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15965

Distr.
LIMITED

UNIDO/IS.571
21 October 1985

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

ENGLISH

**INTERNATIONAL ECONOMIC RESTRUCTURING
AND THE TERRITORIAL COMMUNITY***

Prepared by the

Regional and Country Studies Branch

Division for Industrial Studies

Based on contributions to a Symposium held jointly with the
Interdisciplinary Institute of Urban and Regional Studies (IIR)
University of Economics, Vienna

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Foreword

The basis for this publication is formed by papers presented at the Symposium on Regional Development Processes and Policies and the Changing International Division of Labour, which was held at the Vienna International Centre in August 1984. The Vienna Economic University (Interdisciplinary Institute for Urban and Regional Studies - IIR) and the United Nations Industrial Development Organization (Regional and Country Studies Branch) formulated the concept of the symposium and instigated its planning. Funds were provided by the Vienna Economic University, UNIDO, the Austrian Federal Chancellery and the Austrian Research Association. One hundred participants from both developing and developed countries presented some fifty papers for discussion.

This report is about the fate of sub-national regions in the face of the increasing pace of change in the international division of labour. The report contains analyses of the economic structures of various types of regions and of the problems these regions have encountered during the past decades of structural adjustment to the internationalized industrial economy. Other authors, focussing more specifically on the productive units within this global economy, analyze entrepreneurial behaviour and strategies of large, medium and/or small firms. Marginally, political, social, cultural and environmental aspects of regional and global restructuring are also dealt with. Some of the papers emphasize structures or forms; others emphasize processes or activities which take place within these forms. Some papers emphasize voluntarism at the regional level, some the determinism at the international level. Despite this variety of approaches, however, the papers selected share a common purpose: to lay bare conflicts, tensions and interdependencies within social structures and between groups of actors and thereby to create a greater awareness of the complexity of the international restructuring process to contribute to the on-going work of critical social science research work on global structures, social behaviour, and local response, and to enable the design of policies.

Discussions of the papers presented at the Symposium showed that the issue of regional development cuts across the various dimensions of the development process. Hence, the historical pattern and the emerging driving forces

relating to regional development need to be analyzed and conceived in a multidisciplinary approach. For many participants it was essential to be able to confront their research orientation on particular regions with the global dimension of industrial restructuring, and in particular, of the restructuring between developed and developing countries. For the ongoing activities of UNIDO on the other hand, it was important to obtain an insight into the forces at work at the sub-national, regional level.

In addition to the scientific and policy-oriented discussions in plenum, there was an active exchange of views among the individual participants outside the scheduled sessions of the symposium. Here the subject matter of the Symposium was discussed and questioned in terms of the personal experiences of the participants as individuals, as actors in the processes of social change. Economic and technological development, the central topics of the Vienna Symposium, were discussed in terms of widely ranging value judgements of the present economic-technological upheaval and its implications for the structures of society and for daily life. This aspect of the Symposium - though not represented in specific chapters - influenced the organization and structure of this report.

Thus, this document attempts to illustrate various dimensions of the symposium and to pass on the most innovative presentations and discussions to a wider audience. It is also an attempt to put traditional analytic methods into a new context. This publication not only brings together reports on regional and general economic change of widely varying nature and contrasting outlook, it also attempts to formulate the problems actors will have to deal with in the future (be they regional scientists, politicians, UN-experts, businessmen or "social entrepreneurs"). In the concluding chapter to this report, the need is also stressed to go beyond the conventional wisdom and methods of policy-making and to achieve a truly global understanding of, and policy approach to human affairs.

This document was prepared by UNIDO staff with Paul Hesp and Barbara Stuckey as consultants. UNIDO staff and consultants are very grateful for the co-operation and support provided by Walter Stöhr, Director of IIR, and staff members of that institute.

P. Resp, W. Stöhr, B. Stuckey and UNIDO secretariat

INTRODUCTION

Industrial restructuring and corresponding spatial changes, whether on the local or international level, are nothing new. As pointed out in one contribution to this publication, early European manufacturing moved to the countryside in search of cheap labour and natural resources, and this search, not yet accompanied by industrialization, repeated itself on an international scale during the colonial period. The division of labour was the motive force behind the dissolution of "territorial life" (Friedmann and Weaver 1979). Where economic, social and cultural activities formerly to a large extent overlapped and were interwoven within definable boundaries, the tendency throughout the industrial era has been towards a separation of these activities and the overstepping of boundaries. The viability of local communities was strongly undermined.

The international division of labour became an internationalized industrial division of labour only from the 1960s onwards, when restructuring began to affect spatial patterns of industrial organization on a global scale. This restructuring process affected national core areas, their hinterlands and the peripheries in the developed world; but it also involved the developing countries. National patterns of industrial cores, hinterlands and peripheries are being internationalized into a global network of interaction and dependency.

A number of factors have given rise to this new spatial division of labour. The more important (Fröbel/Heinrichs/Kreye 1977, UNIDO 1981, Massey 1983, Ballance and Sinclair 1983, Andersson and Johansson 1984, and the essay by Borner et. al. included here) are:

- "(...) - the reduction in transport and communication costs due to rapid innovation in these fields;
- the creation of new production technologies permitting the segmentation of production and distribution into discrete units which can be located separately from each other in space, thereby permitting the spatial segregation, e.g. of standardized routine production processes, research and development, managerial planning and control functions;

- the international standardization of production processes and product characteristics;
- liberalization of trade barriers and an intensified integration of national and international commodity markets,
- the emergence of multinational corporations organized to work across the boundaries of nationally or continentally integrated markets and therefore able to make use of the optimal location for each of these specific functions on a world-wide scale;
- increasing integration of inter-regional and international finance and capital markets permitting rapid and extensive capital mobility and a reduction of related political risks; and
- the mobilization of a potential reservoir of industrial workers in practically all not yet industrialized parts of the world, along with the increasing preparedness of territorial units (national, regional, local governments) to offer incentives for new industrial activities (Stuckey 1980, p. 59/40)" (Stöhr 1984).

These factors have led both to a process of concentration and a process of dispersal. In the developed countries, the old industrial regions have lost much of their manufacturing capacity. These regions of early industrialization were dominated by industrial activities in the late stages of the product cycle, activities which have often been relocated to the developing countries; in some cases they have been kept alive through government intervention; others have withered away. Productive activities with a greater viability, those in the early stages of the product cycle, tend to be concentrated in core regions. Entrepreneurial decision-making also remains concentrated in these areas. The same may be said for innovative activities and other essential producer services - although in a number of cases these have shifted from major metropolitan areas to other core regions (cf. Thrift 1984 and Noyelle's essay in this report). Thus, at the national level, there has been a concentration in developed countries of dynamic and innovative activities. Seldom have industrial activities in these countries shifted to areas which - from the point of view of industry - were hitherto relatively marginal.

International dispersal of industrial activities related to the late stages of the product cycle has taken place on a very large scale. It has assisted the emergence of newly industrializing countries in Asia, Africa and

Latin America. Yet, if one looks at the international spatial pattern of diffusion, it is obvious that in many cases relocation has favoured a relatively small group of countries. And inside the developing countries, the industrialization process tends to be highly concentrated in a few regions, especially those surrounding national capitals and major ports. The national economy as a whole often does not benefit much from linkages and spin-offs. Moreover, international restructuring is taking place to an ever greater extent within transnational firms; intra-company transactions are replacing imports and exports, while decision-making remains firmly located in a First World metropolis (cf. the essay by Borner et.al.).

The process of economic expansion of the 1960s and early 1970s was accompanied by great disparities and imbalances. These came dramatically to light during the recent restructuring crisis. The developed countries, where social and political imperatives conflicted with the imperatives of industrial restructuring, returned to protectionism to shield the stagnating markets of weak industries from competition, mainly from developing countries; as a consequence of the disruption of their development process, developing countries ran into difficulties repaying and servicing the debts they had incurred to finance their economic build-up under the assumption of stable interest rates, market outlets and prices.

The global restructuring crisis has prompted a broad re-examination of established concepts of the international as well as the (sub-)national and interregional division of labour. The 1960s ushered in the First Development Decade with hopes for expansion, growth, and social transformation in the developing countries. By the mid-1970s the Lima Declaration paid witness to the new realization that the project of closing the gap was not going to be an easy one. Moreover, the debates surrounding the Lima Declaration made it patently clear that in the existing economic system there were no automatic mechanisms for closing the gap. The Second Development Decade thus saw the switch from a vocabulary of assistance and co-operation to a vocabulary of conflicting goals and tensions, which reflected the transition of the boom period of the 1960s and early 1970s to the crisis which set in during the 1970s. By the 1980s the problem of development was seen in terms less euphoric than those that dominated the discussions of the previous decades.

The growing contradictions between developed and developing countries and rich and poor regions, between private gain and public loss, between haves and have nots, between human activities and the resource base of all development, the natural environment (cf. Friedmann 1984b, 4f), triggered off a series of attempts to formulate new policy measures at the national and international level and to find new concepts dealing with the social and spatial aspects of the global economy.

In industrialized countries like Sweden and France, governments have intervened in the regions to make regional industrial structures more internationally competitive. Developing country governments have confronted the regional problematic as well. An interesting example of government support for the industrialization of hitherto peripheral regions can be found in the essay on Nigeria by Abiodun included in this report. Parastatal organizations have begun to lay the foundation for agro-industrial development in widely varying regions in Cameroun (Hesp 1985).

The Fourth General Conference of UNIDO, held in Vienna in August 1984, stressed the fact that "(...) international restructuring and redeployment processes have largely failed to attain the established industrial and socio-economic objectives and to create a basis for sustained economic and industrial development in the developing countries" (UNIDO 1984). The conference, seeking to create a new basis for a consensus on international restructuring was confronted with such questions as:

"Can the interdependence of the world's industrial production be made more "equitable"? Can an international industrial policy or set of principles be found that encompasses both the right of national sovereignty and a collective responsibility for the industrial advancement of the developing countries? Can global industrial restructuring become the common denominator to which the treatment of finance, trade, manpower and technology issues should be linked? How then are national policies and international agreements to be gradually adjusted to these new concepts?" (UNIDO 1984).

It was suggested that, to help answering these questions, UNIDO should give particular attention to the following activities:

"(...) setting up a system of information exchange on international industrial restructuring and related policies drawing on information systematically accumulated by UNIDO; (...) establishing a special programme of feasibility studies (... and ...) of technical co-operation and promotional services to assist developing countries in formulating programmes to adjust current structures; and (...) providing systematic support to more dynamic measures to create and retrain human skills and to the establishment of stronger links between education and training and the skills required by industry." (UNIDO 1984).

A response to the global crisis also came from the academic community, where researchers tried to grasp the dynamic and identify the processes and the actors which had instigated and were sustaining the transformation. Some emphasized the need to abandon the traditional mainstream framework within which both the global economy and regional problems had been viewed. The search reflected the realization that conflicts and tensions within the international division of labour must be seen as central issues and not as momentary disequilibria:

"During the last decade or so, political economy has become the most adequate theoretical mode of inquiry into this process of restructuring and crisis. There are dramatic differences between the explanatory models of political economy and those of neoclassical economics that they replace. Neoclassical economics looks towards the harmonization of the system of economic relations; they describe a state of equilibrium. Political economy models, on the other hand, seek to account for change and movement. Their point of reference is history and the struggles that animate it. These struggles are political in nature, and they take various forms: between social classes, between fractions of a class; between regional class-alliances and the state; between states. They are fought for different reasons, but mostly for material interests and power." (Friedmann, in Moulaert/Salinas 1983).

Out of the debate, a new awareness grew - an awareness of the firm as an individual entrepreneurial decision-making unit, caught up in the international process of restructuring. There was a rebirth of interest in

the work of Joseph Schumpeter as researchers began to delve into the dynamics of firm behaviour from a perspective of the firm as a history-maker rather than from the traditional neoclassical approach which saw the firm as a passive price-taker. The word innovation came in to replace the long-standing vocabulary of supply and demand economics. At the same time, the traditional analysis of economic relationships among countries - the theory of trade and comparative advantage - came to be replaced by theories which took account of innovative processes at the level of the firm - product-cycle analysis came into vogue as the basis for analysis of disparities among firms, disparities among nations, and disparities among regions. From the point of view of the region, from the point of view of national governments and regional policy-makers, the central question is no longer how to spread growth and clear away temporary bottlenecks - but rather the fundamentally different question: why are particular regions and nations being abandoned by entrepreneurial interests altogether?

The long-standing theoretical realization that capital was mobile started to take on the eerie concrete connotation of abandoned regions, abandoned activities, leading to an entirely new pattern and pace of employment creation and destruction - both nationally and internationally. Countries and regions, even cities, saw themselves competing directly for jobs with others. Strong regions in Europe saw themselves competing with regions in Japan and the US. Weaker regions in the North saw themselves competing with stronger regions in the South, and regions in the South competed among each other to attract whatever industrial activities were shifted to developing country locations.

This emergence of a globally competitive economy has led to an awareness that:

"The role of specific, local, regional and national communities in this spatial division of labour has recently become increasingly volatile, not only due to the complexity of the factors involved and their accelerated rate of change, the volatility in the movement of interest and exchange rates, in prices of natural resources and energy that shocked industries (Ballance and Sinclair 1983), but - and this particularly since the reduction of aggregate economic growth rates around the middle of the 1970s - also through the emerging 'war between states' (regions and localities) waged within the public sector to retain or attract private sector investment (Bluestone 1981)." (Stöhr 1984).

To use the expression used in the Castells essay: the "space of places" has been replaced by a "space of flows". As long as these flows streamed outward, trickling-down effects to underdeveloped regions might be expected and indeed did take place in a number of areas. With the global crisis, the flows appear to be withdrawing into the developed world and within the transnationals which generate a large part of these flows. Yet, very few regions can now exist outside these flows, "no region is an island to itself" (Friedmann 1984a, 3). A re-examination of the concept "region" is called for. Obviously units of analysis which are in all respects (geographically, economically, socially, politically) as different as the "Pacific Basin", the Swiss watch-making region, the US Northeast, the Warsaw region and Central Nigeria cannot be treated on the same level; individually, they cannot even be treated as contiguous spatial units for all analytical purposes. In the present-day international economy, it may make more sense to think of Tokyo and San Francisco as being part of one (functional) region than an Indian village and an agro-industrial estate both located in Brazil's Mato Grosso.

Especially in times when "trickling down" effects have become unlikely, and the entrenchment both of governments and large enterprises have reduced the probability of "top down" forms of economic development, development initiatives will have to come from the "bottom up", from a confidence in forces at the local level (cf. Galtung/O'Brien/Preiswerk 1980, Stöhr/Taylor 1981). The Perrin, Stöhr, and Sjöholt contributions to this publication show that, at least after a certain level of know-how and development has been reached, such "bottom up" strategies can be initiated. Of course, a reasonably favourable political and economic climate is needed for such initiatives to succeed. In the highly competitive world of modern industry, such initiatives are more likely to be successful in developed than in developing countries. In the latter countries, given a sufficiently strong and capable national government, "top down" strategies may be successful, although several authors (see e.g. Abiodun's essay on Nigeria) have pointed out the serious obstacles (technological dependence, financing) such policies may be confronted with in the present-day international political-economic environment.

In all its aspects - economic, political, policy related, scientific - the present crisis represents a major break. The following chapters will take

stock of a wide variety of aspects of the situation, as highlighted by the papers presented at the conference and by the discussions surrounding their presentation. Both the organization of the chapters and the nature of the papers selected represent an attempt to clarify issues about the fate of regions in the context of the transformation of the global economy. Thus Part I is devoted to the analysis and understanding of the global dynamic, Part II to an examination of spatial consequences and regional response. The essays which make up Part I, "Global Dynamics of Entrepreneurship", analyze at a general level what is going on. Emphasis is on entrepreneurial strategies, - on the who, those structural units which are perceived to be the main determiners of the global restructuring. The Stuckey, Stöhr, Castells, Tichy and Bluestone essays provide a general framework; in the essays by Auty, Borner et. al., Christopherson/Gradus and Miyakawa, entrepreneurial dynamics is dealt with in specific contexts. Part II, "The Region - A Sub-National Territorial Community", is a series of essays answering the questions " where does it happen?" and " how do regions react?" - be it passively or actively. After a general introductory essay by Stöhr, changes in spatial patterns at the sub-national level which result from changes in the international division of labour are described by Noyelle, Townsend/Peck, Maier/Tödtling and Helmsing. In the next section, development initiatives at the local level are the subject of essays by Sjöholt and Perrin. Finally, the essays by Moolaert/Willekens, Lilaia/Pinho, Abiodun and Becker analyze problems of regional development in both developed and developing countries. Throughout the book it becomes clear that capital, the developed countries' entrepreneurs, sets the pace. Capital is viewed as the history maker of the moment. Labour and the developing countries are seen by most authors to play largely passive role, the role of history-takers. In the conclusions we deal with the question: Now what can social scientists and policy-makers do? Here, the most far-reaching analyses, discussions and comments made during the symposium were used to formulate a research and policy agenda, raising basic questions about human development, the region, international relations and social science. The need for a global approach to regional analysis, an awareness of the often contradictory activities competing for the same space will be stressed in this last chapter. This approach (succinctly formulated in e.g., Grocholska 1984) combined with thorough investigations of specific problems, could be an analytical step beyond the "intermediate level" theories

in social science which deal only with one aspect of social reality. As was argued by many participants in the conference, the present economic and technological transformation is a part of a more general crisis which also involves human value systems and the relationship of humanity to its natural resource basis. Moreover, this transformation, this crisis, affects all of us, whether we live in the North or the South, in the East or the West.

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Part I - GLOBAL DYNAMICS OF ENTREPRENEURSHIP

B. Stuckey

**THE DIVISION OF LABOUR AND THE DYNAMIC OF THE WORLD ECONOMY:
GROWTH AND CHANGE IN HISTORICAL AND THEORETICAL PERSPECTIVE**

1. Forms and measures of social change

In this essay we discuss three aspects of structural change (cf. UNIDO 1979a):

- Changes in the product mix ("what");
- Changes in the production process ("how");
- Changes in the geographical distribution of productive activities and output capacity ("where").

A short historical review of the growth and development of industrial commodity production brings to light fundamental changes in the way economic structures manifest themselves on a world scale. Historical changes are most obvious in the case of products ("what"), whether these are inputs for further steps in production or consumer goods. Think of the changeovers from candles to lightbulbs, from the abacus to the computer, from washboards to automatic washing machines, from the horse-drawn carriage to the supersonic jet. Second, forms of labour and manufacturing technologies, both for new products and for goods which have been in use for hundreds of years, have changed beyond recognition. There have been changeovers from self-sufficiency to wage labour, from cottage industry to the assembly line and automatized production; from scissors to computer-controlled textile cutters, from powders mixed by mortar and pestle to mass-produced, automatically packed and controlled pills. In contrast, the third factor - the "where" - the geographical distribution of production for the world market on the intercontinental level (i.e. between former colonizing countries and their colonies) long remained exceptionally stable.

For hundreds of years, the colonies produced almost nothing but basic materials. Within the European and North American continents, however, industrial capacity continuously grew and relocated. During the 16th and 17th centuries domestic piecework, carried out under merchant control in dispersed rural locations, began to compete with the dominant type of guild-controlled production largely located in towns (cf. Kriedte/Medick/Schlumbohm 1977). During the 18th century, these cottage industries were relocated in towns, especially in towns close to rivers where water power could be utilized in

production. Competition by the new capitalist firms slowly pushed the guilds out of business. Then, the invention of the steam engine brought about a growth and relocation of industry in the vicinity of coalfields, which in the 19th century led to the growth of a number of industrial metropolises. The development of railway networks made industry less dependent on waterways and ports. Later, electrification and decentralizing technologies greatly expanded the range of potential industrial locations. Firms now located in areas where extensive labour reserves were available as a consequence of agricultural mechanization. After the Second World War industries relocated from town centres to suburbs in a new decentralization phase. During the last two decades industrial product and process change have not only been accompanied by interregional and intraregional locational shifts within the industrialized countries, but also by a massive, parallel (and partly substitutional) international shift of productive capacity. For the first time, internationally competitive industries are emerging on a large scale outside the developed countries: they have become globally mobile; the era of internationalized industrial production has started.

How does one measure the extent of structural change within the context of this global perspective? The simplest and most common method is based on the three-sector hypothesis, which in Europe is connected with the name of Fourastié (Fourastié 1954). The generally accepted empirical methods which now form the basis of structural research build on his hypothesis, or can even be considered as an extension of it. Political, theoretical, and empirical interest has, above all, been concentrating on structural change in the second, the industrial sector. This has led to the establishment of time-series and a more and more sophisticated analysis of the industrial sector. Focus is on the product range of a nation, i.e. productive activities are categorized into branches and product types. Together with import and export data, these national industrial statistics - long since available for cyclical research - are now serving as the basis of empirical analysis of structural change. As the problems of international structural change became acute in the 1970s, this data base became inadequate.^{1/} The "traditional" explanation of productive structures was felt to be unsatisfactory as the

1/ Cf. Burgener, Zur Wettbewerbsfähigkeit schweizerischer Unternehmungen: Bedrohungslage und Handlungsspielraum. Diskussionspapier Nr. 88, Universität Basel.

political awareness grew of the consequences of the intensifying global competition among industrial firms. Political and theoretical discussions focussed on a new question: what are the decisive factors for the competitiveness of a specific branch in a specific country?

To trace these decisive factors the question of productive functions had to be reconsidered. Instead of considering technical advance to be an exogenous factor, innovation was now seen as an important production factor in itself. This discussion led to the development of the so-called neo-factor proportion model (cf. Maillat 1982, and Brugger 1983). Initially, the typical range of production factors in the various branches was used to describe production processes; later branch-specific production processes were categorized on the basis of their respective main factors of production (raw materials, energy, labour, capital, innovation, research, etc.). As a next step, the long-term geographical distribution of industrial production processes was explained by analyzing the mobility of relatively mobile factors (basic materials, capital goods) in connection with the availability and cost-structure of relatively immobile factors: unqualified, qualified, and innovative labour, infrastructure, organizations, institutions, etc. This problem of locational competition required new directions in empirical research. A concept focussing on the nature, the "how" of the production process became necessary. The neo-factor proportion model offered a solution. Its main finding is that basic material-intensive, labour-intensive and capital goods-intensive production in the industrialized countries is exposed to growing competition from certain developing countries; competition does not affect human capital-intensive and innovation-intensive processes as yet. The competition among industrial nations however, has become more intense in these demanding branches of industry. Moreover, newly industrializing countries (NICs) are becoming more and more competitive in some technically advanced fields. All in all, the pressure to adapt, to innovate and to develop continuously is growing.

2. Rivalling descriptive and explanatory models of economic development

As soon as we leave the field of forms and measurements of structural change to address the question of the causes of innovative behaviour, we are unavoidably confronted with a broad spectrum of economic development

theories. It is not our task to depict the variety of relevant basic theoretical notions or to explain, criticize or praise their philosophical background. On the other hand it does not make sense either to attempt to explain specific development forces in history without clarifying or at least having a notion of one's own basic attitude towards individual human actions and their importance for social development. Research on "impulses for economic development" automatically raises basic questions which have philosophical, theoretical and methodological implications and consequences. Are changing social and economic phenomena or structures the result of "superhuman" forces (e.g. laws of human behaviour, economic laws, etc.) or are human beings to be understood as actors (with varying degrees of individual freedom), as the creators of their society, i.e. as the originators of economic laws? Is it the duty of actors in economic life - whether as representatives of enterprises, governments, trade unions, or as individual workers and consumers - to adapt to the conditions of structural change? Are there identifiable single or collective actors whose actions determine the genesis and form of this current obsession with material and organizational innovation? Could one, should one reduce the pressure to innovate? To arrive at any answer to these questions at all, we will have to survey the most common theoretical perspectives on development. After criticizing the basic notions of orthodox thinking, we will try to clarify our own premises. Below, we will discuss the three basic perspectives which still dominate the present academic debate on the dynamics of innovation and economic development:

- growth stage theories;
- theories of exogenous forces, exemplified by the theory of technological waves; and
- theories of equilibrium growth.

2.1 Growth stage theories

We characterize all theoretical approaches which depict and explain the economic life of a nation as a more or less linear process of development as "growth stage theories". According to these theories, the growth and transformation of the English market economy forms the beginning of a universal development path. It is still considered to be the model and the appropriate path for all countries on their way to industrialization.

Empirical evidence for this theory is supposedly provided by the success of other European states, the US, Japan and, nowadays, the newly industrializing countries. This old philosophy of history experienced a renaissance among economic experts in the early 1960s with the appearance of a small publication by Rostow (Rostow 1960). Explicitly or implicitly, the experience of the countries of the North became a norm for the former colonies in the South. Rostow's hypothesis and the concomitant economic strategy imply a succession of growth stages which repeats itself from country to country. Strategy recommendations are based on a positive appraisal of i) the monetarization of the economy, ii) the expansion of the industrial division of labour, iii) a progressive process of innovation, iv) the industrialization of the agricultural sector, and v) the exploitation of comparative advantages in the world market.

From the start, this theory was heavily criticized; later criticism even became more intensive (cf. Gershenkron 1962). The dependencia theorists in the developing countries formulated the well-known "development of underdevelopment" (cf. Amin 1975, Frank 1980, Kraute 1980) counterhypothesis. It is based on the view that the economic history of the underdeveloped countries is an integral part of the history of industrialization in the North. The development of the industrialized market economies is seen as a worldwide, not a national, process. In spite of a number of structural breaks and the continuous dynamic of change in products, production methods and core regions, the advantages and disadvantages of capitalist expansion have stubbornly resisted shifts in their North-South distribution. The benefits have unilaterally gone to the majority of the population in the North; the economic disadvantages have been borne by the majority in the South. Although this theoretical approach is often as imprecise as the growth stage theories, it cannot be denied that theoretical and empirical studies based on this perspective do focus more on international developments and do show a greater consciousness of the international interrelationships in economic life. Since the 1981/82 recession, a global, co-ordinated economy has been considered as the only locomotive for a renewed economic upswing (cf. Bhagwati 1983).

2.2 Exogenous forces: technological waves

In theoretical discussions and political debates on economic dynamics reference is often made to the role played by new technologies. Historical

evidence of the way in which a technology put its stamp on an era is often combined with analysis of long-run growth stages (e.g. Kondratieff's waves). But innovations are not just a matter of technology and its immediate applications to the production process or the product range; transformations of the division of labour, ways of life, social structures, landscapes, etc. are closely related. The leaders of innovative activities may determine the general economic fate of whole regions or nations. Take the steam engine and its application to textile production and railroads, and England comes to mind; take the petrol engine and the car industry - and it's the USA. Nowadays, it's micro-electronics and their apparently universal application - and Silicon Valley in California and Japan are the leaders. These examples show that the exact source of a new technology, the place where it was invented, is not necessarily significant. What is essential from an economic point of view is the application of an invention, the way of transforming an invention into market oriented innovation. The latter may result from intra-firm inventions or from acquired patents, from imitation and even from economic espionage. The temporal and material headstarts in innovation on the one hand, and the size and distribution of the potential profits on the other, are decisive for the dynamics of economic development.

2.3 Equilibrium theories

What we call equilibrium theories are theoretical approaches which characterize economic life as the collective result of market processes (cf. Samuelson 1964). The participants in these activities are assumed to be each others' equals, economic subjects capable of independent planning whose actions are co-ordinated through the market. The collective result - equilibrium - is supposed to be more or less a characteristic of the market process in general. Consumer demand supplies the dynamics - the only task of production units is to produce the commodities demanded with given technologies at the lowest possible costs. All economic activities which do not take place under market conditions are excluded from the analysis. Demand crises in the commodity markets and employment fluctuations in the labour markets are interpreted as temporary disequilibria. In an age of transnational corporations, growing poverty in developing countries and growing unemployment in the OECD countries, this approach is becoming more and more questionable.

We have argued that technological dynamics are considered by many economists to be decisive but exogenous factor in the economic process, while equilibrium theories do not touch on the question of the dynamics of producers' innovative activities. In the 1920s, Schumpeter, in a critical review of equilibrium theory, analyzed (entrepreneurial) dynamics as a cause of disequilibrium: "... a theory of the transition of the national economy from an existing centre of gravity to a new one (dynamism), in contrast to the theory of the cycle, the theory of the economy's permanent adaptation to changing centres of equilibrium and ipso facto of the effects of this change as well (statics). These spontaneous and discontinuous changes in the cycle's path and in the centres of equilibrium take place in the domain of industry and commerce. Not in the sphere of the needs of the consumers of final products." (Schumpeter 1926, p. 99). The "entrepreneur", i.e. the innovator, is identified by Schumpeter as the creator of economic dynamics.

2.4 Critique: the absence of an explanation of entrepreneurial dynamics in globally intensifying competition

The critique of traditional approaches to development problems and innovative activities has crystallized into two main research approaches:

- the analysis of innovative behaviour by individual economic actors - especially at the level of the industrial firm;
- the analysis of general socio-political determinants of economic behaviour.

To analyze the innovative activity and innovative capacity of the firm, micro-economic approaches were taken up and used in new ways. These approaches were now explicitly related to innovation dynamics and to socio-political conditions, thus contradicting the traditional approach of perfect competition. Schumpeter's work became topical again. On the other hand, research focussed more and more on regional or national employment, tax, educational and even cultural policies as competitive instruments for the conservation or expansion of economic activities by innovative enterprises. For the time being these two types of research often remain separated; the present fast pace of internationalization of industrial activities also makes for research difficulties. In dealing with locational characteristics, the production process and the network of marketing outlets of individual firms,

systematic attention will have to be paid to the firm's position in international networks. But this task goes beyond the traditional analytic framework of "Nationalökonomie", which primarily regards the economic cycle as a national phenomenon. The explanation of entrepreneurial dynamics must be sought in the process of competition unfolding on a world scale; the object of the analysis should not be restricted to an economic cycle within national boundaries. Just as the intensification of the international division of labour called the usefulness of an analysis of structural change on the basis of branches into question, so the global innovation policy of the firm calls the relevance of national economics into question. The most important conditions for firm decision-making are not the conditions in one country, but precisely the differences in conditions between countries.

3. Conditions and forces of global economic dynamics in a 6-sector model

Our analysis of changes has brought us to innovative activities of firms and the (inter)national conditions under which these take place. In this section and the next we shall try to integrate the innovative behaviour of modern firms in a historical perspective of internationally growing competition. This analytical step implies three tasks:

- a) to grasp and explain the innovative dynamic within and between firms theoretically and empirically;
- b) to evaluate the consequences of innovative firm behaviour for the behaviour and welfare of other actors in economic life;
- c) to analyse the importance of these other actors for the behaviour of the firm.

To facilitate these tasks we use a simple, descriptive model of the international division of labour. It aims at providing a conceptual framework which for all groups involved allows us to analyze the consequences of the changes in their collective, interdependent division of labour. The model includes behavioural trends of five groups of actor :

- 1) Government
- 2) enterprises/management
 - big firms
 - small and medium size firms

- 3) workers/trade unions
- 4) consumers
- 5) "marginal groups"
 - un- and underemployed workers
 - housewives and children
 - subsistence farmers and their families, agricultural workers
 - "alternative" life-style groups.

Firms' activities are considered to be the prime movers of the market economy. The activities of other economic actors are seen as constituting a framework within which firms struggle to maintain and improve their competitive position. But the individual firm is restricted in its competition with other firms by general economic conditions. The basic concept of the model is the division of labour, i.e. the way the work process is organized among people whose economic activities are interrelated. The first analytical step consists in identifying and describing the changes within this division of labour. It then becomes evident that market-oriented behaviour is only one result and one cause of changes within the division of labour. Thus to analyze these changes, all economic activities which have contributed to the overall, collective division of labour will have to be included in the analysis - not just commodity production connected with wage labour. Since not all economic activities have a price attached to them, other measures besides price and income are needed to assess changes in the division of labour. Institutional structures which have traditionally emerged alongside the market economy - nation states, capitalist enterprises and world markets - are not by themselves adequate categories for measuring and assessing economic changes.

The primary purpose of our six-sector model is to focus attention on certain international relationships and tendencies in socio-economic behaviour which are not taken into account in most standard models of national economics (growth models, cyclical models, structural models). We feel, however, that these relationships and tendencies, which can only be understood in an international context, must be taken into account when evaluating present and future perspectives for industry. We emphasize changes in types of labour, their frequency, and their location - that is the quality and quantity of productive activities which have contributed to the growth and expansion of

the market economy. We have divided economic activities into a number of groups which together constitute a six-sector model (cf. Stuckey 1983) - see Diagram 1.

Sector 1

Commodity (goods, services) production organized in enterprises located in the North which use wage labour: the traditional field of economic development, the sector at which national economic analysis of wealth and production are usually directed.

Sector 2

Commodity production in the North without wage labour: family farms producing for the market, handicraft activities, corner shops, the self-employed (doctors, lawyers).

Sector 3

Non-commodity production in the North without wage labour: the domain of the housewife, the family vegetable garden, do-it-yourself work (from simple repairs to private home building).

Sector 4

Production of commodities using wage labour in the South, originally in the form of colonial enterprises, i.e. mainly in mines and on plantations. Today this includes, analogous to the North, factory workers and workers in the tertiary sector (offices, tourism).

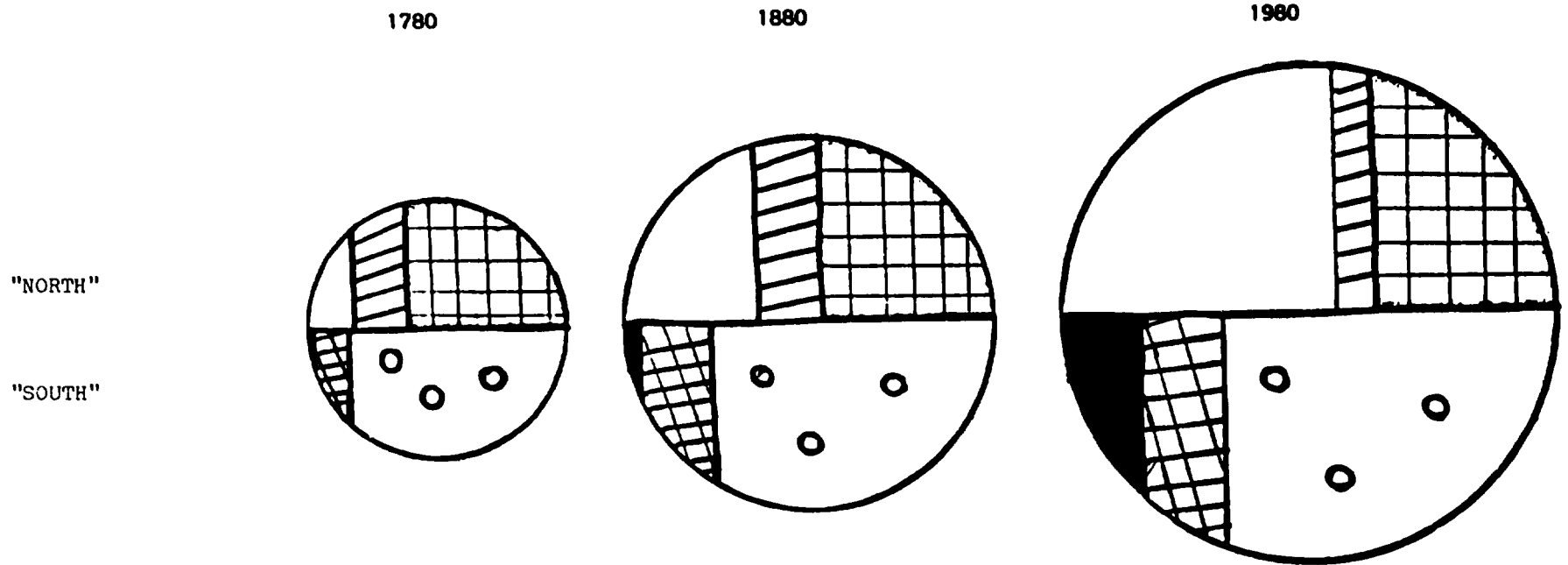
Sector 5







Commodity production without wage labour in the South, e.g. historically forced labour and slave labour in the colonial era and the cash crop share of peasant production, "today cash crops", handicrafts, etc.

Sector 6

Non-commodity production using non-wage labour in the South: the work of the (extended) family in the home and in subsistence farming, herding, hunting and fishing.

Diagram 1: A MODEL OF THE INTERNATIONAL DIVISION OF LABOUR



-  North - Commodity production with wage labour/Sector 1
-  North - Commodity production without wage labour/Sector 2
-  North - Non-commodity production without wage labour/Sector 3
-  South - Commodity production with wage labour/Sector 4
-  South - Commodity production without wage labour/Sector 5
-  South - Non-commodity production without wage labour/Sector 6

By employing measures of inputs and/or outputs, one may trace the consequences of the production of a particular good or service for the quantity and quality of economic activities in all six sectors. Possible measures include:

- price: despite the fact that this is the most frequently used measure of economic activity, it is inadequate because resources, labour, goods, and services in sectors 3 and 6 do not have a market price.
- hours worked: for comparison among the sectors this measure requires not only computation of hours worked, but - in order to estimate productivity per hour worked - an assessment of labour qualifications and technology.
- physical resources and energy: this measure requires an assessment of physical resources and energy embodied in raw materials, machinery, and infrastructure, and human energy used for productive activity.
- work satisfaction: this measure assesses the quality of the work activity itself - in a physical, spiritual and social sense.

When using a single measure or combinations of measures to describe the path of an economic change in terms of repercussions in all six sectors, the following points are of particular importance:

- a grasp of the quality and quantity of economic activities in each sector before and after a change;
- the structural and functional differences between economic activities within a sector in the North and within its counterpart in the South;
- the long-term growth (or decline) in the absolute quantity and quality of the different types of economic activities which results from increased (decreased) population, increased (decreased) use of physical resources and energy, increased (decreased) working time, and/or increased (decreased) productivity;
- the changing relative proportions of the six sectors, i.e. the interrelation and/or simultaneity of expansion in one sector and shrinkage in another.

In the next section the main characteristics of the development of the market economy during the past centuries will be briefly sketched with the aid of our six sector model.

4. Interpretation of historical development with reference to the six sector model (cf. Stuckey 1980, 1983, Stuckey/Fay 1980, Fröbel/Heinrichs/Kreye 1977, 1981; Kellenbenz/Schneider/Gömmel 1978; Frank 1973).

After the collapse of the international trading network built up and controlled by the Romans, an era of Arab trade dominance - which encompassed Asia, Asia Minor, Africa and Europe - followed. During these epochs long-distance overland trade consisted mainly of luxury goods. Bulk goods like cereals, wood, etc. were exchanged as well, but could only be transported by ship over relatively small bodies of water, like the Mediterranean and the Baltic. With the defeat of the Arabs in France and with the rise of the Italian cities during the crusades, European merchants gradually superseded Arabs traders. During the 16th century the South European states began to support and undertake "voyages of discovery". Soon, England, Holland and France participated in the competition for colonies. The aftermath of these discoveries was the collapse of indigenous economic structures in large parts of South America; the same would happen in various parts of Asia and Africa during the next two centuries.

The formation of trading companies, combined with military superiority, permitted merchants to acquire products and labour cheaply in the colonies and to realize great profits in Europe. Gold and silver from Mexico and Peru provided the currency for purchases in India, China and parts of Southeast Asia; the European colonists took over and organized the production of precious metals and other commodities. Using massive imports of labour (slaves) from Africa, a plantation economy producing cotton, sugar, tobacco, spices, etc. was built up in America in the centuries preceding and during the industrial revolution. In Western Europe, especially in England, the expansion of commercial activities and the growth of commodity production led to a gradual dissolution of feudal modes of production in the countryside. Among other things, the rise of market prices for agricultural products led to expanded sheepherding in England (and Scotland). This again resulted in a reduction of labour in agricultural production and opened the way for a new

market-oriented activity: rural cottage industry. The workers in the villages owned their tools, but the raw materials and semi-processed goods which they turned into end products were owned by merchants. The merchants took advantage of the new situation in the countryside to have commodities produced more cheaply than in the towns, where guild regulations guaranteed a certain degree of "wealth" to guild members. The members of the former agricultural labourers' families who were involved in the production process, however, were not employed on the basis of a labour contract of the kind which emerged later with factory production. In short: in the proto-industrial stage there was as yet no labour market.

The earliest form of modern entrepreneurial activity is the mercantile trading firm whose motivating force is trading profit. This type of enterprise of course, still plays a significant role in the modern market economy (e.g. wood and feed grains). But the dynamic of the latter's development, which drastically changed economic life, is not primarily to be found in favourable trading opportunities in existing markets. A new element was added, an element which first emerged in 18th century England. There, a new form of production developed: the factory - controlled, owned and led by an industrial entrepreneur. Here lie the origins of a novel activity: the conscious, intentional, and regular change of production processes, of the division of labour and of the technologies involved. This planned, intentional change of the entrepreneurially organized production process (the "how") is the starting point of what is now generally known as the innovation process.

The factory exploited the labour potential of underemployed, landless agricultural workers. The result was a major social restructuring: the emergence of urban labour markets and of wage labour as a basic relation of production in the modern industrial age (sector 1). From now on the factory owner owns both the means of production and the raw materials. The factory worker does not sell a specific product or the skills employed in finishing that product: he sells his physical and mental faculties for a certain amount of time. He is then paid a wage with which to satisfy his needs through consumer purchases on the market. Food bought on the market is then transformed by unpaid housework (sector 3), but wage labour is the economically dominant activity. The purpose of a worker's activities and the

degree to which his skills and knowledge are used are decided on by other economic actors - at first by the factory owners, later by "management" in general (a new specialization). And now the actor who has been analyzed so fascinatingly and extensively by Schumpeter steps into the limelight: the entrepreneur, the person who organizes human skills, raw materials and machinery in a production process in order to realize a profit by selling the goods and services produced on the market.

The classical economists were the first to recognize the great competitive significance of innovation in the division of labour within the firm. In his Wealth of Nations, Adam Smith argued already in 1776 that an increase of labour productivity really depends on the degree of the division of labour in the work process. His famous pin factory example illustrates what he means by the division of labour; production is divided into its most elementary activities which are then allotted to different workers, each of whom have to complete a limited number of simple, repetitive, routine tasks. It is commonly assumed nowadays that the machine has been responsible for routine work. Smith, however, writing during the early years of the Industrial Revolution, recognized clearly that, on the contrary, routinized tasks - the consequence of an intrafactory division of labour which preceded the Industrial Revolution - had brought about a rapid development of technologies replacing fragmented and routine work processes. Babbage, in his study of the organization of the production process in Smith's pin factory, where wages were differentiated by sex, age and qualification for every function in the production process, noted that the production process in a capitalist enterprise must be divided into the smallest and simplest elements possible in order to save expensive qualified labour (cf. Babbage 1971). But history shows that there has also been a continuous resistance from the side of the workers and their organizations against the dissection of the work process in its simplest and smallest elements. There has also seem permanent pressure on the employer to raise wages in the wake of productivity growth.

These changes at the core of economic life and in the essence of the social conditions of production in European countries also brought about a transformation of the economic structures in the colonies. With the rise of industrialization in the North new sources of raw materials and food were sought and developed. During the 19th century forced labour continued to be

used; in many colonies taxes were introduced, thus speeding up the populations' integration into the monetarized parts of the economy. People now had to look for paid jobs in mines, in the transport sector or on plantations (sector 4); or they had to grow cash crops (sector 5) which could be sold to the colonialists for money. All this led to partial adaptation to the world market without leading to the slow, quasi-total disappearance of the subsistence economy which was characteristic for Europe. The share of wage-income increased, but the general wage-level was not high enough to satisfy basic needs through the market; basic needs continued to be partly covered by non-commodity production in the family (sector 6). In contrast to Europe, the labour market did not expand. Until the mid 20th century, the (former) colonies continued to be predominantly raw material suppliers, and the production of these raw materials took place without a structural expansion of wage/consumption relations. Towns remained relatively small, the subsistence sector (sector 6) survived and fed the part of the population producing for the world market (sectors 4 and 5). Nonetheless, the (small) towns and the elites in the colonies became important consumers of industrial products. The colonial infrastructure became a dominant feature in European and American investment in the South. Apart from isolated initiatives during the First World War and during the depression of the 1930s, few attempts at modern industrialization were made until the 1950s and 1960s. Moreover, these early industries were import-substituting, not internationally competitive industries. The build-up of a competitive industry in the Third World, combined with massive migration from the countryside and (generally) a rapid urbanization, has only occurred since the 1950s. Nonetheless, when compared to the number of unemployed and underemployed people, the number of industrial jobs remains very small in most developing countries (cf. Heinrichs 1980).^{1/}

While industrial productivity expanded continuously, the second half of the 19th century also witnessed a massive expansion and improvement of marketing channels (cf. Chandler 1977). Mass production and mass distribution mutually reinforced themselves. Competition became more intensive, and by the beginning of the 20th century a number of large companies with oligopolistic

1/ See also F. Wehrle, Der exportorientierte Industrialisierungsprozess in den Schwellenländern Asiens und Lateinamerikas und Japans Aufstieg zur Wirtschaftsgrossmacht - Betrachtungen aus einer schweizerischen Perspektive. Diskussionspapier Nr. 84, Universität Basel).

or monopolistic positions in production and distribution had emerged. In the industrialized countries, economic activities became more and more concentrated in the cities, and the agricultural subsistence economy was reduced to the farmer's wife's kitchen garden and home-sewn clothes (sector 3). The growing size of industrial firms led to a new wave of process-innovation historically known as mass production (sector 1). Productivity has since risen continuously. Simultaneously, markets have grown, sales techniques have been transformed and new or differentiated products have been marketed without interruption. All this has led to a more diversified division of labour, a more specialized occupational structure - in 1982 e.g. 30,000 different occupations existed in the FRG (cf. Hicks 1969, Schneider 1982). Within two or three generations spectacular wage raises and gradual reductions in working hours improved the worker's lot in the North in a way which went beyond the wildest dreams. The trade unions' battle against the disqualification and dehumanization of labour - now aggravated by the introduction of micro-electronics (Smith 1926, Münster 1980) - has also been intensified in the present century. Many analysts believe that micro-electronics will completely overshadow previous developments in organization, productivity and products. The ominous consequences for the world of labour are a growing polarization of the qualification structure and mass unemployment. Characteristic for the analyses now available on the topic of productivity - whether in industry or agriculture in the First or the Third World - is the significance ascribed to notions like "technological imperatives", "bureaucratic decisions", "pressure to adapt", etc. Analysis is far removed from the Smith-Schumpeter notion of the individual human being - the entrepreneur - as the central actor, as the conscious creator, executor and utilizer of technologic innovation.

5. Diagnosis of the central problems of structural analysis - a summary

Our discussion of the theories and the history of structural change can serve as a basis for assessing current analyses of industrial transformation. We are primarily interested in change as a continuing process. To analyze this process, decision makers and their activities must be identified. We must search for an analytic procedure which can deal with both change and permanence. Focus must be put on the contradictions between innovation in the firm and the socio-political situation which surrounds these continuous innovations. Two questions are fundamental to any structural analysis:

- what changes?
- what does not change?

5.1 Permanence

The fundamental behavioural principle of firms exposed to competition has not changed - at least not during the past two hundred years. This principle is innovative activity. It has long since been identified as the motive force of change and growth in market economies, and our analysis focusses on this force. Entrepreneurial innovations consist of new combinations of diverse productive activities. In the past two hundred years innovative activity has centred on:

- the acquisition of inputs ("whence")
- products ("what")
- the production process ("how" and "how much")
- locations ("where")
- sales ("whither")

For firms as a group of societal actors, innovative competition has remained the basic characteristic of entrepreneurial activity. Nonetheless, trends and changes in the nature of this competition can be discerned:

- a growing geographical entwinement of "whence", "where" and "whither": the search for new markets and cheap inputs (including finance and labour power);
- a simultaneously growing standardization and differentiation of "what": product cycle, product-differentiation, diversification, vertical and horizontal integration, conglomerates;
- a simultaneously growing specialization and mechanization ("how"): Smith-Babbage principle, product-process cycle, rationalization, distection, automation;
- growing quantity ("how much"): economies of scale, concentration, multinationals.

5.2 Changes

Innovation is a continuous process - necessitated by the permanent competition among firms. This process, the motive force of growth in market economies, unfolds against the background of national and international conditions which structure competition.

These economic, socio-political and cultural conditions change in the course of time, partly as a direct result of innovation itself. Drastic changes in the quality of innovations and in the nature of the conditioning forces serve as catalysts of new stages in structural change. But we should also add those socio-political and cultural conditions in industrial and developing countries which are generally neglected in structural research: the actions of people whose economic activities take place outside market-oriented firms and labour contracts. The natural environment must also be counted among the forces conditioning the conception and utilization of innovations by managers and workers in competing firms. Finally, analysis of economic and social change must be imbedded in a holistic understanding of transformations in human consciousness.

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Walter Stöhr

THE SPATIAL DIVISION OF LABOUR AND ENTREPRENEURIAL STRATEGIES

1. The product cycle theory

The theory of international trade based on the Heckscher-Ohlin paradigm assumes that under conditions of free trade the spatial division of labour will lead to a state in which each country (region) "will export and specialize in the goods embodying their relatively more abundant factors" (Tyson and Zysman 1983, p.25). Highly developed countries or regions would therefore be expected to specialize in the export of capital-intensive goods, while less developed countries or regions would specialize in the export of labour-intensive goods. Leontief (1953), however, showed that in reality this is not the case; rather the inverse (Andersson and Johansson 1984) is true. This "inversion" has been explained by the fact that international trade theory assumes equal access to the same production technology (Tyson and Zysman 1983, p.24), an assumption which is not realistic. In order to correct this assumption the differentiation of technology and innovation can be explicitly introduced into the theory of trade dynamics in the form of product-cycle theory. Product-cycle theory shows that the firm which first introduced a new technology or product enjoys a monopoly rent until the technology or product becomes standardized and other firms (in other countries and regions) enter into competition. The newer locations may gain comparative advantage over the innovative location because of the factor intensities required by standard technology (Tyson and Zysman, 1983, p. 30), particularly cheap labour and cheap land. "This theory essentially states that each product undergoes a development cycle in which each new commodity enters the most highly developed regions of the world after a phase of research, laboratory testing, and implementation development. The product is then primarily produced in the region with a comparative advantage in terms of a high R & D level and access to employment categories with a required profile of competence. The production of the product is exported from this region to other regions. When the product has matured in terms of process development (design of production techniques) and market penetration, the region of original introduction and specialization loses its comparative advantage and the production becomes regionally decentralized" (Andersson and Johansson 1984, p.3).

These theories have promoted a number of deterministic attitudes: that highly developed countries or regions would have a comparative advantage in

technology-intensive, human capital intensive, and innovation-intensive products (Stuckey 1980, p.46) which they could maintain only by continuous innovation and qualitative up-grading of their human capital. Less developed countries or regions on the other hand would have a "primary competitive advantage.... in industries with homogenous output and standard production characteristics" (Tyson and Zysman, 1983, p.41) which they, on their part, could only retain if - in accordance with Ricardian trade theory - they reduce the cost of their most abundant production factors, namely labour and/or natural resources (p.25).

The standardized production processes for homogeneous output, however, represent, at the same time the latest stage in the product cycle. Such productive activities could best be obtained by less developed countries or regions via branch-plants of the multinational firms which had developed the respective product from its earlier phases onward. With the maturing of the product the firms would be looking for new production locations. As a consequence of reduced aggregate economic expansion, these "late stage" production facilities could also only be successfully attracted by the very low cost of "abundant" factors (such as labour, land or natural resources) - or by deregulating them, along with often massive public subsidies to attract this decentralization. Transnational companies (TNCs) however could frequently only be attracted if the host country or region secured the TNC's "private access to its own R & D, technologies or human skills" (Ballance and Sinclair, 1983, p.181), in other words if it accepted the retention of its respective technological and human capital monopoly position. When decentralizing production, TNCs are normally aiming at the penetration of (otherwise inaccessible) markets, at cheap and unregulated reserves of labour or natural resources, or at the externalization of social or environmental costs (Wehrle 1980, p. 167 f.). It may be assumed, however, that a major consideration in TNCs decisions is the maintenance or extension of their potential monopoly position embedded in the product cycle of their respective commodities or services. Thus, examination of entrepreneurial strategies and especially innovation strategies appear as essential for understanding the spatial division for labour.

1.2. The regional question and entrepreneurial strategies

The theory of international trade and comparative advantage has been developed further to include economies of scale, industrial dynamics, and particularly the role of technology and innovation in the dynamics of trade. "Trade in manufactured goods typically follows a set pattern: a country or region that introduced a good becomes at first a net exporter of it but eventually loses its net export position when production of the good becomes standardized and moves to those countries (regions) that have a comparative advantage, given the factor intensities required by the standard technology" (Tyson and Zysman, 1983, p.30). The theory of spatial development has assumed that development would have to start in locations of high accessibility to world-wide markets, where the greatest interaction intensity, the greatest economies of scale and capital productivity as well as the highest rates of social change (Friedmann 1972) can be realized. That is, development takes place in the so-called core areas. This widely coincides with the assumption of product-cycle theory.

The spatial application of product-cycle theory (Vernon 1966, Schubert and Stöhr 1981) similarly assumes that production in the early phase of the product cycle is located in the major metropolitan centres with the highest levels of communications and transportation access, proximity to high level research and training centres, and agglomeration economies which via technological monopoly rent would enable payment of high land rents. In the second (expansion) phase of its cycle a product increasingly benefits from economies of scale which serve to expand markets. The production location would, however, still benefit from proximity to large metropolitan transport and interaction centres. Increasing scale and standardization of production would cause more extensive land requirements and less qualified labour, the price of which would be lower in the hinterlands of metropolitan areas and in intermediate-size cities. Such areas could therefore increasingly become locations for products in their second phase. In the (third) maturity phase, production is widely standardized and requires little qualified labour and less interaction accessibility. Due to the vanishing technological monopoly position, new competitors can easily enter the market and fierce cost competition takes place. Areas with low cost of land and with poorly

qualified labour - usually rural areas - are chosen as locations. The last (stagnation) phase of a product finally is characterized by declining demand and increasing competition. Production tends to move to still lower cost locations, frequently to developing countries where social and environmental costs can be widely externalized.

Both the sequence of the product cycle described (the aging of products) as well as of the spatial "path" of their migration have so far generally been considered in a deterministic way, i.e. hardly subject to policy influence. The major exception to this pattern of thinking were efforts towards an "innovation-oriented" spatial policy (Ewers and Wettmann 1980; Ellwein and Bruder 1982; Brugger 1981 and 1982; Thwaites et al. 1981) which however was mainly oriented to technological innovation; organizational and institutional innovation (Stöhr 1985), including the organization of work (Sabel 1982) and of social and economic institutions (Olson 1971 and 1982) was often neglected. But regions do differ widely not only in their factor endowment but also in the degree of their social, organizational and institutional rigidity. Generalized variations in regional rigidity have been summarized in Table 1. But before the knowledge of regional characteristics can bear fruit for policy-making, the micro-economic strategies of firms must be carefully analyzed - especially in their spatial dimensions. Firms' strategies to "survive" (Ballance and Sinclair 1983) or to improve their position in the international division of labour provide extremely interesting learning experiences. Moreover, if we account for externalities which are external to the firm but internal to the region we can analyze the points of conflict and convergence between entrepreneurial strategies and regional development strategies (cf. the Introduction to Part II of this document). In the next two sections of this paper we shall offer a basic theoretical framework for considering entrepreneurial behaviour in the changing international division of labour.

Under the current conditions of reduced aggregate growth rates and increasing international competition, individual firms are pursuing a variety of "strategies for survival". Since we are specifically concerned with the fate of regions, and thus with the spatial division of labour, we shall draw a distinction between "in situ" survival strategies (cf. Diagram 1) i.e. entrepreneurial strategies without changes in location. "In situ" strategies

Table 1. Some (sub-national) Regional Characteristics
in the International Division of Labour

	Metropo- litan core areas <u>a/</u>	"old" industrial areas	Traditional handicraft areas <u>b/</u>	Peripheral rural areas <u>a/</u>
Cost of labour and degree of labour organization	high	high	varying	low
Cost of land and rigidity of land use regulation	high	high	varying	low
Diversity of qualification in labour market	high	low	high	low
Degree of sectoral diversi- fication of economy	high	low	varying	low
Use of economies of scale (including size of firms and their dominance in regional economies)	high	high	low	low
Use of agglomeration economies and local concen- tration of activities	high	high	varying	low
Degree of organizational and institutional flexibility	varying	low	high	varying

a/ In developing Third World countries frequently only the first and last of these regional types exist as these countries rarely had early industrialization and their traditional handicraft frequently had been destroyed by industrialized countries' competition.

b/ Cf. for instance the crafts areas in the "third Italy" and in Southern Germany analyzed in Sabel 1982 and in Piore and Sabel 1983, further discussed below.

roughly correspond to what is commonly referred to as "structural change" (UNIDO 1981). Besides, "in situ" strategies firms can change the spatial distribution of functions (cf. Diagram 1) i.e. they can spatially "redeploy" (UNIDO 1981, p. 14ff) either by extending activities to additional or new locations, by redistributing entrepreneurial functions among existing plant locations, or by combining the strategies of expanding and redistributing.

3. Entrepreneurial strategies for "in situ" structural change (cf. Diagram 1))

(The following is modified and regrouped from Ballance and Sinclair 1983, p.189 ff)

3.1 Local factor cost cutting strategies e.g. in the form of

- reducing the cost of the most abundant local factor, which in less developed areas usually is labour, either by reducing wages per time unit or by reducing the number of workers or hours worked. This accords with Ricardo's trade theory. The feasibility of any of these strategies will depend on the degree of organization of labour and/or on the availability of alternative sources of income in the region.

- reducing the cost of natural resources.

Both strategies of reducing wages and the cost of natural resources are applied mainly in peripheral areas or countries where labour or natural resources are abundant, their markets are little organized and where competitiveness can be increased by reducing their cost. Particularly in countries lacking democratic institutions and autonomous labour organizations this is often used as an explicit strategy. In core areas or old industrial areas where labour is usually more organized and has more power, a reduction in the number of workers is usually attempted by firms.

3.2 Spatial penetration strategies

These may be chosen where the above mentioned strategies are not feasible because of the existing territorial-political or social environment.

Alternatives are the spatial extension of input or market areas either by :

- the import of low-cost raw materials or semi-finished inputs (Ballance & Sinclair 1983, p. 194),
- the import of cheap external labour, e.g. in the form of guest workers or commuters, or
- market expansion and market channel investment (Andersson and Johansson 1984, p.4).

Diagram 1. Entrepreneurial "Survival" Strategies

Spatial Strategy Dimension →

Functional strategy dimension ↓	3. "In situ" structural change		4. Spatial redeployment	
	Firm related strategies		3.2 "Spatial penetration": spatial extension of input/market areas	
	3.1 Factor cost reduction or "deregulation" of :	Natural resources: Land → Labour →	Extension of low cost input areas Migrant labour →	4.1 Move to locations with lower factor cost/easier regulations Condition: Substantially lower wages and/or deregulated labour market → Standard production for homogeneous output
	3.3.a Process innovation	Standardization of technology and economies of scale →	Market penetration →	4.2 Market "toe-hold" strategies (espec. if protected market) → Capital intensive production
	3.3.b Product innovation ("new" product yields monopoly rent)	Product differentiation Extension of product's life-phase Product substitution Product innovation Flexible specialization		4.3 Export of adjustment needs to other areas: - functional spatial segmentation (key/routine functions) - sectoral spatial segmentation. - integral firm/production transfer (only if know-how monopoly can be retained) - components strategy
3.4 Market segmentation	Differentiation stable/unstable demand ("dual economy" segmentation) Low market share strategy Focussing strategy Harvesting strategy Labour market segmentation		Small firm decentralization strategy (for unstable demand)	

These latter strategies, in contrast to the forementioned ones, are frequently applied in highly developed core areas/countries (an example is the strategy of the electronics industry in the US, which consisted in looking for cheaper sources of foreign labour while that of Japanese electronics industry instead was to adopt product design that incorporated solid-state technology - Tyson and Zysman, 1983, p.37). They are frequently combined with process innovation permitting the realization of greater economies of scale; however, they frequently substitute product innovation and delay long-term structural change. These strategies will also tend to increase capital intensity instead of knowledge intensity which is the basis for continued innovation. While they usually permit short-term productivity increases, they usually cause medium and long-term losses in innovative potential. They furthermore require ever increasing markets, which with reduced aggregate growth rates and the entrance of new competitors in these markets becomes less and less feasible. These strategies finally require a firm's (location's, region's etc) specific ability to organize and operate large-scale production, finance and marketing systems and to implement operational control of complex systems which some social systems seem to facilitate much more (e.g. Japan, cf. Tyson and Zysman 1983, p.31) than others (e.g. Britain, cf. Caves 1980).

3.3 Innovation strategies

These are likely to be applied if local cost cutting strategies or spatial penetration strategies are not feasible (e.g. due to lack of cheap external labour or to lack of access to potential markets). Innovation strategies may be related to :

- a) - process innovation, reducing cost by the introduction of more standardized technology and economics of scale for the same products, usually in their mature phase. They are spatially usually applicable to semi-peripheral industrial areas with low innovation potential but with access to cheap labour and to large markets.

or to different product innovation strategies such as :

- b) - product differentiation strategy introducing a "sufficiently differentiated product to command a price premium" (Ballance & Sinclair, 1983, p. 194). This strategy is frequently applicable to products in their third phase and with usually already declining demand;

- extension of a product's life phase by innovation - either by return to its earlier phase or by extension of the product's maturity phase (p.192). Examples are the prevailing strategy of the Japanese electronics industry or the "rejuvenation" of industries in France by the introduction of electronics to help cut unit costs in "threatened" industries since 1982 (Ballance & Sinclair 1983, p. 187);
- product substitution i.e. the substitution of specific product lines by others (Ballance & Sinclair 1983, p. 192);
- product innovation i.e. the introduction of new products, usually corresponding to the first product phase. Locationally this is frequently considered characteristic of metropolitan core areas. It has been shown however that through
- "flexible specialization" (Sabel 1982), i.e. by applying a specific flexible technology (e.g. numerical control) to the production of changing products. This strategy can also be applied in decentralized form in peripheral areas, which as Sabel has analyzed for Northern Italy (Sabel 1982; see also the introductory essay to Part II). It can also be applied to commodities in their later product phases, as long as they represent speciality lines experiencing substantial growth of markets (Piore and Sabel 1983). This can also be considered as a flexible segmentation strategy, related to what will be discussed in the next point.

3.4 Segmentation strategies

These strategies consist in a segmentation of markets (usually commodity but also labour markets) for the maximization of profits and competitiveness. The basis here is the

- dual economy segmentation strategy (Berger and Piore 1980) in which certain firms, usually the larger and technologically most advanced ones ("the core of the economy", or the "primary sector") cater only to the stable component of a product's demand, while "peripheral", usually smaller firms (the "secondary sector") apply less-refined and

less product-specific techniques principally to satisfy the fluctuating component of demand (Sabel 1982, p. 35). The "core of the economy" thereby predominantly applies Fordist mass-production technology in concentrated form while "peripheral" firms apply flexible technology in usually decentralized form. On the part of large firms in the "core of the economy" this at the same time is a strategy to externalize instabilities and increase market predictability for themselves (Tyson and Zysman 1983, p.30).

If in these large firms union and work organization becomes too rigid, however, Piore and Sabel (1983) have shown that "one phase of production after another shifted to the artisan sector - or, when economies of scale make that impossible, to subsidiaries abroad" (p.396). In the case studied by these authors rigid labour and work organization has apparently prompted redeployment. Interestingly enough, however, it has prompted in its new decentralized organizational and geographic pattern a broadly based endogenous innovation complex (cf. the introductory essay to Part II).

The following strategies follow Porter's (1979, 1980) "generic" segmentation strategies based on his business portfolio matrix. Three of these strategies seem to be particularly relevant here, and complement Piore and Sabel's findings, namely :

- "Deliberate low market share strategy" (Ballance & Sinclair 1983, p.196) which encourages a firm to "segment, segment, segment" (Hammermesh et al. 1978, p.98) by carefully selecting its target market and its product range in order to maximize its profits. Connected with it is Porter's

- "focussing" strategy which concentrates on particular client groups or regions, stressing the profit possibilities of focussing on such "niches", intensifying the hold over a smaller and more segmented portion of the accustomed market and relinquishing mass-marketing, and finally

- "harvesting" strategy which contains a carefully timed withdrawal from the cheaper segments of the market while concentrating resources in more carefully defined segments of it (Ballance and Sinclair 1983, p. 5, 196).

These latter three strategies are closely related to Piore and Sabel's (1983) concentration on speciality products mentioned above. They however add technological flexibility on the input side, to improve supply of, rather than just to segment (the most profitable parts of) the market.

- Labour market segmentation strategy. Similar to the forementioned segmentation strategies on the commodity market, firms also undertake similar strategies on the labour market in order to externalize the cost of instability. The hypothesis is that firms, in order to minimize the effects of external instabilities, create vertical internal labour markets in which workers' ascent is regulated by intra-firm negotiated norms and thereby sheltered from the price, qualification and allocation mechanism of the external labour market (Doeringer and Piore 1971, Buttler and Gerlach 1982). But empirical evidence on the regional implications of these segmentation strategies on different types of regions is still scarce (Buttler and Gerlach 1978).

All these strategies will cause adjustment costs which in part have to be borne by individual firms, in part by the respective localities, regions or national governments.

4. Entrepreneurial strategies for (spatial) "redeployment" (cf. Diagram 1)

This second group of entrepreneurial strategies involves a spatial redistribution of functions in order to maximize the fulfillment of a firm's objectives. It must be assumed that these strategies are chosen if the adjustment costs (Tyson and Zysman 1983, p.41 ff.) of in-situ structural change are considered higher than those of a spatial redeployment of functions. This redeployment can encompass the entire firm or only certain functions in which case the increased segmentation possibilities offered by

modern technology (cf. section 1) are usually utilized. As Tyson and Zysman (1983) put it, "the struggle over the pace of adjustment and its distribution lies at the core of new international economic and political conflicts" (p.26).

4.1 Move to locations of lower factor costs/regulation

This happens particularly by:

- moving to areas with lower cost/degree of labour organization if in-situ wage reduction strategies (cf. 3.1.a) seem unfeasible. In this case either the entire production process or certain segments thereof - usually those with standard-production characteristics for homogeneous output - are "redeployed" to areas of low wages and low degree of organization of labour according to what Fröbel et al. (1977) and Stuckey (1980, p.38) call the "Babbage-principle". While this strategy usually increases the magnitude of employment opportunities and of production in the recipient regions, it tends to produce low skill intensity (UNIDO 1981, p.80) and few regional innovation effects, and tends to erode existing regional activities and create a segmented regional labour market.

At the international scale lower labour costs still appear as the most important reason for industrial redeployment to LDCs (Borner 1980, p.25; UNIDO 1981 p.71). Within nations this motive is of less importance and has caused spatial redeployment particularly during high growth periods when absolute labour market bottlenecks existed in the major core areas.

- access to raw materials and energy or lower cost thereof are a motive of reduced importance for international redeployment (UNIDO 1981) while the absence of environmental regulations in LDCs seems to lose attraction for redeployment as enterprises planning new investments increasingly appear to anticipate future environmental restrictions also in LDCs, as was shown for firms in the FRG, France and the USA (Knödgen 1984). Within nations, differences in these restrictions are usually relatively small and therefore as single factors have a minimal influence on redeployment, except in large federal countries where they may be subject to differentiated State legislation.

4.2 Market "toe-hold" strategies

To gain access particularly to protected markets, firms and especially TNCs have tended to move to, or establish branch plants in, their target countries. Market access was the second most important motive for international industrial re-deployment, particularly in capital intensive industries (UNIDO 1981, p.80). Frequently this was guided by the objective of an integral penetration of these markets, and to assume an oligopolistic/monopolistic role in these markets (Borner 1980, p.25). This often took the form of the acquisition of existing national firms in order to get a "toe-hold" in that market (Ballance and Sinclair 1983, p.181). Within countries, the very large and physically unintegrated ones excepted, this motive is of little importance due to the unity of national markets.

Further spatial re-deployment strategies are :

4.3 "Export" of adjustment needs to other locations, regions, or countries (UNIDO, 1981, p.21)

While governments may do this via fiscal measures, foreign exchange, trade or protective policies, individual firms apply various forms of specialization and spatial segmentation strategies for similar purposes such as:

- functional spatial segmentation within firms by the spatial separation/transfer of specialized entrepreneurial functions ranging from key functions at one end (decision-making, planning, R & D etc.) to routine production functions at the other end (cf. also Massey 1979, Bade 1984). Within this functionally specialized multi-locational network, firms are able not only to choose the optimal location for each specialized function, minimizing externalities, but also to "export" adjustment costs to branch plants or to "peripheral" locations (Healey 1982) by transfer pricing mechanisms or by the physical transfer of functions. Part of the spatial redeployment of activities resulting from their position in the product cycle and the "age" of a product (as described under 1

above) also takes place in this framework. Parallel to this - and in part related to it - functional segmentation within firms is taking place.

- sectoral spatial segmentation as the aggregate territorial result of firms' decisions and the consequent spatial distribution between different sectors (primary, secondary, tertiary, quaternary etc.) on the free market. This well-established phenomenon is the result of differences in scale economies, mobility and importance of immobile factors for different economic sectors. In addition, the functional spatial segmentation of multi-regional firms discussed in the preceding point has led to e.g. the increasing integration of production-oriented tertiary activities in multi-regional firms (or their discontinuation) in many (particularly non-metropolitan) regions or locations, making them unavailable or not fully available for the region. This is particularly true for the service sector (tertiary and quaternary, including consulting services, information processing, research and development, etc.) which for a long time has been considered a non-basic, "derived" sector and only recently has been recognized as an important "driving" sector for regional development.

For the USA Noyelle (1984) e.g. has found an increasing spatial separation between "intermediate" services catering mainly to industry and of "final" services catering mainly to household demand, creating a highly biased potential to attract modern industries for the various regions. The emergence of high-technology parks as a national or regional policy instrument is related to this trend (cf. the introductory essay to Part II). Another facet of this functional and spatial segmentation is the emergence of

- Components strategies in which a multi-regional and multi-national network of components suppliers is knit together by a few major assemblers. This was particularly successful e.g. in the Japanese car industry where the essential feature in gaining additional markets was the "restructuring not of the assemblers but the

components sector. And without the competitive components sector, the assemblers could not have made their world break-through" (Tyson and Zysman, 1983, p.36). The general view prevails however that in the Japanese case there exists a marked hierarchical relationship between the small subcontractors with poorly paid and unstable jobs and the large firms with predominantly life-long and well paid employment, the latter to a considerable extent benefiting from the first group.

In crisis situations such an inter-regional/national components supply network however spreads crisis repercussions as fast as it has diffused marginal benefits during boom periods.

A case with a similar origin but quite different outcome is the

- small firm decentralization strategy analyzed by Piore and Sabel (1983) in "third Italy" with a "vast network of very small enterprises spread through the villages and small cities of central and Northeast Italy, in and around Bologna, Florence, Ancona, and Venice" (p.392). There increasingly rigid employment and work conditions and rising tax burden of the large North Italian factories led to a transfer of production to small and decentralized firms. The latter, by the development of sophisticated technology adapted to small-scale production, and by increasingly marketing their products not only to large firms but also independently, could "break the big firms' control over the definition of their products'" (p.398) and develop into a large sector of highly innovative, extremely flexible, mutually co-operating small and decentralized firms, to a great extent thriving and self-determining. Piore and Sabel (1983) consider "certain long-established features of Italian society", among them the centuries old handicraft tradition, the extended family and the family workshop, as well as a set of political and legal provisions favouring small enterprise as a helpful though not exclusive condition for achieving this pattern of development (pp.406 ff.). We shall revert to this example again in the previously mentioned essay in Part II of this volume.

Basically, it can be hypothesized that firms will try to minimize friction cost and in their strategy choices will first attempt local cost reduction (cf. the top left of Diagram 1), along with spatial penetration on the input and market sides and the standardization of production processes with capital intensive ("Fordist") technology. Firm strategies will therefore tend to shift from top left to bottom right in Diagram 1, under external pressure.

Given the relatively high cost and risk of new product development it may be assumed that product innovation is only undertaken when growth and profit opportunities on the basis of these strategies decline - because wages cannot be reduced further, and/or because accessible markets become fully penetrated with "old" products. Thus, it seems reasonable to assume that innovation and particularly product innovation will be prompted by external (including spatial) bottleneck situations. Local/regional policies which primarily try to reduce emerging bottlenecks therefore in fact may be impeding or at least delaying innovation.

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Manuel Castells

**TECHNOLOGICAL CHANGE, ECONOMIC RESTRUCTURING
AND THE SPATIAL DIVISION OF LABOUR**

1. Introduction

Cities and regions, worldwide, are undergoing a fundamental change under the combined impact of two intertwined processes: the current technological revolution, particularly in the fields of micro-electronics and communications, and the restructuring of capitalism (and of the international economy) to supersede the world crisis of the 1970s. This paper explores the connection high technology, economic restructuring and the urban-regional process, resulting in a new spatial division of labour internationally, interregionally and within the large metropolitan areas.

The current process of technological change is characterised, as everybody knows, by the fact that it represents a new form of production, based on information and knowledge as the major sources of productivity. Yet, its development is taking place within the existing modes of production (capitalism and statism) whose logic it tends to reinforce. Furthermore, high technological activities are largely determined by their role in the process of economic restructuring taking place in all capitalist countries, and therefore, in the international economy, as such economy is basically shaped by the logic of advanced capitalism.

Thus, to understand the structural sources of the new spatial division of labour, we have to recall the main trends of the process of economic restructuring, as well as the specificity of the process of production generally identified under the term "high technology".

High technology refers to something else than to a new technique of production. It is a new form of production (based on information), and therefore, of social organization. But its development is taking place within the context of the fundamental restructuring of our economic system. It is irrelevant to ask which comes first. Both processes, the restructuring of capitalism and the informational mode of development, are historically linked. They go together, reinforcing each other. Today, we are not in the crisis any more (though we might be soon in another recession). We are rather in the phase of implementation of economic policies aimed at reorganizing the very bases of the model of accumulation within the realm of capitalism (cf. Castells 1980a; Carnay 1983; Bowles, Gordon and Weiskopf 1983; Bluestone and Harrison 1984; Carnay and Castells 1984). Though "Reaganomics" have generally

been associated with the main premises of this new model, we would not like to reduce the debate to a simple critique of the policy of a given U.S. Administration. In fact, the Reagan Administration has considerably departed from some key postulates of Reaganomics, such as the reduction of the government deficit. To understand in-depth the process of change we are undergoing, we have to look at the essential, lasting elements of the new economic model that is being put forward both in the U.S. and in Europe (regardless of the political tendency, since similar policies are implemented both by Thatcher and by Mitterrand since 1983), and are also largely imposed on many Third World countries by the means of the requirements of the International Monetary Fund to refinance overdue debt payments:

- a) The first, and most fundamental attempt is to redefine the relationship between capital and labour in the production process, increasing productivity and dramatically reducing labour costs, breaking down, if necessary, the social contract reached between business and organized labour in almost all capitalist countries in the aftermath of the 1930s Great Depression and after widespread social mobilization by workers. So, when things come to the worst, capitalism returns to its most straightforward logic to raise profits: to extract more value from labour by increasing both relative and absolute surplus value, that is trimming employment, containing wages and benefits, and increasing productivity through work speed-up, rationalization and automation.
- b) Secondly, the fight against inflation is led through budgetary restrictions that disregard the social contract also in the sphere of collective consumption, while at the same time the military budget is increased, both to provide markets for the industry and to ensure the new tools of world power. And again, this is true at the same time for the U.S. and for France. It represents what, following the hypothesis formulated years ago by the present author, we call the transition from the Welfare State to the Warfare State.
- c) The third major trend, and the most global one, is the growing internationalization of the capitalist economy with a total interdependency of the different national economies and a new, international division of labour, with the emergence of competitive

economies in the Asian Pacific rim. The interpenetration of the national economies happens at the level of capital, labour, markets, and of the production process, in an economic space of increasingly variable geometry. Corporations, governments and individuals (through migration) all have incorporated themselves into the new dynamics of the international economy. Countries and nations have ceased to be the economic units of our historical reality.

It is our hypothesis that high technology is playing a major role in these processes of fundamental realignment. So, in the following pages we will briefly try to examine the relationship between high technology, the labour process, the transformation of the public sector and the internationalization of the economy. We will also focus, for each one of the three major processes under analysis, on the urban and regional consequences of the role played by high technology in the overall process.

Our analysis will rely mainly on information on the U.S., but we will refer, in a more casual way, to other societies, and we will emphasize the impact of each process on the spatial dimension of the international economy.

2. High technology, labour and the urban process

What we refer to as "high technology" is not an industry, an activity or a device: it is a process, a particular way to produce characterized by the key role that information plays in the production process. In this sense, "high technology" (understood as information-based production) is penetrating everywhere, and most rapidly in those activities where capital finds strong resistance from labour. Thus, it eliminates labour massively (Markusen 1983; Serrin 1983; New York Times 1984). At the same time, because it requires a great input of skills, of knowledge, of managerial capabilities, it greatly expands the sphere of highly-skilled, professional labour, yet falling short of matching quantitatively the jobs it suppresses (Baran 1982).^{1/} Furthermore, the development of information-based production is not limited to

1/ See also P. Walker: The distribution of skill and the division of labour, PhD dissertation, May 1983, reported by Bluestone and Harrison 1984.

manufacturing: it actually requires a concomitant expansion of so-called "producer services", so that the distinction between goods-producing and service-producing industries is increasingly blurred (Stanback 1979). The productivity generated by high technology and the income it induces in the highly-paid professional sectors create the basis (both in terms of investment and demand) for a wide range of service activities and consumer-oriented downgraded manufacturing, fed by labour displaced from other sectors or other countries. Both processes reinforce each other and require each other. So, polarization of the labour force is a fundamental and necessary process of the informational mode of development (Bluestone and Harrison 1984; Thurow 1984). Yet, this polarization does not amount to a new process of class formation, because the two poles are not in direct relationship of production. Both are elements of the same system of polarized growth and re-skilling-de-skilling of labour. But the class relationships have been obscured in the process. To the cleavage between ownership and management introduced in the capitalist pole, we now have to add the cleavage between machines and manual workers, and between information-processing and actual material production spreading all over the labour process. It does not follow that we are in a classless society, but that the relationship between production relations and people's experience is much more abstract, and can be found only at the level of the whole dynamics of the system, which has less and less meaning at the level of social and political practice that emerge around different, more cultural categories and strategic forms of behaviour.

In spite of some uncertainty of existing information, several trends seem to appear quite distinctively in terms of the impact of high technology on the labour process:

- a) By spurring automation in factories and offices, high technology directly suppresses a substantial number of working hours. The fact that this translates into the suppression of jobs is a matter of the social organization of our economy, not of the technology.
- b) By putting pressure on the existing jobs, technological change curbs labour and makes it less resilient to capital's strategies.

- c) While high-tech activities generate new economic growth, and thus jobs, the new jobs in high-tech industries fall largely behind the number of jobs their impact eliminates.
- d) The occupational structure of high-tech industry is characterized by a bipolar distribution of skills, rank and income. Such an occupational structure is amplified by the social characteristics of labour, with white males at the top, women and minorities at the bottom.
- e) By contributing to a more dynamic economy, high-tech does create jobs indirectly. But these jobs tend to be in a growing service sector (basically in business services and in personal services, much less in public services) whose occupational structure tends to follow also the bimodal polarized pattern of high-tech, if anything even more pronounced. So, the new jobs created are less skilled, less paid, more insecure, and above all, less unionized than those destroyed.
- f) Consumer-durables manufacturing that survives automation is dramatically downgraded, as in the low end of the service sector, more and more using immigrant labour (sometimes undocumented in the U.S.), women and minorities.

It does not follow that micro-electronics or biotechnology are part of a capitalist conspiracy to exploit workers. But it is clear that technological change takes place in certain historical conditions and that its use is shaped by these conditions, which in our epoch amounts to being a major instrument in the undermining of the bargaining power vis-à-vis capital achieved by labour through hard social struggles.

Since this analysis refers mainly to the U.S., it seems useful to consider the variation of the effects of high technology on labour in other contexts. For the sake of simplicity, we will reduce these to three situations:

- a) In Western Europe, the strength of the labour movement and of socialist parties (in Italy of the Communist Party) represents an obstacle to the over-exploitation of labour. This is, in our opinion, the main reason

for the tremendous difference in job creation between the U.S. and Europe. During the 1970s, while the U.S. economy generated 20 million new jobs (most of them in services), Western Europe lost two million jobs. This trend is likely to accelerate with the introduction of new technology. The more labour resists, the more there will be an incentive or automation, particularly in the heavily unionized manufacturing sectors (cf. e.g., Getler 1984). New jobs are being created, but many of them, for instance in Italy or in Spain, are being provided by the informal economy, to save labour costs by cutting social benefits (cf. Inchi'sta 1983). Thus, the real debate will increasingly be the sharing of working-time, and the social and political pressures on capital to force the social redistribution of some of the productivity gains of the technological revolution.

- b) In the newly industrialized countries (such as Korea or Brazil), it seems that the tendency is towards a simultaneous increase in the exploitation of labour and in productivity through advanced technology, to increase their competitiveness in the international economy. While this process will still be largely under the financial control of international capital (through the mechanism of lending and of the interest rates dictated by the U.S. economy) the overall process is likely to improve the relative position of NICs as manufacturing centres.
- c) For most of the developing world, including large sectors of the NICs, the new technologies will increase the surplus population, putting political pressure on the public sector to absorb labour in government-sponsored jobs, and fuelling even more a sprawling urban informal economy, as well as the process of migration to the new global or regional work centres.

Now, if we turn to the spatial consequences of the restructuring of the labour process, we can summarize the trends in three major features:

- i) There is an increasing international and inter-regional division of labour between skilled production and routine assembly operations, particularly in high-technology industries (Henderson and Scott 1984;

Storper 1982), but not only for them (Sawyers and Tabb 1984). What the new technologies allow is precisely the disjunction between different operations across spatial distance, with communications being able to restore the necessary links between different production unit (Nicol 1983). There follows a considerable acceleration of the process of uneven development and a disequilibrium of the spatial structure (Weinstein and Firestone 1978; Mollenkopf 1983). The polarization of high-tech dominated production leads to sharp regional cleavages and to the formation of "ghettoized" areas of selective economic activity (of San Jose's Silicon Valley or Boston's Route 128 type), increasingly distant or remote non-metropolitan locations of low-skilled jobs. (Saxenian 1980). And this not only for electronics but for most manufacturing and service activities that can be disassociated in space according to the specific characteristics of their labour force. (Glasmeier, Hall and Markusen 1983).

- ii) The largest metropolitan areas are going through three combined, but distinct processes, within the same space: growth of corporate services and high-tech manufacturing, decline of traditional activities (both in services and manufacturing), and development of the new downgraded, yet booming, economic sectors (cf. Soya, Morales and Wolff 1983). This process of polarized growth creates very distinct spheres, yet it has to relate these spheres within the same functional unit. We observe, therefore, the rise of dualized metropolises that segregate internally their activities, social groups, and cultures, while reconnecting them in terms of their structural interdependency (cf. Sassen-Koob 1984). These metropolises are real magnets at the world level, attracting people, capital, minds, information, materials and energy, while keeping separate the channels of functioning of all these elements in the actual fabric of the metropolis. We are not in a situation of crisis and decline, but in a process of interactive growth between elements that ignore each other, while in fact being part of the same system. We are witnessing the rise of urban schizophrenia. Or, in other words, the separation between cities and society within the same space.

iii) The spatial dynamics of cities and regions of a specific country will depend upon their place within the hierarchy of functions and processes in the international division of labour. For instance, the higher the country in the hierarchy of financial capital, the more advanced corporate services will play a role in its metropolises, and vice versa (Standback et. al. 1981). The larger the traditional manufacturing sector in a given city, the more its decline or rise will depend upon the vulnerability of labour to capital (cf. Bluestone and Harrison 1982). The larger the public sector in a given economy, the more the dynamics of regions and cities will be relatively autonomous of international flows of capital and commodities. Thus, to some extent, the relationship between labour, capital and cities is itself determined by the global dynamics of capital and by the specific form these dynamics take within the socio-political context of each country.

3. High technology and the spatial form of the Warfare State

The most far-reaching element of the current economic restructuring is the transformation of the role the State has held in the economy for the last 50 years (Crouch 1979; Carnoy, Sherer and Rumberger 1983). Not that it is withdrawing from economic interventionism, quite the opposite. But the form and context of government intervention are deeply changing, shifting from accumulation and redistribution to selective accumulation and military reinforcement. It would be a mistake to consider this trend solely as a product of the Reagan Administration, though its policy represents a qualitative step in this direction (Palmer and Sawhill 1982). But the last two years of the Carter Administration already showed a significant reversal of the redistribution role of the State, actually echoing policy orientations developed by the Nixon-Ford years. And in Western Europe similar orientations toward retrenchment of social expenditures and to the imposition of strict limits on collective consumption are apparent in Thatcher's England, in Mitterrand's France, in Kohl's Germany and in Craxi's Italy ("Problemi della Transizione" 1984).

The Welfare State is in crisis (OECD 1981), not because of excessive social transfers, but because an increasingly older demographic structure,

combined with increased costs of health care and higher unemployment, underline the conflict between private appropriation and collective redistribution of the economic surplus. Thus, when the state was riding the crest of economic growth with socially accepted inflation during the 1960s, it could provide both for social welfare and for capital investment, including the military and aerospace expenditures. In the case of the U.S., the Great Society's programmes, the Viet Nam War, and the "Man in the Moon" were financed at the same time. But price of doing it without excessive taxation was precisely increasing government borrowing (particularly at the state and local level) and money supply, triggering an inflationary trend that went out of control, once energy and food prices skyrocketed. In other words, to buy social peace and pursue social redistribution without altering its support of capital investment and business profits, the government (all governments) financed their expenditures with inflationary measures. When, to curb inflation, they had to choose between different chapters in the Budget, they went on trimming social expenditures, precisely at the moment when the economic crisis created more hardship for more people in all countries. The retrenchment of the Welfare State has been particularly pronounced in the sphere of human and community services (Hirschorn 1983). The partial dismantlement of the Welfare State in the U.S. and the impact of this trend on urban programmes and services have been documented by Norman J. Glickman, in one of the most synthetic studies on the matter (Glickman 1983). He shows a dramatic and rapid reduction from 1979 onwards, from 12.4 per cent of federal outlays to 9.1 per cent in 1982 and a projected 7.5 per cent in 1984.

In a parallel movement, the emphasis of federal spending has been shifted to defense spending. Arms demand, and thus arms production, has soared on a world level. While countries such as France, Israel, Italy, West Germany, England and Brazil (not to mention the USSR!) are active exporters in the weaponry business, the U.S. is the leading producer and exporter in absolute numbers. According to the Boston Study Group, U.S. production accounted in 1970 for about 20 per cent of total arms transfers in the world, and the figure in 1982 was 45 per cent (reported by Markusen 1984). The movement is accelerating: in 1974, foreign sales of U.S. weapons amounted to \$10 billion; in 1982, to \$21 billion, and in 1983, the projection was \$31 billion (Klare 1983). Concerning its own military spending, the U.S. Government is engaged

in a massive build-up, particularly since 1980: actual spending rose from \$156 billion in 1981 to \$205 in 1983. But the real acceleration is yet to come: the Reagan proposal for 1985 was \$264.4 billion, and for 1989, if re-elected, an astounding \$398.8 billion. To complete the picture of military spending we should also include a proportion of the budget of other administrations (such as an estimated 25 per cent for NASA), the Department of Energy (nuclear-related research), CIA covert operations, and National Guard expenses (supported by individual states).

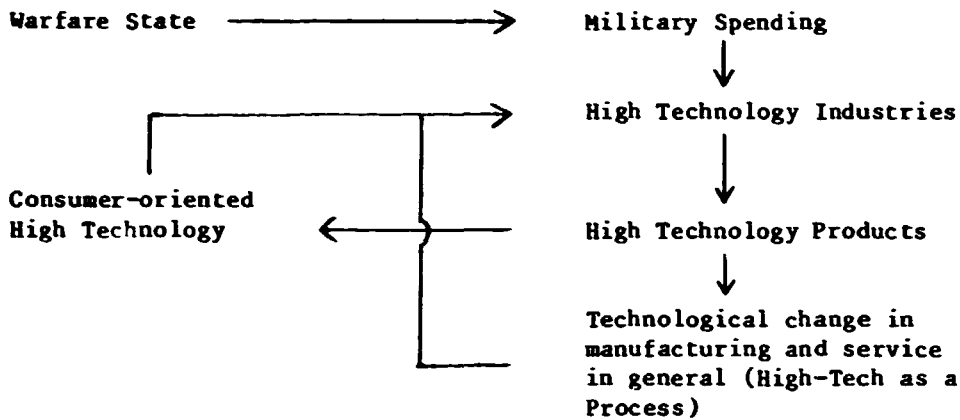
The tendency is very clear in the world in general and in the U.S. in particular: fiscal austerity for social expenditures, and tremendous expansion of military expenditures (Dumas 1982; Gansler 1980). We are witnessing an increasing militarization of the economy, as Martin Carnoy and myself have argued elsewhere (Carnoy and Castells 1984). Why is this so? Certainly, any trend related to the state has primarily political roots (Carnoy 1984). Increasing competition between the superpowers, struggles of liberation in the Third World, manipulation of national antagonisms both by governments and by foreign agents, fights of influence over countries between the West and the East and a rampant Cold War are all elements of an increasingly tense and dangerous world. The response, particularly in the U.S. after the defeat of Viet Nam, has been to raise the stakes, using the technological superiority of the West to try to alter the balance of power with the ultimate illusion of winning an advantageous edge that will enable the U.S. to impose its conditions around the world. The Soviet Union followed the same logic, having committed itself to a military build-up even greater than the one by the U.S. in proportion to its GNP, and the process has spiraled. The national states in general, and the American State in particular, are getting ready for war, and for war of all kinds, from an all-out war to a limited commando operation, passing through "limited local nuclear wars" or large-scale battles with conventional weapons and, of course, military support and training for subrogated armies.

The current economic restructuring is fundamentally shaped and conditioned by this political-historical trend. It is not the other way around. It is not because of the economic crisis that governments engage in military spending. This is too mechanistic a view of how governments

operate. What is true is that the economic crisis has increased international tensions, creating a favourable environment for the military build-up. But the defense policy itself has deeper historical and political roots that we cannot analyse here, in this already too broad essay. What matters for our subject is that the State, while disengaging from its commitment to Welfare (having politically subdued, at least for now, social resistance to austerity politics), has engaged itself in war-preparation activities. And the economy, whose dependency on military expenditures was decreasing during the 1960s and first half of the 1970s, is now being restructured around a core of highly profitable industries directly related to military production. And here is where high technology enters into the picture.

Many of the technological breakthroughs of the past 40 years, particularly in the field of electronics, have been induced or supported by military demand or the space programme (cf. Carlson and Lyman 1984). The emphasis on performance, the low elasticity of price, and the abundant funding, characteristic of the military, were key elements that helped scientific research and technological development more than a short-term commercial demand, necessarily concerned with market profitability (cf. especially Mutlu 1979). In this sense, the State continues to be the Prince for scientists and researchers, provided they accept the lack of control over the use of their inventions.

Nevertheless, during the mid-1970s, consumer products and new machinery were becoming increasingly important applications of high technology, especially in electronics. But the new surge in defense spending has reversed the trend in the U.S., actually leaving the lead in consumer electronics to the Japanese. In the U.S. the gigantic military build-up of the last 10 years is spurring the development of high-tech industries, which in turn rely on the defense market to produce a modified version of their products for other purposes. Thus, the process seems to be operating in the following way:



So, we do not pretend that all high-tech is military-related production. But the source of most high-tech industries is, and this has a necessary impact on the type of high-tech industries, on their products, on employment and, as we will see, on the urban and regional consequences of high-tech induced economic development. But, it should be clear that the growing militarization of the U.S. economy is not a result of high technology. In fact, the Japanese experience shows that high-tech can expand very rapidly in consumer-oriented, or even in social-service oriented products. And many current developments in the U.S. also follow this pattern (from computer-stimulated walking systems for quadraplegics to factory robots). But the bulk and the core of high-tech manufacturing, and therefore of the characteristics of the technologies being researched, are connected to the military market.

