMashu and Umlazi can act as dormitories for workers travelling daily into Durban. The location of these townships contrasts with the more conventional black residential areas, such as Cato Manor, built before the full

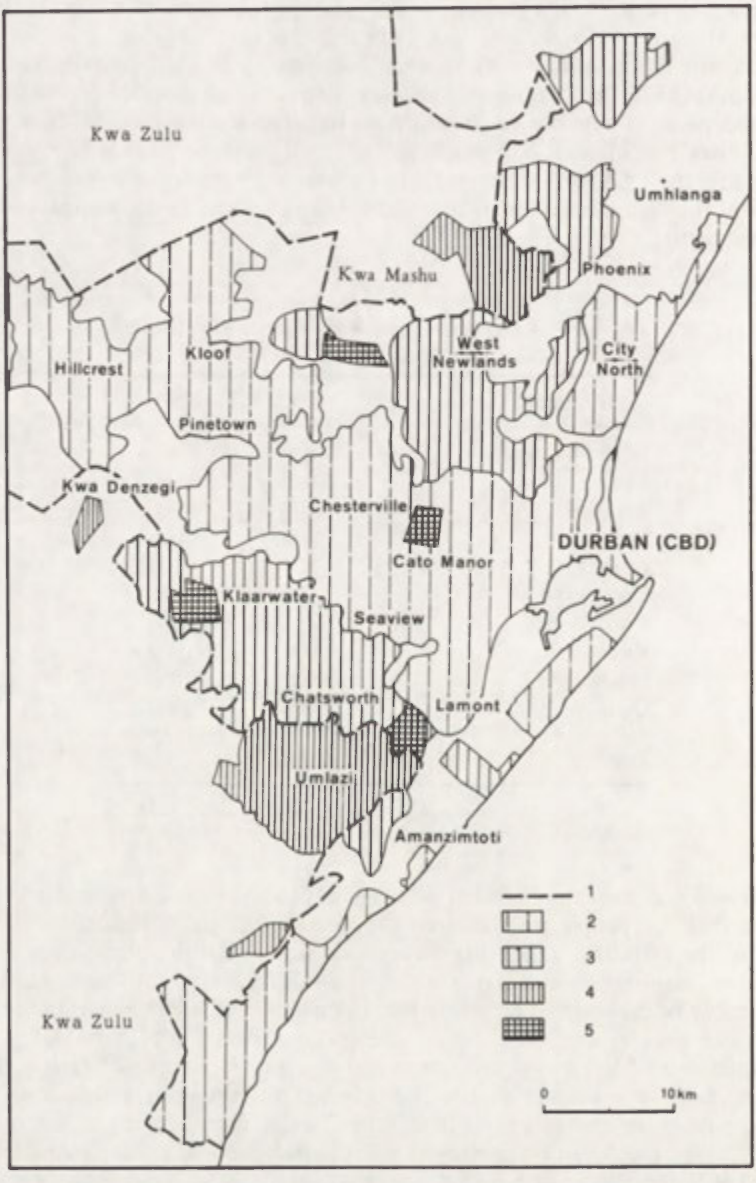

Fig. 4. Residential segregation in the Durban metropolis, showing black townships in adjoining parts of Kwa Zulu (*Source*: based on Smith 1985, Fig. 1.3): 1 – Natal/Kwa Zulu border, 2 – White, 3 – Indian, 4 – Black townships in Kwa Zulu, 5 – Black townships in Natal

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implementation of the "homeland" policy and within "white" South Africa. Other large frontier commuter flows come from townships just inside Bophuthatswana to Pretoria (see Fig. 3).

While frontier commuting provides a convenient means of supplying cheap and disenfranchised labour for Durban, Pretoria, Newcastle and East London by virtue of the proximity of "homelands" to these cities, this is not possible for the Witwatersrand centred on Johannesburg or for Cape Town. The Witwatersrand has to rely largely on the permanently resident workforce of Soweto and other townships, along with the migrant system which provides for some industrial needs as well as for the mines. In Cape Town the local "coloured" population provide an alternative source of relatively cheap labour, but there are also black townships and a growing number of blacks in spontaneous settlements such as Crossroads (see Fig. 5).

Spontaneous settlements have expanded rapidly in South Africa during the past ten to fifteen years. Althought not on the scale of typical Third-World countries elsewhere in Africa, Latin America and South East Asia, they account for something like 2 million people in South Africa today. They thus add a further important dimension to the urbanization process, reflecting the desire of many blacks to move to the city even if neither jobs nor housing are available and despite the fact that in South Africa such settlements are illegal (though temporarily condoned by the authorities). While the

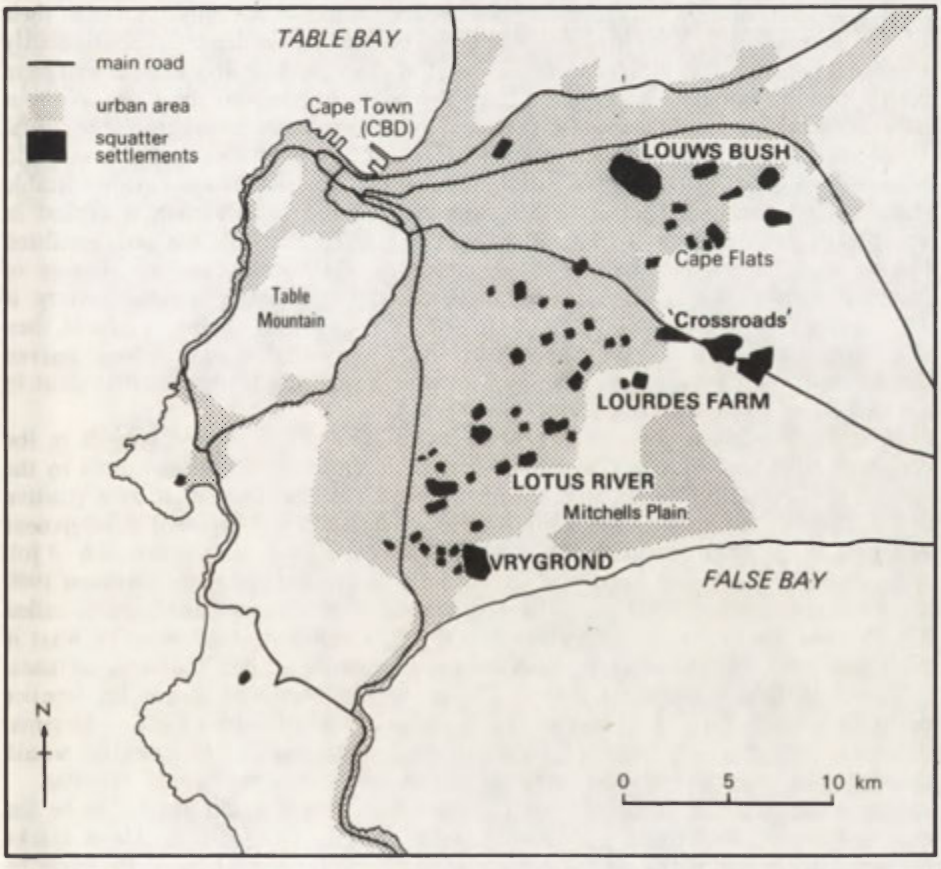

Fig. 5. Areas of spontaneous settlement in the Western Cape (*Source*: Smith 1982, Fig. 2.2)

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spontaneous settlements are portrayed by the government as slums full of idle and potentially unruly blacks, they share with such settlements in much of the Third World the characteristic of allowing people to harness self-help and informal economic activity in the creation of new urban forms which are more orderly than first appearances suggest. In South Africa they also serve the purpose of transferring part of the "homeland" labour reserve to locations more convenient to the urban employers, which include hundreds of thousands of white households with black domestic servants as well as industry and commerce.

UNEVEN DEVELOPMENT IN SOUTH AFRICA

It now remains to relate the geography of black labour supply and associated characteristics of urbanization in South Africa to the pattern of uneven development reflected in this country's distinctive version of core-periphery differentiation. In this context it is interesting to speculate on the effects of those aspects of government policy which seek ostensibly to reduce the economic dominance of the core and to encourage development in the periphery.

In one respect the general policy of *apartheid* has constrained the process of urban concentration in South Africa, to an extent for which there is probably no precedent anywhere else in the world. The various "influx control" measures, which permit blacks from the "homelands" to enter and remain in the "white" areas only insofar as their labour is required or they have qualified for permanent residence as continuously employed persons, have clearly prevented what in other circumstances could well have been a massive population migration from the poor periphery to the cities. Without influx control the spontaneous settlements would probably have grown to usual Third-World proportions around most if not all of South Africa's major towns and cities by now. Despite the spontaneous settlements that do exist on a not inconsiderable scale, the process of urbanization has been much more orderly than is typical of underdeveloped countries – though it could be argued that this has not benefitted blacks, who might be better off in spontaneous settlements close to sources of employment and with an emerging informal economy than living in rural poverty. If a smaller peripheral population could have enjoyed rather higher living standards, then the impact of influx control might have been somewhat to exacerbate uneven development by frustrating the operation of what equalizing tendencies may exist in a situation of unconstrained labour mobility.

The South African government's attempts to stimulate economic growth in the periphery have done little to promote more even development. Prompted more by the spectre of "overconcentration" (i.e. too many blacks in the cities) than by a positive decentralization strategy of the kind which has characterized regional development policy in many other countries, the outcome may have been more prevention of job creation in the core than transfer of growth potential to the periphery. Between 1960 and 1980 only about 75 000 new jobs were created in the "homelands" and so-called border areas just inside "white" South Africa. The authorities make much of what is portrayed as "urbanization in the homelands" as evidence of their economic advance, but most of this is accounted for by the growth of dormitory towns for frontier commuters. In promoting growth in the "homelands" South Africa faces a dilemma: successful economic development there, in truly independent black states, would threaten their current role as reserves of cheap labour for the "white" republic.

The most likely outcome of current government policy would appear to be the exacerbation of core/periphery inequality rather than its amelioration. Those blacks permitted to reside in the core by virtue of the need for their labour are likely to experience improved living standards, with the gap between themselves and the whites

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narrowing slightly in what will remain a highly unequal society with a spatial expression derived from racial segregation. The townships of frontier commuters just inside the "homelands" can expect to share some of the relative prosperity of the core. For blacks in the periphery, including most of the area of the "homelands", the future appears to be one of unremitting struggle at best to maintain existing low living standards as continued population growth places even greater pressure on limited resources. As the "homeland" borders take on more of the character of international frontiers, the power of South Africa to keep at bay these "outsiders" is enhanced; they will remain an impoverished labour reserve increasingly differentiated from the "insiders" who have found a place in the core. The major uncertainty is how effectively South Africa can succeed in externalizing so much of the price of its relative prosperity.

It would be wrong to conclude a paper on South Africa without some reference to the current period of unrest. The level of unrest in black residential areas increased considerably in 1984, culminating in the declaration of a state of emergency in June 1986. The heightened incidence of violence reflects the failure of state planning to resolve the basic contradiction of spatial policy in South Africa, namely the need for black labour in particular places without conceding the franchise and other human rights which conventionally accompany citizenship. "White" South Africa seeks to exploit the physical capacity to labour without recognising its human embodiment. As the position assigned to blacks in the grand design of *apartheid* becomes increasingly intolerable, acts of violence become more frequent and intense.

But it is not simply a case of blacks violently confronting the white state. The actual nature of incidents of unrest show that the targets increasingly incorporate other blacks who are viewed as agents of white control (i.e. black policemen and local councillors). Table 5 tabulates the incidents reported by the police in September 1985, which was a particularly violent month. The location of incidents is also significant: they are shown to be virtually confined to one kind of place — the formal townships in "white" South Africa, coloured as well as black. The same general pattern is revealed by information for sample days in early 1986 (Fig. 6). However, more recently there have been changes

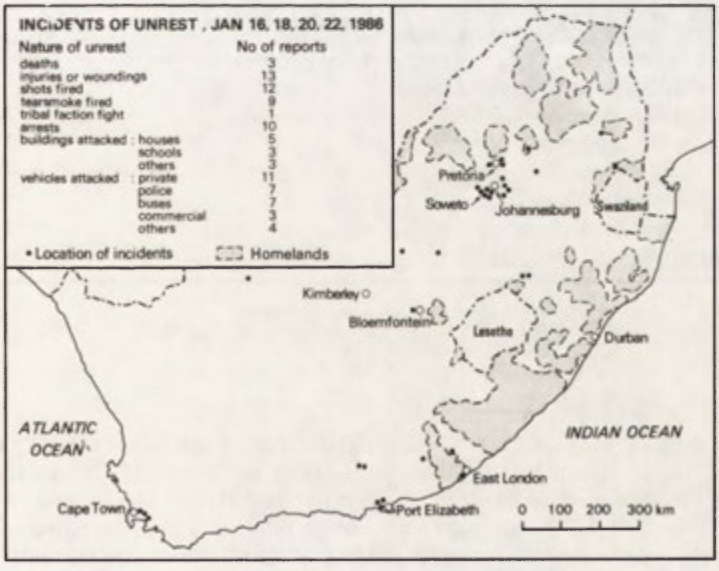

Fig. 6. Unrest in South Africa on four days in 1986 (*Source*: data from South African Police daily reports, as reproduced in the Cape Times)

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TABLE 5. Unrest in South Africa, September 1985

Type of incident			Number
Attacks on vehicles:	police and SA defence force		60
	private		34
	other public and commercial		69
Attacks on buildings:	private homes		38
	schools		28
	commercial		15
	police premises		4
	other public facilities		10
Other stone throwing			28
Other violence, attacks or use of unspecified force			20
Barricades erected			10
Other arson or explosions			6
Robbery associated with unrest			5
Police use of firearms			47
Other use of firearms			5
Police use of teargas/smoke			11
Arrests, including multiples of:		Blacks	134
		Coloureds	45
Attacks on, injuries or woundings of:		Blacks	63
		Coloureds	8
		Whites	5
		Indians	1
		Police and SADF	25
Deaths: Blacks killed by police action			13
other Black deaths			19
Coloureds			2
police (Black)			2

Type of location	Number
Black townships in "white" South Africa	165
Black townships in homelands	7
Black spontaneous settlements	2
Mines	4
Coloured residential areas	45
White areas	12
Unidentified	6

Note: there is usually more than one incident reported at each location.
Source of data: South African Police daily reports, as reproduced in the *Cape Times*.

in incidence which may have a profound significance for the future capacity of the state to control unrest: the hitherto stable spontaneous settlement of Crossroads has been overtaken by open warfare between conservative and radical blacks, and "white" cities are being shown to be increasingly vulnerable. While it would be naive to expect an early end to *apartheid*, the oppressed peoples of South Africa are currently providing a vivid illustration of the limitations of state planning and spatial policy to control a process of development which does not have the sanction of the mass of the people.

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THE PLANNING IMPACTS OF UK NORTH SEA HYDROCARBON EXPLOITATION WITH PARTICULAR REFERENCE TO NORTHEAST ENGLAND

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DEVELOPMENT OF NORTH SEA HYDROCARBONS

When the large Dutch onshore gas field at Groningen was discovered in 1958, it was clear that the geological conditions within which the field was found were related to, and not dissimilar from, the conditions obtaining under the southern North Sea. This realization was instrumental in stimulating two major processes. Firstly, geologists and mining engineers of the North Sea coastal states intensified their sub-sea activities in order to ascertain a more accurate picture of the strata below the North Sea. Secondly, almost coincidentally, the 1958 Geneva Convention established the median line principle for demarcating international maritime boundaries, and with the stimulus of needing to clarify, protect and administer any economically exploitable resources below the North Sea, the maritime states set about sharing out their jurisdictional responsibilities. Between 1965 and 1971 a series of bilateral agreements confirmed the maritime boundaries between the North Sea's coastal states based upon the median line principle, although West Germany disputed the principle, since the configuration of its coast was such that the country would not benefit from such an agreement, and held up the process of agreement by some three years. Generally, however, this process of cooperation rather than conflict, while presaging EEC enlargement in 1973, was seen to be necessary for the orderly exploitation of newly found North Sea hydrocarbon resources. Nevertheless, the application of the Geneva Convention in this instance has been criticised as being regressive in that the North Sea should have been developed as one coherent unit – particularly as six (and at one time possibly seven) of its eight coastal states were to be EEC members. It was argued by some that this would have facilitated joint investment programmes between states with common interests and purposes, and the pursuit of common policies on such issues demanding cooperation as marine pollution control. It was further argued that such cooperation and joint development approaches were inevitable given the unavoidable fact that most of the sedimentary rocks which contain oil and gas reserves straddle the international boundary lines. For example, in the northern North Sea the overlapping of the UK – Norwegian boundary by the Statfjord and Frigg fields (Fig. 1) has demanded cooperation. In the southern North Sea, development of the Ekofisk natural gas cluster overlapping the UK, Norwegian and Danish boundaries has been further complicated by the problem of the deep natural trench lying off the southern Norwegian coast, which has precluded the construction of offshore pipelines to the coast. Thus, Norway

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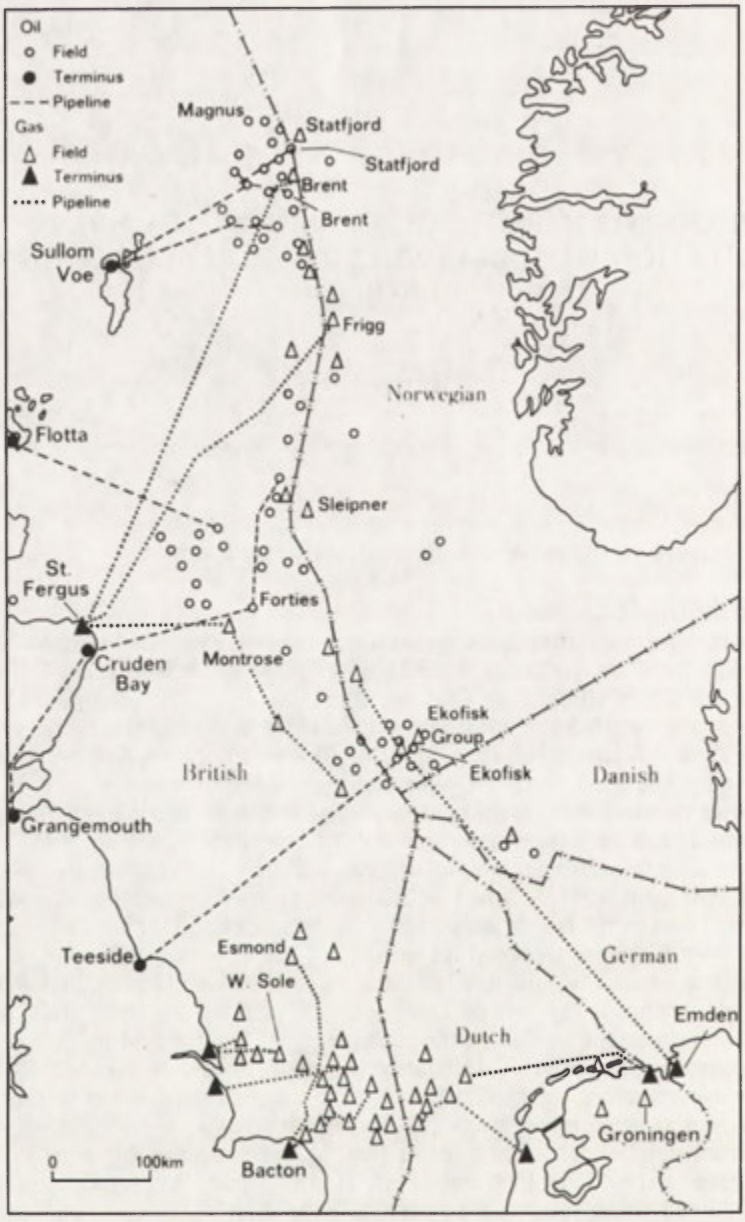

Fig. 1

undertook agreements which enabled the building of a natural gas pipeline from Ekofisk to Emden in West Germany, and an oil pipeline from the cluster to Teesside on the North East English coast.

By 1965, natural gas had been found in sufficient quantities to be economically exploitable, and the West Sole field was the first to be developed in the UK sector of the southern North Sea. Subsequently, surveying and drilling moved northwards into harsher environmental conditions in the search for even richer rewards. In 1969 crude

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petroleum was found in what became the Montrose field, but in 1970 the much larger Forties field reserves were discovered. Subsequent discoveries and developments have seen the United Kingdom become a major producer of both oil and natural gas. Some thirty offshore oil fields are now in production on the United Kingdom Continental Shelf (UKCS), complemented by thirteen gas fields in production or under development.

The combined expenditure on exploring for new fields, developing known reserves, and operating existing platforms, has exceeded $4500 million per year. Capital investment in the offshore hydrocarbon industry currently represents 24% of the UK industrial total. Oil and gas production accounts for about 7% of GNP, and North Sea developments have created regular employment for at least 100 000 people onshore and offshore. Globally, over the past decade, offshore resources have become an increasingly significant aspect of the oil and gas market, due partly to the (until recently) relatively high price of oil, permitting investment in exploration and new development, rendering offshore exploitation commercially viable despite costs being up to ten times higher than for onshore production. It has also been a result of the fact that a significant proportion of the offshore reserves are located within the waters of non-OPEC, and politically stable, countries such as Canada, Norway and the UK. Strategic as well as purely economic factors have therefore had a role to play. Between 1976 and 1980 offshore oil doubled its share of world production to around 30%; approximately half of the world's proven reserves of oil lie offshore, and some estimates have suggested that 70% of future discoveries could be made in this sector. Since the plunge in oil prices during the first half of 1986, such prognoses seem less likely, given the greater cost of offshore development. Offshore gas production will be less affected by oil price drops, and some estimates foresee a 40% increase in the offshore share of total production to 23% over ten years.

The United Kingdom share of the orders placed for goods and services in support of offshore development on the UKCS is currently about 74% (compared to 25–30% in 1972). Certainly, until the recent dramatic oil price fall, the future for offshore exploration and development, and therefore the outlook for the offshore supplies industry, appeared very rosy. Indeed, projections being forecast as late as November 1985 were showing great optimism, not least for the UK industry, and in no small way for North East England's contribution to that. For example, the Scottish Development Agency proposed a strategy in 1985 based upon projections for the world market for offshore goods and services expanding at an annual rate of 6–7% at least up to 1995. Such optimistic projections were formulated in the environment of world oil prices above $25 per barrel, and provided they remained above $20, their effect on UKCS development would be generally beneficial. The pessimism which has permeated the industry since the beginning of 1986 has been based on the twin problems of not simply the emergence of a virtually uneconomic price for North Sea crude, but also the recognition that substantial over-capacity now exists in the offshore supplies industry, especially at the lower technology, less specialist, lower value-added end of the market.

THE SIGNIFICANCE OF NORTH SEA DEVELOPMENT

From the United Kingdom viewpoint, the exploitation of North Sea hydrocarbon resources has had a considerable economic and social planning impact, in a number of ways:

(i) It permitted the complete conversion of UK gas consumption from coal-derived town gas to North sea derived natural gas in a relatively short time, and with it the establishment of a national gas grid system for the fuel's distribution. Annual production is now over 40 billion cubic metres.

(ii) The United Kingdom has, theoretically, become self-sufficient in oil since 1981,

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producing approximately 2.75 million barrels per day. This places the country as the fifth most important world producer after the USSR, USA, Saudi Arabia and Mexico. Proven and probable reserves of oil within the UKCS are estimated at between 1.4 and 5.3 billion tonnes, which could represent up to forty years of further exploitation, although this is highly dependent upon world market prices and levels of extraction efficiency. Presently, the UK produces 5% of the world's oil, but approximately 20% of all offshore derived petroleum. The country is, however, only theoretically self-sufficient in the sense that although production is suffcient to meet consumption in quantitative terms, because North Sea oil cannot meet all of the different qualitative requirements of petroleum users in Britain, approximately one third of UK consumption is actually imported – being of a different quality from North Sea crude – mostly from the Middle East.

(iii) Economically, offshore development, particularly oil, is an important source of tax revenue – estimated at $18 billion for 1984 – and for the country's balance of payments. As already noted, within the UK economy it represents considerable activity, while local and regional development, particularly along sections of the British east coast, has been greatly stimulated. Between 1971 and 1981, for example, the Scottish offshore base of Aberdeen saw the largest absolute growth of employment for any urban area in the UK, with a net creation of 45 000 jobs.

(iv) Faced with some of the harshest environmental conditions ever encountered in offshore resource exploitation, the development of North Sea hydrocarbons has also stimulated technological innovation to meet the demands of such circumstances. However, such innovation has often meant simply the application of larger, heavier and more robust variants of existing technological designs. Further, much of the significant technological innovation research and development which has taken place has actually been undertaken by foreign – often American – firms, rather than indigenous UK companies.

CHARACTERISTICS OF OFFSHORE DEVELOPMENT IN THE NORTH SEA

These often reveal very strong and distinctive geographical dimensions:

(i) A physically difficult environment, in terms of depth of water (the early Forties field was developed through 140 metres of water), and weather conditions which can quickly deteriorate, such that installations are built to withstand winds of up to 200 kph and waves of up to 35 metres in height. A typical North Sea structure will therefore have a height of 250 metres and be composed of 50 000 tonnes of steel.

(ii) Complex system of pipelines and gathering systems have been elaborated between installations, storage vessels, tankers and shore reception facilities. These have demanded some of the most significant technological innovations.

(iii) The essential strong transport and communications links between North Sea operations and the mainland bases emphasize the 24-hours-a-day nature of offshore activities, their high cost, and the requirement for rapid despatch of men and equipment when necessary. Such links entail:

(a) Sophisticated telecommunications systems between installations and their shore bases, and between the shore bases and other centres of the hydrocarbons industry throughout the world.

(b) The use of helicopters to transport men and high value equipment to installations quickly. Most helicopters in use have a range of about 320 kms. but with the introduction of the Boeing Chinook model in July 1981 a range of up to 800 kms – reaching the furthest northern North Sea fields from Aberdeen Airport – can be achieved.

(c) Each offshore structure usually has three supply vessels which constantly ply to

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and from the coastal base for the provision of equipment, spares, food, water, helicopter fuel etc., and the removal of refuse, unusable equipment etc. On average, each structure requires 1000–2000 tonnes of supplies per month. The supply vessels themselves have shallow drafts for ease of manoeuvrability, but because of their urgent tasks do require 24-hour-a-day access to and from their port base.

(d) In addition to the supply function, each installation requires "support". This usually entails at least one vessel – often a converted trawler, although much more sophisticated purpose-built vessels are now available – continuously circling the installation for purposes of safety (retrieving personnel falling from the structure into the sea, fire protection), security, anchor handling etc.

(e) Implicit in several of the previous points is that North Sea offshore hydrocarbons development is a very capital intensive and high cost activity, with not only very high cost structures and equipment, but also costly specific labour requirements and high transport and maintenance expenses. It is often argued that labour costs offshore – given the need to transport, feed and accommodate all men on the installations – can be up to ten times higher than the equivalent onshore.

ONSHORE PLANNING IMPLICATIONS OF OFFSHORE DEVELOPMENT

For the United Kingdom at least, the onshore planning implications of North Sea offshore activity, while not to be underestimated, have tended to be spatially specific and temporally distinctive.

Almost paradoxically, the capital intensive nature of the industry has resulted in relatively few major environmental impacts in terms of:

(a) Pipelines: their landfall has been landscaped and disguised, while landward, both oil and gas pipelines are carried underground, albeit at a relatively shallow dept.

(b) Large plant specifically associated with offshore activity has been substantially contained within a handful of locations – oil terminals at Sullom Voe and Flotta in the Northern Isles, gas terminals at St. Fergus, north of Peterhead and Bacton in Norfolk. The oil refineries at Grangemouth and on Teesside, fed by offshore petroleum, were already in use before North Sea crude came along.

(c) Fabrication, requires specialized site facilities – deep water, sheltered anchorage and accessibility; several virgin sites were established – almost speculatively – on the west and east coasts of Scotland, but an early overoptimism in estimates for fabrication demand in the UK resulted in just one or two sites where platform and module fabrication imposed a major new environmental impact (eg. Cromarty Firth). Other fabrication centres such as the Rivers Tees and Tyne in Northeast England have a history of heavy engineering and the construction of large marine structures.

(d) Shore supply and repair bases: these have been established in pre-existing ports which had seen the decline of their fishing fleets: both Great Yarmouth and Lowestoft in the southern North Sea sector and Aberdeen in the north fall well within this category. Although offshore activity has certainly required new demands – facilitation of round-the-clock activity, including open access to the sea, specialized quayage requirements and improved landward communications, little major physical environmental impact been brought about except that in specific locations road transport congestion has been intensified. Aberdeen undertook a major renovation of its harbours in 1976 at a cost $25 million, and Great Yarmouth is currently going ahead with a plan to expand considerably its port area, specifically to meet continued demands from the southern North Sea gas fields, at a cost of about $70 million.

(e) Air supply and support: Aberdeen Airport has come to symbolize the importance of offshore air links: in 1947 it had just 76 passengers and even in the late 1960s it was little more than a grassed landing strip. However, since the early 1970s, with an almost

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continuous level of helicopter activity to offshore installations, fixed wing links with major cities in the UK and the near continent, primarily for business traffic, together with a growth in holiday flights the situation of Aberdeen Airport has changed. Today Aberdeen Airport has an annual throughput of three million passengers, making it the third busiest UK airport after London's Heathrow and Gatwick. It claims to be the busiest heliport in the world. Elsewhere the response to the need for offshore air links has been less dramatic. In Northeast England, however, both Newcastle and Teesside airports (Fig. 2) have been recently upgraded, while the harbour authorities of both Sunderland and Blyth are making provision for helicopter facilities in support of their offshore base promotion efforts. Ironically, Sunderland's airport was the site chosen for

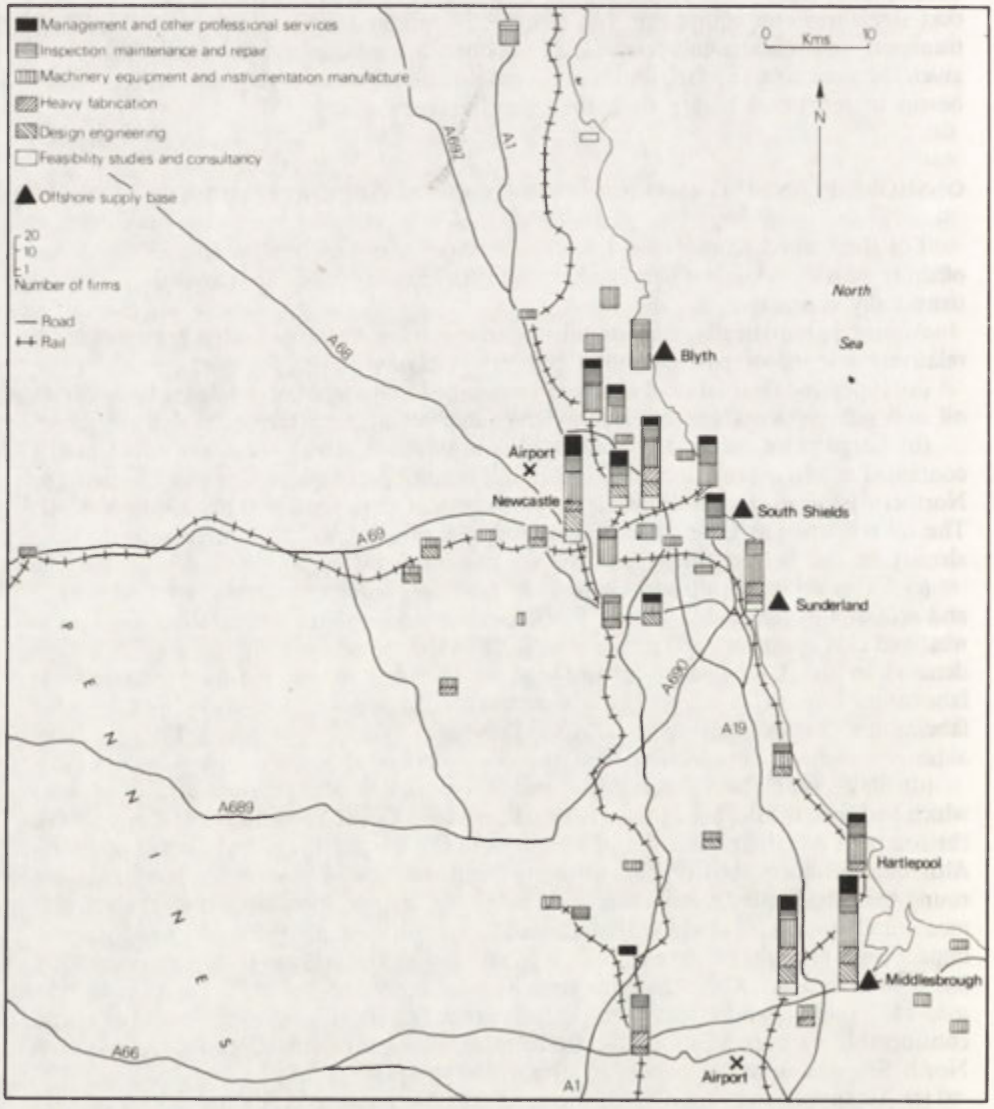

Fig. 2

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the location of Nissan's new car plant just at a time when the close proximity of such a facility could have enhanced the town's offshore role.

(f) Development of support industries: an indirect consequence of North Sea activity has been the need to establish onshore sites for new and incoming offshore-related activities. Most spectacularly, Aberdeen has established six new industrial estates around the periphery of the city, within which North Sea operations' headquarters of a number of international oil, engineering, contracting, survey, catering, consulting etc. firms have been located. For example, in the early stages of North Sea exploration, BP's presence was represented by three people working in a cramped office above a fish and chip shop in a less desirable part of Aberdeen. By the 1980s, the company had established its own international complex on an industrial estate adjacent to Aberdeen's Airport, employing some 2 500 people. Such developments, in their turn, have placed substantial pressures on such local infrastructure as roads, water supply and sewage disposal.

Within the above perspective, very intense localized activity has been generated, particularly in and around Aberdeen, which has demanded new types of planning responses, especially when the driving forces of such activity are strong multinational corporations whose objective of maximizing profits does not necessarily coincide with a concern for the sensitivities of local social and physical environments. Intense land speculation, an influx of relatively high income earners with roots elsewhere, the stimulation of local inflation – with a damaging effect on traditional industries unable to pay competitive wage rates, and on groups such as teachers, nurses and local government workers on nationally set incomes – and a subsequent influx of those seeking, but failing to attain, high income offshore-related jobs – have all presented planning problems unique for contemporary Britain. The pressure of oil-related multinational companies' dissatisfaction with local planning processes, particularly during the period of maximum onshore building and development in the mid- to late-1970s, has seen successful appeals – on the grounds of "national interest" – to the central ministry, overriding planning decisions of local government authorities. Such a situation has been exacerbated when any two of the three administrative levels – district, county/region and central government ministry – have been controlled by different political parties.

Onshore impacts of offshore activity have a tendency towards a cyclical or phased nature in response to patterns offshore:

(a) The three major offshore phases – exploration (surveying, drilling), development installation of production platforms, pipeline hook-ups), and production – each generate specific onshore requirements in terms of administration, equipment procurement, labour recruitment and research facilities.

(b) Platform and module fabricators have faced, and to some extent perpetuated similar structural problems to those encountered in shipbuilding itself: that without long-term full order books, one fabrication run may intensively employ 1500 personnel directly, and several hundred more indirectly in supplying goods and services for a period from six months to two years, then to be followed by lay-offs and redundancies until another order is forthcoming. Clearly, the social, economic and indeed psychological consequences of such a staccato effect of successive periods of intense activity and inactivity are difficult to anticipate and mitigate within a planning framework.

(c) The intense and demanding nature of work offshore requires a cyclical pattern of life-style for those involved. Normally men (and offshore employment in the UK sector at least is almost totally male) work two weeks offshore followed by one or two weeks' onshore leave. Work offshore is not only physically demanding and potentially hazardous, but is often literally a round-the-clock activity for individuals. The pressures are such in these high density, all male environments that no alcohol is allowed offshore, with the result that the men's return to shore after two weeks of such an environmental

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experience often creates particular forms of localized social disruption. Further, the physical, social and psychological problems developed by some of the wives and families of men repeatedly away for two weeks at a time have added to the burden of local health and social services; sociologists have recognised the condition of the "intermittent husband syndrome" (Morrice and Taylor 1978).

(d) As noted previously, global economic cycles based upon the world market price of oil have significantly affected the level of offshore related activity. The price rises of 1973/1974 stimulated a phase of intense exploration and development in the North Sea, mirrored by an equally intense period of land speculation and development around the major shore bases. By contrast, the collapse of oil prices in the first half of 1986 has seen exploration rigs being laid up – at the time of writing ten can be seen in inshore waters between Edinburgh and Aberdeen – with redundancies and lay-offs in those jobs both directly and indirectly dependent upon the health of offshore exploration activity. Individual government action can, of course, have a modifying effect: for example, the 1983 UK budget provided tax incentives for North Sea field development. A second form of governmental intervention has been felt through the block licensing system (leasing "blocks" of the North Sea for exploration and exploitation): under provisions of the United Kingdom Continental Shelf Act the UK Government can offer or hold back potentially fruitful blocks. In the ninth round of licensing for example, held in 1984, potentially "good" blocks were only freed to licensees who were also willing to take more peripheral blocks for potential development.

Overall, at least until the mid-1980s, onshore spin-offs from offshore developments provided what was initially an unexpected opportunity for regional growth – in specific regions – at a time when central government was hesitant in its attitude towards regional planning. They generated significant numbers of jobs in a number of "peripheral" regions of the UK, often in areas of high unemployment; but ironically, the skills required were often not available locally, with a resultant influx of suitably qualified and experienced personnel into such regions. In gross terms however this was seen to slow down, if not actually halt, the population drift to the south from such regions.

IMPACT ON NORTHEAST ENGLAND

The case of Northeast England in relation to North Sea developments is significant for a number of reasons:

(i) the region is involved in most aspects of offshore-related activity – fabrication and vessel building, repair and engineering, support and supplies, consultancy and professional activities (Fig. 2), and although there is a significant disparity in the balance of these activities, they represent a share of the UK sector market of about 10% by value;

(ii) Northeast England provides the landfall for one of the two major North sea pipelines linked to mainland Britain (Fig. 1b);

(iii) considerably less has been written about the region's relationship with offshore activities than that of the – admittedly more heavily involved – Grampian region of Northeast Scotland.

The three river estuaries of the region – Tyne, Wear and Tees – provide the focus of activity, although coastal ports such as Blyth, to the north of the Tyne, and Hartlepool, to the north of the Tees, also play a minor role. Several elements in the organization of offshore-related activities in Northeast England have important spatial implications:

(a) There exist sub-regional variations of activity, although structural and functional linkages often bind them together – e.g. major installation fabrication takes place on the Tyne and the Tees, while the Wear has seen in recent years an emphasis upon the construction of specialized vessels for the offshore industry, such as sophisticated support vessels and crane barges. Although some $370 million worth of offshore

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construction and fabrication orders were placed with Northeast English yards between mid-1984 and mid-1986, many pre-existing shipyards have not attracted contracts for the offshore industry because of perceived restrictive working practices.

(b) A wide range of equipment and supplies manufacturers and procurers exists throughout the region, and over 300 firms are involved in what is often a complicated web of contracting and sub-contracting activitities for offshore-related work.

(c) Although the region's local authorities – in cooperation with employers and unions – have recently established the Northern Development Company, to coordinate efforts to promote the economic interests of the region both in Britain and overseas, the Northeast of England suffers from the absence of a regional strategy. Currently, the United Kingdom has no national regional policy, nor do England and Wales have local authorities of a comparable size or functional role to Scotland's regional councils. In Northeast England, with high unemployment rates, a continuing rundown of shipbuilding and coal mining, the closure of manufacturing branch plants established in the 1950s and 1960s in times of stronger regional planning, intense rivalry and competition exists, between, for example, the ports of the region in attempting to establish and sustain viable North Sea offshore bases. The recent (April 1986) abolition of Tyne and Wear County Council as part of the Conservative Government's policy of abolishing all (Labour controlled) metropolitan county councils (including the Greater London Council) has further hampered attempts to produce a coherent planning framework within which the activities of the Rivers Tyne and Wear, based respectively in Newcastle and Sunderland, could be set. The resulting patterns of activity therefore reflect a mixture of public and private investment but with little spatial coherence at the regional level other than those demanded by commercial considerations.

(d) Multiplier and proximity effects: although estimates vary considerably according to the level of the existing industrial structure, the adaptability of local firms and the degree of availability of existing skills, an average multiplier for the offshore industry has been considered to be about 1.5 (e.g. Chapman 1976) – that is, for every person directly employed in the industry a further 1.5 are sustained in employment indirectly, through the provision of goods and services. With an estimated 12 000 of the region's population employed in offshore-related activities, it might be argued that some 28 000 jobs are thus sustained directly and indirectly by the industry in Northeast England. However, significant numbers of those 12 000 work outside the region – on the offshore installations themselves, in the Grampian region and elsewhere – such that the proportion of their income actually spent within the region may be considerably lowered, and the multiplier effect therefore commensurately reduced. In terms of proximity effects – the ability of new activity in a region to diffuse innovations to other economic activities of the region by raising the level of technological awareness – there appears to be little evidence that the Northeast of England has actually taken advantage of this potential in relation to the offshore industry*. In the Grampian region of Scotland, in response to wage inflation stimulated by the development of offshore-related jobs, the region's more traditional industries have become more capital intensive than they otherwise might have been.

(e) Ironically, one of Northeast England's traditional staple industries – coal – can be seen to be both directly and indirectly affected by offshore developments. At the present time, the low price of oil has had a deflating effect on coal prices, hastening rationalisation and the call to increase productivity at the expense of unprofitable seams and jobs. Earlier, the availability of natural gas and its comprehensive adoption through a national grid system severely reduced the role of coal (as a source of gas).

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* The establishment of the Nissan motor car plant on the former site of Sunderland Airport on the edge of Washington new town is likely to exert a greater impact in this aspect, both in the use of technology and in industrial working practices.

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(f) Relatively few major offshore-related operations companies have actually located themselves within Northeast England.

(g) Firms engaged in offshore-related activities in Northeast England tend to reveal the following characteristics:

(i) Involvement in the development phase of activity – fabrication and equipment for installations, pipelines etc. – rather than in the relatively more stable longer term production phase. In terms of turnover, presently some 80% of offshore-related activity in the region is concentrated in the relatively vulnerable development sector.

(ii) Lack of involvement in the production or application of high technology: it will be the higher technological, more specialist firms who will be best able to survive an offshore environment where oil prices remain low for the foreseeable future.

(iii) Generally, offshore-related Northeast English firms are relatively large, or rather are branches or subsidiaries of large companies; however, revealing sub-regional variations, most offshore-related firms in Sunderland have less than forty employees. Overall, less than 40% are actually independent organizations, revealing a structural vulnerability to the pressures of market decline.

(iv) The average dependence of such firms on offshore-related work is around 20% of their total turnover.

(v) While sub-contract fabricators and plant and equipment manufacturers reveal a substantial export orientation, overall – largely due to the influence of the region's large fabricators – the proportion of offshore-related output from Northeast England being directly exported is only around 5%.

FUTURE TRENDS AND IMPLICATIONS

In 1980 the world price for crude oil was around $40 per barrel, by November 1985 it had slipped to $30. Since then it has sunk to below $10 and has only been saved from falling further by agreement amongst the members of OPEC – of which the UK is not one – to limit output. But even at around $15 per barrel, the price of crude is not encouraging for the future development of the North Sea. It is estimated that while production costs of long established Middle Eastern oil fields are between $1 and $5 per barrel, those of UK fields developed before 1982 are around $12, and those offshore developments brought on stream after 1982 – the smaller and more marginal fields – have production costs of about $17 per barrel. This serves to emphasize the fact that the North Sea is a high cost and therefore relatively vulnerable producing area in global economic terms.

As a result of the market price decline, most oil exploration companies had announced by mid-1986 substantial reductions in their budgets – of at least 10% – such as Britoil's $150 million cut-back and BP's $250 million retrenchment. Yet as late as October 1985 Shell spokesmen were arguing at a seminar held in the Northeast of England that investment of $75–90 billion would be required to further develop the North Sea up to the end of the century. In an attempt to maintain their markets, the Saudi Arabians are now offering companies "net back" arrangements, whereby the price of future purchases of crude from them is tied to the price that the purchaser actually receives for the refined products. Thus there is no incentive for the refiner to go out and search for expensive new offshore supplies when oil can be bought in this way at a price which still guarantees a comfortable profit after refining.

Given the relatively high cost and uncertain future of North Sea oil, it is increasingly recognised that any long term strategy for UK offshore supply firms must be based upon a reduction of dependence upon the UK sector market, the assumption being that overseas offshore markets will present expanding opportunities. Indeed, an almost paradoxical situation is likely to arise whereby continued low prices will reduce the

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exploration and development effort in the more costly, non-OPEC producing areas such as the North Sea, while simultaneously reducing the economic requirement of consumers to move away from oil as an energy source. Low prices should also stimulate an increase in world economic growth rates, especially in developing countries, where dependence on oil consumption is often at its highest.

The most effective way of pursuing such overseas offshore markets is to raise the level of high technology content and specialist input into goods and services: hence the establishment of British Indigenous Technology (BRIT) as an industrial pressure group to pursue such aims. The Scottish Development Agency (1985) has advocated a similar approach for a long term Scottish strategy, and envisaged the world offshore market growing from $38 billion in 1984 to $58 billion in 1988 and $77 billion by 1995, at an annual growth rate of 6.6%. Although such predictions were made before the drastic oil price decline, it is unlikely that all overseas markets will be influenced by this deterioration as significantly as North Sea operations. Indeed, at least 60% of proven world resources offshore are located in areas of a lower cost development than that of the UKCS. The development of several of the lower cost offshore areas will also be affected by influences rendering them less severely constrained by price falls than the UKCS. These different characteristics will include: the dominance of state owned oil companies giving a higher priority to domestic economic interest than would multinational companies; a requirement to maximize foreign currency earnings in order to finance other development programmes and debts incurred; a hitherto dependence on imported energy supplies, emphasizing the strategic importance of developing domestic resources.

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PLANNING AND SPATIAL POLICY IN POLAND WITH SPECIAL REFERENCE TO THE WARSAW AGGLOMERATION

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1. INTRODUCTION

Almost immediately after the Second World War work was begun in Poland on a national plan of spatial management within the new frontiers. The institution created for this purpose was the Head Office of Spatial Planning (*Główny Urząd Planowania Przestrzennego*) at the Ministry of Reconstruction, and an appropriate decree provided the formal and legal foundation.[1]

Under the decree the plan was to include:

1. Areas needed for agriculture, forestry, mining, industry, water management, culture, education, recreation and natural reserves.
2. The distribution of population and the network of main urban centres with defined territories for their development and functions.
3. The network of services in transport, communication, the power industry and telecommunication.
4. The division of the country into regions as a basis for a more uniform administrative division.[2]

The work on the first national plan was based on prewar regional studies. Consideration of 1) the distribution of industry, 2) the settlement network, and 3) the transport network served as premises for a new concept of the country's spatial management. The study of the national plan provided the basis for the reform of the administrative divisions. Intensive processes of industrialization which took place in both old and new industrial districts, mostly due to geological discoveries, resulted in intensive urbanization processes. The priority given to production investment projects made for the development of an urban settlement network determined by the distribution of industry, and this was the reason for its uneven development in both time and space. The main economic activity was concentrated into a triangle whose base was the southern border and whose apex was Gdańsk Bay. Poland's development until the end of the 1960s involved the continuation of trends included in the study of the national plan of the Head Office of Spatial Planning. In general, this concept could be

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[1] Decree of 2 April 1946 on the planned spatial management of Poland, Dziennik Ustaw No. 16, 1946, pt 109.

[2] See B. Malisz, Przekształcenia przestrzennej struktury zagospodarowania Polski Koncepcja – praktyka – rezultaty (Changes of the spatial structure of Poland. Ideas – partice – results), in: J. Regulski, ed., *Planowanie przestrzenne*, Warszawa 1985, pp. 203–258.

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assessed as correct[3] on a macroscale, but significant shortcomings occurred at the regional and local level.

The announcement of a new socio-economic policy, at the beginning of the 1970s, was reflected in starting work on a new plan of spatial management of Poland until 1990, created by the Government Planning Commission. Studies in this field had been already carried out before by spatial planners.[4] Without going into detail regarding the new concepts, one should state that they were all used in the national plan worked out in the years 1971 – 1974. In the early 1970s overoptimistic assumptions were made with regard to the indices used in the plan. Later these indices were found not to be feasible; for example, the housing programme proved to be overambitions.

With regard to the country's spatial structure, the plan provided for the principle of moderate, "polycentric" concentration of socio-economic activity. "Moderate" meant not going above the thresholds of the environment's resistance, and "polycentric" meant securing similar living conditions for all the citizens. In the field of spatial policy a portion of the industrial potential was to be shifted from the southern to northern and eastern parts of Poland.

The reform of the administrative divisions introduced in the mid-1970s resulted in the formation of a large number (49) of fairly small voivodships. These voivodships no longer constituted partly closed economic regions, as was the case with the former larger voivodships.

The stormy events of the early 1980s forced the previous plan to be abandoned and prompted the creation a new version for the planned spatial management of Poland by 1995. The studies began with certain assumptions and the novelty of this work consisted in the fact that three scenarios of development, assuming different priorities, were submitted for a public discussion with different opinion-making bodies and for the final decision of the authorities. At the same time, the consequences of the selection of each of these variants were studied. The three scenarios were as follows: 1) settlement, 2) raw materials, and 3) ecological.

An undoubted merit of the team's work on the national plan was the search for new, better solutions and methods of work as well as the preparation of variants which would allow a choice.[5] It should be stressed that for the first time the ecological variant was prepared equally with others. It remains an open issue which of the presented scenarios of assumptions will be chosen as a basis for further prognostic work. At present, these assumptions have won the initial approval of the authorities and of the relevant committees of the Polish *Sejm* (Parliament) and are the subject of a current broad discussion among planners.

After this introduction let me deal with planning and spatial isssues of Warsaw agglomeration. Deliberately however I omit consideration of settlement network and rural areas. Merely I would like to draw the attention to a certain new development in physical planning which appeared in the 1980s. The legislator, under the pressure of the planner's opinion, aims at socializing the planning process. This is to be observed in concrete solutions. It seems one should also underscore the commitment to work out different variants of the plan and show the consequences of given spatial decisions. One should hope that those changes will produce the expected results.

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[3] B. Malisz, op. cit.

[4] Thy were initiated by the Polish Town Planners Society and the Committee for Space Economy and Regional Planning of the Polish Academy of Sciences set up in 1958.

[5] It was worked out, like the previous plan, by a team of experts from the Government Planning Commission.

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2. WARSAW AGGLOMERATION – ASSUMPTIONS AND PROBLEMS OF DEVELOPMENT

The Warsaw agglomeration – the second biggest next to Katowice – urban complex in Poland[6] was formed in conditions of a strong domination of the centre, i.e. Warsaw which has been Poland's capital since the end of the 16th century.[7] Without going into detail with regard to Warsaw's vicissitudes of fortune, one can say that towards the end of the 19th century it was already a big urban centre with developed industrial and commercial functions, which, at the same time, performed the role of a regional capital of that part of the partitioned Polish state. The regaining of independence by Poland after the First World War made Warsaw the capital of a 27-million state.[8]

The period between the two World Wars was characterized by a dynamic growth of the national economy accompanied by intensive urbanization and industrialization processes. This resulted in the expansion of the railway system and road net and large-scale cutting up of land into building lots, also in the area around Warsaw. The phenomenon of commuting emerged on a fairly large scale. All this contributed to the creation of a building chaos. To introduce a spatial order into Warsaw's metropolitan area which was acquiring its shape then, appropriate studies were started at the then Office of Regional Planning. These studies resulted in the emergence of the concept of "functional Warsaw" (Fig. 1) invented by J. Chmielewski and S. Syrkus[9]. After the Second World War this concept was developed also by other authors so that it provided the grounds for further spatial planning of Warsaw and its agglomeration.

The decision to reconstruct Warsaw and preserve its role as state capital and regional centre at the same time made a large portion of the resources for Poland's reconstruction to be initially directed to the reconstruction of its capital. Later on, other needs were given priority. One of the fundamental assumptions of further spatial plans was to make Warsaw also an industrial, in addition to its function as a centre of education and management. Therefore, considerable means were provided for the construction or modernization of big industrial plants. One of the most controversial projects is the "Warszawa" Steel Mill built in the 1950s. Located in the northern part of the city it blocked the possibility of further expansion in that direction,[10] in addition to an adverse influence on the natural environment.

The implementation of spatial plans (the first one was made during the war) was facilitated by the decree on land communalization issued in October 1945. Under the decree the area of prewar Warsaw covering 140 km^2 became state property. In 1951, the administrative borders were changed and new, mostly private land was incorporated into the city. The area of Warsaw trebled (up to 446 km^2). Later on new land was incorporated into the city several times but never was this incorporation on such a big scale.

The destruction of Warsaw as well as temporary limitations of registration in order

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[6] In 1978 the population of the Warsaw agglomeration was 2 505 000 while that of the Katowice agglomeration was 3 007 000.

[7] Warsaw became Poland's capital in 1596 when after the fire at the Wawel Royal Castle in Cracow King Sigismund III moved there with his court.

[8] At the time of the outbreak of the Second World War the population of Warsaw was 1.3 milion, and that of the whole agglomeration – 1.9 million.

[9] J. Chmielewski and S. Syrkus, *Warszawa funkcjonalna* (Functional Warsaw), Warszawa 1935.

[10] This is mentioned by A. Kowalewski, among others, in his book *Warszawa – problemy rozwoju* (Warsaw – development problems), Warszawa 1981.

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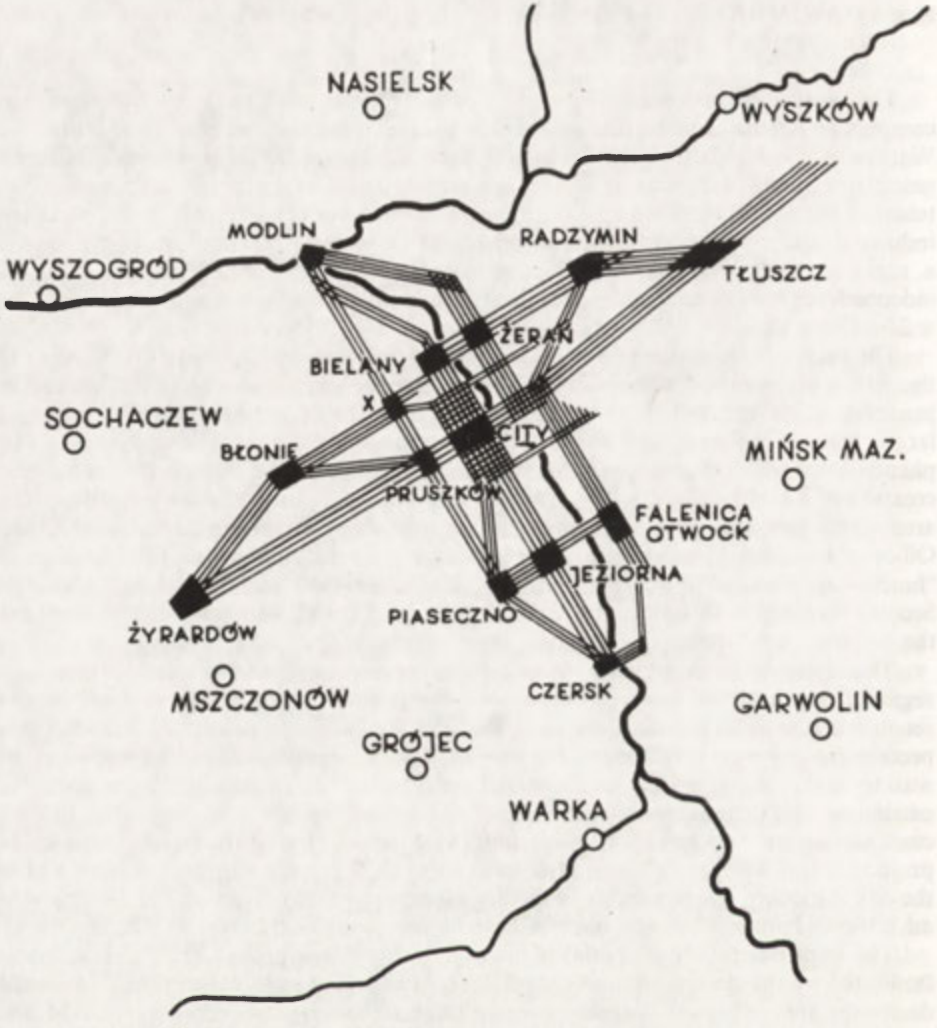

Fig. 1. "Functional Warsaw" scheme. Theoretical study which assume development of Warsaw agglomeration in the form of urbanized belt (the so-called infrastructure belt) of different functions like: "capital belt", "commercial belt", "housing belt", "industrial belt" and "transportation belt"
Source: J. Chmielewski and S. Syrkus, 1935

to live there were the reasons for a considerable population growth taking place in the whole urban complex. Being aware of this, other authors have not only worked out "the capital's master plan" but also carried out studies on the entire Warsaw urban complex. Variations in the various versions of the plan provide for an intensive development of the existing urban centres, which was to take place due to the location of industries in them, among other things. But so far, these centres have never become a counterweight for dynamically developing Warsaw. The characteristic of the developing macroregion and the Warsaw agglomeration was the formation of a clear nodal pattern, considerably

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dominated by the nucleus, i.e. Warsaw.[11] In the towns and village districts near Warsaw, on the other hand, there is serious underinvestment in a number of services.[12] Studies carried out in this field made it possible to coin the term "the shadow of the capital" which euphemistically expresses the serious underinvestment in the suburban zone with regard to the social and technical infrastructure.

The situation in spatial planning and management was significantly changed by the reform of Poland's administrative division introduced in June 1975. The former Warsaw voivodship which, with some simplification, could have been treated as an economic region[13] was replaced by a much smaller capital voivodship.[14] The borders of the new voivodship, delimited somewhat haphazardly had formally and administratively divided areas which were integrally linked with one another, depriving Warsaw of its actual base of supplies. To find the actual range of Warsaw's influence studies on the functional macroregion of Warsaw[15] were initiated by A. Stasiak in the early 1980s.

While comparing the assumptions of the different spatial plans of Warsaw and its agglomeration and their implementation, one can clearly see a change in the original, rather idealistic concepts. The early post-war plans, which were based on concepts invented to a large extent during the war, envisaged that after the liberation Warsaw would be a city with a simple structure, with clearly delimited housing quarters and industrial districts separated by green belts. Administrative functions were located in the city centre and considerable areas were reserved for city greens and recreational areas. In the early 1950s these assumptions were significantly changed. In connection with the adopted general economic model, the share of production functions was increased and the intensity of land use was raised, also at the expense of green areas.

In the mid-sixties an opinion emerged that the development of the capital was more expensive than the development of medium-size towns. Against this backdrop the idea of deglomeration of some industrial plants was born. This resulted in some stagnation in investments, also in housing investment projects, and especially municipal ones. The shift of a portion of employees from industries to broadly perceived services was also unsuccessful.

Following the adoption of a new strategy of "the country's accelerated development" in the early 1970s, the number of investment projects, mostly industrial ones, increased

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[11] A. Stasiak, Wstęp (Introduction), in: *Problemy funkcjonalnego makroregionu Warszawy*, Biuletyn Informacyjny IGiPZ PAN, 38, Warszawa 1982, pp. 5–9; A. Stasiak, Powstanie funkcjonalnego makroregionu Warszawy. Wybrane problemy (Entstehung eines funktionellen Makrobezirks von Warschau. Ausgewählte Probleme), *Acta Universitatis Wratislaviensis*, 801, *Historia*, 51, Wrocław 1987, pp. 257–274.

[12] This is evidenced by the results of studies on the functional macroregion of Warsaw with regard to services carried out by A. Werwicki – cf. Geografia usług makroregionu funkcjonalnego Warszawy (Geography of services in the functional macroregion of Warsaw, *Dokumentacja Geograficzna*, 1, Warszawa 1987) and on living conditions by M. Ciechocińska – cf. Space and living conditions in Poland, *Social Indicators Research*, 20, 1988, pp. 59–77, and Trends in changes of living standards in Poland (1960–1981). An attempt at the defining regional disparities, *Geographia Polonica*, 52, Warszawa 1986, pp. 249–265.

[13] This issue is touched upon by A. Wróbel in his study *Województwo warszawskie. Studium ekonomiczne struktury regionalnej* (The Warsaw voivodship. A study of the economic regional structure), Prace Geograficzne, 24, Instytut Geografii PAN, Warszawa 1960.

[14] Warsaw voivodship and Warsaw city covered 29.8 thousand km^2, while the present capital voivodship covers 3.8 thousand km^2.

[15] The five-year work of the team working on this subject resulted in publication in *Biuletyn Informacyjny IGiPZ PAN*, Nos 38/1982, 43/1983, 48/1985, and 53/1986 and in different other papers.

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again. Big industrial plants were constructed such as the Cable Factory in Ożarów and the "Polkolor" Colour TV Set Factory in Piaseczno, while the "Ursus" Tractor Factory was considerably expanded. All these objects are conflicting for the environment and produce tensions in the plan, also through activating those areas which had been regarded till then as protected because of the quality of soil and climatic values.

The long-term plan (by 1990) worked out in variants in the 1970s provides for an intensive development of the entire agglomeration. Individual variants differed in the selection of the main directions of investments. The northward direction along the right bank of the Vistula river was considered to be the optimal one.

The priority given to industrial functions and the negligence of the preceding years soon became palpable. In the late 1970s, town-planners started to be aware of the aggravating crisis. Various meetings and conferences[16] were organized and attempts were made to take up measures to ease the effects of negligence, but the aggravating general crisis did not permit the fulfillment of these intentions.

