

REGIONS, DECENTRALIZATION AND THE NEW GLOBAL ECONOMY: AN OVERVIEW

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Introduction

This special theme issues of *The Canadian Journal of Regional Science*, dedicated to Harvey S. Perloff, presents a survey of emerging ideas about economic decentralization and regional development in a changing global economy. As Robinson explains below in his personal appreciation of Perloff's work, much of our progress over the last three decades in urban and regional economics, planning, economic geography, and regional science rests on the intellectual example, administrative skill, and entrepreneurial energies of this one man. Our capabilities in North America - indeed, worldwide - to analyze and understand regional decentralization are built on the structure Harvey S. Perloff helped to create [12]. Looking back historically, the core of regional science for the last thirty years has been a concern for the location of economic activities and the impact of locational patterns on local and regional development. Most current practitioners in the field were trained in the original synthesis represented by Isard's *Location and Space Economy* [9] and *Methods of Regional Analysis* [10]. These formative statements were complemented by texts in regional economics, planning, and geography.

The empirical generalizations dominating this school of thought were based primarily on an interpretation of the workings of the North American economic system during the 1940s and 1950s, and it is reasonable to argue that for much of this period the geography of industry in Canada and the United States was an elaboration of pre-World War II patterns, dating back to the first

decades of the twentieth century. During the 1960s regional theory provided a reasonably satisfying description of the North American space economy. This historical context is important because it allows us to identify the intellectual heritage which regional scientists brought with them to the contemporary debate over decentralization.

At the risk of oversimplification, the ideas which set the tone for regional theory at the turn of the 1970s were: (1) the overriding importance of *scale economies* as a determinant of comparative advantage, (2) the role of *city systems and the urban hierarchy* in providing a matrix for locational decisions, and (3) *minimization of transport costs* (overcoming the "friction of distance") as the key variable in most locational analysis. All three of these concepts led to a focus on the advantages of integration, centralization, size, and metropolitan location. Economic development was conceived as intimately connected with metropolitan growth, and government regional development policies strove to recreate the advantages of large scale. Big was efficient, if not beautiful.

Achieving scale economies internal to the firm usually meant adopting vertically-integrated forms of industrial organization, typically ownership by large corporations. Efficient individual production units were also large in size because cost-efficient, state-of-the-art technologies required high volumes and long production runs, in turn requiring ready access to large amounts of venture capital, the capability to handle massive inventories, and entry into major national and international markets. Market access and the availability of adequate labour pools were aided by plant location in large metropolitan centres, which also tended to minimize upstream and downstream transportation costs and provide other external scale economies such as access to public infrastructure and specialized services and suppliers, as well as participation in product and technological innovation. In broad-brush terms, everything seemed to be located in or moving to the big city: factories, jobs, workers, and markets. Centralization and large scale were the most obvious attributes of successful regional economies.

Something else was going on as well, however (what Berry came to call "counter urbanization" [3;4]) that was extremely difficult for regional scientists to make sense of during most of the 1970s. Primarily this undercurrent amounted to the location of a growing number of small production facilities in nonmetropolitan and green field locations. The problem was that such a phenomenon was counter-intuitive for trained regional analysts, not conforming to the body of accepted theory, and at first it was difficult to identify empirical regularities from the available data.

Why should some economic activities contradict prevailing trends and seek decentralized locations for relatively small-scale production facilities? Models built up inductively from past experience offered little insight into anomalous locational behaviour.

By the first half of the 1980s many analysts were arguing that the exception had become the rule: deindustrialization of the metropolis was moving ahead rapidly, and decentralization of production to the national periphery and offshore were said to represent an emergent general tendency. What were the reasons for this dramatic reversal of dominant locational choices across the economic landscape? And what would be its impact on regional development and planning? In this special theme issue of *The Canadian Journal of Regional Science (CJRS)* we explore some of the answers to these questions that have been suggested by recent research.

New Explanations of Economic Location

The Industrial Life Cycle

The earliest explanation of decentralized manufacturing activities grew out of the theory of production and the product life cycle. Normally attributed to Vernon [16], the *product cycle* hypothesis was first formulated in the context of international trade and investment, with an eye to explaining changing employment patterns in the North American metropolis. Early on the idea was tied into a discussion of branch plants and the multinational corporation (see below) and then later linked to the notion of technological change in an international manufacturing *process cycle*. From the mid-1970s onward this has become an increasingly standardized functional explanation of decentralization and changing patterns of regional development. It has also been connected with the idea of a *new international division of labour*.