Ann Markusen is currently pioneering research in this field. On the basis of her own study and on another empirical study by David Henry, she shows that: "heavily defense-dependent manufacturing sectors are dominated by those in the high-tech category, and that a substantial proportion of high-tech industries are important military suppliers" (Markusen 1984). As she points out, the effect of the Reagan Administration defense build-up is particularly visible in the growth of defense output in all but one of the 36 four-digits sectors studied. A striking figure is the 141 per cent defense output growth in electronic computing equipment. In her study, Markusen calculated that these 36 sectors of military-related high-tech production accounted, in 1977, for 47 per cent of all high-tech manufacturing employment. Given the rapid increase since 1977, the proportion is likely to

be higher now and, if we consider the projections, it will be even more so in the near future. Also the regression analysis by Glassmeier, Hall and Markusen (Glassmeier, Hall and Markusen 1983) showed that defense spending per capita across a set of 226 metropolitan areas was the most significant variable explaining high-tech dependence in the economy of a given metropolitan area, a result that is confirmed by a completely independent study carried out by Steven Pinkerton on the distribution of high-tech manufacturing among the American states (Pinkerton 1984).

Numerous empirical studies all go in the same direction of establishing an intimate linkage between high-tech production and military procurement. For instance, a study found that, in 1970, defense spending paid for the jobs of 48 per cent of all aeronautical engineers, 23 per cent of physicists, 21 per cent of electrical engineers, 19 per cent of all mathematicians and 16 per cent of industrial engineers (Dempsey and Schurde 1971). And another study reported that 59 per cent of aeronautical engineers, 38 per cent of physicists, 22 per cent of electrical engineers, 20 per cent of technical engineers, 22 per cent of electrical engineers and 20 per cent of metallurgical engineers were employed by the Defense Department or by defense-related industries (Rutziak 1970). Thus, the expansion of high technology production in the U.S. is, in general, a direct consequence of the militarization of the economy, although its impact on the economy, on the society and on spatial forms goes far beyond the original matrix.

This evolution from the Welfare State to the Warfare State is reshaping the urban and regional structure of the U.S. Norman Glickman has attempted to measure this impact by calculating the rates of growth and decline of federal outlays for selected programmes, between 1981-1984, for different cities and regions, typologized by a number of key variables (Glickman 1983). He shows that all welfare-related programmes decline substantially, while defense spending increases sharply, particularly in the chapter "procurement". But even more interesting is the fact that inter-city and inter-regional variations of both social and defense expenditures follow almost systematically opposite patterns. Defense spending increase is more pronounced than average in high-income, non-declining, low unemployment and "low-hardship" areas; in medium and small, rather than large cities; and

overwhelmingly concentrated in suburbs, though this last result (interestingly enough) is exclusively due to the high suburban concentration of defense procurement. In terms of regions, while concentration ratios for social expenditures vary across the country, depending upon programmes, defense expenditures are heavily concentrated in the West, South Central, South Atlantic, Mountain and particularly in the Pacific regions.^{1/} A study by Glassmeier, Hall and Markusen also reports similar trends with high-tech defense-related activities being the most spatially concentrated of all high-tech sectors, and showing a preference for the Southwest and the West, for medium-size cities and for suburban locations when they are adjacent to large metropolitan areas (Glassmeier, Hall and Markusen 1983). Why is this so? Markusen proposes a number of reasons: large extensions of undeveloped land are required, both for building the huge material structures and for the requirements of testing equipment; clear weather all the year around, for easy testing of aircraft and missiles; skilled labour, isolated from the metropolitan environment, and if possible from unions, located in self-contained residential communities close to the production facility. But the main reason seems to be historical and cultural: the existence of huge military bases (for instance linked to the war in the Pacific) and the anti-urban, anti-"big city world" feeling of the military, particularly significant if we consider the sizable cross-over between the army and management positions in the military industry. Also, Western and Southwestern states have consistently lobbied to attract military-related production facilities. Ann Markusen poses the question of the spatial form of the military-industrial complex. Could it be the endless southwestern desert or the infinite Pacific Ocean, ridden by the last cowboys, the nuclear cowboys, in their winged, jet-propelled horses, coming back in the evening to their small, clean town, to pray in the community church together with their family, which also has remained nuclear and indestructible?

Whatever the reasons, it is clear that the military connection of most high-tech activities, induced by the State, has had an enormous impact on the spatial dynamics of the U.S., shifting investment, jobs and people toward new lands in the outskirts of the metropolitan areas, and in the southern and

^{1/} For a map of U.S. regions see Bluestone's contribution to this publication.

western regions where new activities and new social environments could be recreated, far way from the constraints of a State that was the depository of the social contract agreed upon by classes after decades of struggle. The new urban and regional landscape segregates social universes besides classes or races, adding a new cleavage to the already existing forms of segregation. It is the cleavage between the emerging production system, determined by the Warfare State and generator of a new culture (still unnamed) (cf. Saxenian 1984), and the declining system of production and social organization, in which the State had become too deeply penetrated by interest groups and historic compromises to be an adequate tool for the economic and political elites. The restructuring of the State actually precedes, and determines, the restructuring of the economy, itself relying on a high technology-led process of production, that fundamentally reshapes of spatial forms. The Welfare State was born in the furnaces of life of the large inner cities. The Warfare State expands over an abstract space of distance and silence.

4. The new international economy, technological change and spatial structure

The growing internationalization of the economy is a fundamental element of the economic restructuring under way in the capitalist system. Though it has been a crucial feature of the expansionary period of 1945-73, the crisis of 1974-75 and the subsequent policies of both corporations and governments have increased the interdependency of the national economies, trying to overcome the crisis by winning a competitive edge over other economic units by investing, producing or selling in the most advantageous locations at each particular moment.

The process of internationalization concerns certainly the exchange of commodities, but international trade is by no means the most important, let alone the newest, aspect of the new world economy. The process of internationalization also concerns capital flows, migration of labour, the production process, and the organization of management of economic units (cf. Fröbel et.al. 1980; Portes and Walton 1981). The combined result of this process is a complete reorganization of national economies and of their spatial structure, and this is even more so for less developed and newly industrialized countries.

Which are the main features of such a process? First of all, the organizational logic of multinational corporations gives support to the tendency toward a space of flows attempting to supersede the space of places.^{1/} Nevertheless, at the same time, the global reach of the corporation needs a network of advanced services, a material infrastructure, a series of communications facilities, and even a social milieu, that have come to be associated with the high-ranking downtowns in the largest metropolitan areas of the world (cf. Cohen 1978). So, we find both a tendency toward the delocalization of the logic of the economic process, and toward the concentration of decision-making units in a few commanding heights of the international economy. Secondly, much of high-technology manufacturing epitomizes the new spatial division of labour, with the locationally distinct hierarchy between research and design and assembly-line operations, the latter spearheading the new space of global production. Furthermore, high technology makes possible, and actually accelerates the internationalization of the production process (cf. Trachte and Ross 1983) at three levels:

- a) Because the value of the products in high-tech is increasingly linked to their informational component, the light weight of many of these components, together with transportation technology, facilitate the spatial division of labour.
- b) The process of automation and the increasing precision of machine tools (particularly numerical machines and the robotization of the assembly process) make possible a large-scale standardization of the components of most manufacturing activities, and their recombination wherever the location appears to be more convenient.
- c) The growing importance of skilled professional labour and the decreasing importance of unskilled labour in high-tech reorganized manufacturing reinforce the trend toward the decision to locate high-level operations in a few limited areas of the world, while leaving a very broad choice of

^{1/} For a development of this hypothesis on the emergence of a space of flows, see Castells 1983b.

locations for routine operations, including fully automated plants closer to the company's basis. The application of high technology to all manufacturing definitely segments the production process, thus favouring its internationalization.

In the third place, we should remember that high technology is, above all, a new process of production and management. Therefore, the more the economy becomes open, internationalized and competitive, the more the appropriation of high-tech, and its implementation in the factories, offices and communication systems of a company or of a country become crucial in winning a competitive edge. In this sense, the internationalization of the economy tremendously reinforces the growth and the importance of high technology activities. Furthermore, because of this importance, investment in high-tech production, or the conquest of the growing markets for high-tech products become key elements in the strategy to dominate the international economy. The competition between Japanese and American companies in electronics, or the global battle over telecommunications systems illustrate at which point high-tech sectors have become the decisive economic elements (and not just the technological ones) in the new worldwide competition for wealth, information and power.

Fourthly, given the strategic role of high-tech sectors in the international economy, their development creates a new structure of international dependency (and not just interdependency) between countries, companies, regions, cities and social groups. Without access to the know-how, whichever the speed in the diffusion of innovation, countries or economic units will always be under the structurally prevailing logic of the dominant poles of the system (even if they succeed in being better off in absolute terms), as far as they continue to play by the current rules of the international economy.

Which leads us to our last, and fundamental point. Because of the political, indeed historical implications, of repositioning in a world economy increasingly internationalized and structured by high technology, national governments (or even local and regional governments) cannot be limited to their traditional roles. As Zysman and Cohen have indicated in their

comprehensive study of recent trends in the international economy (Zysman and Cohen 1982), the developmental states, (whichever the type: Japan, France or Brazil) have forcefully entered the arena of economic restructuring with international competition as their main concern. It follows that transnational corporations are not alone in the "game" any more, and that the national states try to recover the initiative they have lost to the private sector, by using their resources and influence both as national political actors and as international economic actors. It follows that national industrial policies, geared toward the new connection between high-tech and the world economy, become the core of economic restructuring, and therefore of urban and regional reorganization.

We will now summarize the trends we have been able to observe in the spatial restructuring under the conditions of the new international economy.

- 1) The internationalization of the economy actually reinforces the spatial polarization between sectors in different regions and their metropolitan areas (Glickman 1980). For instance, in the U.S., since manufacturing exports are decreasing and manufacturing imports are on the rise, the old-line industries are increasingly hurt by international competition. Furthermore, outflow of capital investment (for instance in the automobile industry), and shifts of capital toward the promising new high-tech sectors will augment inter-sectoral differentiation, and therefore the distance between spatial areas we have been able to associate with each economic sector.
- 2) Yet, this general tendency has to be qualified on two grounds in the case of the U.S.:
 - Given the importance of agricultural exports, and the foreseeable jump in agricultural productivity through biotechnology, the new international economy favours the farming states, particularly in the Midwest, but only as far as they are part of the international agro-business complex (Glickman 1980).

- Direct foreign investment is likely to counteract some of the de-industrializing processes of regions and cities (Business Week 1984). Yet, it will look for locations with low labour costs, therefore likely bypassing strong union cities and interventionist local governments (Schoenberger, forthcoming).

- 3) The concentration of economic power on a world level in a few hundreds of major corporations is spawning growth of advanced corporate services and headquarters in a few major metropolises, consolidating the formation of what Friedmann and Wolf have called the world city (Friedmann and Wolff 1982). We would just like to add that an internal hierarchy exists between world cities, and that what should be emphasized is the crucial role of communications for the formation of world cities, and vice versa, the cumulative structuring of communication networks around the communication hubs that world cities come to represent.

- 4) The new process of international migration concentrates a new labour force, and therefore the informal economy, precisely in these world cities, whose "underground" component has also to be underlined as a part of the same system. The urban informal economy is part of the same process of restructuring represented by the internationalization of the economy (cf. Proceedings of the International Seminar 1984).

- 5) Finally, perhaps the most striking effect of the new international economy on cities and regions is the loss of their autonomy vis-à-vis the worldwide economic actors that control their activities in terms of a global logic largely ignored and uncontrolled by local and regional societies. Economic units whose size and transnationality place them above social pressures and political controls determine the rapid change of economic space. There is thus a tendency, favoured by the internationalization process and by high-tech, towards the imposition of an abstract space of strategic decisions over the experience of place-based activities, cultures and politics. Yet, the reactions of developmental states in the international economy create a new dynamic, equally abstract in its horizon, but more directly rooted in political

pressures and social values (cf. Castells 1980b). High technology and the process of internationalization give rise to the space of managerial flows, but the historical dynamics of the decision-making process in the world economy restore the space of historically conditioned meaning. It is in the middle of this dialectics that cities and regions live, die, struggle, change. And with them, people.^{1/}

5. Conclusion

The process of techno-economic restructuring that is altering the basic structure of our societies is simultaneously reshaping their spatial structure, as we have tentatively shown in this paper. At a higher level of abstraction we can summarize the main spatial trends characteristic of the new division of labour as follows:

- i) The internationalization of the economy, made feasible and stimulated by the new communication technologies, creates a space of variable geometry which changes constantly under the impulse of strategies of multinational corporations and developmental states. Specific cities and regions increasingly lose control over their own destiny, and their historical and social meaning tends to be disassociated from their economic performance and from their functional role.

- ii) New technologies allow for the emergence of a space of flows substituting for a space of places, that is, communications and decisions over information and symbols (money, for instance) tend to prevail over the expression of social processes and cultural significance related to a given locality. The logic of large-scale organizations fits perfectly into a spatial form that abstracts itself from historical specificity to endlessly accommodate itself to new information and instructions received according to the position of each locale in a network of exchanges.

^{1/} For a development of this theme, see Castells 1983a.

iii) The new model of capitalist growth, supported by the Warfare State and by the informational mode of development, induces a new territorial division of labour, based on polarized growth and selective development, that is reflected in international dependency, inter-regional cleavages, intra-metropolitan dualism and the simultaneous life and death of cities and regions.

Nevertheless, societies are not only the expression of economic and technological processes. They are conflicting historical realities resulting from the debates between social actors (classes, genders, ethnic groups, regional and national identities, institutional apparatuses). In fact, most of the techno-economic processes of restructuring we have analysed here are the result of political decisions and organizational strategies. Thus, the spatial forms emerging from such a process are only tendencies that will be confronted by alternative projects from class-based demands, social movements and political programmes. The new spatial structure will result from the interaction between the two processes, namely, the techno-economic restructuring and the new social movements. Yet, unless these social movements and the political actors place themselves within the new historical realm resulting from the technological revolution and the restructuring of capitalism, it is unlikely that they will be able to reverse the tendencies. And these tendencies go beyond the simple redefinition of the territorial division of labour: they point toward the dissolution of the space of experience into the logic of the space of power.

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Günther Tichy

A SKETCH OF A PROBABILISTIC MODIFICATION OF THE PRODUCT-CYCLE HYPOTHESIS
TO EXPLAIN THE PROBLEMS OF OLD INDUSTRIAL AREAS

1. Introduction^{1/}

The problems of old industrial areas have found increasing interest in recent economic literature. Supply-side explanations, especially indigenous blockage, are increasingly emphasized. The usual explanations may be able to explain the stagnation of these areas, but they definitely cannot explain the break in development: why and where have these areas, which prospered in former times, lost their dynamics and declined? The present essay tries to answer this question. It starts out to explain the stagnation of old industrial areas as an indigenous blockage of the product cycle (Chapter 2). Then it tries to modify and extend the theory of the product cycle by introducing stochastic elements to investigate the conditions that generate new products (Chapter 3). Chapter 4 extends the proposed probabilistic theory of the product cycle to the firm, Chapter 5 to regions. It turns out that indigenous blockage is a danger which does indeed threaten industrial areas. Chapter 6 attempts to work out the preconditions which make indigenous blockage more or less likely.

2. Traditional attempts to explain the stagnation of old industrial areas

Old industrial areas were highly dynamic in their time. Their industrialization brought prosperity, but somehow the dynamism was lost; regional incomes and production stagnated. The most prominent examples - both in Europe and the United States - are the old mining and iron and steel areas, less obvious examples are the old textile areas. These examples can be found in almost every developed country: the Ruhr- and Saargebiet in Germany, Alsace-Lorraine in France, the Borinage in Belgium, the Manchester-Birmingham region in the United Kingdom; most of the traditional industrial belt in the United States (Norton/Rees 1979), Upper Styria in Austria and so on. Some of

^{1/} The author gratefully acknowledges that the wiser parts of this paper were inspired by several talks with N. Geldner; the remaining parts are his own contribution. L. Beinsen and G. Palme read a first draft and improved it considerably.

these areas have declined to an extent that they cannot even be considered as industrial areas any longer. Examples are to be found a.o. in Scotland and in Austria (the Erzberg region and the Eisenwurzen).

The main characteristic of old industrial areas is that they specialize heavily in industrial products of the basic sector or in textiles, and that an above-average percentage of the population is employed in direct production in the secondary sector. Production in these sectors, however, grows very slowly, if at all, and employment declines even though productivity is kept low. The tertiary sector of old industrial areas typically stagnates as well. It cannot compensate for the secondary sector's slow growth and decline in employment. Quite the contrary: services move away from Old Industrial Areas when industry declines (Norton/Rees 1979, p.143).

Various attempts have been made to explain the stagnation of old industrial areas. Approaches focussing on weak regional demand have not been successful. Nor would these areas grow noticeably faster if they had the industrial structure of more prosperous regions, as has been demonstrated by countless shift-and-share analyses (Richardson 1978, p.206). It has been shown that slow growth cannot be blamed on certain branches or products which dominate. And in these regions stagnation not only affects production, but productivity as well (Steiner 1980).

So the various demand explanations had to be given up, and supply explanations dominate today. The most prominent is the hypothesis of indigenous blockage (Wettman/Ciciotti 1980; Evers et. al. 1980a), which is based on the theory of the product cycle (Hirsch 1969). Every product has a life cycle: after being created by an innovative entrepreneur, demand for the product grows heavily during a first innovative phase, while it penetrates the market. In the next phase the growth rates slow down; absolute growth, however, is at its peak as the good has captured a considerable share of the market. In the maturity phase saturation levels are reached, and a decline may follow during which the product is displaced by a new one.

Regional theory is confronted with the fact that the different life cycle stages of a product are usually linked to different types of regions (Vernon 1979; Geldner 1982). Innovations are heavily concentrated in urban aggro-

merations because of the high density of information prevailing there. The first phase of the product cycle is usually linked to agglomerations as well, due to the availability of scientists and development personnel, as well as to external effects (market perception, problem-solving by specialized firms), the well-known urbanization economies. For the growth phase of a product, however, localization economies are of greater importance. Process innovation gains importance, product innovation slows down. Demand for labour increases, but it is less qualified labour. Apart from capital, space is needed for expansion. These conditions are more likely to be found near than in the agglomerations. For the maturity phase of the product cheap labour rather than qualified labour is needed, as the production process is standardized and capital-intensive. The product is well-known in the markets and is scarcely altered. Direct contact with the market is therefore no longer necessary and the standardized production process makes production transferable. Technical knowledge is linked to specialized machinery, not to the production process. Mature products are therefore normally produced in less industrialized areas with low-skilled, cheap labour.

To sum up: theory predicts that industrial products start life in urban agglomerations and expire in rural areas. This implies that - in the normal course of development and depending on regional characteristics - every region takes over products which have reached the appropriate phase of the product cycle, and later hands over those products to less developed regions with a less sophisticated industrial structure. An indigenous blockage of this process occurs if there are barriers to entry or to exit.

Barriers to exit are likely to exist in areas whose industry is based on local raw materials like coal and iron ore (OEIR-Wifo-Tichy 1982, p.11 ff.). In their former growth phase, demand for labour increased, wages were increased and drove out other industries. High wages stimulated process innovations and concentration to increase productivity. When a product arrives at the maturity phase, it is difficult to shift labour to other industries, as these avoid the region because of high wage levels, the specialization of workers and the limited usefulness of the infrastructure for other industries. The barriers to entry imply that laid-off workers cannot find other jobs in the region. Shop stewards and labour unions therefore will increasingly stick to labour-hoarding practices, join the management and the owners in lobbying

for subsidies for the old industry and thus create additional barriers to exit. The regional product cycle is blocked even more, and so is development in the region.

Thus, according to the theory of indigenous blockage, barriers to entry and exit lead to development problems in old industrial areas: ideally speaking, productive activities in a region should take account of product-cycle phases and adapt themselves. But there is another explanation for the above-mentioned problems: Schumpeter's theory, which insists that new products originate only from new entrepreneurs (Schumpeter 1939). If indeed the product cycle is so intimately linked to the firm, then the firm will age with its product - according to Schumpeter only very large firms can endogenize the development of new products. In general, then, the firm's life cycle parallels the life cycle of the product. If a region's firms have the same age - which may be accidental, or probable in the case of single-industry regions (see ch. 5), the typical problems of old industrial areas will arise. It then becomes more useful to explain how certain regions avoid the problems of old industrial areas than to explain the stagnation in other regions.

The rest of this essay will try to demonstrate that the two theorems need not exclude each other, and to formulate the conditions for indigenous development and blockage.

3. A probabilistic extension of the product cycle theory

The theory of the product cycle and its regional implication seem to provide an excellent framework to organize research; there are, however, many points to be investigated before it can be accepted as a convincing theory. The first weak point of this model is the birth of the product: how does it come into existence? Who creates it under which circumstances? That creation is intimately connected with the availability and quality of information, which favours urban agglomerations, is correct. But it is no theoretical explanation, only a starting point. Much additional theoretical and empirical evidence has been collected in the last years in discussions on the organization of the firm, the conditions for successful innovation and the causes of differential rates of economic growth which needs to be integrated.

There is a second point which needs further investigation: How are products "handed over" from one region to another? There are theoretically no problems if only multiregional (multinational) corporations with several plants in different regions are considered. If a firm in an urban agglomeration builds new plants in a number of other areas, and the product reaches the next phase of its cycle, there may be some. But if this were the only transmission mechanism stimulating regional potential, peripheral regions could never catch up, not even in theory. A more enlightening but more complicated analysis of the process of "handing over" products to less developed regions would probably focus on production to order, licences and imitation. Germany did not "hand over" cameras to Japan, nor did Silicon Valley "hand over" calculators to Southeast Asia. The latter producers imitated at first, and the imitations were of lower quality and much cheaper. They were in a way new products, to be sold to a different group of customers. Then the industry learned, and improved quality until it produced top-quality products and lost ("handed over") the cheaper brands.

In short, regional development involves the further development of a transferred product. This is not possible without the presence of a well-informed entrepreneur. The "birth of a half-new product"-approach seems theoretically more rewarding than the "hand over"-approach. As we concentrate on the regional (dis)ability to create new products here, we shall drop the second approach.

What are the conditions which favour the emergence of new products? For a long time, economic theory apparently assumed that the origin of new goods is stochastic: invention as well as innovation are due to the random intuitions of outstanding geniuses. Schumpeter was the first to use an economic approach and to emphasize that innovations are likely under conditions of "equilibrium" (Schumpeter 1939). Equilibrium for Schumpeter is a situation in which relative prices do not change so much that it is impossible for an entrepreneur to calculate the gains from marketing a new product (Tichy 1983; p. 24 ff.). Theoretical reasoning and empirical evidence have since confirmed Schumpeter's theory (Schmookler 1966). Schumpeter did not thoroughly investigate the question of who innovates, but he was convinced that this involved new entrepreneurs and new firms (Schumpeter 1911, p.341). His age, however, witnessed the rise of the giant corporation, which endogenized not

only innovation but also invention (Schumpeter, 1939). Perfect competition made way for workable competition (Clark 1961; Kantzenback 1966), large oligopolies sharing the market. Only these giants were considered large enough for efficient R + D.

Further research, however, has called into question the notion that large oligopolies are a necessary and sufficient precondition for R + D. Under a wide range of conditions, smaller firms may develop new products faster, while it may be rational for large firms to choose the strategy of being the fast second (Kaufer 1980, p. 160 ff., 171 ff). Small firms are under pressure to market any new product immediately while it may be rational for large firms to keep back the new product as long as the machines producing its predecessor work adequately (Aiginger/Tichy 1982, p. 86 ff.).

Large firms may also be organized in a way that makes it more difficult for them to combine the ideas a new product is based upon (Casson 1982; Heiner 1983). Given these uncertainties and the new theoretical model of "contestable markets" (Baumol/Panzer/Willig 1982) (which jointly determine market structure and allocatively optimal prices, given free entry and free exit to markets), the number of firms in a market has lost its importance as an indicator of market structure; removal of barriers to entry has risen as the new goal of policies to enforce competition.

What we have learned is that the answer to the question of who finds and introduces new products is much more complicated than the simple dichotomy old/young or large/small firms. Nor should one forget the old theories' emphasis on stochastic elements. So it would be the task of a comprehensive theory to work out the conditions under which the creation of a new product is more or less likely. Such a probabilistic theory would probably have to contain four groups of arguments:

- a) It has to start with Casson's observation that the entrepreneur has to create markets and to coordinate production under conditions which are uncertain. In both cases the entrepreneur collects information from very different sources and evaluates and uses it in an unconventional way (Casson 1982, especially chapters 2 and 9). This last condition is very important, as otherwise other persons could create the same goods and

markets, and so eliminate any entrepreneurial gains right from the beginning. Which circumstances increase the probability that useful information does come together?

- A young person more likely collects information from very different sources than an old one, an unconventional person more likely than a desk-slave, and a person disposing over much idle time more likely than somebody with an overloaded time-schedule.
- An interplay of information from very different sources is more likely if persons with a different background contact each other, e.g. in:
 - a young firm which has not yet established a hierarchical organization;
 - a fast-growing firm which attracts new personnel;
 - a firm which rotates its management, changes its organization, or buys new ideas from consultants and is able to implement these new ideas;
 - a firm in the first stage of the product cycle where very different types of people have to cooperate to solve problems and which may have to attract still other trouble-shooters to deal with newly evolving problems;
 - a firm with an optimally organized information system.

There is, in short, a likelihood that new products will originate from young firms or firms which manage to attract and process very different kinds of information.

- b) The second group of conditions may well prevail in a firm which already develops and/or produces a product in the first stage of the product cycle. Better chances for information interplay from unconventional sources already exist under those conditions; in addition several other avenues are opened that may lead to new products:

- The same idea may be adapted to a new market and so create a new product;
- A different product may be produced with the same innovative process;
- The product or the process can be further developed or varied and so create an additional new product;

- The creation and development of a new market may induce a process which feeds upon itself and create demand for a new, similar product which may be best supplied by the same firm;
- A firm is more likely to develop a new product if it has habit of doing so. This will be the case in young firms or in firms producing goods with a short life cycle, which continuously forces them to create new products.^{1/} Once lost, it is hard to regain this creative potential.^{2/}

To sum up, under certain circumstances the creation of new products may become a process which feeds upon itself.

- c) A third group of conditions may work in two directions: Changes in the environment may accelerate the creation of new products if the firms accept them as a challenge, if change makes them more receptive for new ideas and increases their mobility. But if this change is taken as a threat, if it creates uncertainty considered insurmountable by the firms and persons concerned^{3/}, the creative potential of change is lost.

Heiner has analysed this situation as a C - D gap, a gap between the agent's competence and the seriousness of the problem to be solved (Heiner 1983, p. 562) . Firms may react to problems which appear to be insurmountable by retreating - reducing decentralization, reducing mid-level management's leeway, strictly limiting risks. Thus, flexibility decreases at a time when more flexibility is needed.

In other words, changes in the business environment tend to be conducive to innovative behaviour as long as no C - D gap is created in existing firms.

1/ E.g., toys and leisure goods (magic cubes, skate boards, etc.) or fashion goods.

2/ This has happened in the car industry (Volkswagen, BMW); both cases, however, demonstrate that government subsidies and reorganization can help renew a firm's creative potential.

3/ "We think of organizations as being typically much better at the tasks of self-maintenance in a constant environment than they are at a major change, and much better in changing in the direction of 'more of the same' than in any other kind of change". (Nelson/Winter 1982, p.9 f.)

- d) A fourth group of arguments relates to the origin of new products. A product serving a new need will usually be created by a new industry rather than by existing industries. If the product is based on a new technology, the industry controlling that new technology will introduce the product rather than industries serving similar needs with established technologies: pocket calculators and electronic watches were not introduced by manufacturers of calculating machines and watches, but by the microchip industry. Paper handkerchiefs were introduced by the paper and not by the textile industry, electric razors by the electrical engineering and not by the steel blade industry. Railway material, automobiles and mimeographers were all produced by newly-created firms.

The fourth argument therefore is that new products originate with great likelihood in firms which control relevant production processes and not in those which served the relevant needs before. In terms of the product cycle they are new firms.

4. Elements of a probabilistic theory of the firm-cycle

If one accepts this modification of the theory of the product cycle and the introduction of stochastic elements, one can formulate a probabilistic theory of a firm cycle: not only products grow old, but there is a likelihood - not a necessity - that firms grow old as well.

If a firm develops and produces one product only, its life cycle will - at best - be identical to that of the product. It may be shorter and faster if the regional factors mentioned in Chapter 1 intervene: product and process standardization leading to the use of unskilled labour may force the firm to move to a low-income country or even cause its demise before the product cycle has come to an end. The firm's life cycle is longer than that of the product if the firm is successful in developing new products. Again, this is more likely when the firm is young. So it will probably grow fast at first, but as the power to develop new products declines, so will the firm. Eventually (at the latest when its last product is pushed off the market), the firm will be

dissolved as its creativity disappears. In Chapter 3 we surveyed the factors which are conducive to creativity in a firm. They might collectively be called the "new-product multiplier", as they normally reinforce each other:

- young firms normally sell new products in an expanding market;
- expanding production should lead to expanded employment, which should bring new ideas into the firm;
- expanding employment implies organizational change; managers will rotate and see their firms from different positions;
- the development process of a new product and its production methods may start feeding on itself and create additional new products, by-products and new production processes;
- developing a new product means discussing problems with a variety of people and employing several types of problem-solvers. This may lead to the creation of other products;
- in a growing market new ways may be found to use a product, or a demand may grow for related products;
- in a new market involving several new firms, cross-fertilization (synergy) may take place.

If the firms are profit maximizers or at least profit-oriented, if they try to maximize the likelihood to survive and know that the product cycle exists, they are continually under pressure to search for new products.^{1/} But even so, and even if they spend an increasing amount of money for this purpose, the likelihood that they find a successful new product decreases with their age. The multiplier decreases as organizational slack develops with increasing firm size, declining growth rates push down the rate at which new persons with new ideas enter the firm, markets become satiated and the possibilities of product variations become exhausted. New products of other firms will begin to threaten the firm's market share. The firm will behave more and more conservatively: "... a study of the determinants of firm spending on research and development formed the empirical arena in which it first became apparent that much of the firm behaviour could be more readily understood as a reflection of general habits and strategic orientation coming

^{1/} This search does not necessarily imply high R + D expenditure. Firms may lengthen their life by buying firms which have developed new products, by buying licences or innovative personnel, by marketing and so on.

from the firm's past than as a result of a detailed survey of the remote twigs of the decision tree extending into the future." (Nelson/Winter 1982, p. VII f.).

Generally speaking, therefore, a firm is less likely to come up with new products in the long run. Yet it may be successful by chance, after a reorganization, or if it employs consultants with unusual ideas. And the new products which result may start the product multiplier process all over again, protracting the firm's life.

The development of firms has been described as a Markov process: in any period it depends on the development in the previous period plus a stochastic factor (Nelson/Winter 1982, p. 19 f.). The theory of the firm cycle proposed here would add a systematic component: the development of a firm in any period depends on its development in the previous period plus a growth factor (new products) which is probabilistic in nature, much more likely to be found in young firms than in aging ones.

On the other hand, firms do not necessarily live longer than their products. Manager's incompetence, lack of financial means, superior performance by competitors, inability to relocate when the product cycle stage demands it and other factors may shorten their lives. Most new firms exist for less than five years.

5. Elements of a probabilistic theory of the regional life cycle

Although a firm's life will end, it may last many product cycles. The arguments brought forward so far can be extended to the region. A region may have a distinct life cycle if its firms have the same age and the same life cycle, and if the region is unable to attract new firms (which does not seem likely in regions with a one-sided industrial structure).

Most regions have several industries, a variety of resources and a large number of firms. Even if those have been founded at the same time, it is very likely that they have developed differently. As long as there exist different firms in different stages of their life cycle producing different goods, the

information basis of the region is appropriate for the development of new products. Firms may cross-fertilize each other, depending on the strength of input-output relations (forward and backward linkages) between the firms, the mobility of employers and managers between firms and between regions and the rate of foundation of new firms within the region. With a diversified information basis and a produce range in the appropriate cycle stage, the region is attractive for new firms. Input or information suppliers may decide to move in or to establish a branch; sons of entrepreneurs and research or marketing personnel of firms in the region may decide to start their own business.

So another cumulative process exists, the new-firm multiplier: regions with firms in the early part of their cycle attract new firms which bring down the average firm age even more. As the life cycles of the firms start at different points of time, the demise of a firm will probably be compensated by the presence of "younger" firms. Regions to which these characteristics apply have no obvious life cycle, they may flourish "forever".

The conditions described above appear to exist in most regions at least to some degree, and this is consistent with observed facts: most regions do not appear to be either old or young. Some areas, however, have declined, they did age. How did this happen?

The growth of quite a few industrial areas was controlled by a single industry. The availability of iron and coal in a region often resulted in a regional structure dominated by the steel industry, the availability of tar led to domination by the chemical industry, the textile industry was characteristic for regions with a humid climate, a wool supply and cheap female labour. Even lack of resources may induce a one-sided industrialization: in some regions it stimulated the uncontested rise of the precision tools and instruments industry.

Single industries tend to dominate areas outside the large agglomerations. Skills are not so much passed on by a broad spectrum of vocational or on-the-job training, but from father to son and mother to daughter; the labour market therefore is homogeneous, specialized. In a sense, centering on a certain type of product facilitates input supply and marketing. But the

homogeneity decreases the likelihood that new industries are founded or immigrate or that new products are developed. As firms in these areas reach the end of their life cycle, a concentration process sets in, which is accelerated as firms apply economies of scale, either because of process innovations (the only type of innovation likely to be familiar here) or to compensate for increasing costs as production stagnates. With increased firm size, the total number of entrepreneurs will sink, and this again diminishes the innovation-stimulating contacts between entrepreneurs. At the same time, the organization of the firm becomes more inflexible.

The increasing inflexibility of firms sets into motion another mechanism: shocks which could have proved stimulating under normal conditions overstrain the adjustment potential of the firm (see point c, Chapter 3). Some firms close down, other merge, the regional industry as a whole becomes a sick one, without financial reserves, new ideas or a defensive strategy. No region has an unlimited growth potential. But in these cases there is a probability that demand for a region's product disappears and that its industry is completely shifted to low-income areas. Regional senility has then set in.

To sum up, it is likely that a single product experiences a product cycle. It is more unlikely that a firm experiences a firm cycle, and a regional life cycle is even less likely. Yet, examples of regions which appear to be in one stage or another of a life cycle exist^{1/}, especially regions which concentrate on a very limited number of products or industries. Silicon Valley may be given as an example of a young industrial area of the specialized type, the old industrial areas enumerated above as its old counterpart. Several regions in Southern Germany and Switzerland with a high concentration of precision tools and instrument industries may be just on the brink of aging, and it could happen, two or three decades from now, that Silicon Valley will be an old industrial area as the Pittsburgh area or the Old South in the U.S. already are.

1/ Steiner (1982) used factor analysis in an attempt to work out the several stages of development of Austrian regions.

6. Interacting conditions provoking indigenous blockage

The dominant position of a single industry in a region interacts with several other factors to increase the likelihood of regional decline. Some of these have been touched upon before; here we treat them more systematically.

- Preponderance of large single-product firms

Large firms engaged in the production of a single product, or using a single production process, normally have a strictly hierarchic, bureaucratic organization; there is little scope for innovative behaviour. As these firms usually have internalized almost all transactions and tasks, the regional environment is unfavourable for new, small firms. Additionally, the highly specialized nature of the working population, the high average wage level and the low productivity per worker, partly resulting from trade union resistance to labour-saving techniques in old industrial areas, make the region unattractive.

The few large firms are often owned by a few families. Entrepreneurship is passed on only to the few potential leaders of firms emerging from these families^{1/}. The typical founder of the modern small firm, a university graduate who has worked in a high-tech enterprise before starting a spin-off venture, will be found working in the major urban areas rather than in an old industrial area. The regional entrepreneurial potential therefore is limited.

- Habit persistence

Research by Simon (1959), Cyert/March (1963) and Winter (1979) has shown that firm behaviour is often inflexible, based on the past rather than on the demands of the future. Chandler (Chandler 1967; Chandler 1977) emphasizes the variety of individual firm strategies. Firms have different interpretations of economic opportunities and constraints, and the gains of specific strategies are different for each firm. The

^{1/} See for instance: Roberts 1968, Cooper 1970, Roberts-Wininger 1971, Thwaites 1978, Wettman-Ciciotti 1980.

capabilities of firms are embedded in their organizational structure, and only a change in organization will allow adaptation of firm strategies. If a region's firms are similarly organized, cross-fertilization within the region is unlikely, and organizational change, which according to these authors is difficult anyway, becomes even more unlikely.

- Olson coalitions

According to Olson (Olson 1982, Ch.3), economies and societies which are stable over a long period of time are likely to become fettered by a network of collusive, cartelistic and lobbying organizations which make the economy less dynamic and less efficient. Members of small and homogenous groups gain disproportionate organizational power for collective action, and these groups tend to be distributional coalitions. Such coalitions slow down the process of decision-making, slow down a society's adaptability (e.g. to new technologies), slow down growth and increase the complexity of regulation.^{1/}

- Excessive C - D gap (Heiner 1983)

When the environment changes, firms have to change. The speed at which firms change depends on (a) human characteristics; (b) the horizon of practical experience, which itself depends on the frequency of change; (c) the size of the change; and (d) the availability of alternatives, the knowledge of the actions others choose under similar circumstances. If (b) is limited, (c) large, and (d) small, which is frequently the case in areas in the later stages of their life cycle, the C - D gap will be very wide and the region will probably decline.

^{1/} Olson implicitly formulates a theory of the regional cycle very similar to, but more monocausal than the one developed here: the longer a region exists in a more or less stable environment, the more organizational mobility and decision-making will slow down. Slower growth increases the likelihood of distributional coalitions which slow down growth even more. New growth is only possible if force majeure destroys the coalitions.

- Tichy interpretation of the Verdoorn-Kaldor Law

The Verdoorn - Kaldor Law (Verdoorn 1980 and Thirlwall 1980, Kaldor 1966, 1967; and Thirlwall 1983) says that there is a strong positive correlation between the rate of productivity growth and the growth of (manufacturing) output. It is both Verdoorn's and Kaldor's opinion that this relation is partly a result of economies of scale due to technical factors and learning, partly the result of the movements of workers from low-productivity to high-productivity sectors of the economy. Tichy (Tichy 1981; p.22) has given additional explanation, matching the theory of the product cycle: when demand for products (of a region, in this respect) increases faster than productivity, the labour market gets increasingly under pressure, because demand for labour is higher than supply. Labour unions and entrepreneurs are equally interested in labour-saving investment which increases productivity and provides the means for wage increases.

If the demand for the product of the region slows down and falls below productivity increase, labour unions fearing unemployment lose their interest in productivity increase. They try to prevent labour-saving investment, and management, fearing labour disputes, may give in. Productivity increase slows down, and if it slows down more than in the more prosperous regions, the region's competitiveness declines. Now a vicious circle starts: decreasing competitiveness - decreasing sales - decreasing production - labour-hoarding practices - decreasing productivity, further loss of competitiveness and so on.

- Heuss climate

The last factor is a psychological one, emphasized by Heuss (Heuss 1980, p. 687) in his description of destructive competition in the late stages of the product cycle. According to him, by the late stage of the product cycle competing entrepreneurs have had so many collective experiences that they adapt to each other in their thinking and acting. When stagnation and falling demand set in, they are unable to break away from their collective experience: a psychological barrier to exit exists. Their only answer is to try and retain market shares by lowering prices until all, in the long

run, are ruined. This catches exactly the economic climate in the last stage of a regional cycle. Government support for ailing industries will only perpetuate this situation - the only solution for industries and regions is to adapt to structural change.

7. Conclusion

Is indigenous blockage a pathological development or is it the senility stage of a life cycle which every region necessarily reaches sooner or later? Both the most advanced theoretical explanations and regional policy makers apparently assume the first. This paper has tried to show that the regional life cycle will be especially distinct in regions with a one-sided industrial structure. If the theory sketched out here proves right, it would be wise for regional policy to intervene in a much earlier stage of the life cycle of a region: it must try to improve information and to diversify industrial structure already at a time when regional concentration on a few branches is generally considered growth-stimulating. Regional policy should e.g. try to prevent a further expansion of the electronic industry in Silicon Valley, or better still reduce its dominance and promote the establishment of other industries. If regional policy waits until a region has declined to the level of an old industrial area, it is very difficult and costly to bring the area to life again.

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Barry Bluestone

**COPING WITH LABOUR AND COMMUNITY:
CAPITALIST STRATEGIES IN THE 1980s**

After more than a generation of relative labour peace cemented by an implicit social contract between corporate management and organized labour, a large contingent of the private sector has initiated a concerted campaign against the trade union movement and against local and regional governments that have fostered greater social welfare spending and enforced business regulation. This is not merely a managerial ploy to regain lost status or prestige, but in many ways a major effort to reconstitute the conditions for profitable investment after nearly a decade of moribund economic performance. The strategies being used to "discipline" labour and government are already redefining the economic landscape.

The resurgence of "class warfare" in the U.S. and parts of Europe is largely a result of the loss of global dominance of capital based in these countries which reduced its ability to generate its accustomed profit. Despite the increasing centralization of capital - as measured by conventional domestic concentration ratios - there is a clearly defined trend toward unrestrained competition among individual firms, including the very largest. A high level of global overcapacity in such key industries as steel, automobiles, tires, and machine tools contributes to this increase in economic rivalry. In the course of events, some of the most powerful multinational enterprises (e.g. Chrysler, Rolls-Royce) have found themselves facing extinction.

The secular decline in profit rates in the United States and the United Kingdom is perhaps an even stronger indication of the growing degree of economic rivalry, particularly among firms that operate in the world market. According to research by Holland and Myers, for example, the real rate of return for all non-financial corporations in the United States fell from 15.5 per cent in the period 1963-66 to 12.7 per cent during 1967-70. In the following decade, the profit squeeze continued. The rate fell to 10.1 per cent in 1970-74 and finally to only 9.7 per cent for the period through 1978 (Holland and Myers, 1980). In the U.S., profits fell even further through the recession years in 1980 and then again in 1981-82.

The fall off in profitability was especially notable in America's key industries. Using Internal Revenue Service data on corporate earnings, we have calculated the average rate of return on total assets for the periods of 1963-66 and 1969-75. These pre-tax profit rates are shown in Table 1. Those sectors that have suffered from imports the most - radio and television equipment (consumer electronics) and motor vehicles - show the greatest loss. In both cases industry-wide profitability fell by nearly two-thirds. The average slump across all twelve manufacturing industries cited in Table 1 exceeded 46 per cent.

In many of these industries, the decline in profitability reached a point in the late 1970s where it threatened the entire investment process. This forced corporate management to reorient its strategy toward labour and the state.

Table 1. Net pre-tax profit rates in selected manufacturing industries
1963-75 (in per cent)

Industry	1963-66	1969-75	Percentage Change
Rubber products	91	61	-36.2
Glass products	12.0	7.9	-34.2
Steel industry	7.3	4.4	-39.4
Fabricated metal products	8.0	6.4	-20.4
Radio, television equipment	12.2	3.8	-69.2
Machine products	13.9	9.3	-33.4
Farm machinery	8.4	4.1	-51.4
Machine tools	12.9	6.1	-53.1
Electrical equipment (heavy)	13.2	7.7	-49.1
Motor vehicles and parts	16.3	6.7	-64.8
Shipbuilding	5.8	3.1	-47.0
Railroad equipment	7.8	3.4	-56.9
Average for the twelve industries			-46.3

Source: U S Department of the Treasury, U S Internal Revenue Service, *Sourcebook of Statistics of Income*, Publication 647, (Washington, D.C., U S Government Printing Office), 1963-75
 Note: Net profit rate = net pre-tax corporate income (less deficit) divided by total assets

From the middle of the 1930s to the 1970s, organized labour in the U.S. - as well as in other industrialized nations - won major concessions on a broad set of issues that ultimately limited management's flexibility in its use of labour. In the U.S. the union movement gained its most impressive victories in the northeast (the old New England states where the textile, shoe, and apparel industries dominated the manufacturing sector plus the states of New York, Pennsylvania and New Jersey where a range of industries from apparel to steel underwrote the economy) and in the industrial midwest, home of the auto, tire and agricultural implement industries.

A small indication of management's loss of flexibility is found in the sheer size of contract documents negotiated between unions and management. The initial agreement between the American auto workers union (UAW) and the General Motors Corporation was spelled out on a single page when it was signed in 1937. The contract contained one provision, the recognition of the UAW as sole bargaining agent for GM's hourly-paid workers. By 1982, the UAW-GM contract, with its extensive array of provisions covering each production unit, literally ran into thousands of pages. In exacting detail, the contract specifies everything from wage scales and a cornucopia of fringe benefits to limits on subcontracting, the pacing of each machine and assembly line, and the rules governing the introduction of new technology. Each of these rules and regulations was put in place by labour with the explicit purpose of limiting the discretion of management. With the important - indeed absolutely critical - exception (at least in the U.S.) of limiting the right of corporate management to reduce the aggregate size of its labour force, these incursions of organized labour were highly successful. In those regions of the country where labour was strong, wages grew steadily, job benefits expanded, and management was forced to share some of its decision-making authority with workers' representatives.

Moreover, exercising their influence in local, state and federal governments, organized labour and other progressive groups won important concessions from capital through regulatory legislation. Minimum wages, fair labour standards, occupational health and safety provisions, equal employment opportunity, extended unemployment benefits, and improvements in workers' compensation (disability payments) comprise only a partial list of the gains made during this period. In Europe, workers were even more successful in using this political route to obtain income and job security improvements. Taken together, these victories limited capital's ability to generate the high profit rates of an earlier era.

During the heyday of the "American Challenge", roughly 1941-1971 (ending symbolically with the U.S. being forced to abandon the gold standard), capital was able to reap healthy profits while it could afford these concessions to organized labour. But then European and Japanese competition forced American managers to find fresh ways to circumvent

union rules and to undercut local, regional, and national regulations. The economic expansion of the Newly Industrialized Countries (NICs) led by Taiwan, the Republic of Korea, Brazil, and Mexico added to the competitive pressure not only on American producers, but increasingly on European ones as well. By 1982, the so-called NIC "gang of four" was exporting to the U.S. almost as much as Japan, and Brazil was producing more steel than Britain (U.S. Statistical Abstract, 1982, Table 1488 and CIA, 1982).

Heightened competition in the world market was manifest, at least in the U.S., in a substantial swelling in the import shares of many key manufacturing industries. In automobiles, steel, consumer electronics and footwear, to name but a few, foreign producers sharply increased their share of the U.S. market (see Table 2).

Table 2. Import share of leading U.S. industries

	<i>Percent of Market</i>	
	1960	1979
Automobiles	4.1%	21.0%
Steel	4.2	14.0
Apparel	1.8	10.0
Electrical Components	0.5	20.1
Farm Machinery	7.2	15.3
Industrial Inorganic Chemicals	2.0	19.0
Consumer Electronics	5.6	50.6
Footwear	2.3	31.3
Metal-cutting Machine Tools	3.3	26.4
Food Processing Equipment	3.0	18.7
Metal-forming Machine Tools	3.2	24.6
Textile Machinery	6.6	45.5
Calculating & Adding Machines	5.0	43.1

Source: "The Reindustrialization of America," *Business Week*, Special Issue, June 30, 1980. Reprint, p. 8

As a result, in one major industry after another - steel, automobiles, rubber, etc. - labour-management negotiations have taken a dramatic turn: the corporations now make demands on labour, not the other way around. These demands go beyond wage concessions; they involve concessions on the introduction of new technologies, work pacing and regulations guarding worker health and safety.

Employers have always changed their labour market strategies to meet labour's challenge to profitability. The movement from entrepreneurial to technical to bureaucratic control documented by Edwards, or alternatively the use of welfare capitalism, Taylorism, Fordism, and Quality Circles, reflect management's efforts to extract work from the labour force (Edwards, 1979). The problem from management's perspective is that higher levels of control often entail a loss of flexibility in dealing with labour. Bureaucratic control, particularly when it is institutionalized within the context of organized labour, transforms the employer's wage bill from a variable to a (quasi-)fixed cost. This rigidity - not only in the wage bill narrowly defined, but more importantly in the control aspects of the labour process - has posed a serious threat to corporations struggling to survive in the global market place.

The obvious response of capital, and indeed the goal now being pursued by corporate management, is to make labour a variable cost component of production once again. To accomplish this requires that management disarm organized labour of its standard weapons: the grievance process, various work actions, and work stoppages.

What makes the disarming process possible is the enormous increase in the ability of corporate managers to physically relocate production; that is, to move the locus of production or disperse it, and to inexpensively co-ordinate spatially dispersed production from a central headquarters. Put simply, capital mobility has become the most powerful mechanism available to employers to reinstitute flexibility in the labour process. It is the mechanism to transform fixed costs into variable costs - to extract significant wage and non-wage concessions from labour. Furthermore, capital mobility has become the primary weapon used to reverse the regulatory gains won by labour and others from local, regional and national governments.

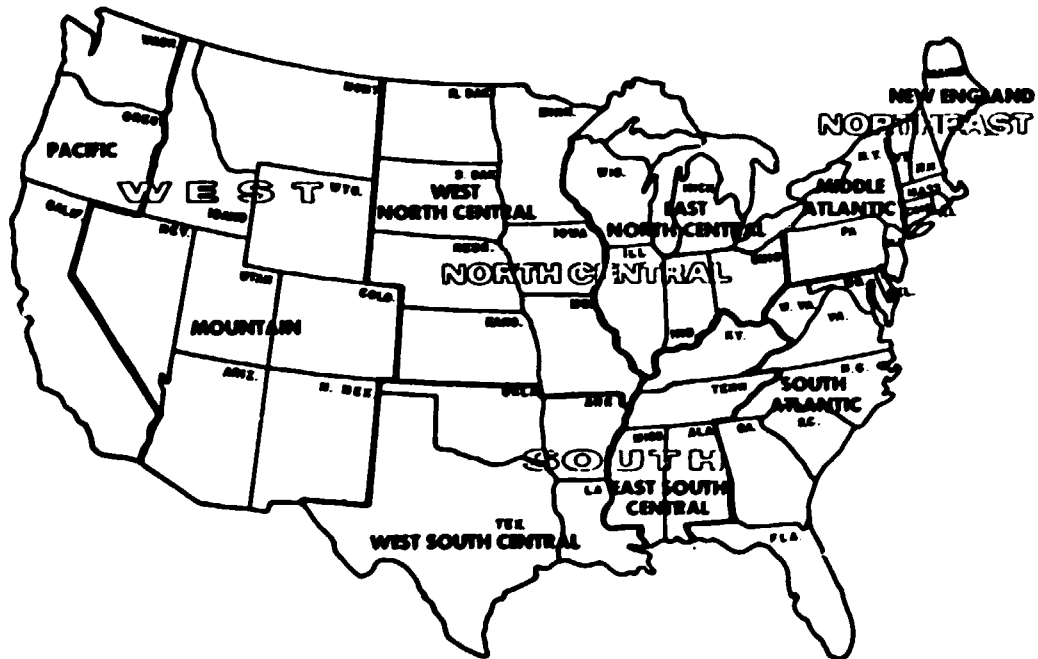
The capital mobility option is now available to corporate management by reason of the permissive technological environment provided by the transportation and communications revolution of the past decade and a half. Satellite-linked telex communications and wide-body jet cargo aircraft provide an environment that, for all practical purposes, allows production to become spatially free. This aspect of the "automation revolution" has even more profound implications for capital/labour relations than the introduction of computer-controlled tools and versatile factory robots. Satellite communications permit central management to oversee worldwide operations at close to the speed of light while wide-bodied cargo aircraft permit the movement of physical commodities at near the velocity of sound. Moreover, this technological revolution promises even faster and cheaper modes of communication and transportation in the future. McDonnell-Douglas, e.g. has on its drawing boards a long distance jet freighter for the 1990s capable of flying a million pound payload (or 1,400 passengers).

There are three components to the new management strategy: (a) the permissive technological environment that permits dispersed production (b) the centralization of capital which provides the financial resources for taking advantage of the technology's capability, and (c) the intensified international competition that provides the imperative for capital to adopt the new technology and the managerial strategy that it permits. The technology is clearly not exogenous. The telex and the jet freighter were explicitly built to provide worldwide communication and transportation for the purpose of commerce. But once the technology is developed, its use becomes imperative for corporate survival - at least within the traditional profit-centered environment.

Data on the actual extent of capital mobility in the U.S. - on disinvestment and investment - has been compiled for the period 1969 to 1976 and for the more recent 1978-82 period. Bluestone and Harrison (1982) have demonstrated that over 22 million jobs were lost throughout the U.S. as the consequence of factories, stores, and offices closing

down operations between 1969 and 1978. By 1976, shutdowns and establishment outmigrations (across states or out of the country) had destroyed 39 per cent of the jobs that existed in 1969. Using a similar data file Harris and her colleagues at the Brookings Institution have constructed estimates of large manufacturing plant closures between 1978 and 1982 (Harris, 1983). An average of 900,000 jobs were lost to closure each year in manufacturing companies with 100 or more employees - more in the recession years after 1980, fewer in the prior period, but substantial in every year. The distribution of job gains and losses reflect the strong tendency for manufacturing (within the U.S.) to move away from the traditional New England, Mid-Atlantic, and East North Central regions (see Fig. 1) where unions are stronger and state governments tend to provide more worker benefits and corporate regulations.

FIG. 1: REGIONS AND DIVISIONS OF THE UNITED STATES



Note: Pacific division includes Alaska and Hawaii.

Table 3, created from data supplied by Harris, indicates that nationwide jobs that were created through new business formations plus net expansions by existing manufacturing establishments exceeded job losses as a result of plant closings by two per cent between 1978 and 1982. But the distribution was highly uneven. In the East North Central states of Michigan, Ohio, Wisconsin, Illinois, and Indiana, only 62 new jobs were created for every 100 lost. In contrast there were 168 new jobs in the booming West South Central states of Texas, Louisiana, Arkansas, and Oklahoma for every 100 jobs lost. The Western Mountain states and those in the Pacific region (including California) also had highly favourable ratios.

Table 3. Manufacturing job losses through closure, and the manufacturing jobs created through new business formations plus net expansions by existing businesses, by region: 1978-1982

	1979 - 1980			1980 - 1982			1978 - 1982		
	job losses	job gains	gains to losses	job losses	job gains	gains to losses	job losses	job gains	gains to losses
U.S. total	1,588.1	2,938.0	1.85	2,961.1	1,687.8	.57	4,549.2	4,625.8	1.02
New England	132.0	208.6	1.58	215.5	112.1	.52	347.5	320.7	.92
Mid-Atlantic	295.7	428.8	1.45	483.8	251.6	.52	779.5	680.4	.87
E. North Central	359.5	478.1	1.33	640.4	140.9	.22	999.9	619.0	.62
W. North Central	82.2	181.7	2.21	166.9	95.1	.57	249.1	276.8	1.11
South Atlantic	224.9	485.8	2.16	474.9	327.7	.69	699.8	813.5	1.16
E. South Central	91.4	167.3	1.83	226.9	72.6	.32	318.3	239.9	.75
W. South Central	123.5	363.1	2.94	249.1	261.6	1.05	372.6	624.7	1.68
Mountain	39.2	118.0	3.01	92.6	81.5	.88	131.8	191.5	1.51
Pacific	239.6	503.2	2.10	411.0	353.5	.86	650.6	856.7	1.32

source: Candee Harris, "Plant Closings and the Replacement of Manufacturing Jobs: 1978-1982", The Brookings Institution, November 1983, cited with permission. Only firms with 100 or more employees at the beginning of each period are included. Ratio of job gains through new business formations plus net expansions to job losses through plant closures is the "replacement ratio" referred to in the text.

On an establishment basis, Bluestone and Harrison found that nearly 30 per cent of all establishments in 1969 had closed down or moved by 1976. There is good reason to believe that the greater proportion closed down in order to move capital into a new region (domestically or internationally), or in some cases to move into a different branch of the economy. For example, U.S. Steel, the largest steel company in America, announced the closing of 14 mills in a single day in 1979. It followed this move by spending over \$6 billion of depreciation reserves, tax write-offs, and loans to acquire Marathon Oil, a major petroleum firm.

The most centralized forms of capital - the conglomerates - were responsible for a disproportionate amount of capital mobility. This mobility of both physical, and much more quantitatively significant, finance capital, has put labour at a distinct disadvantage relative to employers and has placed it in an extraordinarily vulnerable position. Moreover, those regions of the country where labour traditionally has been strong and where local and state governments have provided greater worker benefits and imposed more corporate regulation are now at a substantial disadvantage in maintaining and expanding their capital base. The "business climate" of a region has become the catchword in corporate boardrooms.

Beside the outright physical relocation of existing facilities, corporate management has resorted to an astounding range of strategies that have the common property of destabilizing labour (i.e. increasing the employer's flexibility in the labour market) and of threatening community viability. One of these involves parallel production where a firm builds and operates duplicate production facilities, usually in one or more union-free regions distant from the initial plant. Identical components are built in these various facilities, allowing management to move production from one facility to another whenever labour balks at a unilaterally imposed management decision or a local government attempts to raise tax revenues or supplement existing social regulation. A strike or other work action at one plant is quickly defused by shifting production to one of the non-union locations. The Pratt & Whitney Aircraft Company, the world's largest producer of aircraft jet engines, has used this strategy successfully for a number of years. Instead of

expanding facilities in their central Connecticut location (where they had been based since the late 1920s), Pratt has set up new plants in rural areas in Maine and in a number of Southern states (Bluestone, Jordan, and Sullivan, 1980). By moving parts production from one facility to another, they have been successful in forcing contract concessions from the union that represents their Connecticut employees. An increasing number of U.S. producers are using the parallel plant strategy in precisely this way.

A second strategy involves the use of multiple sourcing. Instead of relying on sole source subcontracts for critical components or supplies, the prime contractor has a policy of buying the same component from several suppliers, often despite a loss in technical economies of scale. This allows the firm to play one supplier off against another. Pratt & Whitney provides another example. The company buys exactly the same jet turbine rings from two producers: a subcontractor 6 miles away in a Connecticut suburb and another 6,000 miles away in Tel Aviv, Israel. The telex allows the prime contractor to be in immediate contact with the distant supplier and the cargo jet allows these high value-to-weight components to be shipped from Israel almost as cheaply as parts that come from the neighbouring facility. Any disruption of production at one supplier can easily be redressed by simply ordering more parts from the other.

Bilateral or multilateral co-production agreements, while used by importing countries to assure that they will share in technology and employment gains, have the same destabilizing effect on labour and localities as parallel production and multiple sourcing. The sale of F-16 fighter jet aircraft to the NATO alliance is a case in point, as is that of F-15s to Japan. In the NATO co-production agreement, General Dynamics and Pratt & Whitney (the American airframe and jet engine producers, respectively, for the F-16) promised that industries in those countries ordering the plane - particularly Belgium, the Netherlands, Norway, and Denmark - would be allowed to produce 40 per cent of the value of the 348 F-16s they were purchasing for their own defense departments, 10 per cent of the value of the 650 planes to be procured by the U.S. Air Force, and 15 per cent of the value sold to other countries.

Of the 100 F-15 fighters sold to the Japanese Self-Defense Force, 14 will be exported complete from the United States, eight will be delivered in kit form for assembly in Japan, and the remaining 78 will be produced by Mitsubishi and Kawasaki using blueprints supplied by the American designers. The negotiated agreement dictates that 60 per cent of the total value of these planes originate in Japan. Japan's interest in this deal clearly rests in the gains that it makes from technology transfer and in employment generation. On the other hand, the U.S. producers have at least three reasons for engaging in such co-production agreements:

- a) the co-production percentage is used as a "sweetener" in securing international contracts;
- b) there are substantial royalties to be earned on providing blueprints without the cost of actual production; and
- c) workers in the U.S. are put on notice that their services are expendable.

While we have used examples from the aircraft industry to illustrate parallel production, multiple sourcing, and co-production, these strategies are rapidly spreading to other industries including cars, electronics, and computers (Bluestone and O'Cleireacain, 1984). GM, Ford, and Chrysler are all moving toward building the "world car" where the location of parts production can easily be moved from one nation to another. Similarly, U.S. computer companies including Digital and Wang have moved production facilities offshore to such countries as Ireland and Scotland, and established component manufacturing centres in a number of NICs.

The capital mobility option - when played out through any of these corporate strategies - shifts the fulcrum of bargaining power in favour of capital to an unprecedented degree. It provides employers with the ability to insist upon smaller wage improvements in future bargaining, and in a growing number of instances permits them to effectively demand wage roll-backs. Even more important from management's position, it gives employers the ability to force labour to accept the introduction of labour-saving technology and the deregulation of job rules. In essence,

the capital mobility option provides capital with the ultimate power to make "take it or leave it" propositions stick.

Moreover, in many countries regions are sufficiently different in attractiveness to stimulate moves within the country. This option provides capital with the necessary economic and political clout to insist upon reductions in social wages (unemployment benefits, welfare, education, health services) via a reduction in public revenues of subnational administrative units. At the state and local level in the U.S., this is accomplished through personal, corporate, property, and unemployment compensation tax cuts. The competition between regions to retain existing capital or to attract new private investment leads to the weakening of the subnational territorial units. In the U.S., this inter-regional struggle to attract capital, in light of the high degree of capital mobility, has led the business press to write that the nation is in the midst of a new civil war - a new "war between the states".

The same pattern of weakened government has become evident at the national level. The U.S. and the U.K. under the Reagan and Thatcher governments have led the other developed country governments in the abandonment of government regulation, the reduction of taxes on wealthy individuals and corporations, and cuts in the social wage - all in the name of increasing the incentive to work, save, and invest, and justified by referring to the "reindustrialization" debate initiated by the business community over productivity and investment. The sharp curtailment of non-defense spending within the U.S. federal budget is also an element in the "war between the states", in this case the war between nation-states fighting for their share of the world economy. In sum, the enormous increase in the footlooseness of capital has provided the strongest challenge to labour and community in this century, both at the point of production and at the level of the state. It is precisely the newly enhanced ability of capital to relocate that threatens to reverse the gains of workers over the production process and the social welfare advances made in the public sector since the 1930s.

There is, of course, a fundamental contradiction in this development. That contradiction arises from the generation of enormous social costs in the wake of rapid capital mobility. Mass unemployment and widespread community dislocation have occurred as a result of the rash of plant closings in such industries as cars, rubber, and steel in the U.S., the U.K. and elsewhere. One study after another suggests that the social costs in terms of lost earnings and savings as well as in physical and mental health deterioration are immense (Bluestone and Harrison, 1982). In short, the demand for social wage rises dramatically as a consequence of capital mobility - a demand to which the response is curtailing social wage while capital mobility receives political support. Social reductions become visible in struggles over unemployment benefits and public spending. At the level of the plant, there is already evidence that workers are more concerned with job security issues than with wages and fringe benefits. Private sector workers who are threatened by capital mobility directly, and public sector workers who are threatened indirectly by the cuts in social revenue and expenditure, have begun to organize campaigns to restrict management's right to move without warning or consultation. Organized labour, facing the growing transnational operations of capital, may finally begin to realize the need for international solidarity. Apart from that, at least three counter-strategies could and should be pursued.

The first of these involves plant closing regulation. In the U.S., there are virtually no laws governing management decisions to shut down or move an establishment. In Europe, such laws exist, but they are not uniformly enforced. What is required at a minimum is a "social compact" between individual employers and the state specifying fair and responsible methods to be used in the event of a plant closing or mass layoff. Such methods should include sufficient advance notice to permit workers to find alternative employment, severance pay to maintain workers during job search, and maintenance of other benefits (e.g. health insurance) after the plant closes. In the state of Massachusetts, the first such law was passed in 1984. The "Social Compact" specifies fair and responsible action to include a minimum 90 day advance notice, or in lieu of notice, 90 days of severance pay based on seniority and continuation of employer-paid health insurance for 90 days or more. The law is weak in that it lacks an effective enforcement mechanism,

but it is a first step in the right direction. The original Vredeling proposal brought before the European Parliament would have provided for such a social compact involving workers' right to know about important investment and disinvestment decisions made by their companies.

A "social compact" does not prevent a single plant from closing or a single worker from losing his or her job. There are countless firms (many small to medium size) that close every year because of particular problems involving labour-management relations, the inability to procure sufficient finance capital at reasonable rates, or because their products or processes are obsolete. Some of these firms can be saved if there is a closer working relationship between business, labour, and government. In particular, local and regional governments should establish "Industrial Advisory Boards" that work directly with employers and employees to solve management, financing, and production problems. Governments have aided private industry through research and development grants, procurement contracts and subsidized training in the past, and there is no good reason why local and state governments should not expand their role to include other "industrial policy" instruments. Technical aid etc. could be extended to manufacturing and commercial businesses with the purpose of maintaining employment and protecting community interests. Such a positive programme of private sector assistance would be far superior to current attempts to "help" business through tax cuts and deregulation.

An example of such an advisory board in the U.K. is the "Greater London Enterprise Board". It concentrates on small- and medium-sized enterprises. Support takes the forms of loans, low-cost business locations, technical know-how (in co-operation with local scientific establishments). Special stimuli are available to firms which provide equal opportunity employment and whose products are "socially and environmentally innovative" (e.g. producing apparatus for handicapped people which uses a minimum of energy). Employment thus created reduces spending on unemployment benefits; government also profits from the higher taxable incomes of those re-employed. In fact, GLEB has created employment at a fraction of the cost of employment schemes of the central government (which is highly critical of these initiatives). The sociopsychological benefits of such efforts should not be underestimated either.

Finally, organized labour should be involved in designing co-production agreements and other forms of managed trade. Under present conditions, co-production agreements and joint venture activity are negotiated between the managers of private sector corporations, or between transnational managers and government agents. In no instance has organized labour been a direct party to these agreements. As a result, the interests of labour tend to be ignored. Strengthening the international labour movement would be essential here as well. This, however, will prove a hard task in a period of crisis when labour organizations decline and trade unions tend to put national and branch interests before those of international co-operation.

All three of these suggestions provide, at best, marginal reforms of an economic system operating under the new conditions presented by the capital mobility strategy. They are no more than palliatives to the growing insecurity of workers and communities. A period of intense political struggle over basic issues of capitalist control and workers' rights seems to lie ahead.

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Richard M. Auty

THE PRODUCT LIFE-CYCLE AND THE GLOBAL LOCATION OF ENERGY-INTENSIVE INDUSTRY
AFTER THE SECOND OIL SHOCK

1. Changed patterns of international demand

The abrupt puncturing of the 1979-81 oil boom was accompanied by a radical revision of the expected growth and spatial distribution of global consumption and production of energy-intensive industrial intermediate goods. The steel industry illustrates both the magnitude and speed of the revision. In 1980 the OECD forecast global steel consumption would almost double to 1,400 million tonnes by the year 2000 (Nijhawan 1980), whereas three years later an increase was being projected of no more than 20 per cent to 900 million tonnes (Barnett and Schorsch 1983). The abrupt termination of aluminium capacity expansion in 1981 reflected the replacement of the expected twenty year doubling rate (already a significant downward revision from the pre-shock period) by a slower doubling rate (Fitzgerald and Pollio 1982). Lastly, the petrochemical industry, which had exhibited the most remarkable dynamism for two decades before the 1973-74 oil shock, provided the most spectacular instance in the early eighties of excess capacity caused by tardy recognition of forecasting errors.

In the early eighties the two critical issues facing new entrants into energy-intensive export industry were: first, establishing the reliability of the newly revised demand forecasts and second, determining the marketing opportunities remaining for them in the industrial countries and emerging for them within the developing countries. The resolution of these issues has important implications for regional policy. To explore the first of these issues, postwar trends in the location of global demand and production for steel, aluminium and petrochemicals will be analysed for evidence that the fundamental changes were under way before the 1973-74 oil shock. Next, the factors governing competitiveness after the 1979-81 oil boom will be examined and the magnitude of change noted. A revised model of the product life-cycle which appears consistent with ongoing trends will then be outlined and subsequently used to examine the second critical issue: the evaluation of marketing prospects for the exporters of energy-intensive industrial intermediate products. Special attention will be given to the role of industrial inertia as a barrier to entry in the industrial countries and to the relative competitiveness of market-oriented and raw materials-oriented production within the developing countries.

2. The decline of post-war industrial country markets for steel, aluminium and petrochemicals

2.1 Differences in industrial maturity

Long term demand forecasts for industrial products normally assume some ultimate level of market saturation which is reached via a logistic curve. The concepts of youth and maturity are commonly applied to distinguish industries at early stages in the curve from those at later stages. A simple maturity index can be developed which expresses the total present cumulative demand as a fraction of total projected demand. Such an index recently compiled for the United States shows a range from 0.01 for office machines to 0.7 for copper (Averbuch 1984). Within this range steel records an index of 0.63, aluminium 0.4 and petrochemicals just under 0.3 suggesting that within the United States market, steel is closer to market saturation than aluminium while chemicals are at a relatively youthful stage. The actual figures in the cumulative index may underestimate the degree of market saturation. For example, an index that expresses present annual consumption as a ratio of maximum annual consumption suggests the U.S. market reached saturation by this measure in 1975 (Hochgraf 1983). The cumulative index may also overstate the degree to which chemicals and aluminium lag behind steel. However, the ordering of the three industries appears sound as the following examination of postwar trends in the industrial economies will show. Moreover, it will be demonstrated that differences in the level of maturity both between industries and between countries are reflected in significant differences in industrial operating characteristics.

2.2 Petrochemicals: youthful dynamism

The rapid expansion of petrochemical demand in the advanced economies from the early fifties resulted in growth rates for that industry twice those of their GDP. During the sixties petrochemicals attracted nearly one-fifth of total OECD manufacturing investment (Carson 1979). The two leading producing regions, North America and Western Europe, each accounted for around one-third of international production by the early seventies and - unlike steel - diverged little in their rate of growth. In the decade before 1973 output grew at 8.6 per cent per annum in Western Europe compared with 7.4 per cent

per annum in North America. Compared with the leading producers, the Japanese petrochemical industry was still technically backward in the early seventies and dominated by relatively small firms with limited innovative skills that had yet to penetrate much beyond local markets (Isawa 1981).

Some general insights into the operation of markets for capital-intensive industrial products can be gained from a brief comparison of the postwar North American and West European petrochemical industries. The industry in North America was strongly oriented to its large homogeneous regional market and drew largely on domestic natural gas for its feedstock, so that international trade in both inputs and products played a relatively minor role. With its more competitive large continental market and more profit-oriented firms, the North American industry handled the problems of long lead times, capital intensity and excess capacity more successfully than its West European counterpart. The North American industry appeared to follow an eight-year investment cycle (Carson 1979) in which four years of investment, accompanied by falling capacity utilization, prices and profits, were succeeded by four years of restrained investment and improving economic performance.

The more fragmented West European market, a legacy of national subdivisions, was prone to excess capacity as producers stressed growth maximisation and export markets in order to escape the national constraints on scale of operation. Nationalistic policies towards the industry, notably by France and Italy, exacerbated the tendency towards excess capacity as did dumping by East European producers. The lack of secure domestic feedstock inputs - the industry relied principally on Middle Eastern crude oil for its naphtha raw material base - encouraged the pursuit of vertical integration and over-rapid expansion. Even though the West European petrochemical industry had caught up with that of the United States in terms of size by the early seventies, inadequate integration of the region's national production systems delayed the elimination of market imperfections and sustained the priority producers placed on growth. Clearly, the conditions under which the new producers of energy-intensive industrial intermediate products function has close parallels with Western Europe so that a tendency towards growth maximisation and overcapacity is likely.

Although by no means obvious at the time, there is evidence that the long-term growth rate for petrochemical demand in the advanced economies was already slowing down by the seventies (Carson 1979). Intermediate products for use in the chemical industry and other industries comprised a declining fraction of the advanced economies' chemical sales (three-fifths by the seventies): the fastest growing segment of chemical industry demand in the advanced economies was that for final demand products with higher added value than basic chemicals, such as tires and pharmaceuticals.

Meanwhile, developing countries with large domestic markets, notably Mexico and Brazil, were able to establish new plants on a scale that displaced imports from the industrial countries (Stobaugh 1970).

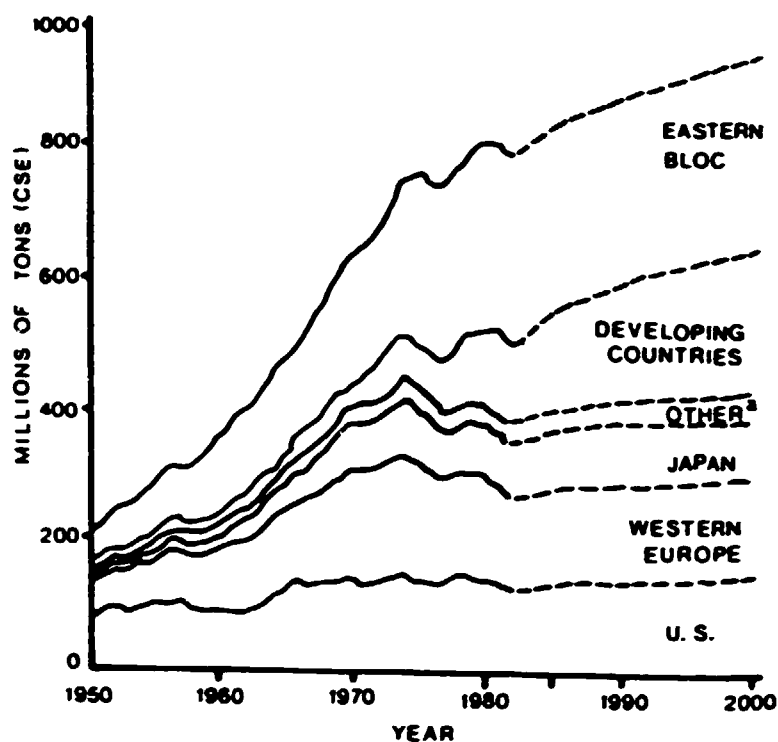
However, the hope that the historically high growth rates in the advanced countries' consumption (7 to 9 per cent) and production of petrochemicals would persist through the seventies was strengthened by the good year of 1973 and the boom year of 1974. Although the outcome for 1973-77 was 2.4 per cent per annum for Western Europe and 4.5 per cent for North America, it remained unclear whether the slow-down was temporary or long-term so that the potential excess capacity continued to grow, especially outside North America.

2.3 Steel: a maturing industry

Figure 1 traces changes in global steel demand by region since 1950. The pre-shock rate of growth in the United States' demand contrasts sharply with evolving patterns of demand in Western Europe and Japan.

Production in the slow-growing U.S. market expanded at around 1.5% per annum in the twenty years before the first oil shock, compared with 4% in Western Europe and 15% in Japan (English 1980). A comparison of the growth of demand and growth of GDP for the critical period 1967-77 shows that while United States' consumption grew at one-fifth the rate of GDP, in Western Europe it expanded faster than GDP until the early seventies and in Japan until 1974, while in the developing countries it remained above GDP throughout the period (Woolcock 1982). The postwar contrast between the steel industries of the United States and Japan provides valuable insights into the behaviour of producers in the mature and early stages of the market.

Figure. 1 Projected steel consumption by region
(millions of net tons, crude steel equivalent)



a. Other developed market economies (Canada, South Africa, Australia, New Zealand).
Sources: World Steel Dynamics, Core Report R (New York: Paine Webber Mitchell Hutchins, 1981); Organization for Economic Cooperation and Development (OECD), *The Steel Market in 1981 and the Outlook for 1982* (Paris: OECD, 1982), International Iron and Steel Institute (IISI), *Steel Statistical Yearbook* (Brussels: IISI, various years); and authors' estimates.

Source: Barnett and Schorsch (1983).

Japan quickly set the pattern for production expansion, despite advice from the IBRD in the early fifties against building a domestic steel industry on account of the country's poor raw material base. By 1974 it had almost overtaken the United States in total capacity. The Japanese built large integrated steel works at coastal locations, geared first to domestic needs and then to exports. EEC producers sought to emulate Japan, and by the early seventies their production exceeded that of North America - though their large new plants were dependent on exports for two-fifths of sales compared with a more prudent one-quarter in Japan.

In contrast, the slower growth of steel production in the United States (half the rate of the EEC in the 1950-1974 period and one-quarter that of Japan) was based largely on extending existing plants, trading lower productive efficiency and higher input costs against the higher capital outlays per tonne of competitors in the other advanced economies. Between 1961 and 1971, the Japanese built 80 million tonnes of new capacity compared with 55 million tonnes in Western Europe and 6 million tonnes in the United States (Crandall 1980). The higher proportion of plant of older vintage in North America, and to a lesser extent in Western Europe, left productivity levels there from one-third to one-half those of Japan (Gold 1982). By the mid-seventies, the average size of integrated steelworks in the United States was only half that of Japan and marginalised plants were closing amid growing calls for protection against Japanese and European imports.

Crandall (1981) traced the onset of the rundown of the United States steel industry to the late fifties and attributed it to higher labour and materials costs. For example, despite lower productivity in the United States, the ratio of steel wages to average industrial wages there was 1.7 compared with 1.25 in other advanced economies. American steel corporations expanded foreign coke and iron ore imports during the fifties, which quickly undercut U.S. domestic sources in terms of cost as freight rates fell with the diffusion of bulk shipping. Since the cheap new raw materials were available to all coastal producers, U.S. producers' dependence on domestic raw material supplies increasingly became a liability.

Crandall neglected to explore the implications of the slower expansion of the United States' domestic market. The U.S. producers' disadvantage in materials costs was not a large one and it could have been ameliorated by

increasing the share of imported inputs in a rapidly expanding output. More important, a rapid expansion of output could have ameliorated the labour cost penalty by raising productivity through the employment of newer vintage plant and the capture of economies of scale. Costly inputs were a symptom of slow adjustment rather than the cause of decreased competitiveness. The decline in the United States steel industry's competitiveness resulted from prolonged operation in a slow-growing market.

2.4 Aluminium: moving towards maturity

The evolving postwar pattern of aluminium demand in the industrial countries traced an intermediate path between that of steel and petrochemicals. The initial North American dominance was eroded, but not as rapidly as its dominance of steel. Production of aluminium in North America grew slightly faster than GDP in the two decades before the 1973-74 oil shock. Growth in Western Europe and Japan was more than twice as fast as GDP growth and accelerated from the fifties into sixties. Due to its earlier start and somewhat slower growth rate, the North American industry operated with slightly older vintage of plant that used energy and labour less efficiently than the newer smelters of Western Europe and Japan, but offset these disadvantages through lower capital costs and energy charges that were the result of that earlier start. All producers increasingly drew their bauxite/alumina from the tropics but smelting was increasingly concentrated within the dynamic industrial markets as real energy costs shrank as a fraction of total production costs.

During the seventies the price of aluminium rose half as fast as the price of steel, which doubled between 1972 and 1981 (Vais 1982), despite aluminium's much greater sensitivity to energy price changes. Rates of aluminium consumption expansion halved in the industrial countries over that period compared with the earlier one, dropping to 2.3 per cent for the United States 1972-79 and 4.1 per cent for Western Europe and Japan. Per capita levels of aluminium consumption in Western Europe and Japan remained one-half to one-thirds those of the United States so that the two lagging industrial regions may expect faster growth than the United States. The switch to slower growth of aluminium demand in the industrial countries during the seventies had been expected by the industry (Younger 1970).

Although the aluminium industry was caught out by the scale of the downturn in 1982 (Vais 1982) its greater caution produced more reliable long-term forecasts for aluminium than for steel and petrochemicals, so that revisions in long-term aluminium demand projections were smaller (Fitzgerald and Pollio 1982). Moreover, although the aluminium industry, like the petrochemical industry, was hit by sizeable production cost changes during the seventies its more accurate monitoring of markets permitted easier adjustment of productive capacity to changing geographical patterns of demand.

3. Locational determinants of production in the early eighties

Of the industries under study, integrated steel production is less sensitive to energy cost differentials than DRI/steel^{1/} production which is in turn less sensitive than aluminium smelting and petrochemical production. A critical locational determinant of integrated steel production is the cost of labour, not simply through operating costs but also through capital costs since the cost of construction labour forms a sizeable fraction of the latter. Whereas aluminium and petrochemical plants may cost from 10 to 50 per cent more to construct in developing countries than in industrial ones largely owing to higher infrastructure and freight costs at the locations where such plants are built, integrated steel works cost less to construct in the emerging industrial countries of Southeast Asia. However, despite the widening geographical differential in key cost parameters in the decade since the first oil shock, there is evidence that access to large expanding local markets is also a significant locational determinant of competitive incremental production.

3.1 Steel: critical role of market access for both integrated plants and mini-mills

The greater part of the world's steel is produced in large integrated plants with a minimum optimum size of 4 million tonnes that is set by scale economies in the hot strip mill. A plant of such size would capture 90 per

^{1/} DRI/steel refers to the process whereby iron ore is directly reduced to sponge iron using cheap oil or gas. This process is associated with electric arc furnace "mini-mills" in contrast to the blast furnace process of pig iron production associated with the basic oxygen furnace "integrated" (large-scale) method of steel production.

cent of the labour productivity and capital cost advantage of the large integrated 10 million tonne unit (Barnett and Schorsch 1983, p. 191). In the early eighties the total capital investment for a plant of minimum optimum size would be around \$5 billion. Table 1 suggests that the labour cost advantage for a greenfield plant of a Southeast Asian NIC compared with a United States producer would amount to 20 per cent on plant capital costs and 25 per cent on total plant operating costs for a combined advantage of around 23 per cent on total costs. Producers in Japan and the Latin American NICs occupy an intermediate position. Japanese plant construction costs matched those of Taiwan ^{1/} in the late seventies but labour operating costs were higher, whereas the reverse was true for the Latin American plant.

Table 1: Estimated production costs for raw steel, by region
(\$ 1978/tonne)

Location Plant vintage	Taiwan New	S. America New	Japan New	United States New	United States Old
Input: Labour	22	39	84	97	130
Scrap	10	10	10	10	10
Coal	44	44	44	44	55
Iron ore	31	26	31	55	55
Other	85	85	85	85	107
Capital charges	146	191	142	177	33
Total cost	338	395	396	468	390

Source: Crandall (1981).

Memo item: 1981 cost/tonne:	U.S. flat roll	1. old plant vintage	474
		2. new vintage	540
	Japan flat roll	1. old plant vintage	386
		2. new vintage	474

Source: Washington industry sources.

Even a 20 per cent cost advantage is insufficient to reduce the risk of market entry for such large investments so that access to a rapidly expanding domestic market, such as that enjoyed by Japan in the two decades prior to the first oil shock, is required. Despite rapid rates of growth, demand in all but the largest developing economies has been insufficient to sustain integrated steel plants of minimum optimum size. During the seventies, 60 per

^{1/} In this essay, the Province of Taiwan is referred to as Taiwan.

cent of the growth in steel production in the developing market economies occurred in Brazil, Mexico, and India (Crandall 1981, p. 147). However, by the early eighties a number of dynamic economies in Southeast Asia along with several large developing country oil exporters were moving within range. The Republic of Korea announced plans in 1983 for a second world scale steel complex, having just completed the establishment of its first (Far Eastern Economic Review 1983). The increasing reluctance of Japanese equipment suppliers to assist expansion plans in Taiwan and the Republic of Korea underlines the competitive threat such producers represent to even the most competitive industrial producing region. The larger more dynamic developing countries are well-placed to displace Western Europe and Japan as exporters of basic steel products.

Since the late fifties a different mode of entry into steel production has been provided by the mini-mill which has taken a small, but increasing, share of world steel production. The mini-mill, using a predominantly scrap or DRI charge, can significantly undercut the large integrated plant in specific product lines such as rod and bar (Hashimoto 1982) and is likely to make further inroads into the product range of the integrated plant (Economist 1983A). The minimum optimum size of such plants producing a single product is currently around 750,000 tonnes, and 1,000,000 tonnes where more than one product is produced. The capital requirements for such plants in the early eighties ranged between 200 and 300 million dollars, one-twentieth of that for integrated units. Although the DRI mini-mill is sensitive to energy costs, since access to inexpensive gas can confer a 20 per cent cost advantage over producers using gas priced at internationally traded rates, this has been insufficient to challenge scrap-based mini-mills even in North America. The flexible construction and operating practices of the mini-mill operators in industrial countries have preserved their competitive edge both against low-cost exporters and large integrated domestic producers. Consequently, the production of such plants must be aimed at the domestic market, as in Mexico and Venezuela, or at local regional markets, as with Saudi Arabia's new steel plant.

3.2 Aluminium: the importance of the "shadow market"

Access to secure cheap long-term power supplies dominated the aluminium corporations' expansion plans in the late seventies. Estimates

of greenfield smelter costs for 1980 (Table 2) show a sizeable advantage for smelters drawing on brown coal in Australia, hydro-electricity in Brazil, Indonesia, and West Africa, and natural gas in the Middle East. Such locations offered costs one-sixth to one-quarter below those of new smelters in the United States, Western Europe, and Japan. A decade earlier when the power cost differential at potential new sites was 3 mills/kwh total production costs varied by less than 3 per cent (Younger 1970).

Table 2: Greenfield aluminium smelter costs, by region
(\$ 1980/tonne)

Input	U.S.	Canada	Brazil	W. Europe	Mid East	Australia	Japan
Alumina	623	623	578	641	575	592	563
Power	675	405	270	675	270	675	270
Labour	95	90	52	69	95	78	95
Thermal energy	18	18	18	18	18	18	18
Coke	135	135	135	135	135	135	135
Fluorides	25	25	25	25	25	25	25
Pitch	25	25	25	25	25	25	25
Other	220	220	220	220	220	220	220
Capital	354	354	407	370	442	354	389
Total cost	2,170	1,895	1,730	2,180	1,805	2,122	1,740
Total cost (\$/lb)	0.98	0.86	0.78	0.99	0.82	0.96	0.79

Source: Brown and co-authors.

However, unlike steel, the industrial country markets are expected to provide the main source of increased demand through the next two decades. Even the North American market, where per capita consumption rates have reached 25 kgs, should experience significant expansion from the construction, automobile, and container industries, partly at the expense of steel and plastics. Western Europe and Japan have per capital consumption rates two-thirds to one-half the North American level and anticipate growth in line with the growth of their GDP. Consequently, with aluminium consumption in most developing countries ranging downwards from 8 kgs in Mexico and Brazil through less than 3 kgs in Southeast Asia (Aluminium Association 1980), aggregate demand remains too low to remove the continued dominance of the industrial countries. Projections suggest primary aluminium consumption may

rise by around 10 million tonnes in the industrial countries during the 1980-2000 period compared with 5 million tonnes in the developing countries (Brown 1981). In contrast, steel demand is expected to be static in the industrial countries so that the bulk of the projected 150 million tonne increase in global demand to 2000 should take place in the developing countries.

In addition to cheap power, investors in new smelting capacity look for secure locations, so that Australia has been strongly favoured. Within the developing countries, those with actual and potential large dynamic markets, such as Brazil, Indonesia and Venezuela, have been favoured over smaller producers. The "shadow markets" in these countries provide an alternative to the international market should that fail to develop as corporate strategists expect. This has long been an important factor behind smelter investment in developing countries, where domestic systems supplying Brazil and India were the earliest such schemes.

3.3 Petrochemicals: the role of discretionary feedstock pricing

For naphtha users like the petrochemical producers of Western Europe and Japan, feedstock costs as a fraction of total costs rose from 50 per cent in 1972 to around 80 per cent by 1981 (Guyton 1981, Suganuma 1982). While naphtha prices rose in line with those of crude oil, prices of ethylene, a basic chemical derived from naphtha increased half as fast and final product prices rose only one-quarter. While the declining contribution of naphtha to final added value further down the production chain explains part of this difference, the inability of producers to maintain prices during a glut by boosting margins was also important. During the late seventies, the position of naphtha-based OECD producers was aggravated by a 25 per cent cost advantage enjoyed by North American producers before gas price deregulation eroded it. Exceptionally low capacity utilization rates also boosted production costs and inflicted heavy losses that required the premature retirement of 20 to 30 per cent of industrial country capacity. In the early eighties, therefore, entry by new exporters was particularly ill-timed.

Table 3: Estimated ethylene production costs for greenfield plants
(US\$ 1978/tonne)

Input	United States Gulf	Middle East
Feedstock and fuel	90	12
Utilities	2	4
Other plant costs	13	16
Depreciation (straight line 15 years)	21	32
Interest (at 5%)	-	16
Return on equity (pre-tax 10%)	33	17
Total cost/tonne	159	97

Source: Turner and Bedore (1979), p.102.

- Note:
1. Feedstock and fuel price \$0.40/MCF in Middle East; \$3.00/MCF in U.S.
 1. Capital structure for the Middle East project is assumed 33 per cent equity and 67 per cent low interest loan. U.S. project is assumed as 100 per cent equity.

Table 3 compares greenfield ethylene production costs for North American and Middle Eastern producers. The rapid expansion of large-scale projects in undeveloped locations resulted in plant construction costs up to three times higher than those for North America, though the differential was normally closer to 30 per cent. In addition, Middle Eastern exporters faced a 10 per cent cost disadvantage for freight and 10 to 20 per cent for tariffs. Table 3 shows how cheap capital and feedstock inputs could offset these disadvantages: typical gas costs have been \$0.50/MCF and interest rates have been in the range of 3 to 6 per cent. So long as they were not excluded from industrial country markets, the new exporters could expect to shade prices and achieve high capacity utilization rates. But viable operation depended on discretionary pricing of capital and feedstock inputs and artificially low prices imply a reduction in potential rents. It is not clear that, once the plants committed before the recession of the early eighties have been absorbed, further large-scale expansion of non-market production will occur.

4. The product life-cycle model

A revised version of the product life-cycle may capture basic relationships in the postwar evolution of the energy-intensive intermediate industries and thereby furnish insights into possible future trends with particular reference to the prospects for export into both industrial and developing countries markets. The genesis of Vernon's three stage product-cycle hypothesis for the international location of manufacturing (Vernon 1966) lay in his earlier efforts to explain the changing intra-metropolitan location of American industry (Vernon 1960). In the first stage a new product requires close communication with the nascent market and access to external economies in order to reduce risk and is, therefore, highly location-specific to the most advanced economy at the international level, and to a particular subregion at the local level. In the maturing stage the increasingly standardised product is exported to other advanced economies where production also becomes established. In Vernon's final "standardised" stage, slackening demand and reduced competitiveness in the market of innovation foster imports into that market from other advanced economies as well as from the developing countries.

Stobaugh (1970) adapted Vernon's product cycle hypothesis to the United States' petrochemical industry by arguing that economies of scale, rather than unstandardised production and external economies, caused locational inflexibility in the early growth of the industry. The economies of scale created significant barriers to entry, particularly in the small domestic markets characteristic of most developing countries (Drucker 1974), favouring brownfield expansion and exports from the country of origin of product innovation. Stobaugh concluded that the U.S. petrochemical industry had not yet entered the final stage of Vernon's product life-cycle, but noted that cheap feedstocks in the oil-exporting developing countries and the increasing scale of world trade in petrochemicals in relation to the minimum viable size of plant might bring that stage about during the seventies.

Vernon (1979) noted the declining utility of the product cycle model to explain the diffusion of new industry among the advanced economies during the postwar period as Japan and Western Europe narrowed the scale and technology gap that had existed between themselves and the United States. He suggested that the model might retain some value in illuminating the diffusion of industry from the larger developing countries to the rest of the Third World.

Krugman (1979) returned to an examination of Stobaugh's suggestion that the model might account for the shift of industry from the industrial to the developing countries. He concluded that as the developing countries acquired the capacity to undercut the advanced economies in the production of standardised products, innovation in the advanced economies might be necessary, not just to continue increasing their incomes, but to prevent a decline in incomes from occurring. Unlike the earlier work of Vernon and Stobaugh which drew strongly on empirical data, Krugman chose to set his analysis in a partial equilibrium framework using a two sector North-South model and stylised industries.

By adapting the more empirical approach of Vernon and Stobaugh to examine global change in the location of industry, insights are gained in addition to those provided by Krugman. The principal reasons advanced by Vernon and Stobaugh for the relative decline of the innovating region during the second half of the product cycle are the declining significance of research and development and of economies of scale, with uncompetitive wage costs (a critical factor for Krugman) of secondary importance. A hitherto neglected parameter that compounds these causes and is closely interlinked with them, is a changing demand growth dynamic. Once the threshold of minimum viable size is crossed, growth is rapid during the early part of the cycle, drawing not only from research and scale benefits but also from the operation of Verdoorn's Law (Lewis 1979, p. 156) as the rapid turn-over of capital stock boosts productivity and encourages high investment. Conversely, as demand slackens, declining investment prospects encourage owners to eke out capital so that aging plant vintage further retards productivity advance and raises the risk of factory fossilization (Auty 1975).