The changes which occurred in the early 1980s led to the plan of 1978 being viewed from a different perspective. Under the conditions of the socio-economic crisis it proved impossible to continue expensive investment projects (shortages of materials, funds, staff, etc.). Major attention had to be called to removing shortcomings and negligence. The very model of planning also called for verification. Plans of spatial management had to be worked out with the participation of communities living in given areas. This can certainly cause conflicts between local and regional or even national interests. It remains an open question then whose reason would be considered to be the most important and final, that is whole interest should prevail. All these issues require thorough studies.

As far as the Warsaw agglomeration is concerned, the authoress made detailed studies on chosen conflict areas in 1980 – a "conflict area" being an area of natural, anthropogenic values or of those values which stem, for example, from the geographical position, and which predestine it to perform different functions, out of which one or several may make it impossible (now or in the future) for other functions to be performed. The following areas were considered to conflict areas in the Warsaw agglomeration: the Kampinos National Park and its border zone, the western belt (Błonie – Pruszków area), the southern conflict area (Konstancin – Piaseczno area), and in Warsaw the Bielany Forest along with its border zone (Fig. 2).[17]

In conclusion, these are the main problems to be solved in the Warsaw agglomeration as they are seen by the team of the Department of Agglomeration Planning at the Research Institute on Environmental Development.[18]

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[16] They were most frequently initiated by the Polish Town Planners Society.

[17] These isssues were presented in many publications by the author, e.g. Les zones de conflits fonctionnelles – approche théorique et exemples concrets, in: *Croissance et développment régional. Actes du premier colloque Languedoc – Mazowsze*, Université de Montpellier III, 1983, pp. 151–168; Przykładowe obszary konfliktowe na terenie stołecznego województwa warszawskiego (Sample conflict areas in the Warsaw voivodship), *Biuletyn Informacyjny IGiPZ PAN*, 48, Warszawa 1985, pp. 103–118; Konflikty w planowaniu przestrzennym i próby ich rozwiązywania, na przykładzie wybranych obszarów z terenu aglomeracji warszawskiej (Conflicts in spatial planning and attempts to solve them on the example of selected areas in the Warsaw agglomeration), *Biuletyn Informacyjny IGiPZ PAN*, 53, Warszawa 1986; Las Bielański jako przykładowy obszar konfliktowy na terenie Warszawy (Bielany Forest as a sample conflict area in Warsaw), *Kronika Warszawy*, 4, 1983, pp. 91–102.

[18] T. Topczewska and others, Podstawowe problemy rozwoju aglomeracji (Basic problems of the development of agglomerations), Conference of the Polish Town Planners Society, Warsaw, May 6, 1986, duplicated copy, pp. 29–60; B. Goljaszewska and T. Topczewska, Urban agglomerations in Poland, living conditions, selected topics, TUP, Warszawa 1986.

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Fig. 2. Analysed conflict areas within Warsaw voivodship (province) 1 — Warsaw voivodship boundaries, 2 — Warsaw city boundaries, 3 — boundaries of towns and communes, 4 — towns, 5 — commune centres. Areas under analysis: 6 — northern area (Kampinos National Park and its envelope zone), 7 — southern area, 8 — Bielany Forest, 9 — western area

1. To improve the state of the natural environment in the central area and in Warsaw's suburban zone (to diminish the conflict between the function of a health resort and the industrial function and between the natural and agricultural function).
2. To improve the operation of the national economy through balancing work places and resources.
3. Compensation for threatened imbalances in the demands made and the possibilities to fulfill them by means of the system of technical infrastructure in the supply of heating, water and transport services.
4. To solve the problem of sewage treatment and utilization of solid waste.
5. To improve the housing situation.
6. To make up for the shortage of services in developed areas and to create a net of basic services in areas of fresh investment.

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DUAL LEGITIMATION AND UNEVEN DEVELOPMENT: WELFARE EXPENDITURE IN THE INTER-WAR CITY

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"At present we know about the political propensities of some highly distinctive locales: places with a high proportion of manual workers in mining have different political cultures from agrarian areas or retirement zones on the south coast. But the political outcomes of a much wider range of local or regional class formations need to be delineated" (Warde 1985, p. 199).

This paper is a tentative first step in the direction implied by Alan Warde's plea. It is an attempt to broaden the geographical content of the debate on the extent to which "spatial structure is not merely... an arena in which social life unfolds, but rather... a medium through which social relations are produced and reproduced". (Gregory and Urry 1985, p. 3). This attempt is made in the context of the activities of local government a subject on which debates are also in full swing in both practical and theoretical terms (see, for example, Dearlove and Saunders, 1984).

Underlying the paper is the simple question: do local politics influence the provision of welfare facilities by urban governments?[1] The question is worth asking as the suggestion has been made in recent writings that the political attributes of local government are an unimportant and insignificant influence upon its activities when set against the constraints of local demography upon the demand for services, central-local relations and the class-based processes of geographically-uneven development. Such an argument has been made in the most general terms by Patrick Dunleavy (1980, p. 134):

"It is important to take seriously the possibility that local politics is fundamentally epiphenomenal... reflecting the playing out of much broader social forces in particular spatial and institutional contexts, but not in itself encapsulating any effective determining influences on urban policy-making".

Thus Foster *et al* (1980, p. 90), for example, find that there is a very close relationship between movements in global local expenditure and GNP. The ratio between the two – the "income elasticity of local expenditure" – has been "amazingly stable". A "major outcome" of this long-run stability is, they suggest, its "relevance for the prediction of current expenditure". An immediate response to such a finding is that it may represent the operation of an ecological fallacy on a gigantic scale. Nevertheless, there are other interpretations of local government which are conformable with this global statistical conclusion.

For some (e.g. Johnston 1982, pp. 193–194), the "local state has no independent

[1] This question has provided a popular focus for research in political science in recent years. It was asked most explicitly by Sharpe and Newton (1984).

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existence. It is part of the state apparatus and exists to further the aims of that apparatus". Local influences upon local government are clearly of little significance in such a context. Alternatively the notion that "local authorities... are increasingly involved... in the affairs of capital" and the view that "most of the activities of local councils" are determined by their involvement in the extended reproduction of labour power (Cockburn 1977, p. 52) suggest not only that powerful non-local constraints are paramount in the affairs of local government but that economics rather than politics is the dominant influence.

In the face of such constraints, local politics would appear to have only a marginal role. But the arguments outlined above may be recognised as forming a rather specific part of the wider debate on the social significance of place, locality and the geography of society (Warde 1985). Does geography matter (Massey and Allen 1984) and, if so, how and in what ways? The object of the present research – to which this paper makes a tentative beginning – is to place the debate on local government into this wider context: to deepen and extend the notion of "local politics" and to explore what David Byrne (1982, p. 61) calls "the historically *autonomous* role of the working class". In this way the research hopes to make a contribution towards understanding how people do in fact make their own geographies and histories. At the same time, it is recognised that local government may itself act both as a means of encouraging geographical effects upon social life and as a means of their expression.

Such a prospectus, however, begs the question of what exactly is meant by "local politics". Suffice it to say that the debate on the ways in which geography matters has reached a stage of the elaboration of the basic concepts, which now include not merely local class structures but class struggle, local labour markets, the localization of collective consumption and the geographical differentiation of civil society and its practices (Warde 1985) together with, crucially, local gender relations. Empirical analyses, however, remain rare.[2]

The paper is set within two broad contexts – the geographical and historical unevenness in what will be referred to as the dual legitimation of local government; and the development of municipally-based welfare provision in the inter-war period.

THE DUAL LEGITIMATION OF LOCAL GOVERNMENT

Although Ralph Miliband's (1973) account of *The state in capitalist society* has been the focus of much critical debate, it does offer some provocative insights into the nature of local government. Miliband located what he calls sub-central government firmly within the state system. Rejecting the notion of the state as a unitary entity he stresses the contradictions and struggles between what he suggests are the six major elements of the system.[3] In this context Miliband (p. 49) elucidates some of the most important characteristics of local government:

"In one of its aspects, sub-central government constitutes an extension of central government and administration the latter's antennae or tentacles... In addition to being agents of the state these units of government have also traditionally performed another function. They have not only been the channels of communication and administration from the centre to the periphery, but also the voice of the periphery, or of particular

[2] One of the exceptions that proves the rule and which also demonstrates the richness of the field for empirical analysis and theoretical extension is the work of Jane Mark–Lawson (1985) and her colleagues (Mark–Lawson *et al* 1985).

[3] These are government, administration, military/para-military/security/police, judiciary, sub-central government, representative assemblies.

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interests at the periphery; they have been a means of overcoming local particularities, but also platforms for their expression, instruments of central control and obstacles to it".

Notions of geographically-uneven social development are clearly apparent here and the implication is that this unevenness is influential in political activity – both proactively and reactively.

These ideas have recently been taken up by a number of commentators upon local government. After an exhaustive study of the reorganisation of local government in England during the late sixties and early seventies, John Dearlove (1979) concluded that the reforms were prompted primarily by political concerns. The basis of this concern – what Dearlove calls (p. 244) "the *particular and enduring* problem of local government" – centres on the relative autonomy of local government from both "the concerns of the central state and the impact of the dominant classes. Related to this, local government is especially vulnerable to working class demands, pressures and even control" (pp. 244–255).

Thus local government may be regarded as the "Achilles heel of the state apparatus" (Dearlove and Saunders 1984, p. 392). Its significance within the state system derives from the fact that

"it is the only centre of political power in the whole state system outside... Parliament itself which can claim legitimacy for its actions on the basis of a popular vote. Local councils are, therefore, in a unique position to challenge the centre and they provide a potentially crucial medium through which groups excluded from representation at the centre can mobilize to express their interests" (Dearlove and Saunders 1984, p. 380).

In short, local government is faced with dual legitimation: upwards to the central state and downwards to its local constituency. The former set of relations is framed by the law and it is in this one-sided context that local government may be seen as a mere piece of the state apparatus. But the legitimation of local government depends too upon local political relations. Part of the significance of local government derives from the conflicts inherent between legal and political relations under conditions of geographically-uneven development.

Such conflicts vary in intensity over both space and time and the fact that they may remain latent for long periods in particular localities does not remove their social significance. What Dearlove and Saunders (1984, p. 309) refer to as "the hidden agenda of central-local conflicts" refers in the 1980s to the political, economic and ideological challenge to the centre mounted by the periphery in the form of the Greater London Council, the six metropolitan county councils and recalcitrant local authorities like Liverpool and Lambeth. In the past the conflict with the periphery has been located elsewhere: Tory-controlled local authorities over comprehensive education in the 1960s, Clay Cross in 1972, Poplar in 1921, Glasgow in 1915 and Oldham in the first part of the nineteenth century are merely some of the more notorious and well-known examples.[4]

As a reaction to the functionalism inherent in certain Marxist accounts of the local state, Simon Duncan and Mark Goodwin (1982) have also used Miliband's ideas to develop an account of the local state which stresses local social relations. Social relations, they argue, are never simply given: they are based upon experience and consciousness. In Anthony Gidden's (1984) terminology, they are the product of an active process of structuration. Thus local social relations in a geographically-uneven society cannot be reduced to a generalized set of capitalist social relations nor can it be presumed that each locality mirrors the social relations of the social formation as

[4] Stuart MacIntyre (1980), Keith Bassett (1984) and John Gyford (1985) provide a much fuller discussion of local socialist resistance in the periphery.

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a whole. On the basis of such arguments Duncan and Goodwin (1982, p. 168) suggest that we should see the local state as "a *response* to local class relations" – a response which may be reduced to purely legal relations by the state apparatus. They support this claim with a number of case studies – which is, perhaps, all the support that it needs as their argument is not one that may be proved or disproved on the basis of generalization. Nevertheless, the objective of their work is, they suggest (1982, p. 159), "to develop an abstract account of the local state in capitalist society, which can then be used in the analysis of real situations".

This is the starting point for my own research which, in a sense, is the reverse of theirs. It is to ascertain whether the effectiveness of local social relations is exceptional or a more general phenomenon. A first stage is to discover whether the most generally-available indicators of municipal activity – in this case published data on specific items of welfare expenditure at a particular point in time (the inter-war period) in specific but varied localities in England and Wales – suggest the possibility that local politics do matter.

THE CONTEXT I: LOCAL GOVERNMENT IN THE INTER-WAR PERIOD

The literature does provide some evidence that local class relations – or, more accurately, local civil societies – do exert long-term political influence upon the activities of the local state. Sharpe and Newton (1984, ch. 8), for example, claim that they can discern a "Welsh effect" in their study of outputs from local authorities in the 1960s and early 1970s. "In spite of their similarities with the English agricultural counties, the thirteen Welsh authorities financed their public services on an altogether different scale" (p. 162). This difference (Welsh expenditure per head was over 130% of English) was only partially attributable to the mechanics of local finance, including the grant system, or to the technical influence of local demography upon the demand for services. Furthermore, the Welsh effect is longstanding. Brian Preston (1985, p. 89) observes that the greatest regional disparities in civic enterprise within the Edwardian city system lay "not between the richest and poorest regions but between South Wales and the North, two industrial-mining districts of comparably limited resources". Preston concludes (p. 92) that the "consistently high tax rates in South Wales ... indicate the systematic influence (upon local policy and expenditure) of important ecological factors other than wealth".

For the inter-war period too, Hicks and Hicks (1943) cross-classified 32 of the 83 County Boroughs into four groups of "spenders" and "stinters" (see Table 1) on the basis of their wealth (*per capita* yield of a penny rate) and expenditure per head. Here again is the implication that local politics may influence the policies of local government and that economic constraints may be overcome by local political pressure. More direct evidence of such influences and of their complexity has been discerned by Jane Mark–Lawson (1985) and her colleagues (Mark–Lawson *et al* 1985). Their studies of the role of gender relations in mediating and differentiating the effects of inter-war Labour politics in Preston, Lancaster, Nelson and Luton suggest that the way in which women are involved in the local labour process is a particularly significant influence upon their role in local politics. Local politics not only matters but the way in which it matters is highly differentiated from one locality to another.

The focii of interest in the present research lies in the attempt to identify "spenders" and "stinters", both rich and poor, and to assess the longevity of their largesse or parsimony in the face of local demographic changes and the effects of external influences deriving from the economy and from their relationships with the state system.

The inter-war period has been chosen because it is arguable that it represents a particularly distinctive period for local government. The Local Government Act of

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TABLE 1. Grouping of county boroughs (32/44) 1938

Big spenders	Poor spenders
Bradford	Barnsley
Hull	Oldham
Lincoln	St Helens
Liverpool	South Shields
Manchester	Stoke
Norwich	Sunderland
Nottingham	Warrington
West Ham	Wigan
Wakefield	
Middle stinters	**Poor stinters**
Barrow	Dudley
Bury	Gateshead
Darlington	Middlesbrough
Huddersfield	Smethwick
Portsmouth	Tynemouth
Stockport	Walsall
Wolverhampton	West Bromwich
	West Hartlepool

Source: Hicks and Hicks 1943, Table IV.

1929 was a crucial turning-point in the history of local government. Between 1921 and 1929 central government "attempted": according to Young and Mills (1982, p. 77) "to leave cities to their own fates". Nevertheless, these years saw considerable growth in municipal activity characterised by a highly complex system of grants distributed on the basis of many different rules. In 1912 Sidney Webb (quoted in Foster *et al* 1980, p. 173) tried to analyse the methods of grant distribution but felt that "(H)ow exactly the grants are allocated among the different local authorities seems past all finding out".

The reforms involved in the 1929 Act were crucial in this respect. According to Bennett (1982, p. 51), the attempt to reduce the burden of local tax by a block grant – the General Exchequer Contribution – and to remove the pressure of rates on productive industry by industrial derating had the effect, for the first time, of recognizing "the role of local authorities as part of the overall government system and formed the basis for a partnership of the two levels of government to achieve minimum standards of services". The 1921 Act began the transformation of British local government from a system showing "many aspects in common with the local government structure of the present-day NE USA or Australia" (p. 54), in which the unregulated effects of uneven development play a dominant role, to a system of central influence upon local government which serves in part to reduce the influence of uneven development and possibly also reduces local political influence.

Furthermore, if the period from the late nineteenth century to the Second World War could be called "the heyday of local government" (Stevenson, 1984, p. 307), "the high point of municipal power and local autonomy" was reached, according to Dearlove and Saunders (1984, p. 381), "in 1929". Up to that date services were being added to local government with only disorganized central control. From that point on central control became increasingly well-organised and "Conservative and Labour

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Governments alike have stripped local authorities of many of their most significant functions" (p. 381). The decentralized organisation of welfare provision in the inter-war period enabled this autonomy of local government to be clearly expressed in material terms.

THE CONTEXT II: THE PROVISION OF WELFARE IN THE INTER-WAR PERIOD

Reviewing the contribution of the "welfare share" to the political stability of Britain in 1939, Sidney Checkland (1983, p. 394) points to its material and ideological significance in legitimating the social order:

"the range of state welfare provisions, in spite of its inadequacies, was making a significant contribution. It was doing so both in terms of real benefits and in terms of a demonstration that society as a whole, through the state, had a degree of sensitivity to need, and could be brought to respond to its various forms".

This assessment will be recognized as an example of the currently prevalent optimistic view of the only apparently "hungry thirties" (see Webster 1985). The "success" of inter-war welfare provision is the more surprising as it was achieved by a system of delivery involving the three principles of self-help, philanthropy and a residual role for state augmentation (Checkland 1983). Certainly, inequalities in the material benefits of welfare intensified at this time[5] and, given the contemporary spatial division of labour in which regions were closely associated with particular economic activities (see Massey 1984), such inequalities were clearly translated into regions and localities.[6]

Social policy was, according to Glynn and Oxborrow (1976, ch. 9), in a transitional phase in the inter-war period between what they call the "destitution" phase of the nineteenth century and the "contingency" phase of the post-war welfare state. Given that social policy "affects, or threatens to affect, fundamental aspects of society and its system of values" most notably "the market system and the distribution of material reward" (p. 247) such a transitional phase might be expected to be one of political conflict. No doubt, however, the sheer complexity of the welfare system helped to thwart political activism. Manuel Castells (1978) has argued that, as the state becomes increasingly responsible for the reproduction of labour power through collective consumption, it is necessarily drawn into the conflict inherent within a class society. Such straightforward lines of causation were, however, confused in the inter-war period. The hospital system, for example, was a "hotch-potch of differently administered and financed institutions that hardly deserves the name of a system" (Glynn and Oxborrow 1976, pp. 263–264). However, political quiescence on welfare issues was more apparent than real as local studies reveal (Mark-Lawson 1985; Mark-Lawson *et al* 1985).

LOCAL GOVERNMENT AND WELFARE PROVISION IN THE INTER-WAR PERIOD

Local government was the single most important institution in the administration and provision of welfare services – health, housing, education and social security and, as we have seen, its own organisation did little to ameliorate this complexity. Under the

[5] In the period between 1911 and the early 1930s infant mortality fell by 57% for social classes I and II but by only 45% for social class IV and by less than 50% for the much higher levels of mortality in social class V. By the 1930s infant mortality in social class V was higher than the corresponding figure for social class I in 1911.

[6] In 1930–1932 death rates in County Boroughs were 30% above those in rural districts whilst mortality rates in the northern regions of England and in Wales were "uniformly high throughout the area" (PEP 1937, p. 382).

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circumstances of municipal autonomy and fragmented welfare provision and given the existence of regional distinctions associated with a sectorally-based geographical division of labour, the significance of local social relations in the provision of welfare by the local state – the *political* element of dual legitimation – might be expected to be particularly marked.

However, on the basis of a detailed and all too infrequently-used intensive research framework,[7] Charles Webster (1985, p. 288) has argued that "the root of the problem of welfare in the distressed areas" was that "the ability of local authorities to meet their obligations depended on their ability to generate resources from their rates". The differential involved "explains the paradox that services were frequently least developed where most needed". At the same time, "the chaotic system of local administration of welfare services" was only rarely clarified and made accessible by local political leadership so that "despite the existence of statutory scales and departmental standards" major welfare services like health, housing, education and poor relief "varied enormously from one district to another" (p. 277). Even progressive authorities like Rhondda or Stockton-on-Tees were unable to match the range of welfare services provided in growth areas. Expectations remained low in depressed regions and so helped to subdue the politicization of welfare already subverted by the complex system of delivery. The economic influence of uneven development was, apparently, decisive.

My own preliminary findings based upon an extensive research framework (see note 7) suggest that things were rather more complex than this. Local government was, perhaps, not merely a passive respondent to economic conditions or control from the centre. Maybe politics did intervene between the influence of uneven economic development and the provision of welfare by municipalities. An initial indication of this intervention may be found in cyclical data on health expenditure (Table 2).

TABLE 2. Cyclical trends in current expenditure on health care by local authorities in England and Wales 1921–1937

(differences between percentage changes in *per capita* health care expenditure and percentage changes in *per capita* total expenditure)

	Health expenditure (total)		Expenditure on maternity and child welfare
	all LAs	CBs	CBs
1921–1923 D	−10.4	−8.1	−14.3
1923–1930 U	−2.8	−0.9	−0.8
1930–1933 D	+23.9	+11.0	+6.5
1933–1937 U	+4.7	+5.6	+0.1
1921–1933	+2.2	+0.4	−1.4

D = cyclical downswing; U = cyclical upswing

Part of the explanation for the differences in the table must lie in the reorganization of the Poor Law after 1929 and the assumption of responsibility for its administration, including that of the former Poor Law hospitals, by the local authorities. This reorganisation had the effect of increasing expenditure on health in statistical terms as

[7] See Sayer and Morgan (1985) for a discussion of the distinction between intensive and extensive research frameworks. The work of Jane Mark–Lawson (1985) and her colleagues (Mark–Lawson *et al* 1985) are further examples of intensive field work in this field.

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well as in real terms. Nevertheless, after making due allowances for such a statistical illusion, Hicks and Hicks (1943, p. 34) conclude that health services "show... the most rapid proportional increase".

Maternity and child welfare services were grant-aided by specific grants before the 1929 Act and by block grants afterwards. A frequent complaint of local authorities after 1929 was that the Ministry of Health was far more interested in stimulating improvements in the service after 1929 when it was no longer responsible for specific grant aid, than it was before the block grant was introduced! Indeed, according to Circular 1072 issued by the Minstry of Health, the principle underlying the Act of 1929 was that "local authorities should have as much freedom as possible in administering the health services" (quoted in PEP 1937, p. 29).

Clearly, from wherever the political pressure came, the influence of cyclical trends was overcome – especially in the 1930–1933 depression – and, given the new grant system, the pressure must have come primarily from within the localities themselves. But this involvement was rather more subtle in practice than might be suggested by the notion that the local state, for example, is a response simply to local *class* relations: gender is a crucial influence. Evidence of highly effective but geographically-uneven local political involvement by women in the provision of welfare services by local government has been presented by Jane Mark–Lawson (1985) and her colleagues (Mark–Lawson *et al* 1985). This uneven involvement is related to the geography of the gender of division of labour and the translation of that division into distinctive gender relations within political action. In the inter-war period, for example,

"different forms of occupational segregation and control in the workplace gave rise to different kinds of political responses. The patterns of segregation in particular localities appear to have... structured the ability of women to organise into trade unions, hence affecting women's patterns of protest and the ways in which they can pursue their political interests. Moreover, forms of occupational segregation and control, and the relative position of women within the local labour markets... structured local political environments" (Mark–Lawson 1985, p. 29).

Under such conditions it is hardly surprising that local welfare expenditure per head and the tax effort made in financing expenditure was not a simple function of wealth/poverty or growth/decline. Something other than the influence of uneven development seems to have been at work. Tables 3 and 4 suggest that local politics did have an influential role to play. Four classes of County Borough (well off; newly well off; declining; poor) were defined on the basis of their wealth (rateable value per head) and the change in their wealth during the period 1921–1937. *Per capita* expenditure on maternity and child welfare services in the 37 cities so defined was then examined and the distribution of above national average expenditure and tax effort for the years 1921 and 1937 plotted in Table 3. The inverse relationship between wealth and expenditure is

TABLE 3. Maternity and child welfare: per capita expenditure patterns 1921–1937

	Number of County Boroughs with above average expenditure per head		above average tax effort (d in the pound rateable value)	
	1921	1937	1921	1937
Well off (9)	1	2	1	1
Newly well off (6)	0	0	0	1
Declining (9)	2	5	2	5
Poor (13)	2	5	3	8
Totals (37)	5	12	6	15

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clear to see. Those boroughs with above average rates of *per capita* expenditure *and* tax effort are shown in Table 4. Again, the inverse relationship between wealth and expenditure on maternity and child welfare is clear.

TABLE 4. Maternity and child welfare: county boroughs with above average *per capita* expenditure and tax effort 1921–1937

	1921	1937
Well off	Eastbourne	–
Newly well off	–	–
Declining	Salford	Barrow
	West Bromwich	Hull
		Smethwick
		West Ham
Poor	St Helens	Burnley
		Grimsby
		Merthyr Tydfil
		Oldham
		St Helens

CONCLUSION

The research begun here is dealing with two opposing arguments:

1) that the imperatives of uneven development in a class-based society and the administrative/legal relations of the state overwhelm the local, political relations of local government;

2) that the autonomy of local government during the inter-war period and the social geography of the spatial and gender divisions of labour which underpinned local political relations facilitated the influence of the latter in the municipal provision of welfare services.

The approach adopted is that of the extensive testing of ideas on the local social relations of local government developed originally in the context of an intensive methodology. The first stage is the attempt to identify local authorities in which it appears that local circumstances have been able to exert an influence, despite the "broader social forces" referred to by Dunleavy (1980). The suggestion here is that there is some *prima facie* evidence that, for particular services in the admittedly rather special conditions of the inter-war period, local circumstances are indeed operative. Such qualifications are not made apologetically; rather they demonstrate the inseparability of intensive and extensive insights in a geographical analysis concerned both with the complex of social relations in particular localities and with the relationships between those localities and the wider geographical context in which they also take on meaning as places.

It follows that the next stage of the research is to extensify and intensify the analysis: to discover both whether such local circumstances are limited to certain localities and welfare services only, and to get behind the figures to find out whether they are due in practice to local political relations.

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THE GREEN BELT: STRATEGY FOR THE URBAN FRINGE IN BRITISH PLANNING

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Green belt literature is extensive. Geographers and planners alike have written at length, focussing on the subject in great detail. Green Belt plans have been prepared in large numbers. The designation and subsequent protection of green belts constitute a major feature in British land use planning; perhaps they are the largest spatial element to have been injected into metropolitan land use, through consistent application of determined policy, during the post war period. Green belts are both praised and derided; to some they are the jewels in the planner's crown, while to others they are no more than an intellectual fashion where objectives have long since lost their original purpose.

For a Geography Seminar this paper is pertinent, therefore, though its coverage can only be modest; it is simply directed towards assisting a Polish understanding of what is essentially a British planning device. There are three main sections:

a) the context: the geography of the urban fringe,
b) history: the development of the green belt in practice,
c) evaluation: an indication of the merits and disadvantages of the green belt.

THE URBAN FRINGE

The outer limits of urban development, beyond the peripheries of big city growth, form an area of land use which is characterized by competition for scarce resources. The facts of geography provide a difficult setting for the execution of land use planning as an instrument of public policy. The reason for this is that the area is one of conflict. where there are competing forms of development. The basic land use, agriculture, is challenged by other demands, not only for forms of building development, including housing, schools, shopping, industry and warehousing, and of course roads, but also for sport, recreation, perhaps sand and gravel extraction, and occasionally airports. Decisions about land use change from agriculture to these other uses are, in the British planning system, essentially political decisions for both local and central government and involving local opinion and often vociferous local community groups. The green belt and the urban fringe constitute a "grey" area, therefore, where planning and politics interpenetrate to a marked extent.

The urban fringe, as a geographical area, has been at the forefront of planning and land development throughout the post war period. During this time a critical aspect of

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city planning has been featured by a set of decisions as to where residential development might be permitted. Urban populations have decentralized and in the process of household fission a seemingly insatiable demand for new dwellings has been experienced. The question of where to locate urban overspill in a regional, metropolitan setting has provided a continuing agenda for city planning. If the problem of meeting the demands of the house builders is any less now than formerly, the difficulties for land use planners are scarcely resolved because in recent years the pressures for decentralization have been fuelled by the attractive power of peripheral motorways, as witnessed by the M 25, the orbital ring road round London.

The fact is that the urban fringes around British cities constitute areas of growth. The urban map of Britain is changing: forty years ago two-fifths of the British population lived tightly housed in seven conurbations. These are now dispersed into regional cities, and the geographic concept of "conurbation" is being replaced by an economic concept of "space economy". The processes of counter-urbanization, so clearly seen in the USA, are well in evidence in Britain too.

Urban decentralization has long been a recognizable feature of the western city whereby economic activity and population increase are experienced more at the edges of cities than in the middle, as previously was the case. In the 19th century British cities grew by a process of attraction; in the late 20th century cities are growing by dispersal, with the peripheries showing the most dynamic features. It is the fringe therefore which is attracting population to live in pleasant, low density, semi-rural settings, while employment is gravitating there too to take advantage of beneficial locations. British cities are being turned inside out. Emptying, decaying cores are sharply contrasted with expanding, buoyant peripheral rings: this is the distinction between the inner city and the outer city.

Britain's current metropolitan characteristics are given a context when we recall that the Egyptian hieroglyph for a city was a circle with a cross in the middle. The circle represented the outer edge of the city, perhaps a wall or a moat, and the edge was a sharp demarcation between the urban area and rural, agricultural hinterland beyond. The cross in the middle represented the coming together at the centre of both people and goods, the towns then being centres of attraction. We might speculate that this simple word-picture represented a model of the British city until well into the 20th century: our cities were contained and physically distinct from their surrounding rural areas and urban activity was concentrated largely in and towards the centre. British cities have since been undergoing a profound process of decentralization so that the old model of containment scarcely applies. Where green belts have been designated, development has leap-frogged to areas beyond.

So the urban fringe occupied a special place in British geography and planning, and has done for at least a century. At the end of the 19th century for example, with agriculture in depression and rural depopulation a matter of concern, the countryside areas beyond the larger cities were tracts of relative deprivation and disadvantage. This particular problem was in sharp contrast to a different set of issues in the big cities themselves, which provoked a long standing desire to restrict the outward spread of development. The 19th century growth of London into a world giant among cities produced a national backlash of emotion: size was thought to lead to economic inefficiency, and result in an accumulation of health and social problems; there was also a deepseated fear of uncontrolled sprawl. The garden city tradition, established by Ebenezer Howard, articulated this determination in two ways: first to restrict the growth of big cities and consciously to shape their form and spread, and second to resuscitate the surrounding rural areas. The "marriage of town and country" was the strategy, and in the 20th century the crucial planning device whereby these policies might be achieved became the green belt.

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HISTORY

We must have a brief understanding of green belt history: why has the green belt come to mean so much in Britain? The shadow of the past lies heavily on all our contemporary questions; with regard to the green belt we can scarcely ignore it. Although essentially a 20th century concept, the idea of forcibly restricting the outward growth of towns is an old one. In England, Queen Elizabeth I's famous proclamation of 1592 forbad any new building within three miles of the City of London. The situation was that suburban workshops were being established outside the control of long-established City Guilds. The Queen was advised by the wealthy merchants of London to stop this activity. (There is a lesson to be learned from this piece of history: restrictions on the use of land are always made in order to ensure that benefits are conferred on one set of people and withdrawn from another. Even in the present day green belt we shall see that some people derive considerable advantage, while others are disadvantaged in certain ways).

But it was in the late 19th century that the demand for effective control over the population size and territorial spread by cities, notably London, took the form of a strategic policy. There were two spectres: one was the loss of vitality in the surrounding countryside areas where agriculture was depressed and migration to the towns strongly in evidence; the other was the seemingly relentless march of outer suburbia in an unplanned and uncoordinated manner. The second half of the century was marked on several occasions by ambitious schemes to resettle overcrowded Londoners in utopian colonies of one kind or another in rural localities.

By the end of the century, conditions, both urban and rural, were highly conducive to the emergence of new ideas about the spread of urban development. It was in this context that Ebenezer Howard's book *Tomorrow: A Peaceful Path to Real Reform*, published in 1898 met with such success. Reissued with some modifications in 1902 with the title *Garden Cities of Tomorrow*, it had the effect of promoting the garden city movement. His satellite towns of up to 30 000 population would be grouped as a "Social City", surrounded by agricultural land producing crops, milk, meat and marked garden produce for the inhabitants. The idea of a strategic green belt around existing cities was born.

There were numerous flirtations with the idea in professional circles, but 30 years were to pass before the concept really took further root. This came with Raymond Unwin's Report to the Greater London Planning Committee, 1929–1933, which advocated a "green girdle" as a narrow barrier of open land at the outer extremities of London's built-up area with the immediately practical intention of providing open space and playing fields for an urban population.

During the 1930s a number of streams of thinking came together to produce a powerful green belt lobby. The traditional arguments for restriction of city size and the provision of sports fields and recreation land were now complemented by a demand for the conservation of attractive countryside on the outskirts of London (the North Downs, the Chilterns, the Thames Lowlands etc.) where more informal leisure pursuits, particularly hiking and rambling, could be followed without disturbing farming interests. The London Green Belt Act, 1938, provided for the setting up of a fund of £2 million in order to facilitate the purchase of private land both to give public access and to prevent the encroachment of urban development. The Act followed the practice, conducted over a number of years, whereby local authorities around London had bought land by agreement to form a number of continuous green belt estates; there were legal difficulties to this and the Act gave legitimacy to land purchases which had been on-going for some time.

Events then moved quickly in the context of wartime reconstruction. Endorsement

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of the green belt concept, with its various objectives, came with the Scott Report on *Land Utilization in Rural Areas* (1942). A little later Patrick Abercrombie's *Greater London Plan* (1944) proposed a green belt between five and fifteen miles wide around London, beyond which expanded towns and new satellites would accommodate the city's overspill and surplus economic activity. After that, the Town and Country Planning Act, 1947, enabled local planning authorities (basically, boroughs, cities and counties) to establish green belts without the need to purchase land. The first statutory green belt was designated for London in the early 1950s.

London was not the only urban area where a green belt was desirable, but in respect of the provincial cities there was some delay while the local authorities battled out their priorities for control over building land. The initiative was seized by the then Minister of Housing and Local Government (as the Planning Ministry was then called): Duncan Sandys issued a Circular (No 42) in August 1955 to local planning authorites. Paragraphs 3–6 read as follows:

"3. The Minister accordingly recommends Planning Authorities to consider establishing a Green Belt wherever this is desirable in order:
(a) to check the further growth of a large built-up area;
(b) to prevent neighbouring towns from merging into one another; or
(c) to preserve the special character of a town.

4. Wherever practicable, a Green Belt should be several miles wide, so as to ensure an appreciable rural zone all round the built-up area concerned.

5. Inside a Green Belt, approval should not be given except in very special circumstances, for the construction of new buildings or for the change of use of existing buildings for purposes other than agriculture, sport, cemeteries, institutions standing in extensive grounds, or other uses appropriate to a rural area.

6. Apart from a strictly limited amount of 'infilling' or 'rounding off' (within boundaries to be defined in Town Maps) existing towns and villages inside a Green Belt should not be allowed to expand further. Even within the urban areas thus defined, every effort should be made to prevent any further building for industrial or commercial purposes; since this, if allowed, would lead to a demand for more labour, which in turn would create a need for the development of additional land for housing".

This recommendation, 30 years ago, marked a critical phase in green belt history; the objectives and procedures for implementation were laid down. In due time all major conurbations, and some smaller towns too, established green belts. With subsequent additions, some indeed have become very extensive: the West Midlands green belt for example covers over 700 sq. miles, a greater area than the Snowdonia National Park.

The objectives enunciated by Sandys have not remained static. For example, local councils have since seen fit to endorse green belts in the interests of providing outoor recreation facilities. Further, a green belt may be seen to have a particular function in the promotion of a regional settlement strategy of dispersal to new towns or expanded towns. In very recent years a new feature has emerged: a green belt may be seen to have a role to play in the economic regeneration of the urban core (the inner city): it is argued that to prevent the establishment of industrial premises on the urban fringe is a very positive step in leading to the development of the inner urban areas.

Hence, once established, the green belt comes to adopt a number of functions. It is in the happy position of satisfying many objectives. Everyone seems to find favour with a green belt in view of its multi-purpose characteristics, now going far beyond Duncan Sandy's relatively simple statement in 1955. But there is mounting criticism from one set of developers who feel that British planning regards green belts with over-rigorous zeal. The house building industry, particularly around London, has been complaining for many years that there is a shortage of building land and that unnecessarily restrictive green belt application is prejudicing the identification and development of an adequate

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supply of new land for housing purposes. The continuing outward spread of big cities is seemingly remorseless and the green belt today occupies a critical strategic role in metropolitan land use strategies for the 21st century.

EVALUATION

There is nothing scientifically right or wrong about a green belt; its merits or otherwise are essentially questions of political choice or cultural preferences. In the British system there is a fine boundary line between geography, planning and the politics of decision making. Proponents of the green belt are quick to point to its many merits. It has, after all, for over half a century been instrumental in reserving open space, playing fields, recreation areas and farmed countryside for the enjoyment of an urban population. It may reasonably be argued that without some positive steps of land protection in this way, crucial open areas would have been lost to urban development. It is impossible to quantify this, and it can always be argued that the operation of a private land market would somehow still have protected leisure and recreation interests, but the basic supposition as to the merits of urban fringe planning is a reasonable one.

One argument often heard is that the green belt around British cities has avoided the loose urban sprawl that has characterized American cities. British planning has sought to achieve a distinctive demarcation between town and country, and the green belt has been the planning weapon to secure this.

The argument proceeds: green belts help to shape and give greater definition to urban settlements. American metropolitan cities straggle and sprawl; the British metropolis is much tighter. British planning has stressed the importance of giving identity to settlements through well-defined boundaries; hence the merging of settlements has been discouraged. The loose sprawl of inter-war suburbia was found unsatisfactory, and in the post war years higher densities on the urban edges have been encouraged by green belt policy.

British planning has also stressed the importance of saving agricultural land. This has meant in practice that post war urban development has been at a higher density than that achieved in inter war suburbs. Loose urban sprawl wastes agricultural land. Green belts avoid this occurrence. They also have a further consequence in that they provide greater certainty to farmers; green belt designation, with the implication that most forms of urban development will be strongly resisted, means in effect that agricultural practices may continue with little disruption from the threat of urban takeover.

Finally, we may refer to the recent argument that the green belt may actually stimulate inner city recovery. The economic collapse of the inner city and the loss of population there in recent years has certainly been dramatic. A major policy now being followed is to achieve some measure of recovery in the old urban cores. It is too early, however, to state with any confidence that a rigorously applied geen belt will in fact have the effect of encouraging development to return to inner city locations.

All these are reasonable arguments in support of the green belt as a constraint on outward urban expansion, but each may be countered by a contrary view point. For example it may be accepted that access to open recreation land is important – but for whom? The green belt typically is readily available for already-privileged suburban communities, but scarcely so for (largely) non car-owning populations in the inner city. The fact is that there are costs and benefits. Those fortunate enough to live in the urban fringe, in proximity to the green belt, have distinct environmental advantages over other urban dwellers, though they also have higher housing costs. However, it may be argued that house prices have been increased substantially for all urban dwellers, irrespective of

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location, by virtue of the green belt which acts as a severe squeeze on land availability for housing purposes.

A major problem in practice, which may be seen as a distinct limitation to the green belt idea, is that any area to be designated as green belt is very difficult to define in detail. If a certain tract of land is to be protected from building development (to all intents and purposes in perpetuity) then it is necessary to be quite precise about the boundaries of that land: why one parcel of land and not another? In planning practice boundaries have to be defended; if they are not determined on reasonable criteria in that first place, they cannot easily by justified afterwards when pressure to develop is experienced.

Finally, one must reflect on the continuing dynamics of urban change. The green belt may be a very blunt instrument when dealing with unpredictable features of urban growth. There is nothing magical in a circular ring: can we really give meaning to the shape, structure and internal coherence of cities by surrounding them with a continuous green belt the object of which is to override the operation of the land market? It may be argued that the dispersed city does not recognize such a device, the forces of change being able to leap-frog a green belt rather than be constrained by it.

CONCLUSION

During the century the green belt has become a major feature of British planning, with objectives of keeping land between towns open, so that they do not merge. It has become a major strategic planning tool. It is a term which has achieved popular recognition and approval in many countries, though definitions differ, and has become well established in the planner's vocabulary. Moreover, at a time when many planning objectives and activities attract opposition by the public, the idea of keeping an area surrounding a town open by permanent or severe restriction on building usually meets with popular approval.

The arguments surrounding the issues are finely drawn. On balance, my own views are that British planning has developed a too obsessive concern for the green belt. As a planning tool it is now overlain by complex social and political considerations, and as a strategic device it must constantly be under pressure from the demands of the construction industry and the house builders. My preference would be to be much more pragmatic about the possible course of metropolitan development into the 21st century, and to evolve a strategy for open space planning *and* urban growth without the rigidity of a geometric urban collar. British planning is faced with the possibility of having to follow two, seemingly contradictory policies over the next quarter of a century: regeneration of inner urban areas *and* provision for selective growth in the outer city. Arguments on the simple lines of the Sandys Circular in 1955, even when revised by later Government statements, are no longer likely to suffice.

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POPULATION AND EMPLOYMENT CHANGES IN METROPOLITAN CORES

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INTRODUCTION

The problems of the inner city have received much attention from geographers and others in recent years (Berry 1980; Hall 1981). The essence of the problem as discussed in these studies and the statements of governments is deprivation as shown by low incomes, high unemployment, poor housing and environment and inadequate lifestyle opportunities. This focus on deprivation is also illustrated by the critics of inner city policy who rightly point out that poverty is not confined to these zones within the metropolis, and that policies should be more people than place orientated. In many inner city studies it is not clear to what extent the city centre and its problems are included. In general the difficulties of the city centre have received much less attention, perhaps because very few people live there (see Davies and Champion 1983 for a recent review). Together the city centre and inner city constitute the core of metropolitan regions. To many decline in the core is only a problem if deprivation is involved. Indeed until at least thirty years ago the core was considered overdeveloped and plans were produced which proposed a decrease in the number of people and jobs. However, the experience of decline has convinced many central city authorities that a continuation of this process threatens the viability of services as well as civic pride. It is also argued that rapid decline may set in motion forces which will make the process cumulative as confidence in the future of the area – and through this investment – evaporates. It has therefore become an urgent priority for many central city authorities to stabilise their population and economy through the renewal of the environment and the creation of new employment.

The inner area of Manchester (which includes part of the neighbouring city of Salford) is an example of a metropolitan core which has experienced considerable decline in recent years. The local authorities of Manchester and Salford and the former Greater Manchester Council (abolished in 1986) were committed to stopping this decline (G.M.C. 1981). Back in 1982 their efforts appeared to be meeting with little success, a fact which prompted a number of questions. Were they attempting an impossible task? Is core area decline inevitable? Did Manchester have any unique features which might worsen its experience? What could it learn from other cities? To answer these questions the Greater Manchester Council invited a small group of geographers from the University of Salford to review the experience of core areas in Western countries and make recommendations about what should be done in Manchester. Ideally it would have been desirable to make a detailed study of the fifty or so metropolitan areas in North America and Western Europe which have a population

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of more than one million, but time and resources were not available for such a work. With hindsight it is possible to suggest that comprehensive and comparable statistics would not have been available either. Instead the study was based on a general review of the literature and eight case studies involving Manchester, Birmingham, Glasgow, Lille, Lyon, Hamburg, Baltimore and Pittsburgh. In the brief space available in this paper the main points of the study will be discussed.*

GEOGRAPHICAL MODELS OF THE METROPOLIS

Theoretical perspectives on change in metropolitan regions could easily be invoked to suggest the continuing decline of core areas. The attempts by geographers to model metropolitan change and structure in western capitalist societies are well known. These models incorporate common features such as the growth of population and households, easier communications, a desire for more space both by households and economic activities, rising standards of living and expectations, class differences and the dominance of a free market in land. Most assume the emergence of a monocentric city during the industrial period with accessibility, densities and land values peaking in the city centre. Subsequently growth is dominated by a process of decentralization, which many studies have confirmed (e.g. Spence et. al. 1982). This process firstly affects the higher income groups who move to the periphery followed by industry, warehousing and later offices. As the population of the outer city increases so new shopping centres emerge which come to rival the old city centre and around which office complexes may develop (Erickson and Gentry 1985). Meanwhile the population of the inner city is declining and those that remain tend to be poor. The retail function of the city centre is eroded both by the evolution of suburban centres and the reduced purchasing power of the inner city. Employment in industry, warehousing and transport decline severely in the core. Whilst office activities may grow, the dominance of the city centre in this sector will be lessened by the expansion of suburban workplaces. The spatial structure of the metropolis will change from monocentric to polycentric (Leven 1978; Muller 1981). The core will become an area of increasing poverty with small islands of economic activity in a reduced city centre. The only possible areas of expansion are likely to be office functions and tourism. How far does this gloomy theoretical scenario conform with reality and what role has public policy played in the changes which have taken place?

POPULATION

Numerous studies have confirmed the process of population decentralization within metropolitan areas and the absolute loss of population in core areas. Our case studies showed similar results (Table 1). There were differences in the rate of decline between cities, but this probably largely reflects differences in the definition of the core area, with the British examples having a more tightly drawn area. Loss of population is not confined to the last twenty years and a longer period would have shown an even greater decline. In the case of Manchester/Salford, the population of the core area declined by 52% between 1951 and 1981. The principal causes of the loss of population have been falling household size, redevelopment to lower densities, the preference of the popula-

* The other members of the study team were Keith Grime, Tina Grundy, Martyn Senior and John Tuppen. The study was called the Comparative Study of Conurbations Project, and the Final Report and 8 Working Papers dealing with the case study cities are available from the Department of Geography, University of Salford, Salford M5 4WT.

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TABLE 1. Population Change in Metropolitan Cores

	Population '000				Change %	Share of area %			
Manchester	1961	524	1981	297	−43.4	1961	17.7	1981	10.3
Birmingham	1961	453	1981	272	−39.9	1961	14.3	1981	8.3
Glasgow	1961	1140	1981	765	−32.2	1961	55.4	1981	41.3
Lille	1962	212	1982	168	−20.6	1962	21.4	1982	15.0
Lyon	1962	641	1982	529	−17.5	1962	67.1	1982	45.2
Baltimore	1960	939	1980	787	−16.2	1960	52.1	1980	36.2
Pittsburgh	1960	604	1980	423	−29.9	1960	25.1	1980	18.7

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tion for suburban living and vacant areas awaiting development. If and when these cleared areas are developed for housing it is possible that the population could increase. There is also some evidence to suggest that the population of certain inner city districts is increasing as a consequence of greater fertility amongst immigrant groups which raises average household size.

The view of the inner city as becoming increasingly populated and dominated by lower income groups has never been entirely true. Even in the United States small high status residential areas survived close to the city centre, as at Beacon Hill in Boston, whilst in Britain similar areas are found at Edgbaston in Birmingham and the West End in Glasgow, originally maintained by estate ownership. On the continent high income groups stayed, living in or near the city centre. Since the early 1970s many cities, particularly in the United States, have experienced a process of gentrification whereby middle class groups repopulate the inner city either through the reoccupation and improvement of older houses, or in new housing units (Palen and London 1984, and Smith and Williams 1986). Generally, gentrifiers are childless households, mostly young adults, who work in the city centre and who prefer a lifestyle involving the amenities of the central area to one in the suburbs, with its time and expense consuming commuting. This process has been aided by an increase in the number and proportion of one and two person households and a relative decline of households with children. In some cities such as Boston and San Francisco in the United States, gentrification has caused a reversal of population decline, a change in class composition and an upgrading of housing and environments in inner city districts. The necessary conditions for the process of gentrification to occur would appear to be a growth of professional and executive jobs in the core area, good amenities both physically and culturally and the possibility of good accommodation. Where these conditions are not met, as in industrial cities like Manchester, there is very little gentrification. Even when gentrification appears to occur, it may merely represent increasing social polarisation within the inner city rather than a real increase in middle class residents. Whilst gentrification of inner city districts is common in many Amercican cities it is usually only on a small scale and does not make an impact on overall central city population trends (Berry 1985).

EMPLOYMENT

The decentralization of employment has followed population and most core areas have a decreasing number of jobs and a reduced share of employment in the metropolitan region (Danson, Lever and Malcolm 1980). This was true of all the case studies except Pittsburgh (Table 2). Information on employment trends in the city centre and the surrounding inner city is not always available or on a comparable basis, but some data for city centres is provided in Table 3. In Britain the major city centres have experienced decline in employment whilst many American cities, but by no means all, have had growth in their CBDs. Information for continental western European city centres was not available but studies suggest stability rather than growth or decline. Employment in the surrounding inner city areas is declining everywhere. Overall the core area has a favourable industrial structure so that the cause of decline cannot be blamed on a high share of declining activities (Danson, Lever and Malcolm 1980). An understanding of employment changes can be gained by discussing the principal activities.

There has been a large decline in manufacturing employment in core areas which has attracted considerable attention (Elias and Keogh 1982; Evans and Eversley 1980). Several factors would appear to be important. The density of employment in factories has fallen in all areas (Fothergill, Kitson and Monk 1985). Inner cities do contain some declining industries such as clothing, shipbuilding and textiles. Planning policies have

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TABLE 2. Employment Change in Metropolitan Cores

	Employment '000				Change %	Share of area %			
Manchester	1971	365	1981	299	−18.1	1971	29.3	1981	26.5
Birmingham	1971	493	1981	397	−19.5	1971	37.3	1981	33.8
Glasgow	1971	463	1981	400	−13.5	1971	57.5	1981	56.4
Lille	1976	80	1982	66	−17.5	1976	37.4	1982	37.5
Lyon	1975	302	1982	270	−10.6	1975	64.5	1982	59.8
Baltimore	1970	483	1982	452	−6.4	1970	52.4	1982	43.2
Pittsburgh	1974	320	1984	351	+9.9	1974	34.0	1984	38.4

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TABLE 3. City centre employment change

	1961	1971	1981	Change % 1961 – 1981
		UK		
Manchester	167 150	122 870	106 950	–36.1
Birmingham	120 940	104 010	101 190	–16.3
Glasgow	139 020	110 970	93 720	–37.3
London	1 414 910	1 252 810	1 070 170	–24.4
Liverpool	157 320	91 900	92 690	–41.3
Newcastle	78 330	66 840	57 620	–26.4
		USA		
Baltimore	1964 – 75 000	1970 – 83 000	1980 – 133 960	
Pittsburgh	1957 – 84 000	1965 – 119 000	1983 – 130 000	
Atlanta	–	1970 – 93 618	1980 – 93 082	
Boston	1963 – 246 000	1976 – 242 885	1984 – 283 755	
Chicago	1957 – 213 576	1970 – 223 971	1984 – 232 749	
Philadelphia	1956 – 376 000	1970 – 310 000	1984 – 285 000	
S. Francisco	1960 – 204 000	1970 – 283 000	1983 – 280 000	

removed industrial premises for road schemes and in order to eliminate non-conforming uses. However, of the greatest significance is the fact that for many firms the inner city is no longer a competitive location. Premises are often old with unsuitable layouts. There is no room on site for expansion, unloading or car parks. The environment is poor and there may be congestion on the roads. The quality of the labour is often poor and in some cases inherited work practices cause lower productivity than in newer factories There has thus been a fall in the birth rate of new firms, relocations and firm rationalizations which discriminate against the inner city. Whilst all central city authorities are trying to stimulate the manufacturing sector, the inner city will never be as important as it was in the past for this activity. There has been a similar decline in employment in warehousing with a relative shift to suburban and other locations. Transport activities have also shed labour, especially in the closure and rundown of docks and railways.

The major growth of employment in the core area has taken place in offices, either of producer services or government, in education and health, and in leisure activities including tourism. The scale of employment growth (or decline in some cases) varies considerably from one city to another. Pittsburgh was fortunate in having a large expansion of office jobs downtown which explains employment growth in the city centre and core area. Whilst most cities had an increase in office floorspace this was not always accompanied by employment growth. In Manchester city centre office floorspace expansion occurred with rising vacancy rates and a fall in the number of jobs. The increase in office activities reflects the state of the local economy, local planning policies and competition from suburban locations. In some cities, including Manchester and Hamburg, office expansion was discouraged, at least for several years, because of the fear of increased congestion by cars. This attitude has now changed and many cities are now actively seeking to promote office expansion. Office growth has been greatest in those cities with a strong base in finance corporate activities and government which favour a city centre location. However, some cities which lack these characteristics have not experienced growth. In the case of Manchester the city centre economy has suffered because of the decline of regional economy, the shift of activities to London and decentralization to southern suburbs where there is good accessibility.

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Until the mid-1970s employment growth in public sector activities such as government, education and health was strong, but has since slowed down and even gone into decline. Many of these activities have tended to remain well developed in the core area, including higher education and large teaching hospitals. Whilst this has helped to maintain employment in the area, many of the jobs, as for those in the office sector, have gone to suburban residents. The growth of employment in recreation and tourism has benefited many city centres in recent years, with jobs in museums, art galleries, conference and exhibition centres, hotels, cultural facilities, as well as indirectly in other activities. Clearly the potential for tourism varies from city to city, but to a certain extent can be created, as illustrated by Baltimore, where the number of jobs generated by this activity increased from 16000 in 1981 to 20000 in 1984.

Employment in retail activities in the core area has declined considerably in recent years, affecting both the city centre and the surrounding inner city. This reflects the loss of trade to suburban centres and the decline and possibly increasing relative poverty of the inner city population, but has in some cases been offset by an increase in office workers and tourists who use local shops. Other ancillary activities which have shown employment growth include eating and drinking establishments.

INTERPRETATION AND POLICY IMPLICATIONS

The above comments suggest that there may be considerable variations in the characteristics of metropolitan cores in the future. At one end of the spectrum there will be some central cities which experience employment growth reflecting the importance of activities such as finance, business services, government and possibly tourism, education and health. Here the growth of professional and executive jobs held by young adults may encourage gentrification in the inner city, resulting in an upgrading of the physical environment and either stability or growth of the population. At the other end of the spectrum there will be industrial cities with a weakly growing office and tourism sector which will experience population and employment decline, little gentrification and a poor environment in inner city areas. This analysis suggests that contemporary trends in metropolitan cores can be understood in terms of economic structure and physical characteristics, but public policies have also been important as our case studies of Pittsburgh and Baltimore have revealed. Pittsburgh could easily have been an example of a core area in an industrial metropolis experiencing decline. However, back in 1945 the civic and business leaders agreed to work together on a revitalization project, subsequently known as Renaissance I. This resulted in the physical renewal and environmental upgrading of the downtown area, which enabled it to retain and enhance its corporate functions. Baltimore, another industrial city, is a further example of public-private partnership, transforming its decaying downtown areas, including the Inner Harbour, creating a top amenity and attracting business and tourist activities. These examples suggest that major public intervention can play a significant role in the transformation of metropolitan areas.

Using the example of successful cities and adopting their best practices, it is possible to suggest a list of policies which should be followed by central city authorities wishing to escape from continuing decline of population and employment. These would include: – partnership between the public and private sectors, improvement of the physical environment through the removal of derelict and obsolete areas, exploitation of buildings of historical and architectural interest, the expansion of office activities and tourism in the central business district, including the development of museums, art galleries and convention centres, the enhancement of retailing through the development of speciality shopping, including festival market places, the encouragement of higher

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education and major teaching hospitals and associated science parks, improved accessibility, including rapid transit systems and good car parking facilities, the creation of good residential environments in the inner city, public redevelopment agencies and selective subsidies to encourage strategic developments. The emphasis here is clearly on economic renewal, but social policies and protection for lower income groups should not be forgotten.

The above policies are currently receiving much publicity in newspapers, journals and books, and are gradually being adopted by most major cities in western countries. Many central cities have been slow to recognize the need for positive and comprehensive policies to deal with the decline which has affected most core areas through the process of decentralization in metropolitan regions. The timing of their intervention is, therefore, late and some opportunities may have been missed. They must also face the fact that there may not be enough employment and activity in finance, business services and conventions to support all existing city centre economies, and not enough public finance from central government to pay for infrastructural works and subsidies which are a necessary precondition for core area revitalization.

Cities also vary in their inherent advantages. Some cities have an exploitable site (e.g. waterfronts), good museums and art galleries, and historic areas which give them an advantage in the competition for growth over those that do not. Many of the ideas for urban revitalization which have become common currency have been developed in the United States and are now being transferred to Britain and the rest of Western Europe. However, the economic, social and institutional backgrounds of these countries are different and, therefore, some caution is necessary in transferring the experience of the United States to other countries. There is greater local control in the United States, which encourages office expansion in major cities whilst in centralized Britain, provincial cities like Manchester have increasingly lost activities to London.

In conclusion, the future for population and employment in metropolitan cores is not necessarily as bleak as theoretical models might suggest. Some central cities have managed to halt decline and revitalize their economies, and others may be able to follow suit, learning from their example. However, there is likely to be a divergence of experience and many central sites, particularly those in the north with an industrial character, face a difficult uphill task with a need for wide ranging, positive and imaginative policies backed up by considerable public resources. Even then success in reversing decline cannot be assured.

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A NEW DEFINITION OF URBAN AREAS IN ENGLAND AND WALES AND ITS APPLICATION TO THE ANALYSIS OF RECENT URBANIZATION PROCESSES

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INTRODUCTION

As part of the output of the 1981 Census the Office of Population Censuses and Surveys (OPCS) in Britain has introduced a new and more accurate method of reporting population and other statistics for urban areas (OPCS, 1984). The basis for the definition is the identification of land that is "irreversibly urban" in character which, at a minimum settlement size of 1000 persons, produces a clear distinction between rural and urban populations. This approach to the definition of urbanization contrasts with, but forms a valuable complement to, the functional view of urbanism as adopted in research into the systemic aspects of settlement structure (Coombes *et al.* 1983).

In addition to the fundamental task of applying the urban land definition to over 2000 urban areas in England and Wales, the OPCS, in collaboration with the Department of the Environment (DOE), has produced census data measuring change in urban areas between 1971 and 1981 and, in 1984, the DOE commissioned research from universities and other organisations into the nature and causes of recent population change among urban areas in England.

This paper uses material from one of these research projects – that relating to urban areas with populations in the range 5000 to 100 000 people – to describe the origins and purpose of the urban areas definition and to demonstrate its application to understanding recent urban change in England. In particular, the paper focusses on the application of urban areas data to the understanding of those urbanization processes which, in North America and Western Europe, have been variously described as "counter-urbanization" (Berry 1976; Vining and Kontuly 1978; Hall and Hay 1980), as "des-urbanization" (van den Berg *et. al.* 1982), or as a contrast between the established forces of "decentralization" and the newer trend towards the "deconcentration" of population into the non-metropolitan parts of the urban system (Robert and Randolph 1983).

TOWARDS A NEW DEFINITION OF URBAN AREAS

One simple and obvious way to define a town is by reference to the administrative status of the area in which it is located. This has been the practice in Britain for many years and was continued for the census of 1981 (OPCS, 1981). In England and Wales,

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for example, it has been conventional to make a distinction between urban and rural areas by treating administrative rural districts as "rural" and other relevant administrative areas – county boroughs, London Boroughs, municipal boroughs and urban districts – as "urban".

Simple as this approach is to apply, there are a number of serious disadvantages in using administrative areas as a proxy for a "true" urban area or town. In all likelihood the urban area will have physically outgrown its administrative boundaries in one, several, or perhaps all directions, giving rise to the phenomenon of underbounding of the actual urban area (Davis 1959). Overspill of urban developments into adjoining rural districts was particularly apparent in England before the reform of local government in 1974 (Royal Commission...). Administrative boundaries can also underbound true urban areas in other ways: the administrative area may be part of a much larger continuously built-up zone, it may be subsidiary to, and contiguous with, a much larger town, or it may contain two or more distinct towns or urban centres. In any of these circumstances the administrative proxy for an urban area is a poor representation of the reality of the urban territory as represented by land use.

Conversely, administrative boundaries can overbound the actual built-up area of one or more towns. The 1974 local government reforms in both England and Wales, for example, subsumed many urban administrative areas within much larger county districts thereby combining urbanized and non-urbanized land into a single administrative entity. The result has been that post-1974 local authority boundaries no longer provide even a crude approximation to the built-up area of towns nor anything like a clear distinction between urban and rural territory. The OPCS therefore saw its 1981 Preliminary Report for Towns, which was based on pre-1974 local government boundaries, as the last of its kind, representing an interim approach to estimating the urban population of England and Wales until a more accurate and comprehensive exercise in urban area definition for the reporting of census statistics could be completed.

Finally, it is particularly in relation to the presentation and calculation of census statistics and other indices that the more serious consequences of relying on administrative areas as a proxy of the urban/rural division make themselves felt. Actual urban populations will, for example, be considerably understated for underbounded urban areas and overstated for overbounded urban areas. Conversely, population densities and other indices related to the territorial extent of an urban will be overstated for underbounded areas and understated for overbounded areas. By extension, these errors will distort the relationship between, say, population size and population density particularly if, as is often the case, the extent of under- or overbounding is systematically related to the population size of urban areas (Denham 1984).

CONURBATIONS AND DE FACTO URBAN AREAS

Prior to the joint OPCS/DOE exercise to define a new set of urban areas for England and Wales there had been two attempts to delineate settlements using land-use as a key ingredient in such a definition and to produce a range of useful statistics for the resulting urban areas. In 1956 the General Register Office (the forerunner of the OPCS), published its Report on Greater London and Five Other Conurbations which identified the major cities of Great Britain using a combination of three factors: the extent of the continuously built-up area, attachment of a local area to the conurbation centre for work, shopping and other services and population density (GRO, 1956). Six "conurbations" were defined on this basis: Greater London, the West Midlands, Liverpool, Greater Manchester, West Yorkshire Tyneside and Glasgow. The definition was useful and, in many ways, pathbreaking in its time, but by focussing on only the major

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metropolitan areas it was severely limited in scope and, because it depended for its finer detail on the judgement of central and local government officers, the rigorous application of the urbanization criteria lacked consistency from region to region.