Taken down to its bare bones, the product cycle hypothesis argues that commodities sold in the global marketplace go through a predictable evolutionary life cycle based on the changing characteristics of consumer demand. At first new items require easy access to a large urbanized market, where a wealthy, information-saturated environment provides outlets for expensive novelties, repaying the high costs of product innovation and skilled hand-craft production techniques. Later, as the luxury good becomes a "necessity" and standardized production methods bring about substantial reductions in cost, markets and viable plant locations become much more widespread. At this point the spatial margins of profitability for firms frequently cover all of the industrialized

world and much of the rest of the globe. Production/consumption levels tend toward an S-shaped curve over the life cycle of the product, as costs fall and then markets become saturated.

The process cycle concept is a more detailed variant of this same argument, focusing on productive processes rather than the outputs of production. Three aspects of the manufacturing process are categorized as to life-cycle stage: (1) organizational environment, (2) labour requirements, and (3) technology. Each is thought to go through a series of evolutionary stages, which at first favour increasing scale, bureaucratic organization and centralization. Later developments encourage vertical and horizontal disintegration of the production process, spawning branch plants located in both MDC and LDC locations, and finally MDC plant closures and subsector-specific deindustrialization. In this issue of *CJRS* Luis Suarez-Villa presents a particularly detailed analysis of the components and stages of the process cycle, and shows heuristically how the disintegration and decentralization of manufacturing processes are leading to the industrialization of some LDC locations and a new international division of labour.

Looking from the perspective of the manufacturing process cycle leads logically to several other elements of the contemporary decentralization debate: (1) industrial organization and the multinational corporation, (2) technological change and (3) labour markets.

Industrial Organization and the Multinational Corporation

The concept of industrial life cycles suggests little in locational terms until it is placed within the context of industrial organization. It is the institutional setting of the large firm, with the possibility of geographically-extended operations, which allows for decentralization and dispersal of production activities. The discussion of industrial organization in its contemporary form began at the turn of the 1970s as an analysis of the multinational corporation and its typical manifestation in peripheral locations, the branch plant.

There is a good deal of overlap in this literature, but several main strands can be identified. The first of these, chronologically, was the Latin American school of underdevelopment/dependency theory, associated with the writing of Frank [6], Corraggio [5], and others. Drawing in part on the tradition of neoclassical marxism, UDT writers carried on their argument largely at the ideological level, asserting that corporate capitalism required foreign expansion to maintain profitability, that such expansion exploded the process of capital accumulation to a world scale, and that this made the multinational corporation the primary agent in the crea-

tion of an international core/periphery structure of dominance and dependency.

Closely related to these interpretive theories was the work of more orthodox French marxists who argued that the circulation of capital at an international scale through the multinational corporation was responsible for a restructuring of production activities in economic space. They identified most of the now common elements of the multinational *problematique* and went on to begin empirical analysis of the impact of capital restructuring on locational change, drawing in part on the industrial life cycle hypothesis to explain changing spatial divisions of labour.

This work was complemented by two related research thrusts. One was an effort to describe the new geography of plant locations and jobs created by multinational organization and foreign ownership. Special emphasis here has been placed on the branch plant in nonmetropolitan areas, its relationship to corporate organization, and its instability as a source of employment. An associated line of work has attempted to judge the regional development impact of multinational firms locating in an area. Some of this research has focused on specific operational mechanisms, such as transfer pricing, product mandating, and technological development. Other research has attempted to frame in the important conceptual issues involved and analyze specific national and regional experiences. Holland's work during the mid-1970s was particularly influential in this regard [7;8].

The typical scenario drawn from this literature suggests that over the last fifteen to twenty years multinational corporations have been responsible for a certain type of industrial decentralization. Production methods have been arranged on a worldwide scale to conform partially to the industrial life cycle. This has meant the removal of many standardized productive activities from former MDC metropolitan locations and the re-establishment of these functions in dispersed locations across the world periphery. The impact of such plants on the host economy is minimal. Technology transfers are limited to discrete assembly operations and consumption technologies. Management, research and development functions, and so-called high tech industrial sectors are increasingly centralized (but see the discussion below). Jobs created in the periphery are relatively low-skilled and low-paid. Job security is particularly poor because of the notorious record of branch plant closures in response to short-term shifts in comparative advantage.