Assuming that the total demand of a regional market for industrial intermediate products describes a logistic curve through time, as evinced by the advanced economies (Cole 1973, Averbuch 1984), then the growth dynamic strengthens along the first (accelerating) segment. Hence the growth dynamic compounds the advantage of an early lead in the region of product innovation and may be lost to it when less advanced regions, having crossed the scale threshold, are moving along the first segment of their demand curves and acquiring the growth dynamic in their turn. As the world economy resumed its interrupted progress towards full integration after the Second World War a succession of initially less-advanced regions followed the United States' broad product consumption pattern, narrowing the gap between themselves and

that country in the process. First Western Europe, then Japan, and more recently the NICs of Latin America and Southeast Asia followed the lead region. The large populous countries of South Asia stand ready to follow in the early eighties, as global economic growth resumes - assuming that global economic integration continues (Chenery 1982).

The behaviour of firms through the product cycle can be incorporated into such a revised model drawing on work by Stigler (1951). He employed the product cycle to explore changes in corporate product strategy and evolving market structure, using the cotton industry as an example. Stigler described the early stage of product development (henceforth referred to as the "pioneer" stage), with its attendant high risk, as tending towards vertical integration. He expected the mature phase of an industry's development to lead to greater competition and the breakdown of vertical integration as expanding demand permitted entry by specialised firms at various levels along the formerly vertically-integrated chain. In the final stage (hereafter referred to as the "eclipse" stage) competition decreases and vertical integration may reappear as surviving firms are increasingly forced to internalise hitherto specialised services that the market will no longer support as independent business activities. Tucker and Wilder (1977) provide some empirical verification of this relationship. Some implications of the product cycle for the corporate strategy of capital-intensive resource-processing firms have been explored with reference to the oil majors (Auty 1983). The high risk of such capital-intensive chains requires an uninterrupted flow of materials to markets which encourages the persistence of vertical integration through the mature stage. A dominant product strategy is favoured during the mature stage as related product diversification proceeds in anticipation of eventual decline in the dominant industry. As markets become sated, an upsurge in mergers and product diversification occurs designed to perpetuate the growth dynamic at the level of the firm through the eclipse phase of the erstwhile dominant product. The development of new products which are related to the dominant product, but make greater use of research and development skills and the domestic market, assumes greater importance for the firm through the cycle (see Figure 2).

Table 4 combines the ideas of Vernon, Stobaugh and Stigler in a product life-cycle model that links the stage of growth via a market dynamic to the location of production, market structure, corporate risk, and corporate product strategy.

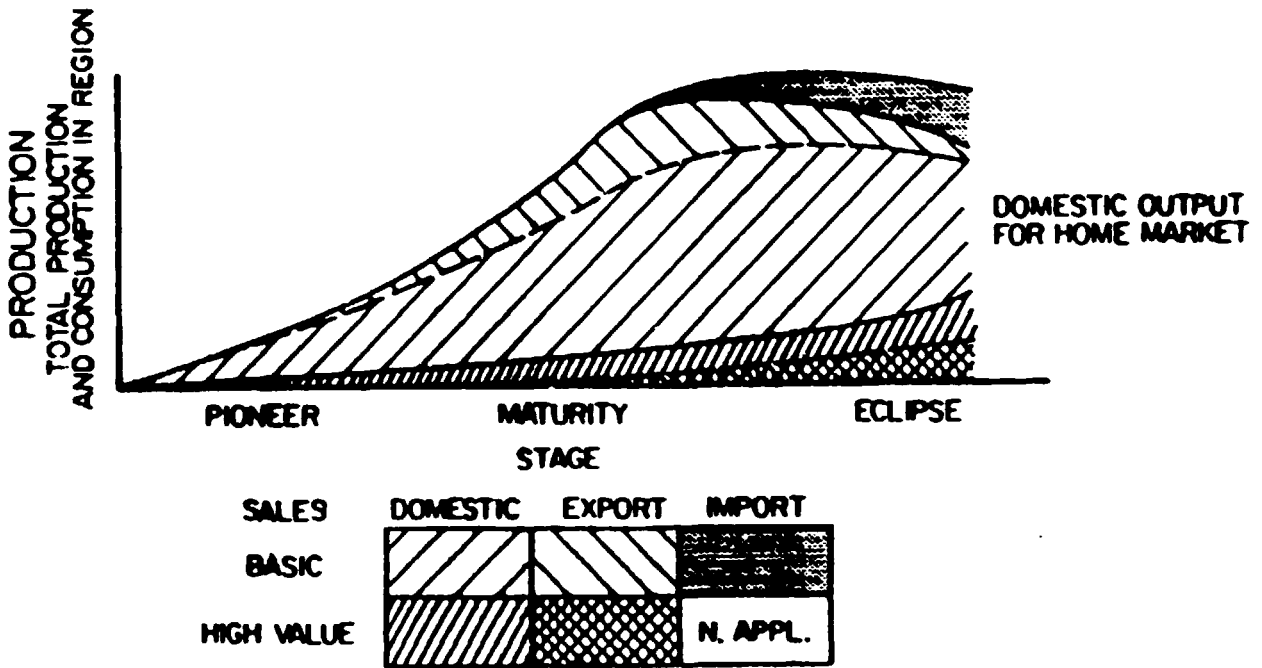


FIGURE 2 : THE PRODUCT LIFE-CYCLE

Table 4: Some characteristics of the product life-cycle stages

Stage	Pioneer	Maturity	Eclipse
Growth	High/Erratic	High/Moderating	Slow/Contracting
Risk	High/Declining	Low	Increasing
Market Structure	Oligopoly	Declining Oligopoly	Concentration/ State Monopoly
Product Strategy	Single Product	Dominant Product	Single Product/ Diversifying
Trade Strategy Substitution	Home + Export	Home + Subsidiary	Import

Demand for both petrochemicals and aluminium appears to have been passing through the late pioneer and mature stages of the product life-cycle in all three major advanced economy regions during the postwar period prior to the first oil shock, with Japan trailing North America in both industries and Western Europe closing the gap in petrochemicals. Steel appears to have been further into the demand cycle in all three regions by the first oil shock, with

the United States already moving into the eclipse stage. Meanwhile, domestic consumption in some developing countries, where growth was rising very rapidly, had reached levels of global significance by the late seventies in steel and petrochemicals, if not yet in aluminium. If, as appears possible, the product life-cycle has some validity in explaining pre-shock trends in global consumption and productive competitiveness, then a continuing strong link between the market dynamic and competitive production in these industries would be expected unless the cost realignments associated with the two oil shocks significantly weakened the postulated close link. That link appears to remain strong for the steel industry but to have been significantly modified in the case of petrochemicals and aluminium. However, the dependence of petrochemical producers on discretionary feedstock pricing and the concept of the "shadow market" for aluminium suggest the persistence of the link, albeit in modified form.

The product-cycle model as outlined here may provide useful insights on trends in international consumption and the location of production for energy-intensive industries, but it remains speculative and cannot predict future patterns. There are too many uncertain variables and there is nothing inevitable in the progression of the product life-cycle: major price changes and technological development can arrest, reverse or accelerate the passage of regional markets through the cycle. With the qualified utility of the product life-cycle model in mind, attention now turns to an assessment of the prospects for developing country exporters of energy-intensive intermediate products, exploring first marketing opportunities in the industrial economies and second those in the developing countries.

5. Geographical inertia in the advanced industrial economies

Forecasters now generally expect an economic growth in the advanced economies at around half the pre-shock rate, with demand flat or declining for steel, growing at around half the rate of GDP for petrochemicals, and expanding in line with GDP for aluminium. This would suggest that while aluminium demand remains in the mature stage, petrochemicals demand is following that of steel into the eclipse stage. Given the cost advantage of many new entrants in the developing countries, especially those in Southeast Asia benefiting from continued high rates of domestic economic growth, rapid penetration of the industrial country markets might be expected. That this is not occurring, and seems unlikely to occur, is due to the strength of geographical inertia in the energy-intensive industries.

The first adjustment in the industrial countries has been the cessation or marked slow-down in the construction of greenfield plant since the 1979-81 oil boom was punctured. Capital spending is being concentrated on those existing plants offering the highest return, such as refinery modification to produce more light products, and process improvements in metals production such as continuous casting. The corollary of this is the neglect of the more marginal plants that are being run into the ground and/or closed. However, the scale of capacity built in excess of demand in the industrial countries since the mid-seventies is such that this second important adjustment, closure, often involves plant of relatively recent vintage.

In the steel industry, Japan as the most efficient industrial producing region is expected to require only minor reduction, but cuts of 23 per cent for the EEC and 16 per cent for the United States are forecast for 1990 (Economist 1983B, p. 71). A more pessimistic source (Barnett and Schorsch 1983) suggests that some 40 million tonnes, or 30 per cent, of U.S. integrated steel production must be retired by 1990. Meanwhile, the developing countries are expected to almost double capacity over the same period so that their share of market economy steel capacity will have jumped from 6 to 19 per cent in the 1974-1990 period. Taking ethylene as an example of petrochemicals, global demand is expected to grow by less than 5 per cent until 1990 while market economy capacity will rise 10 per cent in the absence of any closures. Yet, within Western Europe and Japan some 30 per cent of capacity is surplus to domestic requirements and requires closure (Economist 1983C, p. 77). The most spectacular adjustment, however, has been made by Japan in the aluminium industry. Domestic production fell from 2.2 million tonnes in 1974 to around 400,000 tonnes in 1982 when the average cost of production at \$0.82/lb was almost twice the international spot price. At least half of the country's presently idle capacity of 1.2 million tonnes is not expected to operate again. Adjustments on this scale, painful for corporations, workers and regions, are mostly designed to balance domestic consumption and production. Developing countries must expect fierce opposition, reinforced by accusations that their governments unfairly subsidise capital and energy inputs, if further adjustments are required to accommodate their exports. Consequently, developing country exporters must continue to proceed cautiously, constrained by voluntary quotas and legal suits against unfair trading practices.

During the abruptly terminated mature growth stage of their main product, the heavy capital investments of the energy-intensive industries and their preference for a dominant product strategy slowed down their adjustment

to change. Few have found it practical to follow the example of City Services and exit from an industry, in this case petrochemicals. Although efforts to accelerate the process of diversification through merger have sometimes been impressive, as with Du Pont's take-over of Conoco and U.S. Steel's annexation of Marathon Oil, this process is normally a gradual one of trial and error. Movement upmarket into more specialised and technically advanced products is favoured. For example, a recent survey of the U.S. chemical industry found that demand for special products grew by 3 to 13 per cent annually in the 1971-81 period compared with near static demand for basic chemicals, while returns were 5 per cent higher at 19 per cent (Quinlan 1982). However, the simultaneous shift of large numbers of producers into such markets is likely to erode profit margins, while the research involved makes for lengthy gestation periods and considerable risk.

Established industrial country producers have advantages vis-a-vis developing country exporters that may be reinforced to retain their competitiveness. More heavily depreciated plant and the consequently lower capital costs can combine with market proximity and external economies sustain domestic competitiveness. Provided that rapid technological change does not occur, capital-intensive plants can be adequately maintained for relatively modest capital outlays: whereas the capital charges of greenfield plants may be one-sixth to one-third, those for older plant may be one-tenth or less (Crandall 1981). Even in aluminium, the marginal cost of existing plants is up to one-third less than the cost of ingot produced in the most efficient greenfield plant (Radetzki 1983) so that small increments in production are projected at existing facilities (Brown 1981).

Technical change can be employed to improve the efficiency of existing operations through both the short and long term. In petrochemicals, for example, the peculiar configuration of individual plants presents a unique set of product permutations at each complex with which to upgrade overall product profitability. Immediate avenues for enhancing plant profitability include building in feedstock flexibility so that inputs can be switched in response to changing feedstock availability and price, and close integration of the refining and processing complexes (Steinbaum and Pickover 1983, Bowen 1983). Longer-term technical options include the switch to coal as a feedstock for some petrochemicals (Hochgraf 1983); the expansion of the steel mini-mill's product range to include flat-rolled products, hitherto dominated by the integrated producers; and the development of alternative routes to aluminium

smelting which might reduce energy requirements by one-third (Brondyke 1983). Aluminium produced from scrap uses one-fifth of the energy required by primary aluminium so that as the industry matures and the stock of aluminium scrap expands, the ratio of secondary metal to primary metal will increase.

Penetration of industrial country markets by the new developing country exporters will be retarded by protectionism arising from the scale of adjustment required; the commitment of firms to maintain competitiveness in the absence of rapid diversification options; the improving efficiency of established operations; and longer-term technological adjustments to the new trading conditions. Krugman's gloomy conclusion, that the introduction of new product lines will be needed to replace jobs lost to newly industrializing countries (Krugman 1979) oversimplifies the process of adjustment in the industrial countries and discounts the strong forces for inertia that exist.

For developing country exporters the purchase of market-oriented finishing plants offers one strategy for entry into industrial country markets, while a less costly alternative lies in joint-ventures with those industrial country MNCs prepared to diversify geographically by drawing some of their intermediate products from the developing countries. Clearly, however, the capital costs of the former and the limited number of available partners for the latter narrow the scope.

6. Marketing prospects within developing countries

The developing countries are expected to provide the fastest-growing markets for energy-intensive intermediate industrial products. In the case of steel they appear likely to account for almost all increased market economy demand as compared with less than one-third for aluminium, with petrochemicals in between. Drawing on their sizeable and dynamic domestic markets, Brazil, Mexico, South Korea, and Taiwan will steadily erode the export markets of Japan and the EEC though whether they will enjoy similar export dominance is not yet clear (COWPS 1977, p. 100). The large increase in steel demand in the developing countries is unlikely to generate correspondingly large export opportunities. The diffusion of the mini-mill, which is helping to curb the developing country imports of the industrial countries (Miller 1984), will also encourage greater self-sufficiency within the Third World at the expense

of export. On the basis of committed projects, international DRI/ steel capacity will triple between 1980 and 1985 to 20 million tonnes (Manley 1981), with almost half the new plant in Latin America (principally Mexico, Venezuela, Trinidad, and Argentina); one-sixth in Asia (mainly Malaysia, Indonesia and the USSR); and one-tenth each in Africa (Nigeria and Libya) and the Middle East (Saudi Arabia, Qatar and Iraq).

Most steel projects have been designed for domestic consumption (Far Eastern Economic Review 1983) or for regional markets, as in the case of Saudi Arabia, though serious miscalculations of domestic growth in Nigeria and some Latin American countries may prompt dumping that maintains a downward pressure on international prices through the eighties. Consequently, small energy-rich or ore-rich developing countries face poor prospects. In particular, traditional iron ore exporters such as Mauritania and Liberia, which may have hoped to extend downstream into steel production, are likely to be especially adversely affected for three reasons (South 1983, pp. 73-74). First, demand may actually decline in the industrial country markets. Second, many of the new developing country producers will seek to integrate backwards into domestic supplies of ore and therefore provide few new markets for traditional producers. And third, the economies of scale in mining will encourage export from such new iron ore mines at the traditional producers' expense. Supplying ore and - if cheap energy is available near the iron ore mine - DRI in a joint venture with a multinational and a Southeast Asian steel producer appears to offer the best prospects.

Unlike steel, new entrants into aluminium production in the developing countries require a multinational partner for technological, logistic and marketing services, while the large scale of investment involved compounds the dependence on external capital. A world scale smelter of 180,000 tonnes calls for more than \$500 million of investment. This sum must be doubled if the costs of expanding along the entire vertical chain are considered, and tripled if the cost of power provision is included. The risks associated with projects on this scale have led even the largest aluminium corporations to enter consortia for expansion purposes. Since large volumes of power exist worldwide, the difference in risk between potential new sites emerges as the critical criterion of selection.

A least-cost allocation model of global aluminium trends during the 1980-2000 period (Brown 1981) projected that the industrial countries would absorb half the developing countries' increased production; South Korea and Taiwan one-tenth; and domestic consumption mainly in Brazil and Asian countries with large populations the remaining two-fifths. The model yielded three regional marketing systems in which Australia, Indonesia, and Eastern Siberia fed Japan; South America (principally Brazil) served the United States; and Western Europe drew from West Africa. However, whereas Australia has the advantage of low political risk, and Brazil and Indonesia have the cushion of large potential domestic markets, West Africa has neither of these advantages. It is significant that when the supply projections were revised, West Africa was eliminated first. Few small mineral economies have attracted substantial aluminium investment, hitherto: export smelters had severe start-up problems in Bahrain and Dubai, while plans for smelters in Saudi Arabia, Guyana and Trinidad have been indefinitely postponed. The smelters favoured in the expansion of the early eighties were those with either political stability or potential large markets and access not only to cheap power, but also to domestic bauxite reserves. Established bauxite producers oriented to traditional OECD markets are likely to experience slow growth in demand through the coming decade, like their iron ore-producing counterparts.

Despite projected rapid increases in consumption for the larger industrialising developing countries, petrochemical export prospects within the Third World are also likely to be restricted by a preference for domestic production. An ethylene forecast made by Shell in 1983 (New York Times 1983) expects Japan to import 1 million tonnes by 1990; in 1978 the country exported 700,000 tonnes. Western Europe was also forecast to have switched from exporting 1.5 million tonnes to a small but growing trade deficit. North America would double its exports to 1.5 million tonnes, largely through Canadian expansion, and the Middle East would transform a small deficit into a 1 million tonne export surplus. However, despite increased demand, the remaining developing countries were projected to reduce their imports by 1 million tonnes to 1.5 million.

Recent reports suggest that the large-scale expansion by Saudi Arabia is unlikely to encourage future non-market expansion. Returns are expected to be disappointing for the refined products and LPG, while higher capital returns

on gas-processing are based on gas prices that do not reflect the rising opportunity cost of gas (Stauffer 1983). Moreover, in order to achieve full capacity operation, prices will be tied to Rotterdam spot prices and the large volumes involved are expected to exert downward pressure on crude oil prices via sinking product prices. Kazavi and Fesharaki (1983) have estimated that for each million barrels of OPEC products entering the international market, crude prices will decline by \$2.20/barrels through the short term and more than twice that through the long term. Some 3 million barrels of OPEC-refined export products are expected to enter world markets by 1986. The withdrawal of Dow from two major developing country export projects and slow-downs and cancellations elsewhere suggest that, like established producers, new petrochemical exporters may find a slower expansion, more sensitive to economic parameters and more tightly bound to long-term markets, a preferable strategy.

7. Conclusion

The new forecasting consensus suggests that the oil shocks of 1973-74 and 1979 coincided with fundamental changes in the international pattern of demand for energy-intensive industrial intermediates. During the postwar period high rates of consumption growth in the industrial countries dominated global demand and combined with falling real costs of energy and transportation to heighten the attraction of industrial country market locations for the production of steel (Crandall 1981), aluminium (Auty 1983) and petrochemicals (Manners 1971). Although high rates of demand occurred in the developing countries and their steel production expanded particularly rapidly, they started from such a low initial base as to make little impact at the global level. The postwar dominance of the industrial country markets over incremental growth in global demand and production was probably waning before the 1973-74 oil shock but the change was simultaneously obscured and accelerated by the oil shocks. The industrial countries' slower economic growth and reduced consumption of energy-intensive intermediates were misdiagnosed as short-run adjustments to the sudden jumps in energy costs rather than long-term structural changes. Consequently, much of the new capacity installed in the late seventies was surplus to market needs.

Demand for steel and petrochemicals appears to have matured in the advanced economies though aluminium demand seems likely to grow faster at a rate in step with that for GDP. Market prospects for exporters look bleak through the medium term owing to the inertia of firms and industries in the advanced economies, and the determination of many developing countries to be nationally self-sufficient. The widened geographical cost differential that accompanied the oil shocks was insufficient to break the market dynamic /production link in global steel industry. It did weaken that link for petrochemicals and aluminium, but the need for inputs at discretionary prices (in the case of petrochemicals) and for a "shadow market" (in the case of aluminium) at the very least points to a continuing symbiosis, if not to market dominance. The larger developing economies with dynamic domestic markets face the least risk in developing large, capital-intensive energy-intensive industrial plants. Where these economies are also large in geographical area, and therefore tend to be well-endowed with natural resources, that advantage is reinforced. The corollary of this is that small mineral economies which must rely on exports are disadvantaged.

Although the revised product life-cycle can provide useful insights into the global adjustment of energy-intensive industry it is important to note that it cannot predict change. There are too many variables involved and there is nothing inevitable about the progress of particular regions through the demand cycle: they may accelerate, slow down or even reverse. This important qualification aside, the product life-cycle interpretation of the location of energy-intensive industry outlined traces the broad constraints within which regional policy using such industries as key instruments must operate.

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Silvio Borner, Bernhard Burgener, Barbara Stuckey, and Felix Wehrle

**THE CHANGING INTERNATIONAL DIVISION OF LABOUR
AND THE INTERNATIONALIZATION OF SWISS INDUSTRY**

1. Introduction^{1/}

In Section 2 of this essay we deal with world-wide structural change and the competitiveness of European industry. The empirical information presented focusses on Switzerland. Contrary to the customary way in which structural change is studied (centering on the need for adaptation at the level of the branch or product group), we focus on the industrial firm. In Section 3 we analyze the distinction between internationalized multinationals on the one hand and export-oriented firms with only one location on the other. There are fundamental differences between these two groups of firms in terms of the threats and opportunities which global changes pose for them. These fundamental differences led us to examine the foreign activities of the 15 largest Swiss industrial multinationals. The results of this survey are presented in Section 4. In addition, the most important internationalization strategies of Switzerland's small- and middle-sized industrial firms were researched by evaluating available data on individual firms and by conducting 30 case studies. The results of these two research methods form the subject matter of Section 5.

2. Global structural change: its scope and its momentum

A good 200 years of modern industrial history provides evidence enough that continuous change and innovative competition are nothing new. New are the great number of environmental parameters which are continuously and rapidly changing and increasing the level of their interdependence. This means that it is ever more difficult to understand the logic of contemporary change and to give this continuously changing reality a shape. The

^{1/} This essay, a revised version of an essay which appeared in Kyklos (No. 1 - 1985), is based on a study entitled "The Internationalization of Industry and Switzerland as an Industrial Location" by Silvio Borner, Bernhard Burgener, Barbara Stuckey, Felix Wehrle. The original report consists of seven discussion papers. A summary of the full report has appeared in German under the title "Die Sechste Schweiz - Überleben auf dem Weltmarkt" (Orell Füssli Verlag, Zürich). The authors are grateful to the Swiss National Research Foundation for generous support.

post-war world economic order - characterized by stable rates of exchange and relatively free trade - has given way to a world economic "disorder". This disorder arose because the absolute political, economic, and military power monopoly of the USA - the creator of the post-war global order - has been broken. Sales and investment-oriented activities abroad conflict more and more with the realities of power politics today; this conflict is most likely to increase in the future. Why? The old world economic order was essentially directed at regulating trade among the western industrialized countries and at regulating the level of uncertainty in trade and transnational investment decision-making which is due to monetary policies. This "American order" rested on two fundamental principles:

- A monetary policy based on the principle of stable parity and the dollar as the leading and the reserve currency; and
- Trade policy based on the principle of non-discrimination and free trade.

During the 1970s, the old order of the 1950s and 1960s gradually degenerated. On 15 August 1971, when President Nixon ended the convertibility of the dollar to gold, the USA formally gave up her leading role in the monetary sector. Despite the enormous economic power of the USA today, the American contribution to the gross domestic product of the OECD countries dropped from 61 per cent in 1950 to 34 per cent in 1980. While US industrial exports accounted for 29 per cent of the world-wide total in 1953, this figure had sunk to 17 per cent by 1963 and further to 13 per cent during the 1970s. At the same time US hegemony in the field of direct foreign investment has been successfully challenged.

Due to the permanent acceleration of inflation and the outbreak of the worst recession since 1929, a world-wide trend toward protectionism developed. After the shift from stable to floating exchange rates in 1973, the two principles of the old order - free trade and non-discrimination - were fundamentally put into question. The Group of 77 thus proposed the "New International Economic Order". The old and newly industrialized countries have resisted it. Nonetheless the context of the North-South struggle has been altered:

- Due to their sheer numbers and to shifts in real political power, the political self-consciousness of the developing countries has risen. In addition, the successful demonstration of power by the OPEC countries set an example in the entire Third World and led to a "labour union" stance of Third World countries toward the entrepreneurs of the First World.

- Technological and industrial developments within Third World countries have led to a continuous shift away from the classical international division of labour toward a new international division of labour. This shift may eventually lead to a final economic rupture of the North's dominance over the South.

- The trade surplus of the OPEC countries and the corresponding deficits of the oil-importing industrial and developing countries is forcing the western industrial countries to pay attention to the financial needs and monetary demands of the Third World.

- Through their high levels of imports and debt, the newly industrialized countries (NICs) and the developing countries have also come to play a significant role in the international business cycle and the global rates of economic growth. The Swiss capital goods industry, dependent to a great extent on the building-up of industrial capacity in the NICs and the developing countries, is especially affected by the debt and general crisis in these countries.

- In a world where the South as a whole is enjoying a growing level of political, economic, and financial power and where the level of global interdependence is also increasing, the "chaotic power" of the Third World has also grown. Without an attitude of partnership there is little chance for the old industrialized countries to enjoy a stable international financial system or any level of security in the supply of energy and raw materials.

The "new" international division of labour has been accompanied by a gradual recentering of economic growth impulses in the newly industrialized countries. The aging economies of the highly developed countries are experiencing difficult tests of their ability to compete and their ability to maintain their welfare states. The cautious, status-quo-conserving ("besitzstanddenkend") no-risk mentality of the majority and the new alternative values of a growing minority have weakened traditional national commitments to world market-oriented structural change. Since 1950, the number of independent countries has tripled. The technological monopoly of the North has been weakened as industrial know-how has spread to all corners of the world. From an economic point of view the old picture of a rich North and a poor South has given way to a polycentric constellation which includes the OPEC oil cartel and the industrial export offensive of the NICs.

The weakening of the North-South dichotomy was made possible by the export-oriented industrialization of the Latin American and Asian NICs, by the rapid rise of Japan to a world economic power, and by the tendency away from economic dynamism to welfare state conservatism in the industrial nations of Western Europe and, to a much lesser extent, North America. The uncompromising logic of the world market suggests a displacement of the dynamic center of world economic development from the Northwest toward the East and the South - toward Japan and the NICs. These young industrial, export-oriented countries have based their success on selling the products of their plentiful, low-wage labour forces, on increasing the qualification levels of their work force, and on an open, expansive policy of economic growth.

Together, these measures have resulted in a newly-won comparative advantage for a broad spectrum of industrial activities. In the past, redeployment only hit the shoe-making, textile, and watch-making regions of Switzerland. Today, however, one can also witness the decline of the West's comparative advantage in the automobile and electrical industries. In this sense there is little difference between the redeployment of the production of automobile components and sophisticated machine tools today and the redeployment of the textile and shoe industries a good decade ago. At the beginning of the 1960s, there were no NICs, that is, the developing countries were not integrated into the international industrial division of labour

through industrial multinationals or through indigenously owned companies. The basis of their integration was raw materials and agricultural products. Since then, there have been drastic changes, even though the dynamic of industrial production remains in the hands of a relatively few new industrial producers and exporters. The export value of industrial goods of the Third World's industrial leader in 1960 - India - has been surpassed by the new leader - South Korea - by a factor of 20. Hong Kong, Singapore, Taiwan, and Brasil have also overtaken India. In 1960 as well as in 1980, more than 80 per cent of the total export of industrial goods from the developing countries came from only 12 countries, but by 1980 the total export volume from these top 12 was 25 times greater than in 1960. Despite this phenomenal growth in exports, the developing countries as a whole account for only one tenth of the world's industrial exports. But the dynamic lies in the rates of growth.

Worries about structural adjustment in the aging economies have arisen primarily in the branches and regions whose comparative advantage has been shifted to the NICs. For Swiss companies and Swiss unions the fact that the developing countries exported only 1 per cent of the world's total exports of electrical products in 1963 and 12 per cent today is unsettling. The basis of the industrial success of the NICs and the developing countries no longer lies in the production of textiles, shoes, garments, and other "typical" LDC goods, but rather in the production of televisions, telephones, radar, household appliances, optical equipment, watches, automobiles, etc. The old industrialized countries must finally accept the fact that the high level of competitiveness of Japanese industry is no longer due to a cheap imitation of the West's technological innovations. Rather, clever exploitation of the world market has allowed Japan and even some NICs to rise to the top.

The social and political reactions in the North to the highly demanding framework of the global economy have been ambivalent and even contradictory. On the one hand, there have been attempts to check foreign competition, thereby supporting inefficiency in some industries. On the other hand, attempts have been made to maintain full employment and the real wage level, thus reducing the profitability, mobility, and flexibility in the market economy. Traditional technological and growth-oriented approaches find themselves on a course of collision with changing social and cultural values

and needs - people-oriented and environment-oriented values. It would be wrong to underestimate the socio-political and economic significance of today's alternative movements or to attribute to them, at this point, the ability to draw western society out of its crippling lethargy. The paradox and the irony of our time lies in the exaggerated desire for individual and entrepreneurial security, which in turn leads to a growing insecurity for the nation as a whole. Aversion to risk-taking and structural adjustment is not a cure for what ails. The hot potato is just being passed from one group to another, perhaps leading eventually to a vicious political circle blocking every challenge and any change.

3. The internationalization of entrepreneurial activities

The classical strategies of hardware exports and direct investment are being increasingly confronted by strong nationalistic measures to protect, control, and structure economic activities. New partnership-like forms of international operations are therefore becoming more and more common. The phase of intra-industrial interpenetration (1950-1970) led to a relatively weak level of pressure for structural adjustment. Specialization and product innovation were the major strategies of export-oriented Swiss firms. Such strategies enabled innovative processes and growth of production to take place without much redeployment and without the displacement of entire branches or product groups. Except for the large-scale immigration of foreign labour, foreign trade and structural change took place "without tears".^{1/} The political demands for indigenous production units (the Lima Declaration of 1975), the growing attractiveness of industrial locations in Southeast Asian and Latin American NICs, as well as the need to test promising marketing possibilities have all combined to bring forth a true internationalization of production, the forms of which range from licensing to 100 per cent controlled direct investments. In fact, the internationalization of companies is gradually replacing market-oriented foreign trade. Goods and services are increasingly exchanged internationally among the units of one firm. Strategic

^{1/} Cf. D. Lorenz (1981): "Ursachen and Konsequenzen des Neomerkantilismus", in: A. Woll (editor) Internationale Anpassungsprozesse; Berlin.

bundling of resources in non-market packaging leads to an "invisible" international transfer of resources. Structural adjustment and the innovation process take place primarily inside the firm. Competitiveness has come to be based on "private" comparative advantages internal to the firm. National resources and traditional indicators of competitiveness at the level of the branch or product group have been rendered virtually useless by these changes in the form of economic competition, at least in the realm of primarily knowledge- and/or capital-intensive manufacturing activities.

The main job of the innovation-oriented firm is to produce and market knowledge and managerial know-how. Even in a highly developed country like Switzerland, the nation cannot just rely on the profitable sale of know-how from its reservoir of technological and human potential. The firm-specific internalization of knowledge goes well beyond anything that can be patented or geographically tied down. Know-how which can be internalized includes the following: organizational capabilities, marketing experience, creativity, team-work, flexibility. The world-wide sale of integrated packages of know-how and services takes advantage of all forms of trade, investment, and co-operation. Just as the export boom was the key to success in the postwar period, today entrepreneurs are weaving their firms into diverse forms and types of international activities at all levels of company functions. Both classical export activity and direct investment are losing out to pressures for protectionism and local production. At the same time the opportunities for exports from the traditional industrialized countries are disappearing rapidly, as the credit available to developing countries is cut and as these countries try to meet debt payments by increasing their own exports and by limiting their imports. The complexity of world-wide economic structures and relationships is likely to continue to increase. Neither a slowing-down of the pace of basic innovation nor a major shift in the direction of technological change is to be expected in the near future. Rather, for the individual firm, standardization (in the production process) and differentiation (in the product itself) as well as world-wide mobility of know-how are bringing about radical changes in the locational advantages which formerly characterized the organization of industrial production.

The technological revolution in mass communication and transport has welded the old and the young industrial nations into one global economy. Most

of the factors of production have become globally mobile, the one but very decisive exception being labour. While national prices of mobile resources have given way to a world market price, enormous differences in the price of labour - still sold on national labour markets - means that significant differences in production costs will continue to exist. Technological change has also enabled complicated production processes to be sub-divided into a large number of simplified tasks, which, together with the drop in communication and transport prices, has brought about a world-wide decentralization of production without the decentralization of management and control. Due to the division of complicated processes into simple step-like tasks, many new technologies actually require less qualified labour than their predecessors - watch-making is a good example. All these factors have strengthened the position of multinational firms and newly industrialized countries. The traditional notion of a product and a process cycle is still useful, but since the 1960s we can observe a loosening of the relationship between the product/process cycle and industrial location. Firms, and especially the multinationals, are even able to redeploy production in the early phases of product development and marketing. Product and process innovations often go hand in hand with locational innovation, resulting in the possibility of redeploying throughout the product/process cycle.

The world-wide existence of excess industrial capacity, the proliferation of technological know-how, and international conformity in quality standards mean increased price competition. The price competitiveness of Swiss industry has lagged behind. The special strength of Swiss industry has been not to make basic inventions, but to innovate, that is to bring inventions into a marketable form. Until the middle of the 1970s, the Swiss export industry profited from the low exchange rate for the Swiss franc, which led to a general subsidy for exported goods. After the shock of the 1974/75 recession, Swiss exporters concentrated even more on product innovation and were able to service very sophisticated buyers on a world-wide scale. The resulting explosion in the assortment and variety of products eliminated the ability of many firms to compete pricewise. During the 1970s, competitors not only from other industrialized countries but also from the NICs had learned to rapidly copy sophisticated (Swiss) products but, in contrast to the Swiss producers, focussed their attention on producing cheaply and efficiently. At the same time Swiss production processes were becoming obsolete as a result of

the fall in the level of investment which took place in the 1970s - after the dramatic drop in industrial employment and in profits. That this is not just pessimistic chatter is evidenced by the present situation of the previously highly praised "invincible" Swiss machine industry; while the percentage of value-added due to wages and salaries was 70.5 per cent in 1970, it had risen to 86.7 per cent by 1980. This drastic rise is certainly due more to a drop in marginal profits than to an increase in the quantity of human capital. The cash-flow figures speak even more clearly. If we take a conservative estimate for depreciation costs and calculate the 1980 cash-flow for the machine industry, it is not even possible for the industry as a whole to write-off these depreciation costs. Since 1980, the situation has deteriorated.

The most scarce resource in international competition is management capacity. Its use, therefore, is increasingly taking place on a world-wide scale. For each marketed product there are countless functions involved - from the preparation of the raw materials to consumer services. The single firm is thus characterized by the fact that it performs certain functions itself (internalized functions), while leaving the market to perform the rest. During the years of economic growth, many Swiss firms built up their internal capacities - both vertically and horizontally - which meant that after 1975 they began to become victims of the sheer quantity of functions they had internalized. A large spectrum of internalized functions went hand in hand with a large product assortment. Attempts to refocus firm activities on the difficult to imitate elements of know-how in the areas of conception, organization, and technique are concentrating on that scarce factor - management. In particular the following three groups of management functions are coming under heavy scrutiny:

- acquiring better knowledge of the needs of the buyers to be served;
- putting this knowledge more quickly and more cheaply into a marketable bundle of goods and services; and
- taking advantage of firm-specific advantages more efficiently and with more versatility.

All of this means that modern firms - including firms which continue to sell hardware - must be viewed as know-how producers and sellers and then be managed from that point of view.

4. Foreign-based activities of Switzerland's industrial multitis

Switzerland has excellent export statistics. One knows exactly how much chocolate, how many diesel engines, or how many tranquilizers are exported - one even knows to which country. In contrast to most countries, however, Switzerland provides its citizens with no statistics on the many foreign-based activities of its industrial firms. One can only surmise that Swiss industry produces more chocolate, more diesel engines, and more tranquilizers abroad than it does at home. In other words, the very complete and sophisticated export statistics stand in contrast to the total lack of statistics on the internationalization of entrepreneurial operations. In order to close this information gap, we undertook a direct survey of Switzerland's largest multinational corporations, which together account for more than 80 per cent of Swiss industry's foreign-based activities. We gathered information about the foreign-based activities of Swiss industry for the years 1970 and 1980 and asked for a prognosis for 1985. In the following pages we present only the information collected on the development of employment - both at home and abroad.^{1/}

4.1 The division of labour in Swiss multitis: personnel at home and abroad

In Table 1 we have summarized the employment data collected in the survey. Personnel is listed according to whether employment is in Switzerland, in other industrialized countries, or in the developing countries. In comparison to other countries, Switzerland's multitis show an extremely high percentage of their total employment abroad. Nine of the fifteen multitis employ more than two-thirds of their personnel outside Switzerland. Only Sulzer, Asuag, and Von Roll have more employees in Switzerland than abroad. For the 15 companies surveyed, 75 per cent of their total personnel worked abroad and a good fifth of these in developing countries.

^{1/} For a more complete presentation of data on direct investment, foreign production, research and development according to economic areas, and figures on the destination of Swiss exports see Discussion Paper Nr. 84 "Veränderungen der weltwirtschaftlichen Rahmenbedingungen und die Internationalisierung der Schweizer Industrie"; by F. Wehrle, Socio-economic Series/The University of Basle (1983).

Table 1: Employment in the 15 largest Swiss multis (1980)

	<u>In Switzerland</u>	<u>In Industrialized Countries</u>	<u>In Developing Countries</u>	<u>Total Abroad</u>	<u>Total Employment</u>
Nestlé	7,400	99,600	46,000	145,600	153,000
Ciba-Geigy	22,900	45,770	12,520	58,290	81,190
BBC	21,760	74,640	8,900	83,540	105,300
Alusuisse	8,650	32,720	3,710	36,430	45,030
Roche	9,610	25,220	8,820	34,040	43,650
Sandoz	9,830	19,240	6,390	25,630	35,460
The largest 6	80,150	297,190	86,040	383,530	463,680
Oerlikon-Bührle	15,300	19,080	2,830	21,910	37,210
Sulzer	20,180	11,930	2,820	14,750	34,930
Holderbank	2,060	11,850	4,820	16,670	18,730
Georg Fischer	8,030	9,250	-	9,250	17,280
Schindler	6,010	12,660	2,990	15,650	21,660
Asuag	12,830	2,740	-	2,740	15,570
Landis & Gyr	6,480	9,740	-	9,740	16,220
Von Roll	5,760	490	-	490	6,250
Hesta	3,840	8,040	570	8,610	12,450
The largest 15	160,640	382,970	100,370	483,340	643,980

Swiss industrial employment totalled 692,000 in 1980; the 15 largest multinationals accounted for 160,000 of this total. These same 15 firms employed 483,000 persons abroad. It seems only a matter of time before Switzerland will be the first country in the world to employ more people abroad than at home. The regional distribution of foreign personnel in 1980 shows the dominance of Western Europe. The 15 largest multinationals employed 258,000 workers in Western Europe - accounting for half of Swiss industry's jobs abroad. The Federal Republic of Germany - which certainly cannot be called a low-wage country - accounts for the largest number of jobs in a single foreign country with 96,000. France has 52,000 employees. Among the 15 largest multinationals every fifth job abroad is now located in North America (93,000). About 100,000 jobs are located in developing countries, of which about one-half are in the NICs. In Latin America, Swiss companies employ 70,000 workers, in Asia 22,000, and in Africa 8,000. The growth in personnel abroad between 1970 and 1980 is summarized in Table 2.

Table 2: Change in the level of employment abroad:
Switzerland's largest industrial multinationals (1970-1980)

	The largest 6 firms		The 7th-15th largest firms		The largest 15 firms	
	Employ- ment	%	Employ- ment	%	Employ- ment	%
In Switzerland	7,270	10.0	-4,200	-5.0	3,070	1.9
In industrialized countries	74,420	33.4	23,790	38.4	98,210	34.5
In developing countries	33,600	63.7	6,610	89.1	40,210	66.8
Total abroad	108,020	39.2	30,400	43.8	138,420	40.1
Total employment	115,290	33.1	26,200	17.0	141,490	28.2

Inside Switzerland the employment level of the 15 companies we surveyed rose by 1.9 per cent. If one takes account of mergers, through which many thousands of workers in Switzerland became employees of these large corporations, one can speak of a stagnation of domestic employment, even though this varies greatly from company to company. Outside Switzerland the employment level of these same 15 firms grew by 140,000 to a total of 483,000 in the same period. The stagnation of employment at home was accompanied by a growth rate of 35 per cent in the industrialized countries and 67 per cent in the developing countries. Almost four-fifths of this growth of employment abroad can be attributed to six firms.

4.2 Consequences of the internationalization of industrial multis for Switzerland as a location for industrial activity: management, production, and employment

During the 1970s, the 15 largest Swiss multis (size based on sales) expanded their activities abroad at an unprecedented pace: employment grew by 140,000, while the level of investment, the value of production, and research and development expenses have all doubled. By 1980, the value of the multis' production abroad amounted to 61 billion francs; the total value of Swiss exports was only 50 billion francs. These statistics should not lead too rapidly to an overestimation of the degree of internationalization of Swiss industry as a whole. In contrast to small and middle-sized firms, the 15 largest Swiss multis show a high level of internationalization. The other 8,800 industrial firms - whether large or small, producing for domestic markets or for export - have in principle remained Swiss firms. Nonetheless, we must not underestimate the influence of these 10 to 15 large multis on the Swiss economic situation and on the small and middle-sized firms. The internationalized firms comprise the visible tip of an industrial hierarchy which is essential to the maintenance of the international competitiveness of Swiss industry as a whole. Together with the forecasts for the 15 largest multis for the year 1980, our findings have led us to summarize in ten points the probable consequences of the internationalization of Swiss multis for Switzerland as an industrial location and as a source of industrial employment.

- 1) During the 1970s, Swiss industry expanded its foreign operations significantly: more than every fourth job now located in another industrialized country arose in this period, while in the developing countries the number of employees of the 15 largest multinationals grew by 67 per cent. The increasing internationalization of Switzerland's large-scale industrial companies - above all in the form of direct investment - was simultaneously a necessity if their competitive position was to be maintained and/or improved.
- 2) The stormy expansion of foreign activities of Swiss multinationals during the 1970s is not just due to an internal tendency or desire for expansion. Many of the firms we surveyed claimed that because of political pressures on many markets, the firm was forced - even against company policy - to become a multinational. Under the pressure of the governments of both developed and developing countries local production is increasingly a condition for selling products in foreign markets. Political limits to company policies stem from the general trend toward protectionism. This trend has negative consequences for the role of Switzerland as an industrial location.
- 3) Foreign expansion of the large Swiss multinationals during the 1970s did not take place in the form of a direct redeployment of jobs from Switzerland to foreign countries. Rather, Switzerland experienced a rise in the quality of jobs, while quantitative expansion took place abroad.
- 4) At the end of the 1970s, the expansive phase of foreign activities came to an abrupt halt. The search for qualified workers to conduct headquarter-business in Switzerland gave way to cost-benefit analyses of how to reduce the number of headquarter-employees. At the same time the parallel expansion of exports and foreign operations is threatening to give way to substitution between the two types of activities within companies. This may lead to a net loss of domestic employment.
- 5) The year 1980 is seen as a turning point in the history of foreign-based activities of Swiss industrial firms. Two decades of sales-oriented thinking and strategy came to an end among Swiss

multis, although this fact has yet to be recognized by the general public. The experience of the 1980s and the 1985 forecasts for the 15 largest multis show only a small rate of growth for activities abroad - for the most part in North America, Japan, and the NICs. In the light of world-wide recession and the rise and spread of protectionism, a zero rate of growth remains a real possibility.

- 6) Inside Switzerland, the 15 largest multis expect a reduction in employment. Besides the watch-making industry, the machine industry expects a reduction of jobs in their headquarters plants. Only one company - a chemical company based in Basle - expects an increase of personnel in Switzerland. The expected drop in personnel is more apt to take place among the 7th to 15th largest companies. The six largest companies expect to hold personnel constant until 1985. A large-scale drop in employment is not expected.
- 7) The situation of research and development is similar to that of total personnel. Although R and D expenses of most Swiss multis have grown more rapidly abroad than at home, none of the firms set up facilities abroad by reducing the number of R and D employees at home. The forecasts for 1985 show no plans to redeploy research and development facilities.
- 8) Despite the fact that decisions about the development and regional distribution of research activities are made by the single firm, three trends have become visible during the 1980s. First, the 15 largest Swiss multis are planning a reduction in the rate of growth of research expenditures. Concretely, this means stagnation in the level of expenditures at home and a low level of expansion abroad. Secondly, R and D activities in Switzerland are concentrating more and more on basic research, whereas applied research and development is increasingly taking place abroad. To some extent this is due to political demands that such activities accompany marketing operations. And thirdly, the highest level of expenditures for R and D are, not surprisingly, expected to occur in growth markets: the USA, Japan, and the East Asian NICs.

- 9) Multinationality and internationalization alone do not guarantee economic success - nor do they ensure the maintenance of or increase in the number of jobs at home or abroad. Nonetheless, we can conclude from our survey that the firms which have the best chance of meeting the challenge of increased competition are those firms which have "willingly" and thoroughly internationalized. Problems in general and employment problems in particular will threaten those firms which have remained large export firms, firms which carry on little, if any, research and development in foreign markets, firms which have to fight against world-wide overcapacity. But the 15 largest Swiss multinationals are anything but homogeneous. The pressures for structural adjustment are at the moment much greater for Von Roll, BBC, Asuag, or Alusuisse than for Nestlé or Ciba-Geigy. These differences have repercussions for the success of regional policies inside Switzerland.
- 10) To the disadvantage of profit-making and the security of employment at home and abroad, economic and political risks in the growth markets of North America and Southeast Asia were considerably underestimated. Taught by the negative experience of maintaining an exaggerated sales orientation, firms are turning back to a profit orientation. Consequently, money-losing operations are being purged from many firms. The firms' forecasts show a concentration of expansive activity in North America and Southeast Asia. However, expansion in North America brings with it many dangers. On the one hand the North American market is too big to be ignored, but at the same time - even for Swiss multinationals with perhaps the exception of Nestlé and the pharmaceutical industry - the necessary organizational and financial commitments are so great that the very substance of firms can be endangered. In the NICs, the negative experiences of Nestlé in Argentina or BBC in South Korea show how quickly the situation can change for a firm in these heavily indebted growth islands on the underdeveloped continents. In the sense of long-term, profit-oriented strategy, the market position and the potentialities of Swiss multinationals are dependent on the development of new forms of international investment on all growth markets, forms of investment which allow risks to be distributed across the globe - among international financial organizations and among foreign business partners.

5. Strategies for the internationalization of small and middle-sized firms

5.1 Competitiveness: nation, branch, or firm?

If one judges the international competitiveness of Swiss industry during the 1970s on the basis of trade balances, market position, or factor endowments, one arrives at the conclusion that the textile industry is seriously threatened, while the Swiss machine industry is doing quite well. When, however, one has a look at the profits or the cash-flow of individual firms the picture is fundamentally different. Company figures show that the machine industry experienced a dramatic drop in marginal profits at the end of the 1970s: increasing competitive pressures brought about a decline in the non-wage share of value-added. The growing gap between the necessary rate of depreciation and the actual rate implies that this development is not due to an increased level of "human capital" but rather to a reduced level of profit. As a whole, the machine industry is no longer even in a position to finance the required level of depreciation. In the textile industry the situation is quite the opposite: Starting with a very low level of profit at the beginning of the 1970s, improvement has taken place. It seems that during the 1970s measures were taken which permitted many textile firms to continue production despite dramatic changes in market conditions. Such measures have not yet been found or employed in the machine industry. To date, the machine industry has relied too heavily on product innovation and product differentiation, strategies which have not been particularly profitable.

In order to test these preliminary conclusions, we undertook 18 case studies in the machine industry, four in metallurgy, and eight in the textile industry. Our objective was not to conduct a representative survey, but rather to explore the processes of change at the level of the individual firm. Our special interest was addressed to the various aspects of internationalization of small and middle-sized firms (up to 500 employees). We found significant differences between the degree of internationalization of Swiss multinationals and that of the small and middle-sized firms in our sample. The possibility of carrying out a global strategy is obviously unequally distributed. The concentration of activities in neighbouring countries is much greater among the small and middle-sized firms. Expansion of smaller firms to other continents is undertaken cautiously because financial and management capacities often limit the ability to invest abroad.

The difference between the internationalization of large and small firms is most clearly seen in the case of research and development, though even among the multinationals only the largest machine and chemical producers have been able to carry out a truly global R and D strategy. From this point of view one could divide Swiss industry into three types of firms:

- (1) large multinationals which think and act on a global scale;
- (2) large firms which are nationally oriented; and
- (3) small and middle-sized firms.

The differences between the latter two are much smaller than the differences of either to the multinationals. Our case study analysis of the internationalization of small and middle-sized firms will be presented below. First, we will discuss their behavioral parameters in terms of the structure of output and production. Then we shall examine some of the more successful strategies.

5.2 The structure of output

Our studies of small and middle-sized firms showed that - in contrast to the geographical mobility of output and factors of production - such firms are rarely mobile across the boundaries of the industrial branch in which they operate. Only in a very few cases did we find evidence of firms operating in another branch inside Switzerland - and this was a strategy for avoiding international redeployment. The borders of the branch are more significant barriers to the transfer of company-specific know-how than international borders.

During the last ten years, almost all firms investigated showed a significant change in their assortment of products. Many products not even available in 1970 were best-sellers by 1980. For the most part the "new products" were not really new, since they had been originally launched on the market by competitors. Product "innovations" were not new for the market but new for the firm. In many cases the "new products" were old products in which mechanical parts had been replaced by electronic parts. It is notable that in the machine industry many small and middle-sized firms undertook research in

the field of electronics and developed their own systems. There was virtually no co-operation with highly specialized firms, despite the fact that - given the stiff competition and the highly developed market for electronic components - this would have seemed a logical strategy.

In general, small and medium enterprises concentrated their efforts on a few product groups. Within these product groups the dominant strategy was clearly aimed at filling market niches. Swiss firms tended to produce a great many variations of the same product in order to satisfy a highly differentiated group of buyers. The assortment was also characterized by an increase in customer services and by the general improvement of product quality. Small and middle-sized Swiss firms have become more and more specialized in particular market segments where they can sell their high quality, high price products.

The disadvantages of this trend have become self-evident: avoiding basic competitive pressure by producing ever more specialized and expensive goods often leads to a "dictatorship of the salesmen", who in their desire to get orders are apt to agree to almost any special wish of the buyer. This practice has led to an explosion of the number and specifications of products, robbing many firms of their profitability. This, in conjunction with low levels of investment over a long period of time, explains why firms find themselves stuck with an obsolete production base and a huge array of products. The so-called flexibility of output has not been matched by a corresponding flexibility in production processes. This caused in turn an increase in costs and a consequent loss of profits.

Our case studies revealed the need and possibility for firms to focus on marketing a unique package of inimitable know-how and performance rather than concentrating on a well-defined piece of hardware. This strategy should be seen as complementary to attempts at untying bundles of know-how in order to package individual elements for separate marketing. The main objective of know-how orientation is to achieve multiple marketing of the firm's unique and inimitable capabilities and core skills.

5.3 The structure of input and production

We examined the production processes of the firms in our sample from two points of view: (1) the internationalization of firm activities and (2) the changes in the spectrum of activities conducted within the firm, that is, the degree of internalization or externalization. The first has to do with geographical boundaries, the second with the boundary between the firm and the market. It is clear that there has been an increase in the integration of Swiss firms into the world market, not only in marketing, but also in production, research and development, finance, and within branch plants in sales, assembly, and production.

The special form which internationalization takes depends on the degree of control the firm wishes to achieve over a particular activity. In fact, the degree of entrepreneurial control covers a broad spectrum - from complete lack of control (spot sale on the world market) to complete control (the operation of a branch plant). The means by which control is achieved extends from non-binding discussions to contractual regulation, from minimal financial participation to 100 per cent ownership. The concrete use of a particular means of control - and thereby the choice of strategy - results from the possibility of profitable sale of the firm's unique competitive advantages. In order to take full advantage of its core skills a firm must decide which activities or functions to control and to what degree control is necessary. If the firm-specific advantage lies in the realm of production, then the marketing of this element demands control over a particular set of functions. If the firm's unique advantage lies in the realm of marketing, then this will result in the internalization of a different set of activities. Depending on a firm's unique core of know-how, particular activities must be internalized and others externalized.

Discussion of entrepreneurial strategies from this perspective means that the subject of direct investment is taken out of its isolation and can be seen as one of many ways of exercising control. The spectrum of direct investment can range from export to 100 per cent ownership of a branch plant. Between these two poles lies a multiplicity of forms of co-operation - some

with and some without financial participation: barter, marketing, sales agreements, advisory and management assistance, licensing, franchising, plant construction, sub-contracting, joint ventures, etc. The flexible use of a variety of forms of co-operation should enable optimal marketing of a firm's unique core skills and an optimal level of internationalization as well. In other words, the degree and the form of internationalization must be optimized and coordinated with the unique core activities of the firm.

5.4 Successful strategies of small and middle-sized industrial firms

It is very difficult to test statistically just which measures and decisions have led to a successful strategy in an individual firm. Even large data banks do not permit clear-cut theoretical conclusions or a true understanding of entrepreneurial dynamics. Nonetheless, our case studies enable us to divide the firms studied into four groups: (1) those which especially failed or (2) especially succeeded during the time period investigated, (3) those which developed from very good to very poor firms, and (4) those which developed from very poor to very good firms.

In the case of firms which lost a great deal of their competitiveness during the 1970s, it is obvious that there was a fundamental lack of co-ordination between a firm's internationalization strategy and its actual core skills. A famous brand name and a good marketing organization do not necessarily require internalization of production activities at the international level. Depending on the nature of a firm's unique know-how, concentration of control on activities other than production may be more profitable. Firms which experienced a dramatic improvement in their position often renounced internal control of activities in which the firm had no particular competitive advantage. Internalization and internationalization were limited to the central core functions. Other functions were purchased on the market. This is also true for firms which showed a strong market position both at the beginning and at the end of the period investigated. On the one hand such firms always look systematically for new ways of marketing their particular competitive advantage and on the other hand they rely on internal

control of activities only where it is absolutely essential. In addition, the spectrum of internal control is treated flexibly. At any moment the situation may call for further externalization or internalization.

The case studies also show that successful strategies are based on precise co-ordination of core skills and the scope of internally controlled activities. Each individual activity is internalized or externalized to the optimal degree. It is obvious, however, that for most small and middle-sized firms internationalization too frequently takes on traditional forms. It seems that a great deal of potential with respect to exclusive know-how remains unused or at least underutilized. Too much emphasis on product innovation leads many firms to overlook new forms of production and internationalization which would allow multiple, international exploitation of firm-specific advantages.

6. Summary and conclusions

- (1) During the 1970s, Swiss industry as a whole extended its foreign-based activities considerably. This increase in internationalization - which for the most part occurred as direct investment - slowed down at the end of the decade. There is a clear qualitative difference in the internationalization processes of large multinational companies on the one hand and national companies of all sizes on the other.
- (2) Conceptually, internationalization should not be limited to production and sales, but should rather be extended to cover other areas of firm activity: purchasing, research and development, financing, etc. Similarly, internationalization should not be conceptually reduced to traditional forms such as export, licensing, and direct investment. The resulting, expanded concept of internationalization enables one to perceive the ever-growing level of internationalization, even of small and middle-sized companies.

- (3) Internationalization is no cure for all the ills of diminishing competitiveness. The optimal structure and co-ordination of innovation, internalization/externalization, and internationalization must be central to all company strategies. It is obvious, however, that it is essential to view problems and opportunities in terms of the global economy and take this into account in every discussion of company strategy.
- (4) The concept of innovation should not be limited to hardware - products and production processes. It must be seen as relevant to all types of entrepreneurial activities: purchasing, production, sales, research and development, finance, and organization.
- (5) The profitable realization of competitive advantages should determine the spectrum of activities a firm controls directly, indirectly, or not at all. A firm's know-how must not only be offered for sale in the form of a compact package; in addition, this bundle of product components must be untied and the profit-making potential of each component must be examined and taken advantage of separately. In this way the structure of a firm's output can be composed of many elements, each of which is based on a different degree of control - a different degree of internalization and internationalization.
- (6) It is apparent that direct investment and export are only two extreme forms of international operation. Successful firms are characterized by a flexible strategy of marketing their core abilities. In order to prevent imitation of these unique abilities they choose among many types of control - both external and internal.
- (7) New forms of co-operation are continually gaining in importance: compensation, management contracting, licensing contracts, joint ventures, sub-contracting, etc. A varied combination of strategies allows maximum flexibility in the type and length of commitment, in the distribution of risks, and in the degree of control, thus creating a broad spectrum over which internationalization processes can take place.

Susan Christopherson and Yehuda Gradus

HIGH TECHNOLOGY IN THE HOLY LAND

1. Introduction

During the past ten years, Israel has emerged as a major centre for technological research and development outside the industrialized Western countries. Movement along a high technology development path has been swift and is effecting major changes in Israeli society. Israeli census data indicates that between 1965 and 1982, the proportion of men employed in agriculture dropped from 13 per cent to 7 per cent while the proportion of men employed in scientific and professional occupations doubled from 9 per cent to 18 per cent. According to United Nations data, a higher percentage of the population in Israel is engaged in research and development activities than in any country in the :

Much of this activity is directly attributable to foreign investment, especially by U.S. headquartered firms. 150 U.S. firms have subsidiaries in Israel involved in some form of research and development or have sub-contracted for research and development with an Israeli firm or another U.S.-Israeli subsidiary. At least 28 of these firms rank among the Fortune "500". Among the firms investing in Israeli research and development are Hewlett Packard, General Electric, Control Data, Intel, Monsanto and Motorola. National Semiconductor, headquartered in the "Silicon Valley" in California, is one of the biggest research and development investors in Israel with a projected 55 million dollar investment scheduled for the next several years.^{1/}

There are several reasons for taking a close look at why and how Israel has emerged as a major site for research and development. First, the types of

^{1/} A comparison of listings in the Directory of U.S. Firms Operating in Foreign Countries (1982) and a directory of firms involved in research and development in Israel (Israel, Ministry of Trade 1984) indicates 19 U.S. headquartered firms with research and development subsidiaries in Israel. 12 of these firms are in the electronics industry, 4 in chemicals and pharmaceuticals, 2 in metal working and 1 in optical equipment. U.S. firms also participate in joint ventures with or subcontract to Israeli firms, such as Oprotech, which designs and manufactures computerized electro-optical systems for the printed circuit board industry. Among Oprotech's customers are General Electric, Hewlett Packard, Texas Instruments and Rockwell International (Israel, Ministry of Trade 1984). Further research is necessary to determine exactly which research functions are being carried out by subsidiaries in Israel or subcontracted to Israeli firms.

activities being located in Israel are quite distinctive and illuminate differences within the high technology industrial sector. Secondly, high technology investment is closely associated with Israel's geo-political objectives but conflicts with competing intra-national goals. Finally, and more generally, the process of high technology location in Israel implies the inadequacy of descriptive devices such as the new international division of labour if they are predicated only on wage differentials.

2. Research and development as a subset of international production

Research and development, like the general category of high technology, is only beginning to be defined. Recent attempts to differentiate among high technology industries provide a crude basis for distinguishing the types of employment which might be contained within high technology research and development. They suggest the kinds of questions to be asked rather than providing a satisfactory answer. At the least specific level, high technology industries are defined in terms of the relative number of scientific personnel (Markusen). A more complex approach combines the number of scientific personnel with the level of research and development expenditure in the industry (Thompson and Thompson). Finally, there are those definitions that attempt to define high technology in terms of the products being produced, in terms of the value of research and development in the final product (Riche, Hecker and Burgan 1983).

While they capture some broad differences, classificatory variables miss an important set of dynamics which differentiate one form of research and development from another. These dynamics are based in the competitive situation of the industry and firm, the industry in the world economy and the firm in the industry. With this in mind, we can distinguish industries such as consumer electronics which are highly competitive and oriented toward a large market, from industries such as aerospace and defense electronics which produce customized products for particular markets. In the first type, research and development takes the form of product differentiation and process innovation to reduce costs. In the second, research and development involves customizing products for a specialized use.

The organization of research and development in a particular industry will be further mediated by the history of production organization and the labour process. For example, in some industries, most notably electronics and chemicals, research and development has frequently been decentralized. This decentralization is related to the tendency of firms in these industries to acquire subsidiaries where research and development activities are already located and to require a link with production facilities, such as a fabrication plant (Malecki 1980; Krumme and Hayter 1957).

3. Research and Development in Israel

Foreign firm investment in Israel is overwhelmingly intended to produce intermediate products for market niches, particularly in the defense and aerospace industries. As has already been suggested, the investment typically comes from very large firms, such as Lockheed, Rockwell International, McDonnell Douglas and Boeing. It is not entrepreneurial research of the kind carried out in small firms on route 128 in Boston, or in the Santa Clara Valley in California. It can more properly be characterized as product modification and differentiation rather than product development.

While many of the technical skills required are as sophisticated as in the smaller product development firms, research and development for these industries and markets is carried out by teams of engineering and technical employees, not by entrepreneurs. In the small product development firm, a diverse range of skills is required, including management and marketing. The research and development department of a large firm is likely to be a separate organization which may be located away from other headquarters organizations.

The ideal kind of labour force required for this kind of activity combines somewhat opposed qualities, short-term stability and long-term flexibility. The work is primarily organized in terms of fixed-time development project, ranging from two to six years. To be most productive, the team must retain a stable membership over the course of the project. On the other hand, the employer or contractor does not want to commit himself to employ highly specialized and costly employees beyond individual contracts.

It is primarily U.S. headquartered firms that are searching for research and development facilities outside the centres of innovation in their home country. In the United States, firms which require engineer employees have had to compete with many other firms with similar labour requirements. The absolute cost of labour has been secondary to their need to maintain a stable labour force and to control the results of research and development (Whalley 1984).

Access to venture capital and the dearth of management jobs for engineers encouraged lateral job mobility as well as spin-offs built on know-how, ideas and experience gained in the parent company. According to one survey, engineers and technical employees average two years employment per company in the Santa Clara Valley. Employers queried about this turnover indicated that loyalty was the most important quality they looked for in an employee (Murray 1981).

Obtaining and maintaining the labour force for the kind of on-going research and development efforts that are part and parcel of manufacturing in industries like aerospace, chemicals and automobile production has typically involved three strategies:

- locating in amenity-rich areas such as Southern California which tends to increase other production costs;
- providing stability-inducing rewards such as stock options; or
- subcontracting or moving research and development to locations outside the United States. This last option is limited to an extremely small number of locations, the most notable of which is Israel.

To attract this activity away from U.S. sites, the potential labour force must be less prone to move and be less capable of spin-off activities. Developed agglomerations of research and development are desirable new locations because they offer the possibility of raiding existing firms (Thwaites 1978). Along with Israel, two other contenders in this very limited circle are Northern Ireland and Singapore (Friedland 1984). All three countries have small national markets and very little venture capital. All three have concentrated urban centers and limited urban hierarchies. They

combine highly skilled labour with access to low wage labour that can be employed in production plants.

Through their active investment authorities, Israel, Northern Ireland and Singapore compete with one another and provide considerable incentives to firms willing to locate research and development facilities in their country. In Israel, for example, a newly established company can have up to 66 per cent of its research and development costs subsidized. A special research fund allots 50 per cent of recognized costs of research and development projects in industry. Subsidies for this kind of activity in Israel are also provided by funds from the United States government through a bi-national industrial research and development foundation. Funds from this project currently support 66 facilities and projects in Israel.

Israel is in a strong position to attract this particular kind of research and development effort. It has a skilled labour force (28 per cent of Israelis have more than 13 years of education), concentrated in a small geographical area. For a variety of reasons, some of which will be discussed later, social, economic and legal constraints severely inhibit spin-off ventures by the members of this labour force. Very importantly, research and development activity can be located proximate to a low-cost production work force. An added benefit to many firms which produce products in Israel is access to the European market through the European Economic Community.

Although the political situation in Israel, including the Arab boycott, might be expected to inhibit foreign investment, this is alleviated by Israel's strong defense ties to the United States. The inflation rate approaching 1000 per cent per year might also be a strong detriment but this has a limited effect on firms that are primarily producing for export. In addition, the Israeli government is making a concerted effort to attract investors and dispel fears about the economic and political security of production in Israel. A measure of their success was an economic conference held in Jerusalem last year that attracted 400 participants, 47 per cent of whom came from the United States. The Israeli Investment Authority particularly invited officials of technology-oriented firms whose annual sales exceeded \$100 million annually.

4. The historical context

To understand the role and potential effects of high technology in the Israeli economy, two intersecting historical processes must be examined: government-initiated population settlement policies; and the Israeli response to continual external military threat.

First, government population dispersal policy during the mass migration into Israel in the 1950s has resulted in serious regional inequalities. Of the one million Jewish migrants who entered Israel during this decade, the majority were of North African or Asian origin. These immigrants were overwhelmingly settled outside the high-growth coastal centre in the peripheral development towns where they currently constitute at least 70 per cent of the population (see Map 1). A portion of the Sephardic migrants settled in or eventually migrated to the major cities but are concentrated in urban quarters on the outskirts.

Among the statistics which describe the inequitable relationship between the central cities of Tel Aviv and Haifa and the peripheral new towns are a higher infant mortality rate in the periphery, higher unemployment, lower levels of municipal services, and a shortage of skilled teachers (Hasson 1981, Gradus 1978).

The centre, which now encompasses Jerusalem, continued to be dominated by the Ashkenazim or European Jewish population. The "Oriental" migrants, as they are referred to in Israel, were relegated to the bottom of the class structure and mainly to the geographic periphery. Only the Arab population ranks lower on the socio-economic scale.^{1/}

While Israeli society became more heterogenous as a result of migration, that heterogeneity was defined by a clear spatial division of labour between the European-Ashkenazi upper-class centre and the Arab and Sephardic

^{1/} According to the Israeli Central Bureau of Statistics, the average Arab household in urban area has only 70% of the income of its Jewish counterpart. Since about half the Moslem Arab population in Israel is rural, the income gap would be still wider if the Arab population as a whole were compared with the Jewish population (Friedlander and Goldscheider 1984).

periphery. Today, approximately 70 per cent of the population of Israel resides in or adjacent to the core cities of Haifa, Tel Aviv and Jerusalem and 30 per cent in the development towns of the Galilee and Negev. The approximately 15 per cent of the Israeli population that is Arab is concentrated in the Galilee and in and around Jerusalem.^{1/} Population groups are also highly segregated within Israeli cities, with Haifa and Tel Aviv showing significantly higher indexes of segregation among ethnic groups than Jerusalem (Friedlander and Goldscheider 1984).

Because of the political consequences, the government attempted to redress the inequalities associated with the distribution of the North African immigrant population in development towns. This regional development policy took the form of (largely unsuccessful) regional industrial redistribution policies in the 1960s and 1970s. The lack of success of these policies is attributable both to the kind of capital available for industrial development and to the character of labour demand in what was at that time a limited private sector.^{2/} It was primarily low wage, mature industries, and

1/ When Jerusalem was annexed, 60,000 Arabs were added to the Israeli population. There are also significant Arab minorities in the North (the Druse) and in the South (the Bedouin) of the country.

2/ At the heart of the Israeli economy is a set of industries that are government- or worker-owned. The public or government sector of the Israeli economy invested in and controls certain industries with the purpose of creating a diversified national economy and ensuring the continued operation of strategic industries. This sector includes a wide variety of industries from food processing to banks and the highly successful aerospace industry dominated by Israel Aircraft Industries Ltd., the single largest enterprise in Israel. Industries controlled by the public sector account for 15 per cent of the total industrial output. The labour or Histadrut sector also employs people in a range of industries throughout the Israeli economy. Enterprises in this sector are organized as co-operatives or are companies owned by the central organization of the Histadrut. The largest of these is Koor Industries, a conglomerate which employs over 33,000 people in 80 industrial plants. In 1982, Koor sales accounted for 15 per cent of Israel's industrial production and 15 per cent of industrial exports. The private sector accounts for approximately half of the economic activity of the country and industrial output. The degree of private holding varies by industry. In the agricultural sector, only 15 per cent of production is private while textiles, diamond polishing and many of the new high technology firms are privately held (Bank Leumi 1984).

subsequently, branch plants, that responded to government incentives and located in the development towns in the periphery during the 1960s. Consequently, only one-fifth of gross investment went into development towns (Hasson 1981). Social and economic disparities have not lessened during the past thirty years of Israeli development.^{1/}

5. The military challenge and its political and economic consequences

The dynamic political and economic forces that stimulated the introduction of high technology research and development can be traced to the late 1960s. Israel's involvement in two wars in the space of seven years meant an infusion of a substantial capital investment in defense industries. The development of the aerospace industry was also stimulated by the French arms embargo which increased the government's commitment to self-sufficiency. It was the expansion of this sector that eventually spawned Israel's research and development revolution as engineers began to spin off new high technology industries, such as Tadiran and Elscint, which were substantially if not wholly privately owned. In this way the public or government sector acted as a stimulus for a high-growth private sector.

The further expansion of this private sector activity "at the top" and its spatial character is the result of both economic and strategic planning in Israel. As in many countries, attention shifted in the 1970s from regional equity to national economic development, on the assumption that the stimulation of the national economy must take precedence (Chisholm, 1976). In Israel, this shift was further influenced by concerns for national security,

^{1/} There was a widespread assumption that ethnic differences would disappear in the second generation but this has proved not to be the case as e.g. demonstrated by declining rates of intermarriage between the European Ashkenazim and Oriental Sephardim. Socio-economic status has also remained remarkably the same for various ethnic groups since their incorporation into Israeli society. The spatial policies of the government, especially as they have affected the Arab and Sephardic Jewish populations, are at least a contributing factor to this lack of integration.

for settling the predominantly Arab Galilee with a Jewish population and for securely incorporating Jerusalem within the Israeli polity. The spatial expression of these policies will be further discussed in the next section.

For firms interested in locating in Israel, the less tangible effects of the social and political character of Israeli society act as strong stimuli to investment. Because of their experience of war and sense of being under siege, Israelis are very security-conscious and thus very desirable employees for firms doing military-related work. Ideologically, many Israelis are community-oriented and tend to be co-operators rather than competitors in the workplace. Social security benefits, such as pensions, tie people to their jobs while high taxes with few deductions offer little incentive for entrepreneurial ventures. These conditions make it more difficult for the individual entrepreneur to strike out on his own, even if he has access to capital. There is another way in which the transnational firm locating in Israel benefits from the social security provided by the quasi-socialist public sector: the high levels of health care, education and cost controls on essential food products provide an invisible wage-cost subsidy to firms.

Finally, the emergence of Israel as a high technology center can be attributed to two interconnected international flows, those of investment capital and military alliance. The military character of Israeli society and its alliance with the United States are well documented. What is less well documented is the economic dimension of this alliance: the United States is the major purchaser of Israeli defense products. This trading relationship is strengthened by offset agreements, under which Israeli purchases from U.S. companies must be compensated by U.S. firm purchases in Israel. These purchases are covered by offset credits to the firm by the U.S. government. Examples of the relationship fostered by offset agreements include those between General Dynamics, Hughes Aircraft and Honeywell with Elbit computers and GTE with Tadiran. These ties have been strengthened by the use of American technical specifications in the production of defense-related products. In addition, the U.S. government must approve export sales of Israeli military hardware containing U.S. components. The Kfir jet, for example, has a General Electric engine and falls under this agreement.

These agreements and the stable national and international market they assured enabled investment in local production infrastructure. The dominance of defense industry production in Israeli research and development is demonstrated in several ways:

- 46 per cent of Israeli research and development funds go to defense-related projects (as compared with 2 per cent in Japan);
- the largest research and development institution in Israel, with more than 5,000 employees, RAPHAEL, is a division of the Israeli Defense Forces;
- 30 per cent of all Israeli exports, except diamonds, are from the defense sector and 75 per cent of the exports in electronics and metal products (the fastest growing sector in the economy);
- 40,000 people work in the three major state defense industries, half of them in exports.

Israeli defense industries have always specialized in the improvement and modification of weapons systems, not in the creation of new systems. They have had to maintain confiscated and imported surplus weapons and thus learned to overhaul and manufacture ammunition and parts for those weapons. The defense alliance with the United States created a stable but limited market that has expanded to the world as Israel's ability to customize weapons systems has increased. As in the United States, the technological advances associated with the defense industry (and the infrastructure and expertise it fostered) stimulated research and development in non-military fields such as robotics, lasers, computer software and medical technology. These activities, however, are dwarfed by the dominant defense orientation of the Israeli high technology sector.

6. The interregional location of research and development

Because the phenomenon we have been describing is of fairly recent origin, its specific locational character is only beginning to emerge. Studies are now under way which will describe in detail the geographic location of high technology firms, including research and development (Felsenstein 1984, Razin 1984). Preliminary information from the Israeli

Association of Manufacturers and from the Investment Authority provides strong indications of the geographic concentration of the new sector. Virtually all of the firms in this sector are located in the Haifa-Tel Avia corridor (see Map 2 and Table 1). Jerusalem has the fastest growing high-technology sector, almost exclusively built on foreign investment. This rather small geographic area also encompasses the major universities, all of which have established special intitutes to apply technological advances to industrial needs. Preliminary information indicates some differences in the locational characteristics for types of firms.

Table 1. The location of companies active in research and development in Israel

Location		Percentage
Tel Aviv metropolitan area	158	51
Haifa metropolitan area	34	11
Western Galilee (including Umm al-Fahkh and Nahariya)	7	2
Jerusalem	27	9
Kibbutzim	57	18
Non-metropolitan centre	8	2.5
Beer-Sheva	11	3.5
Negev (Dimona)	1	
Ashdod	3	
Ashquelon	4	
Upper Galilee	4	
Total	314	97

Source: Data gathered by Bank Leumi, 1984, Research and Development in Israel.

The multinational firms that combine research and development with a fabrication plant appear to be locating in the Haifa area and in the adjacent "Region 2000", recently targeted as a high-technology region. The attractions of Haifa include the Technion, Israel's technical research university, and a high-quality physical and telecommunications infrastructure with access to a low-wage Oriental Jewish and Arab labour force in the more rural Galilee. In this respect, the development of Haifa and the adjacent Galilee, including the towns of Karmiel, Maalot and the private suburban development of Kfar Vradim resembles similar industry-residential configurations in Santa Clara and San Diego counties in California (see Map 1) (Saxenian 1983).

Veeco, for example, is a transnational firm that has located a wholly owned subsidiary, Lambda Israel Ltd. in the town of Karmiel, designed especially for mid-level engineers and technicians. Veeco turned down a comparable offer in Ireland because of the opportunity to combine high-quality engineering labour (less available in Ireland) with a low-cost production workforce, available in the surrounding development towns and Arab villages. Lambda's general manager describes this labour force as one "whose direct labor rates are substantially lower than in the United States and ... comparable to Mexico; about the same as Singapore and comparable to Japan. Productivity compares favorably" (Wiener 1984).

The small spin-off research and development firms, such as software firms, are overwhelmingly located in Tel Aviv and its suburbs or in the kibbutzim which, although geographically located throughout the country, have strong communications and organizational ties with the centre. This is presumably related to the agglomeration economies in materials and access to skilled personnel and a market (Israeli Association of Software Houses 1984).

Although the picture is not yet clear, firms locating in the newly constructed industrial parks near Jerusalem could also replicate the configuration between Haifa and the Galilee because of the potential of employing the Arab population in the Israeli occupied territories on the West Bank, immediately adjacent to Jerusalem.

The location of a large Intel subsidiary in Jerusalem has as much strategic as economic significance to Israeli planners. There is a marked tendency to justify all infrastructural development in Jerusalem as necessary for security purposes and to strengthen Israel's capital. One result of the priority placed on development of Jerusalem has been to increase the interaction between Jerusalem and Tel Aviv, a forty-minute drive away.

7. Implications for national and regional development in Israel

To the extent that they help to develop the strategic settlements in the Western Galilee and strengthen Jerusalem's economic base and its control by Israel, transnational and investment facilities in Israel are in concert with national economic development and geo-political objectives. It appears, however, that there may also be significant costs to Israel in hosting this kind of development. First, transnational subsidiaries typically depend on internal sourcing, thus reducing local multipliers that might occur if development took place in locally supplied smaller firms. Secondly, there is the question of the monopolization of highly skilled labour. If the transnational subsidiaries locating in Israel raid existing firms and, through contractual agreements and other means, further restrict the spin-off process, they may impede the development of a more self-sufficient, diversified economy. An example of this raiding phenomenon is the case of Tadiran, the largest Israeli military technology firm, and Intel, headquartered in the Santa Clara Valley. Intel twice raided the Israeli-trained technical staff of the Tadiran quartz crystal plant for employees for its Jerusalem plant. The Tadiran plant was eventually forced to close (Friedland 1984). Firms locating in Israel have also exacted agreements that no competing firm can be located within 30 miles of its plant. Considering the size of Israel, this seriously prohibits competition and spin-offs (Felsenstein 1984).

The current Israeli road to high technology development is quite likely to increase already existing inequities among population groups and among regions. This is the almost certain result of introducing a private-capital dollarized sector into an economy in which wages are low and strictly controlled. Also, the great majority of the new well-paid high technology jobs is likely to go to the already privileged Ashkenazim segment of the

population. These jobs will be located in such a way as to capture a strategically important portion of the labour supply for low-wage, non-dollarized jobs, while being inaccessible to the large portion of the population located in development towns or suburban enclaves. The urban Sephardic Jewish population and the Arab population are likely to benefit from the high technology development only through the expansion of low-paid jobs in the service sector. This may in fact increase competition between these groups and possibly raise the demand for Arab labour from the occupied territories. Already nearly 40,000 inhabitants in these territories commute to work daily in the State of Israel.

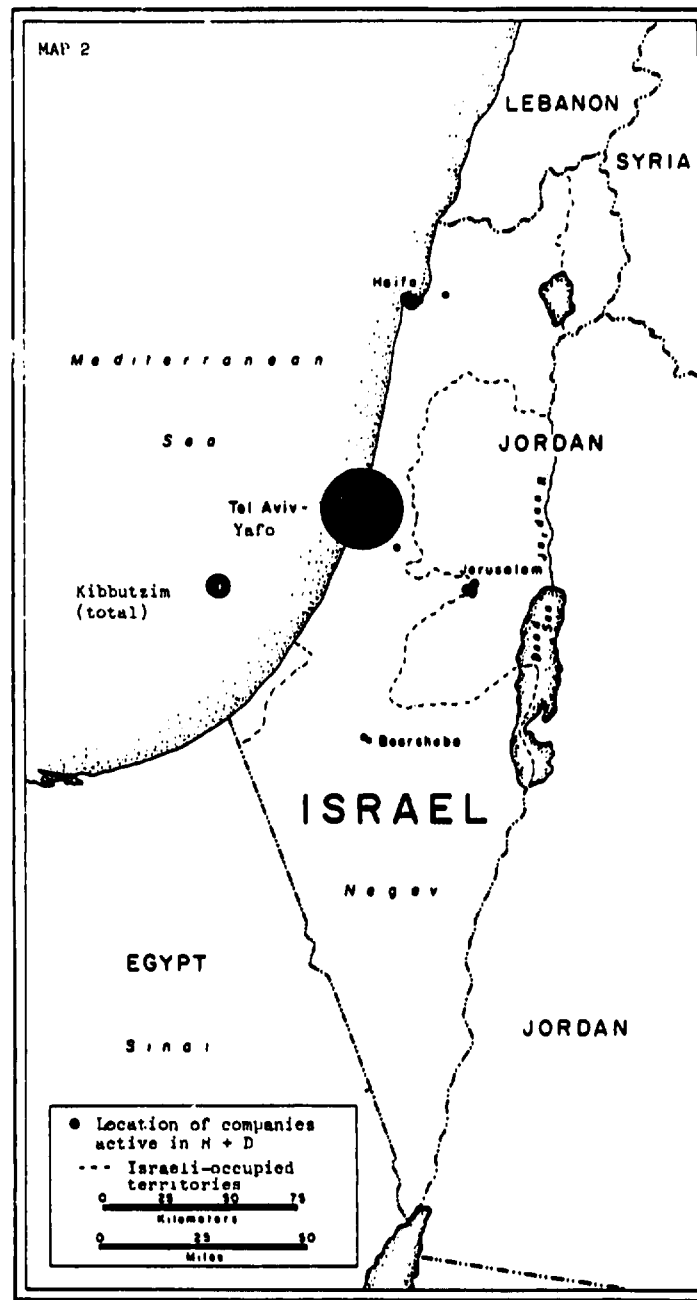
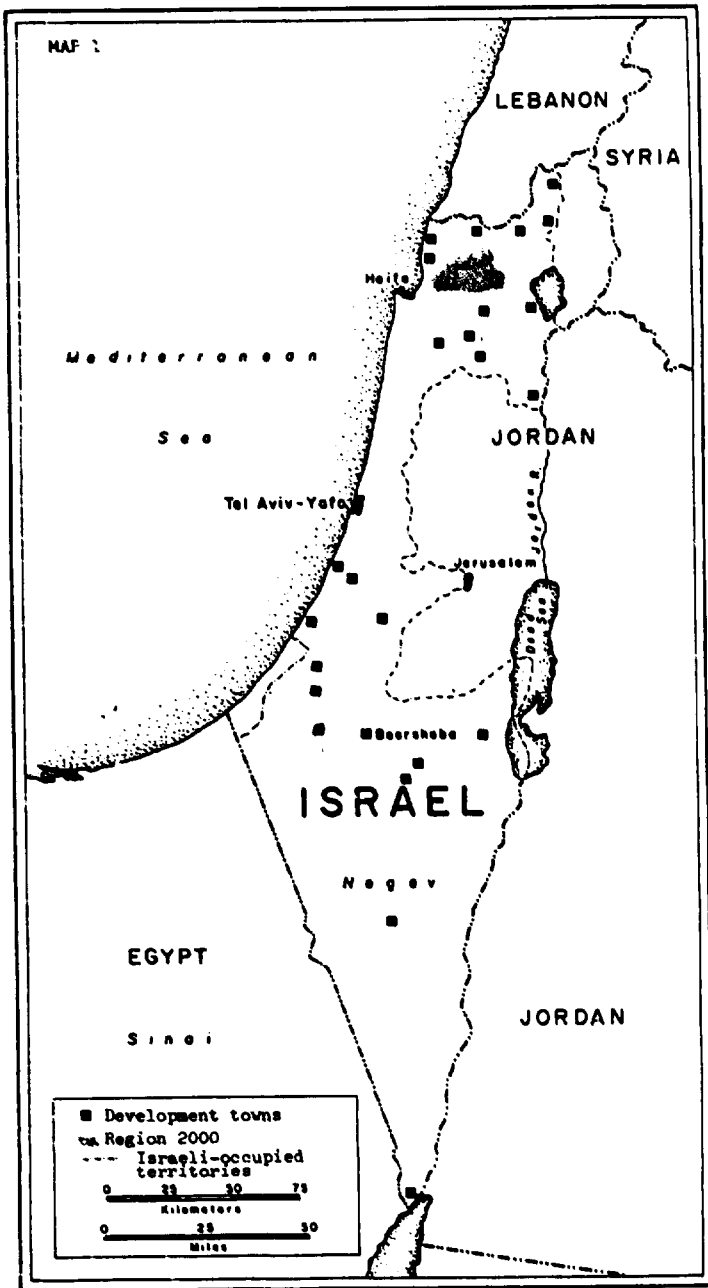
8. Implication for the "New International Division of Labour"

The process behind the location of transnational subsidiaries throughout the world have been analyzed with respect to long-term trends in the internationalization of capital and short-term investment cycles that create different industrial profit and production conditions.^{1/} As a spatial conception of these economic processes, the new international division of labour has been frequently reduced to a consideration of regional and national labour cost differentials, another version of comparative advantage. As a consequence, the analytic concept has been drained of what which made it such a provocative instrument for understanding changes in the world economy: historical description of the creation of regionally different labour supplies and emphasis on the processes connecting places in disparate geographic locations.

As the location of high technology activities in Israel demonstrates, an interpretation of the location of transnational production activities based only on wage differentials is extremely limited. The path that Israel is

^{1/} There is a wide-ranging theoretical and empirical literature on the character, origins and effects of the global production. Directly related to the subject discussed in this paper are the works by Taylor and Thrift 1982; Fröbel, Heinrichs and Kreye 1980; Cohen 1981; Hymer 1979; and Clark 1981.

taking as an outgrowth of the flows of military alliance and investment capital contradicts simplistic notions of comparative advantage. At the same time, the processes we have outlined strongly suggest the need for more comparative research. In those research efforts we should recognize difference and division, but our primary concern should be to explain how they emerge from overarching processes of connection and interdependence.



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Yasuo Miyakawa

**THE METAMORPHOSIS OF JAPAN'S INDUSTRIAL SYSTEM AND THE DEVELOPMENT OF THE
INTERNATIONAL DIVISION OF LABOUR**

1. Introduction

Japan's industry has developed remarkably, especially after World War II. Many have been impressed by its development; few are familiar with the historical evolution of Japan's economic and industrial growth.

Technology imports, which played an essential role in the genesis of Japan's modern industry, are nothing new to the country. With the introduction of Buddhism from India, in the 6th and 7th centuries AD, by way of China, Indian and Chinese technologies were introduced as well. And even at that time, the Japanese government supported technology transfers: new products based on the imported techniques were developed in craft centres owned by the state.

In the 16th and 17th centuries, Portuguese, Spanish and Dutch missionaries and merchants introduced European technologies and ideas. Western thinking was transferred on a much larger scale, together with the inventions of the Industrial Revolution, in the late 19th century. Britain, "the workshop of the world", now played a major role, and it would be interesting to pursue the historical parallels between Britain and Japan as hubs of the world industry. Later, the US became the major source of technologies: in 1923, General Motors and Ford established their Japanese subsidiaries.

With the expansion of its modern industry, Japan also had to rely on foreign resources and markets: cheap energy and raw materials from Third World countries, the vast markets of the United States and Western Europe. To secure resources and markets, Japanese companies have expanded overseas; nowadays they run over 2,600 establishments in both developing and developed countries.

Within Japan, not only the core region around the capital of Tokyo but also the peripheral regions were of major importance in industrial development. The southern island of Kyushu, on the old international shipping routes, was a centre of technology diffusion for many centuries up to the early modern period; Hokkaido island in the north was an incubator for modern agricultural and mining technologies. The core region itself has shifted in

the course of time: Osaka was a major economic centre in old Japan, Tokyo came to prominence only when it became the national capital in the aftermath of the 1868 Meiji Restoration, which brought the emperor back to power and opened the way for modern industrialization. The rapid growth of the automobile industry in the 1970s accompanied the rise of Nagoya, between Tokyo and Osaka. The evolution of economic development both at home and abroad has forced the Japanese government to formulate a variety of industrial and regional policies. The following chapters will highlight the relationships between government policy, the metamorphosis of Japan's industrial system and the development of the international division of labour.

2. The development of modern industry

2.1 Cotton

Japan's first modern industrial equipment, textile machinery, was imported illegally from England by a Kyushu nobleman in 1867, just before the Meiji Restoration. Part of the cotton yarn and the fabrics had to be imported as well initially, and these imports led to a decline of native cotton production. Reactions in the old cotton producing areas were of two kinds. A part of the working population migrated to large towns like Osaka, to work in the modern industries. But when a Japanese artisan invented a spinning process which used waste and old fibre and demanded less capital and skill than the imported manufacturing process, a remarkable redevelopment of these areas took place. A 1877 government project, installing small spinning mills imported from England in these areas, was less successful. Know-how, investment capital, inputs and energy (these mills still used water power) were not available on a sufficient scale. Native technology adapted to local situations in this instance proved superior to government-supported industrialization based on imported technologies.

Of the early modern textile factories, only the Osaka Cotton Spinning and Weaving Co. Ltd. was successful. It was established by a retired Ministry of Finance official, and financed by former feudal lords, financiers and local cotton merchants. Software (management and technical know-how) and hardware (steam engines and spindles) were acquired in England by a Japanese student of economics and mechanical engineering. Osaka was the obvious location for this

enterprise: it was not only a major traditional economic centre, but also designated to be an international port, and it soon became the town where most ginned cotton imported from the US, China and India was landed.

The Osaka Spinning and Weaving Co. Ltd. showed the way to other entrepreneurs: from the 1890s onwards, Japan became an exporter of cotton yarn and fabrics to China (potentially a very large market) and Korea. English cotton imports gradually came to a halt. Entrepreneurs kept their costs low by using cheap female labour, inputs produced by the cottage industry and by successfully lobbying for the establishment of import duties on ginned cotton, against strong opposition from cotton farmers. Transport costs of Indian cotton were reduced through government-supported co-operation with a major Japanese shipping company. During this period, the Japanese began to improve imported machinery and to invent and produce their own. The low price of some machines permitted the diffusion of textile manufacturing to localities in the Aichi and Shizuoka prefectures, east of Nagoya. Some areas responded to growing competition in the cotton market by diversifying into wool manufacturing.

World War I caused a cotton boom. Apart from the 1921 and 1927 crises, which resulted in mergers and the disappearance of many of the smaller companies, the cotton industry kept growing, surpassing the English industry and finally topping the world market in 1933. Silk, traditionally Japan's main textile export product, had been replaced by cotton.

China was the first country where Japanese industrial entrepreneurs established subsidiaries. Overseas location was stimulated by low costs, the World War I boom and the imposition of import duties on cotton yarn and fabrics by the Chinese government in 1919. By 1925, 87 factories were being operated. Competition and co-operation among these were regulated by the Association of the Japanese Cotton Spinning and Weaving Industry in China. The internationalization process of Japanese cotton capital was eventually prevented from following its own course when the Japanese government reorganized 177 cotton firms in 14 groups in 1940, as part of its economic war policy. In the end, only 10 cotton groups remained; the others were assigned to other (military) tasks.

After World War II, the industry was in ruins. The largest company, Toyobo, had lost 90 per cent of its installed capacity. The recovery of the cotton industry, however, was strongly stimulated by the US occupation authorities. US technologies and know-how were now available, and so was a large US cotton surplus. Promoting the cotton industry would not only help to cover the large post-war demand in the Japanese market: textile exports would help to pay for much needed food imports. An extra boost was given by the Korean war, and in 1952 Japanese cotton exports were once more the largest in the world. Soon after, the decline set in. Government policies began to favour synthetic fibres, economic growth led to competition from the budding electric and automobile industries in the labour market, forcing up wages. Japan also had to compete with such low-wage countries as South Korea and China now. By 1981, cotton fabrics accounted for only 0.4 per cent of total exports; Japanese firms, however, retained a hold on the international market through their overseas establishments.

2.2 Automobiles

Although car manufacturing in Japan goes back to 1907, and although the government promulgated a law stimulating production for military purposes in 1918, the automobile industry only took off after Ford located a plant in Yokohama in 1923. The infant national industry once more relied on English technology, but the precursors of the present day Isuzu and Nissan companies were no match for the Americans who, among others, soon acquired a large order for Tokyo city buses and accounted for more than 80 per cent of the Japanese market by 1929.

The 1936 Automobile Manufacturing Act, proclaimed on the instigation of the Army and the Ministry of Commerce and Industry, radically altered the picture. Ford and General Motors plants were closed in 1939, after an increase in duties on automobile parts. The Japanese government not only supported the car industry at home, but also its establishment in China. Seven Japanese automobile companies headed by Nissan had already collectively set up a plant in Mukden (now Shenyang) in 1932, after the completion of the Manchurian Railway, with the support of the Japanese-dominated Manchurian government. In 1937, Nissan completely took over this factory. Toyota reacted by establishing plants in Shanghai and Tientsin. The oligopolistic

structure of the Japanese car industry took shape at this time and has never been fundamentally altered, in spite of the emergence of the Mitsubishi, Toyokoga (Mazda), Honda and Suzuki motor companies after World War II. The US occupation authorities did much for the industry's recovery after the war, large orders being placed for the US forces in South Korea.^{1/}

In the early fifties, new small passenger car technologies were imported from England and France. The great US companies at that time concentrated their efforts on recapturing the European market, so Japan could exploit the export markets of Asian countries and countries like Brazil and Mexico with large Japanese communities; growing prosperity also created a home market. Most factories were located in the Tokyo Metropolitan Area, but the great Toyota assembly plant was built in Koromo, near Nagoya, later renamed Toyota City. Subsidiary plants were built in a number of Asian countries, Mexico, Brazil and South Africa. In 1960, Japan succeeded Australia as the leading car producer in Asia and Oceania; by 1967 Japan had surpassed West Germany as a car producer.