A more comprehensive exercise in urban area definition was undertaken by the Regional Plans Directorate of the DOE in the early 1970s. This was based on simpler, more consistently-applied criteria, although it too was a mixture of land use and functional characteristics. Settlements were identified as "urban" if they had both an average population density of 0.6 persons per acre (0.24 persons per hectare) calculated at the census ward or parish level and if they had an aggregate population of 3000 or more, or 2000 or more plus at least one attribute identified from Ordnance Survey 1:63 000 maps as "urban". Among these urban attributes were the presence of coalmines and other mineral workings, trading estates, racecourses and golf courses. Just over 1330 physically separate urban areas for England and Wales (1170 in England) were identified in this way with a population in 1966 of 41.6 million or 88.3% of the total (DOE, 1974).

THE 1981 DEFINITION

The new definition of urban areas is more comprehensive in geographical coverage than that of 1956 and is based on simpler, more rigorously applied, criteria than that of 1974. These advantages combine to give a definition of urban land-use that is both national in scope and directly comparable from place to place. As noted above the starting point for the definition is the delineation, on 1:10 000 O. S. map sheets, of land use that was "irreversibly urban" in character in 1981. The identification of urban land is modelled on the classification of developed areas produced by the DOE which, in its turn, is based on the National Land Use Classification (Joint Local Authority... 1975).

The rules for the identification of urban areas consist of a list of land uses considered to be fundamentally urban in character and the application of two simple tests to ascertain: (a) whether a continuous area of urban land extends for at least 20 hectares, and (b) whether that area of land had a population of at least 1000 persons in 1981. Urban areas thus identified which were less than 200 metres apart (a distance recommended by the United Nations and used by a number of European Census Offices), were considered to form a single, continuous urban area. In addition large urban agglomerations such as those within metropolitan counties and multi-centred areas were broken down into two or more sub-divisions. Wherever possible these sub-divisions were based on pre-1974 local authority boundaries or New Town boundaries or, where urban areas had two or more well-defined centres, on distinct physical features such as rivers, roads, railways or narrow necks of built-up land. Examples of urban areas are shown in Fig. 1.

Because of the way in which the rules of urban area definition apply in specific cases some care must be exercised in interpreting urban areas and the data which are based on them. Maps published with the urban area reports produced by OPCS show that some urban agglomerations (i.e. sets of urban area sub-divisions) are linked by land uses that might be only tenuously described as "urban" whilst in other cases rather narrow divides of land defined as "non-urban" prevent the formation of agglomerations. Brighton, Worthing and Littlehampton on the south coast of England, for example, form a single, linear agglomeration with roughly 430 000 inhabitants, though the open land of the estuary of the River Adur between Brighton and Worthing is "bridged" only by the inclusion of Shoreham Airport as urban land. Conversely, the River Mersey is deemed to separate the two urban agglomerations of Liverpool (population 753 000 in 5 sub-divisions) and Birkenhead (281 000 people in 4 sub-divisions), an area which has hitherto been treated as a single conurbation.

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Fig. 1. NW London Urban Areas

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The mechanical application of the rules of urban area definition also leads to problematic cases at the lower end of the population scale. Some smaller settlements may be little more than a stretch of "ribbon development" along a major road separated from a larger urban area by a narrow neck of undeveloped land. The area covered by other small settlements may be considerably inflated by the presence of an aerodrome (as in the case of airforce bases such as at Lakenheath in Norfolk or Minster/Manston in Kent) or by extensive parade grounds or playing fields (e.g. Catterick military garrison in North Yorkshire). A different sort of problem is the inconsistent rural/urban "boundary" in some parts of England and Wales where, because there was no previous information on the population of an area of urban land, a proxy measure consisting of the presence of four or more census enumeration districts was recognized as satisfying the population criterion for urban area status. Some urban areas with more than 1000 people were probably excluded by the application of this proxy criterion although few of these would have had more than 2000 inhabitants (Denham 1984).

The final stage in the definition of urban areas was the preparation of the 1981 census and 1971–1981 change data for the areas recognized by the application of the land-use and population criteria. Maps showing the extent of urban land, were drawn up and, by the use of overlays, the number of census Enumeration Districts (ED's) in each area of urban land of 20 or more hectares was counted. ED's covering both rural and urban land were allocated to the category which contained more than 50% of the population and listings of ED's or constitutions (including sub-divisions) were made. Extracts of the resulting data were published in both hard copy (OPCS, 1984), and machine-readable form.

Change data for 1971–1981, which are as yet unpublished, were prepared in a separate exercise undertaken by the DOE. Because the boundaries of more than half of the EDs in England and Wales had changed between the censuses of 1971 and 1981, change was measured in terms of a second constitution consisting of census tracts and civil parishes which are comparable in area between the two census dates (OPCS, 1983). Census tracts or comparable aggregations of ED's were included if any part of the tract lay within the boundary of an urban area and tracts straddling two or more urban areas were allocated to the area containing the largest part of the tract population. Civil parishes were included in an urban area if at least 50% of the constituent ED's within the parish were in the area.

This approach to the measurement of change among urban areas has two main limitations. In the case of the first there is no suitable test for its impact on an investigation. Typically, the physical extent of urban areas expands over time as population grows and density of settlement increases. As a result, comparisons between censuses can be made in three different ways: the urban boundary at one census may be "carried back" to a previous census or carried forward to a subsequent census; or comparisons may be made between different delineations of the same urban areas. In fact, urban areas were not defined for England and Wales at the time of the 1971 census. At present comparisons are made between 1971 and 1981 in terms of the areas as defined in 1981 and this is one aspect of the urban areas definition which could be improved at the next census.

The second potential limitation of the change data for urban areas concerns the relationship between the ED constitution and the census tract/civil parish constitution. Aggregations of census tracts/civil parishes will, in some instances, lead to "overbounding" of the actual urban area and the extent of overbounding may increase as the size of urban area decreases (Denham 1984). Examination of the relationship between the two definitions for urban areas lying in the population range 5000 to 100 000 indicates that the differential for total population is small (on average the census tract populations have 2.0% more population than comparable urban areas) and that although there is a negative correlation between urban size and population differential this is very small ($r = -0.15$) over the whole range of the urban areas data.

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THE URBAN AREAS OF ENGLAND AND WALES: STRUCTURE AND CHANGE

A total of 1852 urban areas was delineated for England and Wales using the above procedures. In 1981 these had an aggregate population present of 44.4 millions or just under 90% of the national total of 46.4 millions. The proportion of the population defined as "urban" based on the identification of urban land is therefore considerably higher than that derived from previous definitions. The Preliminary Report for Towns (OPCS, 1981), which defined "towns" as pre-1974 administrative areas with urban status, gave the 1981 urban population of England and Wales as only 37.7 million or about 77% of the population. The new definition therefore increases the population by almost 17% and reduces the population previously considered rural by 54%.

In 1981 just over one quarter (28.3%) of the population of England and Wales was in the four urban areas with more than one million people that is, Greater London (7.68 million), West Midlands (2.36 million), Greater Manchester (2.34 million) and West Yorkshire (1.48 million) and over half (55.0%) was in urban areas with populations of 100 000 or more. The remaining urban areas, that is those with populations between 1000 and 100 000, accounted for a further 35.5% (17.5 million) and the rural remainder contained almost 10% (4.7 million) of the total population.

The new urban areas also give us a more accurate representation of the "regional urban structure" of England and Wales although in a small, highly centralized country such as Great Britain the total urban system is highly integrated and, in any case, the Standard Region boundaries that are used for such exercises are rather arbitrary geographical divisions. Nevertheless, as Table 1 and Fig. 2 show, there are substantial differences between regions in the number and proportions of the 1981 population in urban versus rural areas and in urban areas of various size classes. The West Midlands, North West, South East, North and Yorkshire/Humberside are the most urbanized regions with more than 90% of their populations living in urban areas, whilst Wales, the South West and East Anglia have one fifth, one fifth, and one quarter respectively of their populations living in rural areas.

Within these two groups there are significant differences in urban structure as represented by the urban areas population data. Thus East Anglia, when compared with its rural counterpart regions (the South West and Wales) has a significantly larger proportion of its population in very small towns (14.5%) and rather less (37.1%) in small and medium sized (SAMS) towns. SAMS urban areas are, however, especially significant in two otherwise highly urbanized regions namely, the North West and the North, although in these regions they often form the fragmented elements of larger urban agglomerations. The two regions which are especially dominated by very large urban areas – the South East and the West Midlands – appear in other ways to be rather different from each other. SAMS urban areas are proportionately more important in the former (42% compared with 35%) and the latter has a noticeably larger (9.4% compared with 6%) rural remainder.

Population growth among urban areas of various sizes is shown in Table 2. These data confirm that during the 1970s there was a major shift in the distribution of population away from the older metropolitan and urban centres towards smaller settlements and rural areas (Champion 1981). There is now a clear gradient of population change in relation to population size of urban area. All urban areas over 200 000 population had negative growth rates between 1971 and 1981, as did many of those in the 100 000 – 200 000 range even though, as a group, they grew very slightly. Urban areas which declined fastest in proportional terms were those with between 500 000 and 1 million people (i.e. Tyneside, Liverpool, and Sheffield), but it is especially significant that the aggregate population of the four "million plus" urban areas in England and Wales declined by more than one million persons in ten years.

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TABLE 1. England and Wales: distribution of population by urban/rural areas and size, 1981

Standard region	Rural areas		Urban areas by number of population						Total urban and rural	
			under 5		5–100		over 100			
	(000s)	%	(000s)	%	(000s)	%	(000s)	%	(000s)	%
South East	1014.6	6.0	695.4	4.1	7017.5	41.8	8068.3	48.0	16795.8	100
West Midlands	481.6	9.4	180.0	3.5	1804.9	35.1	2681.9	52.1	5148.3	100
North West	252.5	3.9	121.5	1.9	4122.3	64.3	1918.0	29.9	6414.2	100
Yorkshire/Humberside	363.3	9.2	330.4	6.8	2226.4	45.8	1940.2	39.9	4860.5	100
North	284.1	9.2	209.3	6.7	2050.4	66.1	560.4	18.1	3104.4	100
East Midlands	486.6	12.7	393.7	10.3	1960.3	51.3	978.5	25.6	3819.2	100
South West	837.5	19.3	397.8	9.1	1934.1	44.5	1179.5	27.1	4348.9	100
East Anglia	487.0	26.0	271.6	14.5	694.3	37.1	418.7	22.4	1871.6	100
Wales	535.1	19.2	275.8	9.9	1285.1	46.0	695.8	24.9	2791.9	100
England and Wales	4206.9	9.1	2599.7	5.6	21810.4	47.0	17745.7	38.3	46362.8	100

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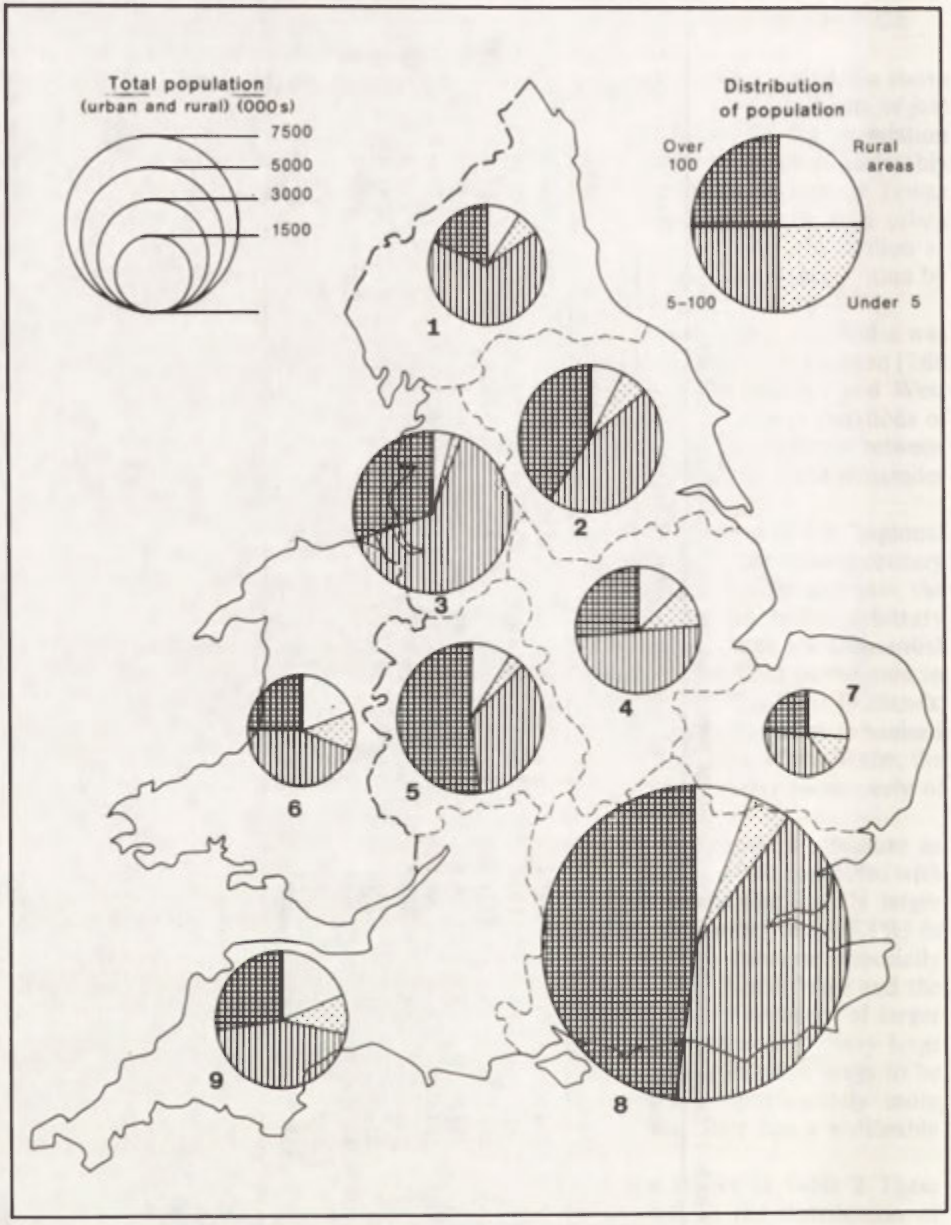

Fig. 2. England and Wales: Regional distribution of urban and regional population
Regions: 1 — North, 2 — Yorkshire/Humberside, 3 — North West, 4 — East Midlands, 5 — West Midlands, 6 — Wales, 7 — East Anglia, 8 — South East, 9 — South West

In marked contrast the population of the smaller urban areas and the rural remainder grew very rapidly indeed, especially when compared with the national population growth rate of only 0.83% between 1971 and 1981. The 1297 urban areas with between 2000 and 20000 population grew at well over ten times the rate for England and Wales as a whole, adding half a million people to their population in a decade. Those with between 20000 and 100000 population grew by about 7% and the

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TABLE 2. Population change in small and medium sized urban areas in England and Wales

	No of urban areas	Population present (000s)		1971–1981 change (per cent)
		1981	1971	
1981 Population				
Over 1 million	4	13916	14950	−6.9
500000–999999	5	3291	3578	−8.0
200000–499999	22	6441	6488	−0.7
100000–199999	25	3316	3224	2.9
50000– 99999	68	4845	4529	7.0
20000– 49999	143	4418	4095	7.9
10000– 19999	218	3063	2782	10.1
5000– 9999	342	2418	2165	11.7
2000– 4999	737	2377	2133	11.4
Less than 2000	216	342	317	7.6
Total	1780	44425	44263	0.37

population of the rural remainder rose by almost 300000 or 5.4%. Such changes in the overall distribution of the population, but especially in the concentration of growth on smaller towns and rural areas, have to some extent taken British planners by surprise and present a considerable challenge to established planning policies.

SMALL AND MEDIUM SIZED URBAN AREAS IN ENGLAND

In order to gauge the nature and policy implications of this trend towards small-town living the Department of the Environment commissioned research that focussed on the SAMS urban areas of England. SAMS urban areas were defined by the Department as those with a 1981 population in the range 5000 to 100000. This particular classification is, to some extent, arbitrary but it has credence insofar as the upper limit roughly marks the current division between growing and static or declining urban areas in population terms. The lower limit, on the other hand, is close to the average size of settlement at which the mix of land-uses indicates the existence of a complex and variegated urban structure (Best and Rogers 1973) and is also near to the population level at which a town begins to act as the focus of a commuting hinterland (Moseley 1973). Concentrating on this population range for urban areas in England gave a set of 957 urban areas for study: 600 were un-subdivided urban areas and 357 were sub-divisions of larger urban areas, most, though by no means all of which are located in and around the big urban agglomerations.

Whatever the merits of the particular size definition, the overall significance of SAMS urban areas in the urban structure of England and in relation to recent population changes is undeniable. In 1981 SAMS urban areas contained 21.8 million people or nearly half (47.8%) of the population of England. In comparison the four largest urban areas had a total population of 13.9 million, whilst in some regions SAMS urban areas dominate the urban structure in terms of population distribution.

The total population of SAMS urban areas is, in itself, significant but the main interest in them lies in their recent experience of population growth and the part they have played in the considerable shifts in the distribution of population that have taken place in Britain in the past 20 years. Between 1971 and 1981 the total population of SAMS urban areas rose from 20.0 million to 21.8 million, an increase of almost 8.5%.

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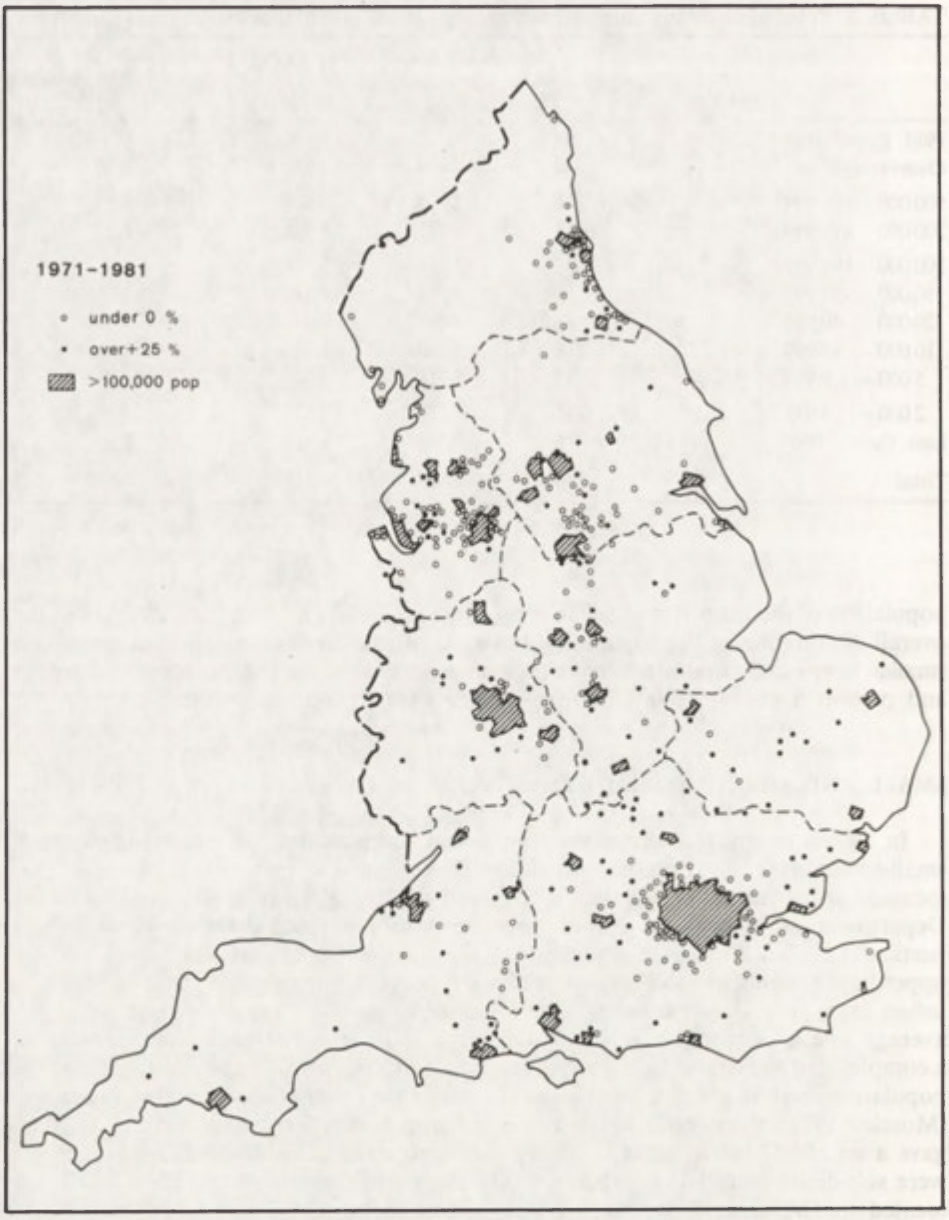

Fig. 3. Population change among SAMS Urban Areas in England, 1971–1981

More significantly, growth among SAMS urban areas at the regional level has been extremely diverse and here the major divide is between the North and South of England, although growth rates are comparatively high in all regions.

SAMS urban areas in the older, declining industrial and highly urbanized regions of the North and North West grew by 4.6 and 5.2% respectively, whilst those in Yorkshire/Humberside, a partly urbanized partly rural area, grew by 8.9%. In the South, the West Midlands and the South East, regarded as the 'core' regions of Great

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Britain, the growth rate of SAMS urban areas was 13.0 and 14.1% respectively. Most significant of all, however, has been the growth of SAMS urban areas in the three more clearly rural areas surrounding the South East. In the South West this group of urban areas grew by 15.6% and in the East Midlands the growth rate was 11.7%. The most spectacular growth of all among SAMS urban areas was therefore experienced in East Anglia where the increase was no less than 22.5%.

More specifically, interest in SAMS urban areas focusses on the sub-regional and local variations in their growth rates. As Fig. 3 shows there are considerable place to place differences in population decline and growth. Population loss on a significant scale (over −5.0%), is primarily found among subdivisions of urban areas located around the fringes of the major urban agglomerations or in the declining coal-mining areas of Northumberland and Durham, South Yorkshire and Nottinghamshire/Derbyshire. Note, too, the wide arc of territory around Greater London containing a number of SAMS urban areas with significant population decline, but it too is broadly characterized by generalized areas of growth and what appear to be a number of local exceptions to the rule. A few SAMS urban areas are also in substantial population decline in scattered locations well away from the big urban agglomerations.

The pattern of very rapid population growth among individual SAMS urban areas, on the other hand, is more difficult to describe succinctly. There is a band of territory containing a number of rapidly growing SAMS urban areas running from the Isle of Purbeck on the south coast, across the chalk uplands of the Salisbury Plain and along the line of the Chiltern Hills into north Buckinghamshire. Here the front line of growth appears to divide into three branches: one heads in a north-westerly direction between the urban agglomerations of the West Midlands and Nottingham; another aims north along the Lincoln and Norwich in East Anglia. Elsewhere rapidly growing SAMS urban areas can be found in a variety of locations: along or near the south coast, suggesting growth by retirement migration; around Bristol in the south west (one end of the M4 "golden corridor"), in the south and east Pennine Hills and east Yorkshire (again, areas of exceptionally attractive countryside) and also around the big northern conurbations intermingled with urban areas in population decline.

COUNTER-URBANIZATION AND SAMS URBAN AREA GROWTH

Counter-urbanization is the tendency, noted in a number of Western and non-Western countries, towards a resurgence of population growth in non-metropolitan areas and at increasingly lower levels of the urban hierarchy. There is, however, some dispute as to whether this is a real phenomenon and not, in part at least, a statistical artefact derived from inaccuracies in the representation of urban settlements by census data based on administrative areas (Wardwell 1977). There is also discussion on how to derive an index of urban size that best represents the population-attracting features of smaller towns (Bourne 1980; Fielding 1982; Hodge 1982).

In Britain, where it is suggested there are also tendencies towards counter-urbanization (Fielding 1982), the analysis of urban population change is complicated by two further factors. One is that the national urban space is both complex and compact with much of the country now under the influence, often overlapping, of metropolitan and other major urban centres. Urban researchers have therefore called for a distinction to be made between growth due to metropolitan decentralization on a widening scale and growth due to the deconcentration of population into smaller towns and non-metropolitan areas (Robert and Randolph 1983). The logic of this requirement is clear but until the introduction of census data based on "true-bounded" urban areas it was impossible to act upon.

Secondly, counter-urbanization is seen as a spontaneous response to the economic

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and social problems of big cities and the environmental attractions of less urbanized areas (Bourne 1980). In order to assess the effects of this process alone, therefore, account must also be taken of the impact of governmental planning on the re-distribution of population. In Britain this has been substantial, sometimes working to reinforce the hypothesized effects of new urbanization processes, sometimes working against them. Green belt controls, for example, which have constrained urban growth around the major cities, have pushed the decentralizing population further and further away from the metropolitan centres, especially around London and the West Midlands conurbation, into areas which are less affected by the "pull" of metropolis. Also, urban areas which, on the grounds of their character and environmental attributes, might be expected to grow in accordance with the de-concentration hypothesis have been prevented from doing so because of strict controls on further development. Finally, New and Expanded Towns (of which there are many among the smaller towns of England), have grown very rapidly as a result of government policy.

SAMS URBAN AREAS: GROWTH IN FUNCTIONAL REGION CONTEXT

In order to investigate population growth in SAMS urban areas at the sub-regional level and to distinguish between growth due to decentralization and growth due to de-concentration, it is necessary to place the physically defined urban areas in their functionally-defined regional context. In Britain we are fortunate to have an up-to-date and comprehensive functional regionalization of the country as represented in the Functional Urban Region System (FURS) devised by the Centre for Urban and Regional Development Studies (CURDS) at the University of Newcastle-upon-Tyne (Coombes *et al.* 1978, 1983).

The CURDS approach divides Great Britain into 228 separate city regions of which roughly 190 are in England. A FUR consists of an urban employment centre (defined as an urban core with a 1981 population of at least 50 000) together with its commuting hinterland. Within a FUR up to four types of "zone" may be identified depending on the strength of commuting attraction to the core: there is the core itself; the inner ring which has over 15% commuting dependence on the core; the outer ring with relatively low integration with the core and the rural area with little or no commuting dependence on the core. In addition the cores can also be differentiated into one of three types depending on their position in the national urban hierarchy. They may be dominant metropolitan centres of which there are 15 in England (i.e. London, Birmingham, Newcastle) located at the centre of large-scale metropolitan regions. They may be subdominant or satellite cities which are important centres in their own right but which are also dependent on a dominant city for both jobs and services; or they may be free-standing towns which, as their name suggests, are relatively independent of each other in commuting terms.

SAMS urban areas have one of several relationships to this system (Fig. 4). Where they have over 50 000 residents they may constitute employment cores in their own right and thus define a functional urban region. If smaller, they may lie within either of the commuter rings (inner zone or outer zone) of an employment centre or in the less closely integrated (in travel-to-work terms) rural areas. Urban areas in the commuter rings may be further distinguished by their own dependence on the core; those in the inner ring having over 15% commuting dependence, those in the outer ring having relatively low integration with the core. Finally, urban areas in the rural remainders may constitute small employment centres in their own right even though they do not meet the functional region threshold. As many researchers have noted small rural employment centres can be considered as "semi-autonomous systems" (Coombes *et al.* 1983), and have become a major source of non-metropolitan growth (Hodge and Qadeer 1983; Moseley 1977; Fothergill and Gudgin 1981).

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Fig. 4. Functional Urban Regions and SAMS Urban Areas in England
Dominant metropolitan region: BI – Birmingham, BL – Blackburn, BRG – Brighton, BRS – Bristol, C – Coventry, LE – Leeds, LI – Liverpool, LO – London, M – Manchester, NE – Newcastle, NO – Nottingham, PO – Portsmouth, PR – Preston, S – Sheffield, T – Teeside

In Table 3 the functional status of SAMS urban areas as indicated by their FUR location/hierarchical type is cross-tabulated with SAMS urban area population size. It can be seen that 97 larger SAMS urban areas (over 50 000 population) form employment cores in their own right: 18 metropolitan, 47 satellite, and 32 freestanding. Over 450 are located in inner ring areas whilst a further 183 constitute relatively independent centres in outer ring or rural areas.

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TABLE 3. SAMS urban areas in England by functional status and population size, 1981

Functional status	Population size in thousands					All sizes
	under 10	10–25	25–50	50–75	over 75	
Metro Core	7	17	23	16	2	65
Metro Inner Ring	46	42	24	3	1	116
Metro Outer Ring	3	11	0	0	0	14
Metro Rural Area	4	2	0	0	0	6
Satellite Core	7	38	37	26	21	129
Satellite Inner Ring	72	71	20	1	1	165
Satellite Outer Ring	10	18	4	1	0	33
Satellite Rural Area	4	1	0	0	0	5
Free-standing Core	8	29	52	20	12	121
Free-standing Inner Ring	116	54	7	0	0	177
Free-standing Outer Ring	34	41	4	0	0	79
Free-standing Rural Area	24	19	4	0	0	47
Total	335	343	175	67	37	957

Table 4 shows the relationship between SAMS urban area growth and size of SAMS urban area for the two different types of regional location: by *Standard Region* which indicates the very broad environmental and policy conditions of population change among SAMS urban areas; and by Functional Urban Region which enables us to interpret the balance of the forces of decentralization and deconcentration in the urban system.

TABLE 4. Population change by location and size. Average level of population change, percentage growth 1971–1981

Location	Urban area population size, 1981 (thousands)				All sizes
	5–10	10–25	25–50	50–100	
Standard Region					
South East	14.4	11.9	22.6	7.7	14.1
West Midlands	11.4	10.5	30.6	10.9	13.0
North West	13.0	4.8	3.6	−1.2	5.2
Yorkshire/Humberside	11.4	10.4	1.0	−0.8	8.9
North	4.1	5.2	7.5	−4.7	4.6
East Midlands	17.1	8.7	5.6	2.1	11.7
South West	19.6	14.0	9.8	5.0	15.6
East Anglia	25.2	22.9	17.6	1.5	22.5
England	14.6	10.3	11.8	4.2	11.4
Functional Region					
Metropolitan	10.8	10.5	5.4	−3.8	7.7
Satellite	11.1	7.7	7.0	8.2	8.6
Free-standing	17.6	12.3	21.8	3.2	15.3
Rural	15.8	13.9	7.9	–	14.6
Functional Region Zone					
Core	18.9	7.2	11.8	4.6	8.9
Inner Ring	13.2	10.7	10.3	−3.3	11.8
Outer Ring	19.1	11.8	22.5	7.2	15.0

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It can be seen that there is indeed an inverse relationship between SAMS urban area size and population growth at the national level but that relationship is much stronger for some regions than for others. For England as a whole the smallest SAMS urban areas grew rather faster than the national average (14.6% compared with 11.4%) whilst those in the next size range (10 – 25 000) were slightly below the national rate and the larger SAMS urban areas, with a growth rate of 4.2%, were well below the national average. Note, however, that SAMS urban areas in the population range 25 – 50 000 grew slightly faster than the average for England as a whole. This group contains several New and Expanded Towns which grew very rapidly in the 1970s under the impetus of national government policy. Many of these towns are located in the South East and West Midlands regions (where they acted as planned overspill centres for Greater London and Birmingham) and this shows clearly in the rate of growth for urban areas in the 25 – 50 000 range in these two regions.

The Standard Region breakdown suggests that East Anglia, the South West and East Midlands are the classic "counter-urbanizing" regions of England. These environmentally pleasant areas lacking major urban centres show very high rates of growth for the smaller SAMS urban areas and a strong negative relationship between SAMS urban area size and population growth. Nevertheless, certain parts of both of these regions and especially East Anglia are also within commuting range of Greater London and some proportion of the growth of SAMS urban areas here may well be due to a decentralization effect from the metropolis. In the North West, Yorkshire/Humberside and the North, on the other hand there is a somewhat different size-related pattern of growth. In these highly urbanized regions only the smallest SAMS urban areas reveal growth rates that are close to the national average whilst the larger ones (i.e. over 25 000 population) grew very slowly or were actually in population decline.

Turning to an examination of population growth rates for functional urban regions it can be seen that, for all sizes of SAMS urban area, the balance of growth between 1971 and 1981 was in favour of the forces of deconcentration with SAMS urban areas in "free-standing" and "rural" FURS growing by 15.3% and 14.6% respectively whilst those in "metropolitan" and "satellite" FURS grew by 7.7% and 8.6%. Reading across the size categories but within the FUR types the size/growth relationship still holds but with some significant local discrepancies. The very high growth of certain New Towns (especially "Mark III" New Towns such as Tamworth and Milton Keynes), has contributed to the noticeably high growth rate of 21.8% for urban areas with 25 – 50 000 population in "free-standing" FURS, whilst the growth of all larger SAMS urban areas in "satellite" FURS has remained reasonably high, probably under the influence of employment which has decentralized from the metropolitan centres.

Finally, the pattern of growth for SAMS urban areas within different types of labour market zone (i.e. irrespective of functional region type) confirms the widespread vitality of this group of urban areas and provides further evidence of the nature of current urban processes. The strong growth of smaller SAMS urban areas in cores, inner rings and outer rings suggests a growing commuter function for those urban areas located near metropolitan and satellite centres and a simultaneous deconcentration of population and employment to free-standing towns and rural areas. Larger SAMS urban areas in cores and inner rings have grown much less strongly and even declined in population (perhaps as a result of green belt planning controls around major metropolitan centres), whilst those in outer rings are still experiencing reasonably significant growth.

CONCLUSION

This paper has described a new source of urban data for England and Wales and demonstrated its use in increasing our understanding of recent urbanization processes. These data relate to urban areas defined on a land-use basis and their main contribution

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to urban analysis lies in providing considerably more spatial detail to enable us to unravel the intricacies of urban change. They must, however, be used with a proper understanding of their origins, definition and constitution. The paper has focussed on a number of elements of this framework, including the way in which the census data for urban areas have been derived from different types of "building blocks" (i.e. enumeration districts and census tracts) and the impact these may have on different types of analysis. It has also indicated the need to understand the functional status of physical urban areas in order to appreciate their role in the processes of urban change.

In England, the processes of urban change thus uncovered are extremely diverse and cannot be adequately summarized in a single all-embracing term such as "counter-urbanization". SAMS urban areas as a group have experienced spectacular population growth in the recent past, especially when compared with a very low national rate of population increase, but this growth must be seen as the outcome of several different trends working themselves out in different combinations in different places. In Britain, as in a number of other countries, the small and medium sized town is now at the forefront of a process of dramatic urban change. The design and derivation of new data sources on urban areas has come not a moment too soon to help us chart and understand this phenomenon and its far-reaching implications.

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CHANGES IN RURAL SETTLEMENT IN POLAND UP TO 2000

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PRELIMINARY REMARKS

The present paper is concerned with the latest findings of research into rural settlement and its transformation, carried out in the Polish Academy of Sciences (PAN) by the Institute of Geography and Spatial Organization and by the Commission of Rural Areas at the Committee for Space Economy and Regional Planning (KPZK). It was the Commission that was particularly engaged in preparing the prognosis of the possibilities for the development of rural areas as a multifunctional space up to 2000. The new Polish law on spatial planning of 12 July 1984 stipulates that long-term development plans should be compiled on the national, regional, commune and town scales. Therefore the Ministry of Construction, Spatial and Communal Economy together with the Town Planning Association, which are bodies responsible for spatial planning, organized in February 1986. a special conference on "Basic problems of the development of small towns and rural settlements". The basic paper on settlement in the rural areas and small towns which are an integral part of the rural settlement network was prepared by A. Stasiak and H. Rucz–Pruszyńska. The main theses of that paper are synthesized in the present paper. Before considering the future it seems worth while recalling a few facts.

1. Rural settlement is largely scattered in Poland; it consists of over 40 thousand settlement units. Regional differences in the size of villages, their occupational and social structure as well as land tenure, are great. An average Polish village is inhabited by about 350 people; in the north-eastern part the number of inhabitants is much smaller, whereas in the southern part it is much bigger – see Fig. 1.

2. In many regions the percentage of non-agricultural population is quite high, especially around urban agglomerations and in the south.

3. In the west and north the proportion of land belonging to state farms is high.

4. The average peasant farm is small (about 5.0 ha), but the regional differences in their size are wide.

5. In the decade from 1971 do 1980 the balance of migration from villages to towns was highly negative; now migration has been curtailed.

6. In rural areas much land is reserved for the urban population as tourist and recreation areas.

7. The rural areas are to a large extent acquiring the character of a multi-functional space.

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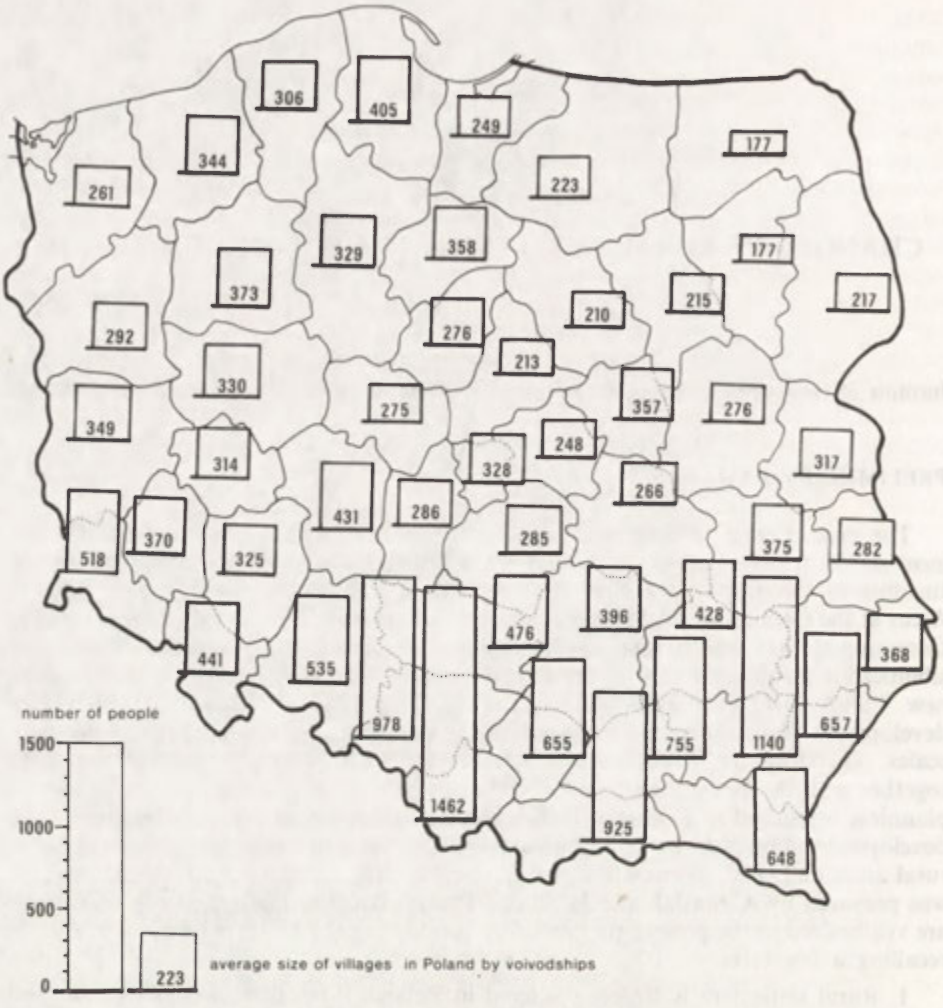

Fig. 1. Average size of villages in Poland in 1978 by voivodships

POSSIBLE TRANSFORMATIONS

It is necessary to realize that possible transformations in the settlement system of the rural areas (including small towns) are conditioned by two groups of factors, which we may agree to call external and internal, remembering, of course, that in the presentday stage of Poland's socio-economic development the first group is of primary significance. Therefore in this paper I have paid most attention to these problems.

Group I (external factors) is associated with the general processes of the country's socio-economic development and the transformation of the economic and settlement structures resulting from them. Depending on the level of development of the national economy already attained, we may expect lesser or greater possibilities of interference by the central authorities in such cases as e.g. support given to neglected regions or the expansion of the technical and social infrastructure on a supra-local scale, though often also on a local scale. This includes such problems as supply of water to the countryside,

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development of drainage, improvement of social infrastructure, especially on the supra-local scale – hospitals, general secondary schools, libraries of adequate standards. Moreover another factor, which is also important, is the effectiveness of spatial planning as a broadly understood instrument of the state's settlement policy, since legislation alone, without material and financial support, is hardly ever effective.

Group II (internal factors) is associated with the influence of the current state of economic structures and of the level of investment in the technical and social infrastructure at the regional scale and in local conditions with regard to their further development. This group contains potential possibilities for stimulating the activities of regional communities, in particular at the local level. This may take the form, for example, of the expansion of infrastructural amenities at the local scale (e.g. the construction of a primary school, a local health centre or the stimulation of cultural activities), or a real participation of local communities, i.e. such which is not provoked by some initiatives of local government. As I have already said I will concentrate my attention in principle upon selected factors of group I, which are significant for the economic development of rural areas like the following:

1. demographic conditions;
2. possible transformation in agriculture;
3. infrastructural conditions;
4. general investment policy, connected inter alia with possibilities of support given to housing construction and the development of services;
5. ecological conditions;
6. conscious activities of planners aimed at linking together processes of socio-economic development with the organization of the space and the creation of spatial order at supra-local and local scales.

Of course, I am fully aware that the above factors to a lesser or greater extent are linked together by mutual dependences, but to obtain a clearer picture we will discuss them successively, possibly inserting some remarks about those links.

1. Demographic conditions. The leading and at the same time the most reliable factor is the rate of natural increase in Poland up to 2000. The estimates included in the third variant of the post-migration prognosis, prepared by the Central Statistical Office in July 1984 (my estimates are very similar) reveal that Poland's total population in 2000 will reach about 40.7 million people. In comparison with the estimate at 31 December 1984 (37.1 million) the increase will be about 3.6 million people. If we assume that the range of possible error in the estimates lies between 40 and 41 million, the minimum increase will be about 3.0 million and the maximum increase about 4 million people. This population must be distributed in space and here the danger of error is greater. If we take into account the current evaluation of the country's socio-economic development (increase of workplaces in towns, chances of the development of housing construction including the accompanying facilities, etc), we may assume that the rate of migration from villages to towns will be lower than in the decade 1971 – 1980. In principle up to 1990 the balance of village-town migration will be less than the natural increase in the countryside (this assumption is corroborated by data compiled in the last few years).*

* Income decrease of rural population in 1987 – 1988 accelerated again the rural migration losses. The net out-migration was higher as the natural increase.

	1987	1988
Poland: rural areas	in thousands	
migration losses	−132,6	−143.6
natural increase	+115.3	+110.7
net balance	−17.3	−32.9

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After 1990 the anticipated acceleration of the rate of economic development and increased housing construction may possibly bring about a higher village-town migration. However, this will not be a rapid increase. Such is the forecast. Therefore, we may assume that the rural population in 2000 will amount to about 15 million people and that of small towns (up to 10 thousand inhabitants) may be slightly raised up to 2.5 million (2.1 million in 1984). Altogether, the population living in the rural areas including small towns, will continue to oscillate between about 17.0 and 17.5 million. This will account for about 41–44% of Poland's total population, i.e. a significant quantity. The population will be spatially dispersed (an effect of the current situation) over about 95% of the area. If such a possibility is foreseen, the planners whose task it is to prepare socio-economic-spatial plans should try to curb the current, too heavy depopulation of certain rural areas, particularly those lying in the voivodships of the so-called "eastern wall", in the Sudeten and in certain parts of the northern and western voivodships. It is a known fact that these processes have led to some disturbances in the age and sex structure of the population and constitute a threat to the future of private farming, based upon family labour.

2. Here we may pass to the further factor – possible transformation in agriculture. R. Kulikowski, on the basis of estimates produced by the Planning Commission's group dealing with the country's spatial organization, suggests that there exist the following trends:

(a) Agricultural land will slightly decrease in 1982–2000 from about 18.8 million ha to about 18.4 million ha (by about 2.5%). This change will not play any great role in the national balance. The estimates by A. Szemberg (1982) are almost the same.

(b) The proportion of private farming will go down from about 74% in 1982 (13.9 million ha of agricultural land) to about 70% in 2000. Thus, the predominance of private farming will still be retained on a large part of the rural area, although the regional differences will be considerable, as an effect of the current state as well as of further depopulation of the north-eastern territories and the Sudeten, where land will out of necessity by taken over by socialized farming. In central Poland and partly in the southern and eastern parts no greater changes are foreseen in the structure of land tenure.

(c) The average size of individual farms will go up from about 5.0 ha (now) to about 6.5 ha in 2000. These art not any revolutionary changes although the share of agricultural land in private farms of over 10 ha will increase from about 41% (of the privately farmed area) to about 57% in 2000. Consequently, the number of private farms in general will go down from 2.9 million in 1981 to about 2.0 million in 2000 (here I have certain doubts as to the order of magnitude of these changes); as a cumulative effect they will lead to less employment per 100 ha of agricultural land and in the total of employment in agriculture. It seems important to note that the figures proposed for 2000 are relatively high, but this is a consequence of the general conditions of the country's socio-economic development (lack of capital to replace labour by capital inputs up to 2000; difficulties connected with additional workplaces outside agriculture for the population taken out of agriculture).

(d) It is estimated that average employment in agriculture will go down from about 5.4 million people in 1982 to about 3.9 million in 2000, or per 100 ha of agricultural land from about 28 people in 1982 to 21 in 2000 (including services rendered to agriculture). Therefore, we may assume that in 2000 still about 8.0 million people will earn their livelihood in agriculture, although regional differences will be as now very great. Freedom of manoeuvre is thus relatively limited. Lowest employment per 100 ha of agricultural land will be registered in the northern territories, with the exception of the Gdańsk voivodship, where there are now – and will be in the future – numerous socialized farms, while in private farming a large increase in farms of 10 ha and over is

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forecast. High employment will be noted in southern and central Poland (minimal in the Koszalin voivodship, 12.6 people per 100 ha of agricultural land; low, 13–14, in the Olsztyn and Suwałki voivodships; about 15–16 in the Słupsk and Szczecin voivodships; high, 24–28, in the Rzeszów, Tarnobrzeg, Nowy Sącz, Cracow, and Tarnów voivodships, i.e. the whole Subcarpathian region, as well as Poland's centre: the Płock, Sieradz, Skierniewice, Radom and Siedlce voivodships; very high, over 30 people per 100 ha of agricultural land, intensive farming in suburban zones, the voivodships of Warsaw and Łódź; maximum, 35 people per 100 ha of agricultural land, the Bielsk voivodship).

The number of families in mixed employment living in the countryside, part of them working in agriculture and part in non-agricultural occupations in their villages or by commuting to towns, will go up. This form of employment makes it necessary to improve mass transport from the villages to the working centres, not only in larger towns but also in villages and small towns, local centres of employment outside agriculture.

3. Thus we have arrived at the problem of infrastructural condition, such as transport, especially by coaches and buses, used by the rural population to go to working and service centres. Quite considerable process was achieved in this field, particularly in the 1960s and 1970s both with regard to the construction of more roads with hard surfaces and the inclusion of rural localities, inhabited in 1977 by about 80% of the rural population, within the network of the Polish Motor Transport. Of course, the regional differences are still considerable and lately the standard of transport services has deteriorated. We should postulate that in 2000 transport should be fully reliable. The next problem is communication, which currently is at a poor level and particularly inefficient in areas with dispersed settlement. Current plans for developing telephone connections give clear preference to towns. It has been estimated that still about 7000 rural localities have no telephones. This is a problem, the significance of which is not appreciated by the central planner, but which is extremely important for the countryside and not very expensive. Therefore, new technical solutions, adapted to the needs of rural areas, should be found.

To meet the country's needs with regard to broadly understood electrification it is essential to develop infrastructural investment of the linear type. In principle, the electrification of the countryside has already been completed. However, the current needs of agricultural production require a redevelopment of the network and the installation of related facilities. However, the most important problem, which at the same time is very expensive and requires much effort on the part of the central as well as local administration, is the organization of water supply in the countryside. The Ministry of Agriculture and Food Economy has estimated that in about 2000 the water supply system will be available for about 60% of private farms, 30% will use their own pipe system, and 10% will have to employ traditional methods. This imposing programme, which requires enormous outlays, should be, first of all, included in the cycle of the plans of spatial organization for both voivodships and communes. Secondly, even if the programme greatly improves the rural population's living conditions and makes the development of livestock breeding easier, it will also bring about a serious ecological threat, since among its side-effects there will be an enormous increase of sewage in the rural areas which will make it necessary to solve the problem of its treatment. In principle now there is no clear conception how this should be done in various spatial systems (small treatment plants, cesspits, etc). As it happens, even now the pollution of ground and surface waters is very strong in the places where the water supply system is in operation.

4. The subsequent important problem, partly associated with the technical infrastructure, is the development of housing construction. So far about three-fourths of houses in

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the rural areas are built by private persons; as a consequence the houses are greatly dispersed. It has been estimated that about 2.0 million dwellings should be built up to 2000. Most new buildings will be constructed on already existing sites. At the regional scale a large part of housing resources in the western and northern voivodships, built prior to 1918, should be redeveloped and modernized.

Another problem, requiring policies devised at the central and regional levels, is the development of residential construction in zones around large agglomerations. I believe that this type of construction will rapidly develop in the period up to 2000 (about 200 thousand dwellings), which requires proper location and adequate investment (building sites and their development, projects, organization of construction plans, supply of materials, etc.).

5. All the activities mentioned in my paper will take place in a rural space under strong pressure by both the urban and the rural population upon the natural environment. The effects of that pressure in the past, at present and in the future may lead to undesirable changes in the environment. We may call them the ecological conditions of development. Here a few postulates may be put forward:

(a) The unsatisfactory state of the natural environment will require a number of activities which will have expression in the spatial structure. The protective role of woodland will be increased inter alia to check the expansion of steppeland in central Poland (necessity for further afforestation). Both woodland and the protective planting of trees should contribute to the formation of a system of biologically active surfaces, prevent the degradation of soils, the drying up of spring and support the efforts of industry to reduce the fall-out of dust and gases.

(b) To preserve an adequate soil structure and the purity of water so-called "ecological" agriculture should be developed and an excessive use of fertilizers avoided, since when not absorbed by plants they flow into surface water causing the entrophication of lakes and even eventually their disappearance.

(c) The rural territories in which there are many tourist functions should be investigated and the level of intensity of use should be determined.

(d) Special care should be taken of sewage systems, both urban and rural: from the areas of towns and industrial establishments, and also from rural settlements. This problem has already been partly raised in connection with that of water supply.

(e) It should not be forgotten that the territories of the so-called ecological grid lie usually in rural areas. Therefore, local plans should take this feature into account and find solutions which will reduce the conflicts resulting from the superimposition of the various land-use functions (which will by no means be easy).

6. Moreover, we should also consider the role of socio-economic and spatial planning on the supralocal and local scales. In principle there already exist legal foundations for this activity such as the acts on socio-economic and spatial planning. The first two acts are not really internally compacts, but with good will there is a theoretical possibility to include the country's whole area including regions and communes in the planning activity. I believe that the easiest way to ensure the compactness of this process will be at the local scale, on condition that the local authorities will feel and act as a responsible administrator should. It seems that Professor W. Pańko was right when he drew attention to the fact that only at the local scale (small towns, communes) may local government be fully responsible for the economic development and administration of a small town or a community.

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AGRICULTURAL GEOGRAPHY IN THE CURRENT WORK ON THE PLAN OF THE COUNTRY'S SPATIAL ORGANIZATION UP TO 2000

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In People's Poland agricultural problems have played an important role in spatial planning since the first few years after the end of World War II. The shaping of the development of the rural areas was then largely in the hands of the Chief Commissariat of the Redevelopment of the Countryside, called into being in early 1946. This institution controlled restoration from war damage in large areas along the rivers Narew and Vistula, as well as in certain territories of Lower Silesia, Western Pomerania and Żuławy (Tworkowski 1966, map on p. 33). An important and positive role in healing the injuries to the landscape of the Polish countryside, incurred durring the war and the occupation, was also played by the Decree on the country's spatial organization issued in April 1946. This law created the system of spatial planning to be carried at national, regional and local scales (Tworkowski 1985). An attempt to introduce a spatial order on rural areas was made in the adoption in 1963 by the Committee of Contruction, Urban Development and Architecture of the so-called guiding principles in the countryside's reconstruction, on the basis of which almost all contemporary plans of spatial organization were then made (Stasiak 1979).

The interest of spatial planners in problems of agriculture and in the rural areas at national and commune (*gmina*) scales was again stimulated when the 2365 communes were created in 1973.

Agricultural problems were the leading theme in several regional plans prepared in Poland in 1949–1956. For example, the regional plan of the Bug valley, made in 1951–1953; the regional plan of Vistula Żuławy; and the regional plan of the hinterland of the Wieprz–Krzna canal, in which the leading task was the economic organization of vast areas of grassland.

Irrespective of the degree of their implementation and the value of their prognoses[1] the plans provide very valuable cognitive materials with regard to factors conditioning the development of agriculture both nationally and regionally.

In 1986 work on the plan of the country's spatial organization was in the final stage of the first phase of the preparation of the draft. The material compiled in the first phase, i.e. the so-called "premises of the plan", was primarily accepted by the Council of Ministers and subsequently presented for a broad, social consultation.[2]

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[1] For example, it was implied in the regional plan of the Bug Valley that agriculture would be fully socialized and that therefore very large numbers of its population would migrate from the countryside. However, subsequent developments did not corroborate these assumptions.

[2] The whole text of the "Premises to the Plan of the Country's Spatial Organization up to 1995" was published in a newspaper *Rzeczpospolita* No 109, 10–11 May 1986.

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The problems of agriculture and food economy, dealt within the premises, are on the basis of a number of studies, carried out before the preparation of the plan by the Department of the Country's Spatial Organization, of the Planning Commission at the Council of Ministers. Among the most important studies are: a prognosis dealing with "Transformations in the agrarian structure and employment in agriculture", worked out with the help of Regional Departments of the Planning Commission; "Factors conditioning the spatial development of agriculture in Poland"; and "Problem areas of Polish agriculture".

Moreover, use was made of certain expertises and development programmes, prepared by the Polish Academy of Sciences and other institutions, of the rich literature regarding economics and the geography of agriculture, and particularly of the studies and materials compiled by the Department of Agriculture and Rural Areas of the Institute of Geography and Spatial Organization of the Polish Academy of Sciences.

In the phase of pre-plan work a particular emphasis was put on the complex and profound analysis of the spatial differentiation of factors conditioning the development of agriculture. Rich materials were utilized, on the basis of which the so-called external conditions were assessed, i.e. the natural and economic conditions among which agriculture functions and develops, as well as the conditions resulting from the spatial differences in the properties of agriculture as such, like the cartographical materials on the commune[3] scale, referring to the social, operational, production and structural attributes of agriculture, worked out in the Institute of Geography and Spatial Organization of the Polish Academy of Sciences.

The group of conditioning factors, resulting from the spatial differentiation of the environment, contains: the quality of soils and a synthetic evaluation of the quality of the agricultural production space.

The analysis of those questions dealt with the positive or negative effect upon agriculture of selected elements of the climate and of phenomena, associated with these elements, like: the erosion of soils, territories affected by late occurrence of spring ground frost, territories with a long period of snow cover, territories characterized by low precipitation and as a consequence by a shortage of water for agriculture. In the analysis of external conditions underlying the development of agriculture the following questions were considered: the amount and kind of soil and air pollution, the degree of soil degradation and consequently the chances of recultivation for the needs of agricultural production.

Among economic conditions the following factors were critically assessed: the state's policy towards agriculture and its separate forms of ownership, as well as the distance of agricultural areas to big markets selling agricultural products.

In the analysis of factors conditioning the development of agriculture, associated with the spatial differentiation of its own properties,[4] a particular attention was paid to the conclusion resulting from the spatial differentiation of the structures of ownership and of the size of farms, regional differences in man-power resources including professional standards of people working in agriculture. Moreover, among the factors greatly influencing the future development of agriculture the following were also recognized: the ageing of the population actively employed in agriculture and the shortage of females wishing to marry young farmers[5]. A big proportion of the

[3] The commune is the smallest unit of the country's administrative division (see the paper presented by M. Potrykowski).

[4] The spatial analysis on the commune scale was made of the set of most attributes proposed by J. Kostrowicki (1982) for the identification and study of agricultural types.

[5] In vast, typically agricultural areas in north-eastern and eastern Poland, the proportion of females of 20–24 years of age to males in the same age interval is 50–60 women to 100 men.

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dual-occupational population, spatially differentiated in the rural areas, will also greatly affect agriculture in future, in the same way as essential differences in social and technical infrastructures in rural areas, as well as production effects obtained now in agriculture.

The analysis of the spatial factors conditioning the development of agriculture, mentioned above, served as a basis for the determination of objectives and principles of the State's spatial policy towards this branch of the national economy. It was recognized that the leading principle of future activities, in particular with regard to the agrarian policy, should be that of the maximum utilization of the spatial differentiation of the agricultural productive space. Moreover, it was accepted that in the conditions of restricted economic possibilities of the national economy, caused, amongst cities by the necessity to repay foreign debts, most means should be allotted first of all to improve agricultural education and subsequently to increase technical equipment in the areas where best effects can be expected. Therefore, an attempt was made to delineate such areas. The procedure was as follows. The sizes of crop and general land productivity, expressed in monetary units (*zlotys*) in fixed prices per hectare of agricultural land were compared with the estimates of the quality of the agricultural production space expressed as a summary index consisting of the estimates of soil quality, agroclimate, water relations and relief (cf. *Waloryzacja* . . . 1981). The effect of this comparison is the index of the level of the utilization of the agricultural productive space, measured by means of the two values:

a) the value of crop production per hectare of agricultural land per point of the general index of agricultural quality of the productive space;[6]

b) the value of land productivity (gross agricultural production per hectare of agricultural land) per point of the general index of agricultural quality of the productive space.[7]

The above two indices, which illustrate the spatial differentiation of the level of utilization of agricultural productive space by agricultural production, were subsequently used for the differentiation of the so-called agricultural problem areas[8] (cf. Fig. 1). It was established that there are at least two categories of problem territories. The first category includes the so-called depression territories, which are undeveloped in relation to other areas surrounding them and also in relation to the potential developmental possibilities commensurate with the natural conditions existing there and the human potential. The second category is characterized by the concentration of many functions (e.g. agriculture, settlement, industry and transport), one of which often develops at the cost of the others.

In the case of problem territories belonging to the first category their chances for improvement arise with the preparation of an adequate programme and a subsequent implementation of the tasks aimed at a maximum utilization of environmental labour and other resources, which at the same time is commensurate with social interests. The opportunities for the development of the second category of problem territories, i.e. the territories with concentrated functions, require that the programme devised for them should imply the minimalization of adverse effects derived from the often diverse interests of their various functions.

For the eight agricultural problem territories, singled out in the study the complex characteristic and the prognostic conclusions were worked out. Subsequently, the study

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[6] Cf. R. Kulikowski 1986, Fig. 3.

[7] Cf. R. Kulikowski 1986, Fig. 4.

[8] When delimiting the ranges of agricultural problem areas some other cartographical materials were also used which illustrate the spatial differentiation of land and labour productivity, agricultural specialization and the degree as well as the level of commercialization of agriculture.

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Fig. 1. Areas characterized by low level of land productivity in comparison with the quality of agricultural productive space in individual agriculture in 1978

was used, in the same way as in case of other similar studies, to single out ten problem territories in the country's spatial economy. It is proposed to allocate resources controlled by the central level of planning and management to those territories and thus to stimulated their development and improve their economy.

One such territory is the Zamość – Sandomierz area, which was singled out because of the dominance of agricultural functions. There are real possibilities of obtaining within the planned period production effects of great significance for the whole country at a relatively low level of outlays in comparison with other areas. The correctness of the above conclusion is evident in the productivity of the capital inputs in agriculture, attained in the Zamość and Lublin voivodship, which was higher than in other territories.[9] This area is characterized by an extreme diversity in the potential natural conditions for the development of agriculture (the value of the index of agricultural quality of the production space is the highest in the whole country) and production effects. The standard of agricultural education, measured by the proportion of

[9] Cf. R. Kulikowski 1984.

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population, with over primary education among those working in agriculture, is low in the same way as the level of mechanization of field work;[10] the resources of man-power in the countryside are ample. Should use be made of these resources and the agrarian structure be improved (there is at present too great subdivision of farms), the Sandomierz–Zamość area may became in future one of the most important suppliers of food for the whole country. It is however necessary to increase investment, not only for agriculture, but also for the improvement of the social and technical infrastructure in the rural areas.

In the remaining nine problem areas, dealt with in the national plan, agriculture is not the leading criterion for their delimitation though in some of them it still plays an important role. This is particularly true of the Warsaw agglomeration, in which there is a very well developed agricultural suburban zone oriented towards high commercial production specialized in market gardening (vegetables, fruit, flowers), as well as of the zone along Gdańsk Bay, which possesses the largest area of fertile soils from the river silts of the Vistula Delta.

The preliminary draft of the plan of the country's spatial organization in the form of the so-called "premises" have undergone social consultation; proposals and critical remarks are analysed by the authors and if correct was included in the next version. With regard to agricultural problems most attention is paid not to the so-called "control figures" but to the main orientation and possibilities of development resulting from the geographical differentiation of the environment.

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[10] In the structure of the total resources of draught power in many communes animals (horses) constitute over 60% and even 70%.