Because of the global integration of production within a multinational corporate framework and the geographically isolated nature of individual production tasks, there are remarkably few

interindustry industrial linkages established by branch plants in the host economy, and transfer pricing allows the multinational enterprise to move components between its various branches without paying full market value to host economies on local sales revenues and government taxes. Many writers have thus questioned whether multinational investment in peripheral locations lays the basis for new decentralized regional production complexes or whether it is a relatively insignificant short-term phenomenon in terms of regional impact.

Further refinement of this portrait - or a change in perspective - requires the analysis of specific aspects of the problem. The two most popular over the last five years have been the impact of technology and changing labour market characteristics.

Technology and Technological Change

Traditional interest in technology within regional science has focused on the importance of innovation in determining locational patterns and influencing regional development and the role of communications and information in shaping urban-industrial growth patterns. These two concerns continue, with an explicit interest in their impact on the decentralization of economic activities. The most important themes in contemporary work, however, appear to be the impact of technological change on the spatial division of labour, and the special part played by R&D and high tech industries in regional change.

The first of these questions is the most general - What is the causal relationship between technology and geographic location? - and a burgeoning literature is beginning to appear on the topic. The key issues here have to do with *contingency* and *human agency*. Relatively pristine adherence to the production cycle notion yields a fairly straightforward case for technological determinism. Within the institutional framework of the multinational corporation, technological innovations lead to new, more efficient production processes, which in turn allow for geographic dispersal or decentralization of the various stages of production. This is an intellectually tidy if inadequate explanation, because it allows for a simple (unmediated) cause-effect chain to be drawn between technology and location but fails to anticipate much in the contemporary industrial landscape.

While critics also draw upon the broad outlines of the production cycle hypothesis to characterize changing industrial location patterns, they argue that:

Production processes do not develop in an abstract vacuum. They are part and parcel of the history of men [sic] and their models of consumption and daily livelihood (and thus the cost of the repro-

duction of the workforce) as well as the technical and social structures of production.

As these processes of production are rooted in history, it is often futile to search for their beginnings. . . . What is important is that, gradually, these historical accidents took hold in an environment adapted to their continuance and ended up by structuring coherent unities whose technical, social, organizational, and spatial aspects harmonized well together [2:11].

Thus Massey concludes:

Technology, the physical nature of the production process and the real content of tasks are important influences on the nature of labour-demand, on who does what job and on the social status accorded to it, but they are not the whole explanation [11:41].

. . . "who" does a particular job is not determined by the relations of production themselves, nor by "technology", but by particular conjunctions of the economics of labour markets and of social tradition [11:40].

According to this argument, then, indepth studies of changes in particular industries and regions are necessary in order to understand the role of technology in spatial restructuring. In this issue, Gertler examines the changing industrial structure of Toronto and government strategies meant to cope with deindustrialization in central Canada. Reciprocally, Webster analyzes decentralization of economic activities to western Canada. Both writers find that in the Canadian context there has been less dispersal of secondary production facilities than would be suggested by the stylized production cycle model.

The question of high technology industry, location characteristics and regional development is both derivative of the above debate and more difficult to get a handle on, despite its raciness and current popularity. The problem is complicated by a conceptual puzzle over definitions. There is little agreement on what, operationally, constitutes a "high tech" or "advanced tech" industry. The difficulties entailed are demonstrated in the following widely quoted definition:

High technology industries consist of heterogenous collections of firms that share several attributes. First, the firms are labour-intensive rather than capital-intensive in their production processes, employing a higher percentage of technicians, engineers and scientists than other manufacturing companies. Second, the industries are science-based in that they thrive on the application of advances in science to the marketplace in the form of new products and production methods. Third, R&D inputs are much more important to the continued successful operation of high technology firms than is the case for other manufacturing industries [13:4].