Apart from the import liberalization policy, few central government measures can be identified which had a direct influence on the car industry in the sixties and seventies, although the Ministry of International Trade and Industry appears to have guided the reorganization process behind the screens. It is certain, however, that the construction of industrial estates by regional and local authorities encouraged enterprises to relocate to e.g. northern Kyushu and the fringes of the Nagoya and Tokyo metropolitan areas.

In the seventies, the automobile industry also began to relocate to developed countries. Toyota, Nissan and Mitsubishi constructed plants in Australia; Honda tried to capture the American market by setting up an integrated factory in Ohio, soon followed by Nissan in Tennessee and Toyota-GM in California. In Europe, Honda began to co-operate with British Leyland. Nissan entered into joint ventures with Alfa Romeo and Motor Iberica, and also became active in the UK. This internationalization process again had its repercussions on regional development and government policies in Japan - a

^{1/} In this essay, the Republic of Korea is referred so as South Korea.

matter to which we will return later. International energy conservation measures further stimulated the exports of Japanese cars with their low fuel consumption: they grew from 38.6 per cent of total production in 1975 to 54.0 per cent in 1980. In the latter year, Japan became the world's largest car producing country.

2.3 Aircraft

In 1910 Japan's first (military) airfield was constructed near Tokyo. By that time, both private companies and government authorities already disposed of pilots and engineers trained in Europe. Japan's first airplane was constructed by a naval officer in 1913, and World War I stimulated airplane production in the vicinity of the Tokyo and Nagoya airfields and of the various naval yards where Navy planes were repaired. In the 1920s, British and German engineers were engaged to improve aircraft technology, and by the late 1930s the country was turning out warplanes which were a match for anything produced in Europe or the United States. Output reached its peak in 1944, with 25,000 planes and 40,000 engines.

After World War II, aircraft production was totally prohibited by the occupation authorities for seven years. In 1952, Japanese firms began to carry out repair assignments for the United States Air Force and took up licensed production for US aircraft companies. The major beneficiaries were the Mitsubishi and Kawasaki companies in Nagoya, experienced airframe producers who were strategically located between the capital of Tokyo and the US Air Force units facing China and Korea. In 1954, the Self Defence Forces were established, providing a sound national market. Its strict quality controls and the establishment of a major aircraft engine factory, Ishikawajima, near Tokyo, attracted engine and parts manufacturers to the capital region. Airframe and equipment manufacturers remained concentrated in the Nagoya area.

In 1959, the Aircraft Industry Development Law was passed. Mitsubishi began to produce airplanes based on its own designs in the 1960s, but the R and D costs for large planes were too high to be borne by Japanese firms on their own. However, joint ventures with US, UK, Italian and West German firms to develop and produce engines, passenger planes and helicopters proved

fruitful and led to a consolidation of the aircraft industry, which remains concentrated in the metropolitan areas along the South Coast.

Although Japan's aircraft imports still vastly exceed exports, the latter reached a level of over 28 billion yen in the early 1980s. Imports and exports largely consist of airframes and accessories, the EEC being the main source of imports, and the US being by far the most important buyer. The increased preoccupation with space industries in the US presents Japan with an opportunity to enlarge its share of the conventional aircraft industry.

3. Internationalization of the Japanese industry

3.1 General overview

During the pre-war period, Japanese factories were not only built in China, as described in the last chapter. Japanese firms also established plants in the colonies of Korea and Taiwan.^{1/} Although these establishments were lost at the end of World War II, their presence exerted an influence on the later industrialization of these countries, and they provided Japanese entrepreneurs with basic know-how and skills for the internationalization process in the post-war period. In 1982, Japanese enterprises owned 2,659 overseas establishments; the stages of international expansion emerge clearly from the following tabulation:

<u>Period</u>	<u>New overseas establishments</u>
- 1964	276
1965-1969	374
1970-1974	935
1975-1979	706
1980-1981	368

The growth in the 1965-1969 period has a parallel in the growth of imports after the 1965 import liberalization measures: both underline the

^{1/} In this essay, the Province of Taiwan is referred to as Taiwan.

increasing internationalization of the Japanese economy. Investment laws were liberalized in 1967, and the 1969 Japanese-US textile conference played a significant role in the decline of Japan's domestic textile industry. These developments heralded major changes in the country's industrial structure and contributed to the great expansion of overseas investment in the 1970-1974 period. The world crisis reduced the growth of new overseas investment during the next period, but the Japanese industry quickly recovered. Trade barriers and growing international competition with the US and the EEC have intensified overseas investment: 368 plants were built overseas in 1980 and 1981 alone.

The structure of overseas investment has changed through time. In the pre-1964 period the textile industry, with 41 plants, still played a significant role. It was replaced by the electronics industry as the major overseas investor: during the fourth (1975-1979) period, it established 125 overseas subsidiaries, followed by the chemical industry (122) and general machinery (84). Initially, cheap labour in other Asian countries was a major location factor for Japanese investors. Later, government industrial policies at home and abroad and competition in the international market became more important factors. In Asia, where most Japanese overseas factories are located, Taiwan and South Korea are by far the most important locations. In the Americas, the US and Brazil stand out, in Europe most Japanese investment takes place in the UK and the Federal Republic of Germany. Most of the Korean, Taiwan, US and UK factories produce electronics; in ASEAN countries chemicals dominate. In Brazil and the FRG, general engineering dominates.

3.2 Japanese industrial investment in selected countries

- Taiwan

Relations between Japan and its former colony Taiwan have a long history, and although diplomatic relations were broken off in 1972 when Japan recognized the People's Republic of China, the remarkable development of Taiwan's industry was and is to a large extent due to Japanese firms. Initially, Japanese manufacturers of paint and pharmaceuticals were attracted by low wages, favourable government policies and the domestic market. Later, the textile, electronics, automobile, general engineering and miscellaneous goods industries were attracted to Taiwan as well. In recent years, wages have ceased to be a major attractive factor, but government policies (domestic

market protection, free-trade zones, technology parks) continue to favour the establishment of foreign-owned factories, which are mainly located near Taipei in the north, Taichung (Central Taiwan) and Kaohsiung in the south. Taiwan itself is the main market for Japanese firms based there. Although it has had an export surplus since the mid-1970s, its trade balance with Japan is still negative.

- South Korea

When Korea was a Japanese colony, industry was concentrated in the north. The partitioning of the country resulting from the Korean War left the South without an industrial base. Development programmes in the 1960s stressed the promotion of the heavy chemical industry. Japanese firms provided capital and technologies, but many of these firms have withdrawn from the country since the mid-1970s. Apart from the influence of the oil shocks, the rapidly rising South Korean wages (trebled, on average, during the 1975-1979 period) and a rather strict control of foreign capital movements contributed to these withdrawals. Japanese electronics and automobile establishments were also affected, but a new government policy promoting high-technology industry has attracted a number of prominent Japanese firms in these fields. Industry is mainly located in the Seoul and Pusan regions, in the north and south of the country, respectively. Although South Korea's trade balance with Japan is still highly negative, the country has outrivalled Japan in the world market for several products (ships, iron and steel). South Korea has also become a serious competitor of Japan in the US electronics market.

- Hong Kong

Hong Kong differs from other East Asian locations. It is a centre of international trade and finance which has attracted many Japanese banks and trading companies, and Japanese industrial firms use their Hong Kong establishments not only to benefit from low wages but also a "test base" for the Asian industrial products market. Until the late 1970s, miscellaneous goods production was dominant in Japanese establishments, but in recent years the electronics industry has received important stimuli.

Table 1. Japanese overseas establishments - major reasons for relocation of production (p), sales and production (s)
(per cent)

		South Korea	Taiwan	Hong Kong	Thailand	Malaysia	Singapore
Labour cost (L)	p	57.3	60.6	47.7	29.5	40.0	37.2
	s	45.8	58.4	35.7	43.5	38.2	39.2
Development (D) policy	p	14.7	11.5	6.8	33.8	32.3	25.5
	s	38.5	29.2	3.5	51.7	45.6	29.4
Market (M)	p	27.3	28.2	38.6	42.4	33.8	54.3
	s	60.5	52.6	46.4	58.8	57.4	68.6
Parts and materials (P)	p	3.3	3.9	2.3	12.7	23.1	3.2
	s	3.7	5.2	0.0	5.8	23.5	9.8
Total answers (T) received	p	183	259	44	71	65	94
	s	109	154	28	85	68	104

		Indonesia	Philippines	Australia	America	Brazil	Mexico
L	p	44.3	50.0	5.8	6.3	27.7	26.3
	s	29.3	31.2	0.0	4.6	23.3	18.5
D	p	44.2	15.6	17.6	6.3	34.7	26.3
	s	53.4	47.9	32.0	3.3	38.8	51.8
M	p	54.2	25.0	5.8	44.2	43.0	21.0
	s	62.0	54.1	64.0	62.6	68.9	55.5
P	p	11.4	31.2	52.9	23.1	25.0	5.2
	s	10.3	16.6	0.0	16.0	11.6	3.7
T	p	70	32	17	95	72	19
	s	58	48	25	150	103	27

		U.K.	West Germany	France	Spain	Nigeria	World
L	p	0.0	10.0	0.0	0.0	21.4	41.9
	s	6.2	0.0	0.0	9.0	14.2	31.5
D	p	33.3	0.0	0.0	0.0	21.4	20.6
	s	25.0	4.3	0.0	27.2	42.8	34.4
M	p	33.3	40.0	50.0	50.0	50.0	34.9
	s	81.2	52.1	71.4	72.7	100.0	68.6
P	p	0.0	0.0	0.0	0.0	21.4	13.6
	s	0.0	8.6	0.0	0.0	0.0	12.3
T	p	6	10	4	6	14	1,123
	s	16	23	14	11	7	1,096

Source: Toyo Keisai's Overseas Subsidiaries Address Book 1983.

Industrial development in these East Asian countries has had varied repercussions on the Japanese economy. Some firms in the iron and steel, machinery and organic chemicals sectors have been able to expand their exports because of their central role in this overseas development process; in the long run, however, the iron and steel, shipbuilding and textile industries in Japan's peripheral areas suffered. The main region to gain was the Tokyo metropolitan area, the centre of management and R and D of the firms which redeployed to East Asian countries.

- Singapore

Before Singapore separated from Malaysia in 1965, the Malaysian Economic Development Bureau had been quite active in attracting foreign capital to the Singapore area. An early result was the location of the Ishikawajima Harima shipbuilding and repair company in the proximity of Southeast Asia's largest harbour. After independence, the Singapore government continued to attract foreign enterprise with large industrial estates. Initially low wages attracted labour intensive industries (textiles, electric machinery). In the 1970s, the Singapore government adopted a high-wage policy (with part of the increased wages being deposited in a central development fund) and a policy of attracting technically advanced industries, services and trade. As a consequence, a number of Japanese factories were closed down and relocated to Malaysia; other switched to e.g. automatically produced high quality electronics. Although Singapore may become a rival for high value added products, its development has had no repercussions on the Japanese domestic economy yet.

- Malaysia

Malaysia (like its neighbour, Indonesia) is traditionally a major supplier of natural resources (tin, rubber, timber) to Japan. Under the first (1966-1970) development plan the country began to promote and co-ordinate industrial development. Industrial estates and free trade zones near the major towns attracted overseas investors. Initially, the country's natural resources were an important location factor for Japanese firms. To speed up industrialization, incentives for overseas investors resulting in a.o. the establishment of Japanese electronics and chemicals factories were provided in the early 1970s. As mentioned before, textile manufacturers redeployed to

Malaysia as well during this period, as a consequence of Singapore's high wage policy.

In recent years Malaysia has begun to attract Japanese car manufacturers. In the present Fourth Malaysia Plan, the government concentrates on large oil refining, liquid natural gas and iron and steel projects in the more peripheral regions, the latter projects involving Japan Steel.

- Australia

Like Malaysia, Australia is one of Japan's traditional raw material suppliers (iron ore, coal, wool), Japanese firms have in more recent years moved to Australia to process raw materials. Aluminium smelters, e.g., were built near bauxite deposits in Queensland and near Sydney.

Japanese-owned factories have only been operating in the country since 1964. From 1970 onwards a relatively strong expansion of Japanese investment took place, but it was checked by the world crisis. Prominent investors are the automobile and electronics industries. The Australian government has promoted high-technology development during the last years a.o. by establishing a technology park in co-operation with the South Australia Engineering University and Birchwood Science Park in the UK. So far, it has not attracted Japanese firms.

- Brazil

Apart from being an important supplier of iron ore, Brazil is linked to Japan through its iron and steel industry. The domestic industry's great expansion after World War II was to a large extent due to Japanese participation (involving most of the major iron and steel companies) in a huge integrated plant in the State of Minas Gerais, followed by the establishment of other Japanese iron and steel works. In recent years, these have had to cope with competition from South-Korean producers.

Most Japanese firms are found in the general and electric machinery branches; textiles and chemicals are also well represented. Plants are generally located in the Sao Paulo - Rio de Janeiro region, but investors have

begun to move inland, a.o. to the Manaus Free Trade Zone in Amazonia, to exploit Brazil's vast natural resources and its cheap labour force.

- United States

Since the US established trade relations with Japan in 1854, it has been Japan's most important export market. Raw silk was long the major product sold to the US, but nowadays more than half of the ceramics and railway vehicles and more than one-third of the automobiles, motorcycles, office machines, cameras and integrated circuits exported from Japan find their way to the US. In return, the US supplies the major share of Japan's imports of such products as plastics, airplanes, cereals and soya beans.

Japanese enterprises located in the US (the third largest concentration of Japanese overseas establishments) because this afforded better access to the huge market, and because of the availability of natural resources and high-quality manufactured inputs. These factors attracted, on the one hand, the producers of electronics, cars and machinery, and on the other the food, paper and chemicals producers. Another pull factor is the availability of sophisticated technologies, which in turn has induced Japanese firms located in the US to set up their own R and D establishments. Most of the investment is quite recent - more than half of the plants were constructed after 1975.

- United Kingdom

EEC-markets and the availability of engineering know-how were important motives for the major Japanese automobile manufacturers to join forces with British automobile companies in the 1970s. For identical reasons, electronics manufacturers also established plants in the UK. In the late 1970s, several Japanese-UK firms became active in the field of factory automation. So far, however, Japanese firms have not used the facilities offered by the various "science parks" in the country to further develop high-technology products.

- Federal Republic of Germany

As in the US and UK, Japanese investment in the FRG largely postdates 1970. Capturing a share of the general, electronic and precision machinery markets, traditional German strongholds, was one of the incentives for investment; the high quality of inputs needed for these industries was another.

4. Some major recent issues in Japanese industrial development

4.1 Overseas management

In most cases, Japanese firms rely on Japanese management for their overseas plants. Both linguistic and cultural barriers and the often relatively recent establishment of subsidiaries have prevented Japanese firms from attracting enough local executives. Some 70 per cent of overseas subsidiaries have a Japanese director. Otherwise, the main problem in developed countries is to attract sufficient high-level engineers, whereas in developing countries financial specialists are hard to find.

Exchange programmes are used to familiarize Japanese and local staff with conditions at overseas locations and in Japan, respectively. Training courses have also helped to solve the problems, and during the last decade special medical, educational and social security facilities have been made available through the intervention of the Japanese Overseas Enterprises Organization.

4.2 Foreign investment in Japan

Under international pressure, Japan has relaxed the regulations for foreign direct investment in Japan, especially since 1970. Although the Ministry of International Trade and Industry and regional development bodies promote the establishment of foreign enterprises in peripheral areas (Kyushu and Hokkaido), most foreign factories are concentrated in the Tokaido megalopolis formed by the three major metropolitan areas (Tokyo, Nagoya, Osaka). During the 1972-1982 period, only 22 out of 100 new enterprises were located outside the megalopolis. The Tokyo and Nagoya areas have been most successful in attracting foreign high-technology enterprises, such as electronic and medical apparatus, pharmaceuticals and high quality chemicals producers. The more peripheral regions have received their share of integrated circuit manufacturing - Kyushu, where eight US firms have settled, is called Silicon Island nowadays. In Hokkaido high quality chemicals are being produced by European firms. The share of high-technology industries in foreign investment is five times as high as in new domestic investment. Foreign plants also tend to be much larger (both physically and qua manpower) than domestic plants. The main motives for investing in Japan are the

domestic market and the proximity to Asian markets, research facilities and the availability of highly skilled labour.

4.3 Research and development

Japanese government investment in R and D goes back to 1948, when the Agency for Industrial Science and Technology (AIST) was created. It incorporated 12 R and D institutes belonging to various government bodies. From its early locations in Nagoya and Osaka, branch offices spread all over the country. These have been or are involved in research on oil derivatives, seabed exploitation (manganese nodules, oil), jet engines, high speed computers, optics, solar energy, waste heat utilization, energy storage, resource recovery, etc.

In 1983, AIST and the Ministry of International Trade and Industry started the Local Technology and Regional Technological Frontier Development project which aims at improving local and regional industrial structures, taking local needs and locally available expertise as the point of departure. Decentralization of research facilities was paralleled by the integration of diverse research institutes in Tokyo into one R and D centre at Tsukuba, north of the capital. It has attracted dozens of private research institutes.

Joint international research and technology transfer have resulted in projects in many Asian and South American countries. Most of these concern improved resource utilization, ranging from tropical fibres (Mexico) and bamboo (Sri Lanka) to volcanogenic ores (China) and industrial and urban waste (Philippines). Industrial technology transfer has taken place in Indonesia (improving colour fastness of paints and dyes) and South Korea (software for metal-working presses). AIST has also provided various Southeast Asian countries with remote sensing techniques and meteorological measurement techniques. Apart from their long-term benefits to Japan as an importer of raw materials (the oil crisis was a major catalyst of these programmes) - these projects may also be expected to bring indirect advantages through their contribution to improving the global economic environment.

The pressure of international competition and the establishment of science parks in the US and UK stimulated work on a new research policy intended to promote the change-over to high-technology industry in Japan in the 21st century. In 1983, the Law on the Promotion of the Construction of

High Technology Industry Areas (generally known as the Technopolis Act) was enacted. At present, 19 areas have been designated for technopolis development. Local authorities, enterprises and research institutes jointly plan these areas along guidelines provided by the central government; they are not only conceived but also constructed as units, with industrial and housing estates and research facilities.

Technopolis locations are generally well outside the metropolitan areas with the exception of Utsunomiya north of Tokyo, Hamamatsu east of Nagoya, Nishiharima west of Osaka and Hiroshima Central Technopolis. Nagoya was the only metropolis to build a technopolis all by itself (the Tokai Techno Belt). General technopolis characteristics are (or will be): a high-quality infrastructure (airports, access to high-speed "bullet train" lines), a concentration of research institutes and a local/regional resource base or industry with development potential. Technopolis growth has been fastest in the south of the country, the "industrial frontier" with Asia.

5. Conclusions

The world economic crisis and heavy international competition have forced the Japanese domestic industry to undergo a metamorphosis. Old textile areas whose attractiveness for capital was based on cheap female labour have had to switch to electronics industries. And the electronics, automobile and petrochemicals producers also had to adapt.

Although research and development are heavily concentrated in or near Tokyo, high-technology industry has been attracted by local facilities all over the country. New information systems, improvements in physical infrastructure, local entrepreneurship and government support - especially at the prefectural level and in the form of university research and training facilities - have all made their contribution. AIST and the 1983 Technopolis Act have provided the framework for further development.

So far, Japan's unemployment rates have been low. Traditional producers have often managed to switch to modern manufacturing, areas with declining or mature industries have redeveloped their industrial structure. Robotized production in the new industrial era, however, will lead to lower employment rates and will force central and local authorities to formulate new social and

regional strategies in the near future. In general, more attention will have to be paid to living conditions.

The key word for future development may be "knowledge". Both the Japanese government and Japanese businessmen in the metropolitan areas, the peripheral regions and overseas locations will have to improve their understanding of international developments in order to preserve Japan's position in a chaotic, heavily competitive world. Japan will also benefit - economically and politically, in the short and in the long run - from the diffusion of technological know-how to developing countries.

In the emerging international division of labour, the new information and R and D industries may be expected to become the motive force for the further metamorphosis of the Japanese industry.

FIGURE 1 : JAPANESE-OWNED FACTORIES OVERSEAS

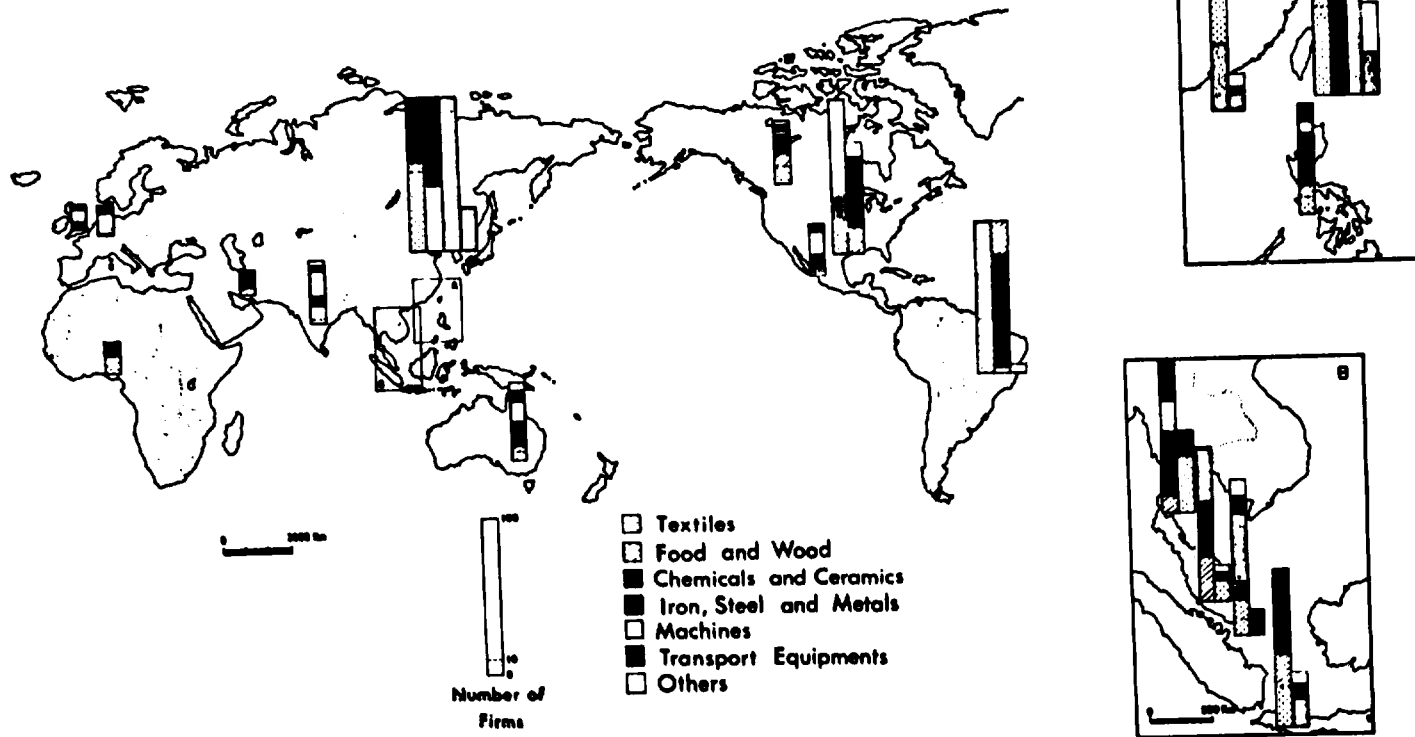


FIGURE 2

FLOW PATTERNS OF MATERIALS FOR JAPANESE OVERSEAS FACTORIES

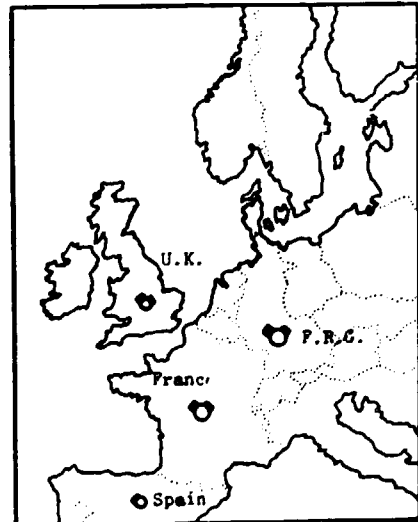
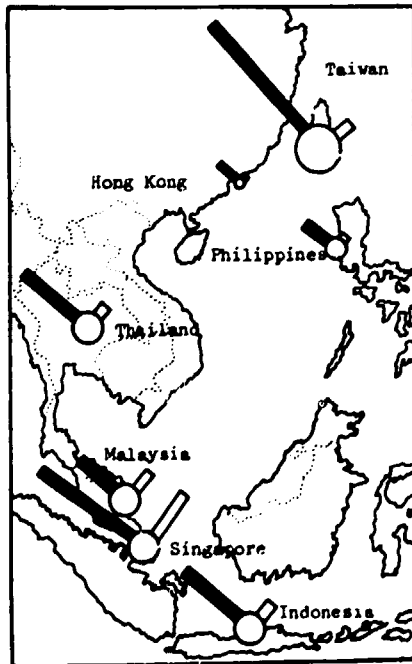
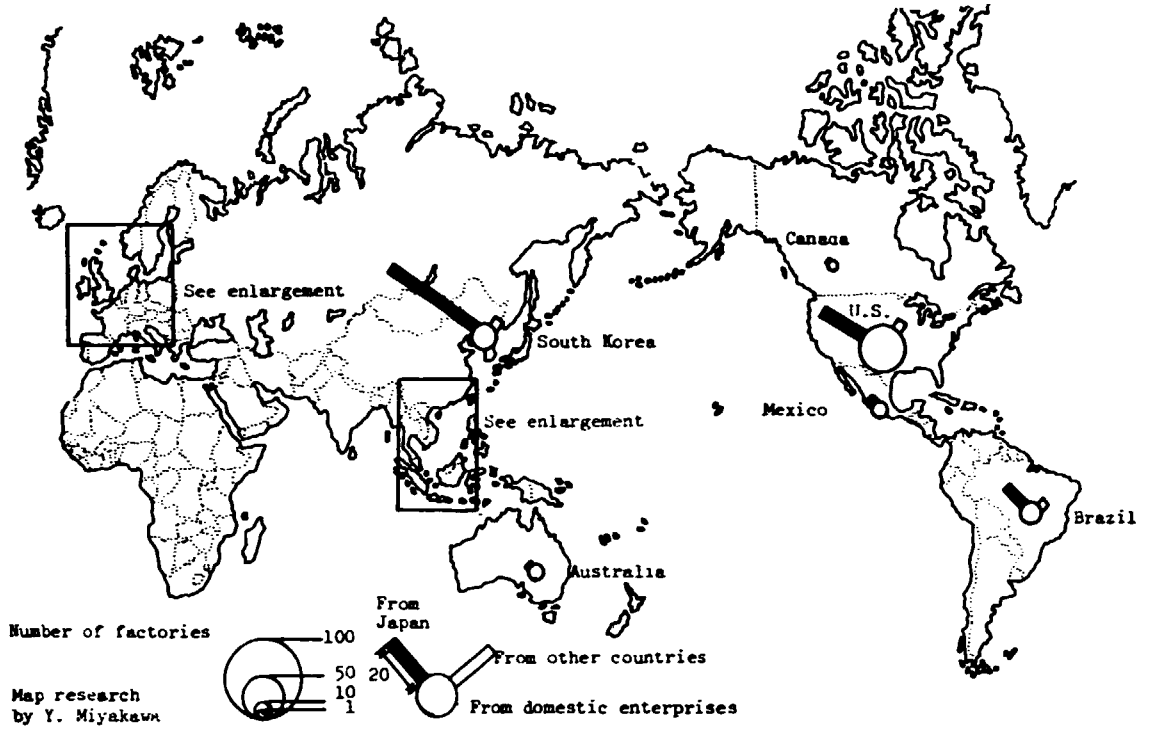


FIGURE 3

FLOW PATTERNS OF MATERIALS FROM JAPANESE OVERSEAS FACTORIES

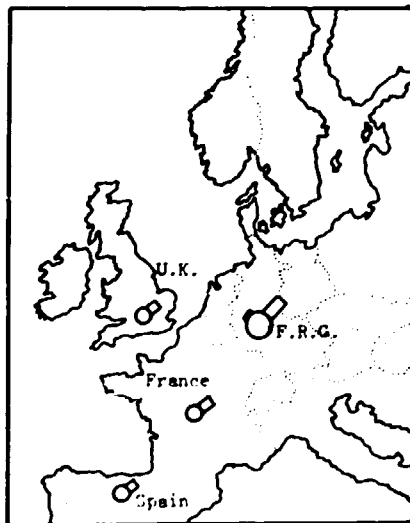
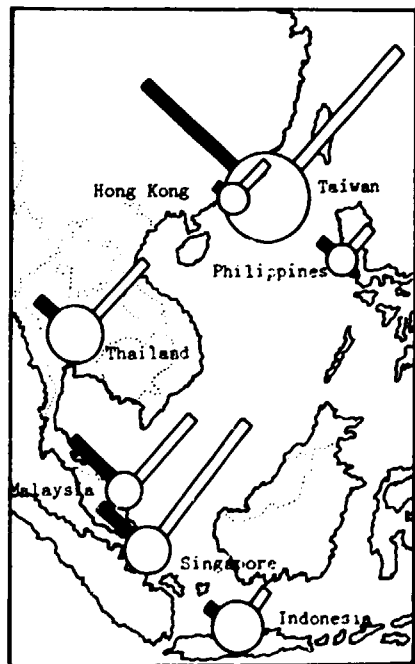
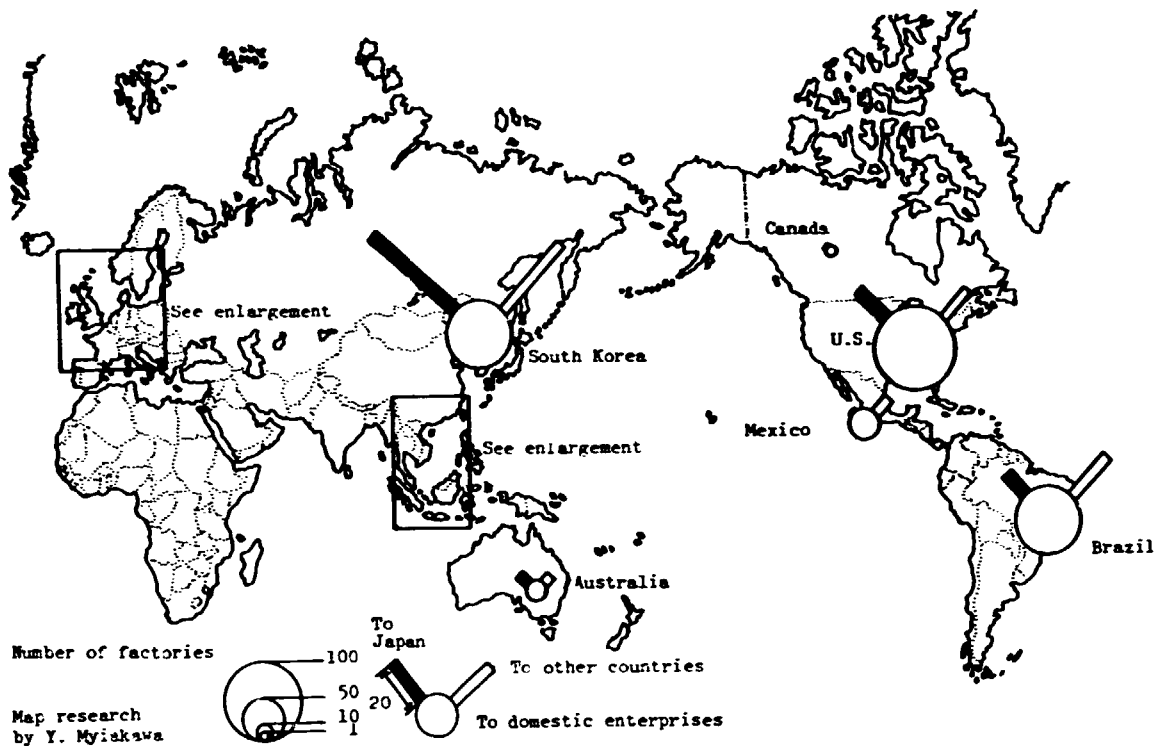
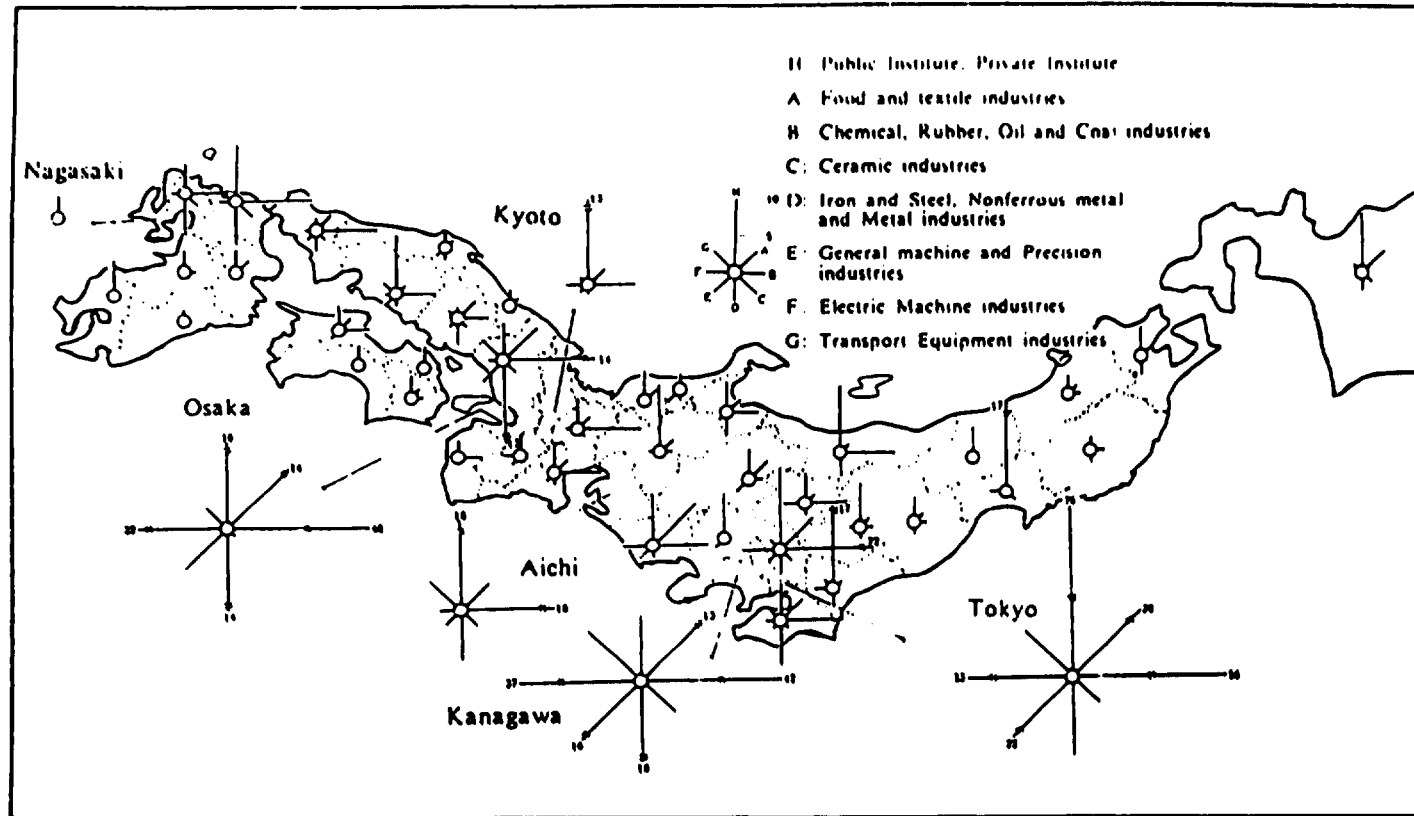


FIGURE 4 : DISTRIBUTION OF R + D INSTITUTES IN JAPAN



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Part II - THE REGION - A SUB-NATIONAL TERRITORIAL COMMUNITY

Walter Stöhr

REGIONAL DEVELOPMENT STRATEGIES AND THE SPATIAL DIVISION OF LABOUR

Introduction

Basically, regional development strategies have similar options as entrepreneurial ones, (cf. Stöhr, "The spatial division of labour and entrepreneurial strategies" in Part I) except that they also have to take account of effects external to firms (cost/benefits) but internal to territorial communities, particularly the spatial and social distribution of these effects (Tyson and Zysman, 1983, p.35). The degree to which this is in practice done will depend on the maturity and responsiveness of democratic institutions in the respective country and region.

Policies actually adopted therefore usually are a function of the power relations and the political weight of specific groups within the respective region/country which normally will try to minimize (political) friction cost. As in national policy, the main policy options will be international integration oriented adjustment promotion on the one hand, or regional integration oriented policy (frequently via financial protection) on the other. As Tyson and Zysman (1983) say, "the categories overlap, but the distinction remains useful... In political terms such policies represent more than just a reward to the politically powerful. Rather, they are often part of a social compact about how the costs and strains of industrial change will be shared. As such, protective subsidies may be seen as a contribution to social peace, a payment to avoid destructive industrial conflicts, and a means to assure that market adjustment can continue" (p.35). Political support for international integration oriented strategies will normally come from 3 groups: employers and employees of TNCs, international financing institutions, highly innovative and competitive sectors; regional/national integration oriented policies however usually will be supported by the rest of the regional population and economy (Wehrle 1980, p.167).

On efficiency grounds, government intervention in industrial restructuring will attempt to promote the movement of both capital and labour resources from industries in relative decline to more profitable employment opportunities. Promotion policies with this objective will essentially try to do three things (Tyson and Zysman 1983, p. 35, 43):

- 1) assist the emergence of new industries, particularly growth -linked ones;
- 2) assure that regional/national firms remain competitive during the process of transition and transformation of an industry;
- 3) easing or smoothing the exit of resources from declining industries.

Government intervention in regional/national industrial restructuring furthermore will tend to be particularly strong if (Ballance and Sinclair 1983, pp.188, 198):

- 1) there is a major threat to employment or to existing industrial plant;
- 2) few options are open to existing firms to make the same products in alternative ways (process innovation) or to develop alternative products (product innovation);
- 3) the cost of running down uncompetitive capacity is higher - this will increase the pressure of interest groups (in this case usually entrepreneurs and labour jointly) on government to intervene.

For regional adjustment as well as for national adjustment policies however the observation that "growing involvement of the state was seldom accompanied by institutional arrangements to co-ordinate the many decisions" necessary for integral and effective adjustment (Ballance and Sinclair 1983, P.18) is pertinent. In other words, governmental adjustment policies so far have done little to promote integral self-regulating adjustment mechanisms for structural change and innovation. Alternatives will be discussed in the last section of this paper.

Regional adjustment policies will be analyzed in the same categories as entrepreneurial strategies have been in the previous essay by the present author. But social costs and their distribution will have to be included in the evaluation. We shall try to do this in the following sections.

Regional development strategies have usually followed similar option paths as entrepreneurial ones (cf Table 1 and Table 2 in the author's previous contribution), last not least because they have generally followed political pressure to reduce emerging factor or market bottlenecks.

1. Regional strategies for in-situ structural change

1.1 Local factor costs cutting strategies

- labour cost reduction: Politically this will depend on the degree of organization and the political power of labour. Like a deregulation of the labour market, it will usually be a political option only in less developed countries/regions or in those with politically weak trade unions. Ballance & Sinclair (1983) quote the example of South Korea where "the government used its influence in the banking system to curtail borrowing by firms whose wage awards are 'too high'" (p.182).

Economically such a strategy however simultaneously reduces regional purchasing power and therefore tends to reduce effective regional demand. Socially it will mainly prejudice the "external" labour market to large firms (cf. 3.4 in the author's previous contribution).

- reducing capital cost: This strategy to attract firms is applied in most areas instead of or in addition to a reduction in labour cost; it is usually offered on an inter-regionally competitive basis in the form of public subsidies or low cost credits, which with declining economic growth rates has become a serious drain on the public sector competing for mobile transnational capital (Bluestone and Harrison 1980). With declining public resources, capital incentives have in many countries tended to become oriented towards the most powerful TNCs while at the same time pressure for labour cost reduction has increased.

Where capital incentives have been predominant, they have furthermore in many cases been counterproductive as they mainly tended to attract production processes in a late stage of the product cycle (typically highly capital intensive). Products in early phases of their cycle, however, typically have to be highly labour/human-capital intensive while processes have to be flexible. This would make the stimulation of non-flexible fixed capital a risky undertaking both from a technological and financial point of view (Borner 1980, p.26).

1.2 Spatial penetration policies

During earlier periods of high aggregate growth rates the most frequently applied strategies have been :

- promoting immigration of cheap labour ("guest workers") which led to short-term productivity increases in the highly developed areas but to retarded innovation in the medium term. With declining growth and employment rates, this strategy caused a rapid increase of the full social cost of guest workers and their dependents as they become eligible for wider social benefits. With declining economic growth rates there has also been increasing resistance on the part of the domestic labour force against external labour.

- market expansion strategy has also brought benefits mainly as long as high aggregate growth rates pertained. Market channel investment by firms has been shown to be a substitute for R & D investment (Andersson and Johansson 1984, p.24 ff.) so that it may be assumed that market expansion (usually for mature products) in many cases serves as a way to avoid or retard structural change through innovation.

Both these spatial penetration strategies have in the short term helped to reduce bottlenecks, but in the long term have tended to substitute or at least retard innovation.

1.3 Innovation strategies

Given the dominance of capital incentives in traditional regional policy instruments, these were mainly oriented towards :

- process innovation which, particularly under high growth rates, consisted primarily of rationalization investment to achieve scale economies for expanding markets. With declining growth rates however this has led to an increasing pressure to reduce the cost or magnitude of labour inputs and thereby to unemployment or wage reductions. Regional benefits tended to accrue only to new or mature products with still increasing demand which however usually had to be accompanied by product innovation.

Diagram 1. Regional "Survival" Strategies

Spatial Strategy Dimension →

Functional strategy dimension ↓	1. "In situ" structural change		3. Spatial redeployment	
	Intra-regional policy			1.2 "Spatial penetration policies" of input/market areas
	1.1 Factor cost reduction or "deregulation" of :	Land Labour Capital	Promotion of labour immigration	3.1 Spatial dislocation of mature labour intensive low-wage industries.
	1.3.a Process innovation	Standardization of technology & economy scale	Market expansion strategy	
	1.3.b Product innovation			
	2. Protective strategies	barriers against competing imports, export subsidies fiscal, foreign exchange, interest-rate policies, transport policies etc.		
	3.1 Spatial "capturing" strategies	3.2 - Enterprise zones - Export processing zones - High technology parks		
	4.1 Integrated regional innovation and adjustment complexes	4.2 Examples: - "Third Italy" inter-related small firm innovation complex - Mondragon Co-operative Federation		

- product innovation and other related entrepreneurial strategies mentioned in the essay in Part I have hardly been promoted at the regional level by government until the end of the sustained-growth phase in the mid-70s. Only then major efforts in this direction were undertaken on an experimental basis and little reliable experience is available yet.

Regional strategies on the whole have so far mainly tended to help reduce bottleneck situations in the short term; in the medium term they have aided regional structural change from primary to secondary sector activities, again mainly favouring large-scale production of "mature" products. Policies were predominantly capital- and mobility-oriented and pursued an industrialization-urbanization strategy in which the promotion of economies of scale and agglomeration dominated, with the objective of increasing the productivity of capital.

2. Territorial protection strategy

Territorial protection by barriers against competing imports, subsidies for exports, etc. is a defensive regional survival strategy. These protective measures are usually applied to avoid structural change but very often tend also to forestall technological and societal innovation. Such protection should therefore in principle only be applied as a transitory measure to reduce the (economic, social, political) friction cost of structural change or as "selective spatial closure" to redress unilateral external dependence (Stöhr 1981).

3. Regional strategies for spatial redeployment

3.1 Spatial dislocation strategies, mainly dislocating mature labour-intensive, low-wage industries in highly developed areas.

Such a strategy is likely to be adopted on the part of governments for territorial units where the absence of hinterlands, labour and land reserves constitute major bottlenecks to further development. An example is Singapore, which "forced the most labour-intensive industries out... to produce goods having a higher income elasticity of demand than traditional 'early' industries like textiles" (Bailance and Sinclair, 1983 p. 183). The less

productive and less innovative activities in such a case are pushed out to make room for more productive and innovative ones. Cities or regions within larger countries have however - particularly since the reduction in growth rates during the last decade - abstained from such policies (e.g. London) as they have become more concerned about short-term employment losses than about long-term structural change. They have frequently embarked on the establishment of (tax-) free enterprise zones to directly attract new innovative firms. These will be dealt with in the following section.

3.2 Spatial "capturing" strategies

These are the opposite of the forementioned dislocation strategies. Three types of such strategies have particularly proliferated around the world in recent years, i.e. the establishment of :

- enterprise zones. These are mainly found in the most developed areas of industrialized countries, such as urban areas of Great Britain and the US, which due to agglomeration diseconomies have experienced a massive loss of economic activities. In these core areas of potentially high accessibility, tax breaks and related incentives have in many cases been able to induce the (re)location of enterprise and revitalize these core areas. This wooing of mobile capital was often supported by heavy subsidies and/or tax incentives.

- export processing zones (EPZs) have been installed along similar lines in developing countries, mainly to attract external capital and technology by offering cheap local labour, duty- (and frequently tax-) free status. Production at EPZs is oriented towards international markets (Fröbel et al., 1977, UNIDO 1980). The objectives are on the one hand an increase in GNP, real wages and foreign exchange earnings, and an improvement of the national terms of trade; on the other hand a spread of modern technology and of export-oriented industrialization to the rest of the country. It is increasingly questioned whether these objectives are realised. Many sources maintain that the major characteristic of EPZs in Third World countries is a substantially higher labour productivity per worker-year ("more working hours per week and fewer holidays per year")

than at traditional industrial sites in industrialized countries, in spite of substantially lower wages, leading to substantially higher profits (UNCTAD, 1983). According to one source, real wages in manufacturing in these countries have actually been declining over time (Ford 1984, p.21/22).

More recently, with similar objectives,

- high technology parks have been added to these strategies, in industrialized and more recently also in developing countries, emphasizing the transfer of high technology and de-emphasizing the factor of labour. They were in part copied from similar, mainly locally and privately sponsored experiences in the USA and in other industrialized countries. These high-technology parks were expected to fulfill what the World Bank calls an "incubator" function for the promotion of new technologies and new products; they would also initiate a sustained and broadly effective regional and national innovation mechanism. They were mainly oriented towards the promotion of small, dynamic high technology enterprises. More recent studies of high technology parks in the US however seem to show that they have increasingly become the domain of large multi-locational and multi-national firms (Malecki 1984) which dominate production and markets. These studies maintain that high technology development has thus become locked into a restricted number of locations (Silicon Valley, Massachusetts Route 128, etc.) from which low-wage and low-skill routine activities are farmed out to other areas and countries (Swyngedouw and Archer, 1985).

The preceding regional adjustment strategies have focussed on the displacement or attraction of specific economic activities or factors but not on the creation of integral regional innovation and adjustment mechanisms within regions or countries. Wehrle (1980) has shown for TNCs that a production transfer - instead of pure commodity exports - takes place only if a technological, marketing, management and experience-based "multipack" of competitive advantage can be gained which gives TNC a monopolistic/oligopolistic advance (p.25). In order to achieve endogenously driven territorial (local/regional/national) development it seems necessary that territorial governments or communities promote and attempt to "lock in" similar

"multipacks" of interacting regional innovation and adjustment mechanisms in territorial space, as TNCs do in functional space within their organization.

4. Integrated endogenous regional innovation and adjustment complexes

In the following, two examples of what appear to represent such integrated regional innovation and adjustment complexes are described. They both are located near what are considered old industrial areas. The first example is based on a collaborative network of private enterprises, the second on a co-operative network. This is to illustrate that intraregional interaction and co-operation are a decisive criterion rather than proprietary characteristics.

The fact that they have not been state policy induced but emerged from local/regional collective initiative - in part even as a response and challenge to segmented and sectorialized state institution policies - in no way reduced their value as a learning experience. On the contrary, they emphasize the need to widen the range of actors not only in terms of firms - including small and medium sized firms (UNIDO, 1981, p.14 f.) - but also in terms of social and economic groups at the territorial level (Stöhr 1985).

- "Third Italy" inter-related small firm innovation complex. A very interesting example of what might be considered a regionally integrated endogenous innovation complex is described by Piore and Sabel (1983) for what has come to be frequently called "Third Italy, to distinguish it from the older industrial triangle (defined by Milan, Turin, and Genoa) and the less developed South... The centre of the new wave of Italian growth is a vast network of very small enterprises spread through villages and small cities of central and Northeast Italy, in and around Bologna, Florence, Ancona, and Venice". (p.392)

These firms are described as being generally very small (frequently ten workers or less) and to range across a wide spectrum of sectors "from shoes, ceramics, textiles, and garments on one side to motorcycles, agricultural equipment, automotive parts, and machine tools on the other". A significant number of these firms "belong to the most

sophisticated and technologically advanced sectors of the industries in which they operate".... and "They work with machinery adapted to their unusual size and structure (some of them controlled by sophisticated micro-processors), and they yield some of the highest earnings in Italy today". (op. cit. p. 393, 397).

There are some specific long-established features of Italian society such as the extended family and the tradition of the family enterprise as a source of labour, entrepreneurship and capital, but Piore and Sabel (1983) feel that these are not an irreplaceable foundation for this development and have often been overestimated in their importance for its success (op. cit. p.406 f.).

What appears to be an important precondition is the specific legal status under which small shops operate which does not subject them to the rigid "tax and labour legislation that governs large enterprises" and not only gives them "numerous opportunities for reducing the direct costs of production" but above all increases "the flexibility of their operation". (op. cit. p.406)

A second important precondition for the highly innovative performance of this large number of decentralized small firms appears to be the intensive functional interaction taking place within and between firms, serving as a feedback mechanism. Within firms there is close co-operation between owners, designers, technicians and production workers in which "hierarchical distinctions tend to be treated as formalities" (op. cit. p. 400). Between firms there is intensive exchange of ideas among owners, skilled workers and small consulting firms. Also, direct collaboration takes place between dynamic small firms which share the cost of innovations, mutually exchange orders, have joint marketing, accounting and technical services, jointly purchase raw materials, subscribe to loans, etc. (op. cit. p. 401). Collaboration is triggered by an interesting mechanism: as firms are all small but growing, once a "firm begins to expand and move beyond its original speciality, it finds itself dependent on the help of neighbours with complementary kinds of specialities; and because the neighbours can never

anticipate exactly when the positions will be reversed, the help is forthcoming... Where invention creates demand and invention is also collective, collaboration is a natural result." (op. cit. p. 401). Piore and Sabel in fact maintain that while atomistic competition tends to favour cost-cutting and labour exploitation strategies for survival, collaboration frequently offers conditions which favour entrepreneurial product innovation strategies (op. cit. p. 420). This seems extremely important for the design of regional strategies.

A second relevant example is the :

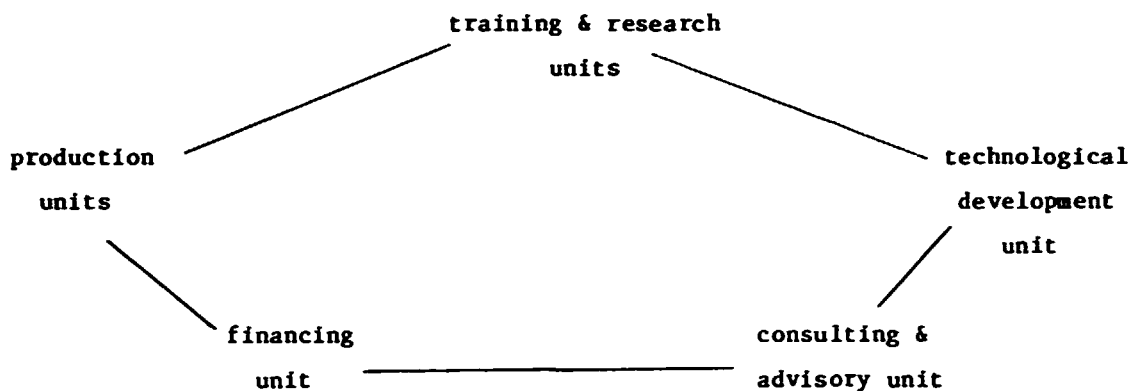
- Mondragon Co-operative complex in the Basque Country in Spain. It comprises about 160 co-operative enterprises in a wide variety of manufacturing sectors (ranging from metal working and capital goods to intermediate products and durable consumer goods), industrial services, training and education, housing, agricultural processing, community services and one consumer co-operative. It is spatially decentralized in a great number of medium- and small-sized towns and villages South of the major old industrial centres of the Basque Country which focus upon Bilbao and have traditionally been dominated by the heavy steel industry and shipbuilding.

While traditional Basque industry has been in severe crisis for several decades now, and has had to face increasing job losses and plant closures during the past few years, the Mondragon Co-operative Federation (the beginning of which goes back to the 1940s) has been able to increase the number of its plants and stabilize, in part even increase, the number of workers, even during the recent years of radical international structural adjustment. This has to a considerable extent taken place in technologically sophisticated sectors such as process electronics. But in more traditional sectors such as household electrics, the Mondragon Co-operative plants are also amongst the technologically most advanced and most efficient in the respective national sector, and strongly oriented towards export markets.

The relatively high innovative capacity of the majority of the Mondragon Co-operatives is to a considerable extent due to the fact that the

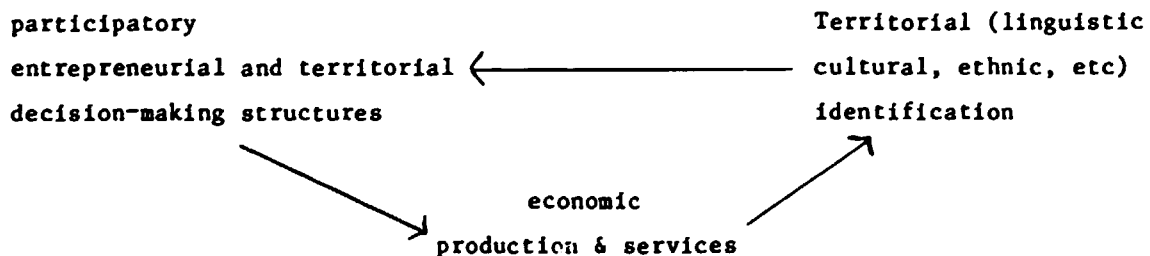
Co-operative Federation has its own training, research and technological development units, consulting services and financing institution (Caja Laboral Popular). This endogenous training-research-innovation-financing-production complex (Thomas and Logan 1982) with its intensive feedback mechanisms appears to be a major reason for the high innovation rate and the competitiveness of most of the Mondragon plants (Stöhr 1985).

Diagram 2. Territorial feed-back mechanism for technological innovation
(example Mondragon Co-operative Federation, Basque Country)



A second group of reasons for the relatively high organizational and institutional innovative capacity (including organization of work, etc.) are the participatory structures within individual co-operatives, and between them in the frame of the Co-operative Federation, as well as its territorial, cultural and ethnic identification with the Basque Country (cf. Stöhr 1985).

Diagram 3: Territorial feed-back mechanisms for societal innovation



In concrete terms the latter fact e.g. implies that the financing institution of the Mondragon Co-operative Federation (Caja Laboral Popular) is only allowed to invest the substantial surplus it makes within the Basque Country (interestingly enough including the Basque areas in France). As Caja Laboral Popular is not able to shop around for the most profitable investment on a world-wide scale (as banks normally would); it is forced to generate profitable projects within the Basque Country and promote institutional structures which will facilitate this, like the ones just described. This territorial "locking in" of capital and surplus, embedded in a competitive international market situation, has thus created what might be considered a self-propelling territorial innovation and adjustment mechanism.

The above examples suggest three conclusions:

First, that there is no "deterministic" rule that innovations - including new technologies and new products - need to develop in core regions and must be diffused from there (as the current spatial interpretation of product cycle theory would suggest - cf. also the present author's contribution to Part I) but that they can also emerge on a sustained basis in semi-peripheral or peripheral regions.

Second, that innovations are not necessarily linked to high world-wide accessibility (usually a characteristic of core regions) but that knowledge-creating and transmitting activities are, as Andersson and Johansson (1984, p.32 ff.) have shown, to a high degree dependent on the intra-regional accessibility of related activities, which, as Stanford, Princeton and Ann Arbor in the US show (p.34), may also be high in non-metropolitan areas.

Third, the examples mentioned above suggest that important intra-regional relations in this respect are those between training and research, technological development, consulting and advisory services, financing, and production activities (cf. Diagram 1), as well as between regional economic activities, regional decision-making processes and broad

representative participatory structures in the context of territorial identity (cf. Diagram 3). Finally non-hierarchical collaboration within and between regional firms not only in such matters as marketing and administration but also in the creation and application of innovations is essential.

This would seem to indicate that sustained technological and societal innovation is much more dependent on intra-regional characteristics like availability and interrelation of specific functions than on extra-regional characteristics such as world-wide accessibility.

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Thierry J. Noyelle

**THE SHIFT TO SERVICES, TECHNOLOGICAL CHANGE AND THE RESTRUCTURING OF
THE SYSTEM OF CITIES IN THE UNITED STATES**

1. Introduction

The United States, like other Western economies, are in the midst of a major transformation associated with a shift of employment and output to service industries. This transformation has been in the making for most of the postwar period, but has quickened considerably since the early 1970s under conditions of rapid technological change and increasing international competition and interdependence. Although likely to rival the earlier industrial revolution in terms of wrenching changes and developmental opportunities, the significance of the service transformation for people, places and the economy remains widely misunderstood.

By early 1984, roughly 21 million net new jobs had been added to the U.S. economy since 1969 and over 95 per cent of those had been in the services. For the third time in 15 years, manufacturing was attempting to recover from a dramatic spill, from a peak of 21 million jobs in 1979 to a low of 18 million jobs by the end of 1982.

But while helpful in pointing to some of the directions of change, the aforementioned statistics still failed to reflect the extent of the transformation that had already taken place in cities and regions across the nation. Between 1970 and 1976, the New York City metropolitan area lost nearly 600,000 jobs, over two thirds of which were in its manufacturing sector. During the ensuing recovery, from 1978 until the later months of 1982, New York made up part of this loss creating roughly 200,000 new jobs, almost all of which were in the financial and producer service industries. Meanwhile, the decades of the 1960s and 1970s were seeing the emergence of newer cities such as Atlanta, Houston or Miami as major regional business centers, while some of the older northern cities, such as Boston, Philadelphia or Columbus were shedding their old skin, breaking loose from their former dependence on manufacturing employment and strengthening their position as regional service hubs, attracting scores of offices, research laboratories and, generally speaking, white collar facilities from different sectors of the economy. Other urban centers, however, such as Buffalo, Youngstown or Flint, were not enjoying this kind of transformation, paying a heavy price for their incapacity to substitute new employment opportunities for disappearing blue collar jobs.

As I have argued elsewhere, the shift to a service economy is bringing about a fundamental restructuring of both labor markets and the economic geography of the country (Noyelle, 1983a; 1984b). In this presentation, I focus exclusively on the spatial dimension of the transformation, and make use of findings from my current research on technological change to explore in greater depth the potentials and limitations for the geographical diffusion of service industries (Noyelle, 1983a; 1984b; Noyelle and Stanback, 1984b; 1984b).

In the next two sections, I lay out the basic analytical framework. I first review briefly the nature of the linkages between manufacturing and services. Second, I highlight some of the principal dimensions of the impact of the growth of services on the system of cities. I am then in a position to take a closer look at the changes in the locational dynamics of service industries resulting from current technological developments. I conclude with some suggestions for needed policy directions.

2. Services

The shift to the services finds its origins in a number of important postwar economic changes, of which three need to be highlighted. The first major change stemmed from the postwar transformation of domestic consumer markets, involving the breakdown of local and regional barriers and the development of nationwide markets in which virtually all consumer goods are promoted and distributed on a coast-to-coast basis.

In terms of services, such a transformation brought with it the development of new networks of distribution and retailing, the development of new modes of marketing, and, especially after the mid-1960s, increasing market segmentation and the concomitant development of services such as engineering, design or styling needed to translate product differentiation into new products and services.

The second major change was associated with the increasing importance taken by the large corporation in the postwar economy, with its emphasis on generating corporate-wide scale economies through the centralization and development of service functions previously carried out at the plant level.

The result was a major growth of employment and output in the divisional offices, regional sales headquarters, R & D facilities and like service establishments of the large corporation, reflecting the latter's increasing emphasis on the use of producer services.

The third and last major change has resulted from the rapid opening of the U.S. economy to international competition after 1973, a development which has tended to both accelerate the move of capital out of older sectors into newer ones - mostly "high tech" manufacturing and services - and further accelerate the development of producer service functions needed to run firms operating increasingly on a world scale.

In short, the shift to services has come to reflect the dual transformation: in what the economy produces and in how the economy produces (Stanback et. al., 1981).

In terms of what the economy produces (that is, in terms of final output), the shift to services reflects not only increases in some free-standing services - mostly, health and education - but also increases in services provided along with goods in the form of specialized retailing, consumer credit, maintenance services and the like.

In terms of how the economy produces, the transformation to the services points to the increasing importance taken by services used as intermediate inputs in economic processes, reflecting the need of the corporation to devote greater resources to R & D and engineering, to customizing and styling, to distribution and retailing, to long range strategic planning, or more simply to day-to-day management of the corporate institution itself.

Empirically, some of these shifts can be assessed by way of the classification of services shown in Table 1. This classification distinguishes between services which are primarily intermediate as opposed to primarily final outputs, and among service outputs provided under different institutional settings - private, public or non-profit. Six groups of services are identified:

(1) the distributive services - transportation, communications, utilities and wholesaling;

(2) the complex of corporate activities which includes the central offices of corporation - national headquarters, regional offices, divisional offices or R & D facilities - and the producer services - finances, insurance, accounting, legal counsel, advertising, management consulting and so forth;

(3) the retail services;

(4) the mainly consumer services - hotels, car rentals, movie theatres;

(5) the non-profit services - mostly higher education and health;

(6) the public sector services.

The first two groups are mostly intermediate inputs, the next two mostly final outputs and the last two a good bit of both. An examination of postwar shifts in employment and outputs - shown in Table 2 - indicates:

(1) that, in terms of employment, growth of the services has occurred mostly in the public sector, the non-profit sector and the complex of corporate activities, not so much in the retailing or mainly consumer services groups;

(2) and, that, in terms of output, growth has come principally from the two groups of services most directly identifiable as intermediate inputs - the distributive services and the complex of corporate activities, with their share of GNP rising from 29 to well over 36 per cent between 1947 and 1977.

Such a perspective on the rise of the services helps explain the seeming paradox that while employment and output have increasingly shifted to the services, the U.S. have remained very much a goods-oriented society. Services are playing an increasingly critical role in consumption but, for the most part, as intermediate inputs. In some sense, what is happening is not unlike what has occurred in agriculture as a result of mechanization. Farm employment

declined by 10 million to 3.6 million between 1910 and 1981, but real output rose 219 per cent between those years (Shelp, 1983). Likewise, some employment displacement in manufacturing is likely to continue occurring, yet real manufacturing output is also likely to continue to grow.

Some final words of caution are necessary to help place the aforementioned industry classification scheme in a sharper perspective. This scheme was devised to avoid some of the weaknesses inherent in conventional sectoral typologies. Like any such classification, however, the result was a set of conceptual and empirical compromises (Stanback et al., 1981; Stanback and Noyelle, 1982; Noyelle and Stanback, 1984a). In particular, the necessity to develop a scheme which could be used to analyze employment statistics at the metropolitan level (SMSA level) placed serious restrictions on possible disaggregation. ^{1/}

The distinction between retailing and mainly consumer services on the one hand, and non-profit and public sector services on the other, is not unlike that suggested by other researchers between "private" and "collective" consumption (Singelmann, 1979). Such a distinction tries to take into account the fact that the dynamics of growth in these two broad sectors of the economy has differed widely in the past, in part because of major differences in the dynamics of demand in each of them. It must be emphasized that the distinction between non-profit and public sector services remains "sloppy" as does the one consisting in treating these two groups as final rather than as intermediate outputs. Thus, higher education and medical services are delivered by both the non-profit and the public sectors. An a number of the non-profit and public sector services are more of an intermediate output nature, than a final output nature: for example, regulatory actions by federal agencies, foreign trade financing by the Ex-Im Bank, infrastructure development by the Commerce Department, non-profit or public sector-based R & D and so forth.

^{1/} SMSA stands for Standard Metropolitan Statistical Area. SMSAs are defined in terms of aggregates of adjacent counties. To carry out our study of metropolitan transformation (Noyelle and Stanback, 1984a), we needed to develop employment profiles for the 140 largest SMSAs. As a result, in developing the scheme presented in Table 1, we had to take into account the availability of disaggregated data at such a level of analysis.

With respect to the distinction established in the classification scheme between distributive services and activities of the corporate complex, findings from our recent research suggest using a finer breakdown and distinguishing among not two but three areas of services (Noyelle and Stanback, 1984a):

1) among decision-making related services, that is among activities ranging from strategic planning to routine management, which are typically carried out in the national headquarters of firms and in firms of the financial, accounting, legal counsel and related industries;

2) among technology-related services, that is among activities ranging from research to development of products and process engineering, which are usually carried out in the divisional offices of firms and in their R & D facilities, in engineering consulting firms, in private-, university- or public sector-based laboratories, or in certain pilot plants or production facilities of industrial firms;

3) and among distribution-related services, that is among activities ranging from market research to product distribution, which are typically associated with employment and output in the regional or district offices of firms, in warehousing, in wholesaling and transportation, and in marketing and advertising.

At the very least, this threefold breakdown accounts better for functional differences and or differences in the growth and locational dynamics of major groups of intermediate services.

In this paper, we make use of both breakdowns of intermediate service inputs, depending on whether we use empirical material prepared under the original classification and difficult to alter, or material which can be reinterpreted with the finer, three-type disaggregation.

3. Cities

In The Economic Transformation of American Cities (1984a), Stanback and I investigated in detail the impact of the growth of the services during the

1960s and the 1970s on the economic base of the 140 largest metropolitan areas (SMSAs) and the resulting restructuring of the U.S. system of cities. We found that the transformation had been highly uneven in terms of cities, leading to sharp differentiation among four groups of metropolitan areas. These four groups are shown in Table 3. They are: the diversified service centers, the specialized services centers, the production centers and the consumer-oriented centers. Their characteristics are described in the following paragraphs with some support data provided in Table 4, showing the way the three networks of intermediate services described in the previous section are located vis-a-vis these four major types of cities. Within each major type, cities are grouped by population size, with the population size bracket described in the footnotes to Table 3. The following presentation is, of necessity, a very sketchy one.

The first group of metropolitan areas, that of the "diversified service centers", includes places ranging from New York, Chicago, Los Angeles, Philadelphia or Boston, to Atlanta, Charlotte or Omaha. These are centers that have already undergone and are continuing to experience strong transformation, involving in many instances sizeable job losses in their once important manufacturing base, considerable rebuilding through growth in corporate offices, producer service firms, wholesaling, transportation, communications and somewhat more selectively universities, hospitals and public sector services. In terms of three networks of intermediate services, and as suggested by some of the data shown in Table 4, these centers have become critical locations for corporate decision-making and strategic planning services, for marketing and distribution (especially among size 1 and 2 regional, and size 3 sub-regional diversified centers), and to a more limited extent, for technology-related services. The concentration of banking and accounting functions shown in Table 4 underlines, in particular, the role which these locations play in determining how and where capital is going to be put to use throughout the entire economic geography.

The second group of cities, that of the "specialized services centers", includes a mixed assortment of places ranging from Detroit, San Jose or Rochester, to Akron, Wilmington, Ann Arbor or New Haven. Typically, these are centers undergoing a more painful process of transition due to a continued

dependency on large numbers of production jobs, and are experiencing more limited rebuilding. Their rebuilding is coming mostly from employment growth in the engineering departments and divisional offices of large corporations, in higher education, in research and in a number of cases in some of the "high-tech" industries. The data shown in Table 4 are helpful in suggesting that, compared to the group of "diversified service centers", these centers display a relatively weak positioning vis-a-vis the networks of decision-making and distribution services (with the exception of the seven largest size 1 and 2 centers), but a relatively substantial involvement in the development of engineering resources, new products, new design, that is a relatively strong positioning vis-a-vis the network of technology-related services.

The third group of cities, that of the "production centers," includes cities such as Buffalo, Youngstown, Flint, Reading or even some of the smaller manufacturing towns of the South which have grown as result of plant relocations during the 1970s. By comparison to the "specialized service centers" which have tended to hold on to high-value-added production, these cities have tended to become increasingly engaged primarily in low value-added, standardized production (mostly assembly work). Either by design (in the case of the newer places), or as a result of accelerating processes of corporate concentration during the 1960s and 1970s (in the case of the older ones), they often tend to lack or to have lost involvement in the planning, management, or research and development functions of their industry. As a result, these centers have tended to become highly vulnerable to competition from third world production platforms or to almost any adverse developments affecting their particular industry. In general, these cities have found very little relief from plant shutdown and the widespread shrinking of once well-paying blue collar jobs, other than through development of mostly low-paying, local public sector jobs or consumer-oriented service employment.

The last, and smallest group of centers, that of the consumer-oriented center (12 places only), includes places that have sprung up in the postwar era under the combined effects of residential suburbanization, rising consumerism and increasing retirement benefits. In general, these places have been characterized by trends in population settlement that have made for

substantial growth. However, with the exception of the largest ones (Nassau-Suffolk, Anaheim, Orlando and possibly Tampa) that have tended to partake characteristics that resemble those of diversified service centers, the orientation of their economic growth and employment expansion toward the provision of consumer services has tended to work against agglomeration of activities which draw upon high level corporate, public or non-profit services. If anything, Stanback and I found that the only consistent departure in their pattern of development has come through some, if limited, growth in the area of manufacturing assembly.

4. Decentralization and diffusion of the services

Implicit in the preceding presentation is a discussion about decentralization tendencies among high level serviceees. The suggestion is being made that, during the 1960s and 1970s, when major shifts in the location of manufacturing assets (to the South, away from the major urban centers, or even abroad) and major decentralization of population and residential services were taking place, high level services were growing primarily in the most central locations of the urban system (Noyelle and Stanback, 1984a; Bluestone and Harrison, 1982; HUD, 1980). The result was the emergence of a geographic dualism between centers well-positioned in the production and export of high level services (the diversified and specialized service centers) and those that were not (the production and consumer-oriented centers). But, with much of the dynamism of the economy revolving increasingly around the high level services, this apparent lack of diffusion speaks poorly of the future of the latter groups of cities. I shall now take a closer look at this issue.

4.1 A look at some employment figures

Table 5 summarizes the record of employment decentralization in four key service groupings between 1959 and 1976: the complex of corporate activities, the distributive services, the non-profit, and the public sector services. The highlights of this table are revealing:

1) with the exception of the distributive services, whose share of total U.S. employment decreased from 11.8 to 10.4 per cent of all employment between

1959 and 1976 (their output share increased - cf. Table 2), the importance of employment in the high level services grew sharply during the period, from 41.7 to 51.1 per cent of all jobs for the four sectors combined;

2) with the exception of public sector employment and distributive service employment, which remained under-represented respectively in the diversified service centers and in the specialized service centers, employment in the high level services tended to be sharply over-represented in the diversified and the specialized service centers in both 1959 and 1976 (share of sector above share of all industry). With the exception of employment in the distributive services, there was very little indication of decentralization away from these two major groups of cities between those two years: the decline of employment share in each service grouping for the aggregate of the two groups of cities was typically smaller than the decline for all industry employment;

3) despite the lack of decentralization away from the diversified and specialized service centers, there was a good bit of change among cities within these two major groups. In general, the period 1959-76 was characterized by strong decentralization away from the largest diversified and specialized services centers (size 1 cities) towards the medium sized service centers (size 2, 3 and 4 cities). This tendency was strongly in evidence among activities of the corporate complex, with the employment share of the largest diversified service centers (the "national" centers) dropping from 28.5 to 22.2 per cent of employment between those two years.

4.2 A closer look at major groups of services

In light of the above, it is helpful to review recent and current decentralization tendencies among specific high level services in order to assess what lies ahead. This assessment is done in the following paragraphs in terms of the three major groups of intermediate services.

a) Decision-making related services. During the 1960s and early 1970s, there was a tendency among a number of the largest U.S. corporations (Fortune

500 firms)^{1/} to decentralize their national headquarters away from some of the largest metropolitan centers. In The Economic Transformation of American Cities (1984a), Stanback and I examined this tendency in detail, and found that most changes in the location of Fortune 500 national headquarters resulted from one of the following movements:

(1) a large contingent of New York-based corporations relocating to neighboring SMSAs, primarily to the Stamford-Greenwich-Bridgeport area (nearly 30 Fortune 500 firms during the period 1959-76);

(2) a smaller group of New York based corporations relocating to some of the large regional diversified services centers - primarily Dallas, Houston, Atlanta and Minneapolis (approximately, a dozen Fortune 500s);

(3) a few of the largest corporations shuffling their headquarters from one regional diversified center to another (typically from some of the northern to some of the southern centers);

(4) and, limited local gains or losses of large national headquarters associated with rank upgrading or downgrading of local corporations.

Overall, however, our investigation indicated almost no change between 1960 and 1980 in the share of the nation's 1150 largest corporations (Fortune 1150)^{2/} headquartered in the diversified and specialized service centers: roughly 85 per cent on both years. Furthermore, there remained compelling evidence showing that, once large corporations had taken over smaller ones headquartered in more remote places, the larger companies would usually take most managerial functions out of these newly acquired subsidiaries and out of these more remote places, and would consolidate them with those which they had already established in their other, typically more centrally located headquarters (Committee on Small Business, 1980).

1/ Fortune magazine's list of the 500 largest U.S. industrial corporations.

2/ The 1150 largest corporations includes Fortune's 500 largest industrial corporations, Fortune's second 500 largest industrial corporations, Fortune's 50 largest utilities, 50 largest transportation and 50 largest retailing firms.

Turning now to banking and insurance, my current research suggest trends that are highly revealing because they point to the general directions in which institutions that employ large numbers of white collar employees (financial firms, producer service firms, public sector agencies, medical and educational institutions, or even large industrial firms in their administrative offices) seem to be using technology to reorganize their operations geographically (Noyelle, 1984a).

In terms of assets, financial deregulation has clearly been pushing towards increasing concentration of financial assets in fewer but larger firms, most often headquartered in the largest financial centers: primarily in New York, Chicago, San Francisco, and Los Angeles - the so-called "money centers". For example, between the early 1960s and the late 1970s, the share of deposits held by the 250 largest U.S. commercial banks headquartered in these four cities grew from roughly 30 per cent to well over 50 per cent. By the late 1970s, New York's largest commercial banks controlled over 25 per cent of the nation's banking deposits, compared to less than 15 per cent back in the early 1960s (Noyelle and Stanback, 1984a).

In general, this increasing concentration of assets, achieved partly through mergers and partly through direct market share competitions, has translated in an increasing concentration of the corporate staff of large financial institutions in the nation's four money centers (Noyelle, 1984a).

As regards the financial firms' marketing staff (accounts officers, calling officers and the like) - often referred to as "front office" staff, which in the past tended to remain highly centralized at headquarters, the tendency has been towards decentralization of personnel in antenna-like "front-offices" set up typically in key business locations. Preferred locations are chosen mostly among diversified service centers (Noyelle, 1984a).

Among processing staff - often called "back-office" staff - the trend has been, simultaneously, towards the consolidation and the decentralization of back office facilities. In commercial banking, investment banking and individual life insurance, back office staff used to be highly centralized in the headquarters city. In group insurance (medical and group life) and in

property and casualty insurance, back office staff was traditionally split between the headquarter city and a large number of small processing offices scattered fairly evenly around the country (some of the largest firms may have had several dozens of those small processing locations). A conjunction of factors including increasing rents in the largest urban centers, labor considerations and technological change is resulting in dramatic changes in the locational dynamics of back office employmen, however. Increasingly, the tendency is towards decentralizing back office staff away from the very large metropolitan cities (especially places like New York, Chicago or Los Angeles) to newer processing centers located usually in either the suburban areas of the largest centers (places such as Nassau-Suffolk, the Northern New Jersey shore around New York, or Anaheim south of Los Angeles), or in some of the regional diversified service centers or their suburbs (Philadelphia, Minneapolis, Atlanta, Denver, Columbus (Ohio) are among some of the favored locations). Not surprisingly, this redeployment of back office facilities of large banks or insurance firms is often accompanied by intense competition among cities as they each try to attract one of these processing centers.

Furthermore, in those cases when firms are operating small processing centers around the country in addition to their main offices in their headquarter city, the trend is towards shutting down these facilities and consolidating their activities in the new regional processing centers. The result is usually dramatic for small urban centers characterized by a limited service orientation because such consolidation takes away from them one source of their limited involvement in the service economy (Noyelle, 1984a).

Among other producer services associated with decision-making activities - for example, legal counsel, accounting, or management consulting - current locational tendencies appear to be rather similar to those found among the financial industries (Noyelle and Stanback, 1984a; Cohen, Mollenkopf and Noyelle, 1983). Usually, as the industry becomes better established, and as the importance of the largest firms in the industry increases, the tendency is for sales, assets, and "corporate staff" to become increasingly concentrated in the largest diversified service centers. This centralizing trend is often accompanied by some decentralizing tendencies among "front office" staff as the firm attempts to establish a stronger presence in the hinterland market,

typically through offices located in regional and subregional diversified service centers. Finally, whenever the distinction between "front" and "back" office has become better defined (which assumes a certain degree of maturity and rationalization in the industry), the tendency is again to establish "back office" processing facilities outside the largest center, typically in the regional diversified service centers. Here again, however, the non-service places tend to be bypassed.

b) Distribution-related services. Among the regional sales headquarters of large corporations, Stanback and I (1984a) observed that not only did such facilities rarely venture beyond the regional or subregional diversified service centers, but that there might be a tendency among corporations for cutting back on the number of such facilities and for becoming far more selective in determining where such a presence needs to be established. What this would seem to indicate is that modern means of communication are making it increasingly possible for large corporations to oversee larger regions from a more limited number of regional outposts. A major result would seem to be increasing competition among regional and subregional diversified service centers as they struggle to retain these regional facilities, with evidence that some cities may be declining as others rise to prominence. This trend is clearly in evidence among the regional and subregional centers in the Western Pennsylvania-Southern Ohio area where there is considerable redundancy. This form of competition is obviously feeding onto the type of competition mentioned before and associated with regional centers competing with one another to attract the regional processing centers of the large financial or producer service organizations.

In advertising, Stanback and I (1984a) found very little evidence of major decentralization out of New York City, where the industry has traditionally tended to be overwhelmingly concentrated. We did note, however, some growth of the industry in a few regional centers - primarily Los Angeles, Chicago, San Francisco, Atlanta, Minneapolis, Philadelphia, Boston, and a few others - in part due to the trend among nationwide advertisers to better tailor advertising to regional markets via the regional editions of national (printed or electronic) media.

In air transportation, we found that the smallest diversified service centers and many among the specialized service centers have been losing rather than gaining air connections and traffic as a result of higher fuel costs and industry deregulation, while the largest diversified service centers were consolidating their leadership (Noyelle and Stanback, 1984a).

Finally, in wholesaling, warehousing and trucking, we observed some movement away from the largest centers towards outlying suburban areas or towards smaller service centers, primarily because the completion of the interstate highway system and the rise of large-scale containerization have made it increasingly possible and even profitable to operate large warehousing and shipping facilities in locations at distance from the more congested places.

c) Technology-related services. In the case of this third and last major network of services, Stanback and I found strong evidence of increasingly tighter linkages among divisional head offices of firms, specialized production establishments (batch production, pilot production), research establishments and higher educational facilities (Noyelle and Stanback, 1984a, especially Chapters 4 and 9). This appears to be so because the kind of engineering work which gets carried out in divisional offices needs proximity to pilot production, to specialized expertise generated in R & D establishments, and to the pools of skilled personnel (engineers, draftsmen, technicians, computer specialists, etc.) trained or employed by universities and development labs.

We also found indications that there had been some decentralization of these technology-related functions over the past two decades or so, often led by the decentralization of research and higher educational facilities to more remote locations. The result was the relocation or expansion of key divisional offices or pilot facilities or established firms or even the development of new technology-oriented firms in places previously marginally affected by industrial development (Noyelle and Stanback, 1984a; Joint Economic Committee, 1982). San Jose in the 1950s or Raleigh-Durham-Chapel Hill in the 1970s seemed good examples of such a process of development. However, we also argued that since funding for research and higher education remained

largely dependent on federal dollars, current federal retrenchment on these fronts would most likely freeze things to the status-quo at least for the foreseeable future.

5. Conclusion

This presentation suggests two major locational tendencies among high level services, both of which underscore the spatial dualism hypothesized earlier on in this paper:

- First, a tendency for some, but limited, decentralization of high level services, primarily away from the largest diversified service centers and towards the medium-sized diversified service centers or the specialized service centers;

- Second, a tendency for non-service-oriented places (production and consumer-oriented centers) to not only benefit little from such decentralization but to be losing in view of the trend among large corporations to consolidate small, remotely located, service facilities in the larger facilities that they are deploying or expanding in the medium-sized diversified service centers or in the specialized service centers.

Back in the 1930s, a major objective of the nation's economic development policy agenda was to devise strategies by which inequalities and unevenness between rural (i.e. agricultural) and urban (i.e. industrial) areas - largely a North vs. South regional development issue - could be alleviated. The Tennessee Valley Authority, the Rural Electrification Program, many of the early state highway construction programs were aimed at developing an infrastructure that would hopefully make it possible to bridge these gaps. How successful these programs ever were can be debated endlessly. The fact is that these efforts did permit some industrialization in the rural South during and after the war.

I believe that the U.S. are faced nowadays with an economic development problem which is not unlike that of the 1930s, although today's unevenness is primarily between service-oriented and non-service-oriented cities (mostly a

distinction between larger and smaller urban centers) meaning that the developmental issue is no longer to bring industry to rural areas, but services to industrial areas.

I have already made extensive suggestions as to what may be needed to bridge the gap (Noyelle, 1984b). Let me summarize some of these by suggesting that, in my opinion, we must deal with at least three problems:

1) A problem of infrastructure. We must insure that the economic and social infrastructure reaches out to all areas of the country. In our increasingly service-oriented economy, telecommunications and training institutions (vocational schools, community colleges, four year colleges) are likely to be at the core of the new infrastructure. Therefore, we must give consideration to the fact that retrenchment in education and deregulation in telecommunications are most likely aggravating uneven development of the infrastructure rather than alleviating it.

2) A problem of capital mobility. Two tendencies have been suggested in this paper: a tendency for increasing competition among medium-sized diversified and specialized service centers as they compete to retain or to attract certain kinds of service facilities; a tendency for the upward - not downward - filtering of small service facilities from the most unfavored to the most favored urban centers, contributing to the further peripheralization of older and smaller cities. Restrictions on capital mobility may be needed to regain control over some of the most negative aspects of these tendencies, although as I have also argued, more extensive, formal economic planning may truly be called for.

3) A problem of dependency. Even if we succeeded in bringing some vitality back to some of the most peripheral locations - and this obviously has to mean bringing those places in the mainstream of the service economy - we must ask ourselves whether it will occur within the kind of "dependent" mode with which we brought industrial development to the rural South (i.e. mostly branch plants) or whether a better and fairer alternative can be found and developed.

In the context of an increasing international division of labor and growing global interdependence, the development problem faced by many regions and cities of the developing world seems of a nature increasingly similar to that faced by the "non-service" regions and metropolitan areas of the developed world. More and more, dependency is couched in terms of service inputs and expertise. This is why, in North-South discussions, it is of utmost strategic importance for countries of the South to develop a response to current pressure exerted by the North, and the U.S. in particular, for opening trade in the services via GATT negotiations.

Table 1. Classification of sectors for GNP and employment analysis

Agriculture, extractive and transformative industries		
1	Agriculture	SIC 01, 02, 07, 08, 09
2	Extractive and transformative	
	Mining	SIC 10, 11, 12, 13, 14
	Construction	SIC 15, 16, 17
	Manufacturing	SIC 20 to 39
Services		
3	Distributive services	
	Transportation, communications and utilities	SIC 40 to 49
	Wholesale	SIC 50, 51
4	Complex of corporate activities	
	Central administrative offices	CAO & A of each 1-digit SIC group
	Producer services	
	Finance, insurance, and real estate	SIC 60 to 67
	Business services	SIC 73
	Legal services	SIC 81
	Membership organizations	SIC 86
	Miscellaneous professional services	SIC 89
	Social services	SIC 83 */
5.	Non-profit services	
	Health	SIC 80
	Education	SIC 82
6	Retail services	SIC 52 to 59
7	Mainly consumer services	
	Hotel and other lodging places	SIC 70
	Personal services	SIC 72
	Auto repair, services and garages	SIC 75
	Miscellaneous repair services	SIC 76
	Motion pictures	SIC 78
	Amusements & recreation services	SIC 79, 84
	Private households	SIC 88
8	Government and government enterprises	SIC 91 to 97

*/ After 1974.

Source: From Noyelle and Stanback (1983). Adapted from J. Singlemann, from Agriculture to Services. Based on Standard Industrial Classification Manual, I. S. Office of Management and Budget, Washington, U.S. Government Printing Office, 1976.

Table 2. Percentage distribution of full-time equivalent employment and gross national product (in 1972 dollars) by industries, 1947 and 1977

	1947		1977	
	Empl't	GNP	Empl't	GNP
Agriculture extractive and transformative	<u>49.39</u>	<u>37.38</u>	<u>31.60</u>	<u>32.81</u>
Agriculture	4.31	5.57	1.90	2.87
Extractive and transformative ^{a/}	39.08	31.81	29.70	29.94
Manufacturing	32.27	24.53	24.10	24.18
Services	<u>56.61</u>	<u>62.68</u>	<u>68.40</u>	<u>66.09</u>
Distributive services	13.54	13.36	11.36	16.51
Retailing services	12.57	11.06	14.18	9.89
Non-profit services	2.61	2.67	6.34	4.04
Complex of corporate activities ^{b/}	6.06	15.50	11.96	20.12
Mainly consumer services	7.67	5.47	4.99	3.11
Government and government enterprises	14.16	14.62	19.57	12.43
	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>

^{a/} Includes mining and construction (not shown).

^{b/} Because of data limitations, this grouping includes only the producer services (see Table 1). Employment and GNP originating from the Central Administrative Offices are not disaggregated and are included in their respective category: e.g. distributive services, retailing services, manufacturing, and so forth.

Source: From Noyelle and Stanback, 1983, from U.S. Department of Commerce, Bureau of Economic Analysis, the National Income and Product Accounts of the United States, 1929-1974, Statistical Tables and Survey of Current Business, July 1978.

Table 4. Distribution (%) of Key Establishments of Firms and Institutions of the Networks of Decision-Making, Distribution and Technology Related Services Among Diversified Service Centers, Specialized Service Centers, and All Remaining U.S. Counties, 1977

	Pop Size (1)	Number of SMSAs (2)	Pop Share (3)	DECISION MAKING			DISTRIBUTION		TECHNOLOGY				
				National Headquarters Fortune 1200 (4)	Deposit in top 250 Commercial Banks (5)	Edge Act Bank Corps (6)	Partners in "Big 8" Accounting Firms (7)	Regional Headquarters Sample Fortune Firms (8)	Headquarters of Top 200 Advertising Firms (9)	Divisional Headquarters Fortune 650 (10)	R&D Labs (11)	Top 100 Universities (12)	Medical Schools (13)
<u>Diversified Service Centers</u>			<u>33.69</u>	<u>61.80</u>	<u>67.00</u>	<u>92.40</u>	<u>72.00</u>	<u>71.90</u>	<u>82.50</u>	<u>51.60</u>	<u>40.20</u>	<u>41.00</u>	<u>52.30</u>
National	1	4	12.30	31.80**	49.10**	54.50**	21.40** (8)	12.50	80.50**	24.80**	19.90*	16.00*	14.20*
Regional	1	8	10.21	18.80*	9.50	21.90**	14.80* (8)	23.40**	17.00*	15.50*	12.90*	11.00	14.20*
	2	11	6.89	6.90	5.80	14.30*	8.50* (8)	25.80**	3.50	7.70*	5.60	9.00*	11.50*
Subregional	3	10	3.33	3.80	2.50	1.90	5.00* (7)	9.40**	1.50	3.60*	1.60	5.00*	8.90**
	4	6	0.96	0.50	0.10	-	0.90 (3)	0.80	n.t.	n.t.	0.20	-	3.50**
<u>Specialized Service Centers</u>			<u>12.26</u>	<u>22.10</u>	<u>8.50</u>	<u>4.80</u>	<u>15.60</u>	<u>18.00</u>	<u>9.00</u>	<u>16.90</u>	<u>22.90</u>	<u>31.00</u>	<u>21.40</u>
Size 1 & 2	1	4	5.39	6.50*	4.90	4.80	6.10* (8)	9.40**	5.00	6.70*	8.80*	5.00	5.40*
	2	3	1.71	2.90*	0.90	-	3.20* (7)	4.70**	1.50	2.30*	3.20*	3.00*	2.70*
Size 3 & 4	3	16	5.41	10.70**	1.90	-	5.00 (4)	3.90	2.50	7.90*	7.00*	10.00**	7.10*
	4	21	3.75	2.00	0.80	-	1.30 (1)	-	n.t.	n.t.	3.90*	13.00**	6.20*
<u>Diversified and Specialized Service Centers - Total</u>		<u>63</u>	<u>49.95</u>	<u>83.90</u>	<u>75.50</u>	<u>100.00</u>	<u>66.20</u>	<u>89.90</u>	<u>(91.50)</u>	<u>(88.90)</u>	<u>61.30</u>	<u>72.00</u>	<u>73.70</u>
<u>All Other U.S. Counties (Including remaining 215 SMSAs)</u>			<u>50.05</u>	<u>16.10</u>	<u>24.50</u>	<u>-</u>	<u>33.80</u>	<u>10.10</u>	<u>(8.50)</u>	<u>(31.50)</u>	<u>36.90</u>	<u>28.00</u>	<u>26.30</u>
<u>U.S. Total %</u>			<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>	<u>100.00</u>
<u>#</u>				<u>1,700</u>	<u>718.5</u>	<u>105</u>	<u>8,525</u>	<u>128</u>	<u>200</u>	<u>11,477</u>	<u>6,661</u>	<u>100</u>	<u>113</u>

Note: col.4: distribution of national headquarters of all Fortune 1200 including Fortune 1000 largest industrials; 50 largest transportation; 50 largest retailing; 50 largest utilities; 50 largest life insurance.

col.6: distribution of all Edge Act Banking Subsidiaries of the Commercial Banks.

col.7: distribution of all partners, principals and managing directors of the 8 largest ("Big Eight") accounting firms. Number in parenthesis indicates average number of Big Eight firms with field offices in each SMSA of the group (maximum possible: 8)

col.8: distribution of regional headquarters of very large corporations based on a sample of 8 firms.

col.9: distribution of headquarters of top 200 advertising firms

col.10: distribution of divisional headquarters of all divisions of Fortune 650 firms, including Fortune 500 largest industrial, 50 largest transportation, 50 largest retailing and 50 largest utilities.

Number in parenthesis indicates average number of Big Eight accounting firms with field office in each SMSA of the group (maximum possible: 8).

n.t.: Not tabulated.

* Indicates that share is bigger than population share (for emphasis).

** Indicates that share is at least twice bigger than population share (for emphasis).

Source: Noyelle and Stanback, 1984a.