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INDIVIDUAL FARMING AND SPATIAL POLICY IN POLAND

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Polish agriculture is distinctive among the CMEA countries in that by June 1984 76% of the area farmed was held in private or "individual" farms, 94% of which ranged from 0.5 to 15 hectares of land in agricultural use and averaged 4.9 (average total area was 5.6 hectares: *Rocznik Statystyczny* 1985, 278–279). Many of these farms cannot provide a satisfactory income (*Policy of agricultural* . . . 1978, 31) and nearly two thirds of them have earnings from mixed sources (Szemberg 1981). On 26% of individual farms in 1974 the head of household was permanently employed outside the farm (Kłodziński 1983). Many farms are devoted in large part to subsistence food production with a variety of small crop and livestock enterprises. Based on the published data for 1984 possibly about 15 to 20% of final net production in non-socialized agriculture, i.e. of the net production of individual farms excluding products used on the farm, was for subsistence (estimated from the calculated difference of 23.5% in the values of final net production and net commercial production, and allowing for the increase in herd value and in the value of stored plant products – see *Rocznik Statystyczny* 1985, 285). However, the percentage could well be more as there are difficulties in estimating the proportion of production used for subsistence and in calculating its value. It seems likely that many farmers would tend to give a low estimate of the amount of produce consumed by their families or that independent estimates might tend to be conservative. With an aging farm population and periodic shortages of certain inputs, Poland's individual farms have considerable problems in contributing to an economy with a rising demand for farm products as the population and its urban proportion steadily increase, whilst the power to purchase imports has been reduced.

Increased agricultural production must mean increased intensity of production, combined with some degree of specialization and regional concentration. As I. Bowler (1986) remarks: "These three processes form part of the larger trend towards farm modernization or industrialization which has transformed agriculture throughout the world". This paper is concerned with some aspects of these three processes and is part of a larger study with colleagues from the Warsaw Institute of Geography and Spatial Organization using data from the national and *województwo* offices of statistics and from field work (many Polish authors use the term "voivodeship" in English in preference to "*województwo*" which is the Polish name for an administrative unit approximately equivalent to an English county in the administrative system).

As in most countries of the world, private farmers in Poland are affected by government policy. Government seeks to manage the agricultural industry whilst farmers try to manage their farms. Government is therefore concerned with agricultural space even if the effects of its policies on space are mostly indirect. For the individual farm sector the inputs for commercial production must come mostly from the socialized sector and to obtain them farmers must normally sell the greater part of their produce

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to that sector. However, a free market operates alongside the socialized market and can significantly affect certain forms of production. For example, in 1981 and 1982 all feeding stuffs imports were reduced as a result of foreign exchange problems. The prices of feed grain rose more rapidly in the free market than in the socialized market and the amount of grain offered to the latter was diminished. Farmers are free to hold back goods when prices fall. Pig producers in Poland react to lower prices just as producers do in other countries and the well known "pig cycle" seems just as apparent in Poland as elsewhere, although policy changes during the period have also contributed to the results shown in the graph (Fig. 1). Prices in the socialized sector have been an instrument of a policy in which the procurement prices did not automatically influence food prices and for certain products, e.g. milk, a gap occurred which was paid out of the state budget (*Policy of agricultural* ... 1978, 21—22; *Rocznik Statystyczny Rolnictwa* ... 1982, 357, 402 and 410). For a number of other products, e.g. eggs and potatoes, the retail price margin left very little for handling and distribution. Thus for several products farm profitability depended on the extent to which the state was prepared to subsidize the price to the farmer.

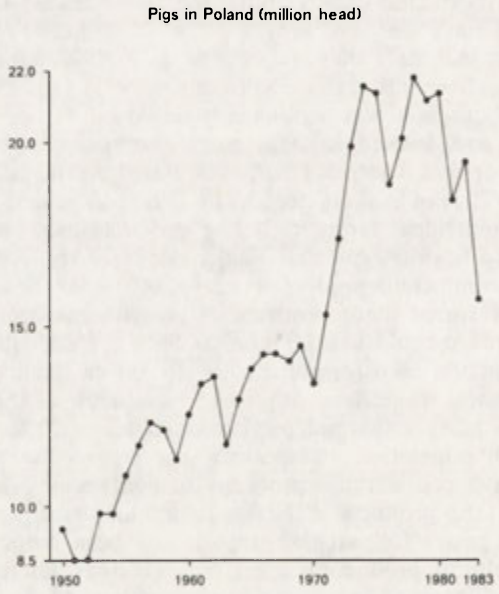

Fig. 1

Availability of farm inputs, size of farm business, marketing arrangements, capital availability, property rights, pension arrangements and, of course taxation all depend wholly or in part on government policy which, until 1981 when the equal sectorial rights policy was introduced, gave preference to the socialized sector over which it had greater control. The socialized sector was privileged in the provision of machinery, chemicals and finance. In 1983 Poland's individual farms produced 82% of final net production and 79% of commercial production for 73% of the current productive investment, but in 1981 they had received only 57% of productive investment and in 1975 only 43%. Even in 1983—84 the area under individual farms still had only 55% of the level of fertilizer application and 65% of the level of manure application per hectare practised on socialized farms, although it should be noted that some of them were operated more

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for subsistence or were thought too small to be worth a more intensive system of field production or lacked the capital for a very highly intensive system of production such as flowers and vegetables in glasshouses which would have made even extremely small units sufficiently productive to support a family. The relationship is circular, i.e. low availability of inputs discourages commercial sales and encourages subsistence. The tendency to subsistence in turn may further discourage the use of modern inputs. The tendency towards subsistence production may also be encouraged wherever the head of household is fully employed off the farm.

AGRICULTURE IN THE NATIONAL ECONOMY: TRENDS AND POLICY

Individual farming in Poland has suffered highly varying fortunes associated with changes in the economy and in policy. Figure 2 shows changes in the gross value of commercial production at constant prices using indices – note the end of the boom

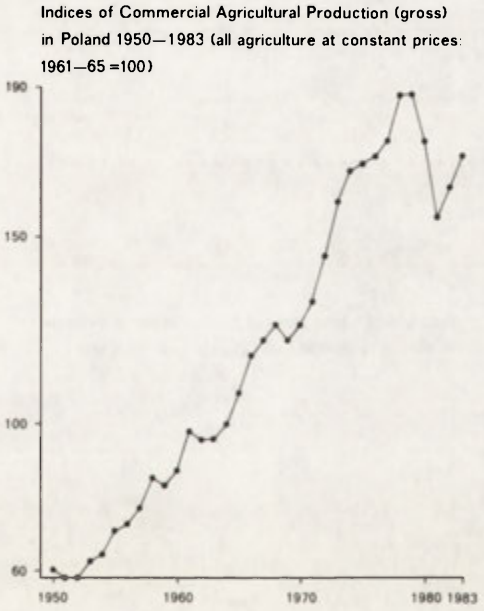

Fig. 2

years in 1979 and 1980. Compare the indices for net production as a whole which has considerable fluctuations even when taking into account the different bases and ranges of the graphs (Fig. 3). Figure 4 shows trends in farmers' real income. Apart from the freak year 1981, real incomes have tended to fall since 1978 and by 1983 were slightly lower than 10 years earlier. In the 1950s there were compulsory deliveries of produce and most investment went into socialized agriculture. From 1964 changes in policy brought a rise in investment in non-socialized agriculture with a steep upward climb in the 1970s (Fig. 5).

Real incomes in farming rose, but not as fast as urban real incomes. Between 1950 and 1978 the number of people fully occupied in agriculture fell by 25% from 7.1 to 5.3 millions, but over the same period the number fully occupied in private agriculture fell

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Indices of Net Agricultural Production in Poland
1950—1983 (all agriculture at constant prices: 1961—65=100)

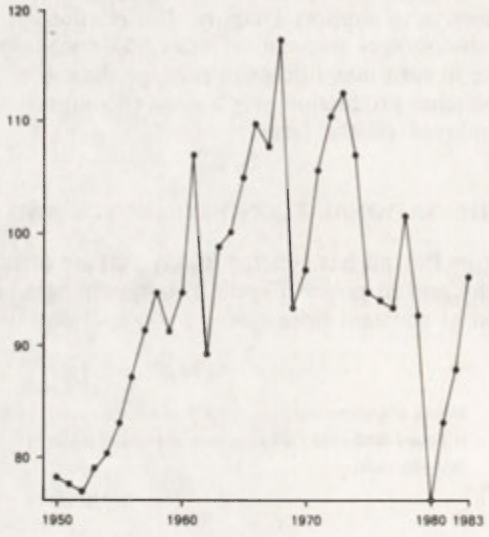

Fig. 3

Real Incomes from Work in Non-socialized Agriculture
in Poland 1950—1983 (constant prices : 1960=100)

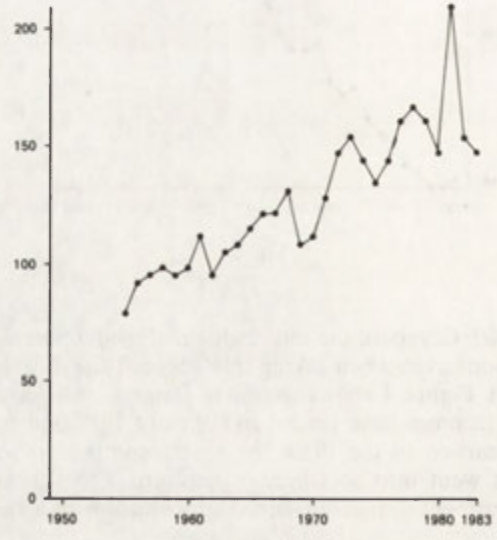

Fig. 4

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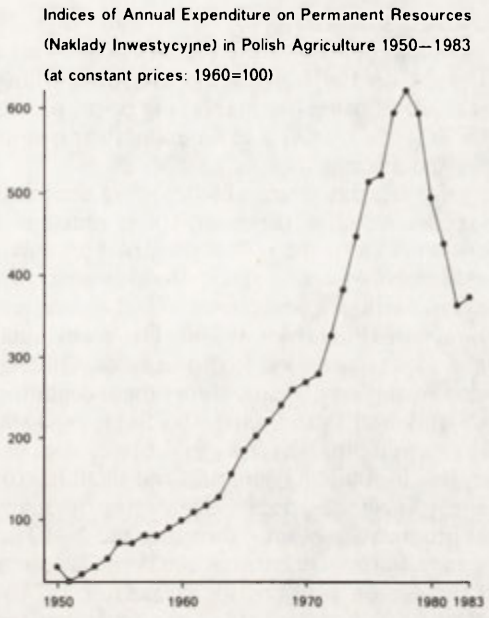

Fig. 5

proportionately even more – by 36% from 6.7 to 4.3 millions (Frenkel 1984) as urbanward migration took place ("fully occupied in agriculture" includes not only the fully employed but those "mainly" employed in agriculture, pensioners still employed in agriculture, people on holdings less than 0.5 hectares and those working in agricultural service units). Clearly work in private agriculture was economically less rewarding and less attractive than in socialized agriculture, and for many much less attractive than work in non-agricultural occupations.

In the 1960s individual farmers lacked the pensions and health insurance they could obtain in industry and had difficulty in obtaining credit. Economists in many countries tended to regard peasant agriculture as a sector with zero marginal productivity from which labour, and in some cases even finance, could be drawn without decreasing output. It was a sector from which resources could be drawn in order to develop other sectors of the economy. In the 1950s and 1960s the net effect of policy in private agriculture (despite considerable investment in socialized farming) was to direct resources elsewhere. In 1972 Polish policy changed. More inputs were provided for individual farmers, compulsory deliveries were abolished and the prices of some products were allowed to rise faster than input prices. More investment credit was made available, chiefly for farm buildings and particularly to specialized farmers, who in certain cases were also allowed some remission of investment costs. Turnover credit, however, was given to all farmers who could show economically justifiable need. This "need" was identified fairly liberally and demand rose rapidly. There was still a strict regulation of the input supply and priority in the private sector was given to those who took up long term contracts and cooperated with the socialized sector. As M. Pietrewicz (1984a) has pointed out, the changes privileged some products and regions whilst worsening others. To take just one example, as pig numbers rose in the early 1970s (Fig. 1), pig prices in the socialized purchase points rose less rapidly than the prices of certain other products, more especially of cattle, calves, potatoes, oats and sugar beet. Pig prices in the free market, however, rose considerably as the demand for pork

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increased with rising incomes and the supply of pig meat from 1970 to 1975 rose by 46%. Many small farmers had developed the practice of growing potatoes and rye in order to fatten pigs bought on the free market and then selling them to the state (Pietrewicz 1984a). The result of rising free market pig prices was that many such farms ceased pig fattening, whilst farms rearing and fattening their own pigs in the major pig breeding areas, such as the Poznań region, gained.

In 1976 there were price reforms intended to improve the relationship between the prices of agricultural produce and of the means of production. Fodder prices were allowed to rise rapidly in order to encourage the increased production of feed grain, but small livestock farmers dependent on bought-in fodder were adversely affected. The accompanying price rises in fertilizers, pesticides and fuel also adversely affected farmers trying to intensify production (Pietrewicz 1984a). For many small farmers increased livestock production had meant increased feed purchases. Others had sought to raise their income levels by increasing crop yields. Under these conditions they tended to do less well than farmers with larger than average holdings, producing their own fodder and less dependent on modern inputs. Diversity in the price rises of fixed assets also had their effects – relatively low for building materials and small tractors, but high for most other equipment. The net effect has been discouraging to many farmers trying to increase the commercial productivity of small farms, i.e. the 2–10 hectare size range, and these have shown the greatest proportionate decline in the last decade, encouraged also by the amendment of the act on pensions for farmers in 1974 which promoted the process of transferring land from the private to the socialized sector (1970–1981 by 19% – the number of farms over 15 hectares increased by 67%, Rocznik Statystyczny 1982, 86). As K. Michna (1984) observed, whereas the agricultural policy of the sixties had been directed mainly at expanding production on smaller farms, in the seventies conditions were created which were more favourable for the big and medium farms. However, these larger farms in 1981 were only 5% of the total number, occupying 19% of the area in individual farms over 0.5 hectares.

ANALYSIS BY *WOJEWÓDZTWO*: PRODUCTION FACTORS AND SPATIAL RELATIONSHIPS

In the analysis of current or recent data there are three possible scales of observation in order to make some assessment of how the spatial aspects of policy may affect individual farming in Poland. These are the farm, the *gmina* and the *województwo*. This paper is solely concerned with *województwo* analysis, that is with a spatial framework of 49 divisions of Poland each averaging 58 000 individual farms on 276 500 hectares. It is obviously an extremely coarse framework in which the results can only be very generalized, e.g. a *województwo* with farms equally divided between performance extremes will appear statistically like a *województwo* with wholly average farms, despite its very different character. At this scale we cannot examine farming as such, but only the agricultural industry. However, the results may suggest some general spatial trends for further examination at other levels and for other years and, hopefully, they may have some relevance for policies which operate at the industry level. The broad trends may be appreciated in part, even if the effects on the farms as such are missed. It is intended that analysis at the *gmina* and farm level will follow in later studies.

Data for individual farming in 1981 were used (*Rocznik Statystyczny* 1982 and *Rocznik Statystyczny Rolnictwa...* 1982). This was the most recent year for which data for a sufficient range of input and other variables were available, but located in a period of reduced productivity and resources after the rapid growth of the 1970s. It was the last year before the new equal sectorial rights policy was introduced, the effects of which are

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still developing. After subjecting the variables to tests for normality of distribution, nineteen were selected:

Production: 2	1. Gross production per hectare (1976–1980 average)
	2. Official purchase of farm products in złoty per hectare
Inputs: 7	3. Value per hectare of fixed inputs
	4. Investment expenditure per hectare
	5. Hectares per tractor
	6. Artificial fertilizer used in kilograms per hectare
	7. Sale of agricultural productive services in złoty per hectare
	8. Investment credit per hectare
	9. Turnover credit per hectare
Social: 2	10. Population of productive age
	11. Urban percentage of population
Size of farms: 3	12. Average size of farms
	13. Percentage of farms 0.5 to 2.0 hectares
	14. Percentage of farms 10+ hectares
Environment: 1	15. Index of land quality
Other: 4	16. Livestock units per 100 hectares
	17. Horses per 100 hectares
	18. Taxation in złoty per hectare
	19. Average prices of arable land on the free market

(All hectares refer to the area of "agricultural use" or *użytki rolne* i.e. the area farmed). More variables could have been included, such as education or the age of farmers, but these were not available to the author in published form at the *województwo* level. The variables chosen were thought sufficiently indicative of major relationships for an introductory study at a level which is in any case very generalized.

Correlation coefficients (statistically significant at 0.5 for the 0.1% level) were calculated and bivariate scatter plots examined. There is considerable interrelationship between the variables and there may also be a degree of autocorrelation, which is not uncommon in geographical distributions, together with an element of spurious correlation due to the standardization of the variables by the areas in agricultural use (Williams 1984, 264–269 and 1986, 494–497). However, this analysis is meant to provide only a general introductory appreciation of the relationships between the few farming variables for which there were data at this level in order better to appreciate certain aspects of spatial policy. Only a simple and very basic bivariate analysis has therefore been attempted.

GROSS PRODUCTION (in złoty per hectare) relates to most variables, but very strongly to tax (0.8161), purchase of farm products (0.7891), fertilizers (0.7781), investment expenditure (0.7091), productive services (0.6679) and turnover credit (0.6042), but rather less to hectares per tractor (−0.5697), percentage of individual farms with less than 2 hectares (0.5363), investment credit (0.5334), and the percentage of urban population (0.5327). There is little relationship between livestock density and gross production per hectare (0.3276) despite the importance of livestock in the farm economy. The highest returns per hectare farmed are recorded on intensive crop farms. A great deal of livestock rearing takes place on very small farms, often supported by bought-in feed. Figure 6 shows the location of the top quarter of the distribution of gross production per hectare on individual farms by *województwa* (the plural form of *województwo*). The highest levels of productivity are in the west and in the central and southern urbanized areas. The growth of urban markets may be a factor, but a much more complex explanation involving the distribution of socialized agriculture and input supply policy seems likely, amongst other factors such as the policy in the 1970s of linking specialized private livestock farms to state farms, so that the latter supplied the

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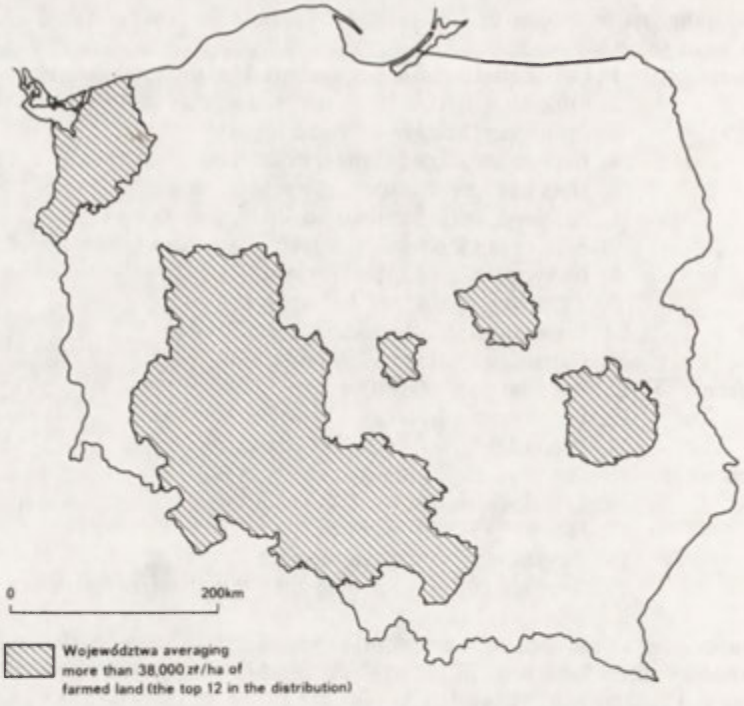

Fig. 6. Gross production on individual farms (1976—1980 average)

former with feed grain for fattening. There is some relationship to the percentage of very small farms, but very little to the presence of larger farms or to size in general. Farm size is not easy to evaluate as a factor in the productivity of individual farms as most farms are very small and the range of farm size differentiation is low. Likewise the urban percentage of population — a limited indicator of urban proximity — is weakly related to productivity. The scatter plot (Fig. 7) confirms the appearance of this weak relationship, although it has been held to be important in the location of more productive farming in Poland by a number of geographers and economists. The seven *województwa* at the top right of the distribution shown, all urbanized and highly productive, indicate something of the basis for that view. However, *województwa* like Leszno and Zamość clearly do not fit any supposed trend. There are clearly difficulties of interpretation which it is hoped to resolve from work at other scales.

The OFFICIAL PURCHASE OF FARM PRODUCTS in zloty per hectare has been used here as an indicator of commercial production on individual farms rather than total commercial productivity, due to uncertainty about the quantity of free market sales reported. Official commercial purchases were estimated to be nearly 84% of the value of commercial agricultural production in 1981, leaving about 16% for the free market. Official purchases correlate very highly with sales of services (0.8913), fertilizers (0.8594) and turnover credit (0.7977), as would be expected. They also correlate strongly with gross production (0.7891), farmers' taxation (0.7555), hectares per tractor (−0.6944), investment expenditure (0.6783) and investment credit (0.6522). The correlation with the urban proportion of population is weak (0.5242) and extremely low with the index of land quality (0.3107) and the three farm size indicators (0.1708, 0.2801,

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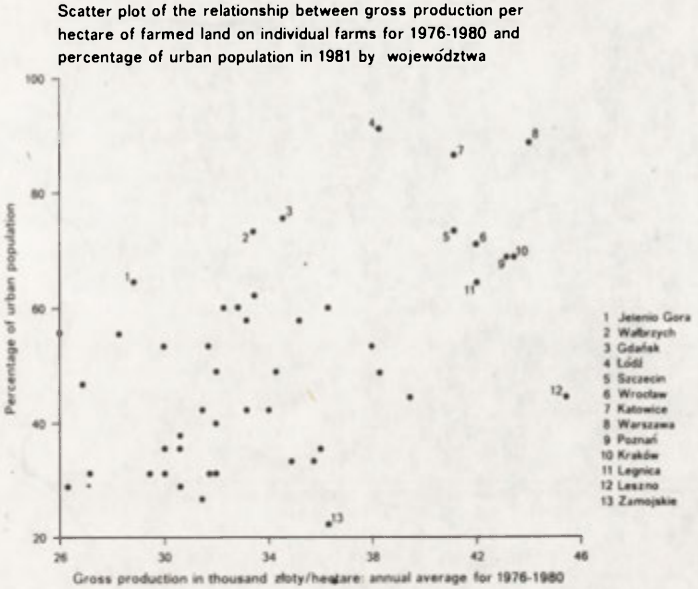

Fig. 7

0.1709 respectively). The highest levels of purchase per hectare in 1981 (Fig. 8 – top quarter of the distribution) were in the west, Bydgoszcz, Kalisz and the central Warsaw – Płock urbanized area. The relationship of the main purchasing element in the commercial structure of Poland's agriculture to urban location looks weak on this evidence. The map, however, is only an indication. Different interpretations could be made if it were redrawn in more detail and using *gmina* based data. The high correlation with taxation rates per hectare suggests the possibility of using the latter as an index of productive intensity. Farmers' taxation is calculated with reference to land and environmental factors, together with a factor for the expected income differences from different crop and livestock enterprises, i.e. there are both spatial and productive elements built into the assessment.

The production pattern in relation to certain inputs suggests the existence of two groups of urbanized farming districts in the centre, south and west (Fig. 9):

1. An eastern group, consisting of Warsaw and Kraków – Katowice: high on gross productivity, current investment and the value of fixed inputs, but less high on official purchases, services, turnover credit and the use of fertilizers. There are districts with marked concentrations of small farms of both high and low levels of intensity.

2. A western group, rather less strongly urbanized, consisting of Poznań – Leszno, Wrocław – Legnica and Szczecin: high on gross productivity and current investment – except Wrocław – but all low on the value of fixed inputs. They are, as a group, more intensively commercial with high levels of official purchases of farm produce, turnover credit – except Leszno – and the use of fertilizers. These districts include areas with very high crop yields and highly intensive livestock production.

Although these urbanized districts of relatively high productivity are only part of the distribution of *województwa* with higher levels of production and of certain inputs, nevertheless they are important for future growth as they have high proportions of the population of productive age compared with more peripheral rural districts. They

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Fig. 8. Purchase of farm products in the non-socialized economy (1981)

Fig. 9. The leading urbanized farming districts based on *województwo* data for 1981

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almost certainly have more potential attraction for younger and more progressive farmers. Gorzelak (1986) notes the better performance of agriculture in the "mid-west" during the period of recent economic difficulty and especially around the great urban centres with a "profit-oriented well equipped agriculture".

TURNOVER CREDIT per hectare needs special mention. For farmers with very small holdings and little or no capital it is a vital input, particularly where commercial cropping is concerned. It enables them to pay for variable inputs such as bought-in feed, seed, fertilizers, pesticides and casual labour before receiving payment from produce sales. In 1981 the amount of turnover credit provided for individual farmers was 2.5 times the investment credit i.e. as one would expect there was a much greater demand for short-term credit to maintain existing systems of production than for long-term credit to achieve progress. It averaged about 18% of the costs of productive materials used on farms other than those materials produced on the farms and put back into the productive system. Correlation with the sales of services (0.8400) and official purchases of farm produce (0.7977) were expectedly high. They were high also with investment credit (0.7387), fertilizers (0.6797), hectares per tractor (−0.6756), proportion of urban population (0.6622) and, negatively, with the density of horses (−0.6291) used as a possible indicator of lack of progress. The top quarter of the distribution of services in relation to turnover credit is entirely located in the north and west, the region with the more progressive, generally larger individual farms and the main concentration of socialized agricultural production.

CONCLUSION

This paper has tried to indicate some aspects of the changing pattern of agricultural development policy over time and of the relationships and geographical distribution of elements in Poland's individual farming which are affected by agricultural policy. The correlations shown may not necessarily involve direct causal relationships, but they suggest the possibility that some of the production factors over which government policy has had strong influence, such as credit, services, fertilizers and tractors, may have had a more potent influence on individual farming than others, such as differentiation of farm size, land quality and the urban proportion of population. Given the volume of government controlled purchase and supply in the private farming sector, it is likely that free market operations will be of more local than general importance, except for the small sales from mainly subsistence farms and the very specialized operations of a few intensive farmers such as the producers of flowers stock. The free market prices for arable land had little or only weak correlation with the other variables excepting fixed inputs (0.6610).

Further examination of these variables in more detail at other scales of observation would seem worth while. Some of these relationships may operate in either direction. For example, although the availability of credit may be seen as a means to higher productivity , it may also be appreciated that it is the more productive farmers who are likeliest to receive credit. The effect can be circular and cumulative and once it has begun to operate in a particular region may lead to production leadership over other regions. Investment expenditure may seem very important at both farm and industry level, but equally important are the skills, enterprise and initiative of farmers, not only at the farm level, but also at the regional level for there are regions with greater concentrations of more educated and skilled farmers where improved availability of appropriate inputs will meet with a more productive response. T. Olszewski (1985, 89) observes that in the new agricultural policy great importance is attached to the professional awareness of farmers. There is an awareness of the need to increase food production both for home and export markets, to reduce the flight of young people from agriculture and to encourage those who have agricultural knowledge and experience or

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who are prepared to learn. The pensions law, offering pensions to retiring farmers, has encouraged some farmers to leave agriculture, but has not achieved as much as had been hoped (see forecasts reported by M. Pietrewicz 1984b). Some found their pensions inadequate (Ostromęcki 1982) and their material situation worsened (Zakrzewski 1985). However, there has been some movement of people back into agriculture, a reduction in the number of farms without successors and a slowing of the aging process in agriculture (Szemberg 1983). More will be needed to encourage a bigger movement of young and skilled people into farming. The need for a more productive use of rather scarce resources has been recognized. Greater efficiency in the use of resources requires regional and local elements in planning policy in order to ensure that such resources go to those farmers who can make the best use of them. There is a need in agriculture, as in industry – to echo Dziewoński's paper (1989) – to examine the possibilities for the regional "restructuralization" of input distribution and to establish "new priorities in investments".

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TYPES OF AGRICULTURE IN BRITAIN IN THE LIGHT OF THE TYPES OF AGRICULTURE MAP OF EUROPE

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INTRODUCTION

As two British papers are dealing with Polish problems, in order to maintain a proper balance. I decided to introduce a Polish paper concerning Britain, more precisely British agriculture.

The paper is based on the *Types of Agriculture Map of Europe* (1:2.5 million) published in 1984 (Kostrowicki 1984a), on three unpublished maps at 1:10 million, presenting various ways of simplification of the original map, and on 28 analytical maps of Britain showing individual agricultural attributes.

All these maps have been elaborated based on the methods and techniques developed in 1964—1976 by the IGU Commission on Agricultural Typology (Kostrowicki 1979), then modified and improved several times (Kostrowicki 1980, 1984a).

The typology may be considered as a kind of classification, in which classes, i.e types, are not established in advance, but are set up in an aggregative way, by grouping individuals according to their similarity around certain cores or models recognized as the most typical. This concept, less precise perhaps, than a number of more sophisticated taxonomic methods, is however the only one to date, which may be applied when the number of objects to be classified cannot be established in advance. This is similar to biological classifications or taxonomies, in which objects, i.e species, are classified when discovered and described.

As the concept, methods and techniques of agricultural typology have been presented in numerous publications (Kostrowicki 1977, 1980, 1984b, 1986 and the other), only some of the most essential features of that classification will be recalled here in order to make further explanations more comprehensible.

To maintain full comparability of results, it has decided that agricultural typology, irrespective of scale, time and place, should be based on identical agricultural attributes, and the same methods and techniques of type identification should be applied. As a result of much discussion and of the experience drawn from many testing studies, it has been decided that the typology of agriculture should be based on the following four principal groups of agricultural attributes: (1) social, including land tenure and size of operation; (2) operational, covering the most important inputs in agriculture; (3) production – including agricultural productivity, commercialization and specialization and (4) structural, showing the proportions between various branches of agriculture. In order to balance individual groups and to keep the number of variables as low as possible, it has been accepted that each of these groups is to be represented by 7 variables (Table 1).

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Such variables, computed for every unit under study and transformed into codes with 28 digits that represent classes (0–5) of world ranges of given variables, are compared with the others and grouped according to their similarity.

By use of these methods and techniques to analyse over 1000 cases from various parts of the globe, the preliminary multi-level classification of world agriculture has been elaborated. Six types of the 1st order, about thirty types of the 2and order and over one hundred types of the 3rd order have been identified in the world and described (Kostrowicki 1980).

While it was rather doubtful that more types of the 1st order could be described, from the very beginning it was certain that more types of the 2nd order, and particularly of the 3rd order, could be singled out as a result of further investigations.

Those views have been confirmed already by the classification of European agriculture carried out for the *Types of Agriculture Map of Europe*, elaborated by the common effort of a number of European geographers, without any outside help, and published in 1984 (Kostrowicki ed. 1984a). The map was presented to the 25th International Geographical Congress in Paris and will be followed by a monograph.

All six world types of the 1st order have been identified in Europe, at least in their residual or transitional forms, namely: (1) Traditional Extensive (Primeval) Agriculture (E), (2) Traditional Large Scale (Latifundia) Agriculture (L), (3) Traditional small scale (Peasant) Agriculture (T), (4) Market-Oriented Agriculture (M), (5) Socialized Agriculture (S), and (6) Highly Specialized Commercial Livestock Breeding (A), each with number of types of the 2nd and 3rd orders.

SPATIAL DIFFERENTIATION OF AGRICULTURAL ATTRIBUTES IN BRITAIN

As the 28 variables representing the most important attributes have been used to represent any type of agriculture anywhere in the world, it is hardly surprising that several of them, when applied to Britain, do not show greater spatial differentiation, particularly at the county level, and some others are insignificant for British agriculture.

This is particularly true with some social attributes, very important differentiating factors within Traditional Agriculture, less important in the Market Oriented Agriculture that dominates in Britain.

Nevertheless, even in Britain, some relics of the old, traditional land tenure systems have survived, either in the form of a common ownership of land or land tenancy. The first one (variable 1) may still be encountered in Britain in the form of common lands, so beautifully described by W. G. Hoskins and L. Dudley Stamp (1963). At present however those commons do not cover much agricultural land and play only an insignificant role in British farming.

The same may be said about land tenancy, the traditional forms of which occur as labour or share tenancies (variable 2) which, because of their very character, have a negative effect on agricultural productivity (see for example D. Coon 1962)*.

On the other hand the long term fixed rent system of land tenancy, as practised in Britain does not differ much, as far as production is concerned from that of owner-operators.

As V. Liversage pointed out some 40 years ago (1945, pp. 37–38) "it was not good form" for a land owner "to eject a tenant or to raise the rent ... so long as he was of the right political complexion, treated the game with proper consideration, paid his rent

* In his book the author gave excellent examples of two villages from Iran situated side by side, out of which one farmed by owner operators used to give far higher productive results than the neighbouring one operated by share croppers.

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with regularity if not with punctuality and did not sell hay or straw off the farm. On the other hand the land owner spent large sums in provision of buildings, in draining and other improvements. He seldom exacted the full competitive rent, made reductions in bad times and only with reluctance made any upward adjustment in times of abnormally high prices". Thus "he just performed two invaluable services for agriculture. He provided a large part of the farm capital at less competitive rates of interest and he acted as a cushion againts the shocks of fluctuating farm prices".

As more or less the same could be said about long-term, fixed rent tenancies in other countries it has been decided to treat that form of tenancy in the same way as land ownership.

Much greater differentiation may be observed in Britain as far as size of operation is concerned. In terms of acreage or rather hectarage (variable 6) the sizes of British farms correspond with the 2nd (20–100 ha) or 3rd (100–1000 ha) world classes (Fig. 1), the smallest farms being characteristic in some suburban areas (London, Midlands) but also parts of Wales (Dyfed), of Cornwall and Northern Ireland, while the largest farms dominate in most of Scotland.

When taking into account another measure of scale of operation, the number of actively employed per agricultural holding (variable 5), considerable differences may be observed between southeastern and eastern England, where more than 2 or even 3 people were employed per farm, and western and northern parts of Britain, with mostly less than 2 or even less than 1.5 active in agriculture per farm (Fig. 2). This corresponds with the 1st and 2nd class on the world scale.

Finally when the scale of operation is measured by gross agricultural output per holding (variable 7) most British counties occur in the middle i.e the 3rd world class, with higher figures in eastern England and central Scotland, and lower in Cornwall, Wales, Northern Ireland and northern Scotland.

As far as the variables representing operational attributes are concerned, labour inputs measured by the number employed in agriculture per 100 hectares of agricultural land (variable 8) are highest, over 3 (world class 2), in southern and central England and lowest (bellow 3 and even below 2) (world class 1), in Scotland, northern England, Northern Ireland and parts of Wales (Fig. 3).

As British agriculture is fully mechanized, the inputs of animal power (variable 9) are very low or non-existent everywhere. On the other hand the inputs of mechanical power (variable 10) are very high (class 5) almost everywhere, except most of Scotland where it is simply high (class 4), or even medium (class 3) in the Border Region (Fig. 4).

Another important index of capital inputs – chemical fertilization (variable 11) – is very high or high in most of England, but medium in a few Welsh and most Scottish counties, and low in the Highland Region of Scotland and in the Shetlands (Fig. 5).

For climatic reasons irrigation (variable 12) does not play any important role in Britain (class 1). The intensity of cropland use (variable 13) is high (no fallows) everywhere, the intensity of livestock breeding (variable 14), measured by the density of livestock units per unit area, is high, except in a few eastern counties with more important crop growing, where it could be either medium or low, and some parts of Scotland, where it is medium, as well as the Shetlands and Hebrides where it is low (Fig. 6), in spite of the prevalence of animal breeding over crop growing.

Among production attributes land productivity (variable 15) is very high around some urban agglomerations (Liverpool, Birmingham) but high in most of England an Northern Ireland. It is low in most of Scotland, Wales and some northern English counties (Fig. 7). Because of large tracts of uncultivated pasture (rough grazing land), the productivity of cultivated land (variable 16 Fig. 8) differs considerably from the picture presented above and is high in most of the country except in some suburban areas where it is very high.

Due to the high level of mechanization and low labour inputs, labour productivity

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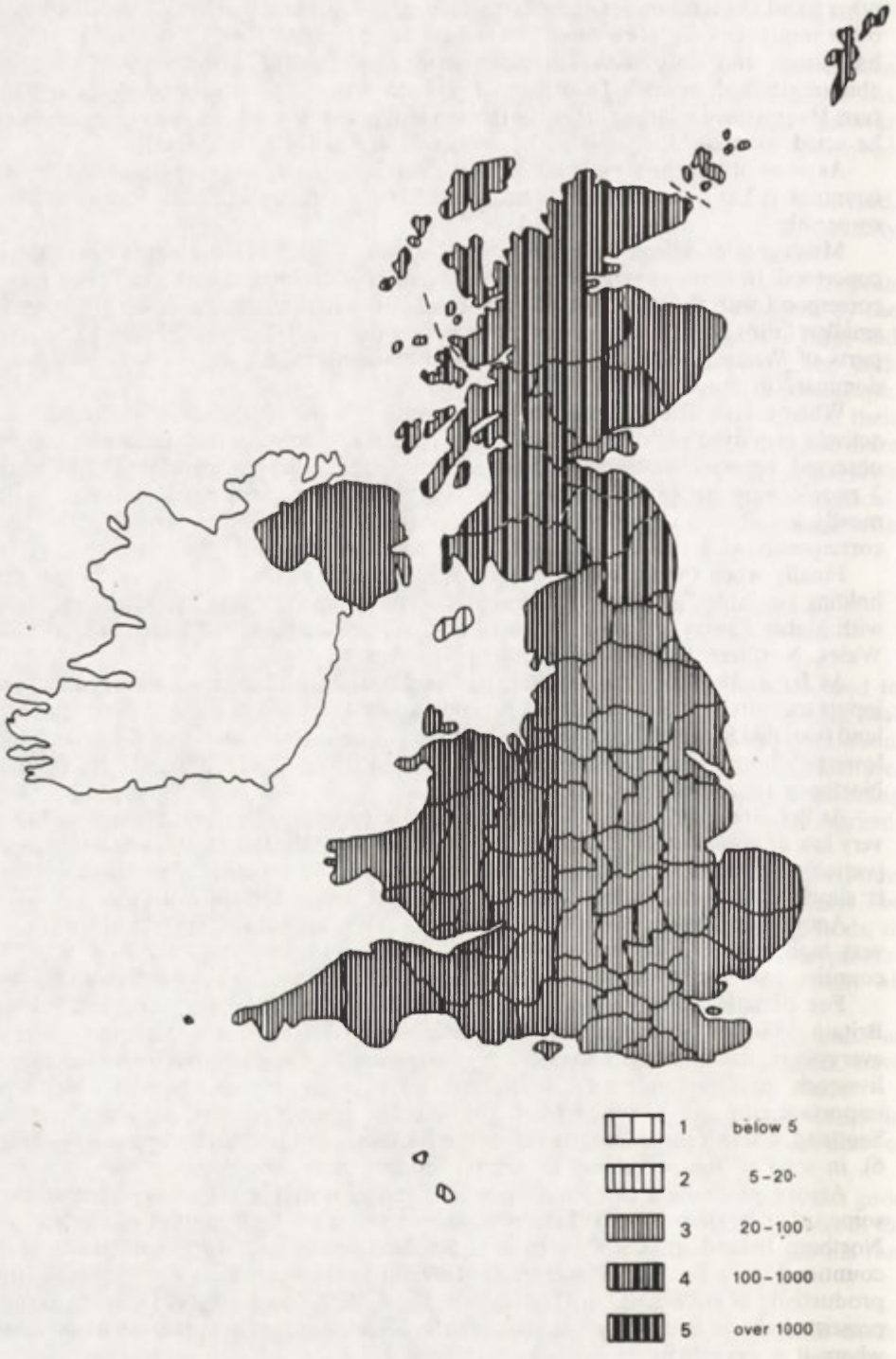

Fig. 1. Variable 6: Amount of agricultural land in hectares per one agricultural holding

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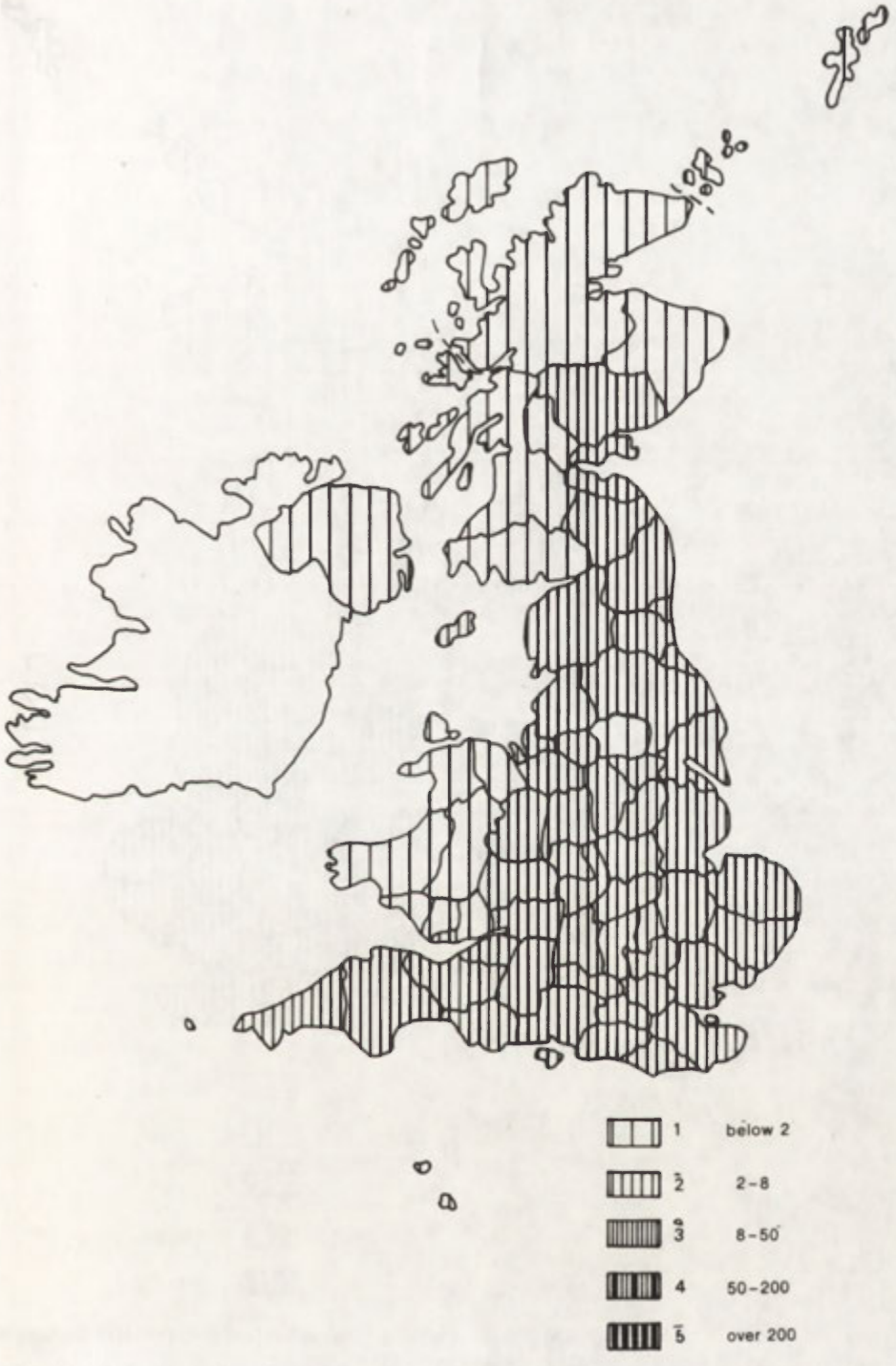

Fig. 2. Variable 5: Number of people actively employed in agriculture per one agricultural holding

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Fig. 3. Variable 8: Number of people actively employed in agriculture per 100 hectare of agricultural land

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Fig. 4. Variable 10: Number of tractors and other self-propelling machinery in HP per 100 hectares of cultivated land

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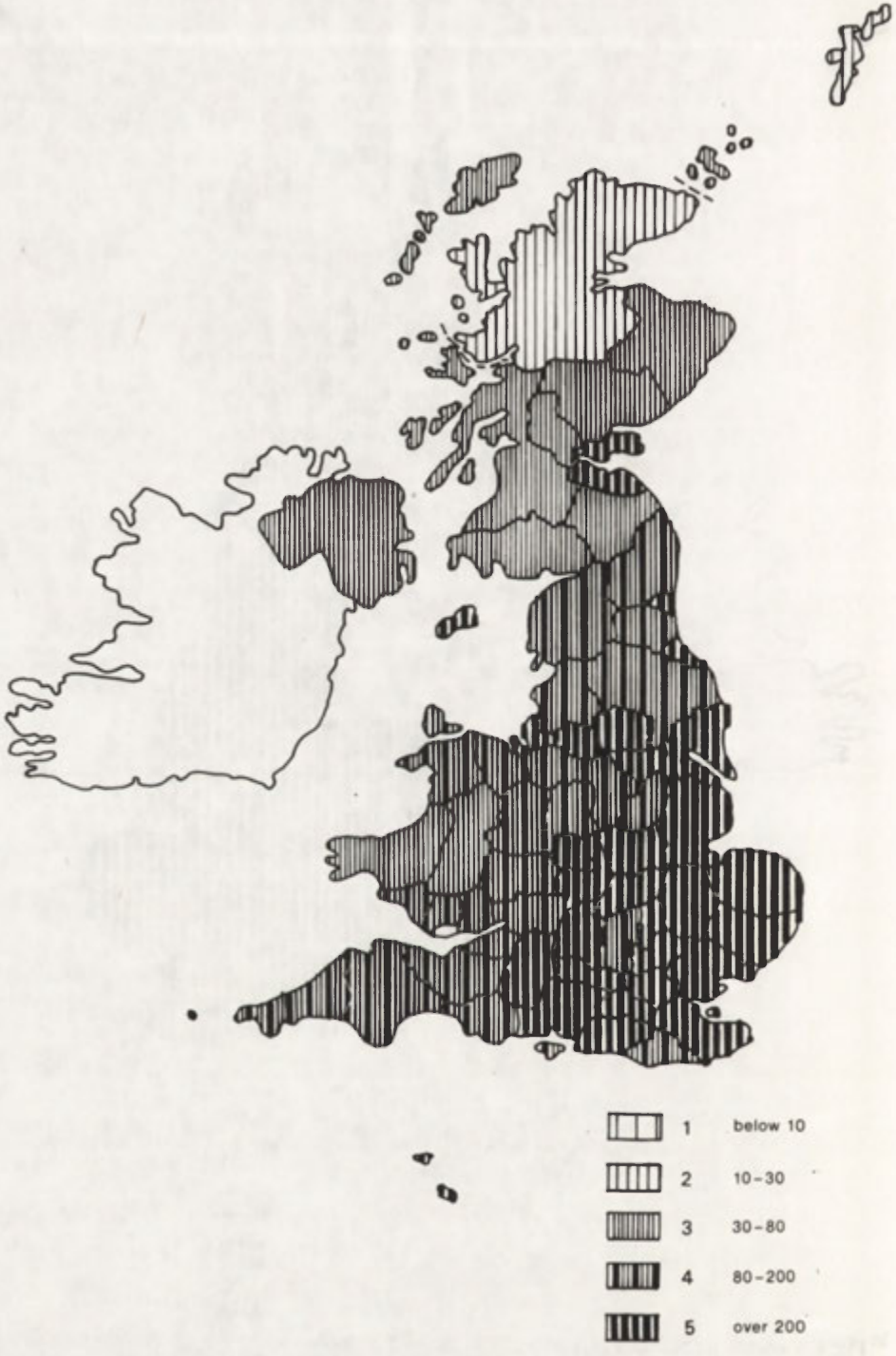

Fig. 5. Variable 11: Amount of chemical fertilizers in pure content (NPK) per one hectare of cultivated land

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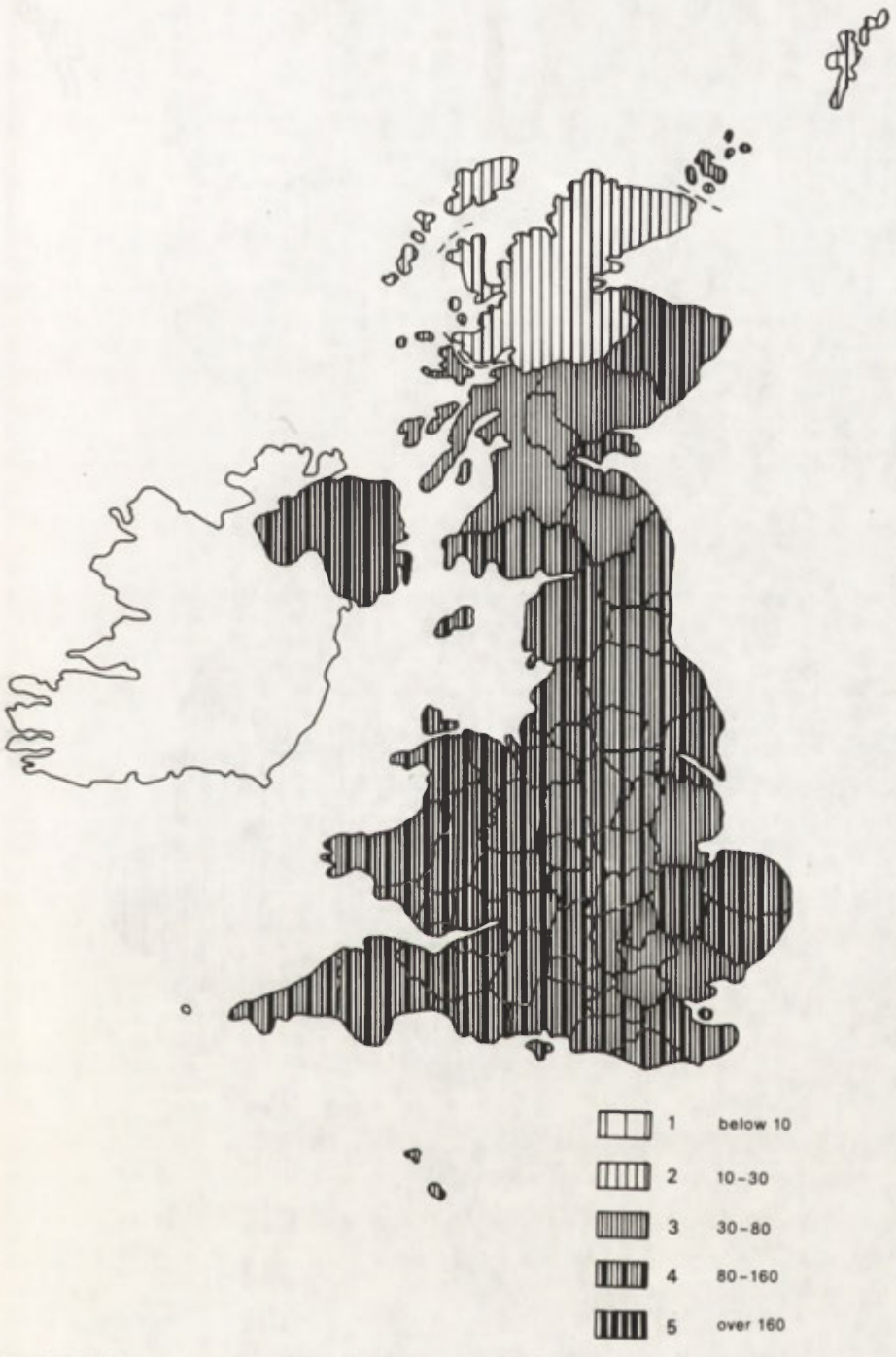

Fig. 6. Variable 14: Number of farm animals in conventional (large) animal units per 100 hectares of agricultural land

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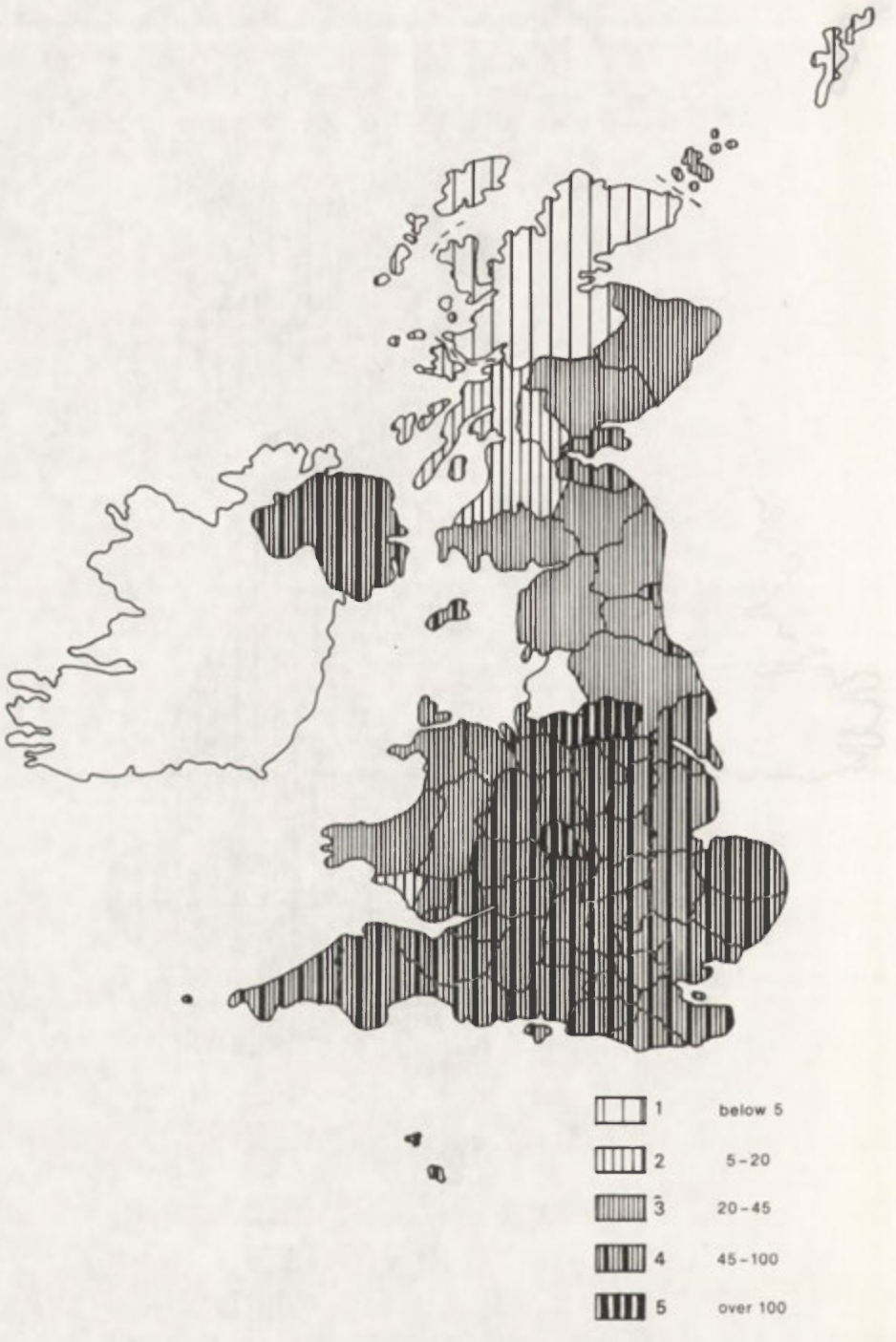

Fig. 7. Variable 15: Land productivity in terms of gross agricultural production in conventional units per one hectare of agricultural land

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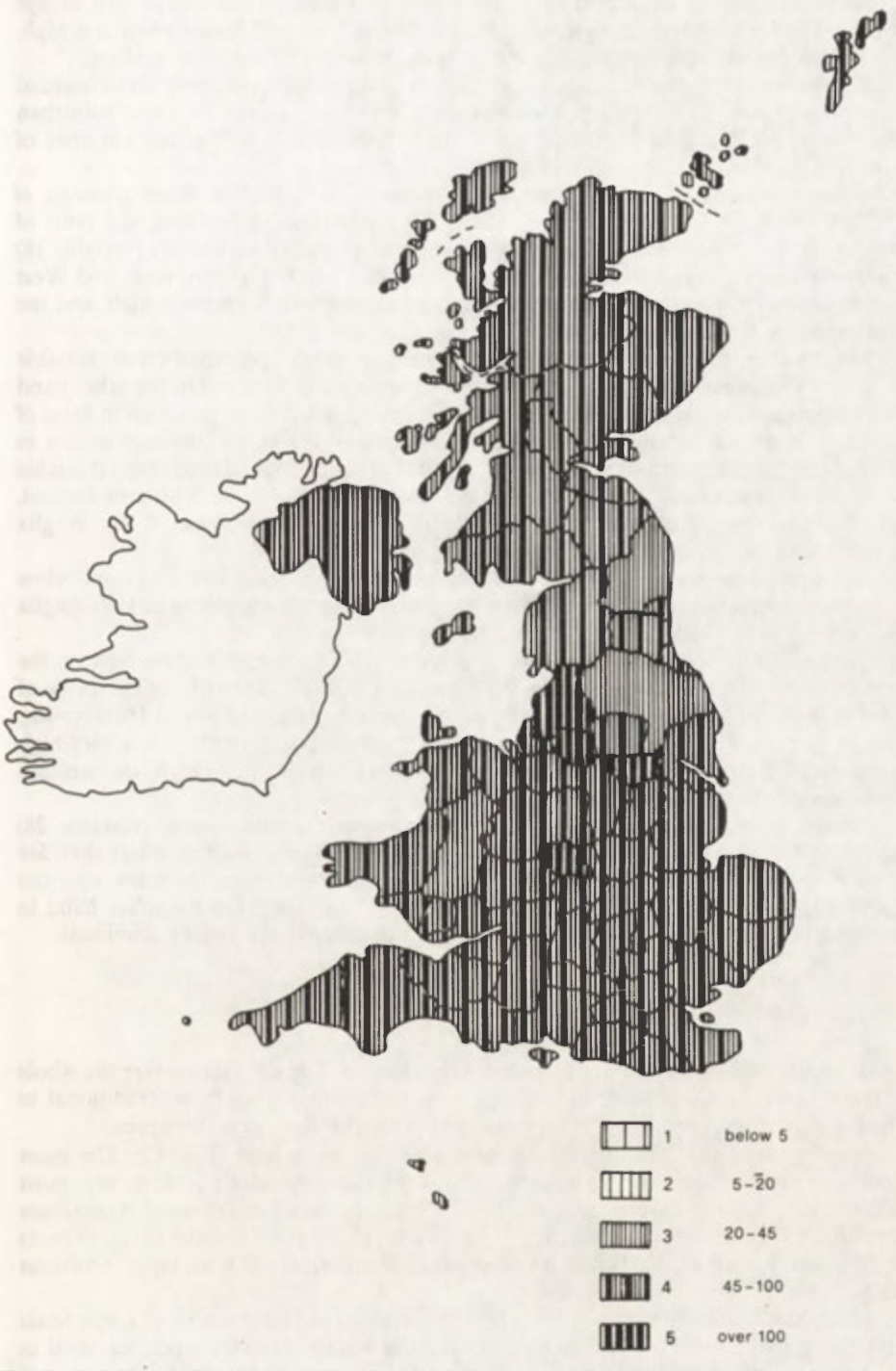

Fig. 8. Variable 16: Productivity of cultivated land in terms of gross agricultural production in conventional units per one hectare of cultivated land

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(variable 17) in Britain compared with the world is very high, almost everywhere, except Greater London and West Sussex, and also the Isles of Man and Jersey where it is high, due to the higher labour inputs, and the Isles of Scilly, where it is medium.

The degree of commercialization (variable 19) i.e the percentage share of commercial to gross agricultural output, is high almost everywhere, except in some suburban counties where it is very high, and the Scottish highlands as vell as few counties of Northern England where it is medium.

Commercial production per unit area (variable 20) is high in most counties of England, except in northern England, where it is medium, as in Scotland and most of Wales (Fig. 9). Commercial production per person employed in agriculture (variable 18) is very high in most of Britain, with the exception of Greater London, Kent and West Sussex, in addition to Jersey, the Isle of Man and Glamorgan, where it is high, and the Isles of Scilly where it is medium.

As far as the structural sttributes are concerned the role of perennial crops (variable 22) is very low in most of Britain, except Kent where it is simply low. On the other hand the percentage share of permanent grassland (variable 23) is high to very high in most of Scotland, Northern Ireland, north England and parts of Wales, but medium or low in most of the eastern counties of England (Fig. 10). The proportion of food crops (variable 24) is rather low, below 10% of arable land, in most of Scotland, Northern Ireland, Wales and northern and south western England, while in a few counties of East Anglia it is medium in relation to the world scale.

Industrial crops (variable 27) are of little importance in Britain, covering from below 1% of agricultural input in most counties to above 5% in a few counties of East Anglia and over 5% in Norfolk and Cambridgeshire only.

The proportion of animal products in gross production (variable 25) is high on the western side of the island and medium on the eastern side (Fig. 11) with the exception of a few counties in which it is very high (mainly suburban areas) and low in Humberside. The proportion of animal products in commercial production (variable 26) is very high in most of Britain, except south-eastern England where it is high or medium (Humberside, Lincolnshire, Norfolk).

Among farm animals, herd or herbivorous animals (cattle, sheep) (variable 28) prevail almost everywhere with the exception of some eastern counties where they are more or less equal to non-herbivorous animals (pigs, poultry) and in a few counties (Cambridgeshire, Essex, Humber, Norfolk, Suffolk) even lower. On the other hand in Scotland, Wales and the Cornish peninsula, herd animals are highly dominant.

TYPES OF AGRICULTURE IN BRITAIN

As mentioned above Market Oriented Agriculture clearly dominates over the whole of the country. In a few Scottish counties only, transitional types from Traditional to Market Oriented Agriculture in combination with the first seem to appear.

Four types of the 2nd order have been identified in Britain (Fig. 12). The most common however are two: Market-Oriented Mixed Agriculture.(Mm), the most characteristic for the eastern side of the country, and Market Oriented Agriculture Specialized in Livestock Breeding (Ma) – mainly for the western and the northern parts of the country, with a large belt in between with a combination of both types in various proportions.

Much less frequent are two other types of agriculture: Market Oriented Large Scale Agriculture (Ml), identified in various combinations with the former types, scattered in some counties of central or eastern England, and less advanced Market Oriented Large Scale Extensive Agriculture (Me), combined with other types found in the Grampian Region of Scotland only.