Even if the several components of this conceptualization are accepted as empirically sound (e.g., labour vs. capital intensiveness), the evident difficulties in measuring any of the suggested characteristics from readily available data become quickly apparent. In practice, analysts have surveyed wide cross-sections of the economy, based on sectoral employment of scientific personnel, studied the locational characteristics of recognized high tech sub-sectors such as biotech, semiconductors and defense industries, and analyzed the history of high tech territorial growth complexes. The generalizations coming out of this work to date are useful but still leave a fairly cloudy image of the relationships between the industrial use of advanced technologies and industrial location. "Silicon Valley formation" seems to bear out the broad tenets of the industrial process cycle model, but economy-wide analyses (because of the markedly heterogeneous industries involved?) provide few straightforward answers to the high technology/decentralization question. Not surprisingly, then, discussions of high tech industry and regional growth remain either theoretically based or judiciously noncommittal. In this issue of *CJRS* Planque draws a useful distinction between the locational effects of changing technologies and the impact of changing models of industrial administration on the geography of industry in France; he then relates these influences to the success of French decentralization policies.

A recent variant of the technological change/decentralization theme which has attracted significant attention might be referred to as the *flexible specialization* argument. It is observed that recent generic changes in the physiognomy of production processes call into question the efficiency and competitive advantage of large-scale mass production. Because of diversity of tastes, market segmentation, the rapidity of technical change, worldwide competition, changing cost and price structures, resources shortages, and the dynamics of structural change itself, heavy investments in limited-purpose capital equipment and related labour techniques are becoming white elephants. They not only threaten corporate profitability and the competitiveness of dependent territorial economies; they expose a fatal weakness in the organization of traditional industrial production itself - functional rigidity.

The emerging competitors are *flexibly-specialized industrial districts*, such as the textile district of Prato in central Italy and machine tool supply areas in Germany and Japan. In these regions networks of skilled labour are combined through subcontracting arrangements between groupings of small firms. They respond to the pressures of a turbulent economic/technological environment by shifting from one particular product within the general pro-

duct spectrum to another, achieving flexibility by the use of craft techniques of production and computer numerically controlled (CNC) machinery. Volume requirements can be met through the network of regionally-organized cooperative competitors. If this paradigm could be spread geographically to new regions and new industrial sectors, it might provide (1) the economic basis for decentralized development, and (2) a means of transforming the work process.

Labour, Labour Markets and Location

This relationship between technology and the work process leads to consideration of recent ideas about the impact of labour on the industrial location problem. The basic argument here is that labour is a very special "factor" of production: unlike other "commodities", it is embodied in human individuals and must be considered within the holistic context of their lives, influenced by life history, culture, individual will, socialization, and so forth. Thus, labour remains a relatively idiosyncratic variable in the production process - extremely heterogeneous in its geographic distribution - while other production factors grow increasingly standardized. Technology and capital can be imported; people are much less mobile. Because of this it is suggested that labour take centre stage in reconstructing industrial location theory, assuming a role not unlike that assigned to transport costs in the Isardian synthesis.

The product cycle model is viewed as a useful but grossly oversimplified ideal type. Its weaknesses in locational terms are summarized as follows:

There is no universal pattern of decentralization of plant location with the maturation of industries. Some become more spatially concentrated over time, some hardly change, and some decentralize without going through the predicted increase in automation or firm size. Nor is there an aggregate movement out of "core" areas by all industries. Studies of the "seedbed" function of central cities have shown decentralization to be more a result of the differing industrial bases of cities compared to suburbs than of high birth rates of firms at the centre and decentralization over the lifecycle of the firm [15:12].