Table 5. Distribution (%) of Employment in the Complex of Corporate Activities and in the Distributive, Non Profit and Public Sector Services Among Diversified Service Centers, Specialized Service Centers, and all Remaining U.S. Counties, 1959 and 1976

	Pop. Size	Number SMSAs	Corporate Complex		Distributive Services		Non-Profit Services		Public Sector Services		All Industries	
			1976	1959	1976	1959	1976	1959	1976	1959	1976	1959
<u>Diversified Service Centers</u>			<u>51.1</u>	<u>54.2</u>	<u>47.3</u>	<u>50.6</u>	<u>41.0</u>	<u>43.3</u>	<u>32.6</u>	<u>33.8</u>	<u>38.9</u>	<u>41.0</u>
National	1	4	22.2	28.5	18.5	22.5	15.5	17.4	12.0	13.9	14.8	18.1
Regional	1	8	14.3	13.5	13.0	14.1	13.7	14.5	9.2	9.3	11.7	12.0
	2	11	9.1	7.4	9.7	8.6	7.3	6.6	6.7	6.1	7.6	6.6
Subregional	3	10	4.3	3.7	4.8	4.3	3.5	3.7	3.8	3.6	3.8	3.4
	4	6	1.2	1.1	1.2	1.1	1.0	1.1	0.9	0.9	1.0	0.9
<u>Specialized Service Centers</u>			<u>20.2</u>	<u>19.4</u>	<u>15.9</u>	<u>15.8</u>	<u>18.9</u>	<u>18.5</u>	<u>18.7</u>	<u>18.1</u>	<u>17.9</u>	<u>17.9</u>
Size 1 & 2	1	4	8.4	8.7	5.3	6.0	6.4	6.6	6.9	7.0	6.1	6.3
	2	3	2.2	2.1	1.7	1.4	2.2	1.9	1.4	1.1	2.0	1.8
Size 3 & 4	3	16	5.3	4.0	4.8	4.7	5.2	5.1	4.7	4.7	5.1	5.4
	4	21	4.3	3.8	4.1	3.7	5.1	4.9	5.7	5.3	4.7	4.4
<u>Diversified & Specialized Service Centers - Total</u>		63	<u>71.3</u>	<u>73.5</u>	<u>63.2</u>	<u>66.4</u>	<u>59.9</u>	<u>61.8</u>	<u>51.3</u>	<u>51.9</u>	<u>56.8</u>	<u>58.9</u>
<u>All Other U.S. Counties (including remaining 215 SMSAs)</u>			<u>28.7</u>	<u>26.5</u>	<u>36.8</u>	<u>33.6</u>	<u>40.1</u>	<u>38.2</u>	<u>48.7</u>	<u>48.1</u>	<u>43.2</u>	<u>41.1</u>
<u>U.S. Total</u>			<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>
Industry Grouping as Share of all U.S. Employment			14.7	10.2	10.4	11.8	6.5	3.5	19.5	16.2	100.0	100.0

Source: Country Business Patterns and Employment Earnings, 1959 and 1976
from Hoyette and Stanback, 1984a

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Alan R. Townsend and Francis W. Peck

SPATIAL REDEPLOYMENT THROUGH PLANT CLOSURE AND REDUNDANCY
BY FOREIGN COMPANIES IN THE UNITED KINGDOM, 1976-81

1. Introduction

The period from 1977 to 1981 represents in the U.K. a period of greater relative decline, and greater increases in unemployment, than in virtually all other parts of Europe. It represents a new period of analysis in the behaviour of large corporations, both in the greater emphasis on employment decline in U.K.-owned corporations, and in introducing the question of serious absolute decline in many previously successful foreign corporations in the U.K. There is comparatively little precedent for practical analysis of the impact of multi-national corporations in regional development. Many writers, such as Brooke and Remmers (1978), have discussed the general global strategy of multi-national corporations. Geographers such as Watts (1979, 1982) and Dicken and Lloyd (1980) have assessed the changing distribution of foreign manufacturing investment in the U.K. Yannopoulos and Dunning (1976) wrote an exploratory paper on the role of multinational enterprises in regional development, while Taylor and Thrift (1982) edited the first volume on the geography of multinationals, including important papers by Blackburn, and Thrift.

The evidence which is presented here has the advantage of being a subset of equivalent data for plants of all kinds of ownership throughout the U.K. (Townsend and Peck, 1985). The absence of any reliable, consistent and publicly available data source on company behaviour has previously been a major stumbling-block to research. The data source used as a basis for this study must be seen in this context. The analysis makes first use of a computerised data set derived from reports of job losses in the Financial Times between October 1976 and October 1981. Coverage of the data can at least be tested against the most relevant official redundancy series of the British government, ES955. A comparison of the total redundancy figures reveals that our source provides a 43.1 per cent coverage overall, though fairly unevenly spread across the regions of the U.K.

The severity and widespread effects of the British recession after 1979 have many implications for the analysis of regional patterns of change in manufacturing employment. As in the U.S.A., the existence of an "urban-rural shift" in employment during the early 1970s has been widely accepted, despite continued controversy over the exact causes of these changes (Fothergill and Gudgin, 1979; Massey, 1979). Recent studies of patterns of redundancy during the 1976-79 period appear to show strong negative differentials most noticeable in peripheral regions as a whole (Townsend, 1982, p. 1402). As industry entered recession, however, in 1979, all the indications point to a change in these patterns, with some continuing elements of a return to a "North-South" division in employment performance which was dominated by manufacturing decline (Own, Coombes and Gillespie, 1983, p. 12; Regional Studies Association, 1983, p. 44).

The emergence of a substantial differential shift in studies of employment change, however, points to processes which are not reflected in any way in the most detailed industrial classification. This opens the door to many possible avenues of inquiry, one of which is explored here because of its immediate relevance to foreign-owned corporations. It is possible that the recession has disproportionately affected branch plants in the peripheral regions, having accounted for differences in industrial composition. In this way it is hypothesised that companies faced with the need to cut capacity more often closed or reduced employment in more distant branch plants rather than equivalent plants within the head office regions. The idea that such branch establishments are discriminated against in closure decisions is of course not new, and indeed the evidence of such behaviour from former time periods is extremely inconsistent (Watts, 1981). There are sufficient reasons, however, for examining this simple hypothesis in the recession itself where plant closures become much more numerous.

2. Foreign-owned corporations; past experience in British regional development

In the light of our overall context, of more than 1630 occasions of job loss in the United Kingdom, 1976-81, we may now proceed to look at a part of the data, that which deals with 264 cases at establishments owned

by non-U.K. firms. In general, the analysis of foreign investment in the U.K. has been concerned with its size, origin and financial significance (see for example, Dunning, 1958). Discussion of its possible impact on the stability of employment in foreign-owned plants was in many cases based more on the potential threat than on real evidence. In the United Kingdom, the best-known statements to this effect are in the books of Holland (1976), but his hypotheses were not extensively supported by aggregate statistics, nor by citation of the performance of many individual corporations. On the whole it appears that the cyclical sensitivity of multinationals' branch plants was less than that of home-owned factories (Clarke, 1976), and that their patterns of investment were not necessarily contrary to the role of governments' regional policies. "It has been fairly well established that such (multinational) firms exhibit greater employment robustness than indigenous firms in times of recession and, at best, go solidly against the trend displayed by older, declining industries. In such instances, for Scotland, the witnessing of large numbers of closures among long established multinational enterprise plants is a totally new experience and one not readily understood" (Hood and Young, 1982).

The impact of new conditions since 1976 has guaranteed fresh controversy surrounding the role of multinationals, which have clearly been involved in major adaptations to deal with recession. However, closing plants in one country in order to concentrate production in another can often be misunderstood. Multinationals appear to have given insufficient priority to their political relations with the societies in which they are operating; hence a dissatisfaction in many parts of Europe with the various codes of conduct for multinationals which have been evolved by the Organisation for Economic Co-operation and Development, and the United Nations. The most recent expression of disillusionment, and the one to which multinationals most object is the Vredeling directive of the European Commission, which would impose on them requirements to provide information and to engage in consultation. The need for more information is stressed in one of the latest volumes on Multinationals and Political Control (Robinson, 1983).

3. Statistical evidence of the growth of foreign investment to the mid-1970s

Dicken and Lloyd (1980) showed that in the years 1963 to 1975 foreign-controlled establishments

- a. increased their share of total net output from 10.6 per cent to 16.6 per cent
- b. increased their manufacturing employment by 71.7 per cent in absolute terms, and from 7 per cent of workers in private manufacturing to 13 per cent, in relative terms
- c. increased their manufacturing employment in all eleven standard regions.

It is clear, however, that "first-time greenfield investments" concentrated in Scotland; in 1945-65 it attracted 46,200 out of 108,500 manufacturing jobs from abroad (Board of Trade, 1968), and in the period 1966-75 it attracted 10,900 out of 34,100 jobs from abroad (Pounce, 1981). However, very few of these jobs arose from moves occurring after 1972, except in developments related to preparations for the production of oil from the North Sea. The effect of development in peripheral areas assisted by the government's regional policy was to weaken the overall concentration on South East England. In the 1970s, however, takeovers by foreign manufacturers have primarily involved U.K. companies based in the more developed regions of the country, particularly the South East and West Midlands. "The higher incidence of foreign-owned manufacturing plant closures in the assisted areas between 1972 and 1975 may be related to two factors: first, their increased peripherality with regard to the market of the EEC after 1973, and, second, the increased importance of acquisition as opposed to greenfield investment after 1971. Both sets of circumstances may have encouraged foreign companies to focus their rationalisation strategies on these peripheral regions during the recent recession" (Smith, 1982). The overall distribution of foreign employment in British manufacturing is shown in Figure 1.

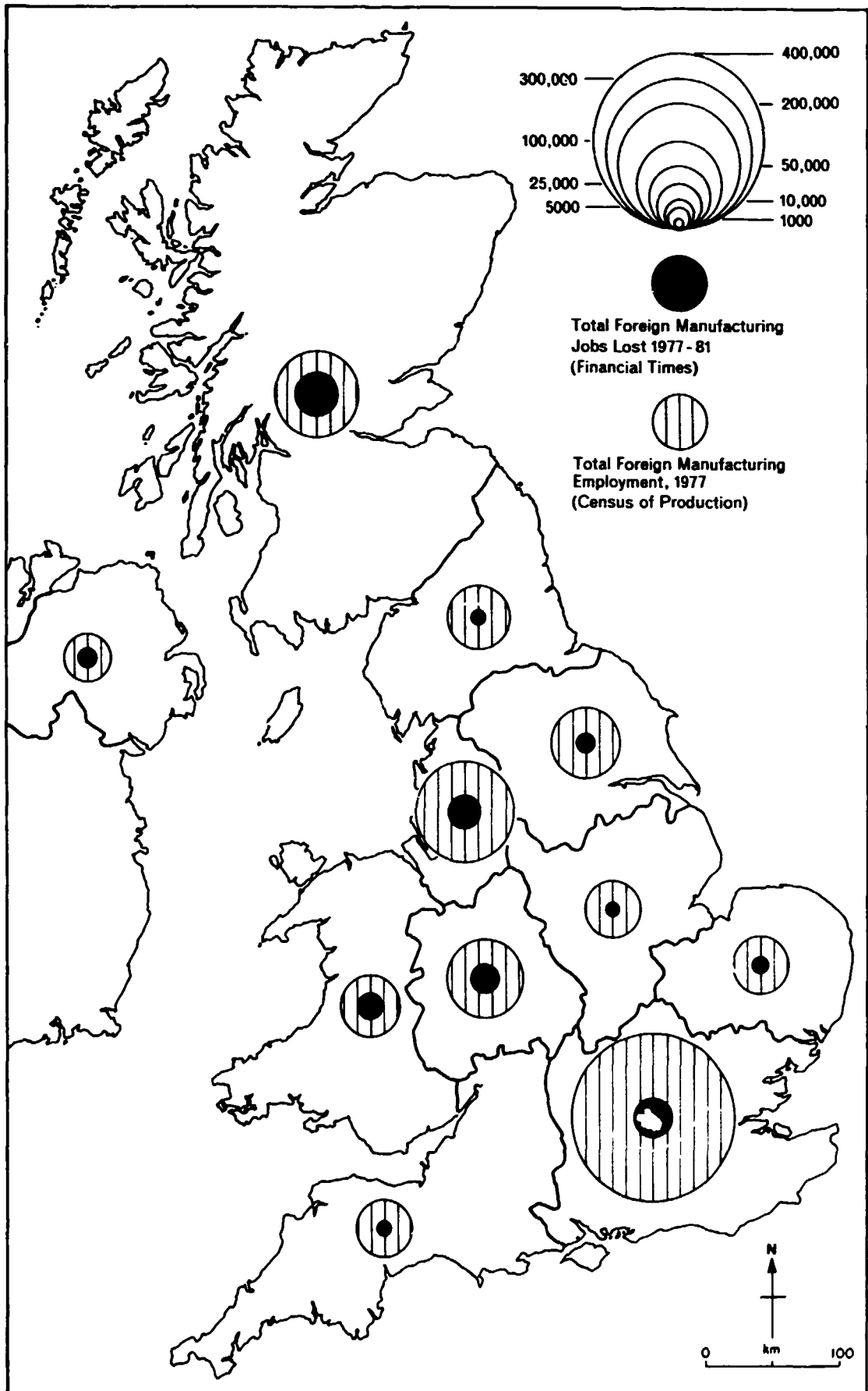


Fig. 1 Foreign-owned manufacturing plants in the UK: reported job-losses, 1977 - 81 in relation to total employment in 1977

4. The evidence of our data; the withdrawal of foreign investment, 1977-81

Clearly any downturn in foreign employment in the U.K. is a serious departure from past trends in investment histories which were associated in general with the arrival of "growth industries" in the U.K. Following hints given above about a changing climate from 1972 to 1975, it is apparent that total foreign manufacturing employment in the U.K. increased slightly from 925,700 in 1975 to 1,013,800 in 1977, and declined to 974,200 in 1979, and 858,100 in 1981, the last recorded figure in the Census of Production: job losses had thus become the dominant component of change by 1980 (as in domestically-owned industry). The area where analysis of government data is most advanced is for Scotland, where Hood and Young (1982, p. 9) estimate a net employment reduction of 27,700 in overseas-owned units from 1975 (108,200) to 1981 (80,500), involving at least two job losses for every one increase (p. 35).

In total our record covers 100,400 job losses at known locations in the United Kingdom. These may be attributed, according to Who-owns-Whom (Dun & Bradstreet, London) to the nationalities of ownership shown in Table 1. The table shows clearly that employment in foreign-owned establishments in the U.K. remains dominated by the U.S.A. which accounted for 70 per cent of the one million manufacturing jobs controlled from outside the country. Traditional trading links with Canada and the Netherlands gave these countries more prominence in U.K. manufacturing in 1977 than investment by other countries of the EEC, in which one should recall the short period since the U.K.'s accession to membership in 1973.

Our source for this analysis documents the loss of ten per cent of these manufacturing jobs, and very few more in other sectors of the economy, mining, services, etc. This figure is of course subject to some recording errors, as the Census of Production records a loss of twelve per cent of jobs in this sector, 1979-81. It undoubtedly indicates a fairly even spread of job reductions among the different nationalities of

Table 1: Nationality of corporations responsible for job losses in the U.K., as reported in the Financial Times

	(1) Total manufacturing employment in U.K., 1977 ¹	(2) Recorded jobs lost in U.K. manufacturing 1977-81 ²	(3) (2) - (1) Per cent	(4) Leading corporations for job loss, 1977-81
U.S.A.	711,800	65,600 ³	9.2	General Motors; Singer
CANADA	66,500	7,600	11.4	Massey Ferguson
E.E.C. including				
France	32,100	10,900	n.a. ⁷	Peugeot-Citroen
F.R. Germany	19,400	2,100 ⁴	11.0	Hoechst; Grunig
Netherlands	63,200	4,100 ⁴	6.4	Philips; Akzo
Italy	2,000	600	29.6	Fiat; Jefferson-Smurfitt
Eire	9,800	600	6.1	
OTHER, including				
Switzerland	52,100	4,400	8.4	Ciba-Geigy; Alusuisse
Sweden	19,500	1,700	8.6	SKF; Sandvik
Australia	12,900	1,400	10.8 ⁷	Wormald Industries
Japan	1,100	1,200 ⁵	n.a.	Toshiba
Other	21,200	200	0.7	-
TOTAL	1,013,800	100,400⁶	10.0	

Notes:

1 As in Census of Production, Her Majesty's Stationary Office, 1977

2 As recorded in Financial Times, and identified by this project as described above

3 Or 64,500 including non-manufacturing cases

4 Or 4,200 including non-manufacturing cases

5 Or 1,200 including non-manufacturing cases

6 Or 101,600 including non-manufacturing cases

7 Not applicable, as job losses were in holdings acquired after 1977

ownership in British manufacturing, with comparatively little variation around the apparent average of ten per cent. One of the lowest figures is for the Netherlands, where the Anglo-Dutch corporation of Shell had relatively modest losses. There are a number of reasons why recorded losses may not always be compared directly to the 1977 total figure for the same country, and the chief one is that certain job losses were in holdings acquired only after 1977 (see footnote 7). The most notable case is that all the French job losses were in Peugeot-Citroen, in respect of their acquisition of the European operations of the U.S. company Chrysler in 1978.

This French car-making group are the leading corporation responsible for job losses in the U.K., as is shown in the ordered list in Table 2. They are followed in the list by nine further vehicle-manufacturing and component groups, immediately by General Motors of the U.S.A. and Massey-Ferguson of Canada. The rest of the list is dominated by U.S.A. corporations, as one would expect from Table 1, although the foot of the list includes rationalisation of relatively recent investments made by Australia, Japan and the Federal Republic of Germany. Eighteen of the 25 corporations in the list are shown, in our third column, to be among the leading 1,000 corporations in U.K. domestic industry in their own right. There are comparatively few leading foreign corporations with less than 1,300 job losses (i.e. not shown in Table 2). As an indication of the concentration of job losses in a relatively small number of foreign corporations, it is notable that the 20 corporations which are listed in Table 2 provide nearly 70,000 (70 per cent) of the total shown in Table 1.

5. Sub-regional distribution of foreign job losses

Virtually all "main products affected" in the table were classified as expanding industries, 1953-66, and the majority were in turn dependent on geographical mobility in the U.K. as a whole in the same period (Townsend, 1983, p. 178). Both because of a concentration of ownership, and a history of mobility, the table is important in studying the overall recorded distribution of job losses in foreign-owned establishments.

Table 2: Foreign corporations responsible for 1,300 or more job losses in the United Kingdom as reported in the Financial Times, 1976-1981

U.K. name	Nationality	Rank by U.K. turnover if under 1,000	Jobs lost (sum)	Location(s) of job losses (leading 3 in order of importance)	Main product affected
Peugeot-Citroen	FRA	336	10,900	Strathclyde,* Coventry, Luton	Motor cars
General Motors	USA	75	9,100	Luton, Cheshire,* Southampton	Motor cars
Massey-Ferguson (UK)	CAN	114	5,800	Coventry, Peterborough, Strathclyde*	Tractors, diesel engines
Singer (UK)	USA	553	5,700	Strathclyde*	Sewing machines
Koover	USA	250	5,100	Mid-Glamorgan,* Strathclyde,* London	Domestic appliances
International Harvester of GB	USA	289	4,200	Doncaster, Bradford, Lancashire	Tractors, commercial vehicles
Goodyear Tyre & Rubber (GB)	USA	251	3,700	Wolverhampton, N. Ireland,* Strathclyde*	Tyres etc.
Ford Motor Co.	USA	10	3,200	London, Merseyside,* Swansea*	Motor cars
Kiba-Geigy (UK)	SWI	143	3,000	Essex, Manchester	Photographic materials
ITT Industries	USA	557	2,800	N. Ireland,* Brighton, Hastings	Television sets & electronics
Philips Electronic & Associated Industries		76	2,400	Suffolk, Lancashire, Co. Durham*	Television sets & electronics
Monsanto		210	2,300	Strathclyde,* Co. Durham,* N. Ireland	Artificial fibres
Firestone	USA	579	2,100	London, Clywd*	Tyres, etc.
Marathon Manufacturing	USA	-	1,900	Strathclyde*	Oil rigs
Heinz	USA	193	1,700	Wigan,* N. Ireland,* London	Tinned food
Paccar	USA	-	1,600	Cheshire	Commercial vehicles
Champion	USA	-	1,500	Bradford	Woollen cloth
Borg-Warner	USA	368	1,400	West Glamorgan,* Hertfordshire	Vehicle components
SKF (UK)	SWE	-	1,400	Strathclyde,* Luton	Bearings
Wormald International Holdings (UK)	AUSTRALIA	374	1,300	Manchester	Mechanical engineering

* Locations in Special Development Areas and Development Areas assisted under British government regional policy in 1976

between the sub-regions of the United Kingdom. The penultimate column of the table uses principally the location-names of the counties (in England and Wales) and Regions (of Scotland).

Strathclyde clearly dominates the map of foreign job losses, just as it stands out among the leading seven corporations entered in Table 2. Its 23,100 jobs losses are largely attributable to the complete closures of a large motor-car plant by Peugeot-Citroen, a large factory for tractor components of Massey-Ferguson, and a long-established factory for industrial sewing machines by Singer. These remarkable blows to Strathclyde (and others) all arise from complex international patterns of decisions, but are not seen as having a single local cause (Hood and Young, 1982). The next most important locations, Bedfordshire (5,700), Cheshire (5,000) and Coventry (4,800), do share a common source in that they all suffered from major rationalisation in the foreign-owned vehicle industry. Northern Ireland (4,500) figured prominently in Table 2 but in a variety of industries. In distinguishing between U.S. and other corporations the map is of very great interest, but it would appear that the distribution of foreign-owned job losses by nationality is largely incidental to the history of acquisition behaviour.

The overall volume of total job losses nonetheless shows a certain broad distinction between the principal conurbations of England (Greater London, Greater Manchester, West Midlands) and certain peripheral Regions where there is a tendency toward large figures of job loss. One very important question immediately arises in considering Table 2. That is whether corporations were effecting more job losses in the asterisked areas or in the other, the mainly "non-assisted" areas.

This central question can be approached in a number of stages. At its simplest level, Wormald International Holdings of Australia had no choice in effecting rationalisation of Mather & Platt because all the latter's engineering factories were in Greater Manchester. Similarly, Singer UK had only one plant, in this case, contrastingly, one near Glasgow which they had owned since 1881 and which originated in a decision

of 1867 to manufacture in the U.K. Peugeot-Citroen's closure of their plant at Linwood, near Glasgow, represented clear withdrawal from a "branch-plant" established in the "periphery" with government assistance (by their predecessor, the Rootes Group) to U.K. headquarters at Coventry - where there were also redundancies but where activity survived. On the other hand, the Borg-Warner group closed their factory at Letchworth, Hertfordshire, in the "core" and retained factories in the "periphery" in South Wales - although announcing equal numbers of job losses there. These two cases represent extremes of a spectrum on which a large proportion of multi-plant companies may be placed.

6. A regional comparison with job losses in U.K.-owned corporations

The 101,600 job losses of foreign corporations have been classified by geographical area, and their regional distribution may be compared with that of the overall set of data for reported job losses. The general thrust of comment in previous literature, and first indications of what we have said above, might be that job-losses in foreign-owned establishments were disproportionately weighted towards "peripheral Regions", and perhaps more concentrated there than job losses at large. An initial comparison is shown in Table 3.

This shows that the total of 101,600 represents 17 per cent, or one in six, of total job losses reported in this source. There are significant geographical differences in the distribution of losses in foreign-owned establishments, and they appear to support the assertions made above. Firstly, the foreign-owned sector contributed a greater proportion of its losses in the "periphery"; this was especially a feature of Scotland which received a full quarter of U.K. job losses from this source, which was nonetheless heavily under-represented in the North of England. The foreign source was consistently under-represented in all Regions of the 'Manufacturing Heartland', but was an important origin of job losses in the South East, experiencing one-fifth of total losses of this kind. The question arises whether the variations in the distribution of foreign losses are due to variations in the initial distribution of

activity, as at the start of our study period, or to reporting errors in our source, or to one of our initial hypotheses; greater job losses at a greater distance from U.K. headquarters.

Table 3: Regional distribution of job losses in foreign and all other corporations, as reported in the Financial Times, 1976-81

	Reported jobs lost in foreign-owned establishments		Reported jobs lost in all establishments	
	Nos	Per cent	Nos.	Per cent
PERIPHERY, including	42,500	41.8	203,400	34.8
N. Ireland	5,300	5.3	21,900	3.7
Scotland	25,200	24.8	60,300	10.3
Wales	9,000	8.8	56,500	9.7
North	3,000	2.9	64,600	11.0
'MANUFACTURING HEARTLAND', including	33,500	32.9	268,700	45.9
North West	14,000	13.8	105,000	18.0
Yorkshire & Humberside	5,500	5.4	43,300	7.4
East Midlands	2,700	2.6	31,600	5.4
West Midlands	11,400	11.2	88,800	15.2
'CORE', including	25,700	25.2	112,800	19.3
South West	1,970	1.9	14,300	2.4
East Anglia	3,100	3.1	13,500	2.3
South East	20,600	20.2	85,000	14.5
TOTAL U.K.	101,600	100.0	584,900	100.0

The 'initial' regional distribution of employment in foreign-owned establishments is available for manufacturing establishments for the year 1977, and provided the basis of Figure 1. A small adjustment to our own data enables us to exclude non-manufacturing plants, and then to demonstrate regional manufacturing "jobs lost" in our own record as a proportion of all foreign jobs (1977) in respective regions. Clear results are evident from inspection of Figure 1. Thus, when we standardise for the size of "initial" foreign employment in 1977 the average apparent loss of ten per cent is exceeded in the 'periphery' and under-represented in the "core". Thus the high level of absolute losses which we recorded in the South East is entirely due to the well-established concentration of plants in the South East, and the apparently low level of losses which we record in the West Midlands is in fact a poor performance relative to the small scale of foreign investment in the Region. On the other hand, the "periphery" showed a poor performance in relative as well as absolute terms, though it is still clear that Scotland showed an even worse record than N. Ireland and Wales. Further comparisons confirm that there was a relatively poor performance by foreign-owned plants in Scotland, Northern Ireland and the West Midlands. The poor performance of the periphery cannot be attributed to differential reporting error.

In summary, what we have found so far is:

- a) The rate of job losses per thousand manufacturing workers in foreign-owned plants is not higher than that in UK-owned plants. The Census of Production for 1979 to 1981 shows a loss of 12 per cent of jobs, compared with 15 per cent for national manufacturing as a whole.
- b) In absolute terms, the worst affected Regions are Scotland, the South East, the North West and the West Midlands (in that order).

- c) Relative to 1977 levels of employment in foreign-owned factories, the worst-affected Regions were Scotland, Northern Ireland and Wales, followed by Regions of the 'Manufacturing Heartland', on both adjusted and unadjusted bases (although the adjusted calculation puts Yorkshire and Humberside and the North West above the West Midlands).
- d) Regions of the "core" show the lowest rates of loss on all bases, although the North, somewhat remarkably, shows the best performance after completion of adjustments.

7. Spatially discriminatory decision-making at the corporate level

Closer dissection of the 100,400 job losses reported is possible in terms of attributes of the 264 cases which they represent. Among these cases some corporations are represented up to fifteen times, in effecting job losses at different times, in different parts of the country, or in different ways, for instance through redundancies, reported labour wastage, plant closures or site closures. We may now examine the foreign-owned cases by year of report and compare results with the outline for the whole data-set which was provided at the start of the paper. We have now seen from our analysis of all closures throughout the period in section 3 that geographical patterns changed during the period of analysis. In dealing with foreign corporations this analysis cannot be undertaken in this exact form due to the lower numbers of cases involved. Considering all job losses however (that is including reported redundancies, wastage and closures), some broad similarities can be identified.

7.1 Distance from United Kingdom head office

The international literature on multi-plant corporations carries the common hypothesis that sites which are more distant from the headquarters of the organisation are more liable to closure and reduction than are geographically closer sites. This hypothesis might be applied at the

international level, but that is not possible here. It certainly is necessary to enquire whether the differential rate of job losses as between the South East on the one hand, and Scotland, Northern Ireland and Wales on the other is a function of distance from headquarters in the London area.

All but 15 of the 85 foreign corporations in our data-set had identifiable U.K. headquarters in the U.K. To a remarkable extent these headquarters were concentrated in South East England (53 cases), including central London (18). There was no other focus of relevant head offices anywhere in the remaining Regions of the U.K. (17 cases in all). A glimpse at Figure 1 suggests then that the redundancy pattern in foreign-owned corporations is in overall terms consistent with the descriptive generalisation that "corporations close more distant plants first".

Table 4 may be related to reported job losses under all ownerships by reference to its final row, which alone includes U.K. based as well as foreign-owned corporations. Comparison with the penultimate row will indicate that reports of job loss at foreign-owned plants, 1977-81, related more often to "long-distance" control than at UK-owned plants, (distance over 500 km including all plants in Northern Ireland), and less often to "short-distance" control (under 100 km) (to be read in the light of regional distribution seen in section 6). This feature varied in significance over time, with long-distance cases becoming steadily and relatively less important from 1977 to 1981, and short-distance cases becoming more important from 1979 to 1981. The latter feature was not, however, accompanied by proportionate increase in actual closures at shorter distances (not shown in this table). These results are compatible with the view, noted above for U.K. corporations, that, on average, foreign corporations met difficulties in a fairly normal trading period, 1976-79, by running down and in some cases closing more distant plants, and in severe recession also produced job losses (though without a full complement of closures) nearer to headquarters, commonly in the South East.

Table 4: Cases of reported job loss in foreign controlled establishments; distance from UK headquarters by year

		0-100 km	101-250 km	251-500 km	Over 500 km	Total cases analysed
1977	Nos.	3	1	0	3	7
	Per cent	42.9	14.3	0	42.9	100.0
1978	Nos.	4	6	3	8	21
	Per cent	19.0	28.6	14.3	38.1	100.0
1979	Nos.	4	14	7	9	34
	Per cent	11.8	41.2	20.6	26.5	100.0
1980	Nos.	23	29	24	17	93
	Per cent	24.7	31.2	25.6	18.3	100.0
1981	Nos.	27	22	18	11	78
	Per cent	34.6	25.6	23.1	14.1	100.0
TOTAL	Nos.	61	72	52	48	233
	Per cent	26.2	30.9	22.3	20.6	100.0
ALL OWNERSHIPS	Per cent	40.9	27.2	22.7	9.1	100.0

7.2 Assisted areas under government regional policy

As one would expect from our historical introduction to foreign investment in the UK, and from analyses immediately above, it is clear that there is an overall bias toward assisted areas in the cases reported in Table 5. Non-assisted areas are under-represented in this set of reports at least until 1980, and the incidence of reports on the foreign-owned plants of Intermediate Areas is unremarkable. Conversely, if we take Development Areas, Special Development Areas and Northern Ireland together we find their share of U.K. cases declining steadily from 57 per cent (1977 and 1978) to 47 per cent (1979), 41 per cent (1980), and 35 per cent (1981). There is some similarity in the pattern of closures (included within the figures). This of course partly reflects the national manufacturing incidence of recession (Martin, 1982; Townsend, 1982), but is also fully compatible with a model of gradual withdrawal from branch plants under accelerating difficulties.

Table 5: Cases of reported job loss in foreign-controlled establishments;
government development status by year

		Non- assisted	Intermediate Area	Development Area	Special Development Area	Northern Ireland	Total cases analysed
1977	Nos.	3	0	2	2	0	0
	Per cent	42.9	0	28.6	28.6	0	100.0
1978	Nos.	5	5	4	8	1	23
	Per cent	21.7	21.7	17.4	34.8	4.3	100.0
1979	Nos.	13	6	3	13	1	36
	Per cent	36.1	16.7	8.3	36.1	2.8	100.0
1980	Nos.	44	17	14	19	9	103
	Per cent	42.7	16.5	13.6	18.4	8.7	100.0
1981	Nos.	38	20	3	24	4	89
	Per cent	42.7	22.5	3.4	27.0	4.5	100.0
TOTAL	Nos.	103	48	26	68	15	258
	Per cent	39.6	18.5	10.0	26.2	5.8	100.0
ALL OWNERSHIPS	Per cent	44.5	21.9	9.4	20.7	3.4	100.0

8. Conclusions from the analysis

For the first time in U.K. history, foreign corporations have played a significant part in a manufacturing recession. Further data will be available at a later stage from the Census of Production, and from further analysis of individual corporations in this project, according to concepts and approaches presented in Townsend and Peck (1984). Contrary to many impressions, there is no evidence that foreign-owned corporations played a disproportionate role in the periods 1976-79 and 1979-81; rather, it is clear that their patterns of disinvestment broadly reflected those of UK-based private corporations when adjusted for initial concentrations in certain Regions. This is notably the case in respect of a concentration of losses in the years 1976-9 in assisted areas more distant from London, and in a gradual spread to non-assisted areas including further locations of post-war greenfield investment, 1979-81. This is, however, only an average picture; as we saw there are corporations which placed the balance of their job losses in assisted areas, and others which actually 'favoured' assisted areas from the start of this period.

As a whole, however, foreign cases accentuate the contrasting experience of "peripheral" and "core" areas. Where serious employment loss has taken place in foreign-owned plants, this has been the consequence of the concentration of foreign investment in large sites. Indeed the disproportionate job losses in Strathclyde and the West Midlands result partly from the location there of particular vehicle plants of Peugeot-Citroen and Massey-Ferguson. By contrast, Merseyside had comparatively few job losses in its important post-war foreign plants (Lloyd and Dicken, 1980), and this is attributable to the relatively good redundancy record of the USA car plants of Ford and, to a lesser extent, General Motors. Of course, these events must be seen in the general European pattern of planning and investment. But the monitoring of our overall data on 1633 occasions of job loss reveals relatively few in which directly attributable to openings in the Third World.

The overall picture, however, challenges many assumptions of past growth planning. It would seem that "peripheral" areas of the UK are less likely to receive multinational corporations' investment in the future, compared with the EEC area, the Mediterranean and the Third World. As Hood and Young (1982) point out this experience does not argue for a reduction of regional policy in "assisted areas". Indeed, the renewed attraction of foreign investment appears to be one of the main reasons for a Conservative government's re-dedication to a modified regional policy (Her Majesty's Government, 1983).

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Günther Maier, Franz Tödtling

THE INTERNATIONAL DIVISION OF LABOUR AND INDUSTRIAL CHANGE
IN AUSTRIAN REGIONS

1. Introduction

Because of the lowering of transport and communication costs and the liberalization of trade barriers, the post-war period has seen a very strong expansion of international trade and factor flows (capital, technology) and very high rates of growth in industrialized countries. In the 1970s considerable changes took place in the world economy (Fröbel et al. 1977, UNIDO 1981, Skolka 1983): market saturation and overproduction in many industries, cost increases due to scarcities of raw materials and environmental problems, an acceleration of technological change in production, an increase of manufacturing production in some newly industrialized developing countries, etc.

The latter process, the increase of manufacturing capacities in newly industrializing developing countries, has received much attention in industrialized countries, where it is considered as a major cause of unemployment problems. But, as some studies have shown, the industry and region-specific impact are of more concern to industrialized countries. In this context, UNIDO (1981) states that:

" ... trade with developing countries has (in general) positive or negligible effects on employment ... Such negative impacts of imports from developing countries as exist (structural or frictional unemployment and the decline of certain activities) are very often concentrated in particular industries and regions or on specific types of workers" (UNIDO, 1981, p. 10).

As a consequence of the changes described above, competition has increased in many industries and enterprises had to adapt to the new conditions by various strategies (Ballance and Sinclair 1983, Müller 1983, Stöhr 1984). Such strategies include measures to cut labour cost (standardization of production, shifts to low wage areas), and the search for new markets or products and for more flexible technology or organization. Many of these strategies have spatial consequences although only few (e.g. the spatial transfer of production or the spatial division of labour) have an explicit spatial dimension (Massey and Meegan 1979).

Several hypotheses have been formulated with regard to the regional consequences of the changing international division of labour (e.g. the neo-factor-proportion concept or the product-cycle concept, to be discussed in more detail in section 2) but up to now there is a lack of consistent operationalized theories and empirical insights remain limited.

The present paper is based on an empirical study of Austria, a country which is strongly exposed to the recent changes in the international division of labour, for several reasons:

- as a small open economy it is very much interlinked into the network of international trade and factor flows, and
- its economy has a very high share of basic industries and production of traditional consumer goods (Seidel 1979, Urban 1980), industries which are strongly affected by the new international division of labour because of their low skill and high labour intensity (Fröbel et al, 1977).

Severe problems could arise for those regions where these industries are concentrated, such as "old industrial areas" and newly industrialized rural areas.

In this paper we will present some empirical evidence on changes in employment and in the industrial composition of production in Austrian regions in the 1973-1981 period. These changes will be analysed in terms of product-cycle characteristics of activities. In particular, we will investigate two aspects: the skill and labour intensity of activities (since low-skill, labour-intensive industries are strongly affected by the new international division of labour - cf. Urban 1980) and the "information and knowledge character" of activities, which is considered to be important for the innovation process of a region (Andersson and Johansson 1984).

Some important aspects of the changing international division of labour and its effect on Austria and Austrian regions (see Höll and Kramer 1982) will not be dealt with in this paper:

the high share of foreign capital in the Austrian economy (similar to e.g. Belgium).

Austria's weak role as a capital exporter: in contrast to e.g. the FRG or Switzerland the transfer of production to less developed countries (direct foreign investment) has not been very important up to now.

the rather low R & D efforts of the Austrian economy (Chaloupek, 1980), and the dependency on foreign technology.

In the following section we will discuss the conceptual background relating the changing international division of labour to regional development. In section 3 we will present some results of empirical research on Austria.

2. Conceptual background

Two major theoretical concepts relating regional development to changes in the international division of labour are the neo-factor-proportion concept and the product-cycle concept.

The neo-factor-proportion concept roots in the tradition of the international trade theory (Ricardo, Heckscher-Ohlin) and argues that a change in comparative advantages has taken place during the last years. Developing countries have become more competitive in low-skill and labour-intensive industries while industrialized countries are said to be competitive in human-capital intensive industries (Urban 1980). For regional development in industrialized countries this implies that particularly agglomerations, traditionally specialized in human-capital intensive industries, are less affected while regions with predominantly low-skill and labour-intensive industries (e.g. rural areas) would be more severely hit by the new international division of labour. It is a weakness of this concept that it refers only to the given factor and resource endowment of a region and does not take dynamic aspects explicitly into account.

Product-cycle theory deals better with these technological and dynamic aspects: according to this theory regions and countries have a different attractivity for products and production processes in the early, growth and maturity stage of the product cycle (Norton and Rees 1979, Erickson and Leinbach 1979, Suarez-Villa 1983).

Products in their early phase have small markets, a low price elasticity of demand and unstandardised production processes. This favours location in agglomerations, where agglomeration economies (access to market and technological information, research institutions and universities, skilled work force, supplying firms) can be exploited. Products and production processes in their growth and maturity phase become standardized, have large markets and a high price elasticity of demand. They are shifted to more peripheral areas and countries in order to save labour cost. Relocation is intensified in later phases since price-competition continuously increases. From the perspective of regional policy for peripheral regions in industrialized countries the result is very ambiguous: on the one hand these regions theoretically attract production activities and employment from agglomerations, while on the other hand these activities experience strong competition from newly industrializing countries. Therefore activities relocated to peripheral regions may be rather unstable.

3. Empirical analysis of Austria

In this section the following questions will be analysed for Austrian regions:

- how did employment change in various types of Austrian regions during the seventies (1973-1981)?
- can this change in regional employment be related to product-cycle characteristics and to the changing international division of labour? Has there e.g. been a shift of low-skill and labour-intensive activities to peripheral rural areas while agglomerations have improved their industrial structure by attracting skill and knowledge-intensive activities? Or has strong international competition reduced employment in all types of regions because of the high proportion of low-skill and labour-intensive activities?

3.1 Methodological aspects

We will use a classification of Austrian regions based on two criteria: sectoral structure (Geldner 1982) and access to markets (Kaniak 1983, Maier

and Tödting 1984). The sectoral structure classification of regions distinguishes between service centres, manufacturing, industrialized-rural, rural and tourist areas. It is used because these types of regions differ strongly in location factors for the investigated activities (availability and price of production factors such as land and labour, labour skill, unionization and work discipline of the work force, environmental aspects). For details of this sectoral classification see Geldner (1982).

Accessibility criteria are used because the distance to markets and other economic activities is considered an important location factor (e.g. in the product cycle theory) for new activities and for the ability of existing regional enterprises to restructure and adapt to changing conditions in the world economy. "Accessibility" was measured by three kinds of market potential for Austrian districts (1973): regional, national and European (Kaniak 1983).^{1/} These potentials have been aggregated by adding the respective rank orders of districts (Maier and Tödting 1984). Figure 1 and Map 1 show the resulting regional classification.

The classification of industries has been made according to product-cycle aspects: manufacturing industries have been grouped according to skill, labour intensity and wage level at a three-digit level, using W. Urban's (1980) work. Low skill, high labour intensity and low wages were considered to be indicators for industries in the "late phase of the product cycle" which are endangered by the changing international division of labour.^{2/} In the service sector those industries which have to do with the generation/transmission of information and knowledge have been analyzed separately, because they are considered important for the early phase (innovation phase) of the product cycle (Anderson and Johansson 1984). Of course the information and knowledge aspect, although very important, constitutes only one factor of

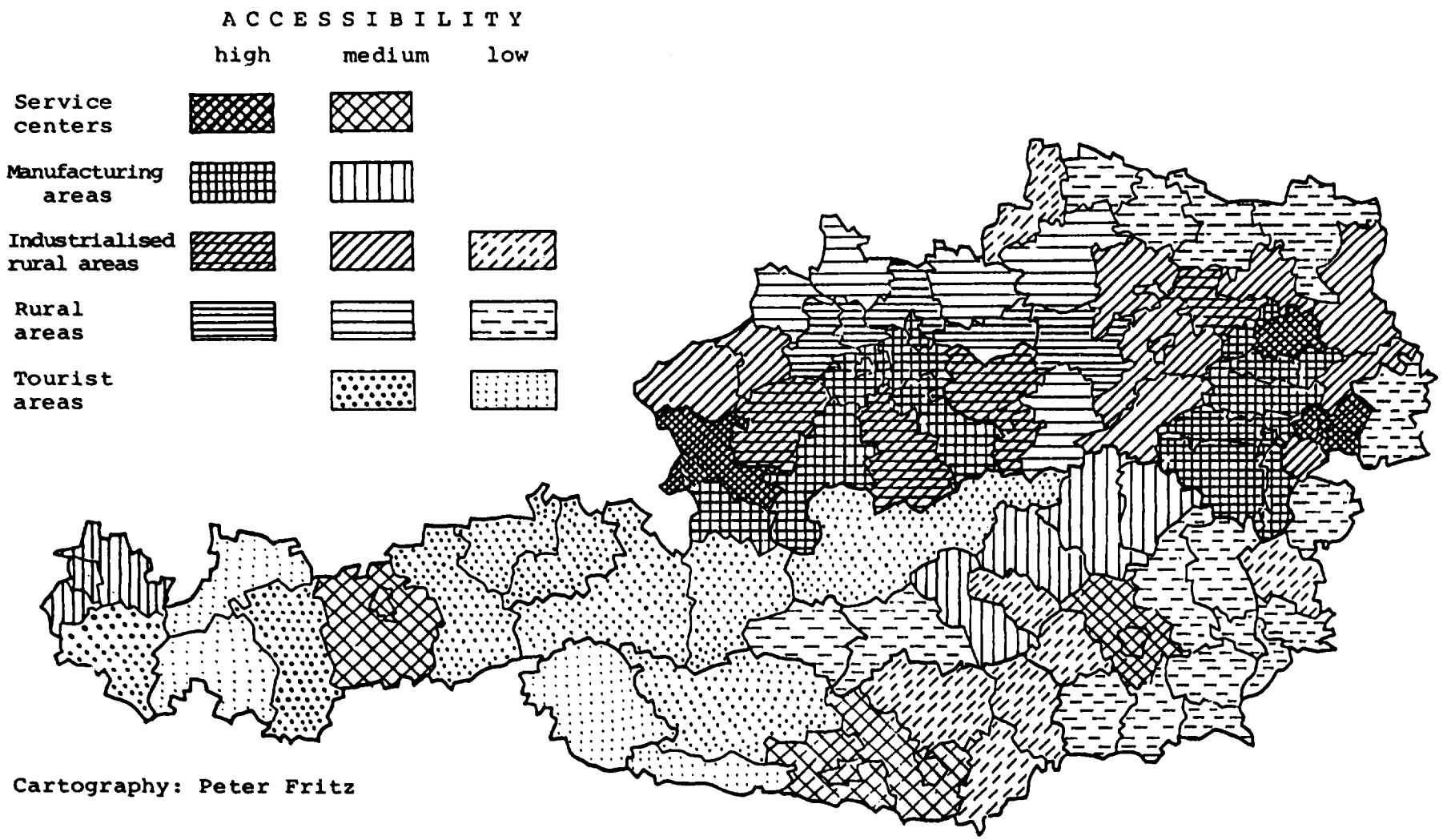
^{1/} To calculate these market potentials, distance was measured by car travel-time (road accessibility) and was weighted by gross regional product by district (Bruttoregionalprodukt 1971 für Bezirke). For regional, national and European potentials three different - empirically derived - distance functions were used (Kaniak 1983).

^{2/} In Urban's analysis (1980) skill intensity was measured by the proportion of white-collar and skilled blue-collar workers in the total labour force. Labour intensity was measured by comparing employment and production value. The wage level indicator was the yearly gross salary per wage earner.

**Fig 1: CLASSIFICATION OF AUSTRIAN DISTRICTS BY
SECTORAL STRUCTURE AND ACCESSIBILITY**

		A C C E S S I B I L I T Y		
		high	medium	low
S E C T O R A L	service centers	Eisenstadt Salzburg Wien ("core areas")	Graz Klagenfurt Villach Innsbruck	X
	manufacturing areas	Baden, Mödling Wr. Neustadt, Neunkirchen, Linz, Steyr, Wels, Gmunden, Hallein, Wien/Umgebung	Bruck/Mur, Judenburg, Leoben Mürzzuschlag Bregenz, Dornbirn Feldkirch ("old industrial areas")	
	industrialised rural areas	Amstetten, Tulln Kirchdorf, Vöcklabruck	Mattersburg Krems, St. Pölten Bruck/Leitha, Gänserndorf, Korneuburg, Lilienfeld, Braunau Ried	Oberwart St. Veit/Glan, Völkermarkt, Wolfsberg, Gmünd Knittelfeld, Voitsberg
	rural areas	Melk, Eferding Grieskirchen, Perg Urfahr/Umgebung	Scheibbs, Zwettl Freistadt, Rohrbach, Schärding	Glassing, Jennerdorf, Neusiedl, Oberpullendorf, Hollabrunn, Horn Mistelbach, Waichhofen Th., Tamsweg, Deutsch- landenberg, Feldbach, Fürstenfeld, Krau. Hartberg, Leibnitz, Radkersburg, Weiz
	tourist areas	X	Spittal, Zell/See Liezen, Imst, Kitzbühel, Schwaz Kufstein, Bludenz, St. Johann/Pongau	Hermagor, Landeck, Lienz, Reutte

Map 1: AUSTRIAN DISTRICTS BY SECTORAL STRUCTURE AND ACCESSIBILITY



Cartography: Peter Fritz

the regional innovation process and there are many other essential factors, such as a qualified work force, venture capital and markets (Brugger 1984), which will not be dealt with in this paper.

3.2 Research results

In this section we will discuss a) some aspects of the performance of the Austrian economy since the early seventies b) look at the major changes in the regional distribution of employment in the 1973-1981 period and c) then present more detailed findings on regional changes at the industry level.

a) The Austrian economy during the economic crisis

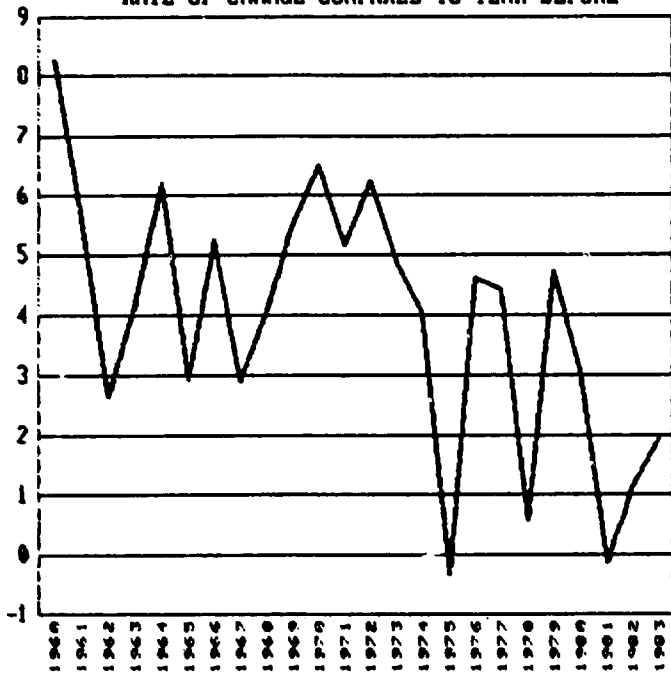
Until the early seventies Austria experienced very high GNP growth rates (annual average, 1955-72: 5.1 per cent). In the seventies, growth rates severely declined (1972-82: 2.6 per cent; see also Fig. 2), as in many other countries. In spite of these reduced growth rates unemployment remained relatively low (2 per cent; see Fig. 3) due to an expansion of the tertiary and the public sector, a high social consensus on the priority of full employment ("social partnership") and an expansive fiscal policy (Butschek, 1981). This period was characterized by considerable labour hoarding, but the number of foreign workers was constantly reduced. Because of strong government and union efforts to prevent dismissals (Duda and Tödting 1985), structural problems have become dominant in the eighties: the economy is burdened with a high share of basic and traditional consumer goods industries, many of them low-skill intensive and in the late phase of the product cycle (Urban 1980). The 1981 recession (GNP decrease: 0.15 per cent) hit the labour market fully in 1982, when employment decreased by more than 1 per cent, the unemployment rate reaching a level of 4.5 per cent, high by Austrian standards. By 1985 the firms seemed to have eliminated surplus labour which had accumulated during the period of slow growth; they may now be able to adjust more quickly to changing conditions in the goods market (Duda and Tödting 1985).

figure 2:

GROSS NAT. PRODUCT

RATE OF CHANGE COMPARED TO YEAR BEFORE

GROSS NAT. PROD.
RATE OF CHANGE COMP. TO YEAR BEFORE



LEGEND:

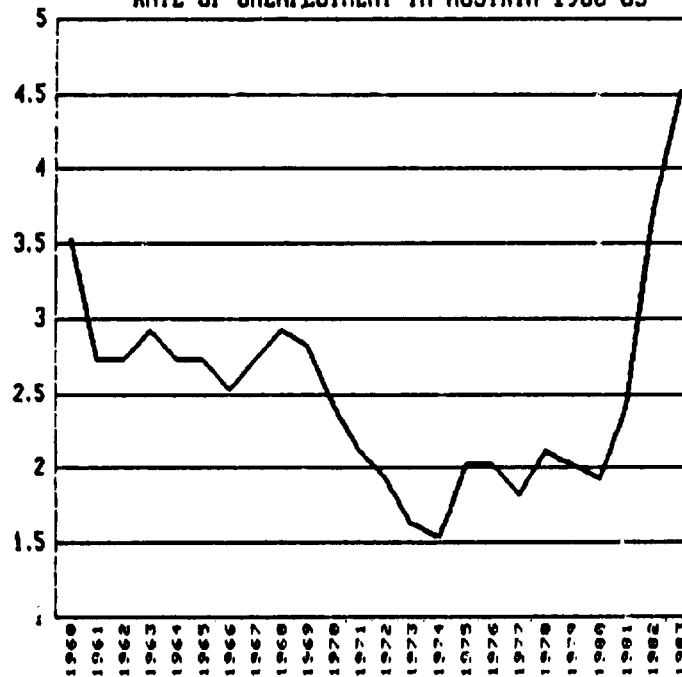
GROSS NAT. PROD.

figure 3:

UNEMPLOYMENT - RATE

RATE OF UNEMPLOYMENT IN AUSTRIA 1960-83

UNEMPLOYMENT
RATE OF UNEMPLOYMENT IN %



LEGEND:

RATE OF UNEMPL.

The following analysis of regional changes in Austria refers to the 1973-1982 period. The regional pattern of the recent increase of unemployment is not covered by the present data set, but it has been analysed in Maier and Tödtling 1984.

b) Changes in the regional distribution of employment in the 1973-1981 period

Despite the severe recession in the world economy at the end of the seventies and in the early eighties, Austria experienced a slight increase in employment (1 per cent) between 1973 and 1981. When differentiating by region - classified in the way mentioned in section 3.1 - large differences can be found (Fig. 4; see also Maier and Tödtling 1984). There were large increases in employment in the rural and tourist areas (6 to 18 per cent), while there was a drop by 5 per cent in the core areas. This latter figure mainly refers to Vienna: the city lost almost 8 per cent of its employment during the 1973-1981 period, and the agglomeration as a whole^{1/} lost 5 per cent. Employment also declined (-2 per cent) in manufacturing areas with medium accessibility ("old industrial areas"). In highly accessible manufacturing areas and in service centers of medium accessibility employment has been growing at an average rate.

In all areas except the service centres accessibility had a positive influence on employment growth: the fastest growing areas in terms of employment have been those which combine rural characteristics (availability of labour, low wages, a disciplined labour force, low degree of unionization, good natural environment) with a good system-wide accessibility.

c) Regional changes at the industry level

Regional changes in the Austrian economy at the industry level have been investigated by calculating entropies, i.e. measuring the spatial concentration of industries in 1973 and 1981 (using the small-scale

^{1/} The Vienna agglomeration was given broad limits to take account of suburbanisation processes. It includes the districts of: Wien, Wien-Umgebung, Mödling, Baden, Korneuburg, Tulln.

Fig. 4: CHANGE IN NONAGRICULTURAL EMPLOYMENT
1973 - 1981 BY REGIONS (1973 = 100)

AUSTRIA		ACCESSIBILITY		
101		high	medium	low
SECTORAL STRUCTURE	service centers	95	101	
	manufacturing areas	102	98	
	industrialised rural areas	110	105	99
	rural areas	118	108	107
	tourist areas		109	106

Source of data: Industrial census 1973 and 1981

Fig. 5: NONAGRICULTURAL EMPLOYMENT IN AUSTRIA
SPATIAL CONCENTRATION, 1973, AND CHANGE, 1973-1981³⁾

		DEGREE OF SPATIAL CONCENTRATION, 1973 ¹⁾		
		H I G H	L O W	
SPATIAL CHANGES 1973 - 1981 ²⁾	STRONG DECONCENTRATION	research/science	1.54 ¹⁾ / 119 ²⁾	
		banking/insurance	2.67 / 109	
		cultural facilit.	2.33 / 108	
		public administr.	3.09 / 107	
		business services	2.70 / 105	
	WEAK DECONCENTRATION	trade	3.33 / 104	education 3.90 ¹⁾ / 104 ²⁾
		pers./soc.services	3.10 / 104	manufacturing 3.77 / 104
		health facilities	3.40 / 102	com./transport 3.42 / 103
				construction 3.88 / 102
				water,energy 3.62 / 102
CONCENTRATION			hotels 4.01 / 101	
			security 3.48 / 95	
			mining 3.56 / 95	

1) 1973 entropy calculated at the district level (low numbers denote high concentration - see 3.1)

2) Rate of entropy change (1973=100 - high numbers denote strong deconcentration)

3) For the definition of sectors see Appendix

Source of data: Industrial census 1973 and 1981

administrative districts), and by a detailed analysis of industrial change in the various types of regions.

- Changes in the spatial concentration of industries

Entropies have been calculated in the standard way (Theil, 1967), using the formulas:

$$0 \leq Y_{is} \leq 1 \quad \text{and} \quad \sum_{i=1}^N Y_{is} = 1 \quad (1)$$

in which "s" denotes the sector whose distribution over space has to be measured, "i" the spatial unit (with $i = 1, \dots, N$) and "Y" the employment share of spatial unit "i" in jobs in sector "s". The entropy of sector "s" (I_s) measuring its spatial concentration is defined by:

$$I_s = - \sum_{i=1}^N Y_{is} \log(Y_{is}) \quad (2)$$

To avoid undefined terms in the summation of (2) it is standard practice in this context to define (Theil, 1967, p. 24f):

$$Y_{is} \log(Y_{is}) = 0 \quad \text{for} \quad Y_{is} = 0 \quad (3)$$

Thus, the entropy as defined by (2) varies between zero and $\log(N)$. It is zero when all employment is concentrated in one spatial unit and takes on its maximum value when employment is evenly distributed over space. Since the number of spatial units does not change, the corresponding entropies for 1973 and 1981 can be compared directly, and rates of change can be calculated. One has to keep in mind that a lower entropy measure denotes a higher spatial concentration of employment.

For non-agricultural activities some expected as well as some surprising results were found (see Fig. 5).

The high (1973) degree of spatial concentration of the "information and knowledge sectors" (research and science, business services, banking and insurance) and the relatively low spatial concentration of manufacturing activities and of public services such as education were expected, as was the further dispersal of manufacturing activities between 1973 and 1981.

Against expectation, however, many other industries and particularly those service industries which had shown the highest concentration in 1973 and are generally considered as "agglomeration-oriented" (research/science, business service, banking/insurance) had dispersed. One has to keep in mind, though, that despite this dispersal trend the degree of spatial concentration of these activities was still rather high in 1981.^{1/}

The dispersal of service activities which has also been found in other countries (see Noyelle 1984 for the USA, Aydalot 1984 for France) cannot be explained by the theoretical concepts discussed above (Section 2). Possible explanations:

- the new communication and office technologies allow operation at a more decentralized level and in more peripheral locations;
- these services follow the dispersal of population and manufacturing activities (van den Berg et al. 1982).

Focusing on the manufacturing sector, a more detailed classification with regard to skill intensity, labour intensity and wage levels was worked out (see Fig. 6).

Skill-intensive and high-wage industries were more concentrated in 1973 than those with low qualifications and wage levels. As could be expected on the basis of the product cycle theory, the latter industries experienced a dispersal between 1973 and 1981. But manufacturing industries with higher skills and/or wage levels also showed dispersal tendencies.

^{1/} Apart from the spatial concentration of information and knowledge activities another factor may influence regional innovation processes: the difference in organizational characteristics of plants (Brugger 1984). A study on Austria (Tödtling 1984a, 1984b) established that headoffices of multiregional firms and endogenous regional plants are strongly represented in core areas, while externally controlled branch plants dominate in "old industrial areas" and in industrialized rural areas.

Fig. 6: MANUFACTURING EMPLOYMENT IN AUSTRIA
SPATIAL CONCENTRATION, 1973, AND CHANGE, 1973-1981³⁾

		DEGREE OF SPATIAL CONCENTRATION 1973 ¹⁾	
		H I G H	L O W
SPATIAL CHANGES 1973 - 1981 ²⁾	STRONG DECONCENTRATION	Qual _h LabInt _l Wage _h 3.15 / 106 ¹⁾ 2)	Qual _h LabInt _h Wage _l 3.81 / 105 ¹⁾ 2)
		Qual _l LabInt _h Wage _h 2.82 / 105	
	WEAK DECONCENTRATION	Qual _h LabInt _l Wage _l 3.72 / 103	Qual _l LabInt _h Wage _l 3.77 / 101
			Qual _l LabInt _l Wage _l 3.77 / 102
	CONCENTRATION	Qual _h LabInt _h Wage _h 2.10 / 89	Qual _l LabInt _l Wage _h 3.90 / 99

- 1) 1973 entropy calculated at the district level (low numbers denote high concentration - see 3.1)
- 2) Rate of change of entropy (1973=100 - high numbers denote strong deconcentration)
- 3) Manufacturing industries at the 3-digit level have been classified (high, low) according to their skill intensity (Qual), labour intensity (LabInt) and wage level (Wage). For details see section 3.1 and Urban (1980).

Source of data: Industrial census 1973 and 1981

Fig. 7: CHANGE IN MANUFACTURING EMPLOYMENT,¹⁾
1973-1981, BY REGION

- a) Rate of change (1973=100)
- b) Employment share 1973) Regional nonagricultural
- c) Employment share 1981) employment = 100

AUSTRIA		ACCESSIBILITY		
a) 93 b) 39.7 c) 39.8		high	medium	low
SECTORAL STRUCTURE	service centers	a) 82 b) 30.2 c) 28.1	98 28.3 27.3	
	manufacturing areas	91 48.3 41.3	96 49.5 48.4	
	industrialised rural areas	104 48.5 45.8	97 43.0 39.8	88 46.1 40.9
	rural areas	112 39.4 37.4	104 37.8 36.1	100 37.7 35.4
	tourist areas		105 31.4 30.3	105 28.8 26.7

- 1) Classification of industrial census (Betriebsstatistik 1968) No. 31-59.

Source of data: Industrial census 1973 and 1981

Fig 8: CHANGE IN SERVICE SECTOR EMPLOYMENT, ¹⁾
1973-1981, BY TYPE OF REGION

a) Rate of change (1973 = 100)

b) Employment share 1973

c) Employment share 1981

} Regional nonagricultural
 employment = 100

AUSTRIA a) 108 b) 52.0 c) 55.7		A C C E S S I B I L I T Y		
		high	medium	low
S E C T O R A L S T R U C T U R E	service centers	a) 101 b) 61.3 c) 65.4	106 59.9 62.4	X
	manufacturing areas	116 43.0 43.1	106 37.7 40.6	
	industrialised rural areas	114 41.1 42.8	114 43.2 47.0	110 39.4 44.1
	rural areas	124 45.4 47.7	113 49.2 51.4	113 48.5 51.5
	tourist areas	X	116 53.1 56.8	110 58.8 61.1

1) Classification of industrial census (Betriebssystematik 1968) No. 71-99

Source of data: Industrial census 1973 and 1981

- Industrial change by type of region

In 3.2.b it was shown that employment declined in the core areas and the manufacturing areas of medium accessibility ("old industrial areas") between 1973 and 1981, whereas it grew in rural and tourist areas. Which industries caused these spatial trends and how did the industrial structure change in these regions?

Figures 7 and 8 show the aggregate employment changes (1973-1981) for the manufacturing and the service sector by type of region: it can be seen that the large reduction of employment in core areas has been caused by a decline (18 per cent) of manufacturing employment. The employment gains in rural and tourist areas, on the other hand, can be attributed to gains in both the manufacturing sector (outside the peripheral rural areas) and the service sector, where employment growth has been particularly strong (between 10 and 24 per cent). In all areas except the service centres accessibility had a positive influence on employment growth in both manufacturing and services.

To which extent did the regional development of employment show the expected product-cycle characteristics? To answer this question, we used skill and labour intensity as indicators for the maturity of industries, as mentioned before. In the service sector information/knowledge related activities were considered as factors favouring innovation processes.

Manufacturing activities

In a study by the Austrian Institute for Economic Research (Urban, 1980) manufacturing activities were classified into three groups according to skill and labour intensity:

- I) "highly endangered" by the new international division of labour (low skill, high labour intensity);
- II) "endangered" (low skill, low labour intensity);
- III) "not endangered" (high skill intensity).

Since the first two categories showed very similar performance, we have aggregated them in the following presentation to form one group labelled "endangered industries", which is characterized by low skill intensity.

Fig. 9: CHANGE OF EMPLOYMENT IN "ENDANGERED INDUSTRIES",¹⁾
1973-1981, BY TYPE OF REGION

- a) Rate of change (1973 = 100)
 b) Employment share 1973 } Regional nonagricultural
 c) Employment share 1981 } employment = 100

AUSTRIA		ACCESSIBILITY		
		high	medium	low
a) 85	b) 19.9			
c) 16.8				
SECTORAL STRUCTURE	service centers	a) 77 b) 12.7 c) 10.4	88 14.8 12.8	
	manufacturing areas	75 26.5 19.5	94 36.5 34.8	
	industrialised rural areas	95 29.7 25.7	92 22.5 19.8	75 31.0 23.5
	rural areas	102 20.0 17.3	100 20.6 18.9	93 20.2 17.6
	tourist areas		100 18.0 16.6	90 17.0 14.5

1) Manufacturing industries only, for definition see section 3.1
 Source of data: Industrial census 1973 and 1981

Fig. 10: EMPLOYMENT CHANGE IN "NON-ENDANGERED INDUSTRIES",¹⁾
1973-1981, BY TYPE OF REGION

- a) Rate of change (1973 = 100)
 b) Employment share 1973 } Regional nonagricultural
 c) Employment share 1981 } employment = 100

AUSTRIA		ACCESSIBILITY		
		high	medium	low
a) 101	b) 16.2			
c) 16.9				
SECTORAL STRUCTURE	service centers	a) 85 b) 17.4 c) 15.7	108 13.6 14.5	
	manufacturing areas	111 19.8 21.7	102 13.0 13.5	
	industrialised rural areas	118 18.8 20.1	102 20.5 20.0	114 15.0 17.4
	rural areas	122 18.4 20.1	109 17.0 17.2	108 17.5 17.7
	tourist areas		112 13.4 13.7	132 9.8 12.2

1) Manufacturing industries only, for definition see section 3.1
 Source of data: Industrial census 1973 and 1981

Figures 9 and 10 show the employment shares in 1973 and the employment changes between 1973 and 1981 for "endangered" (I + II) and "non-endangered" industries (III), respectively by type of region.

In 1973 the "endangered industries" (I + II; Fig. 9) were strongly represented in medium-accessibility manufacturing areas ("old industrial areas", 35 per cent of non-agricultural employment) and in industrialized rural areas (20 - 26 per cent). The employment share of these industries was very low in the service centres (10 and 13 per cent).

Between 1973 and 1981 these industries declined heavily (in terms of employment) in core areas, manufacturing areas with high accessibility and peripheral industrialized-rural areas (decreases by 23 - 25 per cent). Only one region, a rural area with high accessibility, showed a (small) employment increase (+ 2 per cent) in this group of industries. Employment-reducing restructuring, then, occurred in both service and manufacturing agglomerations and in peripheral industrialized rural areas. The mechanisms may have differed: in agglomerations high wages and costs may have caused firms to introduce capital-intensive technology or to relocate to peripheral locations while in the peripheral industrialized rural areas branch plants may have been closed down to cut capacity (Massey and Meegan 1979).

There was little employment change in "endangered industries" in manufacturing areas with medium accessibility: the employment decrease was less than the Austrian average. This may be due to a general slow structural change of this region, and to labour hoarding in which strong unions, public policy and state-owned enterprises (see 3.2.a) played a role.^{1/}

Figure 10 gives an overview of the employment changes (1973-1981) in "non-endangered industries". Employment in this group of industries was relatively stable, growing by 1 per cent. Employment decreased only in core

^{1/} Since 1982, however, job losses have been particularly high in old industrial areas and unemployment has increased strongly (Maier and Tödttling 1984).

area (-15 per cent); strong increases took place in all other high-accessibility areas and in rural and tourist areas. Skill-intensive industries have contributed much more to the employment gains in rural and tourist areas than standardized low-skill production.

However, a closer look at the employment gains of rural and tourist areas in the "high-skill industries" reveals that the major gains took place in low-wage, labour-intensive activities such as furniture, wood products and electrical instruments manufacturing (Urban, 1980). In some of these low-wage industries the "high skill" classification may be biased because firms sometimes employ former blue-collar workers as white-collar workers (higher social status, better legal position) in order to compensate for low wages. Despite their formal high skill intensity, these industries therefore do not represent an improvement of the industrial structure in rural and tourist areas.

Information and knowledge activities

A considerable part of the service sector employment increase took place in trade, tourist activities, personal and social services and health services. From the perspective of product-cycle theory and the changing international division of labour the following "information and knowledge related" activities which favour regional innovation are of particular interest:^{1/}

- banking and insurance,
- business services (legal, business and technical consulting),
- education,
- research institutions and universities.

^{1/} The 1973 and 1981 industrial censuses which served as a basis have only used these categories to classify whole plants or separate spatial units, and not, e.g., entrepreneur functions within plants relating to the generation or transmission of information/knowledge (cf. Bade and Eickelparsch 1983). There is no detailed "functional" classification of such activities in Austria yet.

Fig. 11: CHANGE IN INFORMATION AND KNOWLEDGE SECTOR¹⁾
EMPLOYMENT 1973-1981 BY TYPE OF REGION

a) Rate of change (1973=100)

b) Employment share 1973 } Regional nonagricultural
 c) Employment share 1981 } employment = 100

AUSTRIA		A C C E S S I B I L I T Y		
		high	medium	low
a) 131				
b) 8.5				
c) 11.0				
S E C T O R A L S T R U C T U R E	service centers	a) 119 b) 11.3 c) 14.2	132 9.6 12.5	
	manufacturing areas	142 6.6 9.2	127 5.1 7.9	
	industrialised rural areas	151 6.1 8.4	140 6.6 8.8	140 6.1 8.6
	rural areas	166 6.5 9.2	149 8.3 11.5	141 7.8 10.3
	tourist areas		153 5.8 8.2	149 6.8 9.6

1) Classification of industrial census (Betriebsstatistik 1968) No. 910-938, 971, 972

Source of data: Industrial census 1973 and 1981

Fig. 12: CHANGE IN BANKING & INSURANCE EMPLOYMENT¹⁾
1973-1981 BY TYPE OF REGION

- a) Rate of change (1973=100)
b) Employment share 1973 } Regional nonagricultural
c) Employment share 1981 } employment = 100

AUSTRIA a) 126 b) 3.4 c) 4.2		ACCESSIBILITY		
		high	medium	low
SECTORAL STRUCTURE	service centers	a) 116 b) 5.4 c) 6.6	131 3.7 4.8	
	manufacturing areas	129 2.5 3.2	124 2.0 2.6	
	industrialised rural areas	165 1.7 2.6	139 2.2 2.9	138 2.2 2.1
	rural areas	173 1.5 2.5	173 1.7 2.6	145 1.7 2.5
	tourist areas		153 1.8 2.5	162 1.8 2.7

Fig. 13: CHANGE OF EMPLOYMENT IN BUSINESS SERVICES¹⁾
1973-1981 BY TYPE OF REGION

- a) Rate of change (1973=100)
b) Employment share 1973 } Regional nonagricultural
c) Employment share 1981 } employment = 100

AUSTRIA a) 145 b) 1.5 c) 2.2		ACCESSIBILITY		
		high	medium	low
SECTORAL STRUCTURE	service centers	a) 137 b) 2.3 c) 3.4	130 1.9 2.5	
	manufacturing areas	184 1.1 2.0	146 0.9 1.3	
	industrialised rural areas	158 0.7 1.0	134 0.9 1.1	157 0.6 0.9
	rural areas	175 0.6 0.9	193 0.7 1.2	154 0.6 1.9
	tourist areas		140 1.0 1.3	199 0.8 1.5

¹⁾ Classification of industrial census (Betriebsystematik 1968)
No. 910-932

Source of data: Industrial census 1973 and 1981

¹⁾ Classification of industrial census (Betriebsystematik 1968)
No. 933-938

Source of data: Industrial census 1973 and 1981

Fig. 14: CHANGE OF EMPLOYMENT IN EDUCATION¹⁾
1973-1981 BY TYPE OF REGION

- a) Rate of change (1973=100)
 b) Employment share 1973 } Regional nonagricultural
 c) Employment share 1981 } employment = 100

AUSTRIA		ACCESSIBILITY		
		high	medium	low
a) 128	b) 3.2			
c) 4.1				
SECTORAL STRUCTURE	service centers	a) 108 b) 2.6 c) 3.0	125 3.2 4.0	
	manufacturing areas	133 2.8 3.6	123 3.0 3.7	
	industrialised rural areas	142 3.6 4.7	138 3.6 4.7	138 3.9 5.5
	rural areas	157 4.2 5.6	135 6.0 7.5	138 5.3 6.9
	tourist areas		154 3.0 4.2	133 4.2 5.4

1) Classification of industrial census (Betriebssystematik 1968) No. 971 without 9711

Source of data: Industrial census 1973 and 1981

Fig. 15: CHANGE OF EMPLOYMENT IN RESEARCH/UNIVERSITY¹⁾
1973-1981 BY TYPE OF REGION

- a) Share of regional nonagr. employment on Austria 1981
 b) Share of regional res./univ. employment 1973 on Austrian res./univ. employment 1973
 c) Share of regional res./univ. employment 1981 on Austrian res./univ. employment 1981

AUSTRIA		ACCESSIBILITY		
		high	medium	low
a) 100	b) 100			
c) 100				
SECTORAL STRUCTURE	service centers	a) 31.1 b) 66.2 c) 57.1	12.9 22.0 25.8	
	manufacturing areas	17.0 7.2 10.1	6.8 3.1 2.5	
	industrialised rural areas	3.7 0.2 0.4	6.2 0.3 1.3	3.4 0.3 0.2
	rural areas	2.3 0.01 0.5	1.9 0.1 0.5	6.1 0.3 0.3
	tourist areas		7.1 0.3 1.1	1.4 0.02 0.03

1) Classification of industrial census (Betriebssystematik 1968) No. 972 + 9711

Source of data: Industrial census 1973 and 1981

Total employment increase in these services was high (31 per cent). Business services (+45 per cent) and research/universities (+43 per cent) ranked first and banking/insurance (+26 per cent) also increased at a higher rate than services in general. The share of these services in Austrian non-agricultural employment increased from 8.5 per cent (1973) to 11 per cent (1981).

As indicated above, these activities are heavily concentrated in core regions (with the exception of education) but displayed strong tendencies of dispersal between 1973 and 1981. The investigation led to surprising results (see Fig. 11 to 15).

Very high relative employment increases took place in all of the rural and tourist areas (between +40 and +65 per cent) and in the manufacturing areas with high accessibility (+42 per cent; see Fig. 11). Accessibility was once more a factor favouring employment growth. Only two areas showed below average growth, namely the core areas (+19 per cent) and the "old industrial areas" (+27 per cent), while in service centres with medium-accessibility the employment increase was average.

Despite these dispersal tendencies, regional differences in the employment shares of these activities were still quite high in 1981 (14,2 per cent in core areas, 7.9 per cent in "old industrial areas").^{1/}

Regional employment change in the individual categories is shown in Figures 12 to 15. The picture is essentially similar to the one just described, with some deviations:

In banking and insurance (Fig. 12) there was a clear difference between the service and manufacturing areas on the one hand (average or below average increase: 16 to +31 per cent) and the rural and tourist areas on the other hand (38 to +73 per cent). The high growth rates of the latter areas are

^{1/} It is remarkable that the areas with the lowest share of these activities have shifted in 1973 the lowest share was found in tourist areas with medium accessibility (5.8 per cent), in 1981 it had shifted to the "old industrial areas" (7.9 per cent).

probably due to the spatial extension (branch offices) of banking and insurance companies and may reflect the growth of routine activities rather than information and knowledge transmission.

A similar spatial pattern of employment growth can be seen in education (Fig. 14). With regard to these activities the public policy of building schools in rural and peripheral areas was the driving force behind dispersal. In principle the increase of human capital is favourable for these regions, but the following questions arise:

- are the appropriate skills provided?
- will the increase in human capital lead to selective outmigration? (this has been the case in Austria in the sixties - cf. Maier 1983).

Business services (legal, technical and business consulting), which were highly concentrated in 1973, almost doubled their employment in some rural and tourist areas (even in peripheral ones) and in manufacturing areas with high accessibility (+84 per cent - see Fig. 13). Surprisingly, the lowest increase was in service centres with medium accessibility (+30 per cent). For rural areas the increase in knowledge-generating and transmitting activities should be of particular importance in stimulating innovation processes and structural change.

Employment in research institutions and universities, which grew strongly (+43 per cent), constitutes only a very small part of total Austrian employment (less than 1 per cent). In 1973 these activities were concentrated to a high degree in the core area (66 per cent of all employment in this sector)^{1/} and in service centres with medium accessibility (22 per cent - see Fig. 15). The share of core areas had dropped to 57 per cent in 1981 while that of the service centres with medium accessibility had increased to 26 per cent. The extension of university facilities in some provincial capitals (Graz, Klagenfurt, Innsbruck) is probably responsible for this

^{1/} Because of some very low scores for 1973 employment, the regional shares in Austrian sectoral employment are reported instead of growth rates.

trend. The manufacturing areas with high accessibility and, surprisingly, most of the rural and tourist areas increased their collective share from 1.5 to 4.5 per cent.^{1/}

Besides the core area and the peripheral industrialized rural areas only the "old industrialized areas" experienced a decline in their research/science employment share. Together with other findings on the slow development of information and knowledge activities this could be an indicator of the weakness of innovation and structural renewal in "old industrial areas".

4) Summary

The empirical analysis of regional industrial change in Austria (1973-1981) and its relation to the changing international division of labour can be summarized as follows:

1. Strong regional differences exist in the employment share of "endangered" (low skill) industries on the one hand, and of innovation-related information/knowledge activities on the other:
 - Employment in the low-skill industries is highest in manufacturing areas with medium accessibility ("old industrial areas" - 37 per cent of non-agricultural employment in 1973) and in industrialized rural areas (23-31 per cent); service centres show lowest shares (13 and 15 per cent).
 - Clear regional differences exist in the distribution of information and knowledge activities (such as research and science, business services and banking) which are considered to stimulate the innovation and restructuring process of enterprises. In 1973 11 per cent of employment in these sectors was found in "old industrial areas" and some rural and tourist areas accounted for only 6 per cent.

^{1/} These findings are similar to those of Malecky (1980) for the U.S., who found tendencies of dispersal for corporate R & D activities. Although the relative increase in research/science activities in rural and tourist areas is remarkable, the share of these areas was still very low in 1981 (4.5 per cent) as compared to their share in total employment.

2. Regional employment changes and changes in regional industrial structure have been only partly in line with expectations between 1973 and 1981:

- As would be expected on the basis of the product cycle theory, there was a large employment decrease in low-skill and labour-intensive industries in the core areas (-23 per cent) and an increase in rural areas with high accessibility. This latter increase, however, was small (+2 per cent) and contributed little to employment growth in these areas.
- The very strong growth of the service sector in rural and tourist areas (between +10 and +24 per cent) and particularly of the information and knowledge-related services (between +40 and +66 per cent) do not conform with the product cycle or neo-factor proportion theories.

3. Employment and industrial change (1973-1981) by type of region can be summarized as follows:

- Core areas experienced structural change with a general employment reduction (5 per cent). Structural change involved a growth of the service sector and particularly of the information and knowledge activities. The main characteristic of this process was the reduction of employment in manufacturing and particularly the low-skill "endangered" industries.
- In service centres with medium accessibility and manufacturing areas with high accessibility structural change was accompanied by a stagnation of total (non-agricultural) employment growth (+1 to +2 per cent). The restructuring process replaced low skill "endangered" manufacturing industries by high-skill manufacturing and service activities and was strongest in highly accessible manufacturing areas.

- Manufacturing areas with medium accessibility ("old industrial areas") experienced an overall employment decrease (-2 per cent) and a much slower structural change than other areas. Although these areas had the highest employment shares in "endangered" industries of all regions (37 per cent in 1973) the employment reduction in these industries was rather small (-4 per cent) - this may be partly due to labour hoarding. Employment growth in high-skill manufacturing industries, the service sector and information/knowledge activities was below average, indicating that particularly in these areas there are obstacles to innovation.

 - Rural and tourist areas experienced a strong employment growth (with the exception of the peripheral industrialized rural area). There was also a remarkable structural change: skill-intensive manufacturing and service sector activities (including information and knowledge) became more important. In general, areas with good accessibility performed best. The peripheral industrialized rural area did worst: every fourth job in "endangered" industries has been lost, which contributed to the considerable decline in total manufacturing employment (-12 per cent).
4. Although regional development trends in the investigated period (1973-1981) do not look too bad from the point of view of some disadvantaged areas there are reasons for concern:
- In 1982 and 1983 unemployment in "old industrial areas" increased strongly after labour hoarding had to be given up. Some rural areas, particularly in the periphery, were also affected (Maier and Tödttling 1984).

 - Up to now no information on changes in the organizational and functional characteristics of plants is available in Austria (see e.g. Bade and Eickelparsch 1983, Tödttling 1984a). Detailed information on the skills structure and the technological and product characteristics (quality, market prospects, etc.) of plants is missing as well. These, however, to a high degree determine the ability of enterprises to innovate and to adapt to the changing international division of labour (Brugger 1984).

Appendix

Classification of sectors according to the industrial census

(Betriebssystematik 1968)

Water, energy	100-199
Mining	200-299
Manufacturing	300-599
Construction	600-699
Trade	700-779
Hotels	780-799
Communication, transport	800-899
Banking, insurance	910-932
Business services	933-938
Personal & social services	940-945, + 9910
Cultural facilities	950-956
Health facilities	961-969
Education	971 without 9711
Research & Science	972 + 9711
Security	981 without 9811, + 9862 + 987
Public administration	983-986 without 9862, + 9811

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Bert Helmsing

COLOMBIA: INTERNATIONAL TRADE, ECONOMIC STRUCTURE AND REGIONAL DEVELOPMENT

1. Introduction

The effects of the changes in the international division of labour on the interregional division of labour are by no means well understood.

In regional studies literature two main views are held on this issue. The first one considers them largely separate areas, relating to different dimensions of development at different levels of analysis. Regions are seen as open economies, but their contacts with the 'rest of the world' usually are not differentiated according to their domestic or international origins. With the increasing attention to the multinational enterprise a point of overlap and contact was created, namely the locational behaviour of the TNC's and its regional consequences (cf. Storper, 1981 and Hayter and Watts, 1983).

The second view has gained increasing acceptance with the rise of dependency cum imperialism approaches to regional development. Realizing the danger of gross generalization, this view holds that the international division of labour takes predominance over the interregional structure of a country. A top-down sequential conditioning takes place: international centre-periphery structures shape interregional centre-periphery relationships. There are considerable differences between such authors as Myrdal (1957), Frank (1968), Slater (1975) or Massey (1978), and they are not all equally specific on this issue. But on the whole it is argued that Third World countries find themselves in historically developed unequal (trade) relations with center countries, and that their internal (interregional) structures are not only historically shaped by those trade relations, but also that the continued postcolonial international (trade) dependency causes a worsening of the (inter-)regional problem. For example, a macrocephalous urbanization process (metropolitanization or development of primacy) is seen as one of the results of the international insertion (cf. Quijano and Castells in Schteingart, 1973). Similarly it is argued that, as interregional economic relations remain structured along "internal colonialist" lines, regional inequalities are exacerbated.

Although some of the mechanisms through which international effects are mediated downwards are identified (transnational corporations and state policies), many conclusions are based on a sort of parallel argumentation (e.g. centre-periphery relations of one level that are "reproduced" at another level). This has a certain common-sense appeal. After all, regions are more open economies than nations and therefore are bound to be more susceptible to external influences. Finally, there has been a considerable bias in the analysis. Industry and industrialization have received most attention.

Perhaps matters are not so clear cut however. Historically, and prior to processes of national integration by industry, several Latin American countries had one or more individual regional economies that had strong international ties, stronger than those with other regions with which they formed a national unit. It is reasonable to argue that this fact influenced the regional shape of the national integration process and the interregional division of labour that evolved as a result of this process. However, international trade factors are not the only ones involved. In some cases and instances they do play a key role, in other they clearly do not, or only at a very reduced level and along with other factors.

In this paper, on the basis of a review of Colombian national and regional development processes, we will discuss the relation between the two divisions of labour. In doing so we will hold the view that as national integration proceeds, the interregional division of labour increasingly complements the international trade participation of the regions. In other words, national integration processes draw regional economies more and more into market and trade relations. This trade may be either international or interregional, depending on a number of factors. Since it is unlikely that both the interregional and international trade accounts of a region can remain negative in the long run, a trade deficit on one account has to be compensated by a trade surplus on the other account. For example, a region may be a large net international exporter and, because of it, at the same time a large net interregional importer. Similarly, a region (e.g. the capital region)

may be a large international net importer, and at the same time dominate interregional trade.

In the following three sections we will discuss the major features of the Colombian development process, focussing on agriculture, industry and international trade, describing sectoral and spatial processes. In section 2 the early industrialization process (1900-1950) is briefly analysed against a background of some historical facts. In section 3 we deal with the period 1950-1967 during which major transformations took place in agriculture and industry largely completed its import substitution process. Section 4 describes the changes that took place in the 1967-1980 period, in which relations with the international economy were altered under the new policy of export promotion.

A comparison of the regional changes as they took place under different national and international conditions in each period allows us to discuss, in section 5, the relation between the participation of Colombia in the international division of labour and the changes in the division of labour between the regions of the country.

2. Early industrialization and agricultural change

One of the early development problems of Colombia was that it lacked a strong international sector. The country failed for a long time to develop a viable export base and, because of this, it also lacked the resources to build and maintain a strong central state. There was a number of shortlived attempts to replace gold production which already before Independence had entered into decline. However none of these (tobacco, quina and some textile production) succeeded. Taking into account the country's geographical features, there was in fact little that united the various regions.

In passing it is perhaps useful to mention here that the country is carved up by three spurs of the Andes Mountains, which run north-south; around the various valleys, regions have developed (location: see Map 1). The eastern highlands are the most populated part of the country (Cundinamarca,

Boyaca and Santander). In the north, the Andes give way to the Atlantic Coast region, some parts of which, because of their role in the natural transport system, have a long development history. Finally, there are vast natural regions with very low population densities, such as the Llanos Orientales, the Amazon region and the Pacific Coast.

These geographical features constitute formidable barriers to communication and movement between regions. For instance, by the end of the 19th century it was cheaper to transport a commodity from Liverpool to Medellin, than from Medellin to Bogota (Ospina Vasquez, 1951 and McGreevey, 1975).

The weak export base and the absence of a dominant national elite able to displace the old landed groups, led three decades after Independence to the adoption of a federal structure which permitted a minimization of conflict among the variously structured regional oligarchies. Only by the end of the 19th century did the 'Regeneration' culminate in the reinstitutionalization of a unitary political-administrative structure (1886), but with considerable powers still vested in the "departments" (Ruiz, 1982). Departments had a large resource base, controlled key functions such as police, education, immigration, land settlement, roads and railways, etc. (Tirado Mejia, 1981). This change towards a unitary system coincided, not surprisingly perhaps, with the development of coffee as a new export sector from 1870 onwards.

Traditional regional power was gradually weakened as new departments were created and functions transferred to or displaced by central government. The "War of a Thousand Days" (1899-1902) was the last regionally inspired civil war, and resulted in the creation of five new departments (Narino, Caldas, Atlantico, Huila and Norte Santander).

The growth of coffee exports contributed to the strengthening of the central government. The growing revenues derived from them made possible the expansion of central government institutions and activities, either directly financed or on the basis of now accessible foreign

loans. In the first decade of the present century, coffee came to constitute around one-third of total Colombian exports. Partly due to the changing world market in coffee in favour of the fastgrowing post-World War I United States economy, coffee exports rose rapidly to 70% of total exports in the 1920s. This share went down during the Great Depression only to recover after World War II, rising to more than 75% in the 1950s.

Without doubt, the growth of coffee production and exports enabled industrialization to take place (Urrutia, 1979). First of all, the structure of coffee production was much less concentrated than in other agricultural sectors, generating a more favourable distribution of (monetary) income, and thus constituted an important source of demand for manufactured products. Secondly, the growing coffee exports generated the foreign exchange necessary to finance the imports of industrial machinery and raw materials. To this one may add, as a third point, that the coffee exports stimulated the creation of a much-needed transport infrastructure, which facilitated the physical entry and movement of industrial equipment. During the 1920s great advances were made in the expansion of the various railway networks of the country (McGreevey, 1975). Finally, the emergence of the industrial bourgeoisie is related, thought not exclusively, with coffee production and trade (Brew, 1977).

In addition to coffee, several other factors should be kept in mind which contributed to the establishment and consolidation (from 1930 onwards) of the manufacturing sector. First, the temporary interruption of foreign competition, particularly during the First and Second World Wars, and during the Depression (when protective measures were made necessary because of the reduced capacity to import), created a similar effect. A further factor of importance has been the import of foreign loans and capital, particularly during the 1920s, with which the construction of transport infrastructure was partly financed. Foreign (US) private capital concentrated mostly in oil extraction (Escorcia, 1978).

The main branches of manufacturing concerned basic consumer goods, such as food, beverages, textiles and clothing. The development of the

sector as a whole was based almost entirely on internal final demand and continued to rely on imports of intermediate and capital goods.

Industrialization was not a widespread phenomenon, but developed largely in the Antioquia-Caldas coffee region (Medellin and to some extent Pereira and Manizales), in the eastern coffee region, Cundinamarca (Bogota), and some port cities, like Barranquilla. This fact notwithstanding, it constituted a powerful stimulus to the integration of local and regional markets. This is also evidenced by the tendency towards oligopoly formation, first on a regional and later on a national basis. In the production of textiles, beer, tobacco and some food products like chocolates such processes occurred in the 1930s and 1940s. Periods of reduction of competitive imports, marked by great spurts in oligopoly formation by means of absorption of competing firms, were followed by periods of incorporation of new technical progress leading to larger plant size, which in its turn led to a further consolidation of these market structures (Helmsing, 1979).

In Table 1 it can be seen that already by 1945 the two most highly industrialized regions accounted for 50 per cent of total manufacturing

Table 1. Manufacturing net output and employment by region, 1945-1980
(per cent)

	output					employment				
	1945	1958	1967	1975	1980	1945	1958	1967	1975	1980
Antioquia	25.3	24.8	23.7	21.1	22.6	26	24	25	24	25
Atlantico	13.1	9.0	8.3	7.7	6.2	11	10	9	8	8
Bolivar	3.3	2.7	3.7	4.9	6.2	4	2	2	2	2
Boyaca	2.2	2.2	2.5	2.6	2.6	3	3	2	2	2
V.Caldas	6.0	5.2	4.6	4.9	4.9	6	5	5	5	6
Cauca	1.1	0.7	0.7	0.9	0.6	1	1	1	1	1
Cordoba	-a-	0.1	0.2	0.1	0.1	a	0	0	0	0
Cundinamarca	25.3	27.1	25.8	30.3	28.0	20	30	30	33	33
Hulla	0.3	0.4	0.3	0.3	0.3	1	0	0	0	0
Magdalena	0.9	0.6	1.0	0.6	0.6	1	1	1	1	1
Meta	-b-	0.1	0.4	0.3	0.3	b	0	0	0	0
Narino	0.6	0.6	0.6	0.4	0.4	1	1	1	1	0
Nor.Santander	1.1	0.9	0.9	0.8	1.0	2	1	1	1	1
Santander	5.3	5.3	5.5	5.2	7.8	7	5	4	4	4
Tolima	2.7	1.5	1.1	1.0	1.1	3	1	1	1	1
Valle	12.6	18.5	20.3	18.5	17.1	13	16	17	16	16
Total	100.0	100.0	100.0	100.0	100.0	100	100	100	100	100

a-included in Bolivar

b-not available

source: Cens. of Manufacturing Production, Bogota, various years

net output. The growth of industries, trade and state fomented urbanization. Not only was the growth of urban population higher than the rural one, but particularly the departmental capitals grew at above-average rates. Within this group, the largest cities (Bogota, Medellin, Cali) and the towns located in coffee-producing areas grew fastest.

With regard to agriculture, it is important to recall some fundamental historical aspects. The agrarian structure was dominated by the latifundium-minifundium complex. Large haciendas were found in the fertile valleys, high plains and lowlands, whereas peasant holdings were situated alongside them on less fertile land and on the mountain slopes. Agriculture was most developed in the more temperate Andean regions. Some subtropical regions were just recently settled (Antioqueno colonization) but tropical agriculture was virtually undeveloped. Very extensive livestock production prevailed in regions such as the Costa Atlantica and the Llanos Orientales.

The development of coffee production had relatively little direct impact on domestic agriculture. Its labour requirements were such that it could be easily incorporated into peasant household production in the newly settled lands of Antioquia and Caldas. In Cundinamarca, where most of the production was organized on large haciendas, it did however put pressure on traditional tenancy relations. The major impacts on agriculture came from public works, industrial expansion and urban growth. The resulting increases in demand for labour contributed to uproot traditional forms of tenure that had tied labour to the land. Secondly, there were local impacts in terms of demand for urban food and industrial raw materials. These effects were mostly felt in the Andean regions of the interior (Cundinamarca, Tolima and Valle). Peasant organization and movements during the thirties produced some positive change during the liberal governments (improvements in land tenure laws and some land redistribution).