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Fig. 9. Variable 20: Commercial agricultural production in conventional units per one hectare of agricultural land

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Fig.10. Variable 23: Percentage rate of permanent grassland/including leys within field-grass system in the total agricultural land

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Fig. 11. Variable 25· Percentage rate of animal products in gross agricultural production

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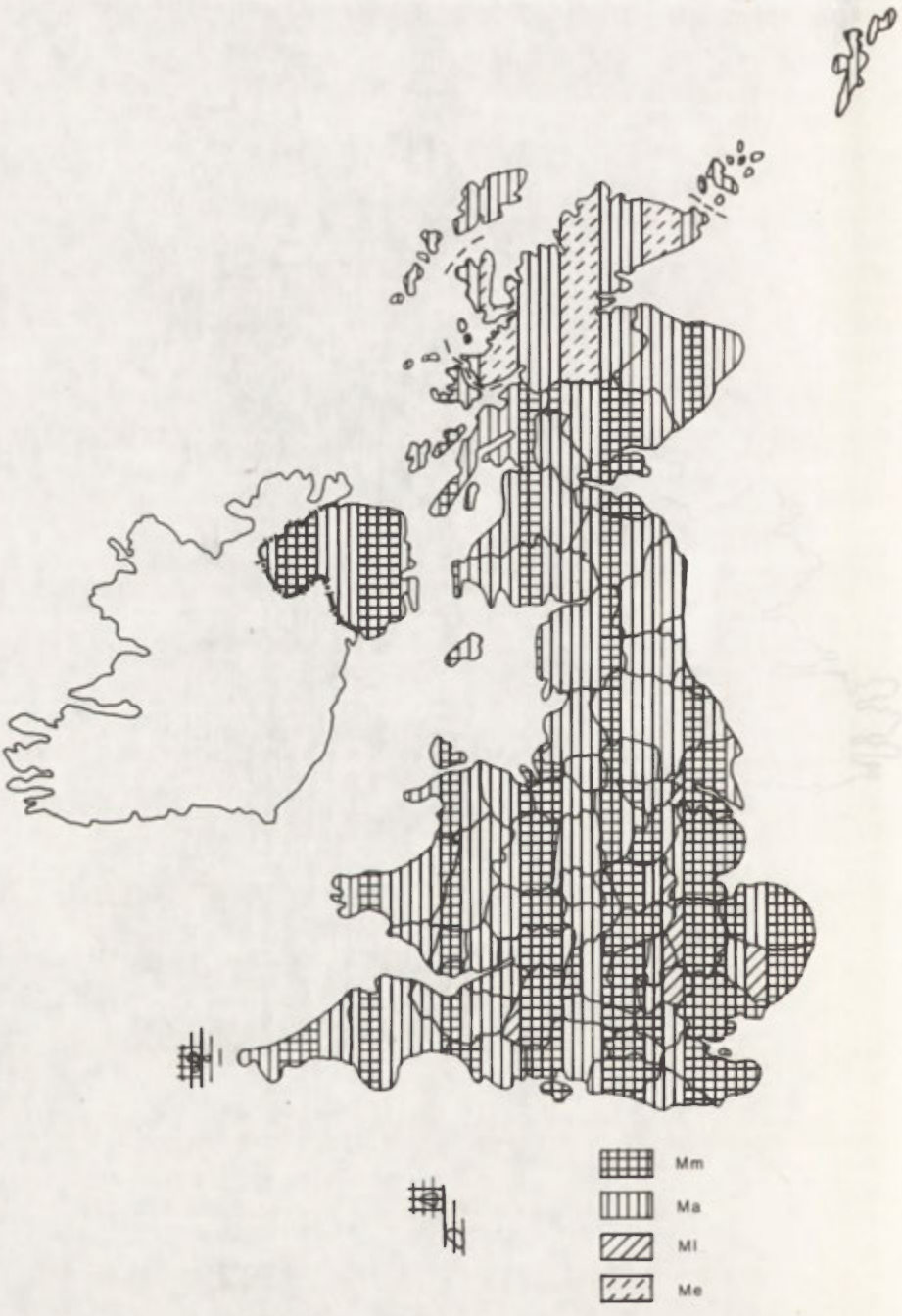

Fig. 12. Types of agriculture of the 2nd order

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Fig. 13. Types of agriculture of the 3nd order

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Within each of these types of the 2nd order a number of types of agriculture of the 3rd order have been described (Fig. 13). Out of them ten have been identified in Britain, again with varying frequencies.

Within Market Oriented Mixed Agriculture (Mm) the most common is Mmm type. It is a small scale agriculture with medium inputs of labour, but very high capital inputs, high density of livestock, high land an labour productivity, high commercialization but low specialization, low proportion of permanent grassland, almost equal importance of crop and animal products and equal proportion of herd to non-herd animals.

The most characteristic for west-central Europe, this type, while clearly dominating in one county only (Humberside), combined with the Mlm type is very common in East Anglia and in the neighbouring counties, and with the Mam type occurs in a large tract stretching from southern England, across the Midlands to northeastern England, and also may be identified in the Fife county of Scotland.

The other subtypes of the Mm type are less frequent in Britain. The less advanced and more crop oriented Mmr type could be treated as transitional from the Traditional to Market Oriented Agriculture. It is a medium scale agriculture with low inputs of labour, very high mechanization, low density of farm animals, medium land but high labour producivity, and medium to high commercialization. It is also characterized by a low proportion of permanent grassland, medium proportion of food crops and low proportion of animal products, but high proportion of herd animals.

This type described initially from central France, has been identified in Britain, combined with the Mmm type on the Isles of Scilly only.

On the other hand the Mmv type represents very intensive mixed agriculture with crop growing prevalent. It is a small scale agriculture, with low inputs of labour, but very high capital inputs, often irrigated, with medium density of livestock, very high land and labour productivity and commercialization, but low specialization (vegetables important), very low share of both perennial crops and permanent grasslands, low to very low proportion of animal products and equal proportion of herd and non herd animals.

This type described from the Netherlands, combined with the other types, has been identified in a few counties only (Lincolnshire and the island of Jersey).

Among types of mixed agriculture with livestock breeding prevalent, the first two (Mmg and Mmw) could be treated as more or less transitional from the Traditional (T) to Market Oriented Mixed Agriculture (Mm) and at the same time to Market Oriented Agriculture Specialized in Livestock Breeding (Ma).

The first (Mmg) is less intensive. It is small to medium scale agriculture, with medium inputs of labour, low to medium capital inputs, medium density of livestock, medium to high land productivity, medium labour productivity and commercialization, medium proportion of permanent grasslands, very low proportion of food crops, medium percentage share of animal products in gross production, but very high in commercial production, which means that animals, mainly herd animals, are still fed on the farmers' own feed.

This type quite common in Britain in the past, combined with the other types has been identified at present in the Grampian county of Scotland only.

The Mmw type is not much more common, identified in combination with other types in the West Glamorgan county of Wales only. More intensive than the former, this type represents a small scale agriculture with medium inputs of labour, but very high capital inputs, very high density of farm animals, medium land productivity, high labour productivity, but medium commercialization and specialization. The percentage share of permanent grassland is very high, that of food crops very low, the proportion of animal products in gross output is rather low, but very high in commercial output, the proportion of herd animals is very high.

At present this type is quite common in the Scandinavian countries, the Alps, the Pyrenees as well as in Belgian Wallonia.

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In general a certain sequence may be observed in Europe: from the traditional types with animal breeding prevalent such as Tmk or Tmh, through the transitional forms represented by the Mmg and Mmw types to Market Oriented Agriculture Specialized in Livestock Breeding such as the Mam type.

Exceptional to that line of development is, however, the Mmi type, described from the Netherlands, but identified in Britain, combined with the other types, on Jersey Island only. It is a small scale agriculture with medium inputs of labour, very high capital inputs, partial irrigation, very intensive cropland use, very high density of farm animals, very high land productivity, high labour productivity, very high commercialization, and medium specialization, higher than elsewhere in Britain but low on the world scale in the proportion of perennial crops, very low proportion of permanent grasslands, low proportion of food crops, and high proportion of animal products in gross production and very high in commercial production. The proportion of herd and non herd animals is comparable.

Within Market Oriented Agriculture Specialized in Livestock Breeding (Ma) the most common in Britain is the Mam type. It is a medium size agriculture with low inputs of labour, but very high levels of mechanization and of chemical fertilization, high density of livestock, high to very high land and labour productivity, commercialization and specialization, high percentage share of permanent grassland, very low proportion of food crops, high proportion of animal products in gross production and very high in commercial production, mainly from herd animals.

It is at the same time the most common type of British agriculture. It clearly dominates in many counties of southern and western England (East Sussex, Isle of Wight, Dorset, Cornwall, Somerset, Wiltshire, Gloucestershire, Hereford, Worcestershire, Salop, Staffordsdshire, Derbyshire, Cheshire, Northern Yorkshire) and also in southern Wales, Northern Ireland and the Lothian region of Scotland. Combined with the other types (Mmm, Mab, Mai) it occurs in numerous other counties of England, Wales and Scotland. In comparison with the other countries of Europe this type is the most widespread in Britain, but identified also in Sweden, Switzerland and northern Italy.

The most intensive and productive among the Ma types, but much less frequent than the former is the Mai type. It is a small to medium scale agriculture with low inputs of labour, but very high capital inputs, very high density of farm animals, very high land and labour productivity, commercialization and specialization, very high proportion of animal products from both herd and non herd animals.

Described originally from Netherlands, combined with the other types it has been identified in the West Midlands, Greater Manchester, South and West Yorkshire, Avon, Guernsey and Fifeshire in Scotland.

More common is the Market Oriented Extensive Agriculture Specialized in Livestock Breeding (Mab) which is transitional to the Market Oriented Extensive Agriculture (Me).

In terms of a number of employed people it is small scale, in terms of acreage – large scale, and in terms of agricultural output – medium scale agriculture. It is also characterized by very low inputs of labour, high level of mechanization, medium level of chemical fertilization, low density of farm animals, low to medium land productivity, very high labour productivity, high degree of commercialization but low commercial production per unit area, high specialization in herd animals, grazed mainly on permanent grasslands.

More characteristic in such countries as North America and Australia, in Britain this type is most common in Scotland, where it dominantes in the Highland, Tayside, Central, Strathclyde, Dumfries and Galloway counties in the Hebrides and Shetlands and in the county of Powys in Wales. Combined with other types it has been also identified in the Border region of Scotland and a few northern counties of England.

Within the type of 1st order Market Oriented Large Scale Agriculture (Ml), one type

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only has been identified in Britain, namely Large Scale Mixed Agriculture (Mlm). It consists of large scale farming, with low inputs of labour, very high level of mechanization and chemical fertilization, medium density of livestock, high land productivity, very high labour productivity, very high commercialization, but low specialization. The percentage share of permanent grasslands is low, the proportion of food crops and animal products medium, that of herd and non herd animals equal.

Identified also in France, this type of agriculture combined with other types, has been recognized mainly in eastern and southeastern England (Greater London, Berkshire, Hampshire, Oxfordshire, Hertfordshire, Essex, Suffolk, Norfolk, Cambridgeshire, Lincolnshire, Nottinghamshire, and also in Tyne and Wear and Fifeshire).

The distribution of agricultural types of 3rd order is highly diversified and complicated (Fig. 13). It could be simplified by grouping them into the following agricultural regions:

1. Eastern Region covering large areas of eastern England, from Kent, West Sussex and Hampshire in the south, to Lincolnshire, Humberside, Cleveland and Tyne and Wear in the north, in which Market Oriented Mixed Agriculture (Mm) prevails over the other types.

2. Western Region, from Cornwall, across Wales and western England to Lancashire and North Yorkshire, including perhaps also Northern Ireland, where Market Oriented Agriculture Specialized in Livestock Breeding (Mam) dominates or prevails.

3. Northern Region, covering the whole of Scotland and the northern counties of England, in which Market Oriented Extensive Agriculture dominates or prevails.

Within these macro-regions, a number of sub-regions may be identified, based on the proportions of the principal types of agriculture and also on the share of those which are less frequent. If needed, such a study could be made successfully based on units smaller than the counties.

The picture presented above has been based on data for the year 1976 and in spite of the dynamic classification that allows for some remarks on the evolution of agriculture, it is essentially static. To make it more dynamic, the typologies need to be repeated. Until now that has been done for a few countries only, e.g. France (Bonnamour 1984), Belgium (Stola 1975, 1983), Austria, Finland (Szczęsny 1979, 1986) and Poland (Szczęsny 1981). These studies did not cover, however, more than one or only a few decades. The only typological study to cover a longer period of time, over 150 years, is that on the evolution of the Caribbean sugar cane plantations (Dembicz 1984, 1986) which demonstrated the value of typological method also for historical studies.

It seems to me that real value of typological studies of agriculture may be revealed by such a dynamic approach, which could be used, not only to know better the past evolution of agriculture on a given territory, but also to serve as a basis for forecasting, programming or planning (Kostrowicki 1974, 1975, 1976) further agricultural development.

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TABLE 1. Variables used in agricultural typology

A. Social attributes

1. Percentage rate of land held in common in the total agricultural land (arable land including fallow + perennial crops + permanent grassland).
2. Percentage rate of land in labour and share tenancy (share cropping) in the total agricultural land.
3. Percentage rate of land owned by private persons (irrespective of the land tenure system) in total agricultural land.
4. Percentage rate of land operated by the consciously planned collective or state enterprises in the total agricultural land.
5. Number of people actively employed in agriculture per one agricultural holding.
6. Amount of agricultural land in hectares per one agricultural holding.
7. Amount of agricultural gross production to conventional units per one agricultural holding.

B. Operational attributes

8. Number of people actively employed in agriculture per 100 hectares of agricultural land.
9. Number of draught animals (horses, mules, asses, oxen, buffaloes, if used in agricultural work)

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in conventional draught units per 100 hectares of cultivated land (arable land without fallow + perennial crops + cultivated grassland without uncultivated meadows and pastures).
10. Number of tractors and other self-propelling machinery in HP per 100 hectares of cultivated land.
11. Amount of chemical fertilizers in pure content (NPK) per one hectare of cultivated land.
12. Percentage rate of irrigated land in the total cultivated land.
13. Percentage rate of hervested land in the total arable land (including fallow).
14. Number of farm animals in conventional (large) animal units per 100 hectares of agricultural land.

C. Production attributes

15. Gross agricultural production in conventional units per one hectare of agricultural land.
16. Gross agricultural production in conventional units per one hectare of cultivated land.
17. Gross agricultural production in conventional units per one person actively employed in agriculture.
18. Commercial (delivered off farm) agricultural production in conventional units per one person actively employed in agriculture.
19. Percentage rate of commercial (delivered off farm) agricultural production in gross agricultural production.
20. Commercial agricultural production in conventional units per one hectare of agricultural land.
21. Degree of specialization in commercial agricultural production.

D. Structural attributes

22. Percentage of perennial (trees, shrubs, vines) and semiperennial (covering land without rotation for some years such as hops, cotton, sugar cane etc.) crops in the total agricultural land.
23. Percentage rate of permanent grassland (including leys within field-grass system and current fallow if used for grazing) in the total agricultural land.
24. Percentage of land under food crops (food grains, tuber, root and bulb crops, vegetables and fruits) in the total agricultural land.
25. Percentage rate of animal products in gross agricultural production.
26. Percentage rate of animal products in commercial agricultural production.
27. Percentage rate of industrial crops (such as fibre, oil, sugar crops and tobacco) in gross agricultural production.
28. Percentage rate of herd (herbivorous) animals in the total number of farm animals in conventional animal units.

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AIR POLLUTION PROBLEMS IN POLAND

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In the aftermath of World War II, Poland set about developing its industrial sector, largely based in the territory of Upper Silesia. The key to future industrial growth was coal – output from this region had flagged during the late 1940s overtook the wartime peak figure (86.7 million tonnes: 1943) during the 1950s, and reached 114 million tonnes by 1965.[1] In 1950 a committee was appointed by the State Planning Commission to produce a regional plan for the Upper Silesian Industrial District and was accepted in 1953. Regional changes in the industrialization of Poland were based on the exploitation of new raw materials for national growth purposes, and R. Wilczewski and co-authors have explained how since 1950 five new industrial regions have emerged to give more balance to the industrial map of the country.[2] This fitted well into the socialist ideal of greater equality, in which prewar areas and regions with little or no industry, now had access for the local inhabitants to industrial employment and services. Even so, by 1960 industry still contributed less than a third (29%) to the GNP compared with nearly half (48%) from agriculture and over a fifth (23%) from the service sector.[3] Thus it was only as the 1960s progressed that the threat of environmental disruption and air pollution in particular gradually became more evident.

The first disturbing realization came in 1959 when J. Paszyński revealed that the average daily deposition of particle matter in the Upper Silesian District equalled the combined total of London and Berlin, namely 3000 tonnes over twenty four hours.[4] By the mid-1960s the amount of deposition varied between 500–1200 tonnes per km^2/year,[5] in the ten largest cities of this region, whilst the SO_2 content of the air frequently breached the accepted safety limit of 0.25 mg/m^3 as seen in Table 1.

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[1] D. Turnock, *Eastern Europe. Studies in Industrial Geography*, (Dawson/Westview), Folkestone/Boulder, Colorado 1978, p. 209.

[2] R. Wilczewski, T. Lijewski and B. Kortus, Spatial industrial changes in Poland since 1945, in: F. E. I. Hamilton, ed., *Industrial Change*, Longman, London 1978, p. 80–98.

[3] D. S. Rugg, *Eastern Europe* (*The World's Landscapes Series*), Longman, London/New York 1985, Table, p. 20.

[4] J. Paszyński, Investigation of local climate in the Upper Silesian Industrial District, *Prace Geograficzne IG PAN*, 25, Warszawa 1959, p. 88–89.

[5] L. Dienes, Environmental disruption in Eastern Europe, ch. 9 in: I. Volgyes, ed., *Environmental Deterioration in the Soviet Union and Eastern Europe*, Praeger, New York 1974, p. 142; Ibid, Environmental disruption and its mechanism in East-Central Europe, *The Professional Geographer*, 26, 4, 1974, p. 375–381.

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TABLE 1. Upper Silesian District. Air pollution in major urban centres, 1964–1965

Urban centre	Surface particle deposition	Sulphur dioxide (mg/m^3)	
	tonnes/km^2/year	minimum	maximum
Chorzów	1,243.00	0.02	1.27
Świętochłowice	972.00	no data	no data
Siemianowice	661.80	no data	no data
Zabrze	592.08	0.001	1.15
Bytom	568.08	0.007	0.98
Ruda Śląska	555.36	0.003	0.93
Sosnowiec	520.20	no data	no data
Będzin	518.28	no data	no data
Mysłowice	496.20	0.006	0.95
Katowice	482.40	0.007	1.29
Gliwice	no data	0.01	1.56
Dąbrowa Górnicza	no data	0.006	1.33

Source: S. Žmuda, Vliv hospodářské činnosti cloveka na geografické prostredí na prikladu Hornoslezské Průmyslové Oblasti, in: *Teorie a metody vyzkum Ostravská průmyslová oblast ve 20 století* (Slezsky ústav ČSAV), Opava 1967, p. 125–126.

J. Paszyński rightly concluded that this situation resulted from intensive use of local coal supplies that contained a high sulphur content, which greatly increased the emission of harmful particles, often made worse during winter conditions and temperature inversion; actual deposition in the district varied as a result of prevailing air flow and precipitation.[6]

Another contributory factor to this situation up to the mid-1960s was the government's decision to locate power production in the Upper Silesian Coal Basin, with a heavy concentration in the Katowice province (*województwo*).[7] Here thermal power stations produced large quantities of fly ash with a high sulphur content; similarly, the location of electric furnaces for steel production in this region also contributed to air pollution. S. Jarzębski, J. Kapała and E. Białas–Lubina demonstrated in the late 1960s how these furnaces added to environmental disruption through both gas and dust emissions; they proved that dust emission from these electric furnaces increased according to capacity, so that a 1.5 tonne furnace emitted 0.87 kg of dust/tonne of steel, whereas a 15 tonnes counterpart ejected 5.66 kg of dust/tonne of steel.[8]

After 1965 industrial development and increased thermal electricity production began to be located in other parts of the country with an ensuing increase and dispersal of air pollution. New power stations based on lignite were constructed, e.g. at Pątnów (1600 MW) in the Konin Lignite Basin, and the station on the Turoszów Lignite Basin

[6] J. Paszyński, Der Jahresverlauf der Luftverunreinigungen im Oberschlesischen Industriegebiet, *Angewandte Meteorologie*, 4, 6, 1962, p. 161–165; Ibid, L'influence des conditions climatiques sur le développement des villes, *Geographia Polonica*, 12, 1968, p. 97–100.

[7] L. Luchter, Zmiany w strukturze przestrzennej potencjału produkcji energii elektrycznej Polski w latach 1965–1978, *Prace Geograficzne*, 62, Zeszyty Naukowe UJ, Kraków 1985, p. 114.

[8] S. Jarzębski, J. Kapała and E. Białas–Lubina, *Zasady wyznaczania wskaźników emisji zanieczyszczeń powietrza atmosferycznego z procesów przemysłowych*, vol. 3: Proces wytapiania stali w elektrycznych piecach łukowych, PAN, Wrocław 1970, p. 21.

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was enlarged (2000 MW), resulting in higher pollution problems during the late 1960s. This was reflected in the overall degree of air pollution through industrial dusts and gases in Poland for 1967 (Fig. 1). T. Lijewski has shown the relationship between deteriorating environmental quality and industrial development in Poland between 1945 and 1970, based on extensive studies undertaken at the Institute of Geography and

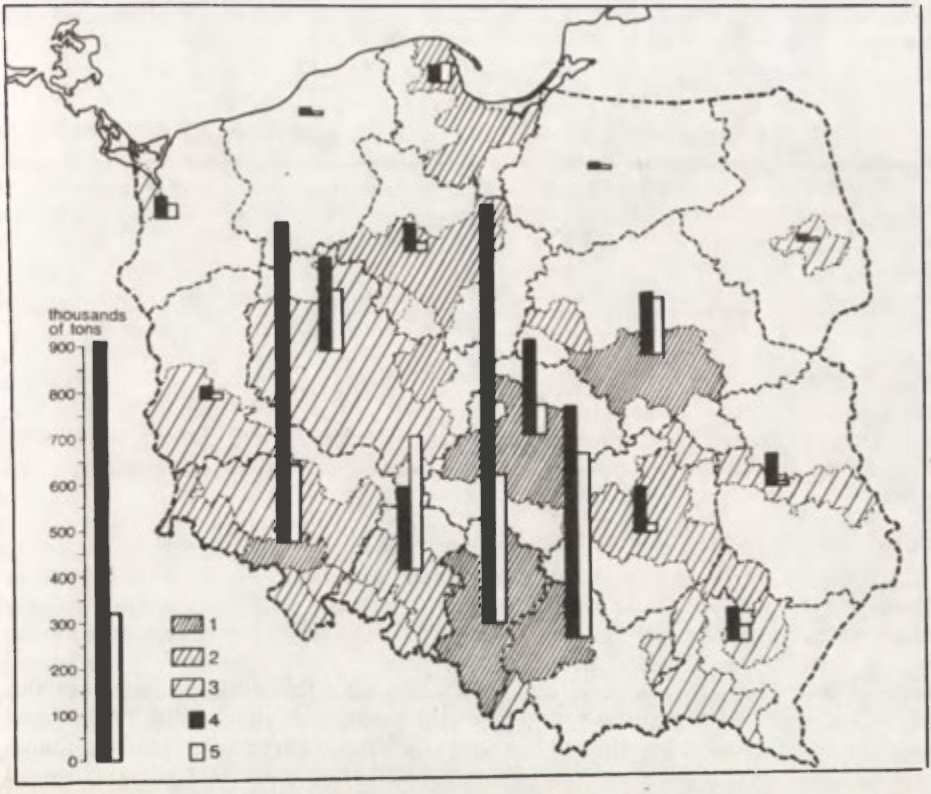

Fig. 1. Degree of air pollution by industrial dusts and gases in Poland, 1967: 1 – industrial regions, 2 – industrial areas, 3 – industrialized areas, 4 – dust emission in t/year, 5 – gas emission in t/year. For 1967

Source: W. Szafer 1973

Spatial Organization of the Polish Academy of Sciences. Here, 1306 industrial plants with capital intensive investments and fixed assets of over 20 million zlotys (i.e. ca one million dollars) were studied.[9] Suffice to say that by 1970, over one million people were employed in these factories (a quarter of Poland's socialized industry), with fixed assets totalling over 40% of the country's industry. Such investment and expected production norms could apparently not be sacrificed for improvement in air quality and healthier working conditions.

[9] T. Lijewski, Environmental quality and industrial development in Poland (1945–1975), *Bochumer Geographische Arbeiten*, 39, Bochum 1980, p. 49.

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The other noticeable factor prior to the 1970s in Poland was the apparent growth of benzopyrenes in air pollution, especially over cities. Benzopyrenes are mainly found in car exhaust fumes, together with dust from rubber tyre abrasion and asphalt pavements. Investigations by J. Juda, S. Maziarka and H. Wyszyńska demonstrated the high content of benzopyrenes, especially benzo(a) pyrene (BaP) in the atmosphere of selected large Polish urban centres, which compared rather unfavourably with some other world cities (Table 2). Such results may help partially to explain why at this time solar radiation in Warsaw was being reduced annually by 5%, and in the Upper Silesian Industrial District by well over twice this amount.[10]

TABLE 2. Incidence of benzo(a) pyrene in the atmosphere of selected cities, 1967

City	BaP mg/m^3	Polish city	BaP mg/m^3
Washington	9.3	Warsaw	29.0
Tokyo	15.1	Cracow	63.0
Osaka	50.0	Katowice	76.0
Budapest	32.2	Gdańsk	84.0
Kiev	9.2	Zabrze	133.0
Leningrad	15.0		
Tashkent	112.0		

Source: J. Juda, S. Maziarka & H. Wyszyńska, Węglowodory rakotwórcze w powietrzu atmosferycznym 10 wybranych miast w Polsce, *Ochrona Powietrza*, 4. Warszawa 1970. pp. 14–16.

During the 1950s and 1960s therefore, Poland had experienced a worsening of its atmospheric pollution. Undoubtedly this was connected with the country's massive industrialization drive which between 1955 and 1965 placed Poland amongst the top ten countries in the world regarding the rate of industrial development. Average annual increase in industrial production was 11%, i.e. double the world average over this period. A price had to be paid for such intensive economic changes; by 1970 annual emission of air pollutants in Poland has been estimated at between 4–5 million tonnes of dust and 2 million tonnes of gas, although distribution was rather unevenly spread between the country's provinces. Some regions, like the Upper Silesian Industrial Discrict, experienced a particularly heavy air pollution concentration.

The 1970s saw further intensification of industrial production in Poland. Coal output in the Upper Silesian Industrial District rose to 165 million tonnes by 1975, and the production of chemicals, including fertilizers and synthetic rubber was enlarged. Exploitation of local orefields outside Upper Silesia led to the founding of new metallurgical works as part of a comprehensive policy of decentralization away from the country's core industrial region. The Polish government also wished to shift the economy away from a strong agricultural dominance, particularly in the south and south-east. This meant a growth of investment industries to provide alternative employment opportunities in different regions. One result was the location of a huge metallurgical works at Nowa Huta, Cracow, initially planned in 1949. By the early 1970s its impact was beginning to be felt; ostensibly its location benefited from being half

[10] J. Kondracki, Sesja naukowa PAN w Szczecinie na temat „Człowiek i środowisko", *Czasopismo Geograficzne*, 42, 2, 1971, p. 194–200; M. W. Kraujalis, Artificial heat over the territory of Poland, *Geographia Polonica*, 21, 1972, p. 49–50.

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way between Ukrainian ore supplies and Silesion coal, and would use the ample water supplies from the Vistula river. In reality, cynics believe it was deliberately placed in the Cracow conurbation to modify the conservative, traditionally intellectual and bourgeois outlook of Cracow society; the new plant would infuse an industrial, proletarian community into Poland's former capital city.[11] Whatever the pros and cons of this decision, by the 1970s the metallurgical plant was making a considerable contribution to the pollution of the whole Cracow area. Similarly, iron-and-steel mills were adding environmental hazards to other parts of the country, including the capital Warsaw, Szczecin, Ostrowiec Świętokrzyski, and Stalowa Wola.[12]

Thermal power made the most decisive contribution to Poland's air pollution in the 1970s. The major trend was to locate some of these new stations away from coalfield sources and close to market consumption areas, e.g. Dolna Odra (1600 MW) power station near Szczecin, Kozienice (2600 MW) south of Warsaw, and Ostrołęka "B" (600 MW) north of the capital.[13] It was hoped that these plants would offset further environmental degradation in Upper Silesia along with chronic water shortages; in spite of such plans, new thermal plants were built in the Upper Silesian Coal Basin at Rybnik (1600 MW) and Jaworzno III (1200 MW), supposedly to utilize local low quality coal supplies,[14] i.e. with high pollutant properties.

Towards the end of the 1970s results of all this activity began to produce deterioration in Poland's air quality. Table 3 shows the situation in 1978: nearly 15 million tonnes of dust and gas were emitted in that year, a quarter dust, three quarters gas (25.25%: 74.75%). The table also reveals that industry/transport produced four fifths of total overall emission (81.56%), and a similar proportion of SO_2 (84.24%). They also added nearly three quarters of the CO (73.13%), and most of the N_xO_y. Energy production through thermal power stations, and industry together were responsible for over a third of dust (35.78%), and nearly a third of all gas (29.64%) emitted. Over half the SO_2 (58.72%) and nearly two thirds of the N_xO_y (63.05%) came from these sources. Transport contributed all the C_nH_m, H_2S and CS_2, along with three quarters of the CO. Thermal power stations produced about a fifth (22.88%) of total overall emission in 1978 and nearly a third of that from industry and transport (28.05%). The communal/housing sector played only a minor role in air pollution, largely CO emission, which reached just over a quarter (26.86%) of Poland's total.

Dust and gas emission for one year must be seen against a background of more general trends during the second half of the 1970s. Even so, they do give some idea of the general proportion of various pollutants in the overall framework, and, where data for other years are less forthcoming, suggest what may have been emitted. Material published on gas and dust emission by Poland's Central Statistical Office (GUS) for 1975–1979 does provide some insight into the situation (Table 4).

Clearly the two major sources show differing trends; dust emission rose by only about 5% over this period, while gas registered a rapid 60% increase. One suspects these official figures underestimate the true situation; some Polish sources admit that directors of the country's largest industrial enterprises, are indifferent to emission measurement, only occasionally (and sometimes never) reporting their totals.[15] Overall, in 1975, atmospheric emissions totalled nearly eleven million tons (excluding CO_2) according to J. M. Kramer and represented about three tons of air pollution per

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[11] A. Dawson, City profile: Kraków, *Cities*, 2, 1, 1984, p. 452.

[12] S. Berezowski, ed., *Geografia Ekonomiczna Polski*, PWN, Warszawa 1978, p. 248.

[13] Ibid, p. 244.

[14] L. Luchter, *op. cit.*, p. 118.

[15] *Trybuna Ludu* (13/XII/1983) Warszawa, p. 3; *Nowe Drogi* (VII/1978), Warszawa, p. 2.

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TABLE 3. Poland: Total emission of major atmospheric polluters according to economic sector, 1978 (in '000' s tonnes/year)

Type of air pollution	Overall total emission	Industry and transport			Communal/ housing sector total emission	% of overall total emission		
		total emission	of which energy production			industry and transport		communal/ housing sector
			from power stations	from industry			of which energy production	
Dust	3 770	3 102	902	447	668	82.28	35.78	17.72
Gas	11 159	9 075	2 514	794	2 084	81.33	29.64	18.67
of which:								
Sulphur dioxide (SO_2)	4 313	3 633	1 927	606	680	84.24	58.72	15.76
Carbon monoxide (CO)	5 156	3 771	–	–	1 385	73.14	–	26.86
Nitrogenous oxide (N_xO_y)	1 229	1 210	587	188	19	98.45	63.05	1.55
Hydrocarbons (C_nH_m)	433	433	–	–	–	100.00	–	–
Hydrogen sulphide (H_2S)	14	14	–	–	–	100.00	–	–
Carbon disulphide (CS_2)	14	14	–	–	–	100.00	–	–

Source: *Ocena aktualnego stanu środowiska w Polsce (synteza ekspertyzy)*. Komitet „Człowiek i Środowisko" (PAN). Warszawa 1981, pp. 1–93.

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TABLE 4. Poland. Air pollution from industrial enterprises and power plants, 1975–1979 (in million tonnes/year)

Type of emission	1975	1976	1977	1978	1979
Dust	2.2	2.3	2.3	2.4	2.3
Gas	3.0	3.3	3.4	4.4	4.8

Source: Główny Urząd Statystyczny, 'Ochrona środowiska i gospodarka wodna 1979', *Informacje GUS*. Warszawa. 1980. 1–269.

inhabitant; data for 1978 pollution reveals a ratio of 22 tonnes of dust and gas deposited on each km^2 of Poland's territory.[16]

The 1970s was a decade of fairly constant particle matter emissions, due to improved cleaning techniques, but between 1975 and 1980 gaseous material nearly doubled, due to poorer purification methods. Much of this pollution resulted from a heavy dependence on coal; pollution would have been higher, but for local hard coal with its lower sulphur content, unlike the softer brown coal/lignite which is heavily utilized by her immediate neighbours East Germany and Czechoslovakia. Even so industry was the main air polluter in the 1970s together with domestic household heating units. Polish industry generated about two-thirds of all air pollution due to its heavy dependence on domestic coal supplies, and in 1978 emitted about eight million tons of waste gases and dust into the atmosphere. This figure may, in reality, have been much higher, through erring enterprise directors not revealing their emission returns. S. Kozłowski has estimated that towards the end of the 1970s overall blame for air pollution rested largely with industrial plants (60%–70%), transport (mainly cars) ejecting 10%–15%, and residential heating boilers and ordinary individuals a further 15%–20%.[17]

Besides this national picture of Poland's air pollution in the 1970s there was considerable areal differentiation in various parts of the country. Two-thirds of all dust and gaseous matters emitted at the end of the 1970s came from six provinces: Katowice 32.3%, Cracow 13.4%, Legnica 7.1%, Jelenia Góra 5.6%, Konin 4.0% and Opole 3.0%. All these provinces are located within the southern half of Poland, mostly in the south-west, coinciding with major areas of heavy industry and power generation.

Most serious air pollution was recorded in Katowice province with a third of all dust and gas emission (Fig. 2). In 1977 this province contained 191 industrial plants which emitted 630 000 tonnes of dust, 187 of them ejecting a further 970 000 tonnes of gaseous matter.[18] Even more serious, over four-fifths of these plants were located within housing estates (160), and a further 29 were located within half a kilometre of them; only two plants were over two kilometres from any residential area. Besides industry, residential areas themselves added particle emission through over a million domestic heating boilers. True emission figures for 1977 in the province must therefore have been much higher, and S. Żmuda has calculated it as over 1.3 million tonnes of dust and a million of gas.[19]

[16] J. M. Kramer, *op. cit.*, p. 5.

[17] S. Kozłowski, *Przyrodnicze uwarunkowania gospodarki przestrzennej Polski*, Ossolineum, Wrocław 1983, p. 64.

[18] Wojewódzki Urząd Statystyczny w Katowicach 1977, *Stan, zagrożenie i ochrona środowiska naturalnego*, Katowice 1978, p. 6.

[19] S. Żmuda, Environmental development barriers of the territory of the Katowice voivodship, *Folia Geographica*, 13, Kraków 1980, p. 122.

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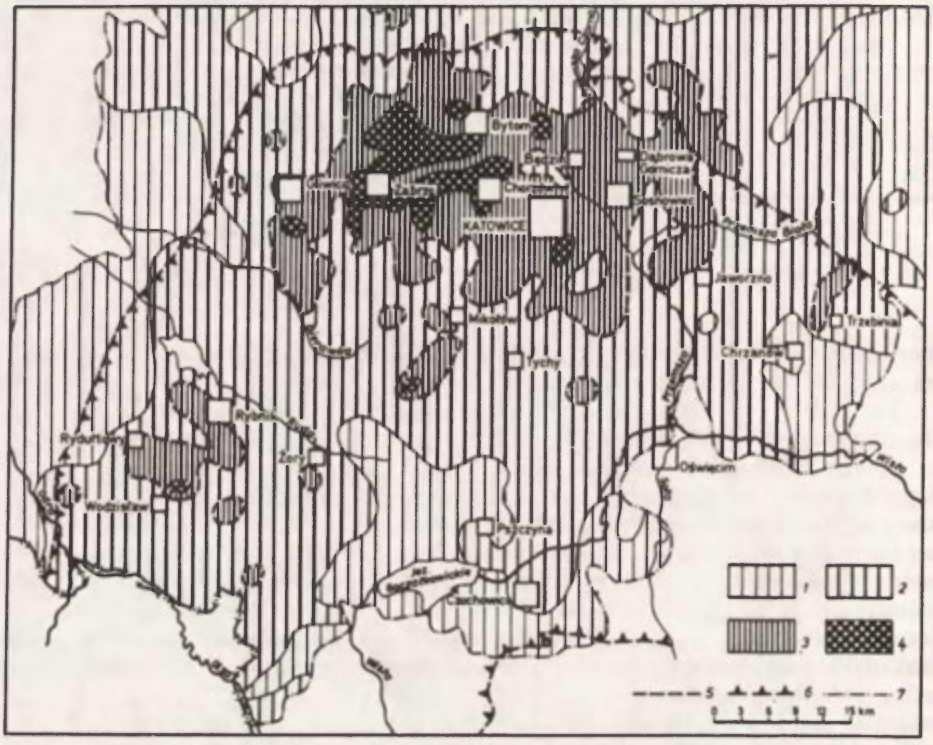

Fig. 2. Upper Silesian Industrial Region: Dust pollution, 1975: 1 – 53–125 tonnes/km^2/year, 2 – 125–250 t/km^2/yr, 3 – 250–500 t/km^2/yr, 4 – 500–1706 t/km^2/yr, 5 – 50 t/km^2/yr boundary norm, 6 – main industrial area, 7 – boundary of Katowice province till 1975
Source: S. Kozłowski 1983, p. 63

Interestingly enough, towards the end of the 1960s Katowice province recorded a decrease in gaseous emission, especially SO_2 but this was shortlived and during the early 1970s it rose once more; ejected gases averaged between 10% – 12% for the whole province and included an increase in nitrogenous oxides (N_xO_y), carbon monoxide (CO), and hydrocarbons (C_nH_m). Data on dust deposition, kept by the provincial sanitary/epidemiological station in Katowice for the years 1973–1975 revealed that the highest mean value was recorded at Zabrze-Biskupice (2024 tonnes/km^2), followed by Ruda Śląska and Nowy Bytom (1645 tonnes/km^2), and Chorzów Stary (1053 tonnes/km^2). Comparable figures for a decade earlier (Table 1) show that only Chorzów had declined, but only by 15%. The legal maximum admissible emission for this region set by the government is 250 tonnes/km^2; the above towns were therefore between three and seven times over the legal maximum.

Cracow's province suffers similar problems. Together with the Upper Silesian Industrial District it occupies less than three percent of Poland's territory, but manage to produce half the nation's gas and a third of its dust pollution. The three main sources of pollution in Cracow province are industry, domestic heating and vehicles, the latter least in importance. The province occupies a low basin of the Upper Vistula river, which sucks in polluted industrial air from Nowa Huta metallurgical plant to the east, the Upper Silesian belt to the west, and during the 1970s the aluminium works at Skawina to the south. As with the Katowice province, one must add sources emitted from

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residential apartments in the central city area, heated by low grade coal. Pollutants from this residential heating often hang over the city particularly during winter, due to temperature inversions. Sulphur dioxide (SO_2) is a particular threat, both to the health of local inhabitants and the city's historic buildings.[20] During the late 1970s S. Kasina's work in the province[21] dramatically illustrates the high concentration and deposition of SO_2 in the central city and industrial areas (Fig. 3a) whilst in 1979 the Cracow provincial atlas showed just how much of the area was above the PSL (Permissible safety level) of 0.15 mg/SO_2/m^3 (Fig. 3b).

These two case studies, and the other four most seriously polluted provinces, are only part of Poland's gas and dust problem. Other examples during the 1970s may be quoted. The city of Wroclaw and its surrounding area suffered considerably according to R. Janusiewicz and B. Terenkoczy;[22] using data for 121 industrial plants in Wroclaw in 1975 they revealed that 20 242 tonnes of dust were emitted, of which 92% came form heating broilers. Gas emission totalled 17 891 tonnes for that year, of which SO_2 formed 83%.[23] Further research by them in 1976 revealed dust deposition in some city districts e.g. Fabryczna, varied between 100–400 tonnes/km^2/year, and related to the presence of new thermal power stations at "Wroclaw I and II", and "Czechnica".[24] Heavy metal (lead, zinc, copper) deposition was also included in the data, but only lead recorded higher levels than the Polish legal maximum of 0.001 mg/m^3; those of copper (0.005 mg/m^3) and zinc (0.02 mg/m^3) were not exceeded.

More recently, J. W. and A. B. Zwoździak have published results of experiments carried out over two years on trace elements: Cadmium (Cd), Lead (Pb), Zinc (Zn) and Copper (Cu), emitted by a copper smelter near Wroclaw between September 1978 and September 1980.[25] Results of airborne Cu, Zn, Pb and Cd from varied sampling sites disclosed that in the immediate vicinity of the smelter (up to 2 km) deposition was ten times greater than surrounding semi-rural area (up to 12 km away). Distance-decay of these airborne metals is seen in Table 5.

Different distance-decay patterns for the individual trace-elements relates to particle size. At a 50 km radius of the smelter, Cu, Zn and Pb, were only between 6–8% of the mg/m^3 found at 2 km, but Cd was still 30% of the 2 km level and four times higher at the 5 km point. Perhaps more disturbing, even at 50 km from the smelter, all the trace metals were still above the Polish legal maximum.

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[20] F. W. Carter, Conservation problems of historic cities in Eastern Europe, *Occasional Papers*, 39 (Dept. of Geography), University College London, 1981, p. 20–25; Ibid, Historic cities in Eastern Europe: Problems of industrialization, pollution and conservation, *Mazingira: The International Journal for Environment and Development*, 6, 3, Oxford 1982, p. 62–76.

[21] S. Kasina, Precipitation acidity in the Kraków region, *Paper presented at a workshop on Ecological Effects of Acid Precipitation*, Galloway 1978 (Central Electricity Research Laboratories), mimeographed, 9 pp.; Ibid, Preliminary sulphur budget in the atmosphere-ground system in the Kraków region. *Paper presented at the International Symposium on Meteorological Aspects of Air Pollution*, Budapest 1978, 14 pp.; Ibid, Preliminary results of the investigations of aerosol, atmospheric sediments and precipitation acidity in the Kraków region, *Paper presented at the International Seminar on Meteorological Aspects of Air Pollution*, Leningrad 1977, 12 pp.; A. Manecki, Z badań mineralogicznych składu fazowego pyłów atmosferycznych Kraków, *Komunikaty z Posiedzeń Komisji Nauk Mineralogicznych PAN w Krakowie*, Kraków 1974, 18 pp.

[22] R. Janusiewicz and B. Terenkoczy, Wybrane elementy zagrożeń środowiska wielkomiejskiego na przykładzie Wrocławia, *Czasopismo Geograficzne*, 52, 3, 1981, p. 297–301.

[23] Anon, *Materiały Ośrodka Badań i Kontroli Środowiska*, Wrocław 1976, 43 pp.

[24] B. Terenkoczy, Dymy nad Wrocławiem, *Aura*, 11 Kraków 1978, p. 33–34.

[25] J. W. Zwoździak and A. B. Zwoździak, Trace-metal behaviour in the vicinity of a copper smelter, *International Journal of Environmental Studies*, 19, 1982, p. 35–41.

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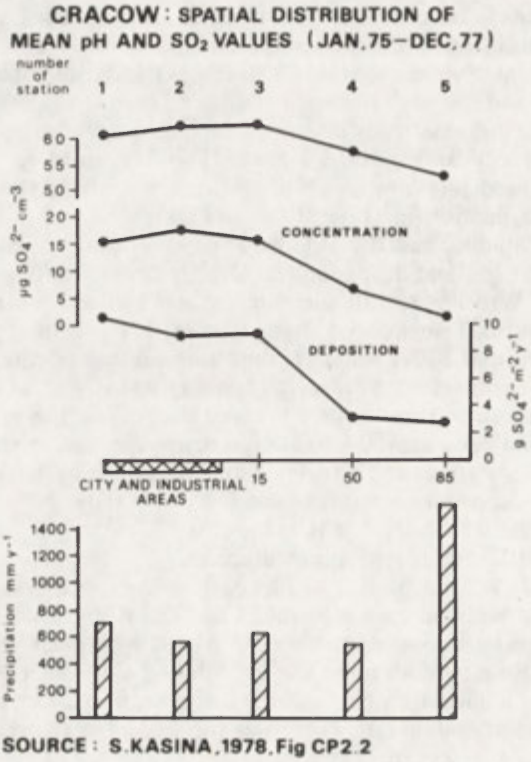

Fig. 3a

Most of the case samples referred to have come from the southern half of Poland, but this is by no means whole picture. For example, a pollution study of the Płock region, north-west of Warsaw was carried out in 1974. Considerable industry is located here, including a terminal of the "Friendship" oil pipeline from the Soviet Union, and a large refining/petrochemical plant established in 1964. Research revealed hydrocarbon (C_nH_m) emissions linked with the petrochemical refining process, together with certain odour forming chemicals like mercaptans. These consist of a substance analagous to an alcohol, with sulphur replacing oxygen; they produce a distinct odour, which proved to have the largest distance-decay function of all chemicals produced at Płock. T. Kowalczyk detected these odours not only within 50 km of source, (Gąbin, Gostynin, Sanniki and Sierpc), but also twice at that distance in Włocławek and Toruń over 100 km away.[26] This led him to conclude that for it to be detected at such a distance the methyl mercaptan must have contained twice the permitted concentration. The 1974 study also proved that SO_2 emission from Płock province exceeded the legal maximum of 0.35 mg/m^3 over an area of 250 km^2.[27] Petrochemical odours exceeding the accepted

[26] T. Kowalczyk, Biosphere and anthroposphere in the Płock District, in: *Village and Agriculture* (Selected publications in English from „Wieś i Rolnictwo" 1979–1980), (PAN, Institute of Rural and Agricultural Development), Warszawa 1984, p. 31.

[27] Biuro Projektów Ochrony Atmosfery „Proat" w Szczecinie, *Kompleksowe studium ochrony środowiska dla MZRiP w Płocku*, Szczecin 1974, p. 35.

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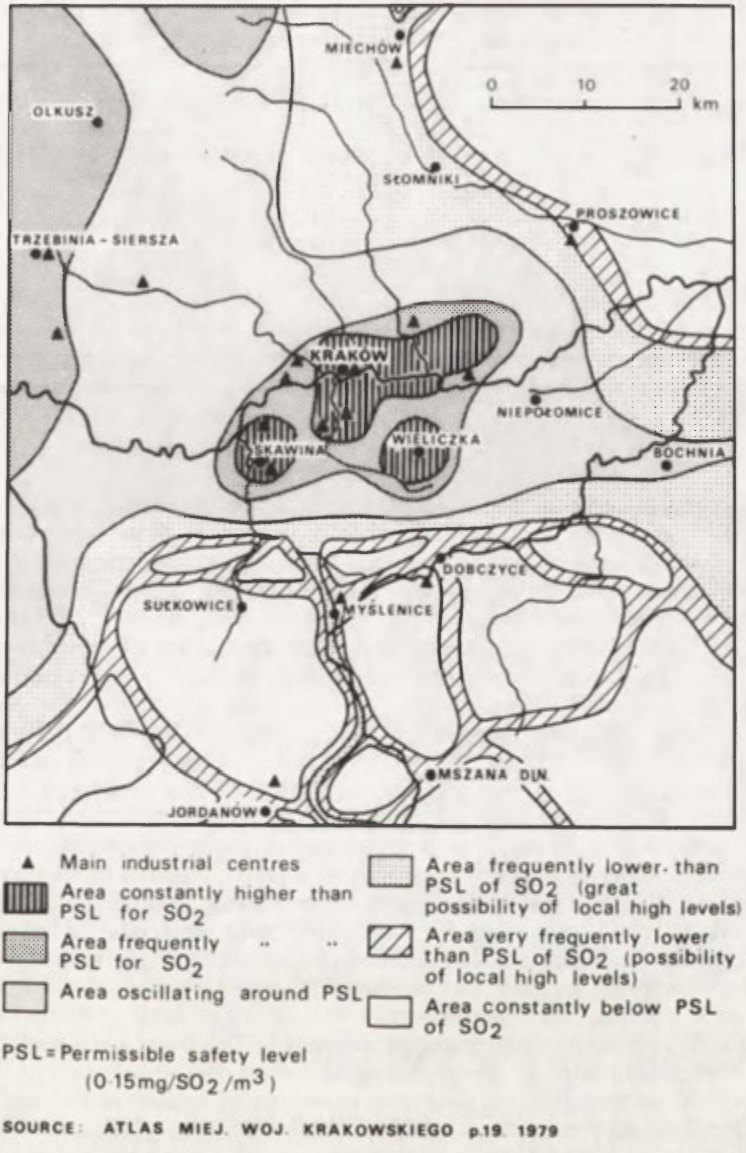

Fig. 3b. Cracow Region: Air pollution 1979

norm (0.01 mg/m^3) spread from Płock 10 km eastwards, 5 km northwards and 3 km to the south and west. Furthermore, it was noted that total hydrogen sulphide (H_2S) emission was considerably larger than the odours, which consisted mainly of components created from asphalt oxidation, mercaptans, hydrocarbons and hydrogen sulphide. The refinery was modernized in 1977 and this led to increased SO_2 emission averaging 9.6 tonnes/hour; this in turn meant 400 km^2 had to be declared an endangered area around the factory site whilst hydrocarbon mixtures above the PSL level covered a range of 600 km^2 from the site.

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TABLE 5. Atmospheric concentration of certain trace-elements emitted from a copper smelter near Wroclaw (IX/1978-IX/1980), in mg/m^3

Distance from smelter (in km)	Copper (Cu)	Zinc (Zn)	Lead (Pb)	Cadmium (Cd)
2.0	2.17	2.74	4.00	0.10
3.1	1.40	1.59	2.13	0.19
5.1	1.28	1.47	2.13	0.43
6.8	0.37	2.04	2.02	0.23
8.5	0.42	2.43	2.85	0.26
10.0	0.28	1.21	1.42	0.23
50.0	0.14	0.20	0.32	0.03

Source: J. W. Zwozdziak & A.B. Zwozdziak, Trace-metal behaviour in the vicinity of a copper smelter, *International Journal of Environmental Studies* 19, 1982, Table 1, p. 38.

Finally, deposition of airborne pollutants on the Baltic Sea was analyzed for the early 1970s by H. Rodhe, R. Söderlund and J. Ekstedt.[28] The Baltic is constantly being peppered with airborne pollutants, and the authors calculated deposition rates for a number of them including inorganic non-metals, metals, radionuclides and organic compounds. Atmospheric deposition was found to be a major source of nitrogen compounds and lead in the Baltic, whilst the deposition of other metals and radionuclides may also have contributed to the sea's pollution load. Poland's involvement in this process revolved around air mass origins reaching the Baltic. Air trajectories were calculated for every six hours from 1/VII/1972 to 1/IV/1975 and estimates made of their position 24 hours previously. This was plotted and an isoline encircled the area of highest frequency (expressed in per '000 according to 5° lat, by 5° long "squares") defined as exceeding 25 per '000. Poland covered two grid "squares" and had values of 39 and 28 per '000. This suggests Poland too contributed to Baltic airborne pollution during thist test period. Other evidence supports Polish involvement; for example in 1972 the Gdańsk oil refinery was established to process 3 million tonnes annually. W. Milewski believes this plant added to atmospheric pollution but by the end of the decade, he concludes that a 90% drop in hydrocarbon (C_nH_m) emission had been achieved at the plant together with a reduction in SO_2 levels.[29]

The first half of the 1980s has experienced continuing air pollution problems for Poland, and air quality appears to be deteriorating annually.[30] This trend was already apparent in 1980; that part of territory designated as above the PSL (8400 km^2) in 1975, had reached 10 670 km^2 by 1980 i.e. a 27% increase. Spatially much of this increase was concentrated in three provinces, with Legnica the worst affected (3000 km^2) followed by Katowice (2371 km^2) and Cracow (1516 km^2). Equally worrying was the alarming growth of areas above PSL in some other, previously little affected, provinces; between 1975 and 1980 the area above PSL in the Elbląg province had increased sixfold (633%), in Koszalin (550%) and Poznań (500%) and more than twice (250%) in Słupsk province.

By 1980 the inhabitants of Katowice province appear to have been the most

[28] H. Rodhe, R. Söderlund and J. Ekstedt, Deposition of airborne pollutants on the Baltic, *Ambio*, 9, 3–4, Stockholm 1980, p. 168–173.

[29] W. Milewski, Czyste niebo nad Gdańskiem, *Przyroda Polska*, 12, 1979, p. 11–12.

[30] A. Kassenberg and C. Rolewicz, *Przestrzenna diagnoza ochrony środowiska w Polsce*, PWE, Warszawa 1985. p. 36.

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subjected to air pollution. People in this province directly exposed to above PSL's rose by 667000 between 1976 and 1980; nearly a million people suffered from intensive fallout of poisonous and strong toxic dust/gases in 1980, with PSL barriers exceeded several times over, which continue to rise. Moreover about 2.6 million (over 70%) of the province's total population live in areas subjected to various levels of air pollution intensity, which exposes them to considerable health risks.[31] The percentage of people at high risk from other provinces in 1980 were in Cracow (10%), Gdańsk (9.2%), Łódź (6.7%), Wroclaw (6.6%) and Szczecin (5.7%).

A survey on industrial pollution and atmospheric protection in 1981 carried out by the food and agriculture department of Poland's statistical service[32] designated three major pollution groups; first, sulphur dioxide (SO_2), nitrogenous oxides (N_xO_y) and carbon monoxide (CO), which the survey stated had wide dispersion and high concentration in Poland; secondly, lead (Pb), Cadmium (Cd), arsenic (As) and mercury (Hg) also with wide dispersion rates, high toxicity and persistent throughout the environment. Thirdly, cancerous highly dispersive hydrocarbons (C_nH_m) were admitted as "dangerous to people's health".[33] Given these details, what evidence exists for the Polish situation? In 1980, Poland produced more than 16 million tonnes of atmospheric pollution, half coming from industry. Between 1975 and 1980 (Fig. 4) dust particles from industrial sources only increased about 5% and have since declined below the 1973 level; conversely, industrial gas emission rose by more than two thirds over the 1975–1980 period[34] and the latest figures (1984) show little improvement. Sulphur dioxide emission in 1980 was over 4 million tonnes i.e. 8.3% of total emission from the region covered by the United Nation's European Economic Commission.[35] By 1980, 120 kg of SO_2 annually were emitted for each Polish inhabitant or the surface area equivalent of 14 tonnes/km^2/year.

The question therefore arises who are the main culprits in this emission? Tables 6 and 7 provide some of the answers. Clearly, thermal electric power stations play an important role; in 1980 they ejected well over a third of the gas and nearly half the dust emitted into Poland's atmosphere. Metallurgical plants were another serious contender, emitting well over half the gas and nearly a seventh of the dust, whilst cement works provided a fifth of the dust total. The 29 industrial plants mentioned in these tables between them supplied over a quarter of the country's total air pollution for 1980, with fly ash and SO_2 the dominant pollutants. These 29 enterprises when mapped give a disturbing distribution. A third of them were in the Upper Silesian Industrial District and supplied 34.06% of the dust and 37.63% of the gases to Poland's air pollution total. Moreover, if a line is drawn halfway through the country, roughly from Szczecin to Chełm, then all the major emitters were located south of this line (Fig. 5), which contains some of Poland's largest urban agglomerations (Table 8). Nearly three-quarters of Poland's atmospheric pollution fell on urban areas in 1980, over a quarter of which was deposited on the Upper Silesian Industrial District. This area covers only 2% of Poland's territory, but contains a tenth of its population; it also produces a third of the state's coke, a quarter of its electricity, over half its steel, 98% of its coal, and all its lead

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[31] Ibid.

[32] Wydział Rolnictwa i Gospodarki Żywnościowej GUS, *Przemysłowe zanieczyszczenia i ochrona powietrza atmosferycznego 1975–1980* (Opracowanie statystyczne), Warszawa 1981, 75 pp.

[33] Ibid, p. 9.

[34] Anon, Ochrona środowiska i gospodarka wodna 1981, *Statystyka Polski – Materiały Statystyczne*, No. 3, GUS, Warszawa 1981, p. 181–182.

[35] Anon, *Informacja nt. stanu realizacji konwencji o transgranicznym zanieczyszczeniu powietrza na dalekie odległości w Polsce*, MAGTiOŚ, Warszawa 1981, p. 5.

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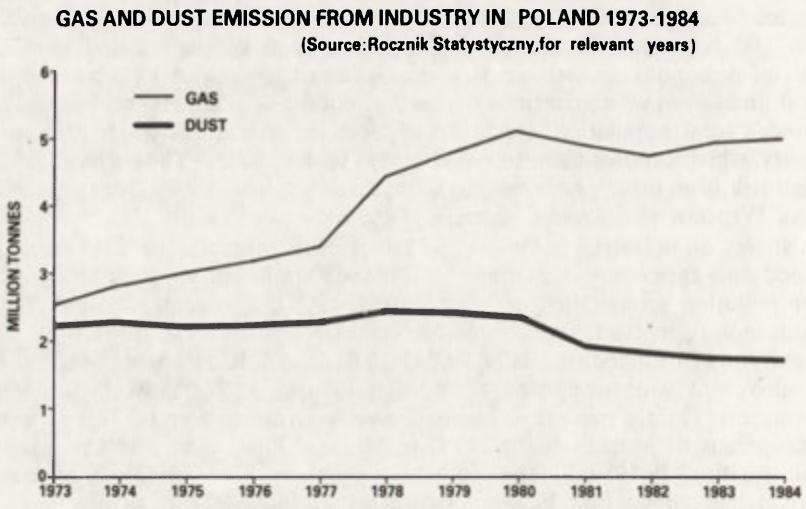

Fig. 4

and zinc ores. Of the 928 industrial enterprises in Poland (1980) given "A" category (i.e. worst environmental polluters), over a fifth of them (192) are located here (Table 8). In 1980 these enterprises ejected 650 000 tonnes of dust and 1.77 million tonnes of gas (mainly SO_2) into the atmosphere. While total dust emission for 1980 was similar to 1964 – 1965 (Table 1), gas emission has risen dramatically. Even dust deposition showed little improvement over the fifteen year period 1965 – 1980; every urban area at both dates received above the PSL for Poland of 250 tonnes/km^2; many Upper Silesian cities received over 1000 tonnes/km^2/year (e.g. Bytom, Gliwice, Zabrze), in other words a kilogramme of particle matter was deposited on each square metre of surface area.

Besides the Upper Silesian Industrial District, the hardest hit areas in 1980 were the Cracow region, and the Legnica/Głogów Copper Basin. The Cracow region suffers from being downwind of Upper Silesia; more locally the city, in a humid valley, is squeezed between a large aluminium plant (operative up to the early 1980s), and the massive Lenin metallurgical works. Research efforts by the Polish Ecological Club have revealed that the city and its immediate environs are seriously threatened by industrial pollution. Their findings indicate that in 1980 dust fallout over the city was nine times above the national limit, and that every year 170 000 tonnes of dust and 1.2 million tonnes of gas (mostly SO_2 and CO) fall on Cracow; further as Table 8 illustrates, Cracow's urban agglomeration has the highest pollution emission per km^2 in the country (548 tonnes/km^2), 15% higher than the Upper Silesian region. The main source of this emission was the Lenin iron and steel combine, which ejects 88% of all dust and gas falling on Cracow, while the Skawina aluminium plant, "Solvey" soda factory, "Bonarka" cement works and other polluting plants, added even more to the total. The steelworks alone gave off 7 tonnes of cadmium, 170 tonnes of lead, 470 tonnes of zinc and 18 000 tonnes of iron in its annual dust emission.[36] Such quantities have prompted K. A. Waksmundzki to conclude that Cracow is a "city of death".[37]

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[36] Polski Klub Ekologiczny, *Quo Vadis, Cracovia?* (*Jaki jest Kraków, a czym i jaki ma być w przyszłości?*), Problemy Ekologiczne Krakowa, 5, Kraków 1981, p. 15 – 18; *Kraków Przemysłowy* (Nauka dla Wszystkich, No. 97), PAN, Kraków 1969, 30 pp.; Ibid, The role of industry in regional development. The case of the city of Cracow, *Folia Geographica, Ser. Geographica-Oeconomica*, 13, Kraków 1980, p. 58.

[37] K. A. Waksmundzki, Kraków – miasto śmierci? *Dziennik Polski* (4/4/1985), London, p. 3.