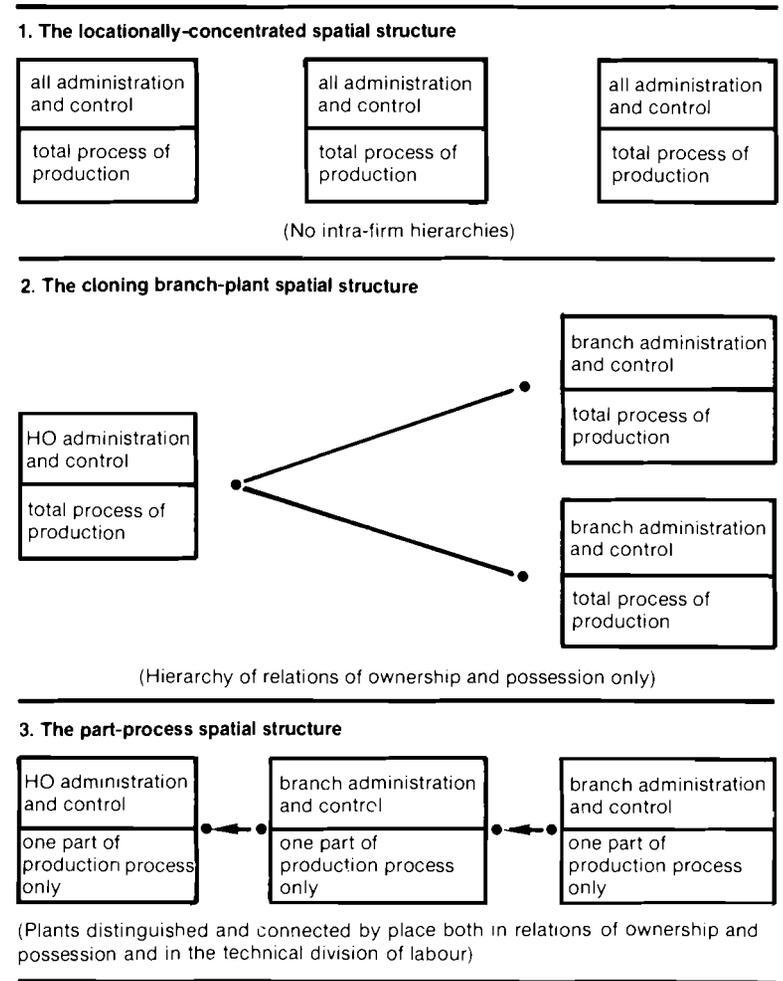
Product cycle models of location begin from the faulty assumption that the greater aggregate dispersal (locational capability) of factories today as compared to the past is the cumulative effect of the decentralization of individual industries over time. On the contrary, most industries, if sufficiently disaggregated by product/commodity (to the 4, 5 or even 6 digit level of the Standard Industrial Codes (SIC) in the US Census of Manufacturers), are remarkably

concentrated in their location today. It appears that degree of spatial concentration varies more between product types than over time for each one. Therefore, the distinctive location patterns of industries must be explained before one can tackle the cases of decentralization [14:24].

For these authors the larger question is that of reproducing capital, labour and the employment relation in different sectors of industry. The location problem becomes one part of the management and control strategies of capital. Massey [11] has suggested three broad alternative industrial structures, see Figure 1, in which the relations of production can be organized spatially: concentrated, cloning, and part-process. These are meant to be simplified indications of the forms that might be encountered empirically.

It is easy to think of numerous other possible structures. Conglomerate ownership, for example, in which the production of a wide range of different commodities is under the same financial control. Product-cycle structures, where the grip of both financial and scientific control is relaxed as products mature. Or combinations-part-process structures combined with dual-sourcing, for instance. And once again it is not legal forms but real relations which are crucial. Subcontracting systems can involve one company in "real ownership" of another, for instance, or a firm may be operating in a situation where part of the functions of ownership and possession lie with a bank or financial institution. All of these potentially represent different structures of the relations of production over space. The point here is not to establish an all-embracing typology, but to use a few examples as vehicles for illustrating an approach [11:76].

Storper and Walker argue that it is the nature of labour demand associated with various specific products that determines the primary characteristics of the spatial division of labour. This can be followed up the industrial hierarchy by sectoral aggregation, but soon the distinctive character of labour demand and location becomes "blurred" [14:26]. They suggest, however, that it is useful to investigate six major types of industries, based on their production processes. These in turn are defined by their dominant technologies of conversion (action on the material) and transfer (movement of the material from one work process to another), and include: (1) craft-type batch production, (2) continuous processing, (3) automated processing, (4) mechanized assembly, (5) mechanized processing, and (6) manual assembly. Each type of production process creates its own labour demand. Locational decisions are one means for industries and firms to establish the required employment relation. The matching of divergent



Taken from [11:77].

Figure 1
ALTERNATIVE INDUSTRIAL SPATIAL STRUCTURES

labour supply (from territorial communities) and demand (from industries and firms) creates a dynamic spatial division of labour, a fine-grained mosaic of unevenness. This mosaic can only be discovered at any point in time by detailed empirical analyses undertaken from a "realist" perspective. Decentralization is one of many possible outcomes, which change from firm to firm, from labour process to labour process, and with management's choice

of strategies to deal with the contradictions of the capitalist employment relation.