The regional pattern of the development of agricultural production was relatively straightforward. Market production expanded most around

the big cities and in a pattern consistent with the industrialization process. In Cundinamarca and to a lesser extent Antioquia concentrated most of the agricultural production was concentrated, but a agriculture remained diversified (Bejarano, 1979).

Table 2. Origin of international exports and distribution of international imports by region, 1950-1980 (per cent)

	exports					imports				
	1950	1958	1967	1975	1980	1950	1958	1967	1975	1980
Antioquia	21	22	28	22	27	19	13	11	13	14
Atlantico	1	1	4	4	4	18	14	11	6	6
Bolivar	1	3	5	9	5	4	4	4	1	2
Boyaca	0	0	1	0	2	0	1	4	0	0
Caldas	37	45	35	29	37	5	3	3	2	2
Cauca	1	2	2	1	2	0	0	0	0	0
Cordoba	0	0	1	0	0	0	0	0	0	0
Cundinamarca	12	5	7	13	10	31	46	49	60	61
Choco	0	0	0	0	0	0	0	0	0	0
Guajira	0	0	0	0	0	0	0	0	0	0
Huila	0	0	0	0	0	0	0	0	0	0
Magdalena	3	4	4	5	3	1	1	1	0	1
Meta	0	0	0	0	0	0	0	0	0	0
Narino	0	1	1	1	0	1	0	1	0	0
Nor.Santander	8	9	3	1	0	2	0	0	0	0
Santander	7	4	2	1	0	2	3	3	1	3
Tolima	4	2	1	1	1	1	0	0	1	0
Valle	5	2	6	12	9	15	14	12	14	11
total	100	100	100	100	100	100	100	100	100	100

sources: Anuario de Comercio Exterior, DANE, Bogota (various years)

With regard to the regional distribution of Colombia's international exports it is found, not surprisingly, that by the end of the period (1950) Caldas and Antioquia were the major contributors, with respectively 37 and 21 per cent of total Colombian exports (see Table 2). Being the third coffee producing region, Cundinamarca ranked third with 12%. Other region contributed with secondary exports products, such as Magdalena (bananas), Santander (tobacco). Consistent with the pattern of industrialization and urbanization, the four most developed departments accounted for 83% of the international imports, but within this group there was a manifest differentiation in the sense that Cundinamarca alone accounted for almost one third (31%) of total international imports. The relatively more prominent role of ports or

port-related towns such as Barranquilla and Cali was in all probability due to the fact that here we find more specialized import trade firms.

If we look at the net interregional foreign exchange flow we find that Caldas contributed 64% and the two Santander departments another 22%. The largest net user was Cundinamarca (38%), followed immediately by Atlantico (33%) and at a lower level Valle (19%). It is interesting to observe that Antiquia, much in line with its "independent" reputation, generated within its own department the foreign exchange it required to finance its international imports. Finally, it is important to mention that a number of regions had no or hardly any direct international trade participation. Here we refer not only to distant frontier regions such as Choco and Meta, but also to long established but subsistence regions like Narino, Huila, Boyaca and Cauca.

From this brief account it can be concluded that the period (1900-1950) was a very dynamic one. Various processes of change in part reinforced each other. The production and export of coffee created demand and the reduction of competitive imports due to external factors stimulated a domestic supply response in manufacturing. Furthermore, coffee production made possible an accumulation of capital which under the prevailing conditions could best be profitably invested in domestic industry. The infrastructure made possible by, and necessary for, the mobilization of the coffee exports unified and extended some regional markets for industrial production. The infrastructural works employed rural labour, stimulated rural-urban migration and contributed to the formation of urban labour markets. The migration fuelled the process of urbanization which in turn amplified the demand not only for industrial products but also for agriculture. Given the technological conditions of agriculture, these new opportunities could best be met through raising local peasant production. The development of Colombia as an industrializing, single-crop exporting nation contributed to shape the interregional division of labour, particularly insofar as the Andean interior is concerned. It should, however, be added that many regional economies were as yet little affected, particularly the Atlantic Coast and the southern part of the country, and that large parts of the territory were not even settled at that time.

3. Import substitution and the evolving interregional division of labour (1950-1967)

The change from one period to the other was marked by a spectacular investment boom immediately following the Second World War and by the beginning of the period of rural conflict known as "La Violencia". The boom greatly expanded domestic manufacturing capacity and, together with balance of payment problems which resulted from temporary declines in coffee export earnings, induced governments to adopt import substitution policies. The recurrent and in many respects systematic government protectionist intervention marked an important difference vis-a-vis the previous period. However, it should be added immediately that this policy was determined by balance of payments considerations rather than by conscious and deliberate industrial development objectives (Montes y Candelo, 1981).

For the period as a whole (1950-1967), manufacturing industry grew at an average real rate of 8.1 per cent. The greatest contribution, namely 3.7 per cent, came from the intermediate product sector while the consumer goods sector contributed 2.7 and the capital goods sector only 1.7 per cent (Montes y Candelo, *ibid*). This demonstrates the stage in the import substitution process which the country had already achieved. The importance of import substitution as a source of growth is well illustrated in the following table.

Table 3. Percentage distribution of growth by demand component in manufacturing production, by subsector, 1951-1968

	change in domestic demand	change in exports	import substitution	total
Consumer goods	93.5	3.6	3.1	100.0
Intermediate gds	71.8	-0.5	28.7	100.0
Capital goods	53.3	0.6	46.1	100.0
Total Manufacturing	84.2	1.1	14.7	100.0

Source: Montes y Candelo(1981),op cit.,table 6

Although sectorwise the pattern of manufacturing growth conformed with the import substitution model, it should be stressed that, on the whole, changes in domestic demand (final and intermediate) were far more important than the external sector, either on the import or on the export side. In fact the increase in import duties on consumer goods hardly produced any growth effect at all, and consequently must be seen in the context of domestic price rises.

To analyze the regional pattern of change, a shift and share analysis has been conducted for the periods 1945-1958 and 1958-1967. The main results are summarized in Table 4. The major conclusions can be formulated in the following way. The regional pattern of output change in the period 1945-1958 revealed some very clear changes. Whereas industry in Antioquia, the "oldest" industrial area, grew at a rate slightly below the national average, Cali (Valle) became firmly established as the third industrial centre of the country. The extraordinary growth of output in Cali can, to a large extent, be explained by the expansion of the Buena Ventura harbour on the Pacific coast which made Cali an attractive alternative transshipment point to Barranquilla in the North. Output growth in the department of Barranquilla (Atlantico) consequently fell behind. This trend continued up to the present day. A second important reason was found in the expansion of agro-processing, particularly in relation to sugar grown in the area near Cali.

As a matter of fact Valle, together with the capital city region Cundinamarca, contained almost the entire positive shift. Peripheral regions such as Narino, Norte Santander, Tolima and Magdalena not only had a relatively unfavourable industrial structure, but also performed worse than elsewhere (negative shares). The same applies also to regions that did not have a clear peripheral status such as Bolivar and Viejo Caldas.

The fact that in this period the domestic market was protected from foreign imports, enables one to interpret the relative interregional changes as in a zero-sum context. That is to say, there is a direct relation between the high growth of the central industrial regions and the relatively poor industrial growth performance in the periphery.

A shift and share analysis of regional industrial output
and growth in Colombia, 1945-1958/1958-1967/1967-1980

Table 4:

1945-1958	Output (VA) 1945	Output (VA) 1958	Net shift	Relative distribution	Comparative shift	Decomposition industrial composition	Net Shift regional residual
Antioquia	36,475	801,884	-13,458	5.3	-1.7	-101,265	87,808
Atlantico	18,882	292,570	-129,508	51.2	-30.7	-30,097	-99,411
V. Bolívar	4,759	93,569	-12,811	5.1	-12.0	-8,390	-4,421
Boyaca	3,173	74,124	3,197	-1.3	4.5	-2,502	5,699
V. Caldas	8,693	168,280	-26,038	10.3	-13.4	-23,245	-2,794
Cauca	1,564	22,738	-12,223	4.8	-35.0	3,216	-15,439
Cundin'ca	36,601	875,945	57,787	-22.8	7.1	-73,858	131,644
Hulla	0,506	11,864	0,553	-0.2	4.9	-1,914	2,467
V. Magdalena	1,326	20,051	-9,590	3.8	-32.4	-2,306	-7,284
Narino	0,970	18,202	-3,481	1.4	-16.1	-2,267	-1,214
Norte San.	1,623	29,674	-6,606	2.6	-18.2	-4,461	-2,145
Santander	7,665	172,464	1,125	-0.4	0.7	240,866	-239,742
Tolima	3,916	48,143	-39,393	15.6	-45.0	-0,715	-38,679
Valle	18,242	598,216	190,445	-75.2	46.7	6,936	183,509
Total	144,395	3,227,724	0	100.0	100.0	-	-

note: values in (*10⁶) current pesos
Source: Helmsing, 1983b

Table 5:

1958-1967	output (VA) 1958	output (VA) 1967	net shift	relative distribution	comparative shift	decomposition industrial composition	net shift regional residual
Antioquia	801,884	3,590,703	-161,499	26.3	-4.3	-400,898	239,399
Atlantico	292,570	1,258,480	-110,523	18.0	-8.1	53,602	-164,125
V. Bolívar	88,633	566,920	152,186	-24.8	36.7	-34,871	187,056
Boyaca	74,124	383,258	36,415	-5.9	10.5	-25,447	61,861
V. Caldas	168,280	691,919	-95,502	15.6	-12.1	-29,041	-66,462
Cauca	22,738	119,483	13,087	-2.1	12.3	-4,331	17,418
Cordoba	4,936	24,438	1,341	-0.2	5.8	-1,916	3,257
Cundin'ca	875,945	3,908,677	-190,074	31.0	-4.6	98,410	-288,484
Hulla	11,864	57,441	1,927	-0.3	3.6	-3,222	5,148
Magdalena	20,051	151,833	58,010	-9.5	61.8	-6,739	64,749
Meta	5,072	56,199	32,466	-5.3	136.8	-1,510	33,975
Narino	18,202	94,164	8,993	-1.5	10.6	-6,227	15,220
Norte San.	29,674	135,879	-2,973	0.5	-2.1	-9,965	6,993
Santander	172,464	839,426	32,427	-5.3	4.0	120,206	-87,779
Tolima	48,143	172,114	-53,158	-8.7	-23.6	-8,799	-44,359
Valle	598,216	3,076,071	276,879	-45.1	9.9	260,747	16,132
Total	3,232,796	15,127,005	0	100.0	100.0	-	-

note: values in (*10⁶) current pesos
Source: Helmsing, 1983b

Table 6:

1967-1980	output (VA) 1967	output (VA) 1980	net shift	relative distribution	comparative shift	decomposition industrial composition	net shift regional residual
Antioquia	3,590,703	76,276,976	-3,683,832	15.1	-4.6	-4,197,454	513,625
Atlantico	1,258,480	21,060,216	-6,964,680	28.5	-24.9	-1,952,347	-5,012,336
V. Bolívar	566,920	20,930,328	8,305,675	-34.0	65.8	-1,518,665	9,824,335
Boyaca	383,258	8,630,374	95,661	-0.4	1.1	2,827,111	-2,731,449
V. Caldas	691,919	16,441,389	1,033,152	-4.2	6.7	-1,040,275	2,073,428
Cauca	119,483	2,088,794	-571,954	2.3	-21.5	-258,510	-313,444
Cordoba	24,438	506,274	-37,932	0.2	7.0	-54,886	16,954
Cundin'ca	3,908,677	94,267,728	7,226,008	-29.6	8.3	6,604,916	621,078
Hulla	57,441	1,230,992	-48,153	0.2	-3.8	48,424	-96,577
V. Magd'na	151,833	2,106,994	-1,274,152	5.2	-37.7	-140,162	-1,133,989
Meta	56,199	1,222,996	-28,491	0.1	-2.3	-41,606	13,115
Narino	94,164	1,330,215	-766,709	3.1	-36.6	-40,515	-726,194
Norte San.	135,879	3,264,395	238,527	-1.0	7.9	-70,898	309,425
Santander	839,426	26,212,662	7,519,614	-38.0	40.2	-1,389,029	8,908,638
Tolima	172,114	3,620,486	-212,294	0.9	-5.5	-195,388	-16,906
Valle	3,076,071	57,670,088	-10,830,456	44.4	-15.8	1,419,255	-12,249,718
Total	15,127,005	336,860,928	0	100.0	100.0	-	-

note: values in (*10⁶) current pesos
source: Helmsing, 1983b

Table 7: Regional export base dependency ratio, by region, 1945-1980

	Serie A		Serie B		
	1945	1958	1958	1967	1980
Antioquia	25	32	33	32	30
Atlantico	25	18	20	22	25
V. Bolivar	33	35	35	53	63
Boyaca	46	57	64	69	71
V. Caldas	33	39	39	36	24
Cauca	45	60	60	61	62
Cordoba	(1)	(1)	55	58	59
Cundin'ca	18	18	19	21	22
Huila	38	49	51	56	69
V. Magdalena	40	54	55	61	51
Meta	n.a.	n.a.	56	64	73
Marino	18	41	41	58	70
Norte Santander	32	43	46	54	51
Santander	44	59	59	53	63
Tolima	39	48	48	54	40
Valle	15	28	29	30	32
Total	25	29	30	32	34

notes: (1) included in Bolivar

n.a. not available

Methodology: The manufacturing export base was calculated with the following formula

$$OB(i) = \frac{Lq(i)-1}{Lq(i)} * O(i) \quad \text{for } Lq(i) > 1$$

if $Lq(i) < 1$ then $OB(i) = 0$

$$\text{The export dependency ratio } E(r) = \frac{\sum_1 OB(i)}{\sum_1 O(i)} * 100$$

Table 8: Regional export base diversification index, by region, 1945-1980

	serie A		serie B		
	1945	1958	1958	1967	1980
Antioquia	0.20	0.24	0.26	0.32	0.37
Atlantico	0.73	0.62	0.79	0.83	0.78
V. Bolivar	0.79	0.59	0.59	0.55	0.24
Boyaca	0.52	0.36	0.33	0.51	0.29
V. Caldas	0.13	0.40	0.40	0.60	0.80
Cauca	0.56	0.48	0.48	0.44	0.27
Cordoba	(1)	(1)	0.57	0.31	0.38
Cundin'ca	0.66	0.83	0.85	0.80	0.89
Huila	0.46	0.41	0.45	0.24	0.21
V. Magdalena	0.27	0.02	0.07	0.49	0.16
Meta	n.a.	n.a.	0.24	0.45	0.00
Marino	0.69	0.66	0.66	0.59	0.01
Norte Santander	0.69	0.47	0.52	0.52	0.50
Santander	0.79	0.59	0.41	0.38	0.02
Tolima	0.39	0.50	0.51	0.52	0.57
Valle	0.75	0.67	0.69	0.72	0.72
Total	0.86	0.88	0.89	0.90	0.88
Range of index	0 < index < 0.93		0 < index < 0.95		

Notes: (1) included in Bolivar

Methodology: The index which is known as the Gibb-Martin index of trade diversification, is formulated as follows:

$$DM(r) = 1 - \frac{OB(i)^2}{(\sum OB(i))^2}$$

The upper boundary varies with the adopted number of sectors (i) (cf. Hammond and McCullagh, 1974)

In the second part of the period (1958-1967), the slow growth of domestic demand manifested itself in a relative stagnation of consumer goods industries, something which explained the relative standstill of the "early" industrial regions, such as Cundinamarca and Antioquia (see Table 5). In contrast, Valle continued to grow fast thanks to the growth of foreign enterprise-dominated intermediate goods production. A parallel differentiation can be found within the periphery, where some regions experienced fast growth on the basis of a particular branch of production (e.g. Santander, Bolivar and Boyaca), while other regions continued to stay behind.

The industrial export base was estimated for each region on the basis of the same data. An export dependency ratio and a sectoral export diversification index were calculated. The results are quite revealing (see Tables 7 and 8, and Figure 1 and 2 in the Annex). There was a clear tendency towards specialization (reduced diversification) in the manufacturing export base of almost all peripheral regions, as well as an increased dependence on industrial exports. With regard to the core regions no such phenomena can be observed. Export base activities remained highly diversified (except in Antioquia) and the export dependence rose only slightly, if at all (Helmsing, 1983b).

Perhaps three conclusions stand out:

- a) by far the greatest source of growth was domestic demand, rather than the external sector (import substitution or export growth). Changes in the domestic conditions of demand (e.g. migration) and the evolving oligopolistic market structure must therefore be seen as the principal factors explaining the regional pattern of change;
- b) for those sectors where the external sector played a more important role (production of intermediate products), the regional pattern of change is not of a centre-periphery nature, but differentiation took place within both the centre and the periphery;

c) the integration process affected regions differentially. Almost all peripheral regions underwent a restructuring. Increased export dependence, reduced diversification and relatively poor growth performance were all features of the integration of the peripheral regions into the national market. In contrast, the more developed regions did not undergo such restructuring. They benefitted from the integration in terms of relatively high growth.

In order to explain the developments in agriculture a number of factors need to be taken into account. The "Violencia" in certain regions, which had devastating effects in that it contributed to uproot the traditional tenure relations and distribution of ownership, has already been mentioned. Many peasant smallholders/tenants left their holdings, often never to return (Oquist, 1978). The rural exodus from the areas of violence - which may have involved more than two million people - mostly ended up in the towns but also led to settlement of new land, mostly in tropical regions (e.g. Caqueta, Putumayo, Meta, Medio Magdalena).

Another major factor was the new technology that became available after World War II: it made large scale entrepreneurial production feasible (Kalmanovitz, 1976), and caused supply conditions to shift in favour of the landlords.

Thirdly, there was a considerable increase in the demand for agricultural products. During the intercensal period 1951-1964 urban growth was as high as 5.7 per cent per annum. The proportion of population living in towns rose from 39 per cent in 1951 to 53 per cent in 1964. Also the growth of industry stimulated the demand for agricultural output. The latter did not result automatically. It is known for instance that textile firms continued to import cotton. Only after the domestic market was shielded from foreign competition could the agricultural import substitution process start (cotton, soya, sorghum and palm oil).

During the fifties the government agricultural support system was built up: agricultural extension, some marketing facilities and credit.

The growth of the public sector took place largely at the national level, and implied a de facto centralization process.

Finally, it is relevant to mention the role of producer associations as vehicles for the rapid diffusion of technological know-how and as channels for procurement of inputs and marketing of output (cotton, rice, coffee, banana). These associations often emerged in a response to monopsonistic trade and industrial firms.

Table 9. Annual growth rates agricultural production, land and employment
Columbia, 1951-1973 (per cent)

	production		employment		crop acreage	
	51/64	64/73	51/64	64/73	51/64	64/73
Commercial crops	8.3	3.8	8.5	-4.1	7.4	2.1
Mixed crops	1.7	-0.7	1.1	-8.0	0.8	-0.4
Traditional crops	2.6	0.7	2.2	-4.2	0.8	2.1
Plantation	2.1	0.4	1.6	-4.8	2.3	0.6
Minor crops	3.0	5.0	1.6	-1.2	2.3	10.6
Agriculture	3.0	1.2	2.0	-5.0	2.0	2.0
Livestock	4.0	4.1	1.2	-3.8	2.0	1.5
Total	3.3	2.9	1.7	-3.7	1.0	1.2

Based on: DNP, 1977, op cit, p.158

Table 9 summarizes some of the main aggregate features of agricultural development. The so-called commercial crops, i.e. those that are predominantly used as inputs for industry, have been the most dynamic elements in the transformation of Colombian agriculture. Their share in the value of crop production almost doubled from 10 to 19 per cent and continued to grow thereafter, but at a lower pace. The fact that on the whole neither land nor labour productivities changed very rapidly, indicates that a geographical widening of the base of transformation occurred. Only in the sixties and early seventies did a strong deepening take place.

The production of basic foodstuffs such as maize, cassava, plantain and potatoes - and with the notable exception of rice at the end of the period-remained within the realm of peasant production. Given the fact that productivity increases were very low, the only way to explain increased supply is through the continuation of market incorporation of peasant agriculture and the expansion of the latter through landsettlement.

In the sixties the development of the agro-industrial complex took a great leap forward. It had two major features. Firstly, the growth in production resulted in exportable surpluses (cotton, rice and sugar). Secondly, the new technologies that enabled the large increases in productivities (HYV's and related inputs), raised the capital requirements of production and this threatened to marginalize the participation of the smallholder farmers. The number of smallholdings as well as agricultural wage employment, which had gone up in the fifties, went down in the sixties.

When industrial growth slackened and the employment absorption capacity of industry was severely reduced, capitalist agriculture started to expel rural labour and peasant agriculture was threatened with marginalization. Two policy solutions were put forward to solve the "social" problem. One was to keep the peasants in the countryside. Recognizing the social function of landownership, land reform would be the principal instrument. The second was an urban solution via a programme of labour-intensive urban housing construction. Both solutions were experimented with by successive governments. Though there were outspoken differences with regard to the "social" issues, there were remarkable similarities on how to tackle the economic problems. Instead of seeking to stimulate domestic demand - eventually by means of some redistributive measures - a re-orientation towards external demand was aimed for. To this end a number of major reforms were introduced in 1968.

What were the regional aspects of the emerging structure of agricultural production? As already implied above there was a

considerable expansion of the agricultural frontier. First, in terms of a transformation of the estates to capitalist production, particularly in the interior and later in the Atlantic Coast. Secondly, in terms of peasant land settlement, which occurred on a fairly large scale in the south and south-east of the country, but extended basically to tropical areas all over the country (Helmsing, 1982). On the basis of regional land use data available for the principal 16 crops, it was found (Helmsing, 1983a) that agricultural production expanded most notably in the Atlantic Coast. Here expansion occurred in commercial crops like cotton, sorghum and rice. In addition, Antioquia extended its agricultural frontier considerably. With regard to the commercial crops it can be concluded that some already specialized production areas switched to other (more profitable) crops and new specialized production regions emerged (sorghum, barley), in part replacing existing ones (barley, rice and cotton). With regard to the mixed and traditional crops, changes in the interregional distribution of production were much more limited. Mostly, there were no specialized production areas at all (maize and plantain), or they existed for climatic reasons only (wheat). Nevertheless, these areas tended to account for a growing proportion of production, something which may be related with market incorporation (potatoes, beans and tobacco).

With regard to the changes in the regional participation in international trade, the following major conclusions can be drawn. Whereas exports in the fifties were completely dominated by coffee, which originated for the greater part in two regions (Caldas and Antioquia), in the sixties a considerable diversification took place (cotton, rice and sugar), which extended regional participation to Atlantico, Bolivar and Valle. The most remarkable changes are however found on the import side. There was a persistent tendency for Cundinamarca, the capital city region, to monopolize international import trade. Its share went up from 31 per cent in 1950 to 49 per cent in 1967. All other regions (except Boyaca and Santander) saw their direct participation decline. Unfortunately, we do not have detailed information on the sectoral composition at the regional level. However, it appears that this change cannot be explained adequately by the urbanization, regional agricultural and industrialization processes alone.

As to the pattern of international net foreign exchange flows, based on the analysis of the trade balances of each region, it can be concluded that, while the number of net contributors increased with a less polarized distribution, the opposite occurred with the net receivers. Consequently, interregional trade must have become increasingly dominated by the capital region as this constituted a way to cover its growing international deficit.

Perhaps a major conclusion of the analysis of sectoral and spatial change in the period is that the evolving interregional division of labour was shaped by the physical and economic integration of the country, the considerable extension of the land frontier and the development of national market organization of industrialized agriculture. If any externally conditioned process is of importance, it is the import substitution process - but with regard to agriculture, not industry.

4. International restructuring and regional differentiation (1967-1980)

In 1968 a number of reforms were carried out which aimed at developing exports as a new source of accumulation and growth, and to this end a structural adjustment of the economy was imperative. The exchange rate regime was changed so as to avoid large balance of payments problems by means of frequent small devaluations (crawling peg). Fiscal incentives for exports were increased drastically, first only for manufactured products but later (1970) also for agricultural ones. New export promotion institutions and funds were created, including free trade zones in the main cities. Finally, the Andean Pact gave an additional export stimulus (Bejarano, 1978). Later governments extended this policy in neo-liberal fashion by considerably lowering the nominal tariffs on manufactured imports. It should be added, however, that the latter policies were also inspired by other events, in particular the coffee price bonanza of 1975/76.

Together with the economic reorientation, an institutional reorganization of the state took place. An administrative reform

expanded considerably the role of national, semi-autonomous public agencies. Some figures on the distribution of expenditures by level of government are quite revealing in this respect. In 1950/52 the share of central government and agencies in total public expenditure was 63 per cent. In 1969/71 this share had risen to 79 per cent (DNP, 1977) and in 1980 it had become 85 per cent (Contraloria General de la Republica, 1983).

The effects of the new economic policy, summarized above, on the growth of manufacturing industry can be seen in the following table.

Table 10. Decomposition of growth in manufacturing by sector and component of demand, 1967-1974 and 1974-1980

	Total change	Domestic change	Export change	Import subst.	Total change	Domestic change	Export change	Import subst.
Light consumer goods	5.35	4.92	0.61	-0.18	5.18	4.64	0.67	-0.12
Consumer durables	9.52	6.42	0.65	2.46	7.95	8.98	1.02	-2.05
Intermediary goods	10.92	10.30	0.92	-0.28	5.47	5.57	0.27	-0.40
capital goods	10.0	6.79	0.35	2.96	6.3	8.67	0.64	-3.04

Source: R. Chica Avella, 1983, table 22, p. 83-84.

It is clear that in both subperiods export has become a much more important source of growth. For the sector as a whole exports contributed 9 and 10 per cent respectively to the average real rate of growth. It should be added, though, that domestic demand did not become less important. On the contrary, it even increased somewhat. The problem was that trade liberalization had a negative effect, particularly in the second subperiod, so that the total contribution of the external sector declined.

Without going into too much detail, it is enough to say here that the pace of capital accumulation slowed down in the second part of the seventies due not only to the world recession but also to the restrictive

policies of the government to curb the inflationary effects of the coffee and illegal drug trade booms (Piedrahita, 1980). The latter activities were the main reason that the world recession only started to be felt in Colombia in the eighties.

The change in economic policy attracted a considerable increase in the volume of foreign investment. By 1974 firms with major and minor foreign participation were estimated to contribute no less than 45 per cent of total manufacturing exports (Arango, 1976). In this respect there is a clear link between the changing participation of Colombia in the international division of labour and the role this played for the foreign firms active in the country.

If we look at the pattern of regional change for the period as a whole it can be concluded that within the industrial core a 're-concentration' occurred favouring the capital city region, Cundinamarca (see Table 6). The Cali region in particular lagged behind. And it is notable that Atlantico in the north (Barranquilla) did not benefit clearly from the export drive. In spite of its free trade zone it continued to lag behind. The trend of 'differentiation within the periphery' also continued very clearly during this period. Bolivar and Santander experienced an above-average growth, which was almost entirely due to their insertion as producers of intermediate resource based outputs (chemicals, oil and oil derivatives).

The effect of foreign investment on the regional industrial division of labour was not simply one of accentuation of trends. In fact it is estimated that, up to 1974, 80 per cent of foreign investment was concentrated in the three principal regions. In this context it is striking to observe that foreign investment became much more important to Antioquia and Valle than to Cundinamarca. The effect was thus opposite to the overall tendency towards re-concentration. As has clearly been shown in Tables 7 and 8 and in Figure 2, all regions except the most developed or core regions, such as Cundinamarca, Valle and Antioquia, became not only increasingly specialized industrial producers, but also came to depend heavily on their industrial export base (Helmsing,

1983b). For agriculture, the new policy orientation aided and strengthened an already emerging tendency. The new policy measures offered new incentives for the expansion of capitalist agriculture.

Now that both manufacturing industry and capitalist agriculture were leaving the confines of the domestic market, price intervention lost much of its rationale. Price control systems were either altered or eliminated altogether and the international prices came to rule more directly the domestic market. For the period as a whole the patterns of growth were influenced by three different processes. Firstly, with regard to the non-traditional agricultural exports, the initial expansion (12 per cent of total exports in 1975) was followed by the progressive collapse of international market prices and skyrocketing prices of chemical inputs. Secondly, the traditional export of coffee was greatly affected by the price boom in 1975 and the subsequent production increase following a frost calamity in Brazil. The share of coffee in total exports, which had gone down to 43 per cent in 1974, rose again to 59 per cent in 1980 (Parra Escobar, 1982). The complex problem that government had to face was to absorb the vast increase in purchasing power caused by the booms in order to avoid an inflationary process and a revaluation of the peso which would undermine the recently achieved export diversification. Exchange controls were adopted and the trade liberalization after 1975 was part of this effort to control domestic inflation and revaluation of the domestic currency. However, the policy failed, partly due to a decline in non-traditional exports as a result of the world recession. The other reason of failure refers to the third major ongoing process in agriculture. That is to say, the stagnation of peasant agriculture.

Several factors need to be considered here. First of all, Colombia had in the late sixties passed the point at which its rural population started to decline in absolute numbers (cf. Johnston and Kilby, 1975). The shares of rural and urban population in 1973 were the reverse of 1951. Rural population was by then only 36 per cent (DNP, 1977). Related with it was the fact that the continued land settlement in the outlying tropical regions no longer compensated the rural exodus in the Andean zone and in the older established tropical regions. Thirdly, the

agricultural policy had, for decades, neglected peasant production. There was no adequate extension or research, credit nor marketing to raise peasant agricultural productivities. Since the extension of the agro-industrial complex had not been fast enough to incorporate traditional and mixed crops into the realm of large scale capitalist agriculture - though certainly inroads were made e.g. in rice, cassava and potatoes - peasant agriculture came to constitute a real economic problem as prices of basic foodstuffs started to rise sharply in the early seventies. In 1976 an integrated rural development programme, which is still being carried out, was initiated.

The changes in the regional division of labour in agriculture in this period are not so easy to establish (Helmsing, 1983a). On the whole it appears that livestock production intensified and was partly displaced in a Von Thuenen-like manner to outlying regions (Llanos and Amazonas). With regard to industrial crops, specialization continued and was accompanied by important shifts from one region to another (rice, sorghum and barley). Production became entirely organized at the national level. With regard to the mixed and traditional crops no such tendencies could be clearly observed except for cassava and, to an extent, maize. If the concentration patterns at the level of each region are examined, it is found that in the core region levels of specialization actually declined. The agro-regions in the north and interior showed marked tendencies towards specialization in a few crops. In the peripheral regions such as Cauca, Norte Santander, Narino and Boyaca, specialization levels which were already lower remained stable or declined. The regional peasant economies that continued to predominate in these regions maintain diversified crop patterns.

With respect to the regional participation in international trade, the following major trends could be observed. Consistent with the changes in the relative importance of coffee exports, Caldas' contribution first declined to an all-time low of 26 per cent in 1974, to

rise again to somewhat below 40 per cent. A similar pattern of change was found for Antioquia - the only core region with a positive international trade balance - although not only coffee but also manufactured exports played a role here. In an opposite manner Cundinamarca, Bolivar and Valle first increased their participation, thanks to non-traditional exports, but later declined. For the remaining most peripheral regions no major change was observed. In table 11, the importance of international exports is measured for each region. Not only is there a very large absolute variation among regions, but there is also considerable change over the period which does not follow a centre-periphery pattern (Helmsing, forthcoming).

The tendency towards a concentration of international import trade, already observed since 1950, continued almost without interruption. By 1971 Cundinamarca concentrated 62 per cent and throughout the seventies this high level was maintained: the region became the only major net receiver of foreign exchange.

Table 11. International export as a percentage of gross product per region, Colombia, 1960 and 1975

	1960	1975		1960	1975
Antioquia	17.4	16.8	Huila	0.6	0.0
Atlantico	3.8	6.5	Magdalena	18.4	25.3
Bolivar	5.8	17.1	Meta	0.0	0.0
Boyaca	1.5	0.7	Narino	7.3	3.8
V.Caldas	71.6	52.5	Norte Santander	44.6	3.5
Cordoba	2.0	1.5	Santander	10.7	1.2
Cundinamarca	2.7	5.1	Tolima	7.6	1.5
Choco	3.7	4.2	Valle	1.8	10.5
Guajira	0.0	1.6	Colombia	17.5	14.0

Sources: Anuario de Comercio Exterior, Dane, Bogota (various years)
Cuentas Regionales de Colombia, Innandes, Bogota

5. Some final observations and conclusions

During the first three decades of the present century Colombia began a process of integration of the various regional economies, aided by the development of external trade and by domestic industrialization. Up to the beginning of the fifties only a relatively small part of the territory and population was affected by these processes. Several regional economies were not yet drawn into a market-based interregional division of labour, when the first stage of the industrial import substitution process was already almost completed and with it the basis of the regional industrial structure.

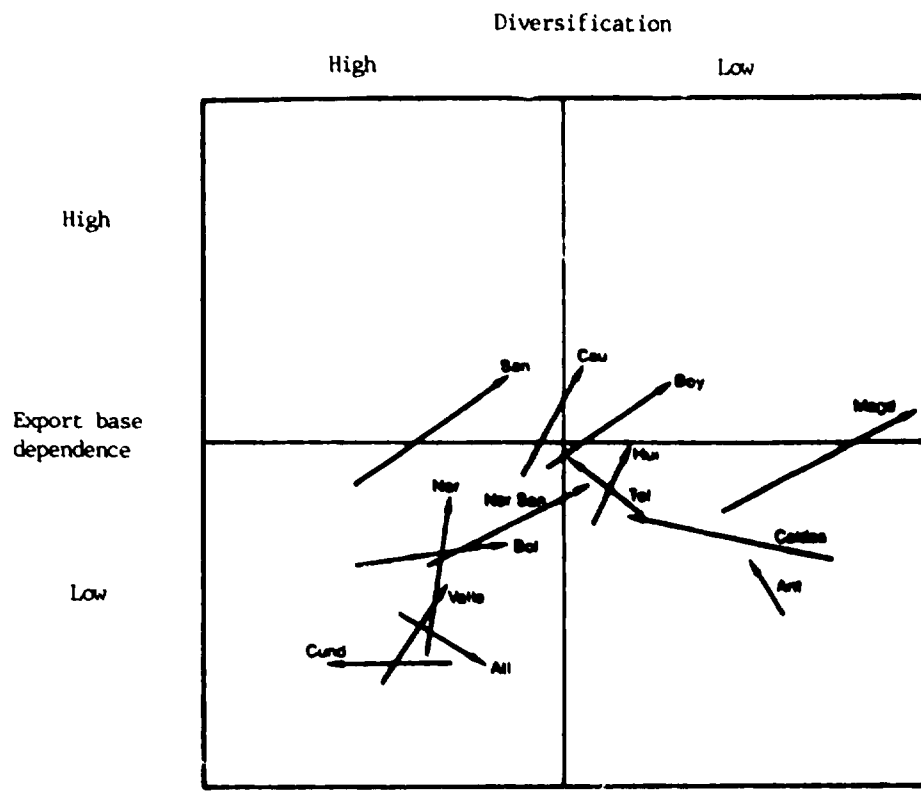
After 1950 some clear changes could be observed in the interregional division of labour and these did not so much arise from externally determined processes of trade specialization, but from physical integration of the country, a considerable incorporation of new land and of existing agricultural regions, and the formation of national oligopolies and markets for manufacturing products. If any externally conditioned trade factor played an crucial role, it was an agricultural import substitution process.

In the third period considered here (1967-80), sectoral growth processes became increasingly regionally selective. That is to say, the continued area specialization in agriculture and the growing importance of domestic and transnational multi-plant firms in manufacturing, trade and services, which operate simultaneously in various regions, were key forces that shaped the regional economies. As a result a growing proportion of interregional trade has become 'intra firm'. This seems to be a fundamental feature of the changes in the interregional division of labour in this period. At the aggregate level, neither core nor periphery advanced or stayed behind in a uniform fashion. Differentiation takes place within each. The centralization in government and in both foreign and Colombian enterprise (in agriculture, industry and other sectors), contributed to increase the leakages and transfer of benefits and resources to core regions so that, macro-analytically, impact multipliers of export growth in peripheral regions declined.

Although it is difficult to come up with definite and direct evidence it must be concluded for the case of Colombia that the effects of the changing participation in the international division of labour are much less evident than expected. Neither the first nor the second theoretical position summarized in the introduction seem to hold in the case of Colombia. The first position seems to be far too simple to capture the complex historical interplay between international and domestic factors in shaping the development of the Colombian regional economies. The second position, while correct in its insistence on the importance of external factors in shaping the regional structure of the country, appears not to be entirely supported by the facts. While in periods of reduced international opening of the economy a center periphery type pattern of regional development did emerge, import liberalization and export growth have resulted in greater differentiation for both core and peripheral regions.

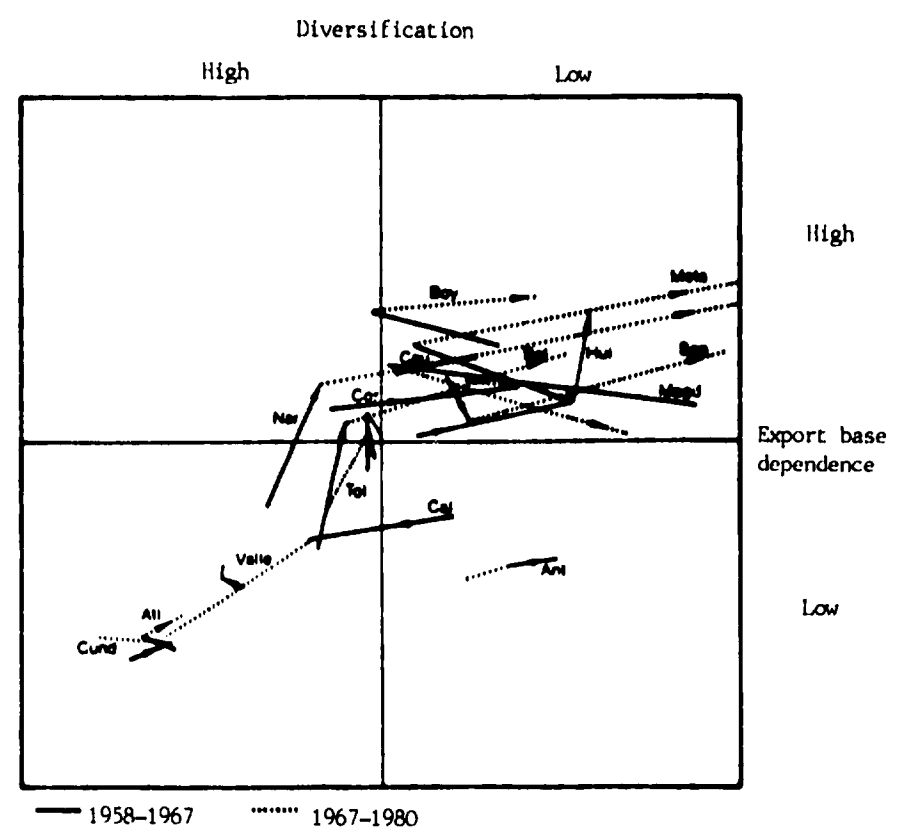
Considerable changes took place in the regional economic structures. Some of these changes can be attributed to the changing participation in international trade. In this context, agriculture rather than industry played a pronounced role. But other factors, such as the physical integration of the country, land settlement and agricultural transformation and the centralization of government and of enterprise, also had a strong impact on the division of labour between the regions of Colombia.

Figure 1: Changes in the industrial export base of Colombian regions, 1945-1958



Note: For full names of regions, see Map 1.

Figure 2: Changes in the industrial export base of Colombian regions, 1958-1967-1980



Methodology; shift and share analysis:

The first two columns give the value added generated by the manufacturing industries. Expected levels of net output at end of period are calculated by applying the national growth rate to each region. The difference between the actual value at the end of the period and this estimated value constitutes the 'real shift' of regional output change vis-a-vis the national average. This figure is presented in column 3. In column 4 the percentage distribution of the total negative and of the total positive net shifts are presented, while column 5 gives the net shift in terms of the 'expected' level of net output, indicating its importance within each region. In columns 6 and 7 the real shift of each region is broken down into the industrial mix (that part of the net shift which is attributable to differences between the region and the nation in sectoral structure) and the residual regional share component respectively. The method is based on the following equation:

$$R(t) - R(o) * (N(t)/N(o)) = \sum RO(i,o) (NO(i,t)/NO(i,o) - N(t)/N(o)) + \sum RO(i,o) (RO(i,t)/RO(i,o) - NO(i,t)/NO(i,o))$$

where, R(o) is the total regional net output at beginning of the period; R(t) is total regional output at end of period; N(o) and N(t) are the same for total national outputs respectively; RO (i,o) is the net output of sector i in the region concerned at beginning of the period; RO(i,t) is the same at end of the period; NO (i,o) and NO(i,t) are the corresponding national sectoral variables.

Methodology, export dependency ratio:

For each region the manufacturing export base has been calculated by the following formula:

$$OB(i) = \frac{Lq(i)-1}{Lq(i)} * O_i \text{ for } Lq(i) \geq 1$$

if $Lq(i) < 1$ then $OB(i) = 0$

where, OB(i) is the export base portion of sector (i); Lq(i) the location coefficient O(i); the total output of sector (i).

After having estimated the export base component of each sector, the export dependency ratio of the region concerned, E(R), can be calculated.

$$E(R) = \frac{\sum_i OB(i)}{\sum_i O(i)} * 100$$

Methodology, export base diversification index:

The index, known as the Gible-Martin index of trade diversification, applied here at the regional level to measure sectoral diversification of the regional manufacturing export base, GM(R), is formulated as follows:

$$GM(R) = 1 - \frac{\sum_i OB(i)^2}{(\sum_i OB(i))^2}$$

where, OB(i) is defined as in table 5. The upper boundary of this index varies somewhat with the adopted number of categories i.e. sectors (i).

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Peter Sjøholt

NEW TRENDS IN DEVELOPMENT PROMOTION IN LOCAL NORWEGIAN COMMUNITIES

1. Introduction

The Norwegian socio-economic structure, like others in the West, has been strongly influenced by functional economic organization, when seen in a regional context. It was formerly characterized by single-company towns, mostly established by international capital to utilize what were considered comparative advantages, primarily cheap electric energy and raw materials (ores, fish and wood). Norway thus became, early in this century, strongly linked to the international division of labour - the export-import ratio reaching approximately 40% of the GNP about World War I. In this process, single local communities in the periphery became important cornerstones of the economy, but at the same time became extremely vulnerable to business cycles and gradually also to deeper structural problems, caused by increasing rationalization and automation and recently also by a new international division of labour. Many of these places were, moreover, so peripherally located that they lacked any potential for tertiary development beyond services for their own populations.

Simultaneously, although the process was slower than in most continental countries and in neighbouring Sweden, the rural communities suffered a strong decline, creating a structural problem over wide areas. Apart from a few favoured areas, Norway was traditionally a country of smallholders; farms were inefficient from an international perspective. Norway therefore saw a considerable transfer of manpower not only from the agricultural sector, but from the countryside on the whole. A host of smaller local communities were left behind and gradually fell below the threshold of being socially viable.

Thus, by the 1950s, problems of regional imbalance were all too obvious. Simultaneously there was a strong political commitment to social equity. Something had to be done, therefore, to cope with the growing regional differences.

2. The traditional approach to redress regional imbalances

Already in the early 1950s there was a growing awareness that particularly the northern part of the country needed a more vigorous economic development if the region was to keep its share of the country's population. To keep the region viable was part of a political and social obligation, and a strategic imperative.

A development fund for North Norway was established in 1952, geographically covering the three northernmost counties (Fig. 1) In 1961 this fund was expanded into a national regional development fund (RDF) with a wide geographical area of eligibility. The areas in question were designated development areas, and could receive tax-free funds, cheap loans and later investment aid (Fig. 1). The instruments were mainly confined to financial incentives and covered only a few trades, above all manufacturing industry. Later, when the financial measures were extended, grants were also made available for major infrastructural improvements linked to development projects. The grants thus came to cover the building of industrial estates and municipal leasehold factories.

The idea behind these measures was that of the Western policy of redistribution from above, an attempt to canalize expansion of more centrally located enterprises into smaller towns and rural areas. Even the growth pole idea was introduced, when the Government designated some such places in peripheral parts of Southern Norway in 1965, the most notable being Namsos, Forde and Kongsvinger (Fig. 1). The strategy mostly favoured the bigger firms with ample resources (see Sørli 1979).

Although Brox (1982) has characterized this policy, particularly in the context of the North of Norway Fund, as a purely functionally oriented strategy, of which the central bureaucracy and single entrepreneurs were the only parties, there was undoubtedly some initial success of the measures, even in a territorial dimension. Hundreds of enterprises moved some of their activities into smaller and more peripheral communities, partly setting up branch plants but also whole enterprises, which became integrated into the local industrial structure

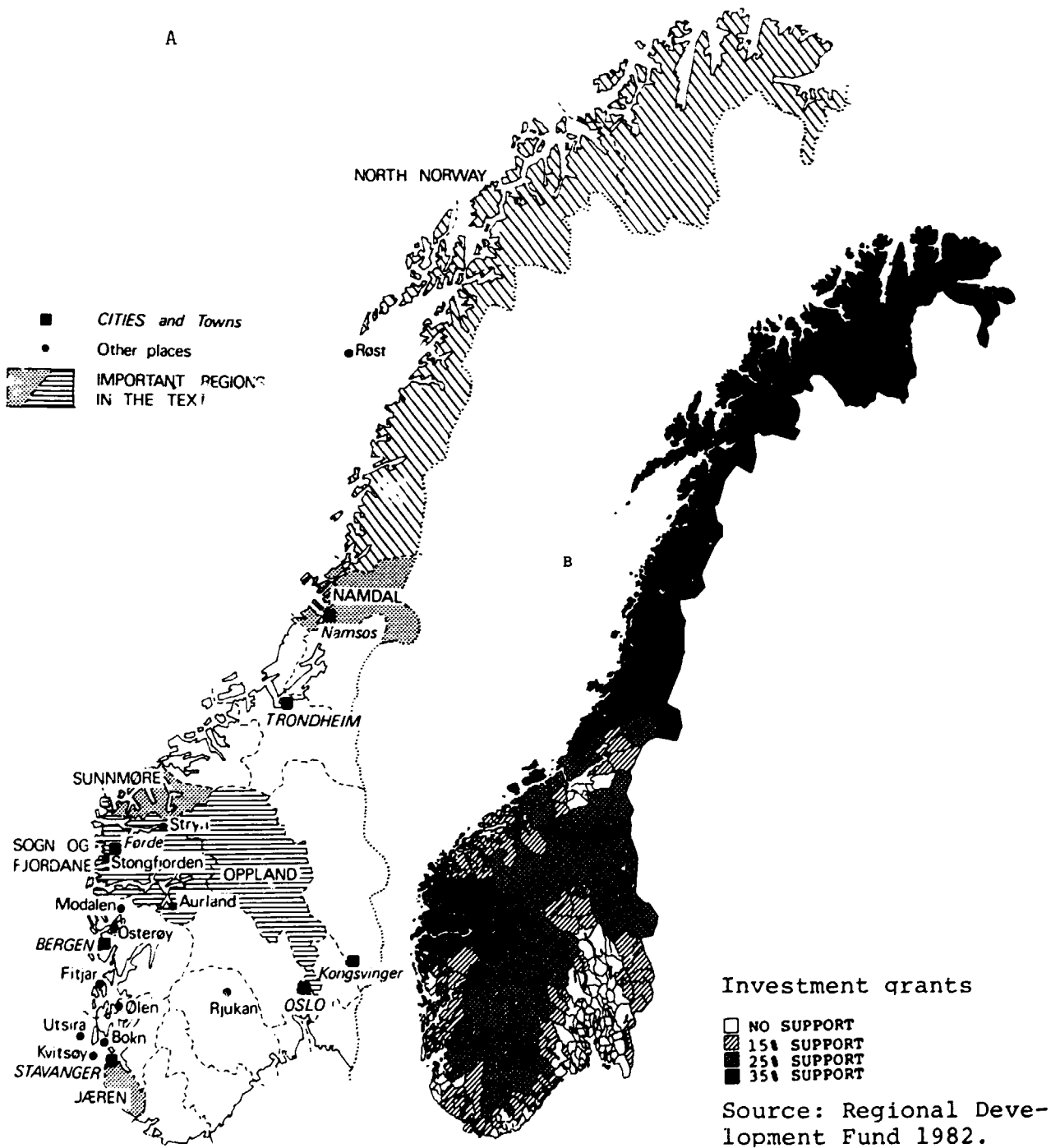


Fig. 1 A) Map of areas referred to in the text
B) Assisted (Development) and Non-assisted areas in Norway

rather than acting as enclaves only. This tendency was particularly widespread when industrial estates were available, development instruments which in Norway were rather peripherally located, or when municipally-built factories could be leased. It must be admitted, however, that many enterprises were located on purely functional criteria with few, if any, links to the regional and local economy. And very many local communities and even contiguous regions in remoter parts of the country experienced no industrial development.

This strategy, belonging mostly to the 1960s and early 1970s, has left quite a few viable enterprises in many rural areas and small towns. In the predominantly rural county Sogn og Fjordane 4,350 jobs have thus been created in enterprises which received large grants from RDF. Naturally only part of the employment can be directly ascribed to the regional measures. For four peripheral counties, including Sogn og Fjordane, Bivand (1984) found an increase of 2,500 to 3,000 employees in industry in the 1970-1981 period which was due to regional policy instruments. It must be conceded, however, that many closures have followed in the wake of the strategy, particularly when regional integration was weak. Some of the above-mentioned jobs have already been lost. The most notable example is the small single-company town Rjukan, where a number of middle-sized branch plants were installed in the late 1960s and early 1970s as a compensation for the cessation of major activities of the original company. Today, all except one of the enterprises have closed down.

3. Alternative approaches to the problem of regional imbalance

It should be emphasized that the above-mentioned regional development style has been counterbalanced to some extent and in some areas in Norway by a long tradition of local entrepreneurship, dating back to the prewar period, partly backed by local and regional financial institutions and developed through successive applications of appropriate technologies. This style of development was particularly true of the Sunnmøre and Jaeren areas. Even though this development was in its

essence a spontaneous expression of local initiative, there existed links to and co-operation with local government, particularly in the provision of basic infrastructure. It should be stressed here that the strongly centralized political and economic structure, of which the Regional Development Fund was part and parcel, has had its counterpart in Norway in a long tradition of local government. Municipalities have enjoyed the right of direct income taxation since 1837. In the areas mentioned municipalities were development conscious in the field of energy provision at a very early date. Thus, when grants from the RDF became available later, these were used more as a means of strengthening the existing industrial structure than as an instrument of attracting outside branch plants. Many of the enterprises thus created have continued developing. Their leaders have shown a remarkable skill of adjusting to, among others, the product-cycle, even supplanting traditional output by high-tech products. Many of the firms are among the most stable enterprises and the most successful exporters in the country today, a few of them even going multinational.

The situation on the Norwegian regional scene by the mid-seventies was very complex indeed. There was, even though not very widespread, a certain initiative potential from below. Simultaneously many single-company towns were exposed to a structural crisis. As a consequence of the new international division of labour and market liberalisation many industries, very often concentrated in particular local communities, were in a precarious situation. For some inland districts this was due to the obsolescence of raw material processing industries and along the coast to cost problems in the shipbuilding industries. In these years offshore oil activities entered the stage and the general cost level soared dramatically. Except in oil-related industries which only in rare cases benefited the Development Areas, industrial development was generally at a low ebb. The structural crisis hit very unexpectedly, both as far as types of industries and localities were concerned. In some places people, following the functional way of thinking, looked outside the local environment for remedies. In others the reactions initiated a new way of looking at development with elements of territorial rather than purely functional organization.

There are some threads linking these new approaches for generating local growth, particularly in the periphery, to the traditional locally based small-scale initiatives mentioned above. Like in the old days the approach is nowhere revolutionary. Developing niches in the established structures, and not primarily changing these structures, has been the goal of the endeavours. More than in the former types of local mobilization, however, political commitment has characterized the process. This change in development style is associated with a generally stronger belief in the political process as a means of problem solving in industrial matters and with greater political engagement at the grassroots. It is tied to a greater local resource consciousness than before, and is simultaneously a result of some decentralization of the governmental and administrative structure. In recent years, moreover, enterprise planners, particularly in the RDF and other parastatal organizations, have made conscious efforts in tracing local entrepreneurial talents and taking care of them.

A development both from below and above, but always implemented at the local level, characterizes this approach, which is a more "unruly" way of attacking problems than the conventional regional policy. It does not fit rules and formalized procedures so easily as the old, institutionalized, redistributive planning process; anyway, the redistributive approach is only valid during a stable growth period. An active search process at the lower level is the hallmark of the new strategies. Whereas the municipality and other local and regional governmental bodies were relatively inactive during the former period, municipal engagement, even enterprise, is a typical response in the present period of industrial and employment crisis.

4. Some examples of approaches to foster and consolidate local initiative

The attempts which, during the last ten years or so, have emerged in the field of local resource mobilization do not lend themselves easily to classification, let alone to a more theoretical evaluation.

There are numerous manifestations and many initiatives seem to be of the ad hoc type, very loosely organized and pursued only as long as they satisfy a real need. I shall confine myself to four broad categories, the main components of which are summarized in Figure 2.

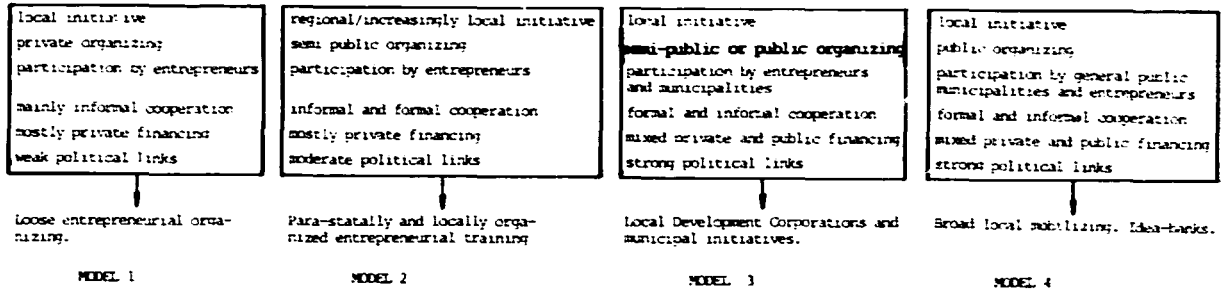


Fig. 2. Four local initiative models.

Mjos and Jevnaker (1978) described the so-called Osteroy strategy (model 1), named after a local informally organized industrial co-operation in an island municipality east of Bergen. Although no other studies have been made of a similar organization in Norway, more examples could be cited, particularly from the areas with long traditions in local entrepreneurship. This is also the case in some areas in Sweden, as found by Johannison (1978).

In the vigorous communities of the Osteroy municipality with their old craft traditions, small manufacturing firms of a distinctive character have developed, the development model being akin to the traditional local mobilization type described above. Most of the enterprises, some of which date back to the pre-World War II days and some of which are offshoots of older firms, have developed strong informal, and sometimes formal communication networks. The former includes subcontracting between firms and some simultaneous purchasing, the latter some examples of formalized sales promotion. Local political links are generally weak, but have been increasing. Some infrastructure for manufacturing has been provided by the local government from the outset.

This type of development promotion might be characterized as a locally induced multi-entrepreneurial model, serving local needs and being to some extent tied to local financial sources and local service. But it has clear limits. Many needs must be fulfilled outside the co-operating units. Most of the forward and backward linkages in the production process, e.g., involve other firms, and capital, technological consultancy, etc.. may even have to be sought beyond the border.

Whereas this relatively informal approach to local development and local viability reflects a relatively long sustained process, most of the other kinds of mobilization are new types and are more dependent on formal organization, although the strategies might well have been ad hoc and informal at the outset.

The next strategy of mobilizing local initiative (model 2) is built on a Swedish model of guidance and training of prospective local entrepreneurs. Adjusted to Norwegian conditions, a programme of group training in business management, sales organization and technological competence was implemented. Among a multitude of applicants, persons were picked out who were considered capable of starting viable businesses and keeping them running. In some cases contact was made with established enterprises as vocational sponsors (Smedal 1979).

This method was first adapted by a parastatal development corporation in West Norway (Utviklingselskapet for Naeringslivet pa Vestlandet), by organizing a so-called "boot-strap pulling project", which resulted in 32 new establishments, mostly in small communities. Thus, new products and an improved industrial environment have come to many communities. The idea was seized by the RDF and applied on a regionwide basis in all at North Norway and Namdal, where a similar project was launched in 1980. By 1982, 75 new enterprises had been started in this area, many of which are by now in a phase of consolidation.

The idea has also spread to single local communities, particularly in West Norway. Municipalities or small organized local groups have approached enterprising persons through announcements or more directly

with an invitation to start a new business. In the case of Modalen (one of the smallest municipalities in the country with 350 inhabitants) prospective entrepreneurs were attracted by offering subsidies. In this community, the procedure has resulted in 5-6 new small establishments in two years, some of which seem quite viable. A similar, but more enterprise-centered project is going on in Stryn, while another project in Aurland failed because of co-operation problems in the local community. A very recent outgrowth of the strategy is a joint plan by the RDF and the parastatal STI (State Technological Institute) to organize permanent guidance of local entrepreneurs at the county level. This measure has also the explicit objective of giving small, prospective local entrepreneurs access to the research and development frontier.

Among the approaches to local mobilization, the development corporation (model 3), organized as a para-municipal body, is also of some importance. Several cases have been reported. The first and most widely cited example was the Rost Development Corporation, located in a tiny, remote Lofoten island (Fig. 1). In the early seventies this fishing community, with a population of about 750, was declining as the result of a growing specialization in the industry and the small population base which made the provision of new infrastructure extremely costly. Through the effort of a local social entrepreneur with wide contacts, and partly as a reaction against the principle of population thresholds in the 1972 Regional Plan for North Norway, the islanders created a development corporation almost overnight. It took care of some crucial repair and service needs in the local community and steps were taken to organize the processing of some of the catch. The initiative was a remarkable success, the population rising from 755 in 1972 to 825 in 1979, mainly as a result of remigration of young people.

An outgrowth of this strategy is a more direct municipal engagement in starting and controlling manufacturing enterprises, mainly small and midsized ones, reported by Aarsaether (1978) from North Norway. He surveyed nearly 200 projects, which led him to the conclusion that in a situation of sheer survival municipalities were induced to take on new roles, paving the way so to speak for entrepreneurial talents to follow up. Aarsaether labelled the model "kommunalisme" ("municipalism"), as

the model builds on the municipality as a political/administrative body. Partly as a response to this local mobilization central governmental support in the field of extension work and consultancy was put at the disposal of northern municipalities in 1979, and officers for enterprise and entrepreneurship were placed in the communities. Although no panacea, mainly because so many preconditions and functional relationships are beyond local control (this became particularly evident in the tougher climate of the 1980s), this approach has released much hidden entrepreneurial talent and spirit.

A slightly different kind of approach, from the outset a territorially organized local mobilization, is represented by the so-called idea-bank or idea-archive strategy (model 4). Initially conceived in the Olen municipality, south of Bergen, in 1981 and extended to two contiguous municipalities in order to obtain government support, the intention was to stimulate the local population to voice ideas on enterprises, service institutions and environmental improvements through an organized campaign at the local level. The essence of the strategy was to transfer these ideas from below, stored in data banks, to entrepreneurs. Implementation was supposed to take place in collaboration with a management group, composed of local politicians and external expertise. As in the second approach, this ensures the evaluation of success or failure, an important element in this type of development promotion. This approach can become specially rewarding if and when firms and institutions can be linked functionally, as in the Osteroy model described above. The idea bank project has evidently had some success in Olen. 40-50 jobs have been generated here since its initiation, though it is doubtful whether this expansion is due to the idea-bank strategy alone. The results in the neighbouring communities seem far more meagre, for reasons which will be commented upon in the next chapter.

Although only a short time has elapsed since the introduction of this local strategy, the idea has spread to other municipalities. The Fitjar project in the same county is under way and in Stongfjorden in the adjacent county of Sogn og Fjordane local associations have assumed the

role of the local government in Olen to map resources and elicit ideas to be implemented at the local level.

To conclude this survey and as a link to the analysis of preconditions for local strategies generally, a mobilization attempt from Sweden, the so-called Krisestad-grupper (problem-solving groups in cities in crisis) should be mentioned. These groups, organized to solve acute problems caused by comprehensive closures, are manned by key persons from the local and regional areas. They took on a more permanent character when the structural nature of problems became clear. The groups dispose of some resources beyond those usually available at the regional level, and have been of great psychological value as they involved legislators and authorities in serious work on industrial alternatives. In a modified form the groups have been transferred to the county level in Norway, notably to Oppland - a county whose industry, in the recent years, has felt the impact both of the new international division of labour and the rise of the cost level in Norway.

After this survey, we can proceed to an analysis of the general validity of the approaches, evaluating their preconditions and assessing factors leading to improvement if not success, and factors restricting the scope of the development strategies.

5. Analysis of some crucial factors in making mobilization of local initiative viable

In the cases where local people have turned to unconventional means of development promotion there has frequently been a background of crisis. This was the case with the initiatives taken in the prewar period referred to above, and bears out Schumpeter's (1912, 1942, 1961) contention that innovation increases as a result of stronger motivation in times of crisis. What is important, however, is not the crisis itself, but the awareness of a threat to the local community. In Schumpeter's model the organization of new activities was restricted to the purely entrepreneurial level as a more or less spontaneous response to the altered situation. According to Lambooy (1984) there has in the

present economic crisis been a growing realization that the organization of the economic process and its external determinants can be influenced, sometimes planned, by conscious efforts. Much of the direct municipal engagement and the promotion of development corporations is in accordance with this presumption.

Mobilization in such circumstances depends very much on the existence of entrepreneurs within the milieu. "Man must take initiative on his own conditions with a territorially limited platform as starting point" (Johannison 1983). The limited success of the idea-bank project in the two municipalities adjacent to Olen, Etne and Sveio, was probably due to lack of indigenous motivation. Business entrepreneurs are naturally crucial. More important, however, are what might be labelled social entrepreneurs. These are persons, mostly operating on their own, who are not only preoccupied with the establishment and management of firms and primarily motivated by the prospect of profit. Their interests are mainly centered on the viability of the local community, and their reward is, in the first place, acceptance by local people. These entrepreneurs are indispensable in the initial phase, making people conscious of what is at stake and thereby mobilizing local involvement. The person in question must, however, also be prepared to lead during a stage of exposure, during the process of seeking legitimacy for the efforts in established institutions. Finally leadership must be prolonged through a consolidation stage, when enterprises are developing a long-term strategy. Entrepreneurship of this type is reported from numerous local mobilization projects. It was the key to success of the first development corporations. It also lay behind the most successful idea-bank project. Of further importance is the development of a certain local (regional) autonomy in a broad sense. In Norway, as in most Western countries, entrepreneurship has traditionally been considered as belonging to the private domain. But these principles have never been rigidly imposed, as an ideology. Unlike in some other countries, absolute barriers to entrepreneurial efforts by local government have never existed. On the contrary, a certain flexibility and ad hoc organization has characterized the Norwegian system. There are, to be true, restrictions on the scope of intervention by local government in

economic matters, particularly when municipalities and counties are dependent on money transfers from the state. But the will to act is the most crucial factor, and an expansion of the public domain in the sense that the local government level has assumed greater responsibility for promoting industrial development has come to be accepted. The solution involving public intermediaries in an otherwise private development process (the right hand model in Fig. 3) has indeed a long-standing tradition in the country, and has often worked well. In many projects certain traits of the lower model can also be found, particularly of what we labelled "municipalism".

1. Private initiative
2. Private intermediaries (financing)
3. Private management

The Liberal Model

1. Private initiative
2. Public intermediaries (financing)
3. Private management

The model of intermediaries

1. Municipal initiative
2. Public intermediaries
3. Public/private management

The model of "municipalism"

Fig. 3 Models of local development.
Elaborated from Teigen 1983.

The political power structure, a centralized versus decentralized political framework, is also important when discussing this type of initiative and implementation. Norway, with its traditionally polarized politico-administrative system - a strong central government and extensive self-government at the municipal level - has strengthened the intermediary, regional level in recent years. This has had implications for decision-making, when granting aid to entrepreneurs and when

fostering closer links between clients and promoters. Authorities on the one hand can discriminate positively by searching for innovation-hungry and particular product-innovating entrepreneurs, to use Stoehr's terminology (1984). On the other hand it has increased the probability that both infrastructural and development planning in municipalities that are too small to voice demands on their own in "a prescribed manner" will be taken care of. Examples can be cited of recent successful, collectively planned regional development measures in small municipalities where the regional (county) authorities have acted as intermediaries. The BUK Commission, covering the three smallest municipalities in Rogaland (Bokn, Utsira and Kvitsoy), is the most notable case and was described by Sjøholt (1979). Substantial local and regional autonomy is also crucial for capital supply and the provision of different kinds of services. This is also desirable for a maximum of intraregional backward and forward linkages in the production process. The maximizing of local flows was one of the notions behind the idea-bank approach, the results of which it would be somewhat premature to assess. It also loomed large in the development corporations. A certain regional autonomy in access to knowledge and expertise is likewise desirable. The recently developed Regional Colleges may be a step in decentralization of R + D functions. They have already functioned as such to some extent, having served both as research and development initiators and transmitters. The most noteworthy example is found in Oppland county, where contact between the college, the county authorities and private enterprises has been intensified to combat the consequences of the crisis.

This leads us to the field of competence, a precondition which is a particularly important factor in local development in our time. In this context competence means something much broader than a personal or a firm quality. As a matter of fact it is also an environmental asset. As stated by two Norwegian industrial researchers, interaction among entrepreneurs is indispensable: the key to success very often lies in entrepreneurs learning from each other and acting as resources to each other (Hernes & Selvik 1983). Competence of the type referred to here comprises both functional, territorial and network competence.

Functional competence means knowing how to manage, plan and develop the business or institution, making it survive and even grow, often in a tough competitive environment. The highest possible level of such competence is needed if the new enterprises are going to be viable under the strains imposed on them in modern economies. This competence includes technological, managerial and marketing skill, the first-mentioned also including an understanding of product-cycles and the last-mentioned not only requiring marketing techniques but also knowledge of markets, as far as future possibilities and constraints are concerned. This functional competence is very often a real problem in local development and must somehow be solved. Besides training programmes as the one sketched under (2) above, an interesting practical innovation in this field in Norway has been the development of local technological centres in recent years. These are organized as associations stimulating the transfer of appropriate technology to enterprises with which para-statal technology institutions like STI have communication problems. The associations can point to some success, although the effects have been rather localized. The INSA association in Sunnmore and TESA in Jaeren have achieved most; in other words, success was restricted to districts with long-standing traditions in small-scale entrepreneurship. Spread effects were minimal.

Territorial competence results from the knowledge of the local economic and social environment and its actors possessed by the social entrepreneur and other key persons in the development process. It enables them to perceive social assets of the community and to put them to appropriate use. It reinforces territorial development in addition to and even at the expense of the functional. This type of competence is closely linked to network competence, which means knowing where to find support, how to get it, and through whom. This type of competence is indispensable when the development strategy includes transferring external resources to the local community - external resources taken in a wide sense, not only comprising foreign capital and branch plants. In the cases where the development corporation model was successful and the direct municipal initiatives were realized, success could very often be attributed to this competence asset. Where it was absent, efforts more often than not came to nothing.

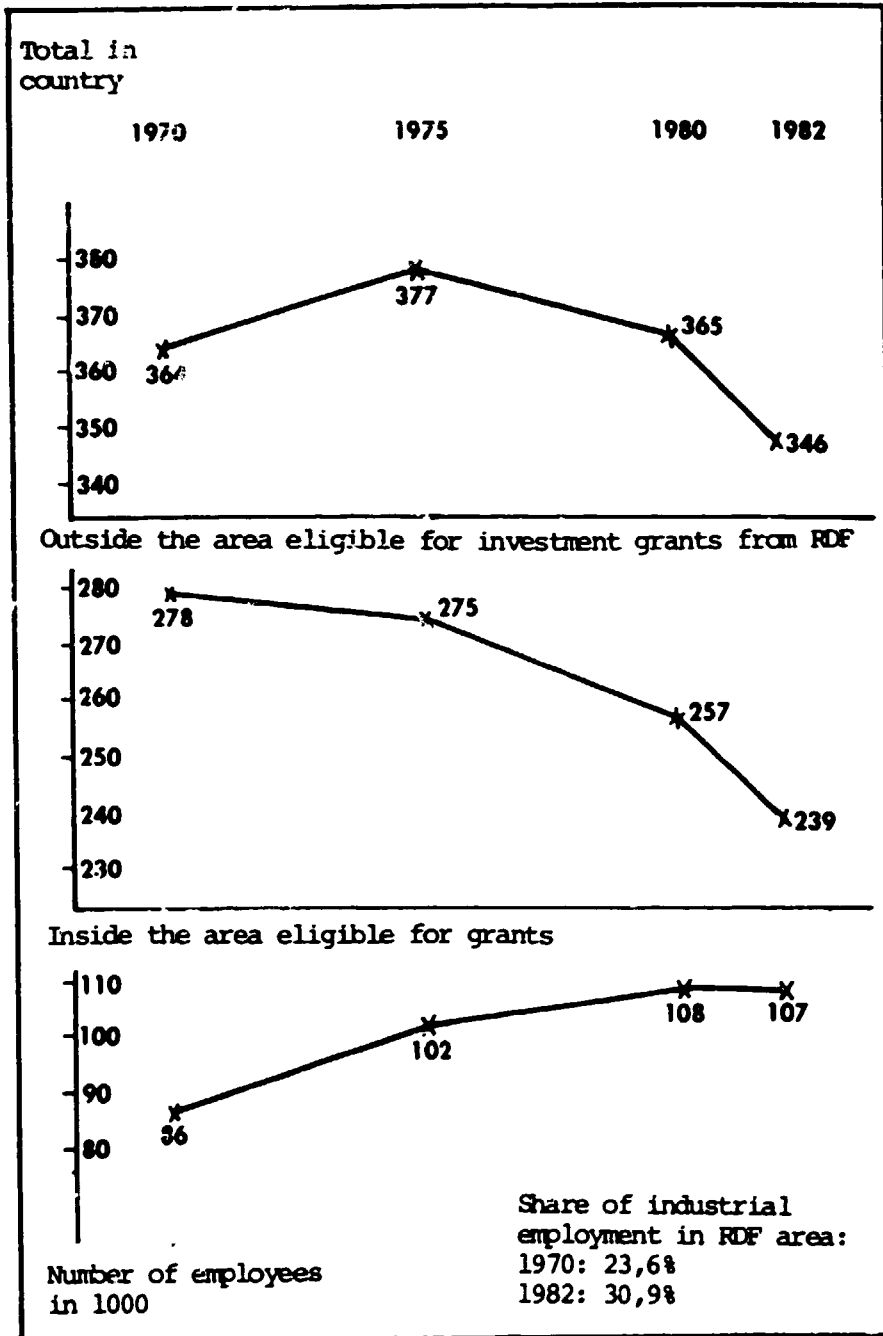


Fig. 4. Development of employment in manufacturing industry in Norway 1970 - 1982.

Source: Aftenposten 22.09.1984.

5. Summary and final evaluation

What I have been trying to show above is not a theoretically coherent alternative system of development promotion. Neither has it been possible to analyse very elaborately the ways of organizing development using the new approaches and how the enterprises function. I have primarily tried to point to some new ways in which small local communities can find a way out of crisis. These are only some of the attempts and solutions.

Despite these analytical shortcomings we may attempt an evaluation. How substantial are the achievements, how robust is the structure and what are the prospects of continuing along this road to go on succeeding?

Many observers hold that the achievements in development areas in Norway are great, indeed. Skogstad Aamo (1984) thus maintains that there has been a substantial growth in manufacturing industry over the last ten-year period in these areas, an epoch which we labelled stagnant, even a period of decline for the country as a whole (Fig. 4). He also argues that closures have been fewer in these areas than elsewhere and that samples of accounts show the existence of many economically sound enterprises. Aamo operates with very aggregate figures, however. It is impossible to extract development due to local initiative from other types of strategies used. Aarsaether (1980) is more in doubt. Very little is achieved, in his opinion, in relation to the resources which have been used. His conclusions are somewhat onesided, however, pertaining mostly to the strategy of municipalism.

Generally speaking, it seems that much of the local initiative is marginal indeed. On the other hand little more than marginal growth is needed in many of these communities to keep them viable. In the municipality of Modalen, referred to above, only a handful of small enterprises are sufficient to keep the local community going. Important is a genuine belief that something can be done, a belief still found in many places. The Rost experiment cited above is a good case in point where a re-consolidation seems to have taken place.

It is furthermore characteristic of these projects and the enterprises which have followed in their wake, that they are often characterized by innovation rather than reproduction of traditional skills and what traditionally were believed to be comparative advantages. Even electronics and information systems are part of the new industrial structure. Development is not only confined to manufacturing industries. A concern for modern services and for making the local environment more competent is part and parcel of some of the new strategies. In a more general Norwegian perspective the impact may have been marginal. Growth in Norway, as in other countries, has largely taken place in central locations in recent years, the oil economy reinforcing development in the Oslo region (particularly R + D functions) and the Stavanger area (broad oil-related activities). However, some of the new promotion efforts, if applied at the right time and in the right place, may open important niches in more marginal areas.

An important question is whether the enterprises and facilities which are created will endure the strains of the 1980s, with the return to more market-oriented approaches. It depends on the robustness of the structure and the ability of the leaders to adopt new ideas and systems and on their position at the R + D and marketing frontier. It is probable that limits to local approaches which have a territorial rather than a functional basis will remain as long as society at large, the frame of reference for local development, mainly consists of institutions, organizations and decision-makers working from functional premises. Neither do some of the measures reviewed, especially those of the "bootstrap-pulling type", automatically produce good industrial environments, concentrating as they do on the single entrepreneur.

Entrepreneurs with success stories, even in the present tough industrial climate, are generally people belonging to a network of industrial collaboration, concentrating on early product-cycle products with a growing international demand. These industries, still relatively scarce in Norway as compared to neighbouring Sweden, are often the result of local initiative, even in small places. Aqua-culture or fishfarming is a good case in point, an industry increasingly being linked to

regional research and development. Niches of high tech production, particularly in engineering, provide other examples. Products are often sold in combination with services and are competitive internationally, in spite of the high cost level in Norway.

The most obvious local initiative failures are those involving traditional products with rather limited markets. Substantial parts of the clothing industry, e.g., were unable to maintain their position during the trade liberalization process which strongly exposed high-cost Norwegian producers to foreign competition. But export industries which were insufficiently aware of international market developments have also been hit, mainly by competition [C-countries]. The Rjukan failure cited above is an example of both. Yet even in traditional lines of production well-managed enterprises have remained successful.

If we are going to cultivate development in a territorial context, which in my opinion is necessary if local initiative is going to succeed in the long run, this will also depend on finding good territorial reference units. Municipalities may form such a level, but that unit is not without its problems, because we shall still be confronted with a scale problem: municipalities in Norway vary from a few square kilometres to 9,500 km² in size, and from two hundred to 450,000 in population. Thus there is a necessity for more integration in case of the small communities and for differentiation in case of the larger ones. This is necessary to exploit scale economies, not only in production, but also in producer services such as R + D and financing and in infrastructure. This type of planning and development promotion however does not fit into the formal administrative system, which is more concerned with control and regulation than with the generation of development. The moulding of a system should, in this case, be left to sound judgement rather than strict rules. This is, in essence, what the new regional development style sketched above represents. Although elements of this approach were inherent in earlier regional development strategies, the recent trends reflect a more consistent flexibility, more fit for industrial readjustment. It will, therefore, be interesting to monitor more closely the impact of this development in the years to come.

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Jean Claude Perrin

LOCAL DYNAMISM, THE INTERNATIONAL DIVISION
OF THE LABOUR AND THE
THIRD INDUSTRIAL REVOLUTION

1. Introduction

"Local dynamism vis-à-vis the international division of labour resulting from the Third Industrial Revolution" could be seen as a new episode in the controversy "development from above versus development from below". But the new techno-scientific revolution, which profoundly modifies the process of spatial-economic specialization, and the renewed interest for local dynamism (particularly strong in France, since the introduction of decentralized planning) invite a new approach which transcends the usual research objects in this field.

Territorial dynamism, whether one focuses on systems at the local level or on the region, is generally considered to consist of a driving force and an induced dynamism. The latter only amplifies the impulses generated by the driving force, in a quasi-mechanical way. The basis of the driving force is formed by the export activities of a territory, nowadays integrated in the international, global division of labour. The only option territories have, according to the theory of comparative advantage, is to specialize in those products for which they now possess comparative advantages (or have the lesser disadvantage). In other words, they are forced to adapt themselves within the limits set by their resources (man-made rather than natural, nowadays) and the conditions created by the technological system. Local dynamism, active local policy, has no place in traditional analysis. Given the unequal territorial distribution of resources, nation-states thus have to intervene to support the least favoured local systems, e.g. by providing infrastructure or by relocating industries. The industrial system and the nation-states are considered to be the two sources of "development from above", the only recognized way of development.

The confrontation with this type of thinking which obscures the existence and even the possibility of local dynamism, gave rise to a new concept: development "from below". It manifested itself most clearly, so it was thought, in local dynamism. To avoid logical and analytical traps, however, this antagonistic way of thinking must be overcome, and the models which have generated it must be abandoned. "What we need to know about regions and regional change will come less from prevailing approaches than from approaches that are still in the process of emerging" (Malecki 1983; cf. also Stöhr 1982).

The approach to local development which is presented here is based on a model which the author has called "functional-territorial" (Perrin 1983c, 1984). The analysis here will continue along that line while the paradigm will be defined more closely. In "Planning for an urban world" (1974, p.25-27), Meier writes on the subject of urban systems (which represent a type of local system):

"Cities (as social reactors) produce the opportunities that stimulate the appearance of new autonomous units called organizations, with larger-than-human capabilities. Human organizations are created much more readily in the city because density promotes frequent interactions among individuals... vital active groups will achieve a higher degree of organization since the transactions of city life produce both an accumulation of knowledge and a diffusion of it... In an urban milieu organizations are continually formed and others dissolve... Over time, we see an enhancement of the number and variety of human organizations in cities; they can be organizations of organizations as well, which try to cap the pyramid with still further organization".

We propose to analyze local dynamism along the same lines, as an organizational process with the following basic characteristics:

1) It is a process which basically manifests itself in the formation of microstructures (enterprises, associations, etc.); these are its modus operandi. But their establishment does not take place in a vacuum, by "entrepreneurs" only. The territorial organization provides a sort of "matrix" in the sense of ecological models, where the ecosystem to which individuals belong provides a matrix for their lives.

2) Territorial and local dynamism generates micro- and macro-organizations through the same organizational process, a "dual" process of micro-macro structuring, so to speak. In a synchronic view, micro- and macro-structures are interdependent - this is not brought out by the usual concepts and methods. Therefore one is forced to resort to metaphorical language: the local environment can, e.g. be compared to a magma. The intervention (energy, know-how) of certain particularly active agents (entrepreneurs, e.g.) combines elements of this magma to form micro-organizations which then crystallize into

micro-structures. Depending on the quality of the magma, this is a more or less intensive process which is more or less rich in technological content. If, e.g., micro-structures already abound in the local environment and/or if a macro-organization is operating in the area (e.g. a planning agency), the crystallization process can be quicker and may have a stronger high-level technology content. Diachronically, it can be hypothesized that micro-organizations play an important role in acquainting individuals with the global organizational process, and that this determines the capacity of a local system to improve its macro-structure.

3) Technological progress is part of the general organizational process, which it imbues with the capacity for self-generated development, a fundamental property of systems' dynamics. Technological progress within the general process is generated in a systematic, non-random way through experimental methods. Individual and collective, cumulative learning is also part of the general process. These developments are generated both by micro- and macro-structures.

4) To pass from potential to actual self-generated development, however, the guidance of planning, of the "organization of organizations" (Meier), is needed. Planning completes the organizational process; it therefore has to harmonize with the existing micro- and macro-structures.

5) This organizational paradigm and the type of symbiosis it establishes between micro- and macro-structures is associated with meso-analysis.

Two case-studies on local dynamism will serve to refine this paradigm. The first, dealing with Alès, some 100 kilometres northwest of Marseille, focuses on a predominantly industrial environment. The second deals with the predominantly rural environment at Apt 50 km north of Marseille. Both have been the subject of publications (Chevalier 1983, 1984; Perrin 1983c, 1984) and of studies by the research team of the Centre d'Economie Regionale of the University of Aix-Marseille III. In both cases, the local dynamism is almost independent of the dynamism of adjacent territories, which makes it easier to isolate its specific characteristics.

In both examples, two fundamental characteristics of local dynamism will be highlighted:

- local systems do not just incorporate technological progress but also produce it;
- local dynamism tends to reinforce itself.

These general characteristics are differentiated in time and space. In chronological analysis, the effects of the Third Industrial Revolution have to be taken into account. Spatially, the only distinction made in this case is between a predominantly industrial and a predominantly rural system. The analysis takes place at the meso-level to highlight the symbiosis between micro- and macro-organization, that is, the unity of the organizational process.

2. Local dynamism and the restructuring of an industrial basin (Alès, 1960-1983)

During the 1950's, the Alès Basin was a medium-size industrial area, a typical product of the First Industrial Revolution, situated in a marginal region of France. Its structure was the product of more than a century of economic change (Perrin 1983c, 1984; Lazzeri 1983), but it was still characterized by the extraction and processing of natural resources. The spatial polarization of these activities was the result of the geographical proximity of iron, bauxite and salt reserves and of the energy resource of the first generation of industries: coal. These formed the basis of the engineering, chemicals and building materials industries and of some textile manufacturing; vertical integration, however, was limited.

The crisis of this industrial area was in the first place the result of the almost complete closedown of the Cevennes coalmines in the framework of government energy policy from the 1950's onwards. In 1954, more than 15,000 persons, or almost 50 per cent of the labour force (agriculture included) of area under study and more than 32 per cent of the total labour force of the arrondissement worked at the coalmines. In 1980, only 1,200 persons - 2 per cent of the total labour force - worked in the sector. To these 14,000 jobs

lost the employment loss in related activities (forestry, etc.) must be added. The employment crisis was aggravated by the loss of jobs in agriculture resulting from the modernization which took place during the same period. Obsolescence affected the whole industrial structure, the whole local economy. How did restructuring take place?

Two key issues will now be studied from the point of view of local dynamism. First, the question of the incorporation of technical progress (the motive force of restructuring) and of the new specializations which are its concrete expression. Second, the strengthening of the autonomy of the local system in its relation to increased external contacts. In both cases it will be shown how recent innovations linked to the Third Industrial Revolution are integrated.

2.1 The promotion of technological progress and new specializations

a) Stages in restructuring (cf. Table 1)

- Large (dynamic) local enterprises in the engineering (Ducros, Gard, Saft) and chemicals (Rhône-Poulenc) branches with a long tradition of innovation have continued to develop more specialized and advanced products.
- The establishment of large- and medium-size subsidiaries of externally-controlled firms belonging either to the more developed segments of the textile branch (clothing - Eminence, Furon, Cacharel, Hom, Levis), or to the electric goods branch (Merlin-Gérin, Crouzet, Câbles de Lyon, etc.) - a newcomer in the region (a result of spatial redeployment), which, however, is represented by mass production using low-qualified labour.
- The recent establishment (since 1975) of electric goods plants which are still externally controlled but produce more technologically sophisticated goods and uses better qualified labour (Alsthom, CGE).
- The establishment of medium- and small-to-medium sized plants, externally controlled, which belong to highly diverse sectors and produce specialized goods using new technologies and a qualified labour force.

- From 1979 onwards, small-to-medium size local enterprises which export from the region are involved in this process.

b) The methods of restructuring: analysis of a meso-process.

The establishment of enterprises using sophisticated technologies is at the same time a micro- and a macro-process. The interaction of these is relatively complex because the enterprises, the micro-structures, operate in a double environment. They are on the one hand associated with their sectoral environment which has a transterritorial economic structure - from forward and backward linkages to the whole industrial system - while on the other they intervene in a local environment enveloped in a regional territorial environment which itself is enveloped in a national territory.

The decision to establish an enterprise, a decision taken on the micro-level, results from a strategy which relates the characteristics of the sectoral environment to the advantages of various territories. From the point of view of the local territory and the existing industrial structure, an enterprise establishing a plant representing an advanced branch or technology effects a "branching out" (Perrin 1984). If the decision leads to success, it will of course be imitated. New plants will be established (imitation, from a micro-view, diffusion from a macro-sectoral and macro-territorial point of view). Beyond a quantitative threshold, the general industrial structure of the area changes qualitatively: the general structure changes under the influence of behaviour at the micro-level. Conversely, each new configuration of the local system facilitates new offshoots. The conditions under which the process can become cumulative and its various elements converge will be described below.

Meso-level analysis allows an understanding of the dual nature of evolution. On the one hand, evolution is discontinuous: innovations introduced at the micro-level produce separate off-shoots. But there is also a continuity in the sense that each of the development stages of the local system sums up all previous stages.

c) Specific actions of the local system

The local system of Alès has also played an active and direct role in technological innovation, jointly with the enterprises and in a way consistent with the sectoral organization of the industrial system. Examples are:

- The promotion of technology transfers among enterprises

Outside the formal subcontracting networks, know-how and experience is transferred from enterprises (usually rather large) which have already been involved in factory automation (CNR, Merlin-Gérin) to interested small- and medium-scale enterprises (SME). Spatial proximity favours communication and transfers of this kind. The contacts have, however, been made more systematic through the intervention of the planning agency charged with the supervision of the restructuring process, ADIRRA (Association pour le développement industriel et la reconversion de la région alésienne). A "creativity club" has been established with, among others, a working group on automation. In co-operation with specialized national and regional institutions and groupings, ADIRRA also organizes the transfer of experienced personnel of outside firms to establishments within the Basin.

- Local activities in the field of high-level services and education

This being a well-known type of activity we will only mention the work on new technological processes carried out at Alès Technical College for industries in the Basin.

2.2. Reinforcing autonomy

A second important characteristic of local dynamism is the reinforcement of its autonomy, which is an essential property of systems, local or otherwise. It has nothing to do with isolationism; on the contrary, it is the result of an organizational process the development of which is linked to the development of external contacts. The conditions of this complex process change as a consequence of the Third Industrial Revolution. Two aspects of the process deserve special attention:

a) The formation of a locally-based "population" of SME's

This phenomenon, which has been observed at Alès (cf. Table 1), deserves special attention in that it is typical for all medium-sized local systems. It is natural enough for SME's created by local initiative and serving a regional market to have their headquarters in that zone. But for export-oriented firms established by outside entrepreneurs it is rather unusual. Initially an exceptional phenomenon at Alès, it has repeated itself over and over again during the past five years, at the end and partly as the result of a wider evolutionary process (see below). At the same time, a burgeoning of business services (especially of the consultancy type) could be witnessed, a result of the demand created by the multiplication of local enterprises. Their existence in turn has made the area more attractive for industrial SME's.

The presence of a group of local SME's (industries and services) must be regarded as an essential factor in a medium-sized territorial system and for a greater internal dynamism of this system. The location of decision-making centres in Alès reduces the external dependence of enterprises and enhances their integration in the local environment, particularly their participation in formal or informal modes of collective planning. When there is a sufficient number of local enterprises, they form a "population", an entity which addresses its survival and development problems spontaneously and organizes itself to deal with them.

b) A "local environment" effect superior to traditional sectoral and polarization effects

With the Third Industrial Revolution, a new type of specialization emerged. Table 1 shows that the enterprises which were created at Alès during the last ten years are active in many different fields; restructuring has been "all-round" (cf. Perrin 1984). The new type of specialization and its contribution to the spatial division of labour cannot be explained in terms of sectors (and branches) or of polarization, as in the past. The Third Industrial Revolution has made industrial SME's more footloose, and R and D activities which are among their basic resources have become mobile as well and can be mobilized by local systems (Perrin 1984, Planque 1983). The

general characteristics of the local environment are also important for SME's employing relatively highly qualified labour.

In the case of Alès, micro-(business) organization and local macro-organization are well-adapted to each other. The enterprises in the survey exploited the size of the Basin well. A new unit can become integrated in the industrial structure without losing its identity. Male and female specialized and qualified labour are available. The Basin's age guarantees a sound industrial work routine. Technical and high-level education have a good reputation and a long tradition and have proved adaptable to new technologies. The interviewed managers highly value the entrepreneurial environment, which is composed of a sufficient number of small, medium-sized and large units. The labour market, as a consequence, is not dominated by a few firms, and therefore has every chance of remaining flexible and open in the long run. Small- and medium-size enterprises do not find themselves isolated; they can be sure that their voice will be heard, especially in the entrepreneurial associations. Before enterprises establishing themselves in the area can actually benefit from the good business climate, there is the problem of "entry" into the Basin. In Alès an agency assists entrepreneurs in finding good locations, submitting and following up requests for the proper type of financial assistance, and introducing them to professional associations. It also helps to settle employees from outside the Basin. The setting for everyday life, finally, has to be taken into account as well: a dynamic medium-size agglomeration, renovation which has erased the mining landscape, of the Cevennes and the Mediterranean, the proximity of cities like Montpellier, Nîmes and Avignon - all these amenities are highly appreciated by qualified personnel and managers.

These various properties and their combination within one territory are not the result of chance (Gould 1984, Cloyd 1984, Oakey 1984, Paelinck 1984, Potter 1984). As has been shown elsewhere (Perrin 1983c) restructuring in Alès had been pioneered by ADIRRA, a unique organization in its associational set-up. It arrived at the proper planning method by conscientiously learning from past experience. A "think tank" of this kind, both the product and the instrument of collective organization, assures that the strengthening of territorial autonomy becomes an ongoing process.

3. Local dynamism and the regeneration of a rural zone - local planning in the Pays d'Apt^{1/}

The analysis of local dynamism can also be applied to the regeneration of a rural zone. The problem confronting local dynamism in Apt, as in Alès, is the restructuring of a stagnating economy. During the past decades the decline of traditional life in a predominantly rural "pays" characterized this relatively remote micro-zone. As in the first case, local dynamism will be defined as an organization process during which micro- and macro-structures are developed in symbiosis, incorporating technological progress in a way which allows the local system to become a co-producer of this progress, not just to adapt. The case-study of Apt, then, presents evidence on different but equally significant forms of local dynamism. Attention will focus on the way in which the creative capacity of local society had been restored. Micro-structure building has not been based on enterprises (as in Alès), nor has it been undertaken by the local government. In Apt a third type is found which is the result of a specific planning process. Analysis will again concentrate on two characteristics of local dynamism: the reinforcement of autonomy and the incorporation of technological progress. How does a declining rural area become creative again by itself? How is this creativity deployed at the technological level?

3.1 Restoring local creativity: a third type of planning and micro-structure building

Two stages can be distinguished. At first, there was a new type of micro-organization in which the planning "collective" learned to run a project. This embryonic organization became the basis for the growth of local dynamism in a second stage.

^{1/} The Centre for Regional Economics (CER) at the university of Aix-Marseille has participated in this micro-local planning experiment, a pilot project both at the regional and national levels, since the start. A staff member was involved full-time in the decision-making process. Progress reports covering five years provide an in-depth study with a wealth of details and a basis for methodological discussions with the planning group (cf. Chevalier 1983, 1984).

a) Stage one: the formation of a supervisory association

To function properly, the "collective" which initiated local planning - originally a simple working group under an elected chairman - had to acquire a more formal structure. It chose an original institutional form, the association. It established a concrete objective, the supervision of a project. It worked out a non-technocratic way of functioning which was radically different from the usual planning procedures. Its various aspects will now be reviewed briefly.

i) A micro-organization representing the whole local system.

The group is a collective in the sense that it consists of permanent representatives of all the institutions which constitute local society: council members, businessmen, representatives of the local government departments involved in the project, technical counsellors of local investment promotion agencies, representatives of the principal parastatal and government institutions (Chambres Consulaires, the Conseil Régional) and a staff member of the Centre for Regional Economics of the university of Aix-Marseille for scientific guidance. All participants are volunteers, and their motivation guarantees a dynamic atmosphere.

ii) An original institutional structure.