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TABLE 6. Poland. Major industrial dust polluters, 1980 (above 30000 tonnes/year)

Industrial source	Plant location	Emission			Type of dust in percent			
		'000's tonnes/year		%	fly ash	cement dust	metallurgical dust	other dust
Power stations	Łaziska Górne	31.6			94	–	–	6
	Świerże Górne	49.9			100	–	–	–
	Bogatynia	145.0			100	–	–	–
	Pątnów	44.3	489.9	46.72	100	–	–	–
	Konin – Gosławice	46.2			100	–	–	–
	Korytków	45.0			100	–	–	–
	Stalowa Wola	53.5			100	–	–	–
	Jaworzno	74.4			100	–	–	–
Heat/power generating plants	Warsaw ('Żerań')	43.2	95.7	9.13	100	–	–	–
	Warsaw ('Siekierki')	52.5			100	–	–	–
Cement works	Nowiny	55.9			–	100	–	–
	Strzelce Opolskie	46.2			–	100	–	–
	Wierzbica	43.4	224.7	21.43	16	84	–	–
	Chełm	33.5			–	98	–	2
	Ogrodzieniec	45.7			–	95	–	5
Metallurgical plants	Dąbrowa Górnicza	62.3	141.4	13.48	63	–	34	3
	Cracow	79.1			37	–	48	15
Chemical factory	Oświęcim	97.0		9.24	91	–	–	9
Total/Average			1048.7	100.00	85.78	95.40	41.00	6.66

Source: Wydział Rolnictwa i Gospodarki Żywności GUS, *Przemysłowe zanieczyszczenia i ochrona powietrza atmosferycznego* 1975–1980 (Opracowanie Statystyczne), Warszawa 1981, p. 9–11

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TABLE 7. Poland. Major industrial gas polluters, 1980 (above 50000 tonnes/year)

Industrial source	Plant location	Emission			Type of gas in percent		
		'000's tonnes/year		%	carbon monoxide (CO)	sulphur dioxide (SO_2)	other cases
Power stations	Bogatynia	213.0			–	90	10
	Jaworzno	164.9			1	99	–
	Rybnik	148.5			2	98	–
	Świerże Górne	132.9			–	100	–
	Trzebinia	131.0			1	99	–
	Łaziska Górne	113.1			3	87	10
	Gryfino	111.4	1270.8	38.90	–	100	–
	Pątnów	103.9			–	100	–
	Skawina	79.9			–	100	–
	Będzin	72.2			4	96	–
Metallurgical plants	Legnica	105.5			74	25	1
	Tarnowskie Góry	110.2			91	9	–
	Żukowice	360.5			66	27	7
	Cracow	739.0	1873.9	57.36	85	8	–
	Dąbrowa Górnicza	413.9			83	14	3
	Chorzów	75.7			83	16	1
	Częstochowa	69.1			78	15	7
Petro-chemical refinery	Płock	122.1		3.74	9	9	34
Total/Average		3266.8		100.00	44.61	63.33	9.12

Source: Wydział Rolnictwa i Gospodarki Żywnościowej GUS, *Przemysłowe zanieczyszczenia i ochrona powietrza atmosferycznego* 1975–1980 (Opracowanie Statystyczne), Warszawa 1981, pp. 9–11.

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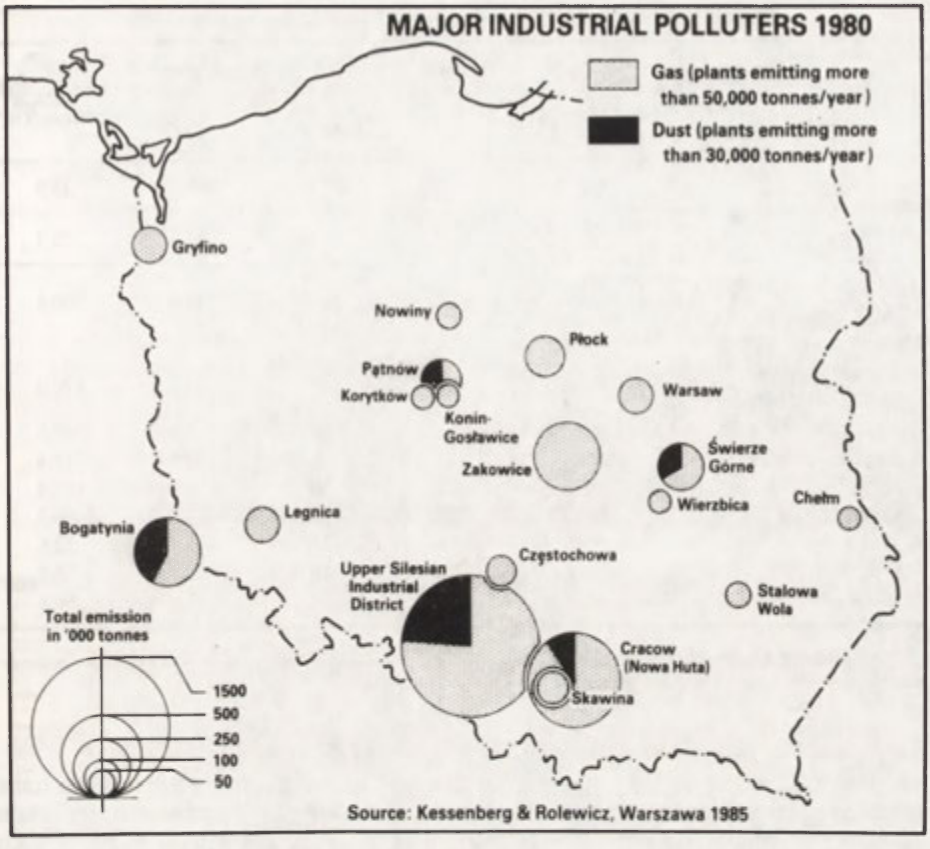

Fig. 5

After Silesia and Cracow other parts of the country in comparison are dwarfed by these figures. Table 8 shows that all other urban agglomerations had below the critical 250 tonnes/km^2, although the Legnica/Głogów region was nearing the legal maximum. Research by J. W. and A. B. Zwoździak on an evaluation of atmospheric trace elements near to copper smelters and power plants in this area (begun April 1983 and continuing) provides disturbing reading on the high concentrations of Al, Ca, Mg, Na, Fe, and Mn (as well as Cu, Zn, and Pb) which are emitted from the copper ore extracting process and lignite powered thermal plants.[38] Warsaw on average only receives about 20 tonnes of pollution per km^2/year (compared with Cracow's 255 tonnes) but the capital's 64 000 tonnes of dust and 119 000 tonnes of gas produced annually, prompted one writer to ask if "there are still sparrows in Warsaw"[39] Dust increases have been noted in Poznań province, especially around Poznań city and Śrem. The main culprits are thermal power stations, heat generating plants, private and industrial boilerhouses, domestic furnaces

[38] J. W. Zwoździak and A. B. Zwoździak, Evaluation of atmospheric trace species in the vicinity of a copper smelter and a power plant, *International Journal of Environmental Studies*, 24, p. 97–105.

[39] Beta, Ile jest wróbli w Warszawie? *Życie Literackie*, No. 1661, Warszawa 1984, p. 13.

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TABLE 8. Poland. Air pollution and urban agglomerations, 1980

	Air pollution emission		Heavy industrial plants		Air pollution in tonnes/km²
	'000' s tonnes/year	%	number	%	
Poland	7472.5	100.0	928	100.0	23.9
Urban agglomerations	5480.0	73.3	585	63.0	73.3
Agglomerations with highest emission	5017.4	67.2	368	39.6	200.8
Of which:					
Upper Silesian Industrial District	2420.0	32.4	192	20.6	476.0
Cracow	984.7	13.2	24	2.6	548.0
Legnica/Głogów	529.3	7.1	8	0.9	213.4
Rybnik	276.6	3.7	30	3.2	161.4
Szczecin	236.4	3.2	33	3.6	60.3
Warsaw	198.0	2.6	36	3.9	32.6
Opole	186.8	2.5	16	1.7	58.2
Bielsko-Biała	185.6	2.5	29	3.1	56.8

Source: Wydział Rolnictwa i Gospodarki Żywnościowej GUS, *Przemysłowe zanieczyszczenia i ochrona powietrza atmosferycznego 1975–1980* (Opracowanie Statystyczne), Warszawa 1981, p. 17.

and industrial enterprises. Plans are afoot to install dust-extracting equipment in some plants (e.g. iron foundry at Śrem; machine-tool factory in Poznań) but the main offender, the phosphate fertilizer plant south of Poznań, has not invested in such apparatus.[40] Alarm has been expressed in Poznań province at the rise of air pollution especially gases, around certain towns, with SO_2 increases recorded in Poznań, Gniezno, Oborniki, Szamotuły, and Września. Thermal power stations and other industrial heating installations were the principal sources.[41] Latest statistical data for 1984 reveals this overall problem, particularly through fly ash production and to a lesser extent carbon monoxide (Figs. 6 and 7). While the Upper Silesian Industrial District is dominant in both maps, fly ash production has a more widespread distribution in Poland, especially in provinces with a large number of thermal power plants.

Sulphur dioxide (SO_2) is still Poland's major air polluter. In comparison with some other neighbouring countries, Poland's SO_2 emission was relatively low in 1980; with only 8.8 tonnes per km², Poland's total looked favourable when contrasted with West Germany (14.5 tonnes/km²), Czechoslovakia (22.6 tonnes/km²) and East Germany (35 tonnes/km²), but this has to be interpreted with caution. C. Jenkins has pointed out that Poland's figure should be seen in relation to an overall population density which is lower than the other countries. However, its industry is highly concentrated in the south-west. Also Polish coal is mainly bituminous, and although it emits less SO_2 than

[40] Summary of world broadcasts – Eastern Europe: weekly economic report (EE/W1222/A/7), (3/2/1983).

[41] Ibid, (EE/W1239/A/7), (2/6/1983).

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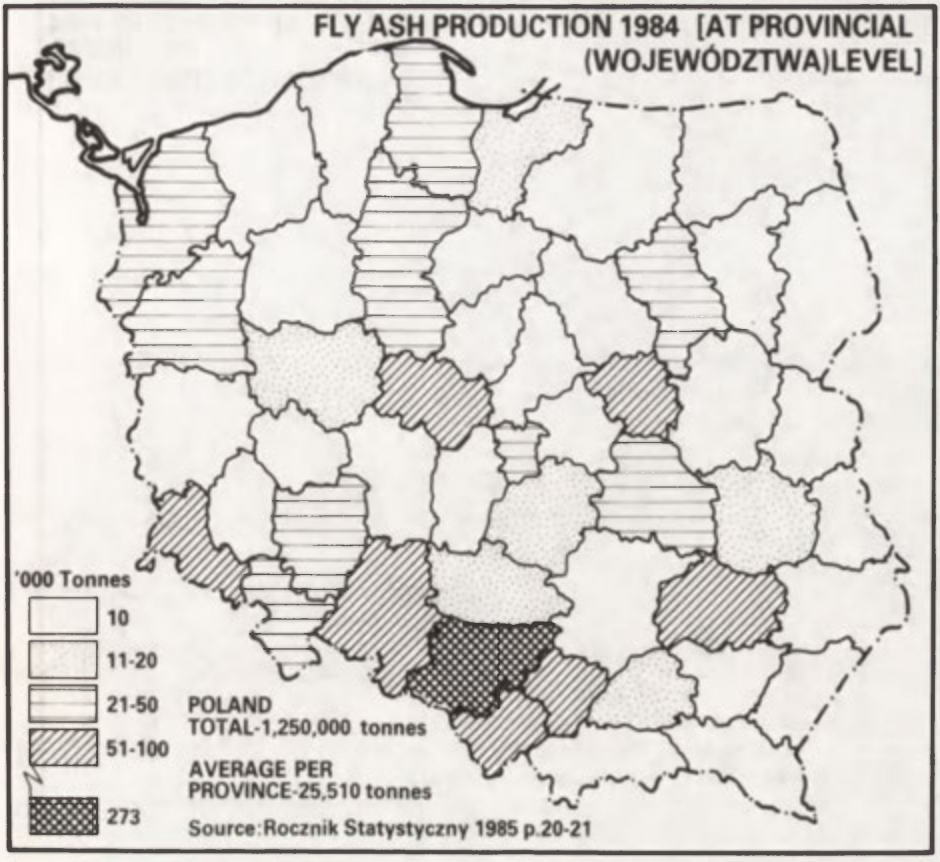

Fig. 6

lignites used elsewhere, it does contain other pollutants e.g. nitrates. In Poland, SO_2 forms only slightly more than half of total air pollution (compared to 90% in Czechoslovakia), but in the southern industrial areas total volume is just above the Czechoslovakian average density per km^2 for the whole country.[42] If these percentages are placed in a European context (Fig. 8), S. Kozłowski has shown for 1980 that southern East Germany, south-west Poland and the Don estuary in the USSR had the highest SO_2 levels (24 tonnes/km^2/year or more). Poland's State Council for the Protection of the Natural Environment, a government advisory body, admitted in 1980 that 2.8 million tonnes of SO_2 were emitted into the country's atmosphere, which ranked it seventh in the world behind the USA, USSR, Canada, Great Britain, and the two German states.[43]

More recent data tend to confirm this situation. In Britain, the Watt Committee on

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[42] C. Jenkins, Environmental problems and policies, ch. 6 in: *EIU Regional Review: Eastern Europe and the USSR 1985*, (Econ. Intell. Unit), London 1985, p. 31.

[43] E. Pudlis, Poland's plight: Environment damaged from air pollution and acid rain, *Ambio*, 12, 2, Stockholm 1983, p. 125.

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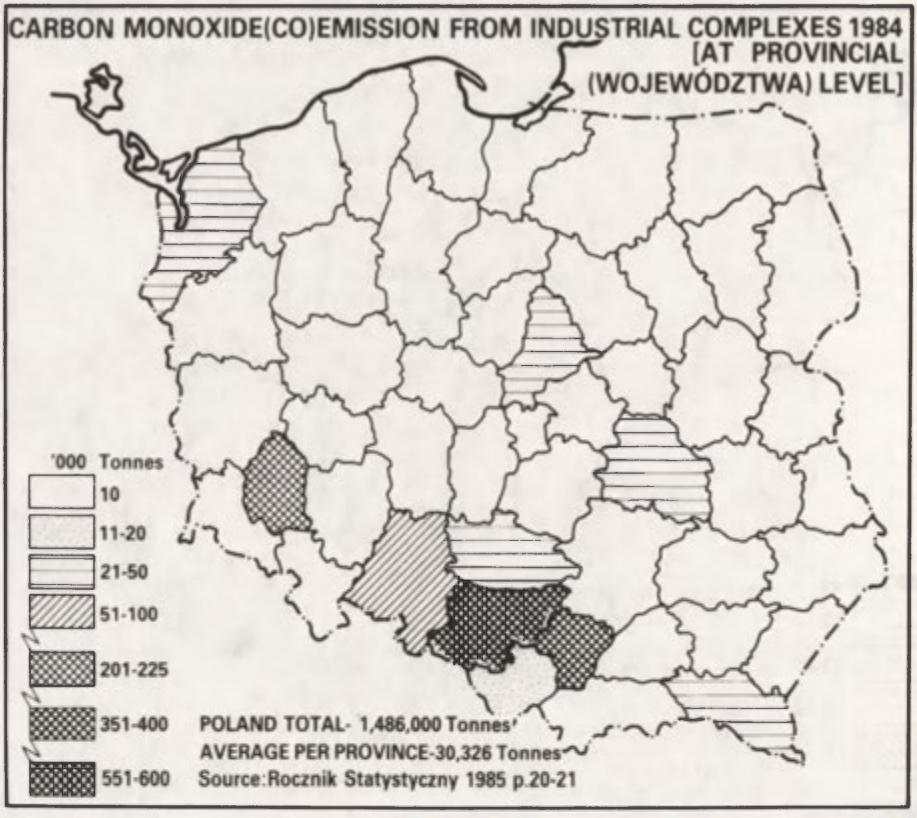

Fig. 7

Energy estimated SO_2 emissions in Europe for 1982, based on Highton and Chadwick's research for the Stockholm environmental conference. Two-thirds of Europe's SO_2 total came from Eastern Europe, with Poland lying fourth, after the USSR, Czechoslovakia and East Germany.[44] Part of the problem lay in natural resource usage; in 1982, Poland mined 180 million tonnes of coal, much of it for stoking up domestic heating appliances. E. Pudlis has estimated that "the average chunk of Polish coal contains from one to four percent sulfur", and "only 11 percent of industrial plants where coal combustion takes place have installations for treating or reclaiming sulfur gases" in the country.[45] According to the latest statistical information (Fig. 9) total emission from industrial complexes reached 2.6 million tonnes of SO_2 in 1984 giving an average of 53 000 tonnes per province; over a quarter of the provinces (13:49) had more than average SO_2 emission, with Katowice recording above fourteen times higher with 767 000 tonnes. Polish scientists have estimated that by 1990 about 7.3 million tonnes of SO_2 and 9.1 million tonnes in 2000 AD will be ejected into Poland's atmosphere by its factories,

[44] The Watt Committee on Energy, *Acid Rain* (Report No. 14), London 1984, p. 45; N. H. Highton and M. J. Chadwick, The effect of changing patterns of energy use on sulphur emissions and depositions in Europe. *Ambio*. 11. 6. Stockholm 1982. p. 326. Table 2.

[45] E. Pudlis, *op. cit.*, p. 125.

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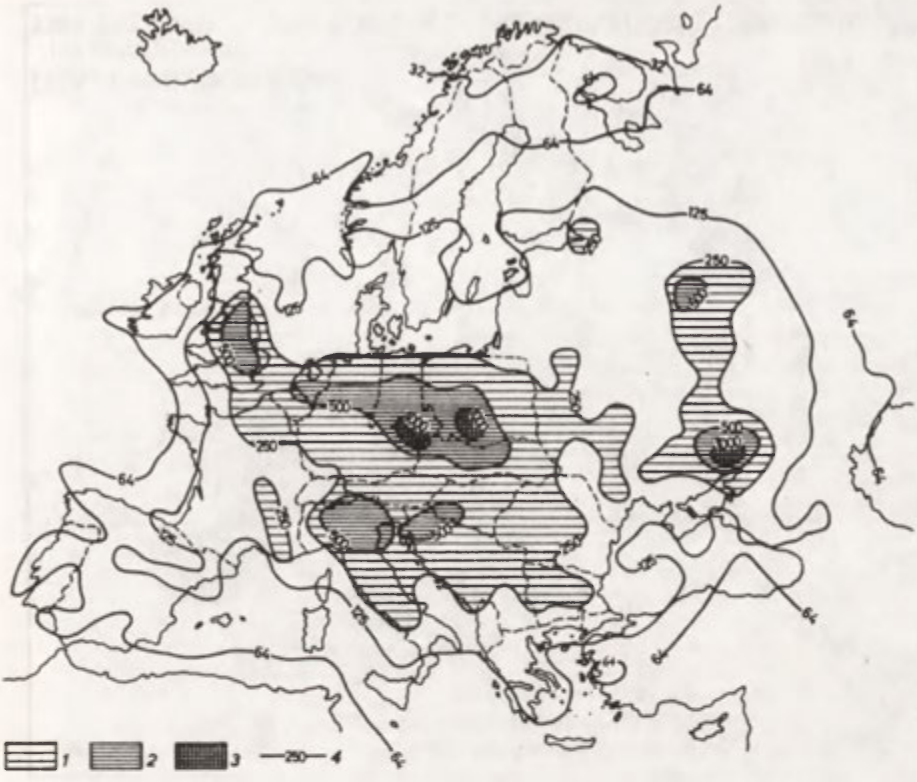

Fig. 8. Europe: SO_2 emission, 1980: 1 – 18 μg/m³/year, 2 – 36 μg/m³/year, 3 – 72 μg/m³/year, 4 – sulphur emission in mg/m²/month
Source: S. Kozłowski 1983, p. 61

power plants and heating appliances, still assumed to be using domestic coal .[46] To this total must be added "imported" SO_2 from neighbouring countries through transfrontier pollution. According to Principle 21 promulgated at the Stockholm Conference on the Human Environment in 1972, states have "the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction".[47] Unfortunately, such concepts have fallen on deaf ears in many parts of Europe,[48] none more so than among Poland's neighbours. The unpleasant trade in air pollution, especially SO_2, has been defined by B. Dampier as consisting of the "Dumpers" and the "Dumped on"; the former are states producing more SO_2 than received, and the latter

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[46] J. J. Braun, „$SO_2 + H_2O$", *Tygodnik Powszechny*, 38, 42 (1842), (14/11/1984), Kraków, p. 6–8.

[47] OECD, *Tranfrontier Pollution and the Role of States*, Paris 1981, p. 5.

[48] H. Karrasch, Transboundary air pollution in Europe, *Heidelberger Geographische Arbeiten*, 73, 1983, p. 321–344; B. Ottar, International agreement needed to reduce long-range transport of air pollutants in Europe, *Ambio*, 6, 5, Stockholm 1977, s. 262–269.

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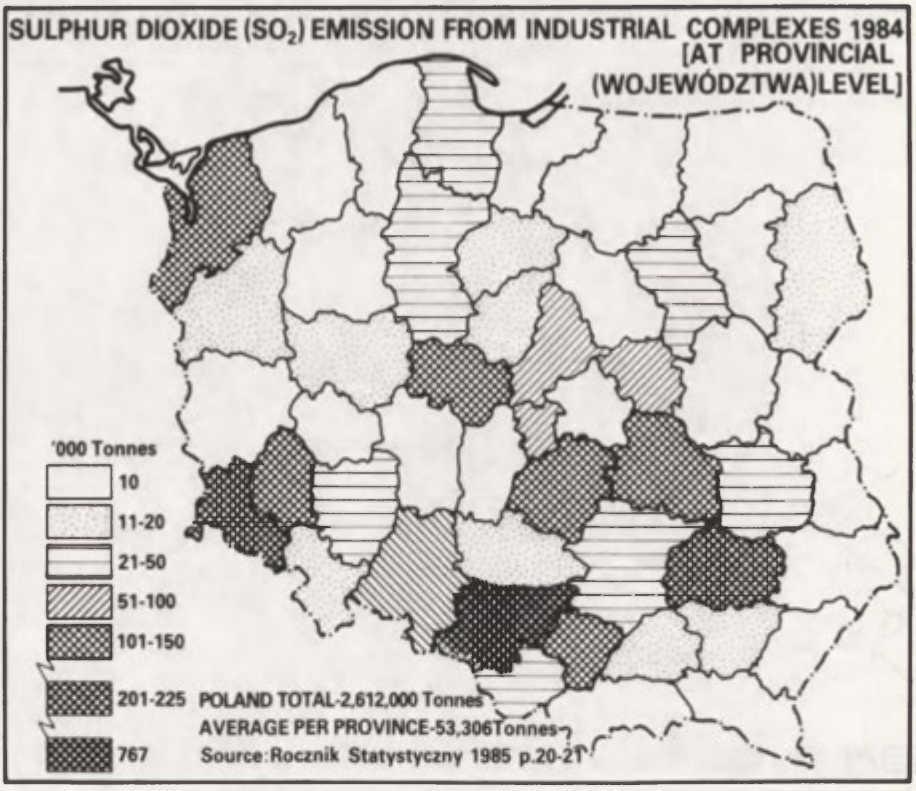

Fig. 9

the reverse. Poland clearly falls into the last-mentioned category and received 325 000 tonnes more SO_2 than it produced in 1982.[49] J. Juda's study of transfrontier pollution showed that even in the late 1970s considerable quantities of SO_2 were being transported from East Germany and Czechoslovakia by prevailing westerly winds (Fig. 10). Poland's western boundary south of Cedynia, received on average 20 tonnes/km^2/year of SO_2 deposition from the southern industrialized areas of East Germany in 1978, with similar amounts along the Czech border from Głubczyce to Wisła, originating from the heavy metallurgical plants and thermal power stations situated around Ostrava in Northern Moravia.[50] This further increased the SO_2 deposition load on the Upper Silesian region, which H. Schrieber noted in 1985 had values five times higher per km^2, than in the Ruhr Valley.[51] More recently, A. Rosencranz has estimated that "Poland imports at least 1.8 million tonnes of SO_2 from foreign sources, mainly

[49] B. Dampier, Smoke gets in your eyes, *Sweden Now*, 3, Stockholm 1983, p. 29.

[50] J. Juda, *Stan realizacji konwencji o transgranicznym zanieczyszczeniu powietrza na dalekie odległości w Polsce*, Instytut Inżynierii Środowiska Politechniki Warszawskiej, Warszawa 1982, p. 1–11.

[51] H. Schrieber, *Acid News*, 9, June 1985.

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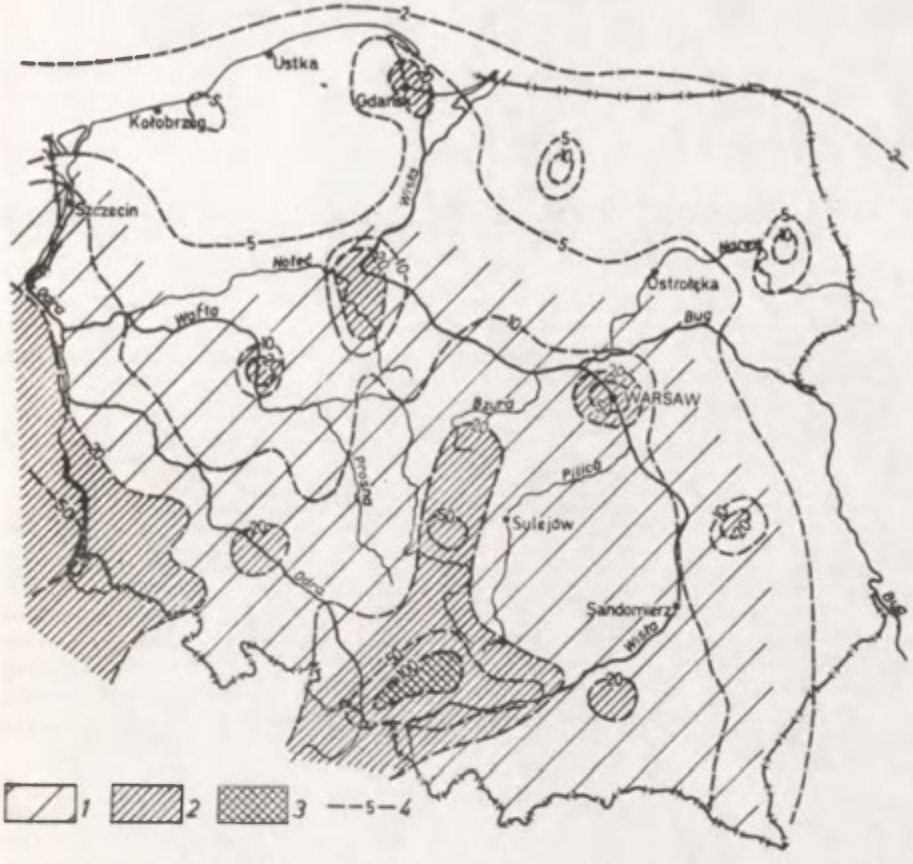

Fig. 10. Poland: Transboundary pollution of SO_2, 1978. Average annual concentration SO_2: 1 – above 20 μg/m^3 (enough to destroy forests), 2 – above 60 μg/m^3 (affects human health), 3 – above 300 μg/m^3 (ecological catastrophy), 4 – quantity of SO_2 deposition in tonnes/km^2/year
Source: J. Juda 1982

East Germany and Czechoslovakia";[52] conversely, Poland also exports half its SO_2 emissions to downwind neighbours in Scandinavia and the USSR. Besides SO_2 other toxic and dangerous pollutants are contained in transfrontier pollution, most notably the recent fall-out from the Chernobyl nuclear accident in the Ukraine. As yet, however, scientific data are unavailable to assess its impact on Polish territory.

[52] A. Rosencranz, The acid rain controversy in Europe and North America: A political analysis, *Ambio*, 15, 1, Stockholm 1986, p. 47.

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CONTEMPORARY TRENDS IN THE POLISH TRANSPORT SYSTEM

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1. INTRODUCTION

This paper presents the transport system as a composite object whose components are transport modes together with relationships between them and other branches of the national economy. The medium that ties them together to make a system is traffic. Stripped to its essence, the main components of the system are transport modes. As in any kind of system, the behaviour of one component has some effect on, or interaction with, other components. The transport system should contribute to national economic growth by providing an efficient service to all sections of industry, agriculture and services, and by ensuring the maintenance of a reasonable level of personal mobility through public passenger facilities.

The Polish transport system is marked by some specific features which will be shown at the national level in the broad context of socio-economic phenomena. More specifically, the objectives of the paper are (1) to present the changes in the volume and structure of freight and passenger traffic; (2) to explore the dynamics of transport absorptiveness in the national economy; and (3) to explain the reasons behind huge freight traffic and transport absorptiveness.

Amongst all transport modes only some are well known and understood to a certain degree. For example, very little is known about road transport, dispersed in tens of thousands of firms and enterprises subordinated to many departments, organizations and central offices. What is more only part of this mode is obligatorily reported in statistics. There are no data for road freight traffic in terms of commodities carried. Thus, in some cases, we have to use estimates. Fortunately, the scope of this paper does not cover detailed characteristics of various modes of transport, unless they illustrate more general phenomena and processes.

2. VOLUME AND STRUCTURE OF TRAFFIC

Haulages in Poland rank among the biggest in the world, especially when compared with the size of the nation, its production, or the level of economic development. Railways are particularly burdened due to the raw-material nature of most goods carried and the underdevelopment of other modes of transport. An especially undeveloped area is inland shipping which otherwise could take over a great share of bulk commodities traffic. At the same time transport capability makes a bottleneck constraint in the development of the national economy. Many experiences demonstrate that the physical condition of transport facilities is unsatisfactory, if not fatal (Pietraszewski 1982; Brdulak and Kordel 1983; Brdulak 1984; Taylor 1987).

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TABLE 1. Rail and road traffic in selected countries in 1983

Countries	Railways				Road transport			
	freight tonne-km (billion)	freight tonne-km (per capita)	passenger-km (billion)	passenger-km (per capita)	freight tonne-km (billion)	freight tonne-km (per capita)	passenger-km (billion)	passenger-km (per capita)
China	663	646	177	172	nd	nd	nd	nd
FRG	55.9	939	39.2	658	61	1024	nd	nd
France	59.4	1087	58.4	1067	87.9[a]	1629	nd	nd
India	176	245	220	307	nd	nd	nd	nd
Italy	16.8	296	36.8	649	137[b]	2415	90.4[b]	1593
Japan	29.1	244	321	2692	188[b]	1576	105[b]	880
Poland	118	3327	50.2	1373	8.7	238	49	1340
Spain	10.6	277	14.7	385	91.5[b]	2393	29	759
UK[d]	17.1	304	30.2	536	100	1775	42	745
USA	1169	5002	17[b]	73	nd	nd	25.6[b c]	110
USSR	3600	13209	362	1328	142	521	423	1552

Notes: [a] in 1981; [b] in 1982; [c] intercity traffic only; [d] except N. Ireland; nd – no data.
Source: Rocznik statystyczny 1984 and Rocznik statystyczny 1985. GUS. Warszawa.

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Polish railways rank very high in terms of the volume of traffic. In absolute measures of freight tonne-km Poland is placed just behind much larger countries such as the Soviet Union, the United States, China, India and Canada – the latter not included in Table 1. In passenger-km the Polish State Railways rank sixth in the world – after the USSR, Japan, India, China and France. The Polish railways rank even higher in relative measure of traffic per capita: placed third in freight – after the USSR and the US, and second in passengers – after Japan, respectively. To realize its overload it is enough to say that the Polish railways rank eleventh in the world according to the length of routes[1] (over 27, 100 km in 1986, including nearly 9 500 km electrified). Nowadays some 75% of all freight and above 55% of passenger traffic are hauled electrically.

Much lower is Poland's position in road traffic. Anyway, since data for many countries are missing, we are not able to determine her place. We know, however, that the structure of traffic is diversified. In Poland it is public transport that plays the predominant role, while in the most developed capitalist countries the share of private transport, especially in passenger traffic, is much bigger. Nevertheless, in public passenger traffic in terms of the number of passenger-kms, Polish buses and coaches carry more people than British buses and coaches. In relative terms however, Poland is placed after Italy and the USSR. Compared with other countries, the role of road freight traffic in Poland is minimal (Table 1).

2.1. FREIGHT TRAFFIC, 1955–1984

To explain the expansion of public freight traffic of today, one should have a look at its growth rate in time series (Figs. 1A and 1B). In the first period, 1955–1978/9, the increase of traffic on the tonnage basis was nearly five-fold, and on the basis of tonne-km nearly seven-fold. Then, the increment of traffic save for maritime shipping was also twice as fast as the relevant volume of material production (Lijewski 1980). An especially intensive rise was noted in the mid-1970s as a result of the more accelerated economic growth of the country. The 2705 m tonnes carried in 1978 have not been exceeded since. As the situation was drawing to a crisis what one could note was first a slower rate and afterwards a sudden drop in absolute freight traffic. Thus, the whole post-war trend of growing demand for transport has experienced a setback. The slump of 1980–1982 caused a sharp decrease in traffic, accounting for about 37% on a tonnage basis (and a bit less on the basis of tonne-km) – to the level of a decade ago. In terms of traffic carried, the tonnage of rail-borne freight decreased by 16.6% and that of road-borne freight by about 43% between 1980 and 1982. The slump in the Polish economy has largely helped reduce the pressure on the country's traffic but previous insufficient investment in the transport system had an effect on costs and produced the problems of congestion of today. Between 1982 and 1984 the total cargo carried increased slightly: by 4% in tonnage and 4.5% in tonne-km. The absolute traffic increment in recent years, however, is a result of in-built inertia: no radical changes took place in the Polish economic structure. As in the previous period, coal now forms 39% of rail-borne freight tonnage overall. But even today carriers have many problems with much smaller freight. In 1983 alone railways were not able to transport over 30 m tonnes of commodities (Pozniak, 1984).

In terms of tonnage (Fig. 1A), road-borne freight increased five-fold between 1955 and 1984 and accounted for up to 70% of total flows (Fig. 2A). Its average annual increase of 126 m tonnes in 1970–1979 amounted dramatically to over 200 m tonnes in 1974 and 1975! The railways were not able to take over the growing freight, and their

[1] For the diffusion of railwaly network in Poland, see Taylor (1984a).

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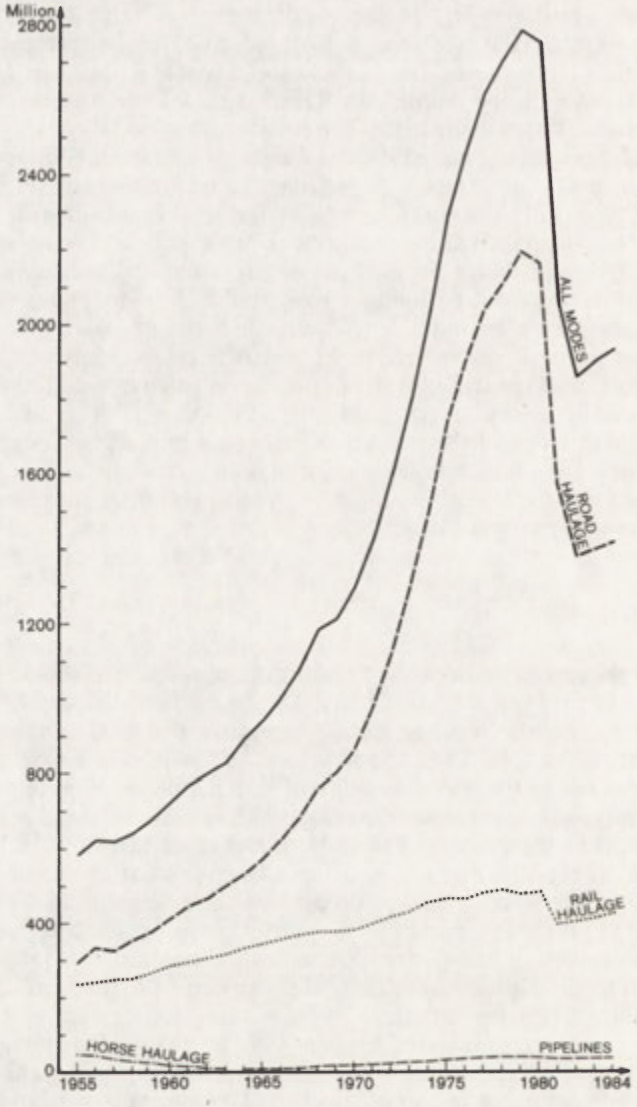

Fig. 1A. Freight traffic by mode of socialized transport: in tonnes. Source (all figures): compiled from data provided by the GUS (Central Statistical Office), Warszawa

tonnage carried increased only two-fold between 1955 and 1984 but their share fell from more than 40 to 22%.

In terms of tonne-km the situation is very different (Fig. 1B). Generally, the rates are on the increase save for the rapid drops noticeable in the early 1980s. The expansion of maritime shipping was to accommodate the rapid economic growth and to facilitate the export of minerals, especially in the mid-1970s. The maritime shipping cargoes increased twelve-fold between 1955 and 1984 to capture a majority (52%) of traffic share (Fig. 2B), mainly at the expense of the railways. Other modes reflect the evolution of the transport system. Taken overall, road-borne freight traffic increased nine-fold while rail-borne traffic rose just over two-fold (Fig. 1B).

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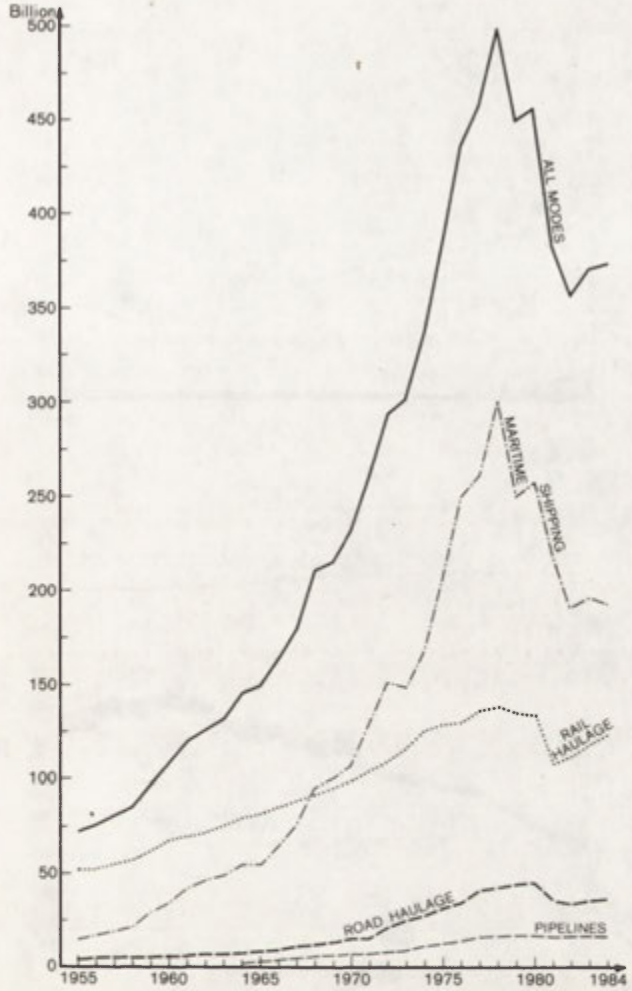

Fig. 1B. Freight traffic by mode of socialized transport: in tonne-km

For analytical purposes, it is useful to concentrate on freight traffic, except maritime shipping freight (Figs. 3A and 3B). The traffic may be divided into rail and road-borne haulages. In terms of freight carried, the railways have sustained their position reasonably well in tonne-km with a marked drop in the total tonnage carried. Road haulage has expanded to capture the major share of tonnage carried (from 50 to 75%) from the railways but in tonne-km has only risen from 7 to 20%. This is due to the fact that the railways carried most bulk commodities on long hauls; 280 km on average in 1980, while on the roads the average haul was a mere 20.5 km. The temporary shift from rail to road as a means of transport in the 1970s was a result of a compulsory situation: the carrying capacity of railways had been much more constrained and difficult to expand – as was also the case with inland shipping – than that of road transport. Moreover, road-borne haulages were more suitable for the then expanding construction and building materials industry than rail transport. Despite these temporary changes,

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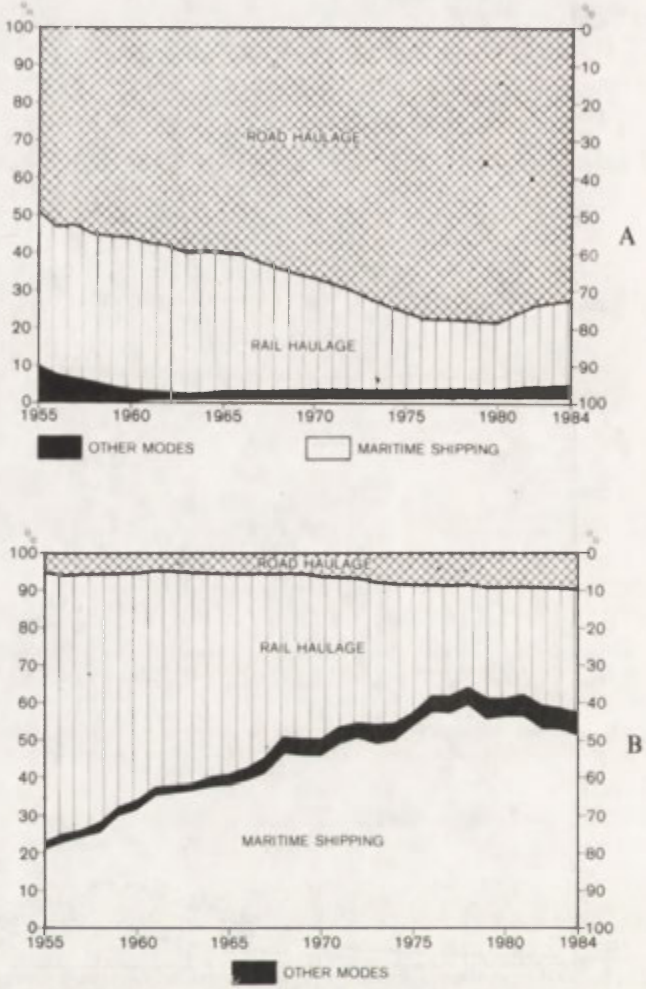

Fig. 2. Freight traffic by mode of socialized transport: A — as % of all tonnage; B — as % of all tonne-km

the share of national freight carried by rail increased in the early 1980s and by 1984 the railways were dealing with predominantly freight traffic: nearly 69% of all tonne-km but only 22% of overall tonnage. The situation in Poland in this respect resembles that in Czechoslovakia and East Germany, but is diametrically different from that in developed capitalist countries.

80% of road freight haulages are found to be confined within a 30-km radius from their origin, emphasizing the significance of local goods flows. On the contrary, in rail haulage trends towards long distances were identified as the majority: more than 50% of traffic is done over 150 km and another 30% from 50 to 150 km. There is also a 'substitution zone' of both modes between 30 and 75 km.

Specialization on the railways consists in carrying raw materials such as ores, coal, fertilizers, while road-borne transport specializes in processed goods including perishab-

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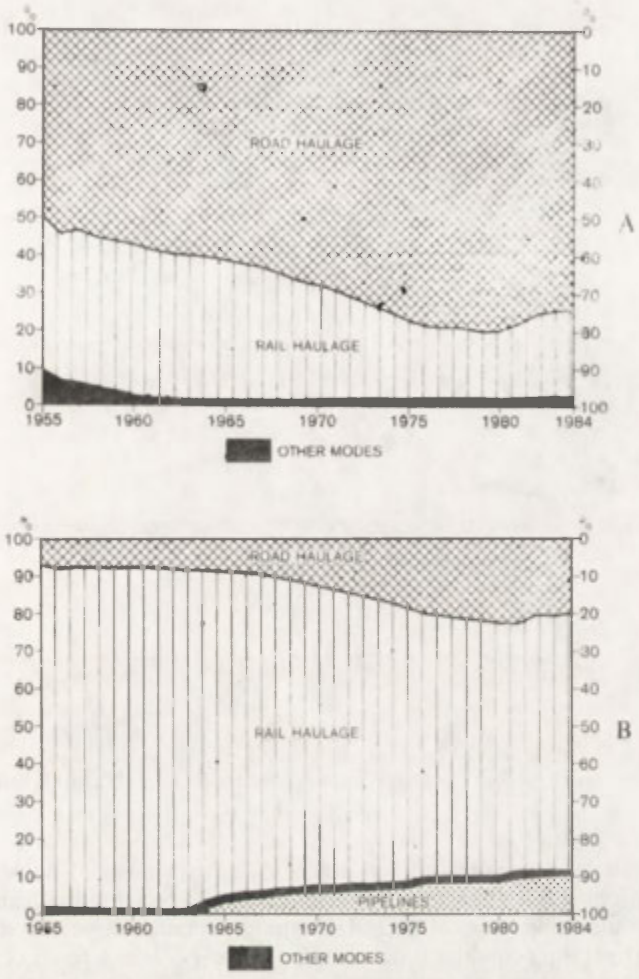

Fig. 3. Freight traffic by mode of socialized transport save for maritime shipping: A — as % of all tonnage; B — as % of all tonne-km

les. These specializations are connected with the concentration of origin and destination points in rail-haulage and, vice versa, their dispersion in road-haulage.

According to Kuziemkowski (1981), the cost of one tonne-km carried in road traffic is nearly six times higher than on the railways. Others speak of a four-fold difference. Anyway, the decrement of railways share in freight traffic in the 1970s was disadvantageous, since the unit transport cost in all modes increased by 33% (Kuziemkowski 1981; 1984). In the early 1980s, a trend towards more economical consumption of fuels is favouring the further development of rail-borne traffic which consumes four times less fuel than the relevant road haulage.

The share of national freight carried by the pipeline network has substantially increased since 1964 when the "Friendship" pipeline was constructed, and in 1984 it accounted for 10% of traffic on the basis of tonne-km. This is an advantageous phenomenon since its unit transport cost is the lowest of all land freight (Engelhardt and Zawadzki 1983), partly as a result of having the longest distance hauls (420 km).

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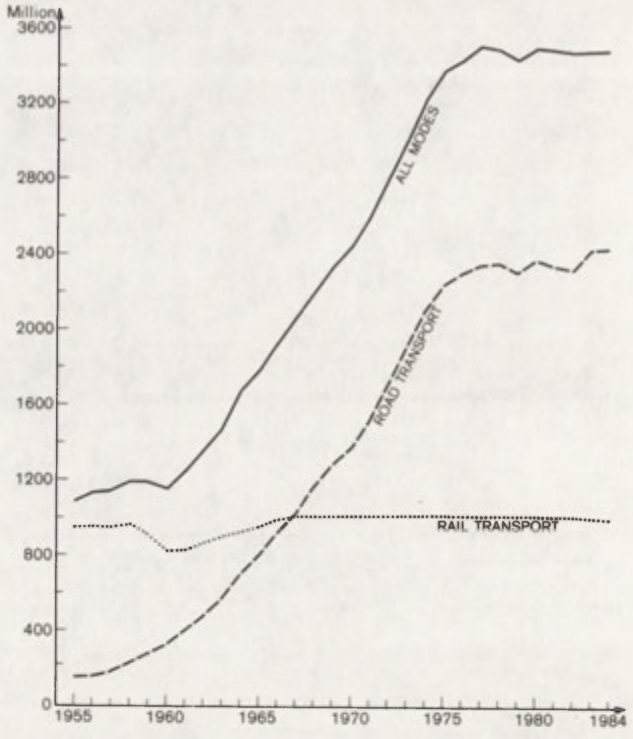

Fig. 4A. Passenger traffic: passenger journeys by mode of public socialized transport

Freigth volumes carried by other modes of socialized transport: horses, air transport and inland shipping, are minimal (Figs. 3A and 3B). Especially disadvantageous is the small and diminishing role of inland shipping, a much-neglected area of freight transport. Its operating conditions deteriorated in the 1970s as a result of the unsatisfied need for renovation and re-equipment of transport facilities, mainly on the Odra waterway (Taylor, 1987); in effect the average distance of freight carried decreased from 261 to 105 km between 1970 and 1980, thus emphasizing flows of local goods such as sand and gravel. By 1984 its share in freight traffic fell to 0.8%. Only countries with very unfavourable natural conditions for navigation, e.g. Italy and the UK, have a lower share of national freight carried by inland shipping.

2.2. PASSENGER TRAFFIC, 1955–1984

Passenger traffic[2] differs from freight traffic in that the rates of movement are generally increasing, save for the troughs apparent in 1960, the late 1970s and early 1980s (Figs. 4A and 4B). These short-term troughs are probably caused by increases in passenger fares. In actual figures for all transport modes both series begin at slightly over 1 billion passenger journeys and 40.5 billion passenger-km in 1955 and terminate at about 3.5 billion passenger journeys and 108.5 billion passenger-km in 1984. A consis-

[2] Socialized traffic, without urban transport.

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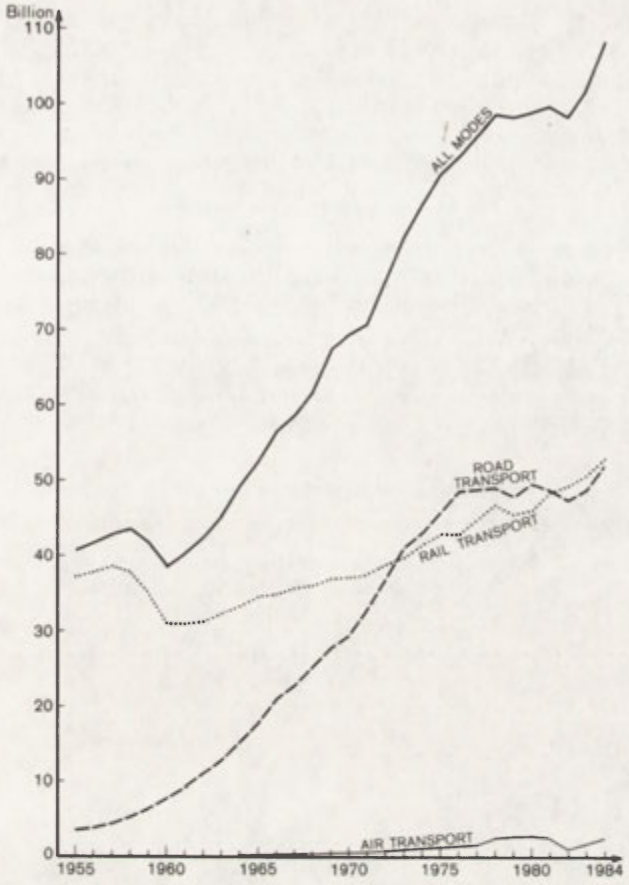

Fig. 4B. Passenger traffic: passenger-km by mode of public socialized transport

tent upward sloping curve is apparent, steeper for road-borne traffic, especially for the period from 1960 to the late 1970s. It is suggested that the fluctuations in passenger traffic of the 1970s and in the early 1980s, respectively, reflect in a way the levels of economic activity. This is due to the fact that the main reason for the large mobility of population was incompatibility between residence and work places, being a result of faster industrialization rather than urbanization processes and the development of housing. Hence, commuting to work was the main component of passenger travel (without urban transport estimated at 3.5 m people daily). Together with other obligatory trips – educational and school-related – it formed the absolute majority of journeys.

No relationship between passenger traffic and population numbers (in a given cross-section of the time series) is apparent. Moreover, there is no impact from the growing number of private cars on the declining usage of public services, which is indirectly indicative of the dominance of public carriers. On the contrary, due to the shortage of fuel for private cars and relatively low fares, the absolute number of passenger journeys and especially passenger-km increased substantially in the last few years.

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The shift from rail to road as a means of transporting people has been persistent in terms of the number of passenger journeys and, temporary, on the basis of passenger-km. The journeys of road-borne transport increased sixteen-fold (!) between 1955 and 1984 with an average annual growth rate of 11% in the middle of that period (Fig. 4A). This sharp rise in travel stands in contrast with the number of rail passengers carried. The latter reached a plateau by 1967 when both modes were equal, but the ascendancy of road over rail expanded and the former accounted for up to 70% of all journeys (Fig. 5A).

The railways have sustained their position reasonably well in total passenger-km with a relatively small drop between 1973 and 1981 (Fig. 4B). Nowadays the share of both transport modes has become balanced with a small ascendancy of rail over road as a leading service (Fig. 5B).

The mean distance covered is 21 km in road transport and 48 km in railways which is slowly growing as a result of the diminishing share of suburban passenger traffic carried by rail. Despite this trend, the frequency of trains is the lowest among

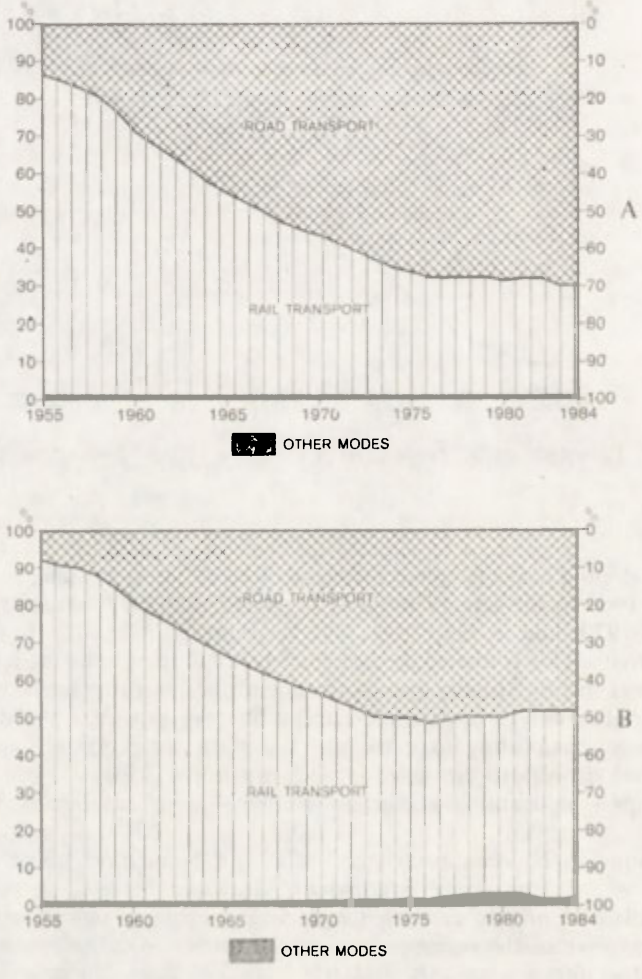

Fig. 5. Passenger traffic by mode of public socialized transport: A – as % of all passenger journeys; B – as % of all passenger-km

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comparable countries. The average speed of passenger trains confirms the priority given to the enlargement of freight carrying capacity rather than improvement of the quality of passenger transport services.

The fundamental point is that in terms of land traffic carried, *the railways have sustained their dominant position in the total mileage of freight carried* (69%) *while since 1973 buses and coaches have become equal partners with rail in the total passenger transport mileage.*

3. TRANSPORT ABSORPTIVENESS IN THE NATIONAL ECONOMY

The Polish national economy is highly transport-intensive which means that a unit of finished product involves more freight traffic than in other comparable countries. In Poland the phenomenon known as "transport absorptiveness" (abbreviated later on as TA) appeared powerfully in the early 1970s when the growing demand for transport was becoming increasingly a bottleneck constraint on the economic growth of the country. It is a common feeling that TA in our economy is excessive and the volume of freight traffic should be decreased. The share of irrational freight carried is put at about 20 to 30% but as was rightly pointed out by Kuziemkowski (1981), this figure is not a result of the research carried out but of subjective estimations. According to Malek (1976) transport absorptiveness[3] (TA) means the rate of involvement of transport activity, being a result of other economic and social activities. In centrally planned economies TA is measured as a ratio of the volume of traffic (on the basis of tonnage or tonne-km) related to the global product or the national income, both in fixed prices.

3.1. GROWTH OF TRANSPORT ABSORPTIVENESS, 1961–1981

On the basis of tonnage carried related to the unit of the global product and the national income, respectively, one can conclude that there was a continuing increase of TA in the years 1960–1980. An evaluation based on tonne-km related to those units shows an increase in the case of total traffic and decrease in the case of land traffic. In all cases, however, the year 1981 is exceptional: a large decrement of transport consumption is seen as a result of a decreased investment rate, economizing in liquid fuel consumption and a shortage of parts and accessories in road-borne transport.

A much sharper rise in TA is seen when related to the national income rather than to the global product. The difference is explained by the growing costs of production of the national income which is accompanied by a declining share in the national income of the value of the global product (40% in 1960 while 35.2% in 1980). This feature indirectly explains the reasons behind the growing level of TA in the Polish national economy, and supports more reliable results when related to the value of the national income rather than to the global product (Kuziemkowski 1981).

Changes in the level of TA in terms of tonnage carried in relation to the national income show an increase of more than 11% between 1960 and 1977 and rather less in 1977–1980. TA as measured on the basis of tonne-km of total freight traffic increased by 13.1 and 10.2%, respectively; and in land traffic it at first dropped by 13% and then increased by more than 10% between 1977 and 1980. Generally, *on the basis of tonne-km, including maritime shipping, TA increased by about 11% in the period analysed.* A faster increase of TA in the case of total freight traffic than of just land traffic is

[3] There is no English equivalent term describing this phenomenon.

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a result of the expanding activity of the Polish sea-borne fleet. The TA of land transport (on the basis of tonne-km) decreased parallel to the smaller mean distance carried. This has been caused by the growing share of road-borne traffic (cf. section 2.1).

Changes in the level of TA can also be illustrated as a growing percentage of the national income produced in the section "transport and communication":

1955 – 5.2%
1960 – 5.9%
1965 – 6.2%
1970 – 6.3%
1975 – 7.4%
1980 – 7.2%, including transport – 5.8%.

This share was growing much faster than the global national income produced which was a disadvantageous trend.

3.2. FACTORS INFLUENCING TRANSPORT ABSORPTIVENESS (TA) IN THE NATIONAL ECONOMY

The factors influencing the level of TA in national economy can be divided into "objective" and "subjective" groups. The first group includes the natural conditions for socio-economic activity being a result of geographical location, size of territory, relief, environment, natural resources, distribution of population, and hitherto existing economic development, thus all factors independent of current influences. Although the strenght of influence of each factor is immeasurable it seems that in the Polish situation the following "objective" factors play a more important role in affecting the level of TA (partly after Lijewski, 1980):

(a) uneven location of natural resources, concentrated mainly in the southern part of the country;

(b) the development of the mining industry and the material- and energy-intensive processing industry, e.g. a big share of means of production and underdevelopment of means of consumption;

(c) primary energy production based on heaviest fuels: coal and brown coal;

(d) most mineral products, e.g. coal and sulphur, are exported through distant Polish seaports (Taylor 1984b);

(e) most heavy minerals are imported in large quantities, e.g. crude oil or iron ore;

(f) most heavy goods (potatoes, sugar beets, milk) in agricultural production and the mal-location of agriculture processing plants in the past; hence bulk commodities flow between regions;

(g) a transport pattern unfit for present-day needs (built in past, mostly within different state boundaries).

Taken overall, the combination of these factors seems less favourable in Poland than in other developed countries.

The second group is composed of "subjective" factors being a result of "actual trends in location and management" (Lijewski 1980), called also "methods of management" (Morawski 1980), or "system of management" (Szempliński 1981). The following are the most important factors.

(a) *Specialization* takes place in all branches of production and services. It is connected with the production of increasingly complex industrial goods and of production processes being split into a series of stages, sometimes with transfer to other plants or branches (cf. the decentralization of the Polish industry in the late 1960s). Specialization is based on technology and economics which result in *co-operation* between plants and the increment of freight flows, frequently between distant places. Specialization develops also in farming and the scale of exchange of agricultural products is expanding, which comes as a result of the decline of formerly self-sufficient

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farms. Specialization and co-operation bring about an increase of social productivity but only to some extent. Too large scale co-operation and specialization can contribute to the overloading of transport. As a result, TA grows irrespective of the complex calculation of losses and benefits. In many branches of the Polish national economy unit production costs have presumably exceeded optimum level (Kuziemkowski 1981). An example of irrational, too-narrow specialization can be provided by the cement industry — whose plants produce only one or two kinds of cement and the rate of self-sufficiency even in cement producing regions is low (e.g. Kielce — 32%, Lublin — 51% in 1975). Irrational co-operation ties can be found, e.g. in shipbuilding, electrotechnics, engineering and the automobile industry. An illustration is the Warsaw car factory co-operating with 600 suppliers, or the shipbuilding industry co-operating with 7000 subcontractors located all-over the country.

(b) *Overconcentration* is the second (alongside specialization and co-operation) most important factor for the increase of TA. An increase in the scale of production and its concentration in a smaller number of places leads to the excessive elongation of the supply routes of raw materials and semi-finished products and the delivery of goods. Concentration, observed in almost all branches of production and some services, is partly a result of technological progress and the use of more efficient and economic equipment, and therefore is urged by ministries or firms, but social disadvantages often result. The biggest rate of concentration is in the iron and steel industry, but high rates occur also in then engineering, electrotechnics, electronics, chemical and food industries. Despite many benefits, concentration can produce detrimental effects — connected with the overconcentration of production (an example being the industrial "gigantomania" in Poland in the 1970s). This not only leads to increase in an average distance of freight carried but also to the deterioration of products — a classical example here is the food industry.

(c) *The location of production* and consumption should take into account the common requirements of the economics of production and transportation. Supply and delivery places should be confined within a motivated radius of distance. Unfortunately, even the recently built sugar factories, e.g. at Ropczyce, or at Łapy, were not located close to sugar beet producing areas. The faulty location of some factories results from changes introduced during construction, modernization or exploitation of a plant rather than from incorrect design (Lijewski 1980). Then the suppliers, subcontractors and receivers change, the scale of production increases, and so does the TA, especially as one location can involve many others. From the point of view of transport it is irrational to locate factories requiring deliveries of raw materials and semi-finished products far from sources (an example of such irrational location is provided by the tyres factory at Olsztyn). The correct location is important considering the proper functioning of a given plant and efficient management of many other plants, but also considering difficulties when it comes to a possible change of this choice.

(d) *The technology of output* frequently does not minimize the socially necessary labour inputs both in production and haulage, but it maximizes the quantity effects, as in the Polish building industry. Meanwhile, the choice of technology often determines the TA of production, and also determines the refinement of commodity (the volumes of cement, steel, fertilizers, or sugar beet carried could be much smaller if they were of better quality). Finished products should not contain too much waste material, useless in consumption but transport-absorbing.

(e) *Defective management and administration* are the most irrational factors influencing TA. It is due to ministerial and administration barriers that much freight traffic is carried only because of the subordination of a given plant to a ministry, concern or enterprise planning their output and co-operation ties within their own framework and disregarding more rational links with someone else (Lijewski, 1980). Sometimes the borders of regions cut most rational links of production and distribution. A classical

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example of faulty organization can be provided by interregional flows of sand and gravel, or simple products of great weight (e.g. prefabricated concrete elements, timber, glass containers, sugar, flour).