What then becomes of the so-called *new international division of labour* (NIDL) or *new global economy*? Most writers in this school continue to talk of "spatial divisions of labour", however finely grained and transitory. Others discuss the impact of NIDL on North American cities and its influence on regional business cycle; yet at the same time they criticize product cycle and NIDL concepts as being overly simplistic and misleading. In a related, if bolder, French-language analysis, Aydalot [1] continues to find the notion of a spatial division of labour at the global scale useful, defined in modes-of-production and core/periphery terms. It would seem that French and Anglo/American analysts come to a distinct parting of the ways on this issue.

At the same time, whether or not we can describe conceptually the macro-scale social and economic forces involved, there seems little empirical question that: (1) today there is a radically different global geography of secondary industry than that observed twenty years ago, (2) a major feature of this new spatial pattern at the national and international levels is the relative dispersal or decentralization of manufacturing activities *en gros*, and (3) in actual geographic terms, host locations for many of these facilities are found in the Asia-Pacific area, especially East Asia (Japan, Korea, Taiwan and Hong Kong) and the ASEAN countries (Singapore, Malaysia, Thailand, Indonesia and the Philippines). Any theoretical scheme which masks, obfuscates or actually attempts to deny these observations would seem to be dysfunctional as a heuristic device.

Alternative Routes to Decentralization

Alongside this discussion of changing approaches to industrial location there is another literature on alternative routes to decentralized development. Necessarily there is substantial overlap between these two discussions when it comes to describing the footloose nature of many contemporary industrial processes, but this alternative literature concentrates primarily on the political and administrative aspects of a deliberate strategy of *bottom-up development*. The outlines of such an ideological approach to decentralization are now reasonably widely understood.

A political strategy of bottom-up development amounts to mobilizing local labour power to create self-reliant economic well-being, typically in marginalized peripheral locations. Starting with use-value production for the individual and living group, it provides a mechanism for promoting wider forms of petty commod-

ity production and exchange. Here we are talking about the so-called informal sector of the economy, whose main institutional forms are the grey market and producer and consumer cooperatives. It is argued that such organizations provide a self-help welfare strategy for underdeveloped areas and a possible bridge to renewed success in the formal sector of the economy, creating in effect new decentralized patterns of economic activity. In this issue of *CJRS* Joyal examines in detail the role of this *third sector* in regional development, based on his experience in Quebec.

Finally, related to political mobilization is the attempt to promote decentralized development in third world countries and other areas through the devolution of political and administrative powers. It is argued that such a decentralization of the state apparatus will help overcome exploitation of the periphery by the core, changing the structural characteristics of public sector resource allocation and the class alliances upon which the power of government depends. The last article in this issue, by Moudoud, examines regional development strategies in Tunisia, focusing specially on attempts to devolve decision-making powers in the Central Tunisia region. He concludes that only very limited success in decentralization can be expected in situations with a strong tradition of unitary government and core-area dominance.

Conclusion

A clear image of regional industrial decentralization cannot be formed from the current literature. While major changes have occurred over the last two decades in the geography of industrial activities, no new consensus has yet emerged to provide an explanation of the structural and functional relations at the heart of this process. There seems little question that the institutional organization of production has markedly influenced contemporary spatial divisions of labour. The multinational corporation is of relatively recent origin and carries within itself the potential for massive restructuring of the global economy. How much of this potential has been realized to date is still a matter of contention. But new national centres of industrial expansion have also appeared, reinforcing decentralist trends within the organizational development of international institutions.

The major causative forces associated with both these phenomena are technological change and the differentiation of regional labour markets. These are modified by historical conditions in particular localities and the structural dynamics of the market economy. A mosaic of such influences - the multinational corporation, socioeconomic evolution in the world periphery, technolog-

ical change, labour market segmentation, local social and cultural history, and the structures of capitalism - combine in numerous ways to create new patterns of regional growth and development. Harvey Perloff argued a quarter century ago that "the various growth patterns displayed can be explained by identifying the relative advantages and disadvantages of the regions with regard to input and output access for the major types of economic activities" [12:93]. He and his colleagues then went on to identify and operationalize techniques for measuring the importance of different influences in creating observed growth patterns at the level of the nation state. It seems likely that theoretical progress in understanding regions and the changing spatial division of labour must be sought along these same lines, with the scale of analysis expanded to a global level.

Many of the requisite steps in this direction, both conceptually and methodologically, have already been taken during the last ten to fifteen years. What is needed now is a commitment to such a project on the part of regional scientists with the appropriate skills and global vision.

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