Not only the traditional sectoral and administrative framework was discarded; the same happened to the planning commissions where these consultations usually take place. The association, a more neutral, egalitarian, free form of organization which would be better suited to stimulate creativity and collective involvement, was chosen instead. It seems paradoxical to use a private organization for a public activity. But to break with the local networks of tutelage, hierarchy and domination, to create new conditions for constructive communication which respects the autonomy of the participants, this was necessary. The association as an organizational form also entails greater flexibility in the execution of projects and in tackling the environmental constraints. When a project has been carried out, an association can be easily dissolved. Associations determine their goals, operating and funding methods themselves. This very open structure forces the

members to be creative; anyway, benefits and responsibilities are shared by all. Given the high degree of freedom, an association can both produce the best and the worst results; a concrete objective should therefore guide the activities of the members.

iii) The objective: vertical integration in the ceramics branch.

The characteristics of this project, notably the way in which it integrates the activities in the private sector, will be stressed rather than the reasons for its selection. It contrasts with the common French method of more or less direct, mechanical intervention in private enterprises by public authorities using the carrot-and-stick method.

The objective the planning group (transformed into the Association Céramique du Pays d'Apt-ACPA) set itself was the reorganization of the whole economic process in which declining local enterprises were involved, from the production of basic inputs to marketing. Production units which contributed their experience to the design of the project benefited from scale effects, mutual assistance, the technological renewal of intermediary activities (cf. 3.2) and from infrastructural improvements and services provided as part of the overall plan. Thus, private and collective interests coincided.

iv) A non-technocratic planning method.

In France, and generally speaking in all centralized systems, planning is confronted with a major obstacle: the rigid specialization separating the parties in a planning operation, the consequence of a division of labour which is reinforced by centralization. Those who conceive projects (scientists), decision-makers (politicians) and actors (civil servants, entrepreneurs, trade unionists) are involved in separate tasks. Generally, scientists and civil servants combined impose their models on, and block the true participation of the others. The result is a technocracy, something the ACPA has managed to avoid becoming. With the assistance of the research team, experiments have been made with a non-technocratic project organization method, which has been the subject of a study (Chevalier 1983) and a full report (Chevalier 1984). Through its collective set-up and the all-inclusive nature of its project, ACPA is both a micro-organization and an embryonic macro-organization. Its

incubator role with respect to local planning has resulted in the remarkable development which took place during recent years.

b) Stage two: the development of organizational dynamism

- Combining micro- and macro-structure building (see Diagram 1).

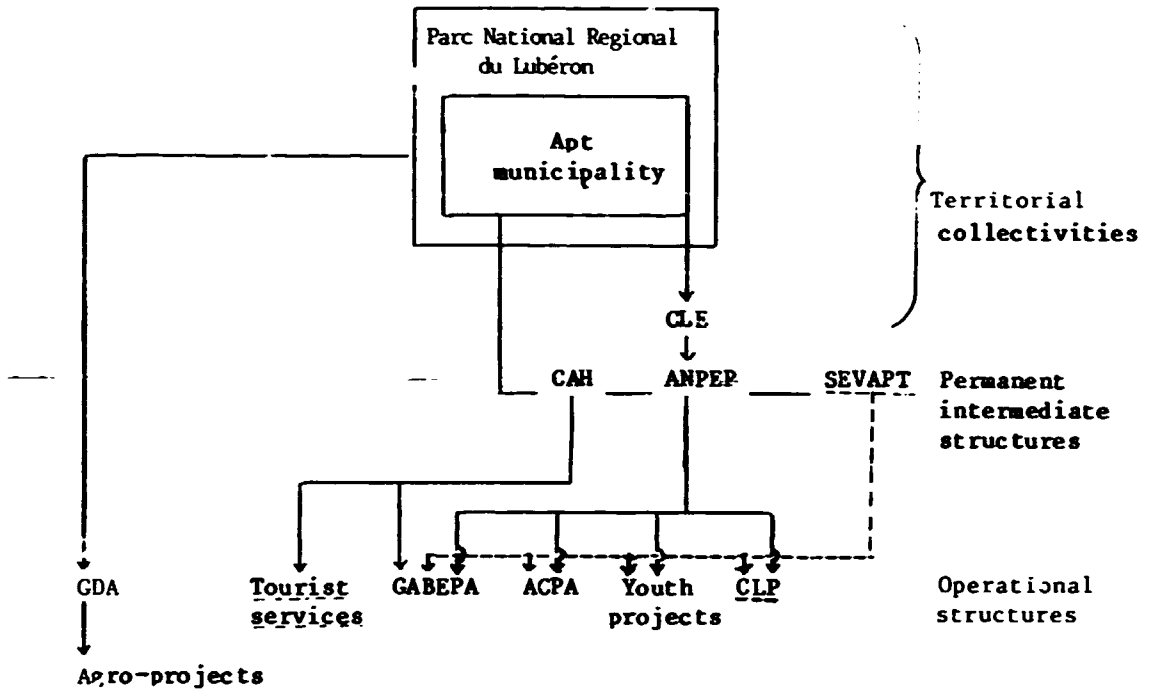
Micro-structure building manifested itself in a multiplication of units:

- Project groups (below in the diagram). ACPA was followed by groups working in other branches: construction (Groupement des Artisans du Bâtiment du Pays d'Apt - GABEPA), agriculture (irrigation projects carried out jointly with specialized agencies: the Groupement de Développement Agricole - GDA - and the Société d'Aménagement Hydraulique du Canal de Provence), tourism (expansion of the activities of the Tourist Agency).
- Service organizations (middle level of the diagram): educational and training services (the task of the Association pour la Formation Professionnelle et l'Education Permanente - ANPEP - is to improve the adaptation of vocational training to local needs and to stimulate local dynamism through permanent education), spatial planning (Collectif Aptésien pour l'Habitat - CAH). A financing agency (SEVAPT) and a communications systems centre (Centre Informatique Polyvalent - CIP, cf. 3.2) have also been planned.

The macro-structure for planning and development consists of the following components (see Diagram 1):

- the improvement of the most important services;
- the tripartite Comité Local pour l'Emploi (CLE) which is charged with a coherent employment policy, employment schemes and vocational training;
- connections between the various activities.

Diagram 1. Apt - micro- and macro-structures in local planning



Explanation of abbreviations: see Table 2.

-- Projected organizations

Source: Adapted from Chevalier 1984, p.57.

CLF, an institution created by the central government, has been made more effective through its inclusion in this integrated system; it also widens the scope of local planning because it introduces a trade-union component (trade unions are represented in CLE's) and expertise on employment problems.

- Intra-institutional mobility of participants - a key factor
(see Table 2)

The creative process described above is partly the result of productive planning methods mastered by the various units. Another factor is the great mobility of participants, which has ensured a transfer of competence and know-how from old to new organizations. The exemplary case of Apt proves that

technology transfer, which is more and more the heart of development policy (especially in the new French Development Plan), can only be successful if those with experience who are its actual agents are integrated completely and over a long period of time in the organizations which are to be transformed. This mobility will have to be institutionalized, because the transfers take place between the private and public domains and between production units, research, training, and planning organizations. At Apt, technology transfer and mobility take place as follows:

- Those who have gathered experience in the project groups move on to the service organizations (especially the ANPEP); this process is then repeated among the service organizations.
- Temporary assignment of experts from service units (trainers, spatial planners, financial and computer experts) to units carrying out projects.

3.2 The incorporation and stimulation of technological progress

The impact of "development from above" models is so great that the capacity to incorporate and promote technological progress is thought to decline with the size of a territory. The Apt micro-zone proves that this notion is incorrect. Technological progress is incorporated in many ways and the contribution of a territory can be very important.

- Integration of technical progress in production

Diagram 2 shows how the restructuring plan for the ceramics branch aimed at expanding the intermediate-level activities in the branch. The projects include a clay treatment centre and local subcontracting of intermediate inputs, using technologies which will improve quality and lower prices to make local products more competitive. ACPA has relied on outside expertise from specialized firms to design and build these units, but, supported by local enterprises, has retained control over the project. The irrigation projects will benefit from the experience and competence of the Société du Canal de Provence and from the support of nearby research centres of the Institut National de la Recherche Agronomique (INRA).

Table 2 Mobility of participants

<u>From</u>	<u>To</u>
Long-term	
DNRL	ANPEP
Apt municipality	ANPEP
Apt municipality	ACPA
Apt municipality	GABEPA
Apt municipality	Tourist services project
GDA	Agricultural projects
ACPA	ANPEP
ANPEP	CLE
ANPEP	Ceramics restructuring programme
ANPEP	Youth projects
Ceramics restructuring programme	ANPEP
Youth projects	CLE
Experts' assistance	
ANPEP	Ceramics restructuring programme
ANPEP	GABEPA projects
ANPEP	Tourist services project

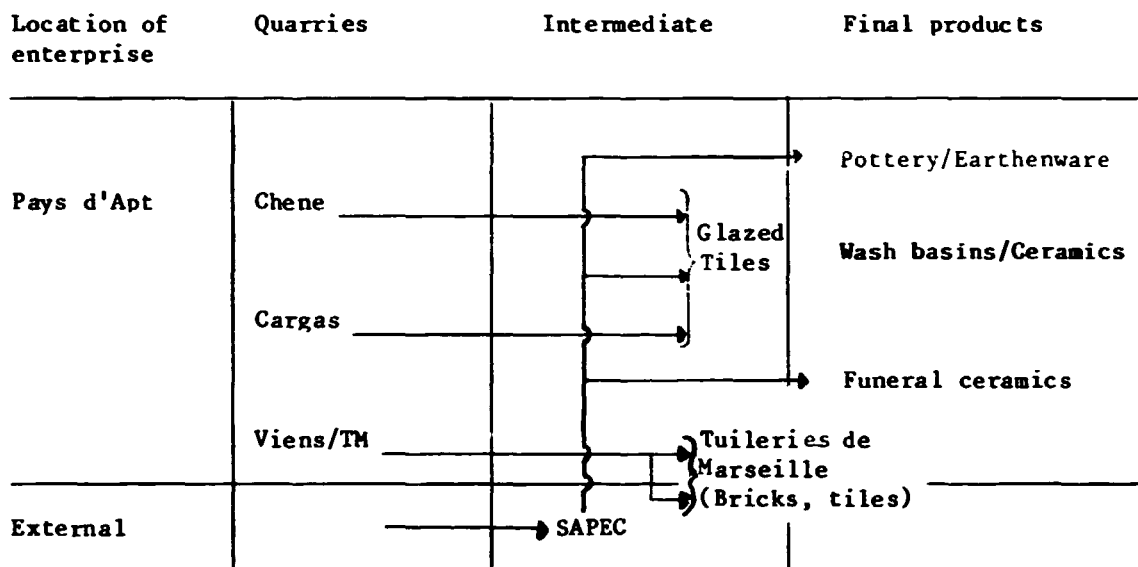
Legend:

ACPA : Association Céramique du Pays d'Apt
 ANPEP : Association pour la Promotion de l'Education Permanente
 CAH : Collectif Aptésien pour l'Habitat
 CIP : Centre Informatique Polyvalent
 CLE : Comité Local pour l'Emploi
 GABEPA : Groupement des Artisans du Bâtiment du Pays d'Apt
 GDA : Groupement de Développement Agricole
 SEVAPT : Société d'Exploitation et de Valorisation Technique d'Apt

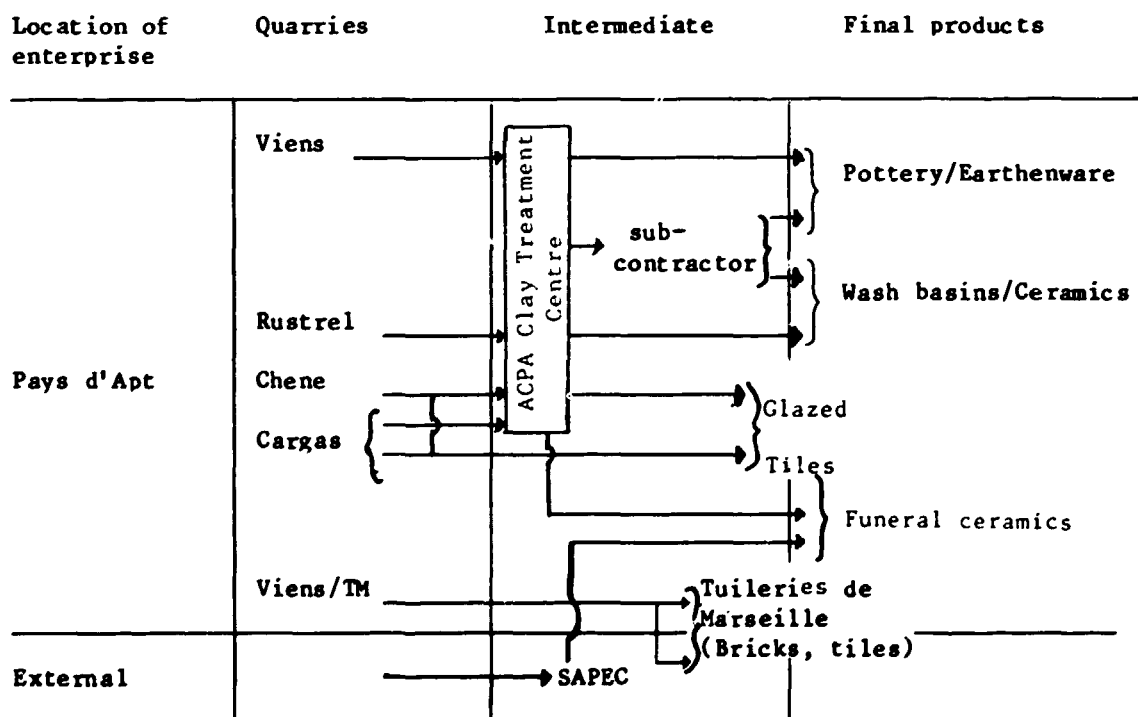
Source: Chevalier 1984, p.73.

Diagram 2. The ceramics branch

Before restructuring



After restructuring



- Technological progress in the services sector.

For a small, remote territory like Apt, the projected highly advanced Centre Informatique Polyvalent is quite remarkable. Its tasks will be both to acquaint the population with the information industry and to provide services to firms. It illustrates the willingness of this micro-zone to adapt to new technologies and its understanding of the fact that development is not just a matter of material and financial resources, but more and more also a question of human resources and know-how.

3.3 Decentralizing planning

Scientific progress cannot only be applied to the production process but also to all aspects of organization. Decentralized local (economic and spatial) planning is a new, complex organizational problem (Perrin 1983b). The Apt experience and its contribution to planning in general are of great importance in this respect. The urgently needed fundamental change in planning methods, which could not be brought about successfully at the national level because of the rigidity of centralized administrative structures and accepted planning models, was accomplished in a local framework. It may indeed have been easier in an integrated community (the "pays" is the territory of everyday life), where close contacts permit continuous communication and guarantee social control.

4. Conclusion: Local dynamism and creative destruction

The present industrial revolution once more shows that technological progress accelerates the obsolescence of existing structures. Territorial systems are forced to restructure, just as enterprises. The outcome can be taken as an indication of the level of dynamism. Restructuring has to be carried out in a planned fashion, but the inadequacy of the technocratic approach and of the tools of macro-economics force local planners to formulate their own paradigms and invent their own tools.

Local dynamism has been defined here as an organizational process taking place on both the micro- and macro-levels. The proper analytical methods therefore have to be found at the meso-level. At that level two case studies

of local planning have been made. These studies go beyond the usual observation of a phenomenon from the outside: the research team was completely integrated in the local planning process, especially at Apt, and has participated in it from the beginning. These are experiences rather than studies.

Experience shows that, in contrast to what is commonly thought, local systems (i.e. small territories) are not incapable of dealing with global technological evolution or with the global division of labour. They do not have to endure the consequences mechanically but can be creatively involved in these processes (Maillat 1983). It has been shown here that both in industrial and in rural areas local dynamism can reinforce local autonomy whilst external contacts become more intensive.

A few words about the problem of "creative destruction", which is generally associated with restructuring. It is often used in a quite dramatic way in descriptions of regions which prospered during the First Industrial Revolution and which have not only been left behind by new industrial regions but also have to face the "savage" competition of the new industrialized countries in what used to be their specialty (Mucchielli 1984). But creative destruction is a permanent and natural fact of life and can be handled well at the local level, in the smallest socio-spatial unit. Only at the higher spatial level (the region, e.g.) does creative destruction seem destructive only. This would also seem to hold for enterprises: what for an SME is a permanent adaptation process becomes a redoubtable problem for a large firm. Large entities, it appears, have more trouble adapting. Is the real problem of many regions not that their traditional industries have been monopolized by a few large concerns and that government has intervened to keep alive these declining industries? Both these factors prevent the activation of territorial dynamism. The best thing to do for these regions is not to bet on the intervention of large external enterprises or to rely on unrealistic development plans, but to systematically return the freedom to be creative to the local economies of which regions consist.

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Frank Moulaert and François Willekens

**DECENTRALIZATION IN INDUSTRIAL POLICY IN BELGIUM:
TOWARDS A NEW ECONOMIC FEUDALISM?**

1. Introduction

Apparently, State industrial policy in Belgium has undergone some major changes since the end of the Second World War.

In the 1950s and 1960s, the Belgian Government followed the general policy trend in the Western economy to liberalize trade and capital movements. As of the 1960s, industrial policy began to play an important part in a strategy which was meant to improve the industrial structure of the country as a whole. A conceptually rather simple and geographically quasi-indifferent system of subsidies and infrastructure works served to attract foreign firms importing new technology, thus contributing to the "national expansion" and the "transformation" of the Belgian industry, which was (and is) overspecialized in basic materials and semi-finished goods. In the middle of the 1960s, the crisis in the coal mines and the textile industry, which hit the regions with different intensity, made it clear that the geographical dimension of the "expansion laws" was too weak. Regions which suffered a structural economic crisis needed an extra investment support. Thus, in 1966, a strongly discriminative and selective regional expansion law was voted and applied. In 1970, a new, less selective expansion law and other industrial policy instruments, meant to speed up innovation in technology and enterprise organization, were established and integrated into a national economic planning programme. But industrial development very soon showed the ineffectiveness of this policy, which caused dissatisfaction among social groups with often divergent regional roots. This dissatisfaction strengthened the call for regional decentralization (regionalization) and liberalization - in reaction to national centralization and State intervention, respectively - in industrial policy.

Thus, in the course of the last 30 years, the cycle of industrial policy has moved from liberalization to stronger State intervention and back to liberalization and from a national approach to a regionally flavoured policy, to a call for a true regional approach. However, when we wrote at the outset that "apparently", industrial policy has undergone some major changes, we have done so because we were not sure of the effective character of these changes. The following questions come to mind:

- Laws and regulations have changed. But has the impact of industrial policy, especially with respect to the complaints uttered by the different pressure groups, become more effective?
- Have laws and regulations changed in response to the major structural needs of Belgian industry, or rather to lobbying by the dominant pressure groups?

What is the real impact of industrial policy on industrial development? Has it provided an answer to the disintegration of the national industrial tissue caused by the changes in the international division of labour?

- Do social scientists, when examining the impact of industrial policy, not confuse the impact of industrial policy on industrial structure with the rhetorics on this issue proclaimed by pressure groups or government authorities?

We hope to provide a partial answer to these questions.

2. The position of Belgian industry in the new international division of (industrial) labour

Until the end of the 1950s, Belgian industry kept its traditional structure based on basic metals, metal products and textiles. This structure characterized the social formation which once led the industrial revolution on the European continent. Post-war economic growth was low as compared to other Western industrial countries.

The real post-war take-off for the Belgian economy came around 1960, when direct foreign, primarily US, investment began to transform the economy into a trade and production "relay" for US enterprises in their regional European network. Their investment policy partly turned industrial Belgium into a centre for products feeding or originating from recent product cycles, such as automobiles, electric and electronic home equipment, synthetic fibres, petroleum derivatives and their finished products. While the restructuring of the old industrial sectors was endlessly delayed, the new sectors began to constitute the modern, dynamic part of the industrial structure.

This structure acquired a more and more international character. The "relay" function gave an enormous impetus to exports to other countries in the West European region; but at the same time it implied strong international backward linkages with the US, from which country the transnational subsidiaries imported their advanced means of production (Coomans 1981, p. 81 f.).

The traditional sectors (steel, metal products, textiles, etc.) also became increasingly dependent on the neighbouring countries, both as outlets and as furnishers of technology and means of production. All this forcibly led to an extreme openness of the national economy vis-à-vis the rest of the world. Significantly, the share of exports in GDP rose from 32 per cent in 1958 to an average 45.2 per cent in the period 1968-1977 (EEC: from 19 per cent to 24.8 per cent). The negative consequence of this internationalization process is the relatively decreasing importance of interregional trade flows. A comparative illustration of international versus interregional trade flows is given in Tables 1A and 1B. But the disintegration of the industrial tissue is more ominous: the dominant spatiality of production branches is no longer Belgian, but international. International in this specific sense that the spatial structure of the production of advanced products, high technology production and production of (computerized) machinery more and more transcends the boundaries of the Kingdom of Belgium. In addition, the control of industrial capital rests more and more with foreign firms and financial groups. One-fifth of Belgian industry is under direct American control; in Flanders, about 60 per cent of industry is controlled by foreign or mixed groups (Coomans 1981, p. 82; Polekar 1982, p. 32). Foreign capital's control of Belgian industry explains to an extent why the more progressive part of industry has only limited access to markets outside Western Europe; these are the protected markets of other daughters of the same transnationals which have made direct investments in Belgium. Of course, limited entry to third world countries and to North America is also connected with the fact that the traditional branches of Belgian industry are in direct competition with base and intermediate production in the NICs and with the traditional sectors of US industry. On the whole, the Belgian industrial structure is typical of a formation with an intermediary function which has lost control of the production of high-technology capital equipment and hence, has lost its grip on its own industrial development (cf. Palloix 1978). This poses severe problems for domestic industrial policy:

Table 1A

Interregional and international trade flows as a percentage of Gross Regional Product at factor costs of the importing region

from	to	Flanders		Wallonia		Brussels		Foreign	
		1965	1976	1965	1976	1965	1976	1965	1976
Flanders		-	-	8.4	30.8	11.5	35.9	-	-
Wallonia		4.0	9.6	-	-	15.7	13.6	-	-
Brussels		3.9	9.7	5.4	11.9	-	-	-	-
Foreign		26.2	70.6	23.5	60.9	8.2	52.4	-	-

Source: Van Waterschoot, et. al. (1973), (1979).

Table 1B

Interregional and international trade flows as a percentage of Gross Regional Product at factor costs of the exporting region

from	to	Flanders		Wallonia		Brussels		Foreign	
		1965	1976	1965	1976	1965	1976	1965	1976
Flanders		-	-	5.0	14.4	3.7	7.3	24.0	66.3
Wallonia		6.7	20.7	-	-	4.5	6.0	23.3	53.2
Brussels		12.0	40.1	9.9	27.5	-	-	13.7	31.5
Foreign		-	-	-	-	-	-	-	-

Source: Van Waterschoot, et. al. (1973), (1979).

"...national industrial policy is made more and more difficult by these new spatial configurations of industry with their concomitant chains of dependency, loss of autonomy, external determination of the realization of capital, disruption of the coherence of the national productive system and the multiplication of bottlenecks for which no domestic solution exists" (Coomans, 1981, p. 26).

But at the same time, it is an urgent challenge, because:

"Country with a long industrial history which is relatively small must respond to the new configurations of transnational capital with a national industrial policy; otherwise, the uncontrolled effects of these polarizing configurations will, in the long run, lead to a major industrial regression for such a country" (Coomans, 1981, p. 126).

We will see in section 4 whether Belgian industrial policy has given an answer counterbalancing the threat of industrial disintegration; or if, instead, this policy has followed the logic of international capital, thus channelling government funds along the new spatial network of investment decisions.

We will now discuss some elements of a theory of the functioning of the State, in an attempt to acquire a better understanding of the place of industrial policy, its effectiveness and political acceptance or legitimization.

3. Some elements of a theory of industrial policy

3.1 State, social formation and political régime

To deal with Belgium's industrial policy, we need some elements of a theory of the State and its institutions.^{1/} The following is based on our interpretation of Mathias and Salama (1983) and O'Connor (1973, 1981). Mathias and Salama distinguish between the State and the political régime. According to them, the State, in a capitalist society, guarantees and helps to establish capitalist relations of production. It does have its own goals, but in the present context we will concentrate on its role as a mediator in the class struggle (representing, in the final analysis, the interests of capital) and as a supporter of capitalist development. In its latter function, it provides an infrastructure, eases the consequences of economic crises,

^{1/} For more details on the theory of the state and its institutions, see F. Moolaert and F. Willekens "Decentralization in industrial policy in Belgium: Toward a new economic feudalism?". Working Paper No. 6, John Hopkins, European Center for Regional Planning and Research, Lille, 1984.

stimulates their restructuring functions, supports the development of new technologies, etc. State intervention takes on various social forms, depending on the mode of accumulation and on the dynamics of class struggle in its diverse aspects and in its manifestations on the political level. This is the realm of the political régime.

This theoretical concept is incomplete in the sense that it restricts the concrete social forms of the State to the intermediary role of the political régime. Other aspects of the social formation in question are not taken into account. In fact State intervention can be influenced by the concrete forms of all social relations in a society: relations of production, as well as of reproduction and cultural interaction. Opposition to e.g. an economic policy, will therefore not only depend on factors directly relating to the political régime: the material well-being of individuals in various social groups, interpersonal relations, political and ethnic ideologies, cultural identification and religious conviction also play a part. Moreover, widening the concept of social relations does not necessarily mean violating the concept of the dominance of the economic structure (Markusen, 1983, p. 33 f.); rather, it offers an interesting perspective from which to examine the relation between the economic and cultural-ethnic aspects of a regional political movement.

3.2 From political struggle to public intervention: a thread analysis

The way from political claims via political struggles to public intervention is usually long and complex. Analyzing the dynamics of interaction between the functions of the state and the concrete forms of social relations (including the political régime) in social formations will help to understand them. Obviously, we cannot study all details of these dynamics and we will confine ourselves to those elements which are relevant for a better understanding of Belgian industrial policy and its regional manifestation. We have made an attempt to summarize the priorities in our empirical approach by way of a "thread of analysis". Our study of theories of public intervention and our value judgements, substantiated by empirical findings, have inspired us to guide our analysis along the following lines:

With regard to interest groups:

- a) Industrial policy measures are, among others, the outcome of political interaction (conflicts and co-operative efforts) between capital and labour;
- b) The interests of capital and labour are predominantly defended by institutionalized interest groups, i.e. employers' and bankers' associations and workers' or employees' unions;
- c) There is often a strong divergence between the rhetorics used by the pressure groups and the real goals which they pursue;
- d) The position of the capitalist lobby has been dominant throughout, especially in periods of cyclical economic crises;
- e) The interest groups are not homogeneous. Both employers' and labour organizations are more or less fractioned along lines which go back to different stages of the development of capitalism in the Belgian social formation. The spatial configuration of these different stages of accumulation to a large extent coincides with the spatial configuration of ethnic and cultural relations between groups of population. But it also partly coincides with the "regional" distribution of direct investment by transnationals in Western Europe;
- f) This coincidence has fostered a regional struggle (regionalism) (cf. Markusen 1983, p. 40), in which ethnic and cultural differences are confused with the dynamics of industrial take-off and decline in Flanders and Wallonia;
- g) The internationalization of production has not eliminated the strong ethnic dimension of this struggle.

With regard to political issues:

- h) The following issues are at stake in industrial policy:
 - The sectoral distribution of national government funds for industrial policy;

- The spatial allocation of funds (regional and national levels, interregional distribution keys);
- Politico-ideological values behind such major policy options as collective or private, democratic or centralized decision-making and selective or global approaches.

The strategies selected to deal with these issues have important consequences for the choice of policy instruments (e.g. tax cuts versus subsidies or shareholding by the State).

i) Issues and pressure groups may change over time. Value judgements may change if their functional effectiveness with respect to policy goals changes;

j) Policy decisions and their implementation are not merely the outcome of the class struggle. The executive levels and State institutions (parliament, ministerial departments) are also involved;

k) During economic crises, long-term public intervention to find profitable outlets for capital is hard to distinguish from short-run crisis policy meant to soften the pain of restructuring; this tends to foster disagreement between defenders of subsidies to old sectors and the propagators of exclusive support to new, progressive sectors.

In the next section, we will make an attempt to use this framework to reconstruct the making of Belgian industrial policy. We will examine:

- To what extent it embodies the interests of pressure groups (including the "autonomous" State and administration);
- Whether it has merely followed the "natural" course of the internationalization of capital; and
- To what extent there is a divergence between the rhetorics used by pressure groups and State institutions and the real impact of industrial policy.

4. A historical reconstruction of industrial policy

We will now try to explain the concrete development of industrial policy in Belgium on the basis of the theoretical elements developed in section 3.

Since most scholars are not familiar with the social formation of Belgium, we will first provide a diagram of the most important pressure groups and political parties, together with factors which explain their historical dynamics.

4.1 The actors: socio-economic pressure groups and political parties

In the 19th century the industrial revolution on the European continent started in two coal and steel basins in the southern, French-speaking part of Belgium (Wallonia). It gave birth to a prosperous bourgeoisie, settled in Brussels, a predominantly French-speaking enclave in the northern, Dutch-speaking part of Belgium (Flanders). The bourgeoisie controlled capital groups organized in holding companies and affiliated banks, with one leader and a fringe of smaller holdings. National capitalism reached its zenith at the beginning of the 20th century (Goorden 1982, p. 6-21). The main opponent of the new Belgian capitalist class in the early industrial era was a strong socialist movement which, in Wallonia, had certain anarcho-syndicalistic roots.

In the first half of the 20th century, a modern textile and metal industry emerged in rural areas in Flanders. Industry here was organized in small companies and only weakly controlled by the holdings.

The growth of the harbour of Antwerp (Flanders) generated a prosperous service sector, where the holdings and especially their banks were better represented than in small-scale Flemish industry. Thus in Flanders a rather diffuse network of small private enterprises with direct or indirect links to the holdings arose and gradually became more powerful (Goorden 1982, p. 22-34). At the same time, in the rural and semi-industrialized parts of Belgium, a religiously-based social-democratic movement with a rather well-organized labour union emerged.

Figure 1: Social map of pressure groups and political parties in Belgium

		Religiously oriented		Non-religious	
		Social pressure group	Political party	Social pressure group	Political party
Labour	Dutch	Christian Labour Union MOC-ACV	Dutch-speaking Christian Democrats CVP	Socialist Labour Union FGTB-ABVV	Dutch-speaking Socialists SP
	French		French-speaking Christian Democrats PSC		French-speaking Socialists PS
Capital	Dutch	Belgian Entrepreneurs Organ. FEB-VBO	Flemish Entrepreneurs VEV (a)	FEB-VBO	VEV (a)
	French				
					French-speaking Liberals PRL

(a) Flemish entrepreneurs are also members of the Belgian entrepreneurs organization.

The unequal development over time and space and the different sectoral distribution of the activities of capital groups explains why some of these groups began to take divergent stances. Especially the more independent fractions of the Flemish "network", which were also organized in a regional entrepreneurs' organization, have taken more and more divergent positions in the discussion about the regional distribution of costs and benefits of Government expenditures and regulations. Nevertheless, capital has remained quite homogeneous in its rhetorics with regard to the ideal socio-economic model for the Belgian society.

Superimposed on the conflicts in the economic sphere, other conflicting interests exist. The 19th century ideological conflict between religious and non-religious groups remains unsolved and the cultural linguistic differences between the regions, strengthened by differences in economic development, have become a permanent source of political conflicts. The main interest groups and political parties could be mapped out along three conflict lines: capital versus labour, religious versus non-religious and French- versus Dutch-speaking regions (Huyse, 1981) - see Figure 1.

After World War II this structure acquired its present form through the regional splitting of political parties. This is mainly to be interpreted as an answer to the rise of regionalist parties in the 1960s, when ethnic contradictions flared up again. These parties receive electoral support of discontented voters of the biggest parties in the various regions (Christian-Democrats in Flanders, Socialists in Wallonia and Liberals in Brussels). These "one-issue parties" force the regional fractions of traditional parties to take more definite stances on ethnic issues, which ultimately leads to the splitting of these latter parties.

4.2 The liberalization era (1945-1959)

a) Policy issues

From 1945 until 1948 national economic growth was very high because Belgian industry, specializing in basic products and semi-finished goods, delivered a substantial part of the materials needed to rebuild the European continent. But as soon as the impetus stemming from reconstruction was over,

the growth rate lowered significantly. The disadvantages of overspecialization in products with slowly growing markets and the underspecialization in growth industries (automobiles, electromechanical products, petro-chemicals, etc.) became more and more apparent in the 1950s: slow growth, high cyclical unemployment and structural unemployment in semi-agricultural regions, where birth rates and expulsion from agriculture are high (see Lamfalussy 1961, p. 10-15).

b) Policy instruments

All political parties, supported by the employers' organizations and labour unions, came up with the same rather simple answer. They follow the trend set by the United States to liberalize trade and capital movements. The main US Government arguments for promoting this policy also hold for Belgian traditional industry: realizing economies of scale by serving bigger markets and exploiting competitive advantages in the formerly closed markets of the colonial blocks. Moreover, growing competition on the home market fostered industrial adjustment to new demand patterns. Direct State intervention in investment decisions was completely rejected.

In this liberal, commercial view, the need for regulation of monetary and financial problems and of competition between national and international capital groups arises (Boyer 1979, p. 50 f.). These problems can only be handled by supranational organizations and regulating agencies, and therefore the Belgian Government has always been a strong defender of European integration. At the national level, capital-labour relations are regulated by the integration of the labour movement in the socio-political system through the institutionalization of collective negotiations over wages and work conditions and the granting of strong advisory competences over social policy.

c) Consequences

This economic policy was questioned by the strongest fractions of the socialist labour union, which have their base in the traditional industry in Wallonia, where the need for industrial reconversion to safeguard standards of living was most sharply felt. These fractions asked for more control by the State over industrial development through nationalization and planning (FGTB 1954, FGTB 1956), demands which culminated in a major political strike in

1960-1961 against the "free-market" policy. It had very limited political results and even weakened the position of the radical fractions in the socialist movement, to the advantage of tendencies favouring integration in the "mixed" economy. The radical fractions now coupled their claims for structural changes to claims for regionalization. This change in their political and union programme was largely brought about by the virtual absence of the Flemish labour movement in the 1960-1961 strike. For the Walloon socialist labour movement, a more autonomous Wallonia seems to be the only way out of the structural crisis of its industry (Vandenbroucke 1981, p. 149-151).

4.3 The economic expansion policy (1960-1965)

a) Policies: issues and instruments

To counter the widespread discontent about slow growth and high unemployment, the incumbent Liberal-Christian-Democratic Government began to display a more selective economic policy in 1959 (CCI 1959, p. 64-83). A rather simple and geographically quasi-indifferent system of investment subsidies was established to channel industrial restructuring into new growth sectors and to promote adaptation to the Common Market system (Law of 17 July 1959). This instrument also meant to attract international productive capital, in particular US corporations seeking to benefit from the new European market. The Government attempted to exploit the good geographical position of Belgium within the EEC and the reserves of (semi-)skilled and highly productive labour. It enhanced these locational advantages by public expenditures for infrastructure works, graduate education and scientific research (see Table 2).

Table 2

Some government outlays in percentage of GNP

	1950	1955	1960	1965	1970	1973	1980
Subsidies and capital to enterprises	0.9	0.5	2.4	1.6	3.0	3.5	3.8
Transport infrastructure	2.2	1.6	2.6	3.3	4.6	5.3	5.4
Graduate education	2.0	2.4	4.0	.8	5.0	6.6	6.4
R & D	0.1	0.2	0.4	0.6	0.7	0.9	0.8

Source: Ministerie van Financiën, Functionele en economische classificatie van overheidsuitgaven.

The institutionalization of the labour-capital relations reaches a climax from 1964 on with successive interprofessional agreements on direct and indirect wages and work conditions. A pragmatic social consensus on economic development is reached. The so-called "end of ideology" seems to be near in Belgium. This can partly be explained by the success of the new economic policy, and by the unprecedented economic boom of the first half of the 1960s which even caused severe labour shortages (Moulaert 1975, p. 344).

b) Consequences

The success of this active expansion policy did not only strengthen the fractions in the labour unions that strive for integration of the unions in the capitalist economic decision-making structure. As already pointed out, the export-based growth also leads to a tremendous internationalization of the Belgian economy and a relative weakening of linkages between Belgian economic sectors and enterprises. Belgium becomes more and more a "follower" on the international market. The multinational corporations particularly settle around the Flemish ports, because they are heavily dependent on imports and exports. In Flanders, a new industrial tissue grew, largely controlled by foreign capital groups (Van Den Bulcke 1979, p. 69 f.). In their margin many small firms controlled by national or regional capital emerge. They deliver inputs, especially services, to the predominantly foreign giants. This phenomenon is rather rare in Wallonia, where industrial activity remained based on traditional sectors controlled by holdings, diversifying production especially to serve the oligopsonic markets of government purchases (large infrastructure works, defense, utilities, communications) and transport and financial services (Willekens and Zeeuwts 1983, p. 464). The differences in economic development between the regions become greater. As a consequence, it becomes more and more difficult to define an economic policy that is equally beneficial to the regions, both from the point of view of capital and of labour.

Regional policy and the accompanying economic boom in the early 1960s covered up the structural weaknesses of traditional Belgian industry, which in vain waited for an active reconversion policy. Obviously, Wallonia suffered most from this failure.

Which groups have propagated the internationalization of the Belgian economy as the solution to structural economic problems? In the 1960s this policy has been most beneficial to Flanders, but the backgrounds of this orientation have not been sufficiently analysed. Later, it has been argued by Walloon economists that this new industrial policy was the result of changes in power relations between capital groups. The political régime more and more promoted the interest of capital groups based in Flanders because Flanders conquered a dominant position on the political scene (Simons 1980, p. 226-270). Specific government policies and the growth of "Flemish" capital groups reinforced each other. In any case it is clear that after world War II the "old" national bourgeoisie controlling the holdings gradually loses its hegemony. New capital fractions become stronger: Flemish entrepreneurs organized around the Kredietbank and the VEV in Antwerp; managers leading divisions of transnational corporations and more independent technocrats in government involved in economic policy (Mommen 1982, p. 123-125). Perhaps the most important development is the growth of a nation-based international capital fraction, playing an intermediate role between leading international capital groups and some fractions of the traditional national and commercial bourgeoisie; this feeds the trend toward fragmentation of and antagonism among Belgian capital groups, a fragmentation reflected in new developments in economic policy.

4.4 Regional policy (1966-1974)

a) Regional selectivity: its birth

The economic crisis in the coal mining and textile industries in the mid-1960s, which hit specific areas severely and was left unsolved by national economic expansion, was the basis of coalitions between locally organized networks of capital, middle-class pressure groups and local labour unions. These coalitions demanded a more selective regional policy. In 1966 a strongly discriminative regional expansion law based on extra investment subsidies for the affected areas was passed by parliament (Law of 14 July 1966).

b) New problems for governments

At the end of the 1960s three topics relevant to our subject constitute the core of the political discussion: (1) a claim for a more elaborate regional policy for all depressed areas; (2) a demand for long-term planning of industrial development and public investment by the socialist movement as an answer to the structural weaknesses of industry; (3) a demand for involving the region "as such" in the formulation and implementation of economic policy after a flare-up of conflicts about ethno-cultural issues from 1964 onwards. At the same time, the regional conflict in Belgium shifts from cultural issues to open economic confrontations between fractions of classes and interest groups which take very divergent positions in the social spectrum.

How does one explain this shift? As already stated, the industrial policy of the 1960s stimulated the further internationalization of the economy, leading to relatively weaker linkages within the Belgian economy and a further divergence of the economic structures of the regions. Moreover, no restructuring of traditional sectors in Wallonia took place. This interacts with the rise of new capital fractions in Belgium, whose interests often conflict with those of traditional holding capital. In a context of ethnic conflicts, pressure groups often redefined their interests in terms of regional claims to the central government, preferably against other regions (Plasschaert 1983, p. 16-17). The "popular" identification with the "regional cause" had a great mobilizing effect on pressure groups which are not directly involved in the basic socio-economic conflict and on public opinion in general. Where ethnic conflicts and opposed economic interests prevail a growing belief could be witnessed that regional solutions to a crisis are better than a low-keyed process of national compromise (Paddison 1983, p. 22). Claims for regional decision-making become stronger. The Flemish entrepreneurs put it in the following way:

"It is often argued that narrow economic linkages between the regions speak against regionalization. A study by Tejano shows that this argument is not very convincing ... The rather weak linkages between the regions are probably largely due to different economic structures. This is an extra argument to pass on to regionalization." (VEV, p. IV)

It seems promising to evaluate further changes in the regional decentralization of industrial policy from this point of view and to examine to what extent the dividing lines between social classes can be traced in regional claims.

c) Consolidation of regional policy

Under a socialist-Christian-Democratic government, two important laws were formulated to deal with the above-mentioned tensions. The extra investment subsidies were extended to all depressed areas.^{1/} These subsidies could also be granted to technologically innovative projects (Law of 30 December 1970). Regional industrial policy became less selective.

The planning of regional development, technological innovation and public investment was delegated by parliament to a planning bureau with national and regional sections, advised by a.o. regional forums of politicians and representatives from all important economic pressure groups (Conseils Economiques Régionaux/Gewestelijke Economische Raden). The bureau was to be assisted by a "broker" in innovative ideas (Offices pour la Promotion Industrielle/Diensten voor Nijverheidsbevordering) and local agencies for planning and implementation of industrial infrastructure which also could promote public enterprises (Sciétés de Développement Régional/Gewestelijke Ontwikkelingsmaatschappijen) (Law of 15 July 1970).

With the exception of the regional extra investment subsidies, the new planning system has never worked. First of all, the planning procedures are too unwieldy and give too much power to non-elected technocrats. This has never been accepted by the Ministers and their staff. Secondly, Liberals and right wing Christian-Democrats did not accept such far-reaching State intervention in enterprise investment decisions (Willekens 1979, p. 161-174). Moreover, the beginning of the economic crisis and its varying repercussions on the regions shifted political attention to short-term adaptation policies and to the growing demand for effective regional control over conversion and innovation policies.

^{1/} Depressed areas are officially defined as areas with actual or projected structural unemployment, slow growth, low regional income and an actual or projected decline of regionally important industrial sectors. According to these criteria two categories of development zones with different characteristics are delineated.

4.5 Crisis and regional decentralization of industrial policy (1975-1984)

a) Problems

Economic recovery from the cyclical slump at the end of the 1960s lasted from 1970 until 1974 and was abruptly interrupted by the oil shock, which hit Belgium more than most other Western countries. Profit rates collapsed. Old industries such as coal mining, basic metals, metal products, ship-building and textiles were worst hit by deficits. The threat of massive unemployment urged entrepreneurship and unions in the traditional manufacturing sectors to claim and to (successfully) lobby for immense amounts of subsidies to their unprofitable firms. In most of these sectors, private capital sought to disinvest and refused to finance the conversion of industrial activities. Many firms were gradually taken over by the State. Thus, a conservative coalition of unions (in a short-term social reflex) and of traditional national capital (in a portfolio rearrangement reflex) forced the State into the role of managing old, unprofitable firms, an extremely bad start for the newly-born "entrepreneurial state" was aggravated by the lack of competent State managers. These two factors fed the image of an inefficient central State, which becomes the target of liberalization and regional decentralization claims.

b) Consequences

- Claims for liberalization

In the short run it is more profitable for the State to subsidize unprofitable firms than to pay unemployment benefits. Entrepreneurial organizations however, especially those mainly representing profitable firms, argue that these subsidies are granted at the expense of "progressive" activities. These, they argue, are restrained in their growth by the rise of tax and interest rates, which are due to growing government deficits. They further argue that instead of "subsidies to losses", incentives should be given to profitable management and innovation; and finally that this policy reinforces the grip of an inefficient government on industry (Moden and Sloover 1980, p. 199-201). The entrepreneurs develop an ideological offensive to lower real wages and to reduce government deficits. They propagate the

cutting back of social expenditures and defend general tax cuts which are beneficial to the most profitable and most innovative firms, as well as deregulation measures which might improve the entrepreneurial climate (ibid., p. 171-198).

From 1977 on, governments react to these demands with a diversified set of temporary tax cuts for all kinds of investment. In 1978 the regionally differentiated investment subsidies were extended to all investments made by small companies. The main reason was that their employment tends to remain quite stable during the crisis. This considerably weakens the possible effects of regionally selective aid (Law of 4 August 1978). In this period, planning and regional policy on the national level completely move to the background of the political scene.

But in spite of these measures capital's reactions to the falling profit rate were capital outflow and a tremendous drop in the propensity to invest. All organizations of entrepreneurs and ideologically allied institutes ask for a more liberal economic policy of detaxation and deregulation combined with a strongly restrictive wage policy, a policy which was hardly acceptable for the unions (ibid., p. 171-225). The Liberal-Christian-Democratic government, which came into power at the end of 1981, has realized many of these claims: devaluation and a partial freeze of nominal wages, permanent tax cuts for enterprises, temporary income tax cuts for purchasers of new shares, tax cuts on income from capital and the establishment of free enterprise zones.

- Claims for regional decentralization

Since the second half of the 1970s, the demands for a substantial decentralization of regional economic policy have even become stronger.

The diverging Flemish, Walloon and Brussels economies do require different policies. Wallonia needs a complete industrial restructuring in order to preserve existing employment, and a re-industrialization to absorb unemployment. Wallonia is poorly integrated in the "new" production lines organized by the multinational corporations, and there is a regional consensus to create a new industrial tissue based on its specific industrial traditions

and skills. For this purpose, the Walloon economy needs a vast amount of investment capital; temporary subsidies from the national Government are needed to assure unemployment compensations and maintain incomes. In 1979, 36.3 per cent of the outlays for social security went to Wallonia and 53.1 per cent to Flanders, whereas 32.1 per cent of the contributions come from Wallonia and 56.7 per cent from Flanders (Van Rompuy and Van Cayseele 1981, p. 9).

The Walloon economy is strongly dependent on government purchases: in 1982 about 58 per cent of government purchases was placed in Wallonia and Brussels, where 43 per cent of the population lived (Studiecentrum Politieke Instellingen, p. 8). Flanders, in contrast, has a more modern industrial sector, strongly integrated in the international trade flows controlled by transnational corporations. The dominant philosophy of economic policy in this region is that in the short run it must remain a favourite production site for TNCs. In the longer run it must look for a policy mix promoting an export-based growth by providing locational comparative advantages to TNCs and by exploiting its technological and intellectual potential to pick up revolutionary innovation patterns. It must diversify away from electromechanics to electronics and from chemistry, metal and non-ferro products to new materials and biotechnology.

The strongly divergent economic needs of regions make it particularly hard for the central state to develop a policy mix that benefits both regions. There are two ways out of this problem. Firstly, national Government can look for compromises by involving itself in log-rolling procedures and developing compensatory policies. In this way, the consensus policy that has been implemented in Belgium since the end of the war can be extended to industrial policy. Secondly, it can opt for regional decentralization. This is an optimal strategy as long as the net benefits of faster decision-making and a better adaptation to various regional constraints and preferences are greater than the net benefits of national compromises. These latter benefits can take such forms as weaker external constraints on macro-economic policies, more effective redistribution policies, higher allocative efficiency through uniform tax rates and subsidies, better internalization of external effects and the distribution of the cost of public goods over more tax payers.

On the basis of the trend towards an ever-growing regional division of labour one can predict an even greater demand for economic decentralization. Firstly, on the national level the above-mentioned costs grow and benefits fall when differences in economic structure grow. Social positions which differentiate under the influence of the progressive territorial division of labour lead to diverging preferences with regard to regional economic structures, which again will contribute to increased regional economic differences. (Paddison 1983, p. 9-10). Secondly, in an international system with an ever-growing regional division of labour, the optimal level for global regulation and co-ordination of policies is supranational. Unfortunately, small States like Belgium have little influence on the promotion of more efficient, internationally organized decision-making (by e.g. EEC, OECD, IMF). Small, open regions may be better off acting as free riders on the international scene than if they accept national compromises.

Two other factors strengthen the trend towards economic decentralization.

Firstly, ethnic conflicts make interregional log-rolling procedures difficult because of the mistrust between various (political) groups, especially when shifts in coalitions are limited by a small number of regions. Also, radical groups force other groups inclined to compromise to be more radical. When ethnic groups geographically coincide with regions, log-rolling within the region becomes easier and groups support each other in negotiations between regions. There is a stronger identification with the "regional interest". This leads to "conspiracy theories" of one region against other regions (Simons 1980, p. 270) further strengthening mistrust and regional identification. Decision-making costs become higher and decentralization seems a way out of the problems. Arguments in favour of decentralization are often heard in Wallonia:

"...(there is) a reaction which favours negotiating a more extensive State Reform with the aim of guaranteeing the Walloon region the means for coherent initiatives supporting its economic restructuring. The proposals brought forward by the North of the country are considered to be detrimental to the interests of the Walloon region." (Deschamps, Quévit and Tollet 1984, p. 2).

Secondly, government income tax systems and expenditures have redistributive aspects. There will be net transfers of income over regions. When patterns of identification change through ethnic conflicts, leading to a decreasing sense of solidarity among the regions, there is a growing call for regionalization of these systems. It is also argued that redistribution decelerates economic recovery; this weakens the legitimation of institutions which organize income transfers, and the central State disintegrates as a maker of efficient policies. Implicitly, this argument is often put forward in Flanders:

"... a desire (exists) to concentrate the financial means obtained from the Flemish population on development objectives which are specially Flemish. The present economic crisis also affects the Flemish economy (...) and that situation reinforces the general feeling that the financial burden represented by Wallonia is a heavy obstacle to redeployment efforts by the Flemish authorities." (Ibid., p. 1).

This sketch of the arguments for decentralization does not answer the question which groups are the strongest supporters of decentralization (or whether decentralization is effective). The standpoint of the national holdings and the FEB-VBO is unclear. Officially, these oppose decentralization, but little is known of their effective positions and lobbying on this topic in day-to-day politics (Moden and Sloover 1980, p. 249-257). Capital groups and related management groups who finance and administer the production lines organized by TNCs, mostly located in Flanders, favour decentralization the most. They seek adjustment to changing international conditions and benefit only in a limited way of regulation policies at the national level.^{1/} They also expect tax cuts when transfers to poorer regions are halted.

A link can be made between the tendencies toward liberalization and regionalization. If the national institutional context does not allow a freer hand to capital groups, regionalization may provide greater freedom, especially for Flemish entrepreneurs, through a change in power relations (the negotiating power of labour unions will be weakened), a more favourable

^{1/} E.g. wages policies and a macro-economic equilibrium, monetary and financial policy, public purchases and subsidies, regulation of competition.

climate for free enterprise and lower costs of liberal, free-rider policies for Flanders. Therefore it is quite surprising that the socialist movement in Wallonia is one of the biggest promoters of economic decentralization. It apparently considers the costs of realizing their claims in Wallonia (where they have a near-majority) to be lower than the benefits. On the national level they are too weak to realize their industrial conversion programme for Wallonia. But how is this programme to be realized in an open economy like Wallonia? Capital is spatially mobile, and an increased regional independence does not necessarily mean an increased ability to capture investments. The labour movement may be the biggest victim of economic decentralization because national wage policies become more and more difficult; their monopoly power in the labour market is undermined. This seems to be an important reason why the Dutch-speaking wings of the labour unions are so quiet and moderate - they are just "followers" in the decentralization process.

e) Regionalization policy

The decentralization process started with the official recognition of the regional fact in political institutions in 1970 (cultural autonomy, advisory competence for the regions in industrial policy). During the 1970s the tendency toward economic decentralization was consolidated in new institutional arrangements: official recognition of the regions as economic entities with their own authorities in 1974, a preliminary economic decentralization in 1978 and a definite arrangement in 1980. The following competences were decentralized: implementation of regional policies (extra investment subsidies, industrial infrastructure), subsidization of innovative projects, public participation in industrial activity, support to the restructuring of unprofitable firms (with the exception of the large, declining traditional sectors) and labour market policies (Laws of 8 and 9 August 1980). The monetary union was left untouched.

There is no clear division of competences between national and regional authorities. This leads to numerous conflicts and to contradictory decisions. When policies at the national and regional level or policies of regions clash, a solution must be sought through complex negotiation processes. Because of the growing demand for even more regional decentralization (especially of public investment, research and education),

conflicts tend to be automatically solved by further decentralization. This is particularly clear in the sectoral policies for steel, coal mining and textiles.

This absence of a clear administrative hierarchy could lead to a new kind of economic feudalism, where every region runs its own little economic programme under the wings of a national authority, which remains very powerful in the domains of monetary and fiscal policy, but has no real arbitration power in regionalized policy matters.

5. Three concluding remarks on unions and regionalism

Throughout its post-war history, industrial policy in Belgium has been sensitive to the pressures exerted by various fractions of capital. Traditional national capital, in control of the industrial sectors which form the predominantly Wallonia-based backbone of Belgian industrial structure, was successful in promoting an expansion policy during the 1960s and the early 1970s. New direct TNC investments and small dynamic enterprises closely connected with the major Flemish banks (Kredietbank) also benefited from this policy during the 1960s. But when pressure of traditional capital and the involved unions caused this policy to be shifted to supporting declining enterprises, the "new" capital groups began to lobby extensively in favour of a drastic regionalization of industrial policy.

5.1 The unions: followers in regionalism

The unions are mainly "followers" in this important political struggle. During the expansion period, they defended a national policy of preserving and partly restructuring existing production activities and of support to TNCs. An important exception to this rule was the more radical fractions in the Walloon FGTB who favoured regionalization as an instrument of a socialist industrial restructuring policy, especially since the beginning of the 1960s. When economic crisis shifts the power balance from national to regional forces, unions in both regions begin to support regionalization more actively. This even leads to a complete involvement in (Flemish) capital's deregulation strategy, of which regionalization is just one aspect. Even the

Walloon FGTB has become a partner in a Walloon coalition for a regionalized economy.

The lack of a proper union profile on "regionalism" in Belgium has not been explained yet. Is it due to the absence of a socially progressive view on regionalization? Or is it the consequence of the weakness of the unions in political matters which reduces them to the role of followers?

5.2 Liberal regionalism: ineffective for Wallonia?

With the gradual dominance of the free enterprise regionalist lobbies, the Flemish economy assumes the role of a "free rider" on the world market. Wallonia, in contrast, now experiences the decline that so many enclaves of earlier stages of capitalist development have undergone. The answer to one of the main questions formulated in this essay therefore is that industrial policy in Belgium has not given a creative answer to the disintegration of the national industrial tissue. Continued and intensified "liberal regionalism" lets Flemish capital enjoy the fruits of the technological revolution, but it leaves Wallonia without financial means and without appropriate policy instruments to recover from its structural weaknesses.

5.3 Rhetorics blanketing reality

It is puzzling that many union analysts who are aware of the strong dependence of the Belgian economy on the world economic situation in general, and on decision-making by international capital in particular, have defended regionalization as a partial way out of Belgium's economic crisis. This would make sense for a capitalist lobby defending a free-rider policy for the Flemish economy, and arguing that Flanders is at the mercy of international capitalism and that its relatively healthy economic structure, which may be its salvation, should be made as attractive as possible. But it does not seem to make sense for a union, especially a Walloon union, to advocate greater independence for a declining region with few economic endowments (which will even be reduced by a "liberal regionalization"). Of course the blueprint for socialist regionalization differs essentially from the "free enterprise" model. But union and socialist party leaders should know perfectly well that this is not the way to create the preconditions for a socialist regionalization.

In our view, the confusion is partly a consequence of rhetorics. Union leaders are too easily captured by savoury presentations of the fruits of regionalization, and feed this confusion. Two hypotheses may explain why they do so. One is that this confusion offers an easy escape from the malaise which has struck unionism. The other is that regionalization, even if not socialist, may increase the power of a fraction of the Walloon socialist establishment, which is becoming a new dominant class in Wallonia.

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Carlos Lilaia

Ivo Pinho

DEVELOPMENT INTERNATIONALIZATION AND FOREIGN INVESTMENT

- SOME CONSIDERATIONS ON THE PORTUGUESE SITUATION -

1. Evolution and present situation of the Portuguese manufacturing industry

1.1 Growth without structural adaptation

Portugal is a semi-industrialized country where industry dominates productive activities but where the level of industrial development is far below that of more advanced countries.

Although, just as in other semi-industrialized countries, real growth rates have been high - 6.3 per cent per year between 1960 and 1970, 4.8 per cent between 1970 and 1977 and 3.7 per cent from 1977 to 1982 (from 1970 to 1982 Gross Domestic Product (GDP) grew at an average yearly rate of 4.5 per cent) - structural deficiencies on the technological plane, in the quality of production factors and in the integration of the productive system still exist.

Portuguese industry has grown strongly during three periods. The first of them was the postwar period with its import substitution policy for intermediate basic products (fertilizers, steel, etc.). The second phase was introduced by the integration of the country in the European Free Trade Association (EFTA), which led to a great expansion of industrial exports. More recently, towards the end of the 70s, there was a new period of import substitution with large investment efforts in sectors which were predominantly oriented towards the home market; these efforts also resulted in some export growth. This third phase was made possible by a regime of special protection for a wide range of products of the mechanical, metallurgical and chemical industries, under the Stockholm Convention.

In spite of the (relatively) high levels of growth achieved by the country, its heavily distorted industrial structure was not even marginally corrected. Indeed, when looking at the classical groups of light industry and heavy industry and considering two traditional indices - gross value added (GVA) and employment (EMP) - one finds that between 1954 and 1980 no significant transformation at the Portuguese manufacturing industry took place (cf. Table 1).

Table 1: Portuguese manufacturing industry, 1964/1980

Gross value added and employment shares

(per cent)

Year Group	1964		1972		1980	
	GVA	EMP	GVA	EMP	GVA	EMP
Light ^{a/}	50	59	49	61	47	57
Heavy ^{b/}	50	41	51	39	53	43

a/ Food, beverages, tobacco, textile, clothing and leather, wood and wooden artifacts, including furniture, typography, graphic arts and connected industries, rubber, artifacts of plastic materials and other manufacturing industries producing for final consumption.

b/ Paper and paper articles, chemical industries, other chemical products, oil refining, oil and coal derivatives, non-metallic minerals, basic metallurgy and machines, metal equipment and metal products.

Source: "Plano de Médio Prazo 77|80"; "Indústria e Energia - Evolução Recente, Situação Actual e Algumas Perspectivas de Desenvolvimento", Instituto Damiao de Góis, December, 1983.

The distortions become even more evident in a sectorial disaggregation based upon the capital intensity of the production process and the level of labour qualification (cf. Table 2).

Table 2 shows that, in value added terms, only the German Federal Republic and France have clearly succeeded in adjusting their industrial structure, reducing the weight of the groups with a low labour qualification (LLQ) and reinforcing the importance of the sectors with highly qualified labour, mainly those in which concomitantly capital intensity is low (LCI/HLQ). In Portugal, the weight of the group LCI/LLQ has substantially grown and the importance of the LCI/HLQ group has diminished. This latter

group encompasses those activities which are more compatible with financial restrictions and corresponds with the dynamic sectors from the viewpoint of world demand. But in contrast to countries with a similar degree of industrialization, the HCI/HLQ group has grown in Portugal; a similar development took place in the German Federal Republic and in France.

In terms of employment, the country did not achieve a substantial reduction of the clearly excessive weight of the LCI/LLQ group, as Table 2 shows. Almost half (about 56,000) of the approximately 127,000 jobs created in the manufacturing industry were offered in the group LCI/LLQ. Obviously, decreased international demand has caused great difficulties in some of the sectors in this group comprising activities which are, in general, oriented towards the foreign market. The proportion of the total labour force employed in the LCI/LLQ group is much higher than in Ireland, Spain and even Greece. The small and relatively favourable adjustment which occurred in the other groups did not mitigate the problems in this group, which will have to figure prominently in an active labour policy for the industrial sector.

The main conclusion to be drawn here is that although the manufacturing industry registered an average rate of growth which is clearly greater than generally found in OECD countries, no substantial improvement of the industrial structure took place. In 1980, 57 per cent of industrial output was produced in industries with low labour qualification employing more than two-thirds of the industrial work force.

1.2 Imbalanced foreign trade structure

The Portuguese economy suffers from various deficiencies, essentially due to the insufficient industrial transformation potential for natural resources. The weakness of the productive system leads to an imbalanced foreign trade structure. While the country is becoming more and more dependent on certain imports - especially of electric power, food products and equipment goods - exports are restricted to a small number of trading partners and largely consist of products for which demand in the world market is decreasing.

Table 2: Development of capital intensity and labour qualification during the 1972-1980 period
(per cent)

Country	Gross value added								Employment							
	LCI/LLQ		LCI/HLQ		HCI/LLQ		HCI/HLQ		LCI/LLQ		LCI/HLQ		HCI/LLQ		HCI/HLQ	
	a/	b/	c/	d/	a/	b/	c/	d/	a/	b/	c/	d/	a/	b/	c/	d/
	1972	1980	1972	1980	1972	1980	1972	1980	1972	1980	1972	1980	1972	1980	1972	1980
German Federal Republic	23	16	34	40	19	17	24	27	24	21	42	44	10	11	24	25
France	22	17	37	38	20	21	21	24	27	25	43	43	14	15	16	17
Spain ^{e/}	29	29	23	24	19	20	29	27	37	38	24	24	22	21	17	17
Greece ^{e/}	31	33	19	17	26	26	24	24	41	41	19	18	24	25	16	16
Ireland ^{e/}	19	19	18	21	40	40	24	20	28	29	20	23	32	33	20	15
Portugal	31	36	24	21	24	21	21	22	47	46	18	20	22	21	13	14

a/ LCI/LLQ: industries in which low capital intensity and low level of labour qualification are predominant (textile, clothing, tanned hides, footwear, wood and cork, furniture, metal products and other manufacturing industries);

b/ LCI/HLQ: industries in which low capital intensity and high labour qualification are predominant (typography, rubber, machines (electric and non-electric) and transport material);

c/ HCI/LLQ: industries mainly characterized by high capital intensity and by low labour qualification (food, beverages, tobacco and non-metallic mineral products);

d/ HCI/HLQ: capital intensive industries with highly qualified labour (pulp and paper, chemical industries, refining and derivatives of mineral oil, basic industries of iron and steel and of non-ferrous metals);

e/ Values relative to 1978.

Classification from H.B. Lary - "Imports of manufactures from less developed countries", Material Bureau of Economic Research. The classification of Portuguese industries is slightly different from the others, mainly with regard to capital intensity.

Source: Yearbook of National Accounts Statistics, U.N. 1972 and 1980 - Estatísticas Industriais (Table by the Instituto Damiao de Gois).

Table 3 shows some Portuguese foreign trade indices for the 1960-1982 period.

Table 3: Foreign trade indices

Year	Indices	Covering rate	Terms of trade ^{a/}	Opening Coefficient	Weight of deficit
		(C = e/i)	$S = \frac{AEPI}{AIPI} \times 100$	$(b = \frac{e + i}{v})$	$(b = \frac{i - e}{v})$
1960		0.77	-	0.40	0.06
1965		0.84	-	0.57	0.05
1967		0.91	-	0.55	0.03
1970		0.63	-	0.54	0.07
1974		0.49	94.0	0.52	0.18
1975		0.50	86.0	0.40	0.13
1976		0.42	82.0	0.39	0.16
1977		0.45	85.0	0.43	0.18
1978		0.51	84.0	0.43	0.16
1979		0.59	82.0	0.48	0.13
1980		0.54	80.0	0.55	0.17
1981		0.47	75.3	0.56	0.20
1982		0.48	75.0	0.54	0.19

a/ Base year: 1973

e = export value (in Escudos)

i = import value (in Escudos)

AEPI = Average Export Price Index, in volume

AIPI = Average Import Price Index, in volume

v = gross domestic product at market prices

Source: Banco de Portugal, Relatórios Anuais.

The terms of trade, indicating the relation between the average unit values of exports and imports, may be affected by the manipulation of the prices of these movements. Under-invoicing of exports and over-invoicing

of imports lead to a more accentuated deterioration than it be indicated by the real situation. Anyhow, the terms of trade with foreign countries have worsened considerably: in the 1973/82 period, the index fell by 25 per cent.

The external trade deficit was bearable during the 60s, but it has grown alarmingly after the first crude-oil shock. Though the index has remained relatively stable since 1974, the cumulative effects on the external financing capacity of the economy must not be forgotten. During the 1960s, the increase in exports brought the export/import covering rate close to unity, but as from 1970 it began to fall and established itself near the value of 0.5.

The values of the "opening coefficient" during recent years indicate the same orders of magnitude registered during the golden 1960s, but they have a different significance now. Due to the low trade deficit in the 60s the e/v and i/v coefficients contributed equally to trade relations with foreign countries. During the 70s and especially during the more recent years, as imports grew to twice the level of exports, this balance was severely upset.

1.3 Persistent regional discrepancies

Portugal suffers from pronounced inter-regional and intra-regional discrepancies, especially with regard to industrial production. The districts of Lisbon and Oporto jointly account for almost half of total production in the manufacturing industry and almost half of industrial employment (see Table 4). The Lisbon district deserves special mention, since it represents by itself the following shares in production by sector:

	<u>Per cent</u>		<u>Per cent</u>
typography	67	metal products	37
beverages	58	cement	32
electric material	49	fertilizers	27
chemicals	48	furniture	23
non-electric machines	45	non-metallic minerals	23
transport equipment	39	other manufacturing industries	51

Table 4: Manufacturing industry
(1979)

<u>Region</u>	<u>GCF</u> <u>(%)</u>	<u>GPV</u> <u>(%)</u>	<u>GVA</u> <u>(%)</u>	<u>Employment</u> <u>(%)</u>
Aveiro	12.1	9.9	9.5	11.0
Beja	0.3	0.2	0.2	0.3
Braga	8.1	8.4	9.2	11.4
Bragança	0.1	0.1	0.1	0.2
Castelo Branco	1.1	1.4	1.7	2.1
Coimbra	2.9	3.0	3.5	3.4
Evora	0.6	0.9	0.8	1.0
Faro	0.7	1.0	1.1	1.5
Guarda	0.5	1.0	0.9	1.3
Leiria	4.9	3.8	4.3	5.1
Lisbon	12.8	23.4	25.3	20.8
Portalegre	0.3	1.0	0.7	0.7
Oporto	18.0	20.9	21.1	23.8
Santarem	2.5	3.4	3.3	3.7
Setubal	31.6	18.1	14.6	9.7
Viana do Castelo	0.5	0.8	1.3	1.0
Vila Real	0.7	0.3	0.3	0.5
Viseu	1.2	1.1	0.8	1.0
Azores	0.9	0.8	0.7	0.7
Madeira	0.2	0.5	0.6	0.8
<u>Total</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>	<u>100.0</u>

Legend: GCF = Gross Capital Formation
GPV = Gross Production Value
GVA = Gross Value Added

Source: Estatísticas Industriais.

If Lisbon and Oporto are considered jointly with the three remaining industrialized districts, Braga, Aveiro and Setubal, an enormous concentration of production and industrial employment emerges: 80 per cent of both is found in five of the twenty districts of the country. It should also be noted that the great majority of the under-industrialized districts have an undiversified structure.

Table 5: Regional distribution of gross value added and industrial employment with reference to capital intensity and labour qualification, 1980
(per cent)

Region	Gross value added				Employment			
	LCI/LLQ	LCI/HLQ	HCI/LLQ	HCI/HLQ	LCI/LLQ	LCI/HLQ	HCI/LLQ	HCI/HLQ
Influence areas of Lisbon and Oporto	85	90	69	78	81	89	58	83
Coastal region ^{a/}	93	96	88	87	89	95	83	93
Interior ^{b/}	7	4	12	12	11	5	17	7

a/ Braga, Viana do Castelo, Oporto, Aveiro, Leiria, Santarem, Lisbon, Setubal and Faro.

b/ Bragança, Vila Real, Viseu, Guarda, Castelo Branco, Coimbra, Portalegre, Evora and Beja.

Source: Instituto Damiao de Góis, op. cit.

The enormous regional disparities in the country also stand out clearly when labour qualification and capital intensity are considered: 92 per cent of gross value added created by capital intensive industries, and 95 per cent of industrial production by highly qualified labour are concentrated in the coastal region.

But it is not only in terms of production that the country suffers from regional discrepancies. There is a general imbalance which again leads to substantial differences in production, productivity, profits and living conditions between, roughly speaking, the coastal region and the interior of the country. If we consider only the two coastal districts of Lisbon and Oporto we may conclude that "in less than 6 per cent of the total surface area we find 40 per cent of the population and more than 50 per cent of the gross domestic product, 40 per cent of the production of the manufacturing industries and more than two-thirds of the production of services" (Simoes Lopes, Regional Development and Integration, in "Economic Studies" Vol. 1, n^o 1, 1980).

More preoccupying yet is the fact that according to some authors, in particular Simoes Lopes, regional imbalance in Portugal has become a cumulative process which systematically reproduces itself. This situation is the result of a historical process of development and location of activities, which was never counteracted or even regulated in the smallest degree. Portugal is perhaps the only country in Europe which until now has never had a regional development policy which might have reoriented the spatial configuration of the labour market and of economic activities. A constant theme in official studies and documents and in the definition of regional policies based on Development Plans since 1962 at the latest, the discrepancies were never reduced because, in most cases, policies were carried out in an atomized way or were not even implemented.

One example is the growth pole policy, part of the 1970 "Spatial Organization of the Territory" plan. It foresaw the establishment of five growth centres, but resulted in the realization of only one (Sines, in the coastal region) which became a manifest failure as it did nothing to improve the economic structure of the south of the country. In 1972 the Public Enterprise for Industrial Estates was created, which planned the development of six estates, of which four would be situated in the interior regions. So far, only one industrial estate (situated in Braga in the coastal region) has been finished and occupied (by 25 plants with 1,000 employees); four estates, for which no significant demand exists, are still under construction and the establishment and construction of the last estate have not even begun. Another example: the "Regional Development Societies" law promulgated in 1981 has until now not resulted in the effective formation of any development

organization. Finally, an Integrated System of Investment Incentives (ISII) was set up after 1980 to support the modernization of Portuguese industry and its spatial diffusion. The objectives, however, were based on a system of weightings which was heavily biased in favour of general productivity growth and sectoral development. Very few incentives were available for spatial diffusion. After two years, it was found that the new investments integrally reproduced the existing location pattern.

Thus, although regional discrepancies have been detected and recognized as important obstacles for the development of the country, no regional policy has been defined and implemented. Nor have the modest instruments and measures which were applied been used in an integrated way.

2. Brief characterization of foreign investment in Portugal

In this part we will formulate a brief analysis of the principal characteristics of foreign investment in Portugal. It is based on studies and investigations on foreign enterprises recently carried out by the Foreign Investment Institute (FII).

2.1 Chronology of foreign capital penetration in Portugal

It is usually stated that Portugal "opened" itself to foreign investments in the middle of the 1960s. This idea is essentially correct, but it should be pointed out that more than one quarter of the existing foreign enterprises and almost half of foreign capital entered the country before 1960 (cf. Table 6). Until 1945 foreign capital was largely concentrated in the manufacturing industry (50 per cent) - above all in the food, beverages and chemicals sectors - and the wholesale trade. From 1946 to 1960 the manufacturing industry and the wholesale trade continued to be the preferential investment sectors with an increase of the relative weight of the wholesale trade, which by itself absorbed 40 per cent of foreign capital in this period.

Table 6: Chronological distribution of foreign investment
(per cent)

Period	Number of enterprises	Percentage of total foreign investment
Until 1945	11.3	26.6
1945 to 1960	14.9	20.4
1961 to 1974	65.2	49.3
1974 to 1978	8.6	3.6

Source: Instituto do Investimento Estrangeiro.

Table 6 shows that foreign investment acquires a greater prominence after 1960 - two-thirds of the foreign establishments were set up between 1961 and 1974. It is to be noted, however, that the average amount of foreign capital invested per establishment is low in comparison to the pre-1960 period. During the 1961-1974 period, the manufacturing industry absorbed about 45 per cent of new foreign investments. The main branches involved were textile and clothing, chemicals and metal products, machines, equipment and transport material. The wholesale trade maintained its strong position, absorbing about 38 per cent of foreign capital, and another sector, banking and insurance, came to occupy a relatively important position.

After 1974 a marked alteration occurred. The manufacturing industry only absorbed one quarter of new foreign investments, while the wholesale trade (ca. 38 per cent) and the sector banking and insurance (28 per cent) gained more weight. Interestingly, there was a certain return to the pre-1945 foreign investment structure: food, beverages and tobacco, textile and clothing once more dominated.

Table 7: Foreign investment by sector
(per cent)

Sectors	Enterprises	Percentage of total investment per sector	Percentage of total foreign capital	Employment	Share of the national market
Agriculture	1.1	0.1	0.1	0.2	1.2
Mining industries	1.6	3.4	2.1	0.9	31.0
Manufacturing industries	43.1	58.0	50.3	75.4	19.5
Building industry	3.6	1.0	1.0	2.1	9.8
Wholesale trade and retail trade, hotels and restaurants	31.8	27.0	35.5	15.0	12.5
Transports, warehouses and communications	3.4	2.2	0.9	0.9	4.4
Banks, insurance and services	14.0	8.3	10.2	4.9	8.1
Other services	1.3	0.1	0.1	0.6	2.1
Total	100.0	100.0	100.0	100.0	14.9

Source: Instituto do Investimento Estrangeiro.

2.2 Countries of origin of foreign capital

Investment from member countries of the European Economic Community, represents almost half of the capital owned by non-residents, as Table 8 shows. More than half of the investments came from four countries: Switzerland (18 per cent), the U.S.A. (15 per cent), the United Kingdom (12 per cent) and the Federal Republic of Germany (10 per cent).

Table 8: Foreign direct investment by countries of origin
(per cent)

Countries	Enterprises	Foreign capital <u>a/</u>
EEC	54.2	50.6
EFTA	21.8	25.3
U.S.A.	10.7	16.2
Spain	12.3	6.2
Japan	1.0	1.7

a/ Stock in 1978.

Source: Instituto do Investimento Estrangeiro.

In the manufacturing industry, the principal countries of origin of foreign investment are Switzerland, France and the United Kingdom. Swiss investment has mainly taken place in the food, beverages and tobacco, basic metallurgy and "other" manufacturing industries. French investors preferred chemicals, non-metallic minerals and basic metallurgy. Investors from the United Kingdom have preferred the textiles, clothing and leather, papermaking, metal products, machines, equipment and transport material industries. In order of magnitude, Belgium, the Federal Republic of Germany, Spain and the United Kingdom are the main investors in the important sub-sector of machines, electric appliances and "other" materials.

2.3 Foreign enterprises in the manufacturing industry

Table 9 shows that the chemical, metal products, machine, equipment and transport material sectors absorb the far greater part of foreign investment in the manufacturing industry. These sectors also represent major market and employment shares. In the electric material sub-sector, foreign capital accounted for two-thirds of employment and for more than two-thirds of the gross production value. Most foreign enterprises in Portugal are strongly export-oriented, as Table 9 shows - in two other countries of Southern Europe, Spain and Greece, 90 per cent of production found its way to the home market in 1974 and 1977, respectively. The exceptions are food, beverages and

**Table 9: Foreign enterprises in the manufacturing industry -
some indicators
(per cent)**

Sectors	Employment	Number of enter- prises	Percentage of total foreign direct investment	<u>Export</u> sales	<u>Import</u> + <u>export</u> sales	Percentage of total sectoral sales
Food, beverages and tobacco	6.2	34	6.8	10.9	21.8	18.4
Textiles, clothing and leather	14.4	49	3.2	48.2	69.4	8.2
Wood and cork	1.5	10	0.6	49.8	56.7	1.1
Paper and graphic arts	5.5	15	7.9	43.2	54.6	7.6
Chemical products	18.8	68	13.2	9.1	39.3	22.6
Non-metallic minerals	4.8	7	2.4	2.3	6.8	4.0
Basic metallur- gical industries	4.0	5	2.3	38.6	59.3	5.2
Metal products, machines, equip- ment and trans- port material	43.4	47	12.9	39.7	77.9	32.1
Other manufac- turing industries	1.1	4	0.2	7.7	44.5	0.5
Manufac- turing industry	100.0	240	49.5	26.8	52.0	100.0

Source: Instituto do Investimento Estrangeiro.

tobacco, chemicals, non-metallic minerals and "other" manufacturing industries. It should be pointed out that, as a consequence of EFTA-membership, the export intensity of foreign direct investment in the manufacturing industry trebled after 1960 (0.38 against 0.12); interestingly, the export covering margin of foreign enterprise imports also trebled after 1960 (1.2 against 0.4).

Finally, a few points of comparison between foreign and national enterprises. Multinational groups own a large number of the principal foreign enterprises, which strengthens the position of the latter vis-a-vis national enterprises. From the point of view of employment, foreign enterprises in the manufacturing industry (and in general) are on average almost 10 times bigger than Portuguese enterprises (334 against 36 employees). If only the enterprises with at least ten employees are considered, the proportion is approximately 5:1 (356 against 73). Productivity levels of foreign industries are generally higher than those in national enterprises, owing to better management techniques and the availability of more sophisticated equipment and technologies. Wages are also higher than the national average, above all in sectors with a relatively high labour qualification, such as metal products, machines, equipment and transport equipment, chemicals, and paper and graphic arts. In these sectors, average foreign enterprise wages are 1.6, 1.3 and 1.5 times as high, respectively, as in those Portuguese firms.

2.4 Location of foreign industrial enterprises

Foreign firms locate where external economies can be realized in the market or as a consequence of agglomeration. This has resulted in the following spatial pattern (cf. Table 10).

**Table 10: Distribution of foreign direct investment and
company capital by district (1983)**
(per cent)

Districts	Foreign direct investment	Company capital
Aveiro	2.26	2.95
Beja	1.93	2.34
Braga	1.39	1.69
Bragança	-	-
Castelo Branco	0.68	0.55
Coimbra	5.42	5.31
Evora	0.59	0.43
Faro	2.06	1.52
Guarda	0.15	0.10
Leiria	0.30	0.33
Lisbon	71.10	68.46
Portalegre	1.86	1.33
Oporto	8.24	9.43
Santarem	0.74	0.67
Setubal	2.71	4.44
Viana Do Castelo	0.40	0.28
Via Real	0.17	0.17
Visbu	-	-
Total, Portuguese mainland	100.00	100.00
Angra Do Heroismo	0.87	0.60
Funchal	69.80	67.47
Horta	-	-
Ponta Delgada	29.33	31.93
Total, Islands	100.00	100.00

Source: Instituto do Investimento Estrangeiro.

- Four-fifths of foreign establishments and of total capital investment are concentrated in Lisbon, Oporto and Setubal;
- More than 90 per cent and 85 per cent, respectively, of enterprises and investment are found in these three districts plus Aveiro and Braga;
- Foreign firms are only represented in the modern industrial sectors in Aveiro, Braga, Evora, Faro, Lisbon, Oporto, Santarem, Viana do Castelo and Viseu.

Altogether foreign investment is spatially highly concentrated, higher even than productive activity in general, thus reinforcing regional imbalances. In certain districts, foreign capital has dynamized industrial activity, e.g. by raising labour productivity. In others, any industrial activity deserving the name is carried out by foreign firms. Examples can be found in Portalegre (synthetic fibres), Coimbra (paper pulp, glass) and Castelo Branco (mining).

3. Brief analysis of the influence of foreign investment in Portugal

3.1 The internationalization of the Portuguese economy and foreign investment

Though Portugal has offered the foreign investor conditions which were as profitable as those of well-known fiscal havens (Liechtenstein, Panama, the Bahama Islands, etc.), the results for the Portuguese economy were disappointing until the beginning of the 70s.

Portugal had much to offer: uncommonly low wages, extensive internal protection (restricted access to industrial activity by competing firms) and external protection (by Portuguese import duties), cheap credit, exceptional geographic location, absence of severe administrative checks on profit repatriation, socio-political stability, access to the resources and markets of Portugal's African colonies, etc. But these hardly attracted foreign investors before Portugal became a member of EFTA, in the early 1960s. This leads to the conclusion that the principal motives for relocating enterprises in Portugal were less related to the attractions of the country than to specific firm strategies, especially in response to competing investment. Though foreign establishments are not strategically relevant for the groups to which they belong - few of them contribute more than 5 per cent of the total

sales of their respective firms - those established in Portugal belong, to a significant extent, to companies which are classified among the top 1,000 in the entire world.

The internationalization of the Portuguese economy gained momentum after 1960. The country was stimulated to become a member of EFTA and to open itself to foreign influence mainly because the spin-offs of the import substitution policy were exhausted and because international support for the continuation of the colonial war was needed. The growth of foreign investment following Portugal's entry into the EFTA played an incontestably important part in the export boom of manufactured goods of the 1960s. But foreign investment did not transform the Portuguese economic system. It mainly wished to profit as much as possible from the most important comparative advantages offered by the country: the availability of unqualified and semi-qualified labour and particularly low wage costs. The country converted itself into a kind of entrepot where industrial operations were carried out whose added value exceeded wage costs only marginally (e.g. in the clothing and electronics industries) and which did not contribute much towards improving the industrial structure. Although this was mainly a problem of the sectors with low capital intensity and low labour qualification, even the so-called modern foreign enterprises working with highly qualified labour showed no signs of assimilation and technological diffusion on a national level. By the 1980s, foreign capital played a significant role in the following sectors:

In terms of employment:

- rubber, chemicals and transport equipment (approximately 25 per cent of total employment in each of the sectors mentioned);
- mining (about 40 per cent);
- electric material (about 65 per cent);

In terms of production:

- transport equipment (about 30 per cent);
- rubber (45 per cent);
- mining (about 50 per cent);
- electric material (about 70 per cent).

3.2 No structural improvement through foreign investment

The first part of this essay showed that the Portuguese industrial system is strongly dependent on external influences - with a pronounced dependence on foreign equipment goods and upstream inputs. Specialization is based on products for which demand is decreasing on a world scale, the (direct and indirect) import content of Portuguese exports is particularly high and regional discrepancies constitute an extra burden for the development of the country. Foreign investment has aggravated the imbalanced structure of the economy. Due to the limited home market, it has few opportunities to realize scale economies, which partly explains its outward orientation. An efficient and selective import-substitution policy, which might have improved the industrial processing of national resources, does not exist. With few exceptions, raw materials are exported for processing, which limits the benefits to Portugal. This export orientation could have had positive effects, but it would have required an entrepreneurial policy of differentiation and diversification of Portuguese exports.

An analysis of the technical and technological spin-offs of foreign investment shows that firms working with foreign capital have in general contributed modestly to total research and development expenses, which in Portugal represented only 0.34 per cent of the gross domestic product in 1980. On the other hand, expatriate firms are responsible for the greater part of transfers to foreign countries - data for the food, beverages and tobacco, of textiles, clothing and leather, chemicals and basic metallurgy sectors are revealing. (Table 11).

Given the export orientation of foreign investment and its prominent presence in labour-intensive sectors, it is not easy to foresee a situation in which location decisions will no longer privilege the coastal zones and, in particular, the densely populated urban areas of Lisbon and of Oporto. Apart from port facilities and the presence of abundant qualified and unqualified labour, factors such as the proximity to major decision makers (national administration, banks, etc.), urban markets and the quality of infrastructure (the best in the country) have reinforced the tendency of foreign investment to concentrate there. In large areas of the north and in the interior of the country, foreign investment is practically absent.

Table 11: Expenses for research and development and transfer payments in the manufacturing industry, 1980

Variables	Expenses for research and development						Transfer payments					
	National enterprises		Enterprises with foreign capital ^{a/}		Total		National enterprises		Enterprises with foreign capital ^{a/}		Total	
	1,000	% to	1,000	% to	1,000	% to	1,000	% to	1,000	% to	1,000	% to
	Escudos	total	Escudos	total	Escudos	total	Escudos	total	Escudos	total	Escudos	total
Food, beverages and tobacco	21,050.5	68.8	8,981.2	29.4	30,577.7	3.5	66,267.0	19.5	236,918.0	69.8	339,473.0	9.7
Textile, clothing and leather	255,657.0	98.8	-	-	27,937.0	3.2	60,215.0	54.4	47,276.0	42.7	110,688.0	3.2
Wood and cork	2,750.0	100.0	-	-	2,750.0	0.3	2,222.0	83.7	443.0	16.3	2,665.0	0.0
Paper and graphic arts	120.0	0.0	7,687.0	98.5	7,807.0	0.9	79,804.0	44.9	95,203.0	53.6	177,580.0	5.1
Chemicals	319,975.7	88.1	39,930.2	10.9	363,263.9	42.1	724,206.0	45.1	710,567.0	44.3	1,604,196.0	46.0
Non-metallic minerals	28,263	94.0	-	0.0	30,062.0	3.5	61,648.0	77.3	772.0	1.0	79,756.0	2.3
Basic metallurgy	68,934.0	94.9	3,662.0	5.1	71,796.0	8.3	113,652.0	50.2	101,134.0	44.7	226,317.0	6.5
Metal products, machines, equipment, transport material	170,328.3	51.8	138,937.0	42.3	328,337.3	38.0	178,500.0	19.6	627,946.0	68.9	911,878	26.1
Other manufacturing industries	-	0.0	634.0	100.0	634.0	0.0	4,742.0	12.8	32,389.0	87.2	37,131.0	1.0
Total	636,278.5	73.7	199,831.4	23.2	863,164.9	100.0	1,291,256.0	37.0	1,852,648.0	53.1	3,489,648.0	100.0

a/ Enterprises in which foreign capital participates for more than 50 per cent.

Source: Instituto Damiao de Gois, *op. cit.*

Labour availability, especially the availability of female labour, and low wages became major location factors after the adhesion to EFTA; the electronics and clothing industries are outstanding examples. Typical locations were the rural outskirts of Lisbon and of Oporto, where alternative employment for women was absent; heavy industry concentrated in certain areas for identical reasons.

In some municipalities foreign investment resulted in the first industrial activities beside cottage industry. In these cases modern plants were virtual "islands" in a predominantly rural environment, having almost no relation to other economic activities in the area. The only positive aspect was the improvement of incomes through wage labour. The economic crisis strongly affected these industries; a number of plants had to be closed down.

4. Development, European integration and foreign investment

4.1 Recent developments in international investments

The structural crisis of the 1970s significantly altered the flows and orientation of international foreign investment. The dominance of US transnationals was partly reduced in favour, mainly, of transnationals based in the FRG and Japan.

Yet, some classical tendencies in the orientation of foreign investment have been confirmed:

- There is an accentuated tendency in developed countries to invest among themselves;
- the manufacturing industry is still the favourite sector for foreign investment;
- international trade to a growing extent takes place within transnationals, between their various branches.

Inter-European development and integration have not been enhanced during the present crisis - heterogeneous national policies prevent co-operation which would strengthen the competitiveness of European industry as a whole in the new technological era. One could even envisage a new international

Table 12: Main participants in world direct investment
(percentage)

	1967	1973	1980
USA	54	51	40
United Kingdom	17	14	14
Federal Republic of Germany	3	6	9
Japan	1	5	8
Switzerland	5	6	7
France	6	4	5
Canada	4	4	4
Netherlands	2	3	4

Source: Centre d'Etudes Prospectives et d'Informations Internationales, 1983.

division of labour dominated by a US-Japanese partnership, based on the technological leadership of these countries, which would more or less reduce European economies to the role of subcontractors of US and Japanese firms.

4.2 Portuguese industrial development and foreign investment

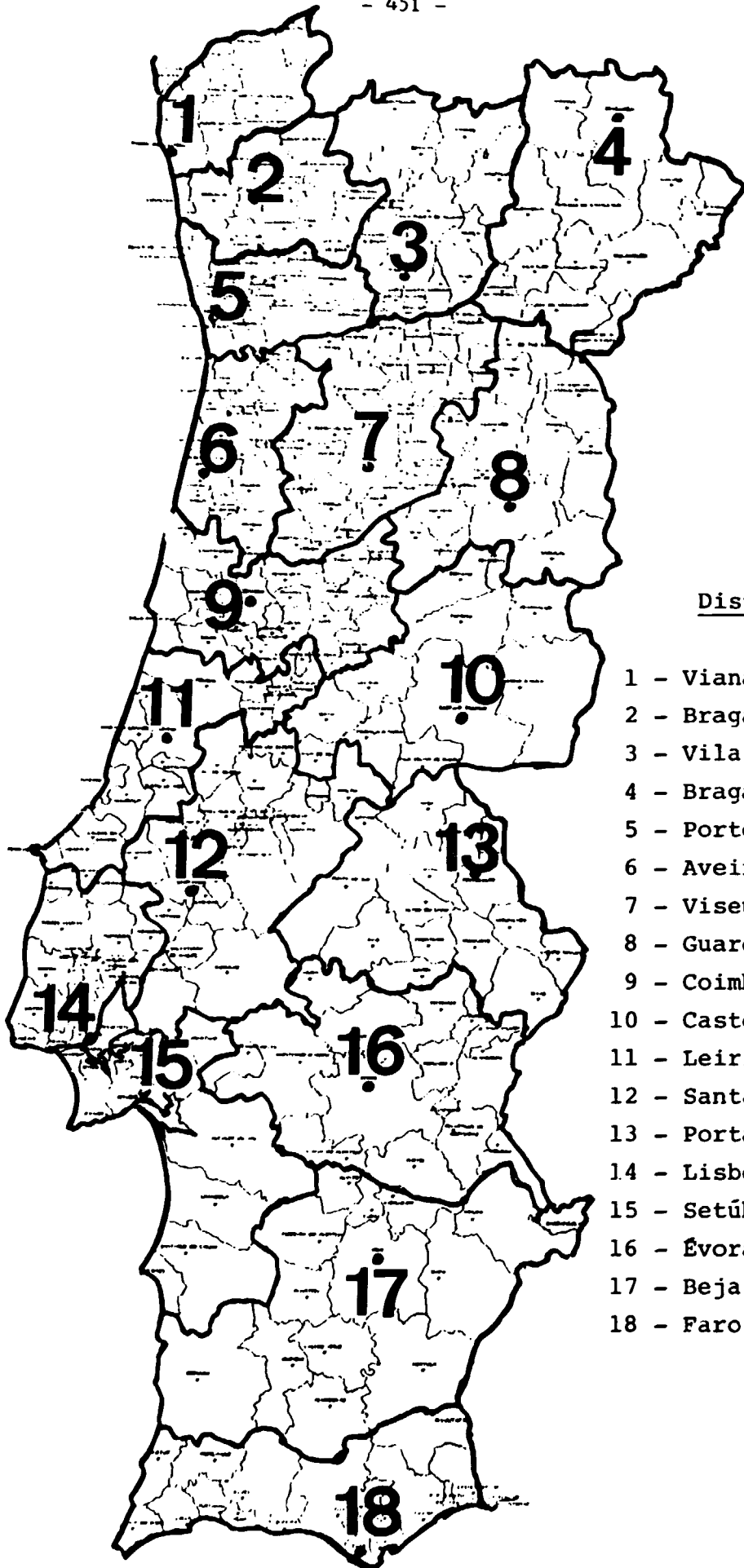
It is against this background that the future role of foreign investment in Portugal must be judged. Much depends on what European unity will achieve and on the formulation and application of an adequate strategy of industrial development. Portugal is a candidate for admission to the EEC, and its economic policy will have to focus on Portugal's adaptation to the new developments in the international economy. In the middle of the 1980s, the Portuguese productive system still presents marked vulnerabilities which, unless overcome, will reinforce its subaltern position in the new international hierarchy emerging from the technological revolution.

The process of structural adaptation and of industrial development will have to be designed, organized and applied within the framework of a long-term development strategy, which aims at a coherent productive system. Portugal's EEC membership and the establishment of a niche in the current redefinition process of the international division of labour will require an increased mobilization of the country's resources and, consequently, the definition and

application of a new investment policy which privileges the formation of human capital and research and development. But science and technology are at a low level and the system of professional training is inadequate. National savings are too low to finance the transition. This means that foreign investment will have to play an important role in the development and modernization of the country.

The restricted home market will naturally continue to be a handicap for foreign investment. But with Portugal's admission to the EEC a large external market can be tapped and investors may be attracted by opportunities in Portuguese industrial sectors having a high export intensity. The country, however, will only benefit from such investments if the competitiveness of Portuguese products will no longer be based on cheap labour. New production methods and conditions will in the future radically alter the profitability of low-skill labour intensive industries. It is therefore absolutely necessary that concentrated efforts should be made so as to promote gradually but firmly industrial activities based on high technical and technological levels and qualifications.