(f) Also *disruption of the transport chain*, bringing about an excessive number of intermediate links between producer and consumer (such as purchasing centres for agricultural products, warehouses, processing, wholesale and retail) which can contribute to the growth of TA.

(g) Apart from the above-mentioned factors, the *acceleraton of economic growth* can also influence the TA in the national economy, a trend conspicuous in Poland in the 1970s. In new investment projects, haulages of building materials and bulk of earth create the majority of all freight traffic carried. The need for means of transport grows according to the duration of an investment, and so does the TA (cf. section 3.1).

(h) Last but not least, mention should be made of the *seeming chaeapness of transport costs*. Transport in Poland is treated partly as a free good as a result of tariffs which do not cover even half of the expenses in some modes of transport (cf. Table 2).

TABLE 2. Percentage covering of the expenses in selected carriers

Service	Polish State Railways (PKP)		Polish Road Transport Services (PKS)		Inland shipping	
	1981	1982	1981	1982	1981	1982
Passenger traffic	20.2	19.3	59.2	23.0	nd	nd
Freight traffic	82.3	84.7	80.4	66.9	40.0	41.4
Throughputs and port services	–	–	–	–	54.9	57.9

Note: nd – no data.
Source: data of Ministry of Transport (after Brdulak, 1984).

The low prices of fuel used in transport, for example, do not correspond to the costs of obtaining them. Moreover, the transport costs are still marginal (2–3%) in the total production costs and therefore cannot create the necessity to rationalize the co-operation ties. This share is bigger only in building firms and trade firms. Thus, from the economic point of view, TA in industry has no practical significance.

All these factors influence fundamentally the increase in the social division of labour and simultaneously the increase in technological progress, but also their uncontrolled course, resulting in an excessive rate of specialization, co-operation and concentration of production and defective location and technology, can be a cause of unreasonable production costs, with transport costs undoubtedly constituting one of the major elements in such unreasonable costs.

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4. CONCLUSIONS

The above analysis shows the disadvantageous level of TA in the Polish national economy in comparison with other countries. In relation to other socialist countries the sources of its higher level are, first of all, within a group of "objective" factors: the character of the national economy – the large coal output in particular. However, do the objective factors substantiate the level of TA achieved? In my way of thinking, there is an accumulation of both groups of factors. The impact of effective management on the level of TA is particularly noticeable when compared with the developed countries of Western Europe. To produce a unit of national income in Poland involves a volume of freight traffic carried exceeding by 1.5 to three times (on the basis of tonne-km) the respective figures in France and the UK. An extremely intense effort of transport is also seen when the tonne-km per capita indices are compared, differing in this case from 1.2 to 2.5 times in Poland's disfavour. More disadvantageous indices are to be found only in the case of Czechoslovakia, the reason being probably the elongated shape of the country and very unfavourable relief.

The structure of output is less favourable in Poland than in other countries. Hence, the high level of TA should be reflected in an increased investment rate within the transport sector. But this is not the case (Taylor, 1987). Meanwhile, the achieved level of TA changes disproportionately slowly as a result of the general reform of the planning and management system initiated in 1982, of limited investment in transport and of changing transport policy.

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SPATIAL CONSEQUENCES OF TECHNOLOGICAL AND ECONOMIC CHANGE

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APPROACHES TO THE PROBLEM

To-date studies and proposals of studies have provided three approaches to the issue of relations between new technologies and regional and sectoral transformations. They are: 1) neoclassical approach, 2) structural-and-periodical approach, and 3) examining technological change and its consequences in a broader framework of socio-economic processes.

A basic notion in the neoclassical approach (Storper 1985) is an individual enterprise as a decision-maker minimizing costs or maximizing business profits. Locational decision are only a part of a broad decision-making process which includes enterprise's activity and development. While planning its activity and development, the enterprise fits production factors (primarily fixed assets and labour) in certain proportions. At the same time, it is searching for a place where the combination of these factors could be most effectively used. It tries to improve the initially planned combination of production factors and their location through substituting these factors and finding a new location which is most effective for the new combination of factors. In this approach, the decision on investment, production and location is joint and simultaneous. The decision is optimum if the rate of marginal productivity of factors (marginal rate of substitution) is equal to the price rate of factors. Further examination of production factors and production leads to the conclusion that, with a given cost, the volume of production can be biggest only when marginal products of production faactors are equal.

The choice of location is mostly determined by the distribution of production factors, i.e. by supply. An individual enterprise, having no possibility to shape the demand, assumes a rational anticipation in this respect. Short periods of maladjustment between the demand and supply are treated only as decision-making errors, next eliminated by competition. The spatial equilibrium is restored by adjustment processes, i.e. interregional flows regulated by competitive prices. When the equilibrium (a state close to equilibrium) is restored, excess profits disappear.

In the neoclassical approach urban-industrial agglomerations are formed and develop when external economies, available for enterprises in cities, are higher than profits stemming from lower prices of production factors in peripheral areas. The surplus obtained in this way is different in different cities. Therefore, industries move to those cities where the surplus is highest.

This traditional approach has been expanded in recent decades by the inclusion of issues related to the life cycle of products, differentiation of production factors' productivity under the influence of innovations, differentiation of the labour factor with

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regard to qualifications, economies of scale and joint products, periods of depreciation of fixed capital and the process of learning production and marketing. However, neoclassical concepts, given their assumption on competitive prices being fixed in the production cycle, still present regional development and interregional shifts as an orderly process of gradual changes of a hierarchical filtration type, in other words, as a process of incorporating consecutive most advantagous areas into the development or concentrating activities in agglomerations with the highest surplus of external economies.

The structural-periodical approach (Storper 1985) takes the existence of business cycles as a starting point. The cyclical variability of economic processes can have different stages of different lenght and amplitude. Recently, researches of economic dynamics in advanced western countries have been attracted by long cycles. Persistently recurring deep economic recessions, uncertainty concerning the future supply of energy and raw materials, divergent economic trands in developed and developing countries threatening the world's stability, and inability of states to control the contemporary technological progress, all this has led to the revival of interest in those theories and methods which are useful in analysing long-range trends in the economic development. The issue of long waves covering such questions as perturbations, balanced growth, stable equilibrium, interregional and international inequalities, and conflicts involving many parties have become the subject of many studies (Nijkamp 1983).

The hypothesis of Kondratieff's long cycles (Kondratieff 1935) enjoys particular popularity. It is believed that it reflects contemporary structural changes taking place in the economies of advanced western countries. According o Kondratieff the course of development of the capitalist economy is marked by the occurrence of cycles composed of five stages: take-off, rapid growth, maturity, saturation and decline. One cycle covers 40–50 years. For cycles of such a long time span it is difficult to get historical data confirming the rightness of the hypothesis. Therefore, for a long time many critics treated it only as peculiarity which manifests itself in changes of prices only. Recently, however, many efforts have been taken to verify this hypothesis and provide it with more solid empirical grounds.

In the context of the technological progress, which is of particular interest to us, it is imporant that the course of each new stage be explained with the help of economic and technological characteristics of the previous stage. Such an explanation would require an answer to the question what technological change would be necessary at the stage of decline to make it possible to pass on to the stage of expansion. Relations between cycles of different time span are also significant. According to a hypothesis put forward in various discussions, Kondratieff's long cycles modify the course of shorter cycles in such a way that the stage of rise extends the stage of expansion of a shorter cycle, while the stage of decline deepens and extends the stage of recession of a shorter cycle.

It is good to start the search for a proper approach to the issue of spatial consequences of contemporary technological change by considering the shortcomings of the two earlier approaches. The neoclassical approach, despite its elegance, must be corrected at many points where it fails to meet reality. In economic reality, gradual adjustment processes not always lead to spatial equilibrium. Cumulative processes induce disequilibrium which may be of a permanent and practically irreversible character. Adjustment processes are dominated in general by the development of technology and production forces which may be of a discrete character. As a result, also spatial shifts are not always gradual and smooth. Obervations of real systems show that highly advanced regions are not always sources of innovations. New industries may create agglomerations but at different locations than neoclassical concepts would indicate. Finally, in the innovative process a significant role is played not only by an

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individual enterprise but also by the organized sectors of the economy and the economic macrostructure which is composed of these sectors.

If the production function is being employed for the analysis of urban and regional economy, the technological and organizational progress should be treated not as a residual but an independent variable similar to fixed capital and employment. In to-date analyses an autonomous role of independent variables was attributed only to the fixed capital and employment. And only the residual of the dependent variable (production), not explained by these two independent variables, was attributed to the technological and organizational progress. If we want to more thoroughly analyse the impact of new technologies, the term representing them should be explicated.

In the structural-periodical approach the factor of space is insufficiently exposed. A theory of spatial cycles could be a proper extension of the theory of structural and periodical changes. Such a theory is being build only now. A significant contribution to its construction has been offered by a work edited by Berg, Burns and Klaassen (1985).

At present high technology is spreading in many countries, especially developed ones. It is accompanied by structural changes of industry and the remaining sectors of the economy. The diversity and the broad range of high technology's expansion prompt a thought whether we witness the emergence of a new bunch of innovations, starting a new long wave of innovations and socio-economic development. There are many premises to give an affirmative answer.

A new wave of innovations does not emerge accidentally. The broad application of latest and earlier inventions taking place today is a response to the challenge posed by the contemporary stage of the socio-economic development. These challenges include: uncertaintly as to the future supplies of raw materials and energy, recurring economic recessions, changes of social priorities and ways of meeting the needs, and international tensions.

A necessary condition of restructuring industry and the entire economy is the accumulation of capital. Without it the scope of changes in production and services, distribution and consumption may be narrow despite the fact that a new socio-economic structure may emerge in a neighbouring country which has managed to accumulate capital. The socio-political conditions must also favour development (favourable social attitudes, efficient system of management, etc.).

The technological and socio-economic progress will undoubtedly lead to spatial changes. What changes? What is the spatial organization of the economy going to be like after the period of a long wave of a more innovative development? Enterprises to be constructed to introduce and develop high technology are not likely to bring about any deeper spatial changes. They will become just a small part of the previously accumulated economic potential and the established spatial organization. In other words, we do not share a view which might be called technological determinism, i.e. a view that technological changes will directly cause the emergence of a new shape of spatial organization. On the other hand, we do share a view that indirect spatial changes will be much more significant, i.e. changes brought about by the involvement of high technology in various and broader economic, social, cultural and environmental processes. Through their intervention the spatial organization can significantly change (Castells 1985).

With this assumption, we must also admit an indirect influence exerted on the spatial organization by the determinants affecting these various and broader economic, social, cultural and environmental processes. A decisive role, next to the existing spatial organization, accumulation and availability of resources, will go to the socio-economic system and consequences of its operation, i.e. spatial behaviour of free enterprises, the way in which towns, communes and regions function and develop, land management, and consistency in pursuing spatial and environmental policies.

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HIGH TECHNOLOGY AND SOCIO-ECONOMIC CHANGES

In accordance with the third approach described above, we shall first present changes in the socio-economic system accompanying the expansion of high technology and next identify regional consequences of those changes. A particularly significant role is played by:

1. Input-output changes of innovative enterprises compared with inputs-outputs of enterprises of the previous generation. A characteristic feature of these changes is a much larger share of innovative enterprises' expenditures on research and development. Outputs will be much higher in relation to inputs if products are sold at novelty price, which is a rule. Innovative enterprises will search for such locations where the input-output relations are most favourable.

2. Changes in the demand and supply of industries and regions stimulated by innovations. These changes will differ depending on the ability to absorb innovations in those industries and regions.

3. The emergence of ever new innovations and formation of bunches of innovations produce a synergetic effect. One innovation, acting jointly with another in performing complex tasks, intensifies the joint action and produces an additional effect.

4. Change of multipliers and their effects. The effectiveness of innovative enterprises seems to depend to a smaller extent on the scale of production. Economic successes are scored by medium – size and small enerprises. This observation inclines one to be cautious while drawing conclusions on the basis of ealier hypotheses concerning the multiplier effects. It is probable that multiplier effects will be greater with regard to income, and smaller or negative with regard to employment. Interregional technical coefficients of production will change in an uneven way. More innovative regions will need less mass raw materials and more light supplies of highly processed parts and subproducts.

5. Changes between location factors. As a result of reduced material-demand, emergence of new, light materials and expanded connections in supply and sales, quantitative and qualitative demands of transportation will change. New enterprises will need employees with different skills. Old urban-industrial agglomerations may fail to create favourable conditions for new enterprises. These enterprises will locate in new agglomerations and co-create them. Ever greater significance is attributed to towns with innovative research centres and regions with a pleasant natural environment.

6. Change in relation between innovative enterprises and their environment. Two significant consequences of this change have occurred already before, i.e.: a) the conflict between industrial plants and their environment was either soothed or eliminated owing to clean technologies, b) a portion or entire production processes were relocated, as new products ripened, to peripherial towns in the same region or to other regions where the routine mass production can be cheaper mostly due to lower labour costs.

7. Bifurcation of the labour market. On the one hand, the position of a minority of highly qualified employees is improving. On the other, a majority of employees are expected to be less qualified, their skills sufficient to perform simple and low-paid jobs only. The latter phenomenon occurs especially in aging industries. The bifurcation of occupational composition is reflected by the distribution of incomes. There is a hypothesis that it gradually washes the middle class away and leads to its decline.

8. Changes of human needs and ways to meet them. It is significant to discriminate between the variability of needs and ways to meet them in towns and in the countryside. In both areas we can observe the spreading of modern electronic and audiovisual equipment, but it is probable that the future demand for equipment which makes it possible to meet one's needs individually will grow faster in the countryside because of inaccessibility of service centres there. This may apply to cultural needs and ways of spending one's leisure. Besides, the countryside, as its incomes and prosperity rise, may record a relatively faster growth of the demand for electric household appliances.

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REGIONAL CHANGES

Let us draw up a list of regional changes induced by high technology following the absorption of the latter by broader economic, social, cultural and environmental processes. Some of these changes have been observed in reality, other are of a hypothetical character.

1. In regions with the traditional industrial structure and technologies (Hall 1985) there occurs the so-called effect of Javanese tree (*Antriaris toxicaria*). This tree has a lethal influence on a man who happens to find himself under its branches. An analogy is drawn to outdated sectors of industry whose presence in agglomerations does not create favourable conditions for innovations and makes them wither. This analogy is incomplete if traditional agglomerations restructure their industries and the remaining sectors of the economy and set the environment and spatial organization in order.

2. Agglomerations with a younger structure of industry, as well as developing agglomerations are more dynamic and are more likely to become a place where innovations emerge to initiate a new long wave of socio-economic development, provided they have reasearch centres, skilled staff and pleasant environment.

3. If one assumes that new bunches and waves of innovations appear every 40–50 years, like in the Kondratieff cycle, and that the Javanese tree effect is operating, thus weakening the innovative character of traditional agglomerations, one can draw a conclusion that every 40–50 years it can be expected that new generations of urban-industrial agglomerations will be formed and the growth rate of the previous generation will slow down.

4. In the initial stage of expansion of high technology locational changes will be occasional. The existing agglomerations still show an ability to keep both capital reserves and most creative employees in their old locations. Thus, for the time being, new locational trends are interwoven with the old ones, the latter being in majority (Malecki 1985). New trends will depend on and most probably be strengthened by the mobility of people employed in new industries (Herzog *et. al.* 1986).

5. A change of production space brought about by the new organization of production (separation of functions and economic units performing them in order to take advantage of utilities of places, followed by integration through modern transport and telecommunications; subcontracts; work at home).

6. High technology, striving for using different utilities of places for different functions, reduces the need for proximity of economic units. These units are integrated by means of modern transport. The significance of a favourable location in relation to this transport network is growing. Some symptoms of the process of substitution of the space of flows for the space of places have been observed (Castells 1985).

7. The theoretically greater freedom in locating new industries cannot be implemented in practice because of spatial, environmental, infrastructural and demographic constraints. Thus, only few places of particularly high utilities gain special significance as potential development centres and the cores of new agglomerations. The greatest location significance (attractiveness) will be attached to those useful qualities which cannot be transformed into flows.

8. New production space does not eliminate the hierarchical order, i.e. hierarchical subordination of production units and the hierarchy of places (differentiation of the utility of places), but the forms of hierarchy change. These forms depend on the division of new and modified production processes into stage of different technological requirements and on the location of these stages at places of different utility. The technological and spatial division of production processes requires an integrating factor, i.e. efficient transport and communications.

9. Technological innovations have always played a big role in the functioning of towns and the life of their residents. Highly advanced countries, which have already

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accumulated many technological changes, carry out prognostic studies on their consequences for the population, economic activity and urban spatial structure. The observation that information is the object of discoveries and their application gives grounds to the conclusion that a future city is an "information city" (Castells 1985).

In the field of employment, automation of labour at offices and the improvement of data transfer offer a possibility to decentralize work-places, including even their transfer to employees' homes.

What is considered to be a very important consequence of the contemporary stage of technological progress is the revolution in households and home entertainment.

In general, along with the territorial expansion and deconcentration of metropolis and the individualization of home landscape and lifestyles, high technology simultaneously multiplies the significance of few places as locations for these activities which cannot be easily transformed into flows and which still require spatial proximity, thus strengthening urban hierarchy. In the information city the spatial peculiarity and the central location become even more important than in the trading-industrial city, just because of peculiar location requirements of some activities. Thus, high-level executive functions, specialized entertainment and recreation centres, chief information institutions, specialized production and service centres will continue to be characteristic signs of metropolitan space due to their requirements of spatial proximity and personal contacts.

Next to high technology, spatial transformation will be also influenced by economic and political reforms. Particularly important changes are those concerning the relations in the triangle: production and service enterprises – local administration – political and economic centre.

SIMULATION MODEL OF THE DEVELOPMENT OF THE SPATIO-ECONOMIC SYSTEM WITH A LONG WAVE OF TECHNOLOGICAL INNOVATIONS

The expansion of high technology has prompted expectations of significant transformations of the economy and society, including spatial ones. A question arises what these transformations are going to be like, which of them are going to be convergent with accepted social goals and which divergent, which elements of the development process should be influenced to channel this process towards social goals.

Some insight into the future development of the spatio-economic system can be provided by the application of a dynamic simulation model. This chapter gives an account of experiments made by means of such a model (appendix).

A characteristic feature of the model is that it contains terms representing a bunch of long-wave technological innovations. Progress has been assumed in: production technology, technical standard of fixed assets, material- and energy-efficient technology, technology and organization of investment processes, technologies protecting the natural environment.

The model system is composed of two sectors (rural and urban ones) and four regions. Its development is simulated for 50 years. The assumed length of wave is that of the Kondratieff cycle but it has not been related to the fluctuation of the capitalist economy. On the other hand, use was made of a suggestion that in Poland the recent years have closed certain cycle of over 40-year postwar development and that Poland is enetering a new cycle of different demographic, investment, production, consumption and environmental characteristics. The first cycle was dominated by extensive growth factors, while the second is likely to be dominated by intensive growth factors.

The following characteristics have been assumed for the four regions constituting the spatio-economic system (Fig. 1):

1. Middle west region. The existence of strong research centres has been assumed along with the occurrence of moderate constraints of an infrastructural and environ-

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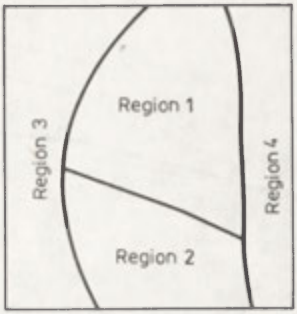

Fig. 1. Regional structure of national system

mental character. This region, owing to its huge innovative potential, is expected to develop dynamically.

2. South-western region. The existence of many development thresholds, including the infrastructural and environmental ones, has been taken into account along with the existence of many industries characteristic for traditional urban-industrial agglomerations. It has been assumed that the socio-economic development will be continued in the conditions of heavy constraints.

3. Region covering western and northern areas. It is characterized by a big demographic potential which will attract investment, production and service activity. The demographic youth and the existence of many important research centres predestines this region to achieve a particularly high growth rate of the socio-economic development.

4. Eastern region. Low characteristics of the initial socio-economic state has been assumed along with a gradual, steady development in the future.

The resemblance of these regions and Poland's socio-economic space is intentional. The thing is to make it possible, while interpreting simulation results, to associate the obtained results with concrete areas. This makes it possible to make an intuitive assessment of the probability of the outlined scenario of development. One should stress, however, that this model is not a prognostic model of Poland's regional development in the proper meaning of the word.

The model is based on real data (mostly) referring to the system's initial state and hypothetical data concerning the course of the process of development. The hypothetical data are based on the theory of innovation diffusion and the currently known determinants and constraints of development. In accordance with the theory of innovation diffusion the logistic (linearized) curve has been broadly used for describing the course of development. Technical progress of fixed assets, employment in modern industries (at a relatively lower level) and the effectiveness of environmental protection develop according to this curve. The share of investments in the national income grows relatively fast at first, owing to the necessity to hold up depreciation and increase accumulation of resources for the development of high technology and modern industries, next it slightly comes down to stabilize later at a moderate level. The technical and organizational efficiency of investment processes grows fast at first (owing to the existence of reserves) and slows down next. The accumulation of fixed capital (net value) is slow at first (being checked by depreciation) and faster later on. The production technology depends on the value of fixed capital, its technical characteristics and staff with university and secondary education (linear growth), and, in the rural sector, also on the level of services for farming and the co-occurrence of the food processing industry. A declining trend has been assumed for: use of materials and energy, employment in agriculture and traditional industries, and the amount of pollution getting into the natural environment (Figs 2–5).

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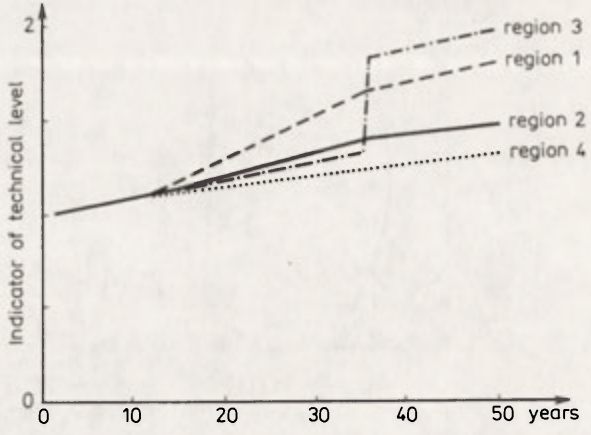

Fig. 2. Technical level of fixed assets in sector 2 in regions (T^{2k})

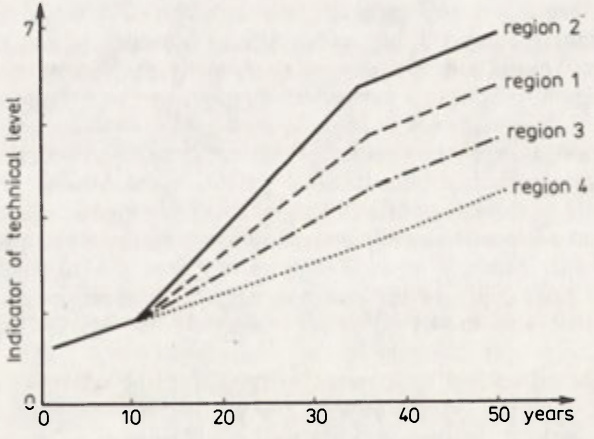

Fig. 3. Technical level of environmental protection in sector 2 in regions (T^{2q})

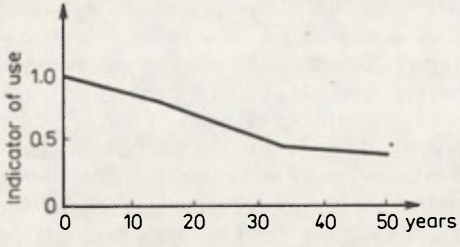

Fig. 4. Unit use of resources and energy in national system (T^{f})

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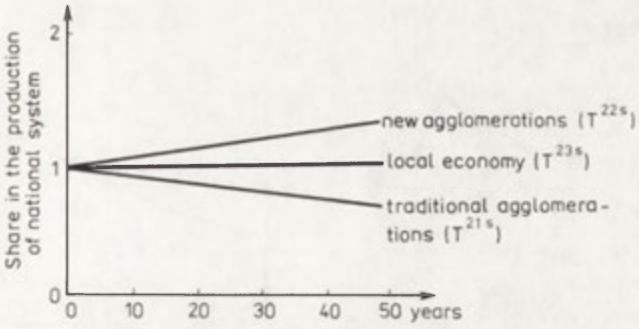

Fig. 5. Trends of the interregional shifts of sector (T^{2s})

The model is based on the principle of sectoral and regional self-organization. Most important interactions occur between sector 1 (rural) and 2 (urban), between regions 1, 2, 3, and 4, between net output, investments and consumption, between production, consumption and the pollution of the environment, and between the value of fixed assets and investments. All these factors are included in production functions of both sectors. Some interdependences are nonlinear (linearized).

Next to deterministic dependences, the model includes random elements. Random variables of two kinds have been introduced: 1) random numbers simulating the impact of external factors, i.e. factors not included in the model (e.g. natural calamities, business slump on foreign markets), 2) random numbers simulating internal disturbances, i.e. disturbances between elements included in the model. After each analytical iteration the result was corrected by random numbers according to the formulas contained in the formal part of the model.

For comparison, simulation was conducted for both cases, i.e. when the impact of all the technological innovations was assumed and when this impact was ignored. A hypothetical image of the state and situation when the socio-economic development was not influenced by technological innovations was obtained.

The simulation results permit a varied interpretation. Interpreted were: variables of the system's state, economic relations occurring in the process of production, distribution and exchange, effectiveness in the process of development, spatial shifts (assumed emergence of new agglomerations), and a hypothetical process of development without a long wave of technological innovations.

The obtained results permit to make the following observations concerning the variability of the simulated spatio-economic system in a long time span. 1. A moderate increase of differences in the level of net output between sector 1 and 2 (Fig. 6), 2. Occurence of regional differences of sectors' growth rate, 3. Emergence of regions which develop more and less dynamically (regions 3 and 1; regions 2 and 4), 4. Faster technological progress in sector 2 than in sector 1, 5. Shift of growth towards new agglomerations results in the growth of production and consumption in the entire system. In regions 1 and 2, initially dominated by specialized supralocal functions, significant effects were brought about also by the shift of activity towards the local economy, 6. Exponential growth of the values of fixed assets (Fig. 7), 7. Correlation between net output, consumption and investments. The parallelism of development is disturbed in the final years of the simulated process as a result of exponential investment growth reducing the rate of consumption growth (Fig. 8), 8. Labor productivity grows in the entire system (Fig. 9), while fixed capital's productivity, after a period of growth, begins to lose its dynamics (Fig. 10). The economic growth proved to be capital-demanding though no such intentional assumption has been made, 9. Trans-

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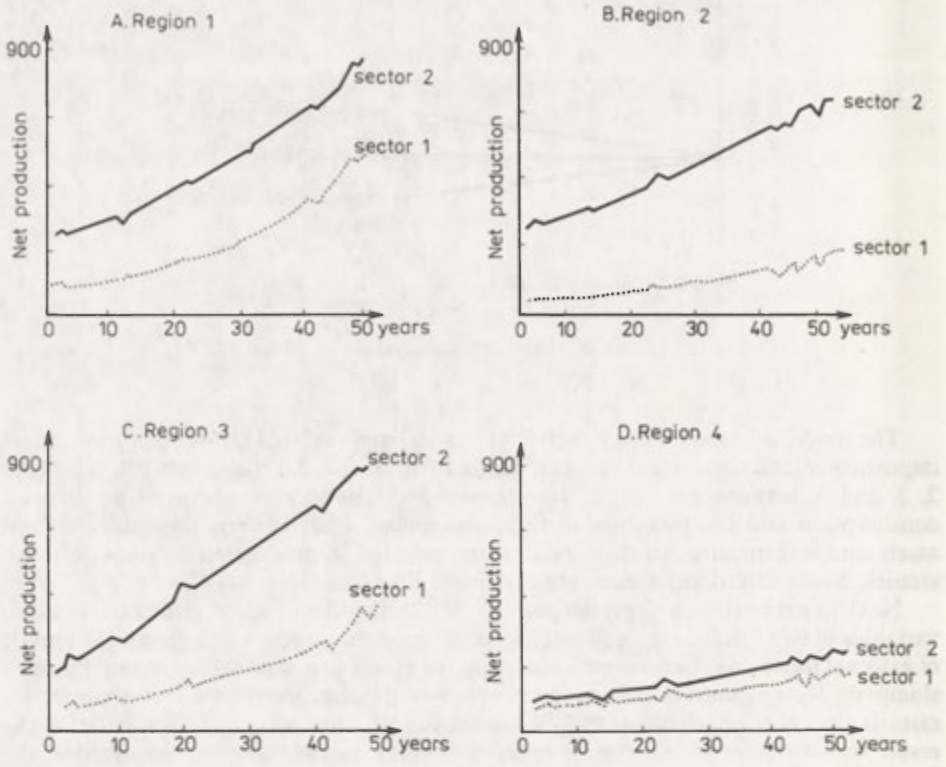

Fig. 6. Net production of sectors in regions (P)

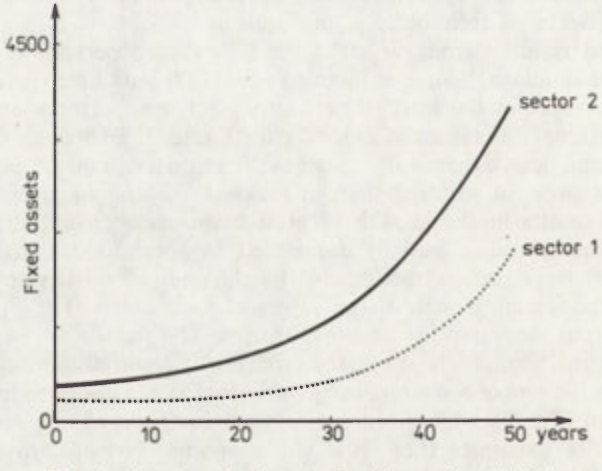

Fig. 7. Fixed assets (gross value) in region 1 (K_1)

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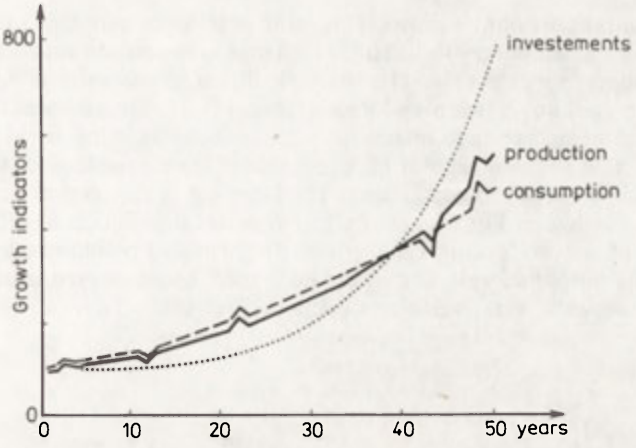

Fig. 8. Relations between net production, consumption and investments in region 1 ($P_1 : C_1 : I_1$)

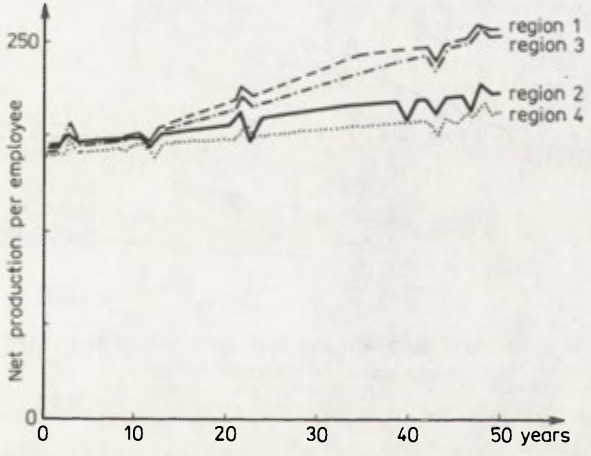

Fig. 9. Labour productivity in sector 2 in regions (P^2/E^2)

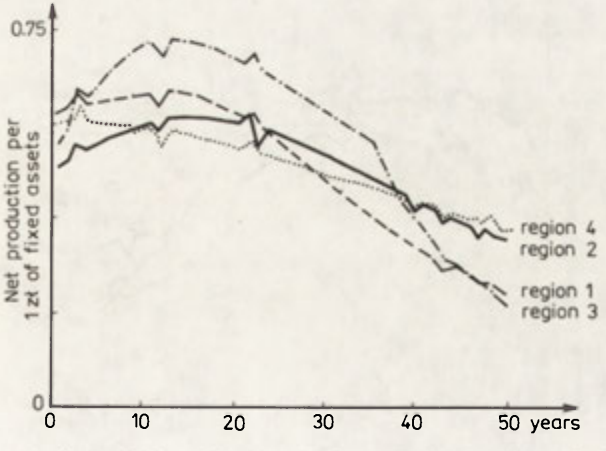

Fig. 10. Productivity of fixed assets in sector 2 in regions (P^2/K^2)

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port-requirements of net output grows. This result confirms a hypothesis that one of the consequences of contemporary technological change is the substitution of the space of flows for the space of places (Fig. 11), 10. Agricultural productivity of soil (land) first grows and then goes down (warning forecast) (Fig. 12), 11. Environmental pollution in urban-industrial areas per unit of net output shows a declining trend (Fig. 13).

The elimination of the impact of high technology lowers the level of state variables and increases differences between sectors. The lowering of the level of production and consumption is shown in Fig. 14 and 15. Environmental pollution in urban-industrial areas per unit of net production is higher (the divergence of pollution curves is smaller than that of net output curves), and in the final years becomes even equal in absolute terms, despite much lower level of production (Fig. 16).

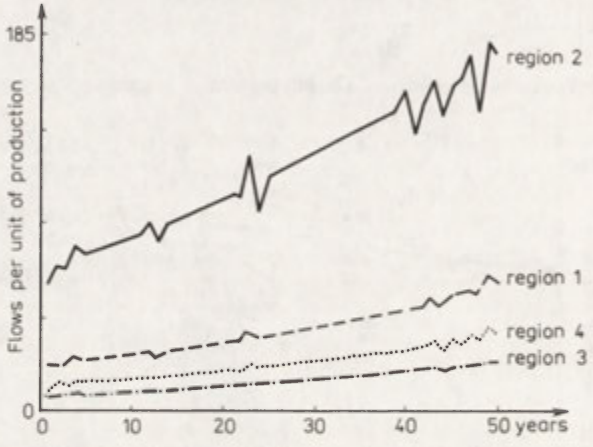

Fig. 11. Transport requirements of net production in sector 2. Substitution of the space of flows for the space of places (F^2/P^2)

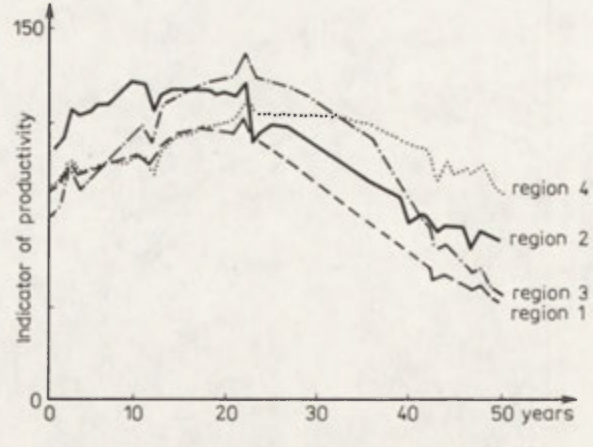

Fig. 12. Agricultural productivity of soil (P^1/Q^1)

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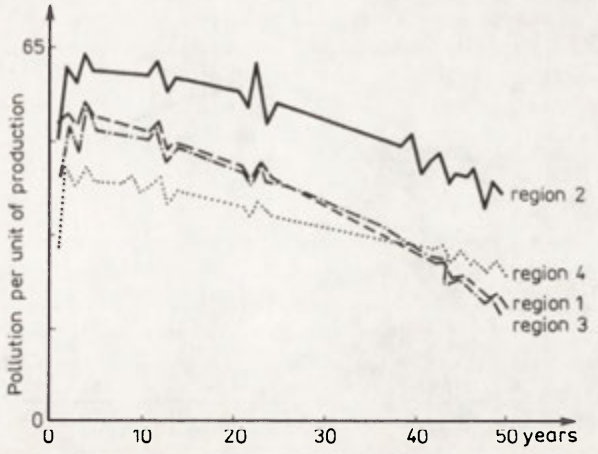

Fig. 13. Pollution of environment in urban-industrial areas per unit of net production (Q^2/P^2)

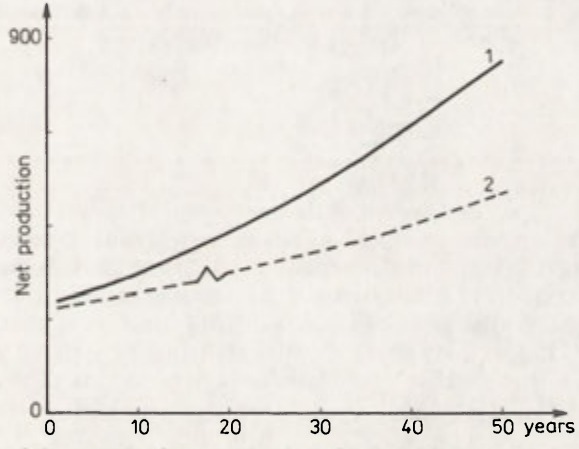

Fig. 14. Variants of the growth of net production of sector 2 in region 1:1 — growth connected with epochal technical innovations, 2 — growth without epochal technical innovations

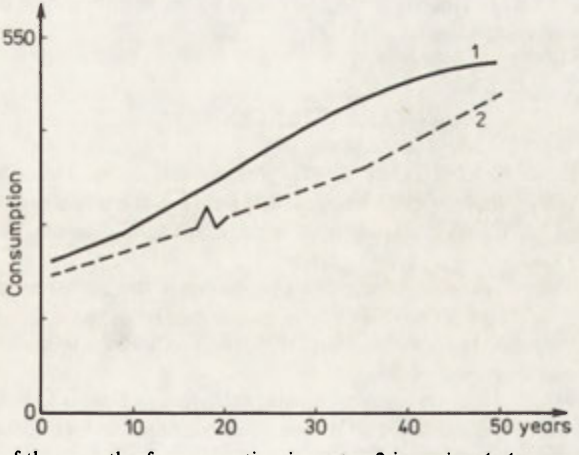

Fig. 15. Variants of the growth of consumption in sector 2 in region 1:1 — growth connected with epochal technical innovations, 2 — growth without epochal technical innovations

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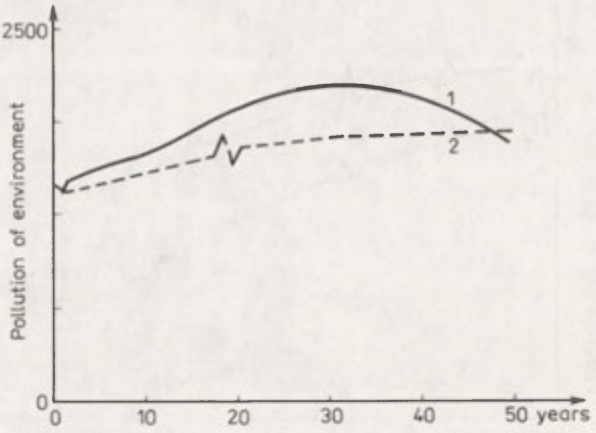

Fig. 16. Variants of the pollution of environment (volume) in sector 2 in region 1:1 – pollution with rapid growth of production connected with epochal technical innovations, 2 – pollution without epochal technical innovations

CONCLUSIONS

The modelling of the development of the spatio-economic system with a long wave of technological innovations produced results consistent with expectations based on theoretical concepts and known determinants and constraints. A majority of state variables react to changes of parameters which determine them in a way which can be reasonably interpreted. The relatively least satisfying reaction is that of the natural environment and value of fixed assets. Coefficients tying the state of the environment with production value and technological level seem to be too low. The growth of value of fixed assets, on the other hand, seems to be too exuberant. Further experiments should check other assumptions and other structures of model.

Diagrams illustrating simulation results well-express the general trends of development in regions and sectors. No characteristic turning points, however, have appeared on these diagrams. This shortcoming suggests that better results might be achieved with the use of the bifurcation theory.

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APPENDIX

Simulation model of the development of the spatio-economic system with a long wave of technological innovations

SYMBOLS:

B_r^1 – soil classification in sector 1 in region r,
C_r^1 – consumption of the population earning its living in sector 1 in region r ($r = 1, 2, 3, 4$),
D_{ri} – average distance between regions r, i ($r, i = 1, 2, 3, 4$),
E_r^1 – average employment in sector 1 in region r,
E_{or}^1 – initial employment in sector 1 in region r,
E_r^{1+} – employment in activities gaining work-places in the period of technological progress in sector 1 in region r,
E_r^{1-} – employment in activites losing work-places in the period of technological progress in sector 1 in region r,
E_r^{1h} – employees with technical education in agriculture and forestry in region r,
F_r^1 – flows of products between sector 1 and sector 2 in the system of regions $r(r = 1, 2, 3, 4)$,
I_r^1 – investments in sector 1 in region r,
K_r^1 – gross value of fixed assets in sector 1 in region r,
K_r^{1n} – net value of fixed assets in sector 1 in region r,
P_r^1 – net production of sector 1 in region r,
P^{1g} – gross production of sector 1 in region r,
P_{or}^{1g} – gross production of sector 1 in region r in initial state,
Q_r^1 – fertility of soil in sector 1 in region r,
S_r – gross production of the food industry in region r,
T^{1f} – parameter characterizing a decrease in material – and energy-demand in sector 1,
T^{1i} – parameter characterizing technical and organizational efficiency of investment processes in sector 1 in region r,
T_r^{1k} – parameter characterizing the technical standard of fixed assets in sector 1 in region r,
T^{1p} – parameter characterizing the level of production technology in sector 1 in region r,
T^{1q} – parameter characterizing the technical level of environmental protection in sector 1 in region r,
U_r – sales of production services for agriculture in region r,
W^{1g} – growth trend of gross production in sector 1,
C_r^2 – consumption of the population earning its living in sector 2 in region r ($r = 1, 2, 3, 4$),
D_r – average distance between regions r,
E_r^2 – employment in sector 2 in region r,
E_{or}^2 – initial employment in sector 2 in region r,
E_r^{2+} – employment in activities gaining work-places in the period of technological progress in sector 2 in region r,
E_r^{2-} – employment in activities losing work-places in the period of technological progress in sector 2 in region r,
E_r^{2h} – employees with university education in sector 2 in region r,

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F_r^2 – flows of products between sector 2 and sector 1 and 2 in the system of regions ($r = 1, 2, 3, 4$),
F_r^{21} – inter-sectoral and inter-regional flows concentrated between matured agglomerations,
F_r^{22} – inter-sectoral and inter-regional flows between developing agglomerations (shifting economic activity towards them),
F_r^{23} – flows generated by booming local economy,
I_r^2 – investments in sector 2 in region r,
K_r^2 – gross value of fixed assets in sector 2 in region r,
K_r^{2n} – net value of fixed assets in sector 2 in region r,
P_r^2 – net production of sector 2 in region r,
P_r^{2g} – gross production of sector 2 in region r,
P_{or}^{2g} – gross production of sector 2 in region r in the initial state,
Q_r^2 – pollution of the natural environment in urban-industrial areas,
T^{2f} – parameter characterizing a decrease in the material – and energy-demand in sector 2,
T_r^{2i} – parameter characterizing the technical and organizational efficiency of investment processes in sector 2 in region r,
T_r^{2k} – parameter characterizing the technical standard of fixed assets in sector 2 in region r,
T_r^{2p} – parameter characterizing the level of production technology in sector 2 in region r,
T_r^{2q} – parameter characterizing the technical level of environmental protection in sector 2 in region r,
T^{2s} – parameter characterizing the attractiveness of matured urban-industrial agglomerations for sector 2; $T^{2s} = T^{21s}$,
T^{22s} – parameter characterizing the attractiveness of developing urban-industrial agglomerations for sector 2 (shifting economic activity towards them),
T^{23s} – parameter characterizing the expansion of flows with booming local economy,
W^{2g} – growth trend of gross production in sector 2,
$a_1^1 \ldots a_6^1$ – coefficients describing the dependence of net production in sector 1 on production factors 1...6,
$a_1^2 \ldots a_6^2$ – coefficients describing the dependence of net production in sector 2 on production factors 1 ... 6.
b^1 – coefficient describing the dependence of investments on the volume of net production in sector 1,
b^2 – coefficient describing the dependence of investments on the volume of net production in sector 2,
c_1^1 – coefficient expressing the dependence of production technology in sector 1 on the employment of technical staff,
c_2^1 – coefficient expressing the dependence of production technology in sector 1 on the net value of fixed assets,
c_3^1 – coefficient expressing the dependence of production technology in sector 1 on the gross value of the food industry,
c_4^1 – coefficient expressing the dependence of production technology in sector 1 on the sales of production services for agriculture,
c_1^2 – coefficient expressing the dependence of production technology in sector 2 on staff with university education,
c_2^2 – coefficient expressing the dependence of production technology in sector 2 on the net value of fixed assets,
m_1^2 – coefficient expressing the pollution of urban environment per unit of gross production in sector 2,
m_2^2 – coefficient expressing the pollution of urban environment per capita consumption of the population earning its living in sector 2,
Π – random variable simulating the impact of the surroundings on the spatio-economic system as a whole,

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Φ — random variable simulating disturbances within the spatio-economic system (in individual regions).

MODEL

$$P_r^1 = a_1^1 K_r^1 + a_2^1 F_r^1 + a_3^1 E_r^1 + a_4^1 I_r^1 + a_5^1 T_r^{1p} + a_6^1 Q_r^1 \quad (1)$$

$$K_r^1 = (K_r^1 + I_r^1 \cdot T_r^{1k}) \cdot 0{,}9 \quad (2)$$

$$F_r^1 = g \sum_{i=1}^{4} \frac{P_r^1 \cdot P_r^2}{D_{ri}^3} \cdot T^{1f} \quad (3)$$

$$E_r^1 = E_{or}^1 (1 + E_r^{1+} - E_r^{1-}) \quad (4)$$

$$I_r^1 = b^1 P_r^1 + 0{,}1 K_r^1 + T_r^{1i}(P_r^1 + K_r^1) \quad (5)$$

$$T_r^{1p} = c_1^1 E_r^{1h} + c_2^1 K_r^{1n} + c_3^1 S_r + c_4^1 U_r \quad (6)$$

$$c_r^1 = P_r^1 - I_r^1 \quad (7)$$

$$Q_r^1 = B_r^1 - m^1 P_r^{1g} + T_r^{1q} K_r^1 \quad (8)$$

$$P_r^2 = a_1^2 K_r^2 + a_2^2 F_r^2 + a_3^2 E_r^2 + a_4^2 I_r^2 + a_5^2 T_r^{2p} - a_6^2 Q_r^2 \quad (9)$$

$$K_r^2 = (K_r^2 + I_r^2 \cdot T_r^{2k}) \cdot 0{,}9 \quad (10)$$

$$F_r^2 = g \sum_{i=1}^{4} \frac{P_r^2 (P_i^1 + P_i^2)}{D_{ri}^{2,5}} \cdot T_r^{2f} T_r^{2s} \quad (11)$$

$$E_r^2 = E_{or}^2 (1 + E_r^{2+} - E_r^{2-}) \quad (12)$$

$$I_r^2 = b^2 P_r^2 + 0{,}1 K_r^2 + T_r^{2i}(P_r^2 + K_r^1) \quad (13)$$

$$T_r^{2p} = c_1^2 E_r^{2h} + c_2^2 K_r^{2n} \quad (14)$$

$$c_r^2 = P_r^2 - I_r^2 \quad (15)$$

$$Q_r^2 = m_1^2 P_r^{2g} + m_2^2 C_r^2 - T_r^{2q} K_r^2 \quad (16)$$

$$P_r^{1g} = P_{or}^{1g} \cdot (1 + W^{1g}) \quad (17)$$

$$P_r^{2g} = P_{or}^{2g} \cdot (1 + W^{2g}) \quad (18)$$

$$F_r^{21} = \sum_{i=1}^{4} \frac{P_r^2 (P_i^1 + P_i^2)}{D_{ri}^{2,5}} \cdot T^{21f} T^{21s} \quad (19)$$

$$F^{22} = \sum_{i=1}^{4} \frac{P_r^2 (P_i^1 + P_i^2)}{D_{ri}^{2,5}} \cdot T^{22f} T^{22s} \quad (20)$$

$$F^{23} = \sum_{i=1}^{4} \frac{P_r^2 (P_i^1 + P_i^2)}{D_{ri}^{2,5}} \cdot T^{23f} T^{23s} \quad (21)$$

Random element of the model

The result obtained from the model after each iteration was corrected in accordance with the following formulas:

$$P_r^i = P_{or}^i (1 + \Pi), \quad (1)$$

where: $i = 1, 2$, (sectors); the frequency with which disturbances occur is equal to 1:10 (once for every ten years); disturbance in the nature of a recession ($\Pi < 0$) occurs with frequency 2:3; and amplitude 0−15%; disturbance in the nature of an expansion ($\Pi > 0$) occurs with frequency 1:3, and amplitude 0−10%.

$$P_r^i = P_{or}^i (1 + \Phi), \quad (2)$$

where: $i = 1, 2$ (sectors); disturbances occur with frequency 1:10 years, and only in one region in each case; both kinds of disturbances (recesion, expansion) are 25% stronger in the model without technological progress in comparison with the basic model.

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Character of random variable Φ

Nr of region	Frequency of disturbances in one region in comparison with disturbances in remaining regions	Frequency of recessions and expansions	Amplitude
1	1:8	2:3	+ 15% − 10%
2	3:8	3:1	+ 5% − 20%
3	1:8	2:2	+ 10% − 10%
4	3:8	3:1	+ 5% − 20%

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THE LEVEL OF EDUCATIONAL ACHIEVEMENT IN POLAND: A TOWN-COUNTRYSIDE COMPARISON

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1. INTRODUCTION

The level of educational achievement in Poland during the last few decades was the result of relatively high educational aspirations and the availability of various types of education above the primary level. Traditionally, big disparities have existed in this respect between towns and countryside, a result of historical processes. The town-countryside relationship may be analysed chiefly from the point of view of differences in living standard and working conditions which set in motion the mechanisms of social appraisals and behaviour that have vast consequences for the whole society and the economy.

For many years it had been assumed for reasons of doctrine that progress in technology and organization will eliminate the differences between towns and countryside. The introduction of elements of urban growth to villages and the widespread use of industrial work techniques in farming were to usher in such changes. The process of transformation of the countryside proceeded on many planes but later suffered a setback and in Polish conditions the differences between towns and countryside are quite pronounced. The level of education achievement may be regarded as an exemplification of the differences whose existence determines the pattern of town-countryside relations.

The level of educational achievement is treated as a synthetic indicator illustrating the existing disparities and can serve for determining the direction of change. The interest displayed by the inhabitants of towns and countryside in educational possibilities indirectly testifies to their personal and professional aspirations and to the degree of awakening of cultural needs and the economic efficiency of a given region. If it is assumed that modern economy requires the completion of some kind of school above the primary level, then on the basis of the attained level of educational achievement it is possible to draw conclusions about the demand for innovation in a given region and the accumulated stock of knowledge and skills.

There is the widely known assertion that a higher level of economic development is matched by a higher level of educational achievement. The latter is not only the result of general accessibility of various types of schools and forms of education but also of the decisions and motivations of an individual. There are considerable regional differences in this respect in Poland, combined with a different attitude of the inhabitants of town and countryside to education. For the sake of simplicity, it can be said that countryside dwellers tend to display an instrumental approach to education as it offers a potential chance of social promotion and of moving away from the hard work in farming.

By contrast, the prevalent view among townspeople is that education is an

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autonomous value in itself as it facilitates self-realization. This is an observation of fundamental importance in view of the generally declared and accepted principle of equal educational opportunities for all. The structure of the Polish educational system according to the years of study and types of school is given in Fig. 1. The level of educational achievement may also serve the purpose of appraising the functioning of the educational system, which produces definite social structures. The existence of differences between towns and countryside may be interpreted as signs of the existence of structural and cultural barriers which obstruct the full implementation of the egalitarian goals of the educational policy of the state authorities (Szczepański 1974). These differences have grown so big that increasingly often there is talk of an educational gap between town and countryside (Banaszkiewicz and Diatłowicki 1984); alternatively, they

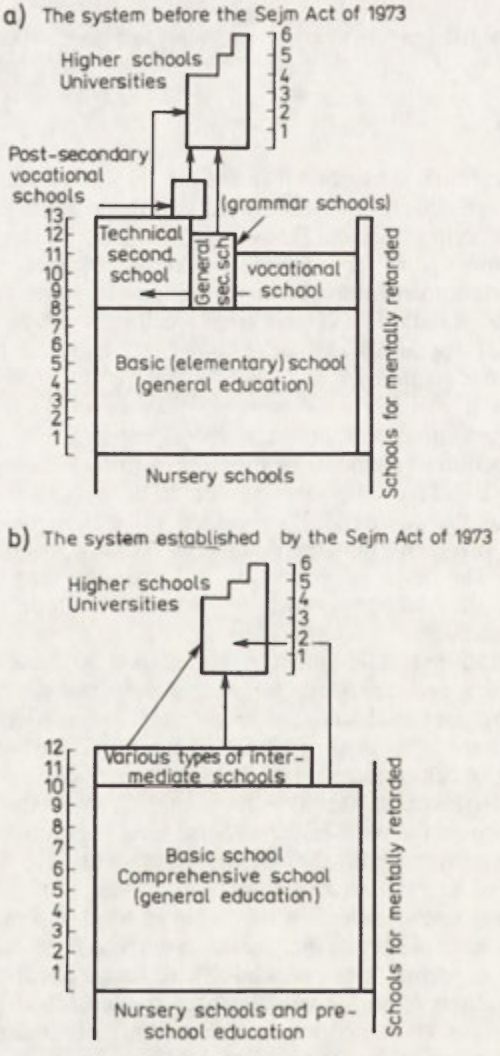

Fig. 1. Formal Educational System in Poland

Source: E. Allardt and W. Wesołowski, eds, *Social structure and change: Finland and Poland comparative perspective*, PWN, Warszawa 1978, p. 231

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may also be interpreted from the point of view of barriers to progress in the democratization of education above the compulsory, i.e., primary level.

In this context, the complexity of the problems connected with the level of educational achievement in towns and the countryside calls for a dynamic and multi-aspect presentation with the help of the available statistical material.

2. THE TENDENCY OF CHANGE IN THE LEVEL OF EDUCATIONAL ACHIEVEMENT IN TOWN AND COUNTRYSIDE

There was a general growth of the level of educational achievement in the years 1945–1985, with big differences between town and countryside in individual periods. The first period, up to, say, 1960, were the years of an educational revolution. Then equal opportunities were an important element of the ideology and social transformations. The ensuring of social promotion through education testified to radical socio-economic transformations. The openness of the school system was accompanied by the awakening and development of educational interests and aspirations on a previously unknown scale, especially in the social milieux whose access to various educational institutions was difficult in the past.

Education created an opportunity for overcoming the old class divisions and contributed to the mass character of vertical social mobility. For rural youth, the obtaining of education and skills in non-agricultural trades was the condition on which the success of its plants connected with the migration to towns depended.

The depth of the transformations is illustrated by the fact that as recently as 1976/1977, one-third of the parents of university students had themselves completed only primary school, or not even that, and only one-fifth had been university graduates. In the period 1945–1973, rural youth accounted for 22,5% of university graduates, but later a downward trend set in (Andrzejak and Sieklucka 1974), until dropping to as little as 6% in the early 1980 s. This was the outcome of many factors which I shall analyse later. In a nutshell, it was a result of the diminishing attractiveness of employment in non-agricultural trades and a relative deterioration of living conditions in towns. Consequently, the instrumental value of education diminished.

The considerable differences in the level of educational achievement between town and countryside are caused by the concentration in the towns of social milieux which put the highest intrinsic value on education. These are mainly people in the professions, members of senior and intermediate levels of management, referred to as the intelligentsia. In its ethos, education is one of the highest values. In the countryside, the population is mainly of a farming nature, with only a marginal role for the intelligentsia, and the former tend to appreciate mainly the instrumental advantages of education.

The disparities in educational achievement are the most pronounced in higher education, less so in secondary education and even smaller in secondary vocational education. There are hardly any differences in primary education, although the proportion of people with incomplete primary education in town and countryside is significantly different. The level of educational achievement is measured in terms of the proportion of people aged 15 and above according to various types of education.

HIGHER EDUCATION

As can be seen Fig. 2a, with regard to higher education, the town-countryside differences are the most pronounced. In the years 1960–1978, the growth of the number of town dwellers with higher education was much bigger than in the countryside. Nevertheless, the T/C (town to countryside) ratio in Fig. 2a, which expresses the

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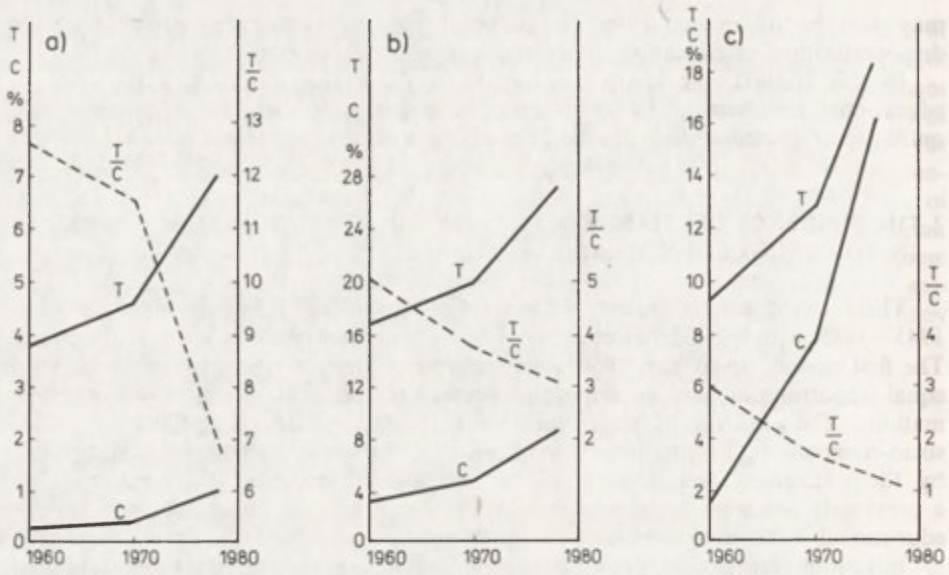

Fig. 2. The changes in towns (T) and countryside (C) according to the level of formal education in the years 1960–1978 a) higher education, b) secondary education, c) basic vocational education

relationship between the share of urban population with higher education and the corresponding share of the rural population, is showing a downward trend, which may testify to a relative lessening of these differences.

Naturally, the change in the value of the T/C ratio should not be overestimated as even a small growth of the share has a big influence on the value of the fraction. This ratio may nevertheless be accepted as an indicator of the existing differences, especially in the analyses of regional differences.

Of course, the town has traditionally been the form of settlement in which there is the biggest concentration of people with the highest formal qualifications among those employed outside agriculture. It should be expected that the percentage share of university graduates among the rural population will increase. But this tendency should not be overestimated as there are certain limits to the number of graduates in the countryside, determined, for example, by the needs of farming, assuming that by the countryside we mean the place of residence of people who live off agriculture.

Due to the underdevelopment of the infrastructure, in many parts of Poland living in the countryside is not considered an attractive proposition. For many decades the factors pushing the rural population away to the cities were much stronger than the pulling force of the attractions of rural life. The economic crisis of the end of the 1970s and the early 1980s set in motion completely new patterns of spatial behaviour of the population. It is hard to predict whether this is going to be a durable tendency or a transitional one.

Nonetheless, there has been a systematic growth in the number of rural jobs and specializations which require the completion of higher education. But direct comparison with towns are of little use because this process is relatively very slow and reaches its peak at a much lower level. However, it is interesting to compare spatial differences in terms of the number of university graduates in various rural areas in different regions.

The growth of the share of university graduates in the countryside depends first and foremost on the educational aspirations of the rural population itself. As mentioned before, there are big fluctuations in this respect, and on top of that there are the

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mechanisms of social selection which operate both inside and outside the school system. It is due to these mechanisms that the youth from rural communities is less well prepared and finds access to educational institutions more difficult.

While appraising the level of educational achievement in town and countryside it is necessary to take into account the influence of the social environment, which determines and modifies educational aspirations at a degree unknown to urban youth (Bourdieu and Passeron 1970). There has emerged a whole syndrome of features, beginning with the level of parents' education and ending with the material situation of the family, the situation of the place of residence within a region, the distance from service centres. These barriers compel the rural youth to verify the feasibility of their ambitions and set in motion a very strong process of self-selection among the inhabitants of the countryside.

Empirical studies have shown that rural youth is subject to strong mechanisms of preselection and self-selection (Białecki 1982). It ought to be emphasized that this is taking place in conditions of free education and the use of the so-called positive discrimination during entrance examinations to higher schools. In the years 1964 – 1983, youth from rural milieux and youth of working class descent was awarded special preferential points designed to correct the outcome of the examinations (Adamski and Zagórski 1979).

In the light of statistical data, these moves did not arrest the dramatic fall in the admission of rural youth to universities because the origins of the selection go back to primary school. The differences in the standard of education are so big that the attempts to offset them through positive discrimination prove insufficient. Empirical studies conducted in the late 1960s showed that an urban youth stood an almost four times as big a chance of making it to university as his rural colleague. These chances increased with the growth of the size of the settlement unit.

Meanwhile, the share of the children of peasants in the total enrolment to daytime university courses kept falling. In 1951/1952 it amounted to 24.9%, in 1970/1971 to 15.1% and in 1980/1981 to as little as 8% (Borowicz 1983). This drop was disproportionately fast compared to the declining share of the rural population, which decreased from 63.1% in 1950 to 47.7% in 1970 and 41.3% of Poland's population in 1980 (*Rocznik Statystyczny* 1983).