What kind of role could foreign investment play in regional development policy? The location of new foreign investments ought to be considered jointly with the location of indigenous economic activities and a regional policy. But it is certain that a continued export orientation of these investments will keep favouring locations with a high accessibility to the international markets. Portugal's EEC membership will not significantly change this pattern - at least not in the short or medium run. Support from the European Fund for Regional Development and adaptation to the regional policy of the Community should however make resources available for economic activities and infrastructure in the least developed regions. Lack of experience will no doubt be an initial handicap, but only the implementation of an effective regional policy which concentrates on providing a good infrastructure in marginal regions will make these areas sufficiently attractive for investors and only in that case will foreign investment contribute to a better economic structure in Portugal.



Districts

- 1 - Viana do Castelo
- 2 - Braga
- 3 - Vila Real
- 4 - Bragança
- 5 - Porto
- 6 - Aveiro
- 7 - Viseu
- 8 - Guarda
- 9 - Coimbra
- 10 - Castelo Branco
- 11 - Leiria
- 12 - Santarém
- 13 - Portalegre
- 14 - Lisboa
- 15 - Setúbal
- 16 - Évora
- 17 - Beja
- 18 - Faro

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Josephine Olu Abiodun

INDUSTRIAL POLICIES AND PATTERNS OF MANUFACTURING IN NIGERIA

1. Introduction

The international division of labour which followed the 19th century industrial revolution in the advanced countries turned the less developed countries (LDCs) into exporters of primary products and raw materials while they became importers of finished manufactured goods from the developed countries. However, within the last few decades, particularly with the attainment of political independence, many of these LDCs have attempted to break out of this international division of labour by embarking on an industrialization campaign based largely on import substitution. The main factor which stimulated these countries to industrialize was the vulnerability of any economy based on one or two principal export products (as is the case in many of these countries). Where such a principal export product is agricultural the economy is exposed to the vicissitudes of both climate and market over which the government has no control. Similarly, international market conditions for mineral products can adversely affect the economy of a country that relies solely on the export of an extractive commodity. The recent oil glut on the world market and its devastating impact on the Nigerian economy is a case in point.

An import substitution strategy initially emphasizes the "final stage" production of manufactured goods with the ultimate goal of domestic production of intermediate and finally basic industrial goods. This approach has the potential of stimulating domestic agriculture through backward linkages from secondary to primary production. There are however a number of prerequisites. These include the existence of a number of "final stage" establishments, whose demand is large enough to stimulate the emergence of intermediate and basic industries. Secondly, there should be a growth in capital formation resulting from re-investment of profits accruing from activities in the final stage industries. Thirdly, there is the need for improved efficiency and productivity of labour, while fourthly, export must continue to rise (Mabogunje, 1971).

In many less developed countries there have been difficulties in meeting all the above prerequisites. The problems have emanated mostly from the fact that the bulk of the capital, raw material and skilled labour needed for

industrialization have had to be secured from outside these countries, and such factors as the political situation in the recipient country, taxation, import duty relief, repatriation of profits and the number of expatriate personnel allowed affect the volume and the continuity of the capital and skilled labour supply. Again, if a substantial proportion of profits from import-substitution is repatriated from the country, not much capital formation will take place. Similarly, if most of the high level personnel are recruited from foreign countries and stay for only limited periods the benefits in terms of efficiency and labour productivity will be limited.

In this essay, we shall examine the industrial policies adopted by Nigeria and the impact of the import-substitution strategy on the structural and spatial pattern of manufacturing activities and on development at the regional and local levels. Special attention is given to a case study of Kwara State.

2. Industrial policies in Nigeria

Prior to the late 1950s, when industrialization can be said to have begun in earnest in Nigeria, there was no deliberate effort to encourage industries in the country. In the colonial economic structure controlled by foreign trading enterprises, agriculture and trade were the major economic activities and provided the most significant connections of the Nigerian economy with the outside world. This situation changed in the late 1950s after the attainment of self-government by the southern half of the country. The indigenous governments, aware of the potential role of industries in developing the economy and raising the living standards of the population, embarked on a deliberate policy of encouraging the establishment of local industries. A series of policies were adopted to attract foreign private investors, particularly those who could participate in mixed ventures with the various Nigerian governments. This trend became pronounced with the attainment of political independence in 1960. The strategies adopted involve the use of fiscal and monetary policies and incentives, infrastructural support and indigenization of and government participation in industries.

Fiscal policies included the granting of pioneer status which comes with a two to five year profit tax holiday, depending on the amount of initial investment. This was incorporated in the Industrial Development (Income Tax Relief) Act, 1958 amended as Decree No. 22 of 1971. The 1971 amendment stipulates more conditions under which profit tax relief may be granted. Companies must invest a certain amount of capital, show signs of development, use local raw materials, implement realistic plans for staff training and manpower development, particularly with respect to Nigerian personnel, and be important nationally. Provision was also made for tax relief for small enterprises during the first six years of operation. Under the Import Duties Relief Act (1957) a new or expanding firm can obtain total or partial relief from import duties on raw materials imported for use in manufacturing production. This may be enjoyed for a period of up to ten years. This act was amended under the Approved Users Scheme of 1964. Under this scheme a manufacturing firm may import certain raw materials completely free of import duty or with high concession on duty. The Customs (Draw-Back) Regulation and Dumped and Subsidized Goods Act, 1958, were designed to encourage the development and expansion of manufacturing industries in Nigeria. Other financial incentives were provisions for accelerated depreciation on capital investment and tariff protection and the guarantee of unrestricted repatriation of profits and dividends. Monetary policies and incentives included the establishment of financial institutions such as the Nigerian Industrial Development Bank (NIDB), The Federal Loans Board (FLB), and the Nigerian Bank for Commerce and Industries. The latter tends to operate as an industrial promoter rather than a bank, and is moribund as a consequence of granting loans on political rather than commercial grounds. Infrastructural development has backed up financial and monetary policies. Much was done to improve the electricity and water supply, ocean transport facilities and to provide modern road facilities, industrial estates and industrial sites.

In order to increase the retention of profits, increase the net contribution of manufacturing to the national economy and reduce the danger of excessive dependence on foreign investment, the Nigerian indigenization policy was formulated. The Nigerian Enterprises Promotion Decree was promulgated in 1972. Subsequent amendments in 1973, 1974 and 1977 reflect changes in government policy resulting from experiences in implementing the Decree.

Briefly, it categorizes enterprises which are reserved exclusively for Nigerians (40 manufacturing types by 1977), those that must have at least 60 per cent equity participation by Nigerians (57 manufacturing types by 1977) and those in which Nigerians must have at least 40 per cent participation (39 by 1977). In addition, actual government capital expenditure on industries increased from about N60 million in 1962-68 to approximately to N2,569,667 million^{1/} in 1975-1980.

No doubt government industrial policy measures have greatly facilitated the diversification and expansion of the Nigerian manufacturing sector. By 1978, 93 per cent (1,120 out of 1,200) of the enterprises affected by the Nigerian Enterprises Promotion Decree had complied. An estimated N350 million worth of shares were sold in the process of compliance with the Decree. But, despite the change in ownership pattern, most enterprises in the manufacturing sector are still heavily dependent on foreign technology sources.

3. Structural and spatial changes in manufacturing

In 1958, about half of the production of the manufacturing sector consisted of semi-processed raw materials designated for export. The main industries were palm oil processing, rubber creping, saw milling and veneer production. The products which accounted for the remaining half were produced by infant industries. By 1967, value added generated by upgrading agricultural and forest products had fallen considerably in relative terms, accounting for less than 25 per cent of the value of the total output in the manufacturing sector. Other manufacturing activities accounted for the rest. These included cement, building materials, metal products, textiles, shoes, beer and soft drinks, soap and detergents and the like. An increasing proportion of the final consumer goods was being produced locally rather than imported. By 1978, the range of manufacturing activities in Nigeria had expanded to cover 54 industry groups (Table 1). There were 1,066 establishments employing 306,275 people. Total gross output was N4,908.4 million and value added was N2,261.7 million. These figures compare favourably with those of 1963 which were 649 establishments, 65,798 employees,

^{1/} At the time of the survey 1 Naira (Nigeria) = \$US1.57.

Table 1: Manufacturing Activities in Nigeria, 1978

ISIC Code	Industry	Number of establishments	Number employed	Gross output in ₦ thousands	Value added
311	Meat products	4	1,798	70,314	56,224
3112	Dairy products	6	1,573	111,733	27,701
3113	Fruit canning etc.	3	492	781	343
3115	Vegetable oil milling	32	21,888	82,879	32,903
3116	Grain mill products	10	1,347	56,829	22,526
3117	Bakery products	123	8,997	80,720	46,144
3118	Sugar refinery	3	5,207	64,196	24,744
3119	Cocoa, chocolate	12	5,598	97,798	43,333
3122	Miscellaneous food preparations	5	1,394	149,239	71,177
3133	Spirit distillery and beer	8	9,080	345,218	262,530
3134	Soft drinks and tobacco	7	7,135	102,545	59,822
3211	Spinning, weaving and finishing textiles	49	63,374	513,107	240,647
3212	Made-up terycile goods (wearing apparel)	18	16,501	130,499	62,393
3213	Knitting mills	6	2,409	42,954	15,769
3214	Carpets, rugs				
3215	Cordage, etc.	6	2,466	14,605	4,561
3220	Wearing apparel	21	1,805	12,872	4,615
3231	Tannery and leather finishing	10	1,436	24,506	10,920
3233	Travel goods	10	1,331	7,229	1,930
3240	Leather footwear	13	4,931	49,648	29,985
3310	Wood and cork				
3311	Saw milling	120	10,154	49,222	30,8287
3319	Other wood and cork products	6	901	4,217	2,132
3320	Wooden fixtures and furniture	82	10,452	89,314	44,777
3411	Pulp, paper and				
3412	Paper board, etc.	16	4,367	10,036	37,528
3419	Other paper products	10	2,808	55,224	21,668
3420	Printing and publishing	68	8,079	69,821	36,326
3511	Basic industrial chemicals				
3512	Fertilizers, etc.	11	2,007	46,105	20,369
3521	Paints, varnishes, lacquers	6	1,638	57,802	24,830
3522	Drugs and medicines	12	2,615	90,294	59,551
3523	Soap, perfume, etc.	19	10,331	379,676	140,997
3529	Other chemical				
3540	Products, petroleum and coal products	10	4,074	312,049	141,156
3551	Tyres and tubes	3	3,574	86,737	38,718
3559	Other rubber products	23	8,642	65,169	24,316
3560	Plastic products	38	8,797	116,611	41,142
3610	Pottery, china, etc.	3	216	1,276	739
3620	Glass products	9	1,912	23,394	13,905
3691	Bricks and tiles	28	2,610	9,337	4,552
3692	Cement, lime and plaster	10	5,912	59,587	33,157
3710	Concrete products	48	7,032	121,100	78,007
3720	Iron and steel	9	1,846	37,430	24,758
3810	Metals	6	2,199	90,451	41,533
3811	Cutlery, handtools, etc.	10	965	14,565	6,124
3812	Metal furniture and fixtures	31	6,524	75,941	31,001
3813	Structural metal products	36	13,657	241,973	84,844
3819	Fabricated metal products	38	10,168	166,487	52,562
3822	Agricultural machinery and equipment				
3823	Metal and wood working machinery	4	211	1,873	1,183
3884	Industrial machinery and equipment	8	1,203	12,785	4,765
3829	Machinery and equipment except electrical	7	4,304	112,776	67,022
3832	Radio, television and communication equipment	5	1,215	48,669	20,514
3833	Household electric apparatus	3	648	18,324	8,328
3839	Electrical apparatus and supplies	8	2,381	56,439	21,487
3841	Ship building and repairing	7	1,159	6,112	3,410
3843	Motor vehicle assembly	10	2,978	330,441	41,011
3844	Motorcycles and bicycles	3	869	75,768	33,523
3909	Miscellaneous products	14	975	13,642	6,585
	Total	1,066	306,275	4,908,419	2,261,709

Source: Federal Office of Statistics: Industrial Survey of Nigeria 1975-1978, Lagos, 1982.

Fig. 1: The spatial pattern of manufacturing in Nigeria, 1962

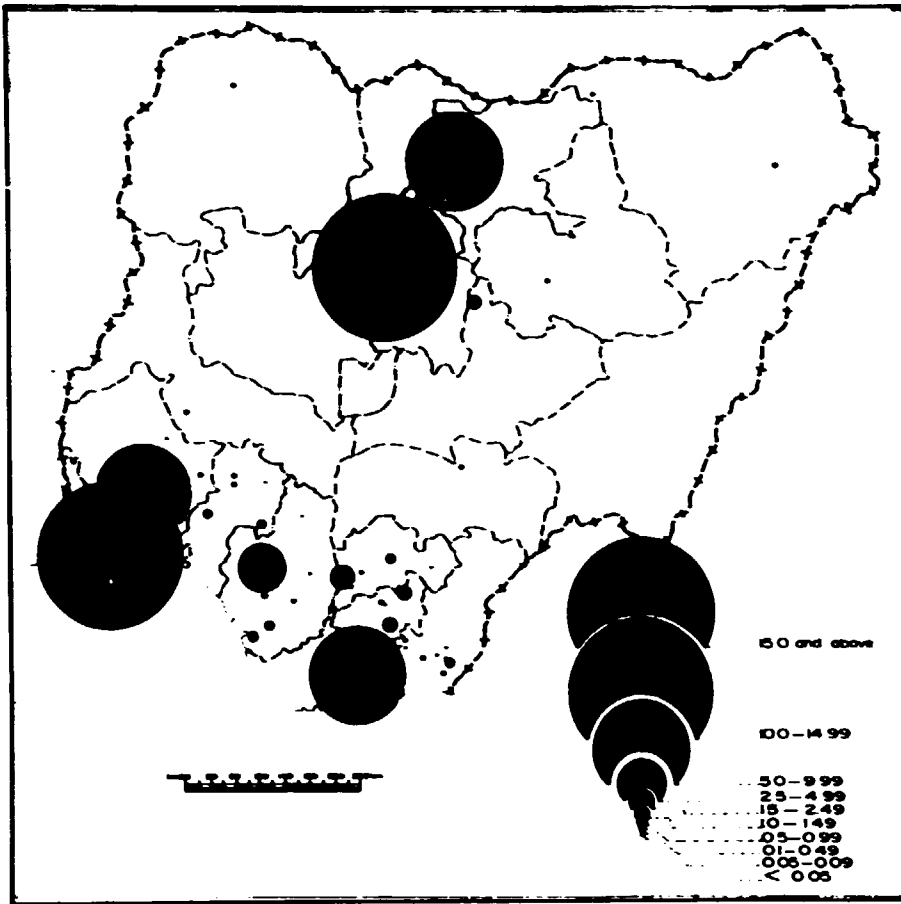
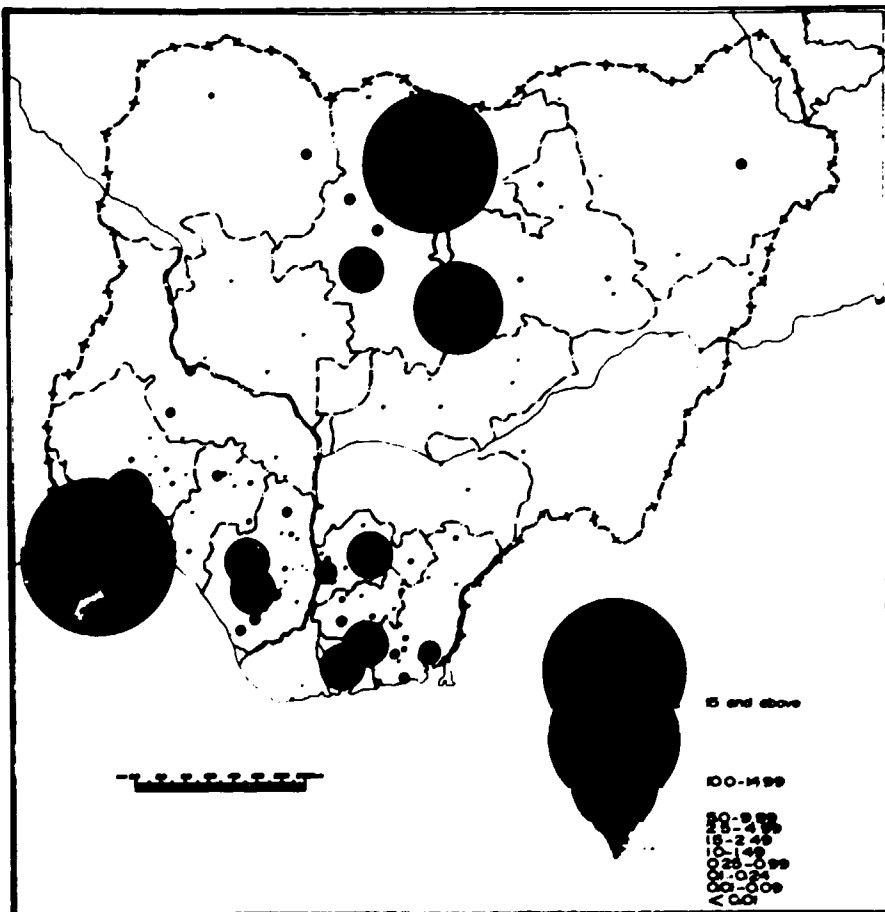


Fig. 2: The spatial pattern of manufacturing in Nigeria, 1973



a gross output of N136,7 and a value added of N54,9 million. Manufacturing alone experienced a 12.2 per cent compound rate of growth between 1962/63 and 1972/73. Between 1975/76 and 1979/80, the growth rate of the manufacturing sector was 18.1 per cent per annum.

Significant changes have also occurred in the spatial pattern of manufacturing activities in Nigeria. In 1962, the bulk of such activities in Nigeria were located south of the river Niger with only Kano, Jos and Zaria having any substantial activity north of the river. However, by 1973, the activity had diffused to a much wider spatial extent (Fig. 1 and 2). This has been the result of a deliberate government policy of industrial dispersal as well as the active encouragement of manufacturing activities by each of the 19 state governments created since 1967.

4. Case Study: Kwara State (see Fig. 3 and 4)

As an example of the trend in spatial patterns of economic and especially manufacturing activities, Kwara State is analyzed in greater detail. Kwara State was created out of the old northern region in 1967 and Ilorin became its capital. The state incorporates part of what is known as the Nigerian middle belt which is typically an underdeveloped area. It has an area of 60,388 sq.km. In 1963 its population was 1.7 million, the 1980 projection was 2,898,552, based on a population growth rate of 5 per cent and 2.5 per cent for urban and rural areas respectively.

The first (1970-1974) Kwara State Development Plan succeeded in laying the political and administrative infrastructure for the state. The second State Development Plan (1975-1980) had among its objectives the promotion of labour-intensive industries as well as promoting the development of agro-based industries. However, the 1981-1985 Kwara State Development Programme declared that during the previous plan period, the state failed to achieve a significant rate of expansion in the manufacturing sector despite its many agricultural and natural resources. Among the reasons adduced for this low performance were the shortcomings of such essential infrastructure as the electricity and water supply and the road network; shortage of financial resources; the dwindling productivity in the agricultural sector and delays in the production of feasibility studies of projects earmarked for

implementation. The 1981-1985 Kwara State Development Plan addresses some of these problems. The policies and objectives of the state in the 1981-1985 Plan relevant to this study include the establishment of at least one industry in each of the 12 Local Government Areas (LGAs), the promotion of agro-based industries, priority to labour intensive industries and encouraging indigenous participation in industrial investments.

In September 1982, a field survey was conducted in Kwara State with the assistance of undergraduates. One student was assigned to each of the 11 LGAs while 6 students were assigned for the survey in Ilorin LGA. In each LGA the headquarters as well as the next two important settlements in terms of population and economic activities were included in the survey. The only exception was the Ilorin LGA which is the city itself. The survey lasted for one month. Two sets of questionnaires were used - one for management and the other one for the workers. The management questionnaire sought, among other things, information on establishment ownership, the number of employees, initial capital and present value of the establishment, input sources and destination of output, expenditures on salaries and local purchases per month. The workers' questionnaire sought from each employee information on age, origins, income, previous employment(s), educational status, home remittances (if any), skills learned on the job, etc. All manufacturing establishments employing 5 or more people were surveyed.

A general review of the state's industrial structure is given in Table 2. Note that in 1962, only Ilorin had any manufacturing establishment that employed 10 people and above. However, by 1982, such establishments were recorded in 9 of the 12 LGAs. If we consider establishments employing 5 people and above, 11 of the LGAs had manufacturing establishments. Although this confirms a diffusion of activity to a much wider area since 1962 there is still a concentration in the state capital - Ilorin: it accounts for 29.3 per cent of the total establishments. This may be explained by a number of factors. Every state government in Nigeria has adopted a deliberate policy of modernizing its state capital by upgrading infrastructure such as electricity and water supply and transportation, which attracts firms. Locating in the state capital also has the advantage of being close to the decision-making machinery of the state. The existence of a high number of salaried workers in the state capital increases effective demand and provides an adequate threshold population for many manufacturing activities.

Fig. 3: KWARA STATE OF NIGERIA

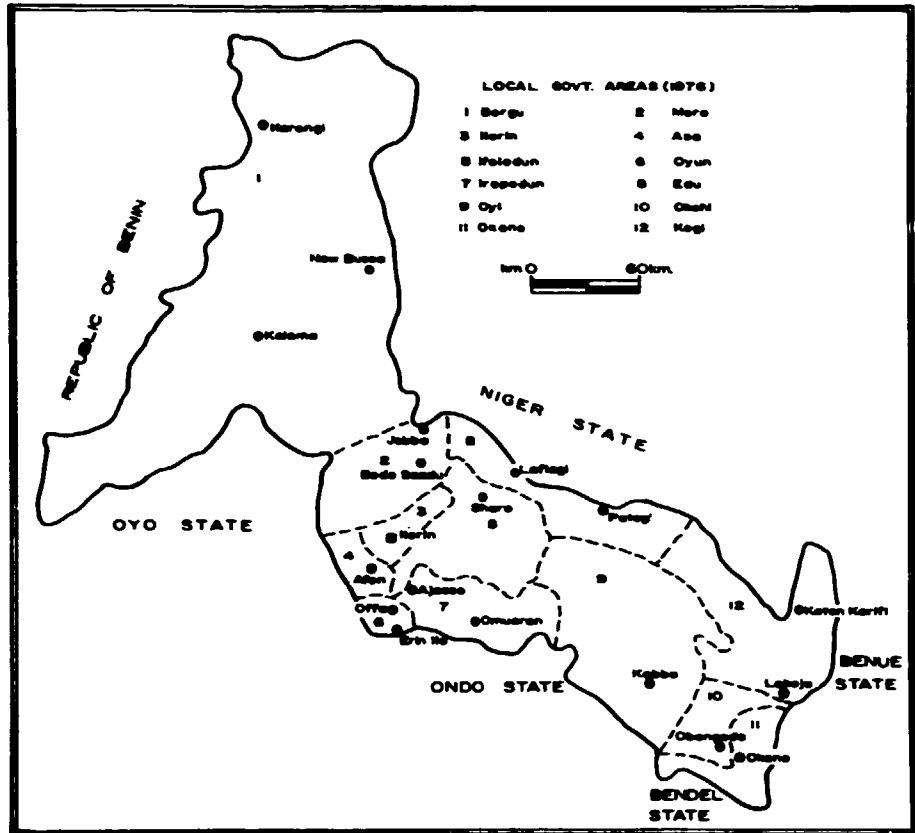


Fig. 4: The spatial pattern of manufacturing activities in Kwara State, 1982

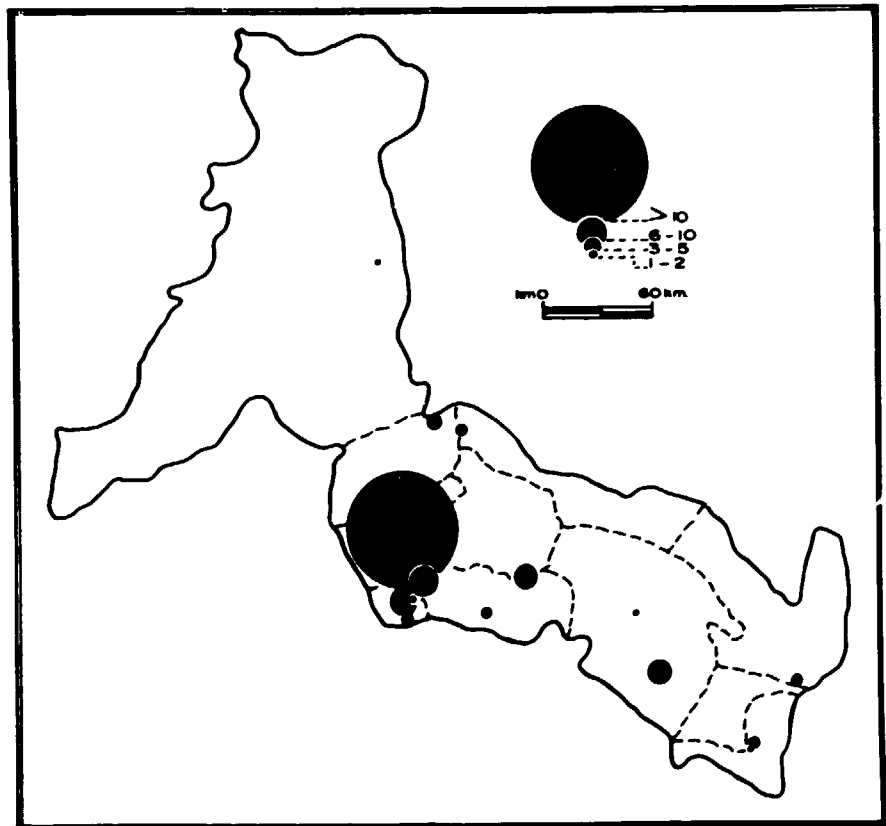


Table 2: Manufacturing Establishments in Kwara State according to local government areas

ISIC code	Nature of activity	Local government Area	No. Surveyed														Total activity	% Total
			Asa	Borgu	Edu	Ilorin	Ife-Iodun	Ire-Ipodun	Kogi	Moro	Okchi	Okene	Oyi	Oyun				
			9	13	17	54	17	30	4	17	12	17	13	19				
			No. Qualify															
			1	3	7	39	-	20	2	17	15	9	6	12				
3117	Bakery		1	-	5	4(1)	-	4	-	10(2)	4(2)	2(2)	-	1	31(7)	23.3		
3121	Misc. food preparation		-	1(1)	2(2)	2	-	1(1)	-	3	-	-	1(1)	-	10(5)	7.5		
3133	Beer and stout		-	-	-	-	-	-	-	-	-	-	-	1(1)	1(1)	.8		
3134	Soft drinks and carbonated waters		-	-	-	1	-	-	-	-	-	-	-	-	1	.8		
3140	Tobacco products		-	-	-	1	-	-	-	-	-	-	-	-	1	.8		
3211	Spinning, weaving and finishing textiles		-	-	-	1	-	-	-	-	5	-	-	-	6	4.5		
3212	Made up textile goods except wearing apparel		-	-	-	-	-	1	-	-	-	1(1)	-	-	2(1)	1.5		
3311	Sawmilling		-	-	-	5(3)	-	4	1	-	-	-	1	4(4)	15(4)	11.3		
3320	Furniture and joinery		-	-	-	4(1)	-	2(1)	-	-	-	2(1)	1	3(2)	13(5)	9.8		
3420	Printing, publishing and allied industries		-	1	-	1(1)	-	-	-	1(1)	1(1)	-	1(1)	1(1)	6(5)	4.5		
3691	Structural clay products		-	-	-	17(15)	-	5(5)	-	1(1)	2(2)	2(1)	1(1)	2(2)	30(27)	22.5		
3813	Structural metal products		-	-	-	2(2)	-	2(2)	1	2	2	1	1(1)	-	10(5)	7.5		
3909	Industries not otherwise classified		-	1	-	1	-	1(1)	2	-	-	1	-	-	6(1)	4.5		
4240	Footwear		-	-	-	-	-	-	-	-	-	1	-	-	1	.75		
	Total		1	3	7	39	-	20	4	17	15	9	6	12	133			
	% Total		0.8	2.2	5.3	29.3	-	15.0	3.0	12.8	11.2	6.7	4.5	9.0				

Source: Author's fieldwork, September 1982.

Figures in brackets relate to the number of establishments employing 10 people and above.

Apart from actively promoting medium and small scale establishments, the state government has embarked on direct investment in industrial activities. Among such enterprises are the Kwara Brewery Ltd., which was established in 1979, the Jakura Marble Industry and the Kwara Paper Converter Ltd., to mention but a few. Table 3 gives a selection of establishments from 6 LGAs. The establishments range from small-scale bakery enterprises through medium-size plants such as the Tate and Lyle (Nigeria) Ltd., to a large scale establishment - the Nigerian Sugar Company Ltd. Similarly, ownership ranges from sole proprietorship to partnership with the government or foreign interests to sole government ownership. Initial capital varies from N3,400 for a bakery to N9.5 million for Kwara Commercial Metal and Chemical Industries Ltd. Many of these establishments rely in varying degrees on imported raw materials (Table 3). An important problem facing many of the manufacturing establishments in Nigeria today is the difficulty of securing imported raw materials due to Federal Government restrictions on imports consequent upon foreign exchange difficulties.

4.1 Impact of industrial activity

The impact of industrial activity in the state is analyzed in terms of backward and forward linkages (within and outside the industrial sector) and in terms of employment (Table 3). Manufacturing activities only have a development effect on the areas surrounding their locations when they have adequate multiplier effects within and outside their own economic sector. A look at table 2 reveals that almost two thirds (65.5 per cent) of the establishments in the state are geared towards the production of food and shelter. Thirty-two point two per cent produce food and beverages for final consumption while bakery alone accounted for 23.3 per cent. Another 22.5 per cent of the establishments produce structural clay products for the construction industry, while another 9.8 per cent are classified as furniture and joinery.

It was found that most of the establishments had no backward linkages with other establishments located within their areas. In Moro LGA for example, 56 per cent of the establishments were bakeries, which obtained their raw materials from Ilorin (115 km away) and also from Jebba within the same

Table 3: Selected Manufacturing Establishments, Ondo State

Name of Establ.	Location	Ownership	Year Est. established	Number Employed	Initial Capital	Value as at September 1981	Type of raw material	Source of raw material	Type of output	Market	Value of output	Amount spent on wages and salaries per month	Amount spent on raw material in 1981	Main Problem(s)
Ibukun Olu Bread	Pategi (Edu)	Private Sole Proprietor	1960	5	N3,400	N3,000	Flour, sugar	Ilorin	Bread	Pategi Pata	N300/week	n.a.	n.a.	Defective flour occasionally
Adios Kifi House	New Bussa (Borgu)	Private Ltd.	1969	12	N2,160	N7,560	Fish	Kainji dam	Fish	New Bussa	N120/week	n.a.	n.a.	Slow demand
Ainscho Printing Works	New Bussa	Private Ltd.	1972	8	N1,200	N4,000	Plain paper	Jebba	Printed Matter	New Bussa	N205/week	n.a.	n.a.	Irregular demand
Olarinde Bakery	Bacita (Edu)	Sole Proprietor	1974	7	N2,000	N3,000	Flour, sugar	Bacita, Ilorin	Bread	Bacita Environ	N250/week	n.a.	n.a.	n.a.
Ondo Paper Converter Ltd.	Erin-ile (Oyun)	Ondo State Govt.	1982	100	N5 mil.	n.a.	White wood-free paper	Germany	Stationery	All over Nigeria	N25,000/month	N140,000	n.a.	Insufficient funds
United Match Co.	Ilorin (Ilorin)	Private Ltd.	1962	365	N6 mil.	n.a.	n.a.	Imported	Safety matches	All over Nigeria	N2.2 mil. in 1981	n.a.	n.a.	n.a.
Ondo Comm. Metal & Chemical Ind. Ltd.	Ilorin (Ilorin)	Private Ltd.	1974	450	N9.5 mil.	N11.5 mil.	Billet, Cobble-plates	Imported	Iron rods, flat & square rods	All over Nigeria	N4.3 mil. in 1981	n.a.	n.a.	Competition from imported rods, lack of raw materials, power failure
Dale & Lyle (Nig.) Ltd.	Ilorin (Ilorin)	80% Nigeria 20% Foreign	1964	500	N2.5 mil.	N5 mil.	Granulated sugar	Lagos, Ibadan & Europe	Sugar cube & Syrup, wastes	All over Nigeria	N15 mil. in 1981	N90,000	n.a.	n.a.
Enamel (Nig.) Ltd.	Ilorin (Ilorin)	Private Ltd.	1978	1,500	N4.5 mil.	N5.2 mil.	Cold Rolled steel sheets, enamel acids & oxides	Overseas	Enamel wares	All over Nigeria	N3.7 mil.	n.a.	N2.5 mil. in 1981	Competition from imported enamel wares, power failure
Nigerian Paper Mill Ltd.	Jebba (Moru)	Federal Govt.	1968	1,300	n.a.	n.a.	Pulp, chemicals	Overseas	Stationery, corrugated paper	State Govt. & other large establ.	n.a.	N67,000	n.a.	n.a.
Nigerian Sugar Co. Ltd.	Bacita (Edu)	Partnership with Federal Govt.	1961	3,000 full-time + 2,000 part-time	N10 mil.	N400*	Grown on the estate	On the estate	Refined sugar, molasses bagasses	Kano Ilorin Bacita	About N20 mil.	About N583,000	n.a.	Imported sugar
Jakura Marble Industry	Lokoja (Kogi)	Ondo State Govt. & 3 other Nigerian companies	1968	190	N1.05 mil.	N2 mil.	Limestone	Jakura	Marble and terrazo	Lagos, Port-Harcourt	N62,277/week	n.a.	n.a.	n.a.
Ondo Breweries Ltd.	Ijebu (Oyun)	Ondo State Govt.	1979	427	N4 mil.	N10 mil.	Imported		Beer	All over Nigeria	n.a.	n.a.	n.a.	n.a.

- * 1. This Company was initially established as a social service.
- 2. One Naira (N1) at the time of the survey in September 1982 was U.S. \$1.57.
- 3. n.a. = not available. The local Government Areas are in brackets.

Source: Author's field-work, September 1982.

LGA, but the flour purchased was manufactured either in Lagos or Kano, using imported raw materials. The output consisted of final consumer products sold locally. Hence the multiplier effect of the activity was very limited. Similarly, in Oyun LGA, 25 per cent of all the establishments were furniture firms, the raw materials for which mostly came from Ibadan, 250 km away and Ilorin, 50 km distant but in a different LGA. Some material was obtained locally, but 33 per cent of the enterprises involved were sawmills whose raw materials came from the forest zone in Ondo state. The distance to the sources ranged from 150-200 km. Part of the production was sold locally, part of it was exported to the state capital and to Okene, as well as to Zaria and Katsina in Kaduna State.

While these are all small-scale, privately-owned establishments employing less than 40 people, the two most important, medium-scale establishments - Kwara Paper Converter Ltd. (with 150 employees in 1982) and Kwara Breweries (employing 427 people) - are owned by the state government. The latter was established in 1978 and the former in 1982; both their establishment and their location are the result of political decisions. The two plants depend heavily on imported raw materials obtained principally from Europe. Their output is sent to various parts of Nigeria.

The Nigerian Sugar Company Limited which is located at Bacita provides a contrast to the above general trend. The company was planned as an integrated establishment with backward and forward linkages. The principal input, sugarcane, is grown on the estate where the factory is sited. In 1981/82 the company employed 2,741 regular staff and an additional 1,511 people during the peak period which normally extends for six months a year. Expenditure on wages and salaries per month was approximately N500,000 and could rise to N1 million per month during the peak period. This represents a significant financial injection into the local economy. In 1981/82 the factory produced about 300,000 tons of granulated sugar, sold to different parts of Nigeria. Forty to sixty per cent of total factory output consisted of bagasse which was used as fuel by the factory. Five to ten per cent of the output consisted of filter cake (which is currently not used) and another 5-10 per cent of finer molasses used by the Nigeria Yeast and Alcohol Manufacturing Company located in Bacita. In that year the value of the company's output was N20 million.

On the whole, the majority of the establishments have no backward linkages with other activities in their LGA, and as producers of final consumer goods they generate no forward linkages with other activities. In consequence, most of these activities have limited multiplier effects on the local economy.

An examination of the labour impact of the activities was also carried out. The focus was on the sources of labour in Ilorin LGA. Two hundred and forty-eight industrial employees in 18 establishments took part in the survey. Table 4 reveals that while 65 per cent of the employees were already working in the town before they were recruited only 22.2 per cent of them were indigenous to the town. Another 37.3 per cent have their home towns in other parts of the state. Although none of the workers was of Lagos State origin, 4.6 per cent of the workers were previously employed in that state before they moved to Ilorin. This indicates that emerging centres of manufacturing activities in Nigeria are succeeding in attracting labour from established core centres of national industrial activity such as Lagos. It also indicates a positive impact of the decentralization policy of the Federal Government. An interesting feature is the proportion of Ghanaians (3.9 per cent) who were employed in the town.

An analysis of the correlation between the size of population of the LGAs and the number of people employed in manufacturing in each of them yields a Pearson correlation co-efficient of 0.62 which is significant at the 0.05 confidence level using Student's 't' test.

The relationship between the two variables was plotted on a scatter diagram (Fig. 5). The regression equation is

$$Y = 912 + 0.62x$$

from which we deduce a positive relationship.

This does not mean that given a specific population, a given number of people will be employed in manufacturing activities: other factors such as the local resource endowment, government policy, type of manufacturing activity, infrastructural facilities, etc., distort any direct relationship

Table 4: Place of Origin and Previous Town of Employment
of Industrial Workers in Ilorin, Nigeria

State/Town	Home town	Previous town of employment
	(As percentage of sampled workers)	
Ilorin	22.2	65.0
Other parts of Kwara state	37.33	8.0
Ondo state	6.5	3.0
Ogun state	5.2	2.0
Oyo state	13.0	6.0
Bendel state	3.9	0.5
Imo state	3.2	-
Sokoto state	2.0	1.5
Kano state	0.65	2.0
Anambra state	0.65	1.0
Cross River state	0.65	-
Niger state	0.65	0.5
Kaduna state	-	0.5
Lagos state	-	4.6
Gahana	3.9	4.6
Total percentage	99.8	99.2*

Source: Author's fieldwork, 1982.

* The total percentage figure may not be exactly 100 because of rounding errors.

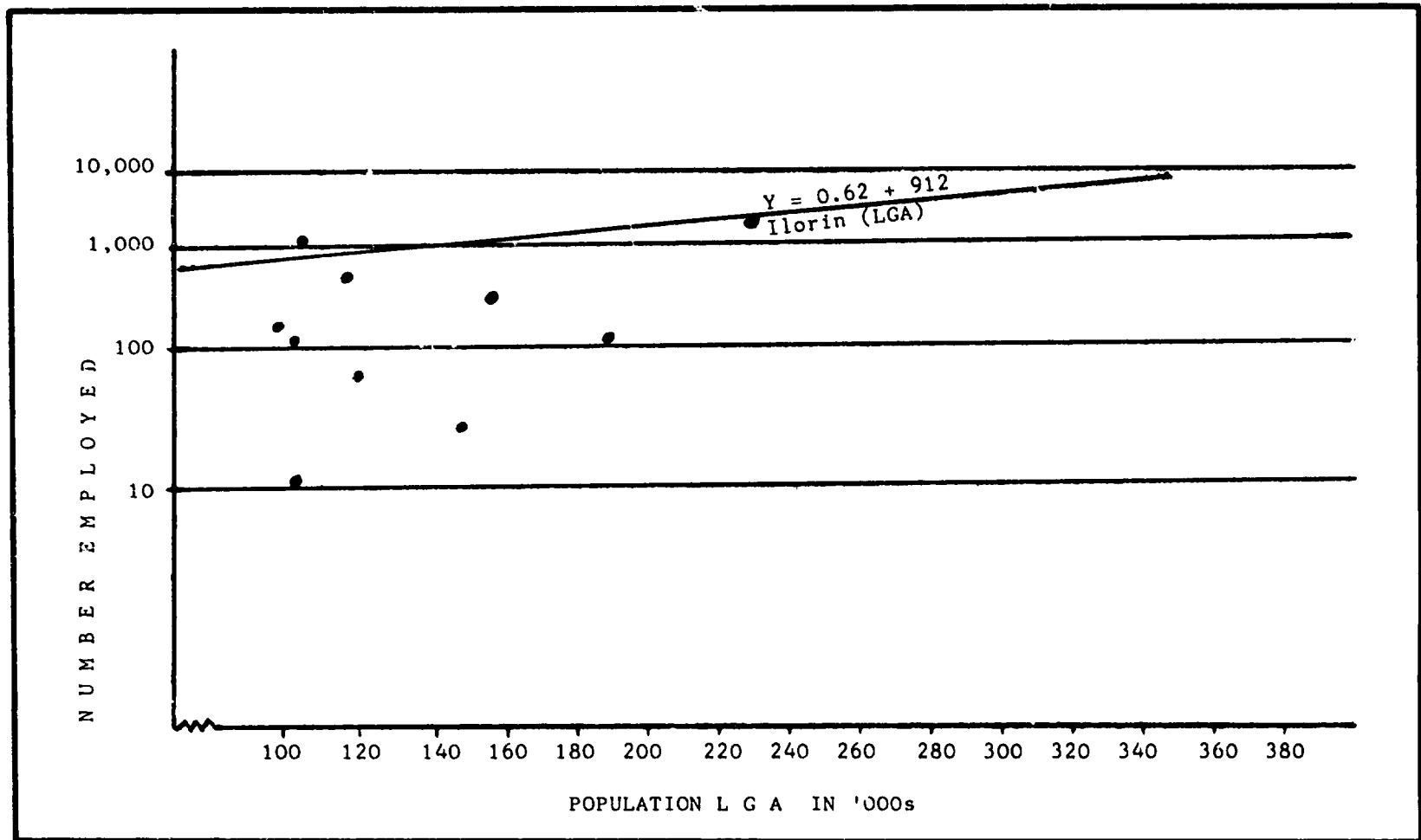


Fig.5: Graph showing the relationship between the population of local Government Areas and the number of people employed in manufacturing

theoretically derived. But Ilorin, the state capital, with the highest population among the LGAs, also has the greatest number of employees in manufacturing activities. Borgu, the LGA with the lowest number of people employed in manufacturing activities ranks eleventh (that is, next to the least populated LGA) in terms of population size. A number of factors account for the relatively underdeveloped status of Borgu LGA. Among these are its peripheral location within the state relative to the state capital and other centres of modern development in the south, e.g. Ilorin, Oyun and Irepodun LGA, the ecological characteristics of the LGA, located in the savanna belt, its poor infrastructural facilities and its relatively poor resource endowment.

5. Summary and conclusions

This paper has examined the pattern of manufacturing activities in Nigeria with a more detailed analysis of Kwara State. The national industrial policies adopted by the Federal Government are examined as well as the impacts of these policies, particularly with regard to the decentralization of activities. It was found that while areas of concentration still exist, especially around metropolitan Lagos, manufacturing activities have diffused over a much wider area of the national territory since the attainment of national independence. A similar pattern is noted with respect to Kwara State. Whereas in 1962, only the state capital Ilorin had any manufacturing establishment employing 10 people and above, by 1982, 9 of the 12 LGAs in the state had such establishments. Furthermore, the indigenization policy of the Federal Government has resulted in a greater involvement of Nigerians in the ownership and management of manufacturing activities. Many of the enterprises are however still technologically dependent on foreign sources.

The Kwara state analysis reveals that most of the establishments have no backward linkage effects on activities in their surrounding areas and have only very limited forward linkages: the majority of establishments are geared towards final consumption and rely on raw materials imported from foreign countries or on inputs obtained from other states in Nigeria. Dependence on foreign raw materials makes these establishments vulnerable in the present period of foreign exchange restrictions. Some of the establishments already face closure because of the lack of imported raw materials.

Overall, there is a need for increased emphasis on manufacturing activities which use local raw materials. Special incentives should be given to such activities. Ventures such as the Jakura Marble Industry which uses a local natural resource should be further developed.

In terms of employment, the greatest favourable impact occurs in Ilorin where 59.5 per cent of the industrial workers are either indigenous to the town or are indigenes of other towns in Kwara State. The analysis also reveals that other centres of manufacturing activities in Nigeria are succeeding in attracting labour away from metropolitan Lagos, a positive result of the decentralization efforts of the Federal Government.

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Bertha K. Becker

THE FRONTIER AT THE END OF THE TWENTIETH CENTURY -
EIGHT PROPOSITIONS FOR A DEBATE ON AMAZONIA

1. Introduction^{1/}

The purpose of this paper is to analyse the structuring and significance of the frontier in the context of the contemporary world. It deals with Brazilian Amazonia, one of the last frontiers on earth, whose rapid appropriation in the last 15 years has been a concrete manifestation of the tendencies of the new international division of labour (IDL).

The international division of labour expresses the character of the reorganization of the capitalist accumulation model. The IDL, however, is not restricted to the level of techno-economic considerations - it also expresses the geopolitical framework which conditions economic restructuring, i.e. the correlation of forces and strategies of the different actors for control of the international scene.

The new international division of labour which emerged from the process of crisis and restructuring of capitalism during the last decade is characterized basically by the extension of the process of industrial production from advanced capitalist economies to peripheral ones. Analysis of the specific forms of integration of peripheral societies in IDL is a difficult task by reason of the very characteristics through which global restructuring operates - the magnitude of the rate and the scale of transformation, and the simultaneous and combined globalization/fragmentation movements which generate an interactive growth among elements which are ignorant of one another and of the logic of the totalities of which they are part.

The present IDL is determined by an economic restructuring led by high technology - a new form of production and social organization (Castells, 1984) - and operated by competitive multinational corporations and financial organs on a world-wide scale. The growing internationalization of the capitalist economy, based on high factor mobility, is the basic element and the most general tendency of economic restructuring.

^{1/} The author is grateful to Professor Lia O. Machado for the English version of this paper.

High capital and labour mobility constitute the basic condition for the globalization of the economy. Labour as an organized force is fragmented as a consequence of the polarization of skilled/unskilled vis-à-vis high technology activities. Capital mobility is associated with the segmentation of production and with financial manipulation. Financial manipulation, facilitated by modern information and communication technology, has a strong political component. The growing debt of capitalist peripheral societies in which financing by the big international banks and organs has been accompanied by extraordinary high rates of interest, reduces their autonomy (Becker, 1984). The segmentation of production is based on the modern technology of production and transport which make the corporation independent of its immediate environment, enabling it to combine resources on a world-wide scale (Becker, 1982, 1984).

The territorial division of labour is thus facilitated. High-level operations - information, research, design - which require highly qualified labour and whose location is restricted to certain areas, become spatially dissociated from routine operations - manufacture and assembly - which, thanks to simplification and standardization, can use unskilled labour and can therefore be set up in a wide range of localities. Other areas are exploited for their raw materials (especially minerals) and their agricultural potential. The extent to which internationalization negatively affects nations depends on their degree of integration in the IDL. The specific forms assumed by this integration, however, are not only determined by economic restructuring; they also depend on the amount of indetermination inherent in politics, which varies in different social formations. Nations are not homogeneous - they express the variety of social conditions of capitalist reproduction; the alliance of classes determines a country's margin of manoeuvre for a more or less advantageous integration in global capitalism. The capacity of each nation to draw up its own geopolitical map is thus a basic element of changes in the IDL.

What are the conditions for the integration of peripheral capitalist societies in the new international division of labour? What is the role of the State in this process? At the moment when Brazilian society is undergoing a severe economic, social and political crisis while trying to recover civil rights, the discussion of these questions is basic to the formulation of alternative solutions to an authoritarian model of development.

The frontier presents the clearest examples of these integration tendencies. It continually attracts new private enterprise and government projects. In the large scale and swift rate of spatial transformation in Brazilian Amazonia, partly controlled by the State, the mechanism of the international division of labour and of the contradictions inherent in it may be identified.

In this essay eight propositions are offered.^{1/} They refer to some of the main controversies that have dominated the debate on the Amazonian frontier and at the same time attempt an up-to-date overview of the conditions for regional reorganization.

2. The Amazonian frontier space is not fully structured while sharing with the rest of Brazil the results of a technology-prone growth model characterized by intensive State mediation.

The term "frontier" here does not designate unoccupied public lands the appropriation of which is open to pioneers, but a not fully structured space which generates new kinds of reality endowed with high political (historical) potential (Velho, 1976). Its evolution will depend on the mode of unoccupied land appropriation, on the social relations established there and on the type and interests of the social agents involved. Hence the frontier cannot be considered as an isolated phenomenon. It is defined in relation to a national spatial structure and its alternative potential is circumscribed to limits imposed by the social formation within which it finds itself.

The scale and rate of transformation of the Amazonian frontier can only be understood in the context of contemporary globalization. The concept of globalization refers to a new scale of labour-capital relationships pertaining to the production of a planet-wide economic space in which nation-states

^{1/} These propositions are the result of a research project largely based on field work. This project began as an individual project by the author in 1970. Since 1977 a research team has been formed by the author and Prof. Mariana Miranda and Lia O. Machado, the former in charge of settlement issues and the latter of urbanization issues. Prof. Luis Eduardo Soares is a project consultant.

retain their controlling, hierarchy-forming and regulating functions while assuring the country's insertion in a global capitalist system (Lefebvre, 1978). This involves the State in a set of contradictions. The main contradiction would seem to be that while assuring ideal material conditions for the perpetuation of bourgeois political dominance, the State cannot reduce itself to being a mere reflex of this class. It can only assure the ideal material conditions through economic interventions if it preserves its own legitimacy as mediator of class interests (Altwater, 1981). Thus it tends to gain a certain degree of autonomy, setting limits to the process of modernization (Furtado, 1981) and developing reform programmes in strategic areas so as to reconcile the many conflicting interests.

Another contradiction is brought out by Lefebvre's notion of the State's fundamental role in late capitalism. For Lefebvre space is the main instrument of the State. The economic, the political and the ideological are reconsidered in spatial terms. The economic is translated in flows and stocks and the State's role is to control and co-ordinate the movement of flows and stocks through existent space. In other words the State imposes a spatial order. This spatial order is bounded by a global conception of space that results from a strategic and generic social practice. A contradiction develops between this global spatial order and the practice and conception of local space, private interests and individual aims. As a result the State "does not engender a new space but a specific product of the public/private cleavage expressed as a global/fragmented space" (Lefebvre, 1978).

The frontier is precisely in the process of being incorporated into global/fragmented space. It offers new possibilities for the territorial expansion of capital. In contemporary globalization, corporate strategy for the domination of the international economy and the selection of localities for investment centres on: (1) investments in high technology and markets for high technology products; (2) control of the world financial market; (3) controlling means of production - raw materials, land and labour.

It is easy to see the attraction of the frontier in this context: without organized resistance from the workforce or local society, it is possible to combine, on an unprecedented scale, the exploitation of the means of production with investments in high technology for such exploitation and, at the same time, to open up a large market for high technology products as a new

space is constructed. At the same time the capitalist social forms that accompany the expansion are imperfectly realized and unstable, and hence problematical. Hybrid forms are quite fluid and very sensitive to the effects of economic and political globalization.

The Amazonian frontier can also be considered as an ideological space in the sense that its existence and its future has become a symbol of possible alternatives which aim at more harmonious social development for the nation. Manipulated by the State as an "alternative" space, the Amazonian region nevertheless has become a major political issue in its own right.

3. Although the scale and rate of land appropriation grow, it is not total nor uniform nor irreversible - the frontier is not closed.

Occupation of such an extensive territory obviously demands State sponsoring. In agreement with capitalist interests the method chosen was to favour large estates as the main form of rural settlement. Income tax reduction and low-interest credits were used to spur on private corporations. Owned by urban Southeast-based commercial and industrial firms, these Brazilian and multinational concerns appropriated most of the newly-opened territory. But the State also developed land reform programmes in strategic areas to meet the needs of different social interests and to co-opt rural masses. This led to the emergence of large areas of tenant farming, just as one finds in the rest of the country, in the mid-1970s. The land appropriation process however has not been completed. Consider the following:

a) The existence of a large amount of unoccupied public land. The frontier is far from closed for future landowners. The total area occupied by landowners and squatters (including farming, ranching and non-productive units) only amounted to 24 per cent of Amazonia in 1980;

b) Large estates are the dominant but not the only mode of land appropriation. Other modes of appropriation are also present. A tentative classification of the various and rather unstable forms of appropriation would include: (a) private settlement projects encouraged by indirect State sponsoring; most of these are managed by land merchants from northern Parana, a farm frontier area; veritable heads of mini-States, they trade large and

small urban and rural holdings and monopolize the marketing of the main commercial products. The State has also encouraged land appropriation by individual farmers, most of them traditional stockbreeders and small crop producers who are steadily migrating from the south-east; (b) direct State-sponsoring following two main procedures: large settlement projects such as the Transamazonian project aiming at the distribution of small holdings to impoverished and prospective small capitalist settlers and directly government-managed territories where conflicts have ensued between squatters and landowners; (c) an association between the federal government and private corporations, the most recent mode of operation on the frontier, which on a regional scale has created planned territories for extensive exploitation (e.g. the Grande Carajas Programme Area);

c) Changing priorities and strategies of producers and landowners may alter the present regional settlement pattern. As new political and economic events such as the present financial crisis develop, it can be noted that:

- Multinational capital shows signs of withdrawal from agriculture (Sawyer, 1982), shifting to more selective investments in mineral undertakings; this process offers opportunities for other types of agricultural investment;
- Individual stockbreeders and farmers must look for new stratagems to maintain their holdings, especially where credit is concerned. As the balance-of-payment crisis restricts credit, many large landowners tend to group themselves with private corporations and urban-based shareholders. Medium and small landholders facing the same problem substitute cattle raising by cash crop farming for foreign markets (rubber, cocoa, guarana, etc.);
- Small settlers and producers with limited means are also changing their tactics. They tend to abandon crop farming as interest rates for agricultural credit become higher, and try to survive through land leasing, investment in trade (trucking or urban trade), joining the gold rush and consuming their savings. In many cases the various members of the family engage in different occupations;

- The traditional peasant sells his tract of land, moving on deeper into the interior or else migrates to the towns or joins the interregional migration flow. Some of them hold on to their land through intensified occupational mobility which provides minimum conditions for survival. An example of internal migration which is modifying the regional settlement pattern is the organized flow from the Sao Paulo industrial area to northern Mato Grosso, consisting of unemployed metalworkers of the automobile factories who sell their belongings and purchase plots in search of new opportunities.

4. Labour mobility has been a condition for spatial reorganization and migration and is a politically-induced process.

According to the classical Marxist labour-market formation model, the expansion of capitalist forms of production leads to proletarianization. In so far as this is considered as an historical tendency the statement is correct. The Amazonian frontier however shows a rather different situation which can only be explained by an alternative hypothesis: labour mobility is the main condition for the expansion of capitalist forms of production. The labour force consist of wage-earners (temporary and permanent) and of smallholders whose income is supplemented by wage labour in agriculture, the transport sector and the urban economy. The labour market is partly the result of a process of migration and mobilization.

a) Labour mobility is the spatial aspect of a process of social fragmentation.

It is the spatial aspect of the transformation of the peasantry into a labour reserve, into eventual rural and/or urban wage-earners. Labour mobility is also part of the formation of intermediate class-layers that complete the capitalist framework. Labour mobility is a plastic quality, it enables the adaptation of the labour force to the needs of production; it is a condition for the existence of capital as it dynamizes the production of the workforce, its utilization in the productive process and its occupational circulation (Gaudemar, 1976).

On the frontier labour mobility is intensified. In the task of promoting rapid occupation of a vast area, relative labour shortage occurs. The creation of a dynamic, versatile workforce accomplishing various tasks and also producing food becomes a fundamental condition for the organization of a regional labour market.

Relative labour shortage is thus solved by a high degree of spatial/occupational mobility of labour: part of the peasant population loses its lands and becomes "free", while others support themselves as peasant proletarians on a seasonal basis.

b) Labour mobility is a politically-induced economic imperative moulded by the strategies of social agents:

- 1) State strategy is implicit in all State policies. Sometimes it is explicit, as in the case of the national mobilization of migrants for the Amazonian frontier. The establishment of an urban and highway infrastructure reducing distances and at the same time offering employment in construction provides a precondition for migration flows. Another precondition is fulfilled by agricultural modernization in the depressed areas of the Brazilian north-east region which creates reservoirs of manpower.

Regional policy subsidized the transfer of industrial and commercial capital into agriculture, assuring monopolistic land appropriation via fiscal incentives.^{1/}

Land policy is now more or less distributive, aimed at the non-monopolistic fraction of capital and at landless migrants. It produces a labour force by means of a mechanism of

^{1/} The tax-incentive package comprised: (a) a 50 per cent income tax deduction for legal entities with head offices in Brazil to finance projects approved by SUDAM (Amazonia Development Agency); (b) total exemption or reduction of up to 50 per cent of income tax for 10 years for enterprises already established or established in Legal Amazonia by 31 December 1974; (c) exemption from any taxes or dues on the import of machines and equipment by enterprises located in SUDAM's area (Brazil, SUDAM, 1966).

appropriation/ expropriation of lands occupied by the small peasant producers: access to land is offered through government or private

settlement projects, but land allotment discrimination and bureaucratic sinecures which regulate title deeds leads to expropriation. If years ago peasants received incentives from government agencies, today peasants become squatters or lose their squatter status because they must pay a price for land. Thus part of the migrants become proletarianized or have to settle as peasants in less fertile or less accessible tracts of land.

A selective agricultural credit policy reinforces the process of peasantry proletarianization/differentiation. Long-term loans favour cattle raising and export production, ensuring monopolistic land appropriation by entrepreneurs and the formation of a small rural bourgeoisie, while short-term loans for food production frequently lead to indebtedness and the expropriation of small peasant producers.

Urban policy creates a spatial condition for settlement/mobility and for the socialization of migrants. Urban nuclei offer services and an alternative labour market for rural migrants; in the towns socialization takes place through the learning of trades.

2) Private settlement schemes also have a strategy to control the migration flow. By scattering numerous agents in depressed areas of the southern and south-eastern regions they organize the migration of large groups made up of families and neighbours all coming from the same district. In addition to selling land they also see to the regulation of land titles in notaries' offices, build roads and townships, and finance production in exchange for a marketing monopoly. In this manner a large part of the settlers is tied down. Some settlers, however, sell to wealthier ones or to the settlement company itself as soon as land prices go up. They are resettled in more distant areas of the settlement project, thus gradually pushing up land values; the small producer's mobility is extremely advantageous to these companies.

3) Finally, capitalist production units also have a complex strategy, determined by the type of undertaking, the degree of capitalization, government policies and the social relations of production (Becker and Machado, 1980; Becker, 1982 and 1983a). Units belonging to the non-monopoly fraction of capital seek to reduce wage expenditures by renting out land to peasants who become unpaid labourers and by seasonally employing small farmers' families who need to supplement their monthly income.

c) The occupational structure of the population is altered in the migration process.

The group that has been most affected by migration is formed by unskilled labourers who have become socially differentiated in the course of migration. The north-east is the main reservoir of unskilled labour, followed by eastern Pará and southern Goiás. But the number of skilled workers migrating from small and medium-sized towns in the centre-south has also increased owing to the mechanization of farming and stockbreeding enterprises and to the growth of urban services using skilled labour only. According to field survey figures, migrants today mainly come from the south of Brazil.

Field data show that for migrants in general a downward social shift predominates (Becker, 1983): there is a clear tendency toward proletarianization, the occupational categories that originally had closer ties to the land being reduced by half while the proportion of wage-earners (28 per cent) and multi-occupational workers (16 per cent) has increased. Labour has attained a rural-urban mobility and has gone in for labour contracting and urban trade. Mobile labourers shifting upward socially account for 35 per cent of the cases studied; they become smallholders/tradesmen or owners of rice-processing machines. Mobile labourers shifting downward correspond to 65 per cent of the cases: they become "rendistas" (peasants paying land rent) and squatters who are also part-time labourers/peddlers/labour contractors. The net result is that the

traditional peasantry is reproduced in new forms: the small capitalist family producer and the peasant/labourer.

Labour mobility points to a dissolution tendency of traditional labour relations while at the same time setting a limit to the proletarianization process - a limit regulated by the peasant's survival strategy and by the capitalist producers' labour demand for land-clearing and production units.

The contradiction between capital and labour has more aspects. It is characteristic of capitalist concerns dependent on facilities offered by the State that they appropriate a maximum of land with a minimum of investment. This means that their expansion does not generate the wide range of production and employment which are a historical feature of the organized capitalist system. Moreover, the alternatives are insecure. They depend on government policies which change very rapidly as a result of the dynamics of the world system and are determined by contradictions between the economic and political institutions of the States and the various social groups.

The negative impact of this situation is felt by migrant labourers: the inherent instability of the capitalist system is magnified, the greater insecurity of labour facilitates its exploitation.

Mobility is a painful process of social apprenticeship. Migrants become socially differentiated from permanent residents, learn new trades, raise their level of expectation at the cost of being uprooted and of suffering great instability, and are thus prevented from organizing political resistance.

5. Peasantry differentiation has been a condition for the physical expansion of the frontier.

The frontier is not only the locus of the traditional peasantry; it is at the same time the place of dissolution of the peasantry.

Three points must be considered for an analysis of this point, taking the previous proposition into account as well (Becker, 1983b):

a) Political conditions - generally neglected in the excessively economy-centred discussion, political conditions are especially important in peripheral countries where authoritarian States have been established and where the peasantry constitutes a substantial proportion of the population. State legitimation is a very important question nowadays. Capitalist development in agriculture creates not only an industrial proletariat but also an immense rural labour reservoir. The State strengthens its legitimacy in the areas that matter most to it by means of agrarian reform and rural development programmes, assuming a social function. This social function engenders conflicts between Government and enterprises.

(b) Economic conditions - refer to the cost of reproduction of the labour force. Capital may be able to increase the accumulation rate by paying only part of the reproduction cost of manpower. The rest is provided by peasant producers in non-capitalist "enclaves" where land is not exploited for commercial purposes.

(c) Spatial conditions: the frontier. The existence of accessible land at low cost and/or land that cannot be negotiated on the market allows the peasant to stay on but he does not accumulate capital or does so very slowly. When accessible land becomes valuable it also becomes marketable. This provokes disputes over ownership and stimulates the differentiation process of the peasantry (peasants are not economically equal to begin with). The interplay of dissolution/ differentiation and reproduction explains the specific character of peasantry transformation.

Both State and private colonization projects contribute to peasantry differentiation. Two types of settlers are found on these projects. The first can be defined as the poor settler. Generally born in the north-east he is the pioneer who is soon obstructed in his efforts to maintain himself through lack of technical know-how and capital, the rise in land value and State manipulation of colonization projects. The second type is the petty capitalist settler. With a small amount of initial capital he tries to expand and capitalize his holding. This settler type usually comes from the Brazilian south and frequently replaces the North-Easterners.

On the frontier the reproduction of small semi-capitalist producers is linked to economic conditions such as the expansion of the industrial inputs market (raw material for biomass fuel plants, e.g.), domestic and foreign markets and credit expansion. Political conditions are important since small producers carry electoral weight.^{1/} Cultural conditions are also fundamental - the peasantry derives its survival and reproduction from the preservation of the "family labour complex".

It remains to be seen whether the latter type of settler will be capable of maintaining themselves. In any case - and this is a basic fact - the peasantry is not a monolithic group: various groups pursue different strategies that may conflict with one another (Soares, 1981).

6. Frontier expansion takes place within an urbanization context which is in itself a condition for regional labour market organization and regional settlement.

The expansion of the frontier is not entirely due to agricultural production. The national and world frontier is a super-position of fronts - an agricultural and pastoral, mining and forestry, financial and, finally, urban frontier.

The latter is more than a logistic base for rapid regional settlement. Urban nuclei form the basic spatial units used by the State in overall regional spatial structuring. From the start, the regional occupation project specified the need for urbanization in order to attract migrants by offering living conditions similar to those existent in their areas of origin.

Cities can be regarded as built-up areas "generated by the mobilization, extraction and geographical concentration of significant quantities of surplus product" (Harvey, 1973). Their specific forms as well as the configuration of

^{1/} The rural population is a politically important factor in the State's distributive strategy which is implemented through official or private settlement projects. An example from the north of Mato Grosso: in the 1982 legislative elections large settlement companies (SINOP and Alta Floresta) rounded up settlers' votes for the incumbent party while squatters - who had fled another badly administrated, bankrupt settlement project - voted for opposition parties.

the urban network are linked to their role in the global pattern of surplus circulation, i.e. economic and social relations developed under global capitalism which locates all cities in the world in a hierarchy according to the new division of labour (Cohen, 1981). The circulation of the labour force is one of the basic tasks of the elements in this hierarchy.

The overexploitation of labour is a major way of accumulating profits in a time of great capital mobility and heavy competition. This, however, is in contradiction with the high social cost of maintaining labour reservoirs concentrated in the largest urban centres. Therefore new ways to maintain manpower concentrated and diffused at the same time are sought. By means of a set of policies labour is kept dispersed in small towns and villages, while on the national level the labour force is regrouped (Damette, F., 1981).

Hence the urbanization process on the frontier assumes multiple forms, from the explosive growth of old and new towns to the multiplication of highly unstable small urban settlements, which constitute the local basis of economic operations, the first link in the great chain of surplus mobilization. The basic aspects of urbanization on the frontier may be summarized as follows:

1) The urban nucleus is the logistic basis of territorial organization.

It is the basis for the organization of the labour market, a point of concentration and redistribution of the workforce in certain parts of the territory. Circulation of manpower is therefore added to the circulation of goods, commodities and information. The smaller the nucleus, the more exclusively it serves the function of manpower circulation; its infrastructure and "life expectancy" are minimal.

But urban nuclei do not only play an economic role. They are also the locus par excellence of the resocialization of the population, of adaptation to dominant social values and to a new occupational structure. People come to the towns in search of information and the means to ensure their survival. Services (communal, individual, transport) are an important factor in the socialization process. Trading stands out as the main form of social co-optation, inducing the population to desire and consume goods, services and information of all kinds (Machado, 1983).

If on the one hand the urban nuclei are the spearhead for the occupation of the territory, on the other they become a factor of social change as loci of manpower circulation in themselves. As a place of residence and of the production and consumption of services, as a permanent or seasonal labour market (20-30 per cent of migrants have an urban occupation) and as a source of new opportunities for capitalist accumulation in commerce and in the processing of rural products, the town attracts landless migrants and mobile labourers. It becomes the locus of occupational change of migrants who learn new trades. These new skills must be adapted to both rural and urban labour demands for plywood makers, truck drivers, carpenters, car mechanics, bricklayers, building workers, electricians, etc. A vast informal sector also develops - tailoring, tin-working, brickmaking, etc., along with petty trading (Becker and Machado, 1980); petty traders are frequently small landowners and producers.

The urban nuclei also stimulate the peasantry because they can market food for the labour force, including such higher-priced products as vegetables and milk for the better-off urban groups. Thus, regional urban nuclei may become more than just manpower circulation, and cross a threshold in the urbanization process.

2) Communication networks determine the rapid organization of the urban network which is a condition and a consequence of the structuration of the frontier. The not fully structured character of the frontier is expressed in a still undefined network segmented in isolated sub-systems, with rather precarious services linked to consumer and productive activities, and an impressive urban growth in terms of the number of nuclei and of demographic concentration. Roads substitute river traffic. The hierarchy of towns and cities is indicated by the complexity of the traffic system.

Between 1970 and 1980 four developments may be identified in reference to urbanization: (1) the expansion-consolidation of regional and local centres which are the basis for productive operations on the frontier along the main roads; (2) the expansion-consolidation of State capitals, resulting from the circulation of capital, information, goods and people; (3) the reproduction of small settlements linked to labour mobility, which disappear when the frontier moves on and reappear close to the new front lines; (4) the decline of traditional centres linked to river traffic.

This analysis of urbanization explains the apparent paradox of an agricultural frontier with an intense urbanization process: between 1970 and 1980, urban population grew from 1,652,688 to 2,720,140, i.e. from 36 per cent to 43 per cent of the Amazonian population, while in the same decade rural population grew from 2,948,324 to 3,982,194 - much slower than land was being appropriated (Becker and Machado, 1982). (These figures are certainly an underestimation since they do not include pioneer nuclei which are emerging and growing at a fast rate).

The urban frontier takes shape in step with or even before the agricultural frontier (Machado, 1983). Towns and highways are the physical framework which spatially structures the expanding frontier. The regional urban network, forming a giant arch round Amazonia, is rapidly growing: in eastern Amazonia the regional centres are on average 300 km apart and local centres 100 km; villages sprang up roughly at a 20 km interval (Becker, 1979). In official and private settlement projects planning also includes regularly spaced urban nuclei as a territorial basis of occupation.

7. Rapid restructuring of regional space is the result of and the condition for the integration of the national territory

Amazonia is not a homogeneous space and is not being destroyed in a senseless way. Under State management a project of national territorial integration and a process of spatial differentiation is going on. Both the project and the materialized process strengthen the State.

The integration of extensive Amazonian subregions into a spatial order imposed by the State implies:

a) A new spatial logic (see proposition 1) in which, however, the logic of the homogeneous whole is belied by the fragmentation of the parts. This insight is derived from Lefebvre's theoretical analysis of the production of space (Lefebvre, 1978). According to Lefebvre "global space" (a specific product of the public/private cleavage) is both homogeneous (since everything it contains is equivalent and can be exchanged in the market) and fragmented (because it is sold piecemeal, and different kinds of capital with various degrees of organization and power carry out selective territorial appropriation).

b) Spatial organization of economic activities on a new and much larger scale. Local activities and establishment become extensions, parts of organized complexes on a national and/or planetary scale. The connection between the components of the whole is stronger than their connections with their immediate environment. Separate activities and establishments are so large that they themselves form giant units of production and consumption, homogeneous/fragmented complexes.

An example: the transnational fraction of capital generally operates in establishments with areas over 300,000 ha. These form fairly self-sufficient units with their own urban centres. Their connections with enterprise offices and plants in other parts of the world are as a rule closer than with the particular area in which they are located, resulting in minimal linkages; their investments in the region depend on decisions taken by the firm as a whole, whose headquarters are outside the country. Their exports bypass regional markets. Examples of homogeneous/fragmented wholes at the local level are the public and private settlement projects.

c) The destruction/reconstruction or articulation of earlier spatial orders. Through space management the State exercises its role of a mediator between "globalization" and the frontier. Space management leads to the destruction of previous spatial orders, allows them to coexist with the new order, or links different scales of the spatial order. In each new space a different social structure emerges. Space thus differentiated is vital to the State as a basis for political negotiation.

The creation of "Legal Amazonia" represents the first homogeneous/fragmented entity on a regional scale. The region's homogeneity was fragmented by State action and State-empowered agents. Two subregional entities were created: eastern Amazonia where State action is more intense and southern Amazonia where private enterprise is stronger. Investors further fragment these subregional units as they selectively appropriate parts of the territory.

In eastern Amazonia where State action is stronger, four differently-structured areas can be distinguished:^{1/} (1) the Belem-Brasilia highway

^{1/} See Becker, B.K.: "The State and the Land Question on the Frontier: a Geopolitical Contribution", (1981) for a more detailed analysis of subregional differentiation.

area where colonization spreads along the highway. Land is divided among individual farmers who have received credit for cattle raising and rural smallholders, some of whom constitute a mobile labour force for the farmers; (2) an area of occupation stimulated by tax incentives, where the dominant element is the large concern employing wage labour (south of Pará); (3) an area of official settlement projects along the Transamazon Highway where domestic rural production units dominate; (4) earlier occupation enclaves where landownership disputes between traditional estate owners and recently arrived squatters have provoked direct intervention of the State which then appropriated enormous slices of land.

In southern Amazonia (northern Mato Grosso) three territorial structures can be distinguished: (1) a large-enterprise dominated territory in the north-eastern sector, contiguous to that of south Pará; (2) private settlement projects territories located within the orbit of the Cuiabá-Santarém highway, characterized by different settlement policies and variable degrees of capitalization; (3) combined State-private enterprise settlement projects (the most recent mode of occupation, referred to in proposition 2) where settlement is undertaken by private co-operatives and INCRA (the National Institute for Colonization and Agrarian Reform). The former is responsible for technological innovations and produce marketing and the latter for the establishment of settlers on plots and the regularization of land titles.

8. Conflicts on the frontier are intrinsic to Brazilian society and are a result of, and a condition for, territorial integration.

Conflicts are not limited to landownership; nor are land conflicts exclusive to the region. Land conflicts may be more violent and more frequent on the frontier but they arise within the contradictory framework of Brazilian society.

State co-ordination of the production of space does not eliminate conflicts, quite the opposite: it aggravates them. In the process of infrastructure-building and reappropriation land conflicts become more acute, since the rising use value of land also raises its exchange value.

Labour mobility, stimulated by the State, is another source of conflict. Labour mobility is a survival strategy and a form of peaceful resistance of the peasantry against its dissolution. Although it hampers the organization of labour movements, it paradoxically tends to politicize peasants: they turn to defence and attack-invasion (squatting) tactics and to armed struggle. The form and degree of resistance depend (a) on land rent differences (land values are higher near highways and urban nuclei or on rich soils) and (b) on the settlement's historical and cultural heritage which influences the population's social behaviour (Becker, 1981). Peasant differentiation generates different strategies that may conflict with one another.

Conflicts are inherent to any society. In Brazil private enterprise and Government both co-operate and collide. The economy is fragmented because power is divided between mercantile, industrial and banking capital which sometimes follow divergent and conflicting strategies. According to the particular social groups involved and the trouble areas concerned, types of conflicts can be roughly systematized (Becker, 1981):^{1/}

1) Conflicts between landowners and labour

a) Conflicts between capital-owning producers and the peasantry over for public lands. Clashes involve landgrabbers, farmers and entrepreneurs on the one hand, and squatters on the other.

b) Conflicts between peasants and traditional latifundia owners who are incapable of negotiating settlements and/or defending their land.

2) Conflicts between labour and the State in urban nuclei

Manipulation of peasants and wage-earners generates undesired consequences: "invasion" is a main aspect of the frontier today, not only in rural but also in urban areas. The State tries to use these invasions by transferring the burden of opening up trails and clearing plots in areas earmarked for settlement to the population. But as land becomes

^{1/} For further details regarding the conflicts see Becker, 1981 and 1983b.

more expensive, squatters invade unoccupied tracts of farmland and also town areas reserved for urban expansion. Urban infrastructure expands slowly, and municipalities are unable to cope with the growing needs of the steady influx of migrants. These uncontrollable invasions undermine the State's administrative capacity and create social tensions that reduce land prices.

3) Conflicts between labour fractions

These conflicts also result from labour mobility. Social fragmentation of the peasantry has set different social expectations and goals between peasants and wage-earners. For peasants, landownership and the erosion of their basis of social organization, family labour, are the main issues. In the latter issue they are supported and stimulated by the church. The main problems for wage-earners are low wages and the length of working days.

4) Conflicts within the power bloc

Conflicts within the power bloc have multiplied and become clearer in recent years. They may be enumerated as follows:

a) Conflicts deriving from a growing centralization of decision-making. Within the federal administrative apparatus a conflict exists between national and individual State power. Locally it becomes visible in the overlapping of landownership titles issued by individual state and federal land distribution offices; in areas where conflict is intense, central government's power is heavily felt as directly managed areas (covering e.g. 70 per cent of the State of Pará) compete with state jurisdiction and even older federal institutions such as INCRA;

b) Conflicts resulting from divergent planning interpretations: within one single government office such as INCRA some officials may be in favour of a rigidly implemented settlement project while others prefer releasing title deeds grants to squatters who are able to face private entrepreneurs;

c) Conflicts between the State and the church, which compete for leadership of social movements. The church is critical of private enterprise which in turn is stimulated by the State;

d) Conflicts between financial and mercantile capital have become sharper. The hegemony of mercantile and usury capital, responsible for the peasantry's "modernization", is disputed by banks financing crop-growing and building projects;

e) Finally there is a contradiction between large (private and State) enterprises which are becoming larger and more autonomous and central government which no longer controls their locational decisions.

The pressure of all these contradictions results in a fragmentation of the central State's power; the State is quickly losing control over large enterprises (Becker, 1982).

9. The alternatives - mobilization versus mobility - are complex and contradictory

Labour mobility has contributed to the emerging national economic structure, but social costs have been extremely high. Workers are heavily exploited and they are continuously forced to look for new employment. Therefore workers are hardly able to organize themselves in trade unions.

Labour mobility also generates contradictions which are being felt at the national level. In conjunction with urbanization it causes a growing demand for infrastructure and basic services which the State cannot meet. As a process of learning and politicization, it has generalized social conflicts, from struggles over land with owners of large estates to urban land and job struggles against the Government.

Are there alternatives to the present-day social and political structures which would not reduce or would even enhance economic efficiency?

The concept of the frontier as an alternative to an agrarian structure dominated by large estates or as the locus of the peasantry is re-emerging in

the form of peasant community organization and rural and urban commodity movements. Popular mobilization as an alternative to mobility, however, is proposed by social groups with divergent ideologies; it therefore seems a doubtful programme for action.

The church (in many cases the mainstay of this type of mobilization) envisages social justice based on the preservation of "land for work". Regional development authorities have also formulated proposals aiming at popular participation through community organization; their strategy would comprise the exploitation of local factors with a minimum of outside investment, capital accumulation within the peripheral regions, local organization of production and labour mobility control inside the region (since mobility at the national scale causes tensions that the State can no longer easily control). Finally, the World Bank has also made a community programme a requisite for its financing.

On the frontier, mobility ensures the availability of labour but social costs are high because of the volatile labour market. If the frontier is a territory in a state of flux, could it become the locus of social change? In this case a fully organized labour market with safe jobs and union organization would be the main social goals.

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P. Hesp and B. Stuckey

CONCLUDING REMARKS

The issue

The recession following the oil shocks of the early 1970s was initially considered to be a mere cyclical depression. By the 1980s, it was realised that it was to be the beginning of a deep-seated retrenchment phase in a world-wide structural transformation of supply and demand networks, of environmental and technological parameters, and of human values. On-going shifts and redeployment of productive activities among highly developed core areas, their hinterlands and national peripheries - both between and within the industrialized and the developing countries - suggest that the new spatial division of labour which emerged during the growth phase of the 1960s and 1970s is being consolidated. The massive close-down of plants in many traditional industrial areas, the centralized use of new "high" technologies, the stagnation of industrialization in many developing countries, are particularly visible symptoms.

As shown in the articles by Bluestone, Castells, Moulaert/Willekens and Becker presented in this document, one major result of these changes is that the role of local, regional and national communities has become exceedingly unstable. In other words, regional and national growth prospects outside the core areas are being undermined. Particularly since the reduction of aggregate economic growth rates around the middle of the 1970s, a conflict has broken out between the governments of cities, regions, and nations to retain or attract private and public investment and thereby jobs (Bluestone). This new political and economic reality - with its actual and potential socio-cultural and ecological consequences - has, as evidenced by the contributions in this report, stimulated a broad re-examination of established conceptions of the international as well as of the inter-regional division of labour and therefore of regional development policy and strategies in both the developed and the developing countries. The residents of regions and the citizens of nations are beginning to consciously and actively worry about their fate. It is no longer a question of higher or lower growth rates, but a question of inclusion or abandonment by the forces of retrenchment and consolidation in the international economy.

The historical perspective

As emphasized in the contributions to Part I, industrial development is the history of increasing footlooseness and the systematic pursuit of innovation within individual units of production (Stuckey, Tichy). This footlooseness increased dramatically as the use of electric power spread and transport and communications networks were improved. The inter-connected expansion of production units within some nation-states into a network of world-wide production, trade and finance systems followed. What began as local or regional economic activities moved on to form national economies and then to weld themselves together into a global economy, a process clearly illustrated by Miyakawa's essay. In this process, not only land, water, air and energy were turned into industrial resources. As well, men and women became human resources and political units became organizational resources or parameters influencing rather than directing economic growth and expansion. Local resources, political processes and socio-cultural life were subjected to the demands of the economic forces of the competitive market economy. But this subjugation did not take place evenly. The inclusion of people, political units, and resources into the vast network we now call the internationalized division of labour was sometimes gradual, sometimes sudden, sometimes bringing wealth to a region, sometimes poverty. In other words, the dramatic wealth-creating potential of industrial development - the key element in the internationalization process - was not equally distributed nor was the pattern of unequal distribution historically stable.

The world was divided into the developed countries where industrial production has been concentrated and developing countries whose role - until recently - was limited to supplying raw materials for the industrialization process of the North. During the global phase of expansion and growth of the 1960s and 1970s, however, it became clear that the constant process of industrial innovation and restructuring had entered a phase in which the raw materials/manufactures trade pattern between South and North shifted towards a global division of labour within manufacturing. Industrial production was transnationalized. but from the perspective of 1985 we today are clearly in a phase of consolidation and retrenchment. Several papers in this volume (Moulaert/Willekens, Townsend/Peck) are an attempt to shed light on the regional consequences of the transitions from expansive internationalization to retrenchment.

The resulting structures and their significance

The expansive internationalization of industrial production pursued by the major actors - large companies, governments, financial systems - and the subsequent retrenchment has led to new constellations, destroying old myths and creating new ones. The old myths - that natural resources brought local wealth, that an industrial past was the harbinger of an industrial future, and that there would be enough growth and expansion to go around - have been eroded. Mineral deposits, for example, in a region do not necessarily imply opportunities for upstream/downstream activities in that region: raw materials are shipped out, others become technologically obsolete (coal is an obvious example). At the same time, the possession of industrial infrastructure and an industrial tradition do not guarantee an industrial future - entire regions and their highly trained labour forces in England, Europe and north America are being abandoned by industry (New England, areas of the Midlands, the Swiss Jura, the Styrian valleys in Austria, etc.).

The decentralization of industrial activities on a global scale - including the location of industry in the developing countries (cf. a.o. Miyakawa and Abiodun) - is now being followed by the concentration of the innovation process in a relatively few number of areas in the world. As a result of a new pattern of locational preferences for industrial activities, transnationalization was coupled with the rise of new growth poles (Atlanta, Stuttgart, Silicon Valley, Singapore, Sydney, Tokyo), added to the major old growth poles - New York, London, Paris - which retained their importance. The successful growth poles, centres of innovation in industrial processes are actively linked to one another within a global network of what Friedmann calls world cities. This leaves the majority of sub-national regions to compete world-wide with other regions for the location of employment-bringing industrial activities inside their boundaries. One-time centres of industrial growth - the Ruhr, Liverpool, Pittsburg, the Lorraine - are declining. Outside these old centres of industry, employment in areas which have become the locations for "high-tech" based production tends to be subject to strong fluctuations as a consequence of the rapid succession of innovations and instable markets. The TNC's, firmly established at preferred locations in developing countries, show little interest in further expansion in the Third

World. The many incentives provided by developing country governments to foreign capital have in most countries not led to a sustained, integrated process of industrialization; even countries on the periphery of the developed world have few opportunities of succeeding at that task under the present circumstances (cf. Lilaia/Pinho).

Government policy in developed countries does not, at present, seem much more successful. Support of declining industries has actually hindered the process of restructuring in many countries (cf. Maier/Tödtling, Moolaert/Willekens) and where governments are involved in promoting innovative activities, their policy seems in general to be one of "betting on the strongest" regions rather than an attempt at equitable spatial distribution of the development potential of innovative activities. The Japanese Government's approach - generalized development initiated at dispersed locations (cf. Miyakawa) - seems untypical. In short, many subnational regions, both in the developed and the developing countries, are marginal, "excess" parts of the international network. As isolated actors they have no control over policies and assets which would enable them to regain a level of regionally-generated economic activity guaranteeing their viability, not just economically, but also socially.

A clear, geographical perspective on the enormous changes in the spatial patterns of development during the industrial age may be acquired by referring to von Thünen's hierarchy of complementary economic activities forming rings around the centre of an imaginary "isolated state". Von Thünen's model was essentially static - but it was valid for his time and his world. Today, von Thünen's analysis maintains its validity only when one places the cores with their rings of activity in a global perspective. The configuration of the rings is now not only determined by the availability and type of natural resources, but also by manpower and infrastructure and their qualities, government policies, financial flows, etc. Regions are locked in a competitive struggle at the global scale - core areas competing with core areas, hinterlands competing with hinterlands. The result has been a growing concentration of power in core areas, and the growth of disparities between regions at the sub-national level, between nations and between regions at the supra-national level, depending on their position in the rings vis-à-vis core areas.

In a world characterized by economic stagnation and highly uncertain growth prospects (even in the most powerful economies), by a concentration of economic power and a reversal of the progressive trends in global co-operation which existed during the 1970s, the generally accepted theories of economic development seem to have lost much of their usefulness. In fact, remote control at the global level and factory robotization invite a fundamental re-assessment of the whole notion of industrial development. Is a country industrially developed when its manufacturing sector consists of robotized factories staffed only by service personnel and managed and operated by people at terminals at the other side of the globe?

A Third-World Perspective

The failure of economic development policies and the rise of various theories of unequal development (Frank, Galtung, Amin, Emmanuel) weakened Third World belief in an economic staircase of nations which would safely take all to a landing at the top. Even in the developed world belief in stable, progressive growth has been heavily eroded. The new technological revolution so far has shown few signs of providing a solution to the high unemployment rates in OECD countries; the position of the millions of unemployed low-skilled workers is especially problematical. The gradual decline in some countries of the state's role as a redistributor during the present crisis has made it especially clear that regions and population groups with weak market positions may in fact very well slip down the staircase.

For Third-World countries the situation is worse. The lack of national (economic, social and cultural) integration and the absence of domestic know-how and entrepreneurship have again and again resulted in completely unstructured processes of development, of which Becker's contribution gives us a dramatic example. Under the circumstances, attempts to arrive at a regionally balanced development process are confronted with great obstacles even in a country as rich in resources as Nigeria (cf. Abiodun), and in countries on the developed periphery, such as Portugal (cf. Lilaia/Pinho).

Development policies for Third World countries have been based on the belief that the locomotive - the driving force for development - was the integration of developing countries into the international market economy. The policies followed during the first and second development decades - including the Lima Declaration - were steeped in this conviction. The retrenchment of the 1980s, however, puts a damper on this conviction or upends it altogether. Concern for national integration and for maintaining a basic level of self-sufficiency is beginning to become a point of serious debate. Global competition with other regions and with the centres of growth will not provide a general way out of the present crisis. Regions are again being viewed by themselves and by national interests as potential building blocks of a national economy. Not only political pressures resulting from continued or new poverty are lending credibility to a national-oriented strategy of development; the failure of agriculture to keep pace with urban and rural hunger, the burden of financing huge international debts, a concern for maintaining ecological balance and the integrity of resources, and a realization of the psycho-social aspects of development "quality of life" are moving consciousness in the same direction. In the developed world, where entrepreneurs and political power exist at the regional level, regional co-operation has begun to take shape at the supra-national level: among the regions of Scandinavian countries, in the Dutch-Belgian, Austro-Hungarian and Austro-Bavarian border regions.

The scope for such initiatives is much smaller in developing countries. Such co-operation as exists, tends to be restricted to the core regions: networks centering on the capital cities are beginning to emerge as a result of the work of organizations like ASEAN, SADCC and ANDEAN. Given the high degree of concentration of economic activities in core areas, the infrastructural weaknesses and the priority which has to be accorded to national integration in developing countries, such supra-national interdependence among more marginal regions is unlikely, although less formalized economic contacts across the borders may well exist, especially where national boundaries created in colonial times cut across older ethnic and trading networks. But at the national level, it is certainly possible to stimulate the regions. In agriculture, serious efforts should be made to counterbalance the monocultures of export crops, which have proved to be

highly vulnerable both from the point of view of international price fluctuations and natural disasters; renewed efforts to stimulate the production of foodcrops (for local and national consumption) in a form which is integrated into the local social and natural environment are necessary.

For industry, the stimulation of small- and medium-size enterprises outside the core region deserves more attention. These enterprises are often admirably suited to use and further develop the entrepreneurial talents available in the so-called informal sector which at present largely produces for direct household consumption; they are also better adapted to the task of processing locally produced raw materials, saving scarce foreign currency resources. Both the local and regional development of agriculture and industry, will have to be supported by the development of physical and cultural infrastructure at these levels. Such measures could not only lead to economic gains at the regional and national level, but could also reduce social disruption. The sine qua non of a new strategy of national integration, however, must be a full understanding of the decision-making processes which are reshaping the internationalized economy from day to day (the international academic community could make an important contribution here) and a willingness of the major decision makers to support general development across the globe rather than overdevelopment which is restricted to core areas. This document is submitted to an international readership to that end.

Annex

a) List of Documents presented at the Symposium on Regional Development Processes/Policies and the Changing International Division of Labour

Vienna, 20 - 24 August 1984

<u>Document No.</u>	<u>Author</u>	<u>Title</u>
CRP. No. 1	Ake E. Andersson Borje Johansson	Knowledge Intensity and Product Cycles in Metropolitan Regions
CRP. No. 2	Walter B. Stoehr	Industrial Structural Change and Regional Development Strategies towards a Conceptual Framework
CRP. No. 3	Silvio Borner Berhard Burgener Barbara Stukey Felix Wehrle	The Changing International Division of Labour and the Internationalization of Swiss Industry
CRP. No. 4	Yasuo Miyakawa	Metamorphosis of Industrial System of Japan and Development of International Division of Labour in the World
CRP. No. 5	Niles Hansen	The National and International Contexts of Manufacturing Expansion in the U.S. South
CRP. No. 6	Klaus Mueller	The Adaptation of Enterprises to the Current Structural Change in World Economy and its Regional Implications in Switzerland
CRP. No. 7	Attilio Celant	Regional Development, International Division of Labour and the South of Italy
CRP. No. 8	Susan Christoperson Yehuda Gradus	Multinational Research and Development in Israel; its Intra-national Origins and Consequences
CRP. No. 9	Philippe Aydalot	The Reversal of Industrial Trends in French Regions since 1974
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b) List of authors

ABIODUN Josephine O.
Department of Geography
University of Ife
Ile-Ife
Nigeria

AUTY Richard M.
Dept. of Geography
Lancaster University
Lancaster
England

BECKER Bertha K.
Instituto de Geociencias CCMN-UFRJ
Cidade Universitaria
Rio de Janeiro
Brasil

BLUESTONE Barry
Dept. of Economics
Boston College
Chestnut Hill, Mass.
USA

BORNER S.
Institute for Applied Economics
University of Basel
Basel
Switzerland

BURGENER B.
Biolab Insurance
Decatur
USA

CASTELLS Manuel
Department of City and Regional Planning
University of California
Berkeley
USA

CHRISTOPHERSON Susan
Graduate School of Architecture and Urban Planning
University of California
Los Angeles
USA

GRADUS Yehuda
Department of Geography
Ben-Gurion University
Beer-Sheva
Israel

HELMSING A.H.J.
Institute for Social Studies
The Hague
The Netherlands

HESP Paul
UNIDO consultant
Vienna
Austria

LILIAIA Carlos
Presidência da Republica
Instituto Domíao do Gois
Lisboa
Portugal

MAIER Günther
Interdisciplinary Institute of Urban and Regional Studies (IIR)
University of Economics
Vienna
Austria

MIYAKAWA Yasuo
Aichi Kyoiku University
Nagoya City
Japan

MOULAERT Frank
Centre Européen John Hopkins
Univ. des Sciences et Techniques de Lille I
Villeneuve d'Asq
France

NOYELLE Thierry J.
Conservation of Human Resources Dept.
Columbia University
New York
USA

PECK Francis W.
Dept. of Geography
University of Durham
Durham
United Kingdom

PERRIN Jean Claude
Centre d'Economie Regionale
Universite d'Aix-Marseille III
Aix-en-Provence
France

PINHO Ivo Jorge dos Santos
Instituto Damiao da Gois
Lisboa
Portugal

SJØHØLT Peter
Department of Geography
The Norwegian School of Economics
Bergen
Norway

STOEHR Walter
Interdisciplinary Institute of Urban and Regional Studies (IIR)
University of Economics
Vienna
Austria

STUCKEY Barbara
Rudolf Steiner School
Zürich
Switzerland

TICHY Günther
Institut fuer Volkswirtschaftslehre und Volkswirtschaftspolitik
Universitaet Graz
Graz
Austria

TOEDTLING Franz
Interdisciplinary Institute of Urban and Regional Studies (IIR)
University of Economics
Vienna
Austria

TCWNSSEND Alan R.
Department of Geography
University of Durham
Durham
United Kingdom

WEHRLE Felix
Coop Switzerland
Basel
Switzerland

WILLEKENS Francois
Centrum voor Economische Studien
Katholieke Universiteit
Leuven
Belgium