Experts in these matters insist that this is a case of a cumulative effect of the advantageous or disadvantageous traits of one's social position: a peasant background is usually accompanied by a low educational level of the parents and residence in the countryside, while the intelligentsia have higher education and a high likelihood of living in a big town.

Calculations made in 1970 showed that in that year there was one university student per twenty people in the whole age group 18 – 24; for those whose fathers had university degrees and who lived in towns, the rate was 1 in 3.5, and for those who lived in villages it was 1 in 10; for those whose fathers did not complete primary education the rate was 1 in 80 in towns and 1 in 166 in the countryside (Osiński 1977). This is the mechanism of social selection in figures.

The authors of many studies agree that rural youth showed relatively the lowest degree of preparation for entrance examinations to universities (Wiśniewski 1969) and as a rule chose agricultural, pedagogical and economic faculties. It is therefore possible to formulate the hypothesis that after a period of spectacular successes with regard to the possibilities of change in the social structure through higher education, especially in the first decade after the war, a dramatic setback occurred. It should be added that at the same time the demand of the national economy for university graduates dropped and so did the instrumental value of education as perceived by the younger generation (Adamski 1983).

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SECONDARY EDUCATION

In the period under review, secondary education was also an area in which big differences occurred with regard to the level of educational achievement between town and countryside. In towns, the growth of the share of graduates of secondary schools was faster than in the countryside. There were some analogies to the situation in the area of higher education, as the two fields usually have identical determinants (cf. Figs. 2a and 2b). However, due to the greater dissemination of secondary education among the population above 15 years of age, the drop in the T/C ratio was more than in the case higher education.

As already mentioned, there are powerful social selection mechanisms operating in Poland at the threshold between one level of education and another. The higher the level, the higher the barriers and the bigger the resulting divergencies in the town-to-countryside ratio of educational achievement.

In Fig. 2b, for the sake of simplicity, general and vocational secondary education was rolled into one despite the special characteristics of each type. General secondary education has come to be regarded as the royal route to university (Borowicz 1983, p. 125). For the rural youth, whose approach tends to be more instrumental, it is also less accessible due to the shortage of places in boarding houses. Very few general secondary education schools are situated in the countryside. Even so, their number showed a downward trend between 1976 and 1983 (*Rocznik Statystyczny* 1983).

Surveys demonstrated that in towns, especially big ones, nearly all the primary school leavers intended to continue their education, with almost a half wishing to choose schools that issued general secondary education certificates. On the other hand, in the countryside almost one school-leaver in five wished to learn a trade quickly on the job. Only one school-leaver in four in the countryside displayed interest in learning for the general secondary education certificate (Borowicz 1983, p. 85).

All the best primary school-leavers in towns planned to go to a secondary school, while among the best pupils in the countryside, only 94.7% planned to do so. Among those with the lowest marks at the end of primary education, only 6.2% in the countryside and 15.2% of urban youth wished to go to secondary school (Borowicz 1983, p. 90).

There are wide spatial differences in the operation of the social selection mechanism at the primary/secondary education threshold. M. Łoś determined that the level of economic development of the countryside influences the educational aspirations of primary school-leavers (Łoś 1972). They are higher in urbanized and industrialized villages. Z. Kosel discovered that socio-economic differences influence not only educational aspirations but also determine the upper limit of education (Kosel 1974). It was found that the attractiveness of secondary education, especially general secondary education, diminishes with the growth of the degree of urbanization.

In the course of studies made in the years 1967–1970, M. Szymański established that youth from the poviats which did not ensure fully satisfactory educational opportunities, e.g., Biała Podlaska or Pisz, did not demonstrate a lower level of educational aspirations than their colleagues from more developed poviats, in fact sometimes the opposite is the case (Szymański 1973).

Studies carried out by S. Wąsowicz in 1972/1973 on a representative sample of Polish villages indicate that the share of spending on the education of children exceeded 7%, but in some families it was nearer 30% when the pupil had to live in privately hired lodgings in a distant locality when a boarding house was not available (Cf. Borowicz 1983, p. 102). While deciding to send a child away to a school of a given type, the family weighs the pros and cons of this peculiar investment. For many families, especially the less affluent ones or ones with man children, sending children to school may prove less attractive than other options, e.g., buying a car or building a home, which leads to the

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choice of a school that gives an opportunity to learn a trade and start earning money fast.

In reality, the passing of the thereshold of primary education also involves the necessity of passing an entrance examination, which in many cases effectively trims the educational aspirations and brings the plans back to the ground. Rural school-leavers face the necessity of overcoming environmental barriers, the barier of lower marks in school and an inferior quality of knowledge. Unlike their colleagues in towns, already from early childhood they have to do work in the family farm. For many, the continuation of education means migration.

These are the general trends and problems connected with secondary education, with considerable regional variations (cf. Fig. 3). Figure 3 shows the combined differences in the level of educational achievements according to voivodships for both higher and secondary education. The T/C ratio shows in a synthetic way how many times the percentage share of higher and secondary education in towns was higher than in the countryside in 1978.

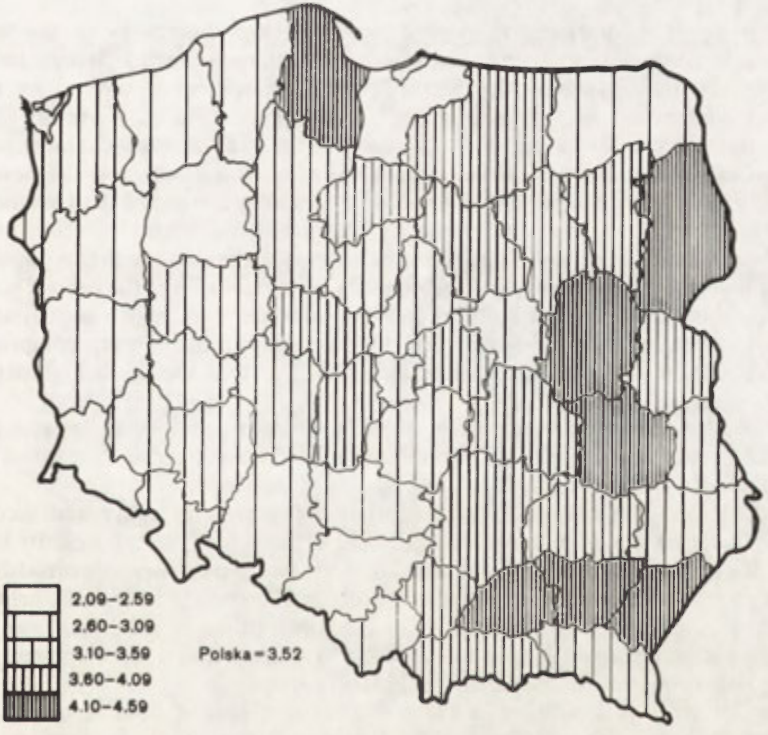

Fig. 3. The values of the ratio of people with higher and secondary education (T/C ratio) according to voivodships in 1978

SPATIAL DIFFERENTIATION OF HIGHER AND SECONDARY EDUCATION BETWEEN TOWN AND COUNTRYSIDE

The smallest differences with regard to the level of educational achievement between town and countryside occurred in the most heavily industrialized voivodship (Katowice), which is the Upper Silesian industrial conurbation based on coal mining and the metallurgical industry, where farming is a marginal occupation and the villages are

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highly urbanized settlement units. The first group also includes the Jelenia Góra voivodship, which has plenty of industry as well as being an established spatial region. The villages there are more like industrial settlements while farming is declining due to unfavourable natural conditions. Small and medium sized towns predominate in the settlement structure, hence the preponderance of urban population.

The two remaining voivodships falling into this group, the Elbląg and Piła voivodships are characterized by the smallest differences. They differ from the other two in that they are of a mixed agricultural-industrial character. Interestingly, both have a relatively poorly developed network of towns and the appearance of the smallest differences is due to the big role state farms play in that area. In comparison to the private sector of farming, state farms employ a relatively high proportion of workers with the highest or high skills and the higher average level of formal education.

In this respect, these voivodships are not exceptional, as a similar pattern exists in the northwestern parts of the country. However, their place on the educational achievement scale is determined first of all by the lack of major towns acting as national centres of culture and science. Therefore their T/C ratio shows the highest degree of homogeneity.

Also group II, comprising 13 voivodships with low differences in the level of educational achievement in towns and countryside is quite varied. It can be easily divided into four subgroups, the first of which shows many similarities to the agricultural-industrial voivodships in group I; it includes the Słupsk, Koszalin, Gorzów Wielkopolski, Zielona Góra and Suwałki voivodships. The distinct characteristics of this subgroup are determined by the large number of state farms and the developed functions of the voivodship capitals. The second subgroup comprises the Częstochowa, Bielsko-Biała, Opole, Wałbrzych, Legnica and Leszno voivodships. The relatively high ratio is the outcome of the high share of industrial employment of the urban population, Leszno voivodship being one exception due to the dominant role of the private sector of farming combined with a high cultural and civilizational level, which is attributed to both the natural conditions and historical heritage. The third subgroup comprises the two biggest urban voivodships, Warsaw and Łódź, in which there is a high degree of urbanization of the countryside.

It should be emphasized that none of the voivodships that make up group II is situated in the southeastern part of the country and it is connected with the past of this part of Poland.

Group III are 11 voivodships with medium differences in higher and secondary education, mostly situated in the central part of Poland (Płock, Włocławek, Bydgoszcz, Poznań, Kalisz, and Piotrków Trybunalski), Szczecin and Wrocław voivodships as exceptions to the rule, and three eastern voivodships (Krosno, Zamość and Chełm). The emergence of such spatial patterns justifies the formulation of the hypothesis about processes of evening up of disproportions in the socio-cultural development of the country. These are new phenomena on Poland's maps.

Group IV are 14 voivodships in the central-eastern part of Poland, from Olsztyn voivodship in the north to Nowy Sącz in the south, with the exception of the voivodships included in other groups. These are voivodships with relatively poorly developed urban network and most of them are centered around towns which were only elevated from poviat to voivodship status in 1975. Curiously, this group also included Cracow, which, after Warsaw, is the second largest center of science in Poland. However, the development of rural areas in that voivodship is characterized by a relatively low level of urbanization.

Group V, seven voivodships in all, embraces the southeastern part of the country, where there are the biggest town-to-countryside differences in the frequency of higher and secondary education, up to five times. This group embraces also Białystok, Gdańsk and Lublin, which are the seats of higher schools.

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From the statistical point of view, the existence of higher schools does not improve the situation, in fact the disparities between town and countryside increase then. The lessening of differences should be viewed as a process in which the changes occur at the pace of the succession of generations, and are therefore spread over a relatively long period of time. While changes in the standard of living can take place at a faster pace, social acceptation of education as a value in itself is still a remote prospect.

BASIC VOCATIONAL SCHOOLS

As can be seen in Fig. 2c, the town-to-countryside differences in terms of basic vocational education are markedly lower, with the growth of the number of people with this kind of education being faster in the countryside than in towns. This growth was especially fast in the years 1970–1978, which is confirmed by the lowering of the T/C ratio.

An advantageous tendency to obtain vocational education has emerged also with regard to the farming profession. This is important for the development of traditional peasant farms. Almost a half of primary school-leavers go on to learn in basic vocational schools. In 1950/1951, this proportion amounted to 42.6% and in 1980/1981 to 45.6% (Borowicz 1983, p. 100). The basic vocational schools are especially popular with the youth wishing to complete their education at the lowest level. This is connected

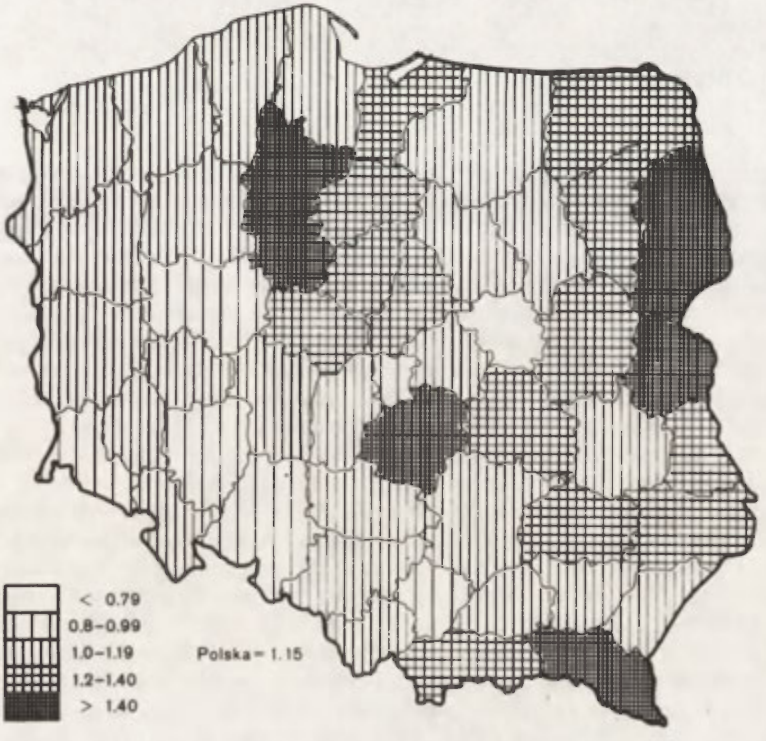

Fig. 4. The values of the ratio of people with basic vocational education (T/C ratio) according to voivodships in 1978

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with definite elements of the social situation, namely the relatively low level of education of the parents, their low socio-occupational position and the dominance of rural youth.

Among the youth in agricultural basic vocational schools, 84,4% come from families working in the private sector of farming and 79,8% live in the countryside (Bolowicz 1983, p. 92–93). Less than 2% of the students of these schools intended to go to university and 42% wished to obtain full secondary education (Borowicz 1983). According to other findings (Osiński 1977), the chances of a graduate of a basic vocational school of obtaining higher education were 8 times lower than those of all secondary school graduates and 23 times lower than those of the graduates of general secondary education schools.

As regards the educational achievement at basic vocational school level, next to the tendency to the lessening of the differences between town and countryside there was also the tendency towards smaller differences between individual regions. This is shown by Fig. 4. The spatial picture of differences between towns and countryside was not greatly polarized. The value of the T/C ratio ranged from 0.7 to 1.47. In seven voivodships, its value is below 1, which is a sign of a slightly higher occurrence of basic vocational education in the countryside than in towns. This phenomenon is especially pronounced in Warsaw, Łódź, Poznań. Cracow, Katowice, Wroclaw and Jelenia Góra voivodships, in that order. With the exception of Jelenia Góra, all the rest are major urban centres of Poland as well as the most heavily industrialized areas.

The biggest preponderance of townspeople with basic vocational education was recorded in five voivodships situated in the central and eastern part of Poland. Some of them are economically backward ones. On the whole, the differences between individual voivodships are small, however.

INCOMPLETE PRIMARY EDUCATION

The comparison of the number of people with incomplete primary education best shows the development backwardness of the countryside in comparison to towns. This phenomenon is illustrated by Fig. 5. Despite a rapid drop in the number of people with incomplete primary education in the years 1960–1978, there are still considerable differences (about 15%). This is the result of the school dropout rate, which is higher in rural schools than it is in urban ones (18,8% vs. 3,5%) (Borowicz 1983, p. 72) and of the relatively low level of education among people in the 65-plus age group.

From the point of view of success in school, the countryside emerges as the most conflict-prone environment as it calls for combining productive work with learning, where the pupil is at the same time a worker or co-manager. This accounts for failure to complete education. Studies have also revealed big differences in the efficiency of learning depending on the location of the school and the pupil's place of residence.

Here the T/C ratio varies widely, from 0.07 to 0.55 (Fig. 6), which means that the number of people with incomplete primary education in the countryside is between 1.8 and 14.2 times as high in the villages as it is in the towns of a given voivodship. Similar values of the T/C ratio occur both in the highly urbanized and industrialized voivodships and in agricultural regions. This applies both to high and low ratios. There are remarkable differences between neighbouring voivodships, which shows that a multitude of factors influence the proportion of people with incomplete primary education. It should be suspected that the direction and character of migration is one of the essential factors. An examination of the tendencies shown in Fig. 5 suggests that the problem of incomplete primary education will be gradually losing its importance.

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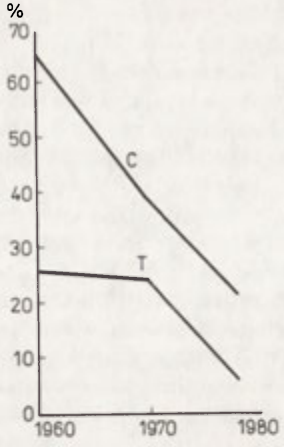

Fig. 5. The changes in the percentage share of the population in the 15-plus age group with incomplete primary education in towns (T) and countryside (C) in the years 1960–1978 *Source*: own calculations based on The National Census 1978. GUS, Warszawa 1980, p. 59–73, Table 5

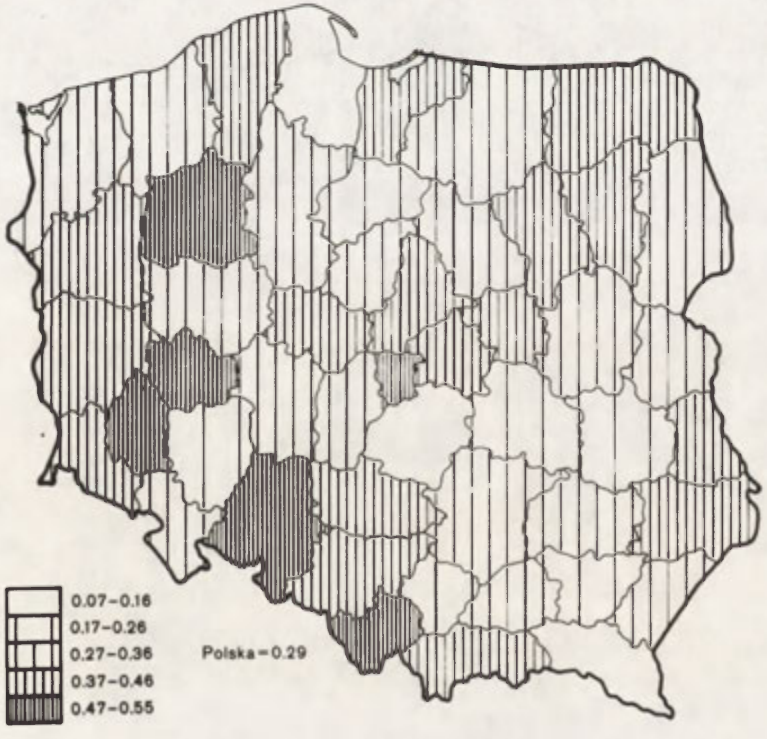

Fig. 6. The values of the ratio of people with incomplete primary education (T/C ratio) according to voivodships in 1978

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3. CONCLUSIONS

The level of educational achievement is the result of influence of many diverse factors. The differences in this respect between town and countryside reflect cultural and civilizational processes. This thesis is borne out by Fig. 7, which shows the spatial differentiation of the T/C ratio. The picture thus obtained roughly corresponds to the traditional division of the country into Poland A and Poland B. The Gdańsk voivodship is an exception; the high value of the ratio there results much more from the large proportion of people with secondary and higher education in towns than from the backwardness of the countryside.

The T/C ratio used for examinig the town-to-countryside relationship makes it possible to standardize the examined values within individual regions, which is an advantage of this approach. It is difficult to analyse the level of educational achievement of the countryside in separation from the socio-economic development of the voivodship. Its application, however, calls for a great deal of caution in interpreting the results of the comparisons as its high value may be the outcome of either the high level of educational achievement in towns or its low level in the countryside. The example of Gdańsk voivodship is a good case in point.

The level of educational achievement above primary level in schools opening the door to decisions on further education determines participation in culture, vocational qualifications and the society's openness to the values of contemporary civilization, whereas in the domain of production it influence the growth of efficiency.

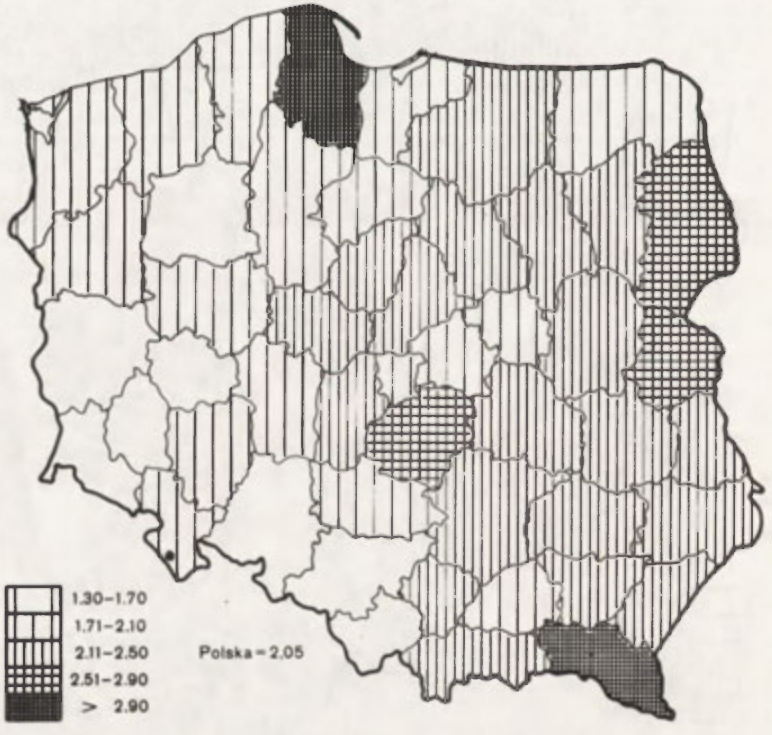

Fig. 7. The values of the ratio of people with more than primary education (T/C ratio) according to voivodships in 1978

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Generally speaking, the town-to-countryside relationship in terms of the level of educational achievement is characterized by considerable differences; for example, in 1978 the coefficient of dissemination of the education of youth in the 19-years age group was 50.8% for towns and 24.3% for the countryside, and in the 20–24 age group it was 24.3% and 6.9% respectively (Muszyńska 1983).

In this context there emerges a new tendency testifying to the diminishing interest of the youth in education, i.e., the discarding of education as a certain need. The new stereotype is affecting towns, whereas in the countryside it appears with a delay and its spread is differentiated in spatial terms. This phenomenon may result in a temporary reduction of the relative differences between town and countryside with regard to the level of educational achievement. A consolidation of this tendency may, however, pose a threat to the possibilities of the future development of the country.

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FOUR STAGES IN EUROPEAN REGIONALISM

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Our main concerns in the present seminar are with methodology, planning and spatial policy. Applied to the regional scale, these three headings cover the principal interests of regional science, a discipline or research field in which Poland has made oustanding contributions. However, it is widely acknowledged that regional science is at present in some disarray. There are several reasons for this, including the poor performance of various major policy instruments in the regional scientist's repertoire (notably "growth poles": Kukliński ed. 1981), and also the eclipse of the Keynesian economics on which much regional science was predicated. Perhaps the most important challenge to traditional regional science perspectives has come from a different quarter: namely the rise of regionalism.

Regionalism is a political phenomenon and as such I suppose it must be said to fall outside the methodological, planning and policy concerns of our seminar. However, it is politics, in the large sense of the word, which ultimately set the context and the agenda for the methodologist, the planner and the policy analyst alike. Or to put it another way round, every method, plan or policy necessarily rests upon an implicit set of political values. In the case of traditional regional science those values have been statist, centralist and technocratic. The regional scientist has customarily assumed a technical mandate derived from a single authoritative decision centre, the state capital. Regionalism challenges this assumption. What defines regionalism as a political movement – though one which, as this paper will seek to show, has many forms – is the demand for a decentralization of state power to democratic regional governments. Regionalism and regional science are thus opposed and antagonistic ways of perceiving territorial issues, and regionalism's importance has been growing throughout Western Europe during the past two decades (Sharpe 1979; Smith 1985). Insofar as Solidarity was also a form of regional mobilisation, regionalism has also shown its significance as a political force in Poland, though one which was repressed by the state, in contrast to the experience of Western European governments who – as my paper will show – have tended rather to respond to regionalist challenges by institutional reform.

All this is by way of a preamble to explain why this paper, with its political and constitutional emphasis, is more central to our seminar concerns than might at first appear. In Western Europe, the debate about regional economic development, for so many years monopolised by national technical elites – economists, geographers, policy scientists, engineers – has become decentralized and politicised, and it is not unthinkable that a similar transformation may in due course occur in Poland. It is important to understand how and why this has occurred. This paper reviews the emergence of regionalism in terms of a four-stage model. It shows how movements for cultural and linguistic autonomy (Stage I) have triggered off more general demands for

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political decentralization (Stage II), and how both have been accomodated by constitutional innovation (Stage III). The progress of regionalism in Western Europe has often been attributed to a softening or weakening of the nation-states as a result of wider trends of European integration. The paper ends by asking whether the emergence of regional governments is indeed part and parcel of the growth of the supranational tier in Western Europe, concluding that it is not, and that the further progress of political and economic integration would tend to reduce, rather than enhance, the prospects for regionalism.

STAGE I: CULTURAL AND LINGUISTIC REGIONALISM

All regionalisms originate in the nation-state and the contradictions and anomalies caused by the political partition of the earth's surface into a global state system of 183 territorial units. The ultimate moral justification for the state is that it corresponds to a political community. Yet the actual process of state-building has not realised the nationalist vision of independent statehood for every ethnic group or people, and never could do so. States and nations are consequently very imperfectly matched. In a recent analysis, Nielsson shows that only just over a quarter of sovereign states could be defined as nation-states in the sense that a single nation-group accounts for more than 95% of the population (1985, pp. 30–32). Most states are poly-ethnic to a greater or lesser extent, quantified by Nielsson. European countries are no exception despite some brutal attempts to achieve monoethnicity through forced migrations of minorities during the 1940s. Additionally, we must not overlook the strong contrasts of dialect and culture within Europe's dominant nation-groups, reinforced maybe by economic and political inequalities, or as in the case of a country like Norway, by sheer geography. All state-building involves some form of cultural engineering, which uses a combination, of education, historical indoctrination, social symbolism, and repressive devices to bind disparate elements into a cohesive political community. As we know, it is not always successful, and the defensive mobilisations that result can be considered the first stage of regionalism.

The relationship between state centres and peripheral regional movements has tended to follow a common pattern. We could describe it as a "vertical" relationship between a higher established power centre and an emergent regional élite. The claim of each region is for recognition of its own distinctive personality against the levelling uniformity of mass culture. Negotiations for regional autonomy are generally bilateral, negotiated vertically between regional and national élites, and often hinge upon claims for the territorial recognition of historic communities deliberately divided by the Jacobin architects of the modern state. Cultural regionalism also usually has a significant but implicit economic dimension, for language provision and media channels require discriminatory expenditure. A measure of its success is the extent to which such provision has come to be seen as a basic human right and a legitimate if belated reparation for the long historical experience of subjugation of peripheral by core nation-groups.

Before the war the issue of what were then generally known, in League of Nations terminology, as national minorities, was seen by ethnic élites in terms of the right to secession and sovereign statehood, and by central governments and the international community in terms of individual human rights. Since 1945 an important shift has occurred, with both sides defining the issue more in terms of the development of autonomous territorial institutions. Or, in a word, regionalism. At the international level, the Federal Union of Europen Nationalities (FUEN, founded 1949) and the International Institute for Ethnic Groups' Rights and Regionalism (INTERREG, founded 1977) have played a significant role in promoting regionalism, and INTER-

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REG's researches document a remarkable history of achievement by stateless peoples in winning legal recognition for their cultures, and the economic resources to sustain them, remarkable particularly by comparison with the doctrines of national indivisibility upheld by most European states within living memory (Veiter 1984). Sociologists and political scientists have been at pains to account for the resurgence of the "national question" which they predicted would vanish as a result of postwar prosperity. More to our present purpose is to understand how hitherto unthinkable demands have come to be accomodated. The answer is surely geopolitical. The postwar power structure, based on super-power zones of influence, has diminished the ancient internecine rivalries between European states and removed the temptation to exploit each others' ethnic minority claims subversively as an instrument of "real-politik". A jealous and repressive nationalism no longer has functional value; as Gordon Smith puts it, "the passing of the hard-shell state implies that the binding force of strong national loyalties is no longer needed" (1981, p. 204). Later in this paper we shall return to the European scale to consider further the important triangular relationship between regionalism, state-nationalism and Europeanism which has been of such evident importance for the satisfactions of ethinic and linguistic minority grievances.

STAGE II: THE DEMAND FOR DECENTRALIZATION

The story does not end with cultural and linguistic regionalism. Whatever reforms are won, on a basis of exceptionalism, by one regional community, will have reverberations on others. This "horizontal" effect leads to the second stage of regionalism, in which the demand for autonomy is taken up into a more widespread demand for decentralization of state power.

This may take the form of direct political mimicry where autonomist parties are formed in neighbouring regions which share certain common characteristics of economic or political peripherality but belong culturally with the core. We can see good examples of this type of mimicry all down the Celtic fringe of Western Europe, where Scottish, Breton and Galician nationalisms have respectively stimulated the emergence of the Movement for the North, the Mouvement Normand, and minority autonomist parties in Leon Asturias and Cantabria. Much more important than this type of mimicry is the more general effect of Stage I regionalism on political expectations throughout the system, and the stimulus it has given to decentralizing movements of a more general character. Regionalism, in this second, larger sense, becomes a movement not for the defence of any single culture but an attack on all aspects of statist centralism. In most countries, it has been a minor but highly persistent movement of political thought associated with the work of individual writers and activists, and taken up from time to time by national parties. Smith (1964), Banks (1971) and Keating (1982) have chronicled the history of British regionalism in this sense. Occasionally specialised pressure groups have campaigned for the cause. The earliest and most celebrated example, the Federation Régionaliste Française (1900–1945) owed its origins to the particular movements in Alsace, Languedoc and Brittany, but became a national campaigning organisation for the wholesale reform of state structures throughout France. A similar doctrine of "regionalismo" developed in Spain during the 1980s and strongly revived after the death of Franco, when the restoration to the three historic nations – Galicia, Euskadi and Catalonia – of the autonomy they had won under the Second Republic, stimulated one of Europe's boldest experiments in the wholesale decentralisation of state power.

Notice the fundamental differences between the Stage I and II. In the first, the issue is defined in terms of uniqueness and particularity, and the frame of reference is defined vertically, in terms of relations between region and state centre. In the second, the frame

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of reference is horizontal and the chief issue is that of comparability and equity between regions, and their shared position viz-a-viz centre. In this perspective, the cultural difference of minority nations is seen to crystallize out and make apparent problems of a more general character. So, within the United Kingdom, while Scots and Welsh have always been the most alert to detect state centralization, because for them it shows up as Anglicisation, what they are identifying can to some degree be reinterpreted as a structural problem affecting all parts of the country.

However, as both the British and Spanish examples well demonstrate, primary regionalist movements often look with considerable suspicion on secondary regionalism. To the SNP, Plaid Cymru, PNV and CiU, general schemes for the territorial redistribution of power may well appear a Machiavellian diversion to water down the wine of their own nationalism, particularly as the new regions within Spain, and any that might in some future reform be created within England, are new-fangled institutions with little historical weight or community loyalty behind them – a problem to which I shall return shortly. Some primary regionalist movements become deeply divided on the issue of whether their claims should become implicated in a more general reform. For instance, this is one of the questions which has fragmented into three separate parties the already small Cornish regionalist movement.

What, to summarise, is the relationship between primary and secondary regionalism? Many would query the use of the single term for both. In the German speaking tradition the tendency seems to be to reserve "regionalismus" exclusively for culturally or linguistically based movements whereas the Spanish "regionalismo", French "régionalisme" and Anglo-American "regionalism" tend rather to refer to challenges to the territorial organization of the state, ethno-cultural mobilisations being classified as a form of nationalism. Setting semantics aside, we should simply note how a single historical logic has led from the consolidation of the state system, through the mobilisation of peripheralised peoples, into a more general concern, particularly to the centre-left of the political spectrum, with reform of the territorial division of power within states. That concern leads logically to our next stage.

STAGE III: CONSTITUTIONAL REGIONALISM

Perhaps the best measure of the long-term importance of regionalism as a political idea is the extent to which it has been incorporated into constitutional theory and practice. It used to be axiomatic that all states fell into one of two contrasted constitutional types, the unitary and the federal, depending on whether sovereignty was undivided or shared between two distinct levels of government. In the postwar years this dichotomy has been broken down by the intrusion of an intermediate type, the regional state, in which ultimate sovereignty rests with the centre (as in a unitary state) but the Constitution also establishes regional governments with an inviolable status and a range of exclusive powers which are constitutionally entrenched, (as in federalism). The philosophy of the regional state derives particularly from the work of the Italian constitutional lawyer Professor Ambrosini in the 1930s and was embodied in the regional provisions of Italy's 1947 Constitution, which were finally implemented in 1970. The subsequent implementation of Spain's 1978 Constitution, has helped to establish beyond doubt the credibilty of regionalism as a constitutional type.

Note the contrast with previous forms of regionalism. Ethno-linguistic movements have an active, romantic character, and an intrinsically localised territorial appeal. Decentralists tend by contrast towards the idealist end of the philosophical spectrum. The constitutionalist is different again. He must create systems that work in legal and

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political reality and have the present consent of the people. The frame of reference is that of the state in its entirety, including all those functions such as foreign and economic policy, and the awkward practical implications for administrative reform and local government reorganization which enthusiasts for regionalism in the abstract may sometimes gloss over.

In its treatment of these issues, does regionalism differ in any significant way from federalism? May the difference between the two be simply that word regionalism is newer and usefully ambiguous and so more politically acceptable across a wider range of opinion? Possibly so. But with the Spanish and Italian cases in mind, we can see two distinctive features of the regional model which have prompted very wide international interest in this world of imperfect nation-states.

First, it is assumed in the theory of federalism that the federating units need to be broadly comparable or symmetrical in status, and that they strike their federal compact at a single point in time. But the point of departure for regionalism is its acceptance of the fact that neither condition may be possible; which is why in both the Italian and Spanish cases the constitutional framework explicitly distinguishes Stage I regions characterised by historic nationhood, language or culture, from Stage II regions which lack these attributes. We see the dichotomy in Italy's two categories of regions, the five created under special statutes in 1948, the remaining 15 under ordinary statutes in 1970; and again in Spain, where the "historic nationalities" of Catalonia, the Basque Country and Galicia assumed autonomy directly under Article 151 of the Constitution, while the other 14 Autonomous Communities followed by a slower route set out in Article 148. Interestingly, both opposition parties in Britain, Labour and the SDP-Liberal Alliance, appear to be converging upon a comparable scheme of devolution "a deux vitesses", with prompt moves to establish assemblies for Scotland and Wales combined, in a single constitutional scheme, with provision for a subsequent regionalisation of England. Of course, the regional state can only accomodate variations in scale and timing of devolution up to a certain point, given that the feature distinguishing "regions" from local government is their ability to assume decentralised powers hitherto exercised by the central state. It may be particularly difficult to reconcile the claims of small cultural regions with the requirements of a decisive administrative reform at the centre; in this regard, we can foresee that the case of Cornwall will pose serious difficulties for any future regionalisation of the United Kingdom.

The second and possibly even more radical aspect of regionalism in contrast to federalism is that the boundaries of the territorial units do not have to be defined in advance. In the Italian case, the Constitution laid certain ground rules for the minimum population size of regions, though in practice they vary enormously, from 110 000 (Val d'Aosta) to 9 000 000 (Lombardy). The Spanish Constitution made no attempt to draw the map of the Autonomous Communities. Instead it wisely did no more than lay down procedural rules through which the regions were to be established. The resulting regions vary significantly in size and resources, but the evolutionary and voluntaristic approach adopted has the strong advantage that not too much political energy was wasted, and ill-will generated, as in the setting up of many federal systems, on contentious attempts to impose a single uniform scheme (Hicks 1978). Regionalism acknowledges the near impossibility of solving at a stroke all the intractable and highly complicated problems of constitutional design. And, as the late Professor Mackenzie saw as long ago as 1951 when he first alerted British readers to the emergence of this new constitutional type, its elasticity makes it highly suitable for countries such as Great Britain, where one or more national minorities – each a ready-made candidate for autonomy status – coexist with a dominant and numerically preponderant nation-group whose regional lines of division are not ready-made, and have to be discovered or invented (1975). And another lesson from the Spanish Autonomous Communities is that, as with some of the new Länder in postwar Germany, regions which at first appear contrived and artificial may

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soon establish themselves, if the larger constitutional setting is right, in the hearts and minds of the people.

Constitutional regionalism is not a panacea. Drawing once again on the experience of Italy and Spain, as well as on such abortive experiments as the Royal Commission of the United Kingdom Constitution chaired by Lord Kilbrandon and its aftermath, the failure of devolution in Scotland and Wales, we can identify several kinds of attendant difficulty in the restructuring of a unitary state on principles of regional autonomy. The central issue is that a new intermediate tier of government has to be inserted without undue increase in the overall weight of bureaucracy. Put simply, regional institutions must grow at the expense of other levels of government, biting into both local and central administration. Both pose problems.

The relation of regions to local governments is especially problematic. What appears, from a country-wide perspective, to be a decentralizing reform taking power to the people, may appear in quite the opposite light from the view-point of municipalities who lose autonomy by the consolidation of new regional centres. The difficulty is especially great in Northern European countries, most of which have already modernized their systems of local government within the last twenty years, reducing the number of units and increasing their geographical size in such a way that the conceptual distinction between "regions" and "local government" is much eroded; indeed, in Scotland since 1974, the reformed upper tier units of local government have actually been called "regions".

The relation of regions to the central government is equally problematic. The essence of regionalism, as a constitutional scheme, is that the region should be not merely an administrative agency but a general government possessing a significant range of executive powers and a degree of legislative autonomy. This implies both an absolute reduction in central bureaucracy and a qualitative change in the nature of national legislation, at least in areas of regional competence, towards what the Italians call "leggi cornice" – framework laws. But any such shifts encounter strong counter-forces. Established bureaucracies will naturally resist their own dismemberment, and nationally organized political parties and interest groups have a similar inertia. As the Spanish experience has clearly shown, the unevenness or elasticity of the devolution process within the regional state, in which primary regions coexist with secondary, each assuming powers at different speeds for all its advantages, may have the unwelcome side-effect of reinforcing the ability of central interests to resist or postpone necessary structural change.

Despite these difficulties, constitutional regionalism retains its attractiveness to large sectors of European political opinion; in passing, we might ask ourselves why? One of the most important factors, especially in regions afflicted by problems of structural adjustment or high unemployment, is undoubtedly a sense of disillusion with traditionally centralised models of economic policy-making, coupled by a growth of interest in decentralised or "bottom-up" forms of intervention. This new concern, which may extend to quite strongly protectionist measures to retain capital and jobs and stimulate innovation within the regional economy, is often characterised by considerable legal ambiguity in contrast with the more standard policy roles performed by regional administrations in fields such as health, education, transport and environment (Hebbert and Machin 1984). However, it is also the focus of considerable political expectation, and much of the impetus behind regional reform derives from the belief that governments operating with their own resources at a regional scale will make a significantly greater contribution to economic regeneration than the "watering can" of national or European regional industrial policy.

So far I have given what I hope to be a reasonably uncontroversial perspective of the historical logic which has led from a regionalism of "special cases" to one which tackles the problems of constitutional design in the round. Now we should consider what all this has to do with European integration.

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STAGE IV: A EUROPE OF REGIONS?

We are familiar with the tradition of argument which sees substate regionalism and suprastate integration as a single movement. The phrase "Europe of Regions" is itself often associated with a vision of the future in which the national states, starved of authority and loyalty by the emerging regional and continental power-centres, become no more than a ghostly memory like the old Austro-Hungarian Empire (de Rougemont 1970).

This line of thinking has a powerful historical appeal. The European and regional movements grew up together and both, as I. Meny has observed, were promoted by men whose *European* consciousness was heightened because their *regions* had been the subjects of military or economic conflict between states: Adenauer, a man of the left bank of the Rhine; De Gasperi, an Italian citizen who had been a member of the Austrian House of Tyrol before 1914; Robert Schuman, born in a then German Alsace Lorraine. Moreover, for many of the new élites, the "*forces vives*" of postwar Europe, "the expansion of the market at the European level and the development and economic integration of underdeveloped regions were two sides of the same coin, two aspects of the same fight for the well-being of their population" (1985, p. 192). Many Euro-federalists still feel strongly this sense of an inexorable historical evolution at the expense of the state (Chiti-Batelli 1983). Whatever the virtues of this ideal, it is somewhat misleading as an interpretation of present realities. The states of Europe remain for the time being the practical building blocks of any form of wider organisation. European institutions – the Council of Europe, the European Communities, and others such as NATO and the OECD with a wider geographical span – have developed not by any process of attrition or erosion of state sovereignty but by a change in the nature of inter-state conflict, which is no longer conducted by warfare but, as Kolinsky well puts it, by "a game ... of seeking competitive advantage within coordinating organisations" (1982, p. 100). States cooperate at the European level because of their underlying interdependence and their need, by coordination of policies and development of common frameworks, to minimize their vulnerability to unpredictable change in the external world; but they do so without relinquishing identity, sovereignty or the possibility of nationalistic self-defence.

As a consequence, the relationship between the dual developments of European and regional institutions is rather more complicated and ambiguous than we might at first suppose. On the one hand, we have already seen how the emergence of the constitutional regionalism in European countries has been facilitated by the larger geopolitical context provided by the EC and NATO. It has proved difficult to export the regional model to other countries, such as Sudan and Ethiopia, and now possibly Sri Lanka, which lack a comparable umbrella of supranational cooperation. Besides, there is no doubt of the enormous direct contribution of continental organizations towards the mobilisation of small and oppressed nations and the growing confidence of their political voice. The Council of Europe has played an important role alongside organisations such as FUEN, the Union of Peoples without a State, the Association for the Defence of Languages in Danger, INTERREG, and the Foundation for International Understanding, which for almost a decade has organised annual reunions of regionalists at the "Europe of Regions" Conventions in Copenhagen. The European Communities have contributed through support for the Europen Bureau for Lesser Used Languages, and the EC role might develop in consequence of the European Parliament's resolution of March 14th, 1983, calling on the Commission "to review all Community and national legislation and practices which discriminate against minority languages, and prepare appropriate Community instruments for ending such Discrimination". The EC's most overt policy presence in peripheral regions is throught the European Regional Development Fund, although it tends to attract a degree of attention from regional politicians and administrative elites out of all proportion to its

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financial significance (Keating and Jones 1985). Its importance lies mainly in the realm of symbolic politics. And, at a more general level, it is probably fair to say that the markedly Europeanist tendency of regional leaders – particularly in parties such as the Basque PNV and Catalan CiU whose domestic power base is built upon a narrow territorial nationalism – owes more to the political rewards of a recognised international standing, than to concrete policy benefits.

Against this we must set the evidence that the institutional beneficiaries of European integration have been national executives, while regional and local government, as well as national parliamentary assemblies must be numbered among the losers. Central government powers have been strengthened by the primacy of intergovernmental bargaining at community level. Because all relationships between member communities and the EC have been mediated through national governments, the effect of the growth of European legislation has been not to reduce but to reinforce state centres, and in new forms which have reduced the level of democratic scrutiny of their actions. Parliaments have found themselves unable to control the intergovernmental relations at the heart of the new decision centres, whether between politicians in the Council of Ministers or civil servants in the Committee of Permanent Representatives (Cameron, 1981): and more importantly for our purposes, regional governments have had no standing at all.

The negative consequences of European integration for regional autonomy are the topic of an extensive literature, particularly with reference to the West German Länder, and the Spanish Autonomous Communities (Malanczuk 1985; Hrbek and Schuttemeyer 1979; Ruiloba Santana 1980). The consequences operate at two levels. First, Community legislation has encroached upon several areas for which regional governments have exclusive responsibility, areas such as environmental protection, food standards, the recognition of qualifications, and vocational training. However elaborate the safeguards within a given country's Constitution may be against encroachment by national governments, they are worthless in European law, which, according to the terms of the Treaties, takes no account of internal jurisdictions of member states. Despite this fact, and this is the second point, regional governments enjoy no right of participation in the relevant legislative processes. Informal devices may be developed, such as the "observer", of indeterminate status, who represents all the West German Länder at the EC. Nevertheless, it is ultimately the Federal government alone which defines and presents the German position, even in legal fields which are attributed exclusively to the regions. If the effect of Community membership upon the relatively robust federal system of West Germany has been to reinforce the national centre at the expense of the regions, we may expect it to be all the more pronounced in the context of regionalized states such as Italy, France, Spain, and Belgium, a conclusion supported by the detailed analyses in Keating and Jones' recent book *Regions in the European Community* (1985).

Chiti-Batelli, analyzing the phenomenon from a "maximalist" stance, freely admits the loss of regional autonomy which is implicit in the growth of Community law and policy, while asserting that the price is worth paying in the interests of political unification (1983, p. 56). That is a logical enough position to adopt, but it is surely not a regionalist position. The latent tension between the two may become more evident as the Single European Act comes into operation. The purpose of the Act is to achieve by 1992 a completely open internal market – "an area without frontiers in which the free movement of goods, persons, services and capital is ensured in accordance with the provisions of the Treaty". The many arguments for this measure advanced by the Action Committee for Europe, by the Commission president, and the Dooge and Cockfield Reports, are all based upon supranational considerations relating to Europe's competitive position in the global economy. The prospects for substate governments under the Act are not encouraging. In procedural terms, the effect of the new qualified majority voting rules within the Council will tend to reduce the say of territorial interests, regional and national, while enlarging that of the functional bureaucracy of the

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Commission. In substantive terms, the abolition of physical, technical and tax frontiers will aggravate economic differentials between more and less favourably located regions, while regional governments will find themselves less and less able to take defensive action because of the loss of competences to the enlarging sphere of Community law.

So we arrive at the same disconcerting conclusion as did Rhodes (1974) and Scheinman (1977) in their earlier analyses of Europe's relation to the regions: the two tiers of government, subnational and supranational, have emerged over the same period and out of some of the same idealism. It is natural to regard them as mutually reinforcing. But they may also be contradictory, and with further progress towards economic and political union are likely to become more so.

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ADMINISTRATIVE REFORM OF POLAND AND ITS CONSEQUENCES

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In developed societies, both the political and administrative authorities have always taken great interest in the problem of administrative division of the country. This has been so because the problem has a bearing on the state-society relationship in the aspect of the exercise of power over population in a given territory.

The administrative division largely determines the powers of the central, regional and local authorities on the one hand, and the scope of citiziens' participation in the government of certain geographical area on the other. It encourages a certain – larger or smaller – measure of society's autonomy at the regional and local scale and determines the spatial framework for contacts between the community and individual people and the central and local authorities and various institutions. As civilization progresses and processes of urbanization intensify, the network of contacts which individuals and social groups need to have with the local authorities and social institutions (education, culture, health care) grows substantially denser. The weight of these spatial relations, which are to a considerable extent determined by the division of the country into basic units of the administration and spatial organization representing a certain hierarchy of the administrative and political authority, is of essential importance for citizens, formal and informal social groups and those governing the country. Spatial organization cannot, or rather should not, be severed from realities of the country – the system if settlements which has evolved over centuries, the existing links between the units of this system and the natural conditions.

Administrative divisions ought to fulfill certain conditions in respect of their goals. A division should be adapted to the basic needs of society, the meeting which should involve the least possible waste of time, and economic management, and thus requires constant modification to the changing conditions of social development, in order not to become an actual barrier to socio-economic progress.

Changes of the administrative division are performed more or less often, depending on the country. The development of productive forces, the transformations of the spatio-economic structure of the country, and the need to increase the effectiveness of the activity of the state administration have thus become the factors, which were decisive in the administrative changes of 1975.

The administrative division of Poland comprising seventeen voivodships existed from 1950 to 1975. This division incorporated older regional forms, and imposed limits on the spatial development of society and the economy. Under relatively stable conditions, nodal networks of socio-economic linkages became established. As a result, the division into voivodships did corresponds, to a certain extent, to the pattern of socio-economic regions.

The administrative division of Poland has been in a state of flux ever since the end of the Second World War. The reforms have had various aims and were never completed.

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However, they involved nearly exclusively the smallest administrative units. It was not until June 1975 that an administrative reform was performed which fundamentally altered the structure of the country's division by replacing a three-tier with a two-tier system of administrative units.

It should be stressed that the need for an administrative reform developed and grew in the 1970s together with the rapid progress of industrialization and urbanization as a result of which in the mid-1970s ca. 60% of the population were living in towns and cities, including more than 25% in cities with population over 100 000. As a result of these processes, there developed new, nodal-type forms of settlement stemming from medium-size cities and their immediate surroundings; moreover, the settlement structures of large urban agglomerations formed in the 1960s and 1970s. Also in rural areas, the desire of ensuring an adequate standard of services, especially in the area of education, culture, health care, welfare and goods distribution, produced the tendency to concentrate these facilities in selected villages. As the rural settlement network in Poland was fragmented (over 40 000 villages) and the economic strength of the then basic units of administrative division, gromadas (about 4300) was insignificant, larger basic units, gminas, were established in 1973. Initially 2400 gminas were set up, but their present number is more or less 2100, part of them (600 or so) having a common administrative office with a small town, which provides for a better satisfaction of needs of both the country and town population.

The establishment of gminas was the first stage of a fundamental reform of the administrative system which changed the system from three-tier to two-tier. The existing model of gromada – poviat – voivodship was transformed into gmina – voivodship. At the second stage, in 1975, the intermediate administrative unit, the poviat, was eliminated and the number of the largest units, voivodships, was increased from 17 to 49. Although the foundation of gminas made poviats largely superfluous (there were 7–8 gminas to the average poviat), the operation was a shock therapy, for the poviat had had very long tradition as a unit of administrative division. It had survived all the earlier administrative reforms; the elimination of poviats weakened traditional local centres and various kinds of local links, causing many conflicts and inconveniences which the present administrative division of the country has so far not solved, or at least has not solved them in a way which would completely satisfy the local communities.

The two stages of this reform were separated by a period of two years, which was considered necessary for gminas to consolidate as basic-level centres of the state authority and administration to be able to assume the socio-economic functions assigned to them when poviats were disbanded and old voivodships were split into new ones.

The new administrative division of the country was to represent a clear-cut and very logical pattern of competence: the gmina was to perform organizational and managerial functions while the voivodship was to coordinate and supervise (Panko 1983). This division of competences into two levels had been intended as an improvement on the not very clear division of competences under the previous, three-tier system and was also to satisfy the requirements of a decentralized model of the state authority and administration. However, there are so many voivodships that it is difficult to stick to voivodship borders when administering various spheres of the country's life. For instance, supravoivodship units, so-called macroregions, have had to be established in spatial planning. On the other hand, voivodships being of a small size, many institutions have established their own special-purpose "administrative divisions", which are called special divisions and are understood as the spatial structure of the economic administration and culture. The economy should correspond to the administrative division, but this is not always possible. Such a possibility exists where the spatial structure of the economy is of a zonal character, but does not exist where it is of a nodal character. It would be difficult to squeeze the operations of the railways, com-

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munications, power supply and hydrological facilities into the grid of the administrative division, which is possible in the case of industry and agriculture.

Several practical consequences should speak in favour of the present administrative division. First of all, the distance between the authorities and citizens has become shorter in a direct and indirect meaning. Basically, it is possible to reach the voivodship capital by public transport and go back home in a day from any locality in the country. The same could in the past be said of connections between poviats and poviat centres. Citizens should benefit from this. The new voivodship capitals are new centres of socio-economic development; they should strongly stimulate the development of the underdeveloped areas and the enterprise of local communities. Where voivodship capitals are relatively small towns, it is assumed that they will rapidly be in receipt of investment, which is a condition of the fulfilling of their designated central functions.

It is assumed in the regional structure model that the network of voivodship centres will significantly influence the formation of the spatial system of urban regions at the voivodship level. The urban region is defined as a nodal region which represents the spatial organization of socio-economic life, securing access to higher order services for the population of rural areas or of smaller towns, that is of areas on which these kinds of services could not be effectively or rationally located. It may be identified with a group of towns linked by daily movement patterns.

The voivodships may be divided into three groups by their stages in the formation of urban regions (Czyż 1981). The first group includes voivodships based upon existing agglomerations, approaching urban regions and comprises Warsaw, Łódź, Cracow, Katowice, Poznań, Wroclaw and Gdańsk. The above nodal regions of supraregional character occupy a relatively high position with regard to other regional subsystems, and their broad territories, exceeding their present voivodships areas, are similar to the previous areas their voivodships.

The second group is made up of voivodships in which existing agglomerations or agglomerations under formation occur and where the process of the formation of an urban region is beginning, specifically: Szczecin, Lublin, Białystok, Bydgoszcz, Częstochowa, Toruń, Kielce, Radom, Rzeszów, Bielsko-Biała, Opole, Wałbrzych, Legnica.

The final group includes 29 voivodships with urban centres, which have been recognized as national growth centres. Voivodships with national centres as capitals are potential urban regions. Their development is dependent on the dynamic growth of production and services in the smaller urban centres, with 20 000 – 120 000 inhabitants, which are the capitals of these voivodships, growth which should be stimulated by their administrative functions and economic management.

The network of small towns, of less than 20 000 inhabitants, that is 78% of all towns in Poland, remains tightly linked to the division into communes. Small towns have become, to a large extent, the centres of rural communes, and thus the main nodes of local systems, which influences the increase in their socio-economic position. These centres are to concentrate the population, economic activities, and basic rural service investments, and thus are to become a factor transforming the excessively divided rural settlement network and equalising proportions in rural living conditions.

Another advantage of the present administrative division is a reduction in the number of hierarchic levels in the administrative structure, which could reduce distortions in the information flow and should accelerate decisions making.

Speaking of the advantages of the present administrative division of the country, we should realize that many of them are of a potential character, which means that the present administrative division creates conditions encouraging certain kinds of situations or more efficient methods of operation than was the case under the previous administrative division. One such element could be the rebuilding of self-government, at least at gmina level. Until 1950, gminas were self-governed and local self-government bodies performed certain functions "assigned" to them by the state administration.

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Later on, gminas were transformed into the basic bodies of the state authority. The development of self-gevernment at the level of small towns or gminas is now possible because these are small communities in which people know one another, so they can choose people who indeed enjoy high moral, professional and public prestige as their representative in self-government bodies. Naturally, in large towns self-government structures have to be more complex and hierarchic. At present, efforts should be focused on the establishment of self-government bodies in gminas; voivodship level self-government is a matter of the future. When shaping the new model of the country's administrative division, it should be presupposed that decentralization will be progressing, i.e., local self-government bodies will be developing, and the role of representative bodies will be increasing while that of the administration will be decreasing.

All in all, the new administrative division should improve the organizational and economic efficiency of the local authorities.

The method of performing the reform of Poland's administrative division and the delimitation of its units, both gminas and voivodships, gave rise to a lot of public resentment and conflicts, often quite justifed. Some people have voiced the opinion that the administrative reform of 1975 has been largely ineffective. This, however, does not mean that another one should be carried out, for this division exists and has to be reckoned with. Stability is necessary and the administrative division must not be altered too frequently. Frequent changes involve high costs and introduce chaos, not only to the administration, but also to the economy and storage of information.

The opinions about the present administrative division are largely an outcome of introducing it. The news of the intended reform had caused such terror among the administrative personnel that at one point the administration ceased functioning altogether. In view of this fact the authorities decided to speed up the introduction of the new administrative division, though the scheme had been neither thought out in detail nor consulted. As a result, an informal network of various local institutions with the status of branches of voivodship institutions was set up former poviats centres. However, some negative opinions have become less negative over the ten years that the new administrative division has been in operation. Moreover, the opinion is often expressed that neither the present nor any other administrative structure can possibly fulfill all the expectactions associated with it. The administrative division has its functions for which it has been created (organization of the state administration) and little more should be expected of it. This point of view may be convenient when the administrative division is no major for the economy and social life or when the system of management is strongly centralized, i.e., when the administrative division is established for the sole purpose of an efficient transfer of directives from the central level of the hierarchy downwards. But this is not the case in Poland. On the contrary, the socio-economic activity here is so strongly "regionalized" that the issue of administrative division of the country produces a very emotional response.

Of the critical opinions expressed in connection with the new administrative division, the most frequent charge was that it cut off the socio-economic links which had evolved over decades. This adversely effected many local communities, which found themselves in a worse position in relation to administrative and economic centres. This was mainly due to the fact that most old voivodship capitals were large urban agglomerations with a vast gravitational field. The new division has been functioning too short a time for new gravitiatonal patterns, ones in which the new voivodship capitals would be centres of gravity, to develop. Nevertheless, this process is taking place, which is evident in fact that most of those who commute to work to voivodship capitals do not cross voivodship borders. Cutting off long-established gravitational lines was an outcome of the method of performing the reform, of the fact that a division into basic units (gminas) was performed first and the subsequent division into voivodships was performed on the basic of this division. This lack of comprehensiveness in the

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reform exerted a negative influence on the delimitation of voivodships, the borders of which had to agree with the earlier division into gminas. However, even at that point the delimitation of voivodships could have been done better, with more attention being paid to existing spatial, economic, social an cultural links. This holds particularly for the so-called municipal voivodships (Warsaw, Łódź, Cracow). Large areas oriented towards these voivodship capitals were left outside the borders of new voivodships.

The number of voivodships and basic units (gminas) in the two-tier administrative division interferes with efficient supervision and coordination and produces a tendency to the establishment of intermediate levels (regionalization of voivodships). This may destabilize the organization of the administration (Kruczała 1983). It should be admitted that even under the previous, three-tier system territorial divisions were performed for special purpose which did not converge with the basic division. To some extent, these are justified, even indispensable operations. However, under the present, two-tier division the number of special divisions has soared, which indicate that the current administrative division is ineffective. But it would be difficult to venture any generalizations in this connection. The problem of special divisions is currently being investigated.

The introduction of the new administrative division disrupted the existing structure of spatial planning, affecting regional planning particularly severely.

The voivodship system turned out to be inadequate in relation to a considerable number of issues concerning the formation of regional structure. The realization of the goals of the national plan at the regional scale required the introduction of large supravoivodship units, which would permit the grasping of properties of spatial macrostructures which have significance in the differentiation of the country from the viewpoint of socio-economic development processes. Further, in the new administrative division certain elements of the infrastructure serve the inhabitants of several voivodships and hence the planning of the infrastructure network must be applied to a macroregion. Finally, there exist certain areas of specialization common to several voivodships, like maritime affairs or tourism.

It should be noted that macroregions have a plan preparation character. As distinct from the planning of voivodships, macroregional planning does not constitute a separate planning level. The macroregional plans are an integral part of the national spatial development plan and thus belong to the central planning apparatus. The specific role of the macroregional plan in the spatial planning system is based on the fact that it is as it were a bridge linking the national plan with the voivodship plans. The need for intervoivodship coordination and cooperation is revealed especially in migration flows, food-stuffs, land use, raw materials exploitation and the conservation of the environment.

It should be stated that the division into planning macroregions did not refer to a sufficient extent to the already existing patterns of socio-economic linkages within the country. The majority of urban agglomerations, the main macroregional centres, were located not in their centres but at the edges of the designated units.

The small area of voivodships restricted the opportunities for using the methological experiences acquired in regional planning. The administrative approach to spatial planning started to prevail over an approach to individual problems, so planning regional development a supravoivodship issue. The substantial increase in the number of voivodships had one more consequence – the scope of the so-called trans-voivodship issues increase. As it had been decided that all issues which reach beyond the competence of one territorial unit are passed over to higher administrative levels, the large number of voivodships in the country (and gminas in voivodships) became a natural pretext for the centralization of decisions. This trend may disappear in the future; at any rate, it should be expected that its scope will diminish substantially. The centralization of decisions often stems from the existence of a large number of economically weak voivodships.

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To determine the usefulness of a given model of administrative division, one should begin by determining what kind of system of government this model is to serve. With regard to Poland, we could assume a general model in which a system of self-government reconciles a strategic point of view with the point of view of local communities, a model in which strong territorial self-government and employees' self-management bodies exist alongside the economic and state administration. Therefore, we should assume that progressing decentralization of administrative and economic decisions, i.e., the development of territorial self-government and growth of representative bodies at the expense of the administration, should be viewed as desirable.

The problem of Poland's administrative division should be approached from two basic angles, namely the optimum territorial domain of representative bodies and a territorial organization of administration which would be the most efficient (from the point of view of the authorities) and the most convenient (from the point of view of the public). The representative system involves two natural dimensions of communicating the public will – the regional and the local. The latter, but more important, has an influence on the population's living conditions and the basic spatial structures which people need all spheres of their daily existence (housing, employment, rest, distribution of goods). It will easily be noted that the quality of the citizen's life and his participation in public life are decided at the basic level of territorial organization. Hence the immense importance of the representative system at basic level of the administrative division.

The other dimension of the operation of the representative system in the region, the delimitation of which is an outcome of economic, historical and cultural factors. Regional development policies stem from a combination of central policies with the diverse aspirations of local communities. A region understood in this way should comprise a powerful urban center and, perhaps, should be relatively self-sufficient. From this point of view the present voivodships are too small.

The foregoing assumptions clearly indicate that the organization of the representative system in Poland requires only two levels of administrative division – the gmina and the voivodship. The problem of whether the present size of administrative units is adequate, and, if not, how it should be changed, has not yet been solved. The evaluation and proposals for change presented so far have been based on intuition rather than reliable research.

At present, there is nearly universal agreement that the existing two-tier administrative system of Poland should be preserved (although the reasons of this acceptance vary) and only corrections should be made to improve its effectiveness. The corrections should involve mainly voivodships, for the division into gminas has generally been approved by the population. After very slight corrections have been introduced, the present gminas may constitute basic units – socio-economic microregions. From the point of view of spatial economy, it is essential that we decide whether to preserve the voivodships with a low economic and population potential. It is generally believed that they should be preserved if they have a chance of even moderate development. On the other hand, the area of the voivodships whose capitals are the largest agglomerations should be expanded.

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