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Excerpt
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Part 1 Location, communication and the organisation

1 Introduction

This book seeks to present an old topic in a new light: to pursue the study of industrial geography as a means of investigating *organisations* as well as locations and areas. Industrial geography, and economic geography in general, has tended to view space as a discrete and disembodied variable somehow independent of the organisations that operate within it. As a direct consequence, the subject has tended to overemphasise space. Although founded in *industrial* geography, the present study attempts to temper this preoccupation by elaborating an organisational perspective for the subject which might enhance the explanation of patterns of location and spatial interaction. The present study therefore moves away from a narrowly based industrial geography preoccupied with manufacturing, towards a more broadly based geography of organisations. It attempts to combine principles and concepts developed in organisation theory with the empirical generalisations of geography. The principles of organisation theory, and especially those of the structural contingency model within it, are fundamentally aspatial. Their combination with geography's empiricism might, therefore, add a basic spatial perspective to the approach, improving understanding of the structure, behaviour and integration of formal organisations. Equally, an organisational perspective adds a long-neglected and all but missing conceptual and theoretical dimension to industrial geography which should substantially improve understanding of the operation of organisations in space.

For a long time industrial geography has laboured under an inappropriate conceptualisation of the organisation, one which has, in fact, assumed all participants to have more or less the same goals, aspirations and motives. This conceptualisation has also been largely accepted in the policy-oriented regional economic development field and may well account for some of its shortcomings too. To assume 'economic man' is to assume that all organisations are the same, thereby obviating the need for conceptualisation and examination of individual organisations and their structures. In short, assuming economic man assumes away the organisation. Behavioural challenges to a stance based on economic man are, therefore, confronted with an urgent need to develop for the first time an adequate conceptualisation and specification of organisational structure rather than adopting, as they have, selected aspects of an outmoded classical construct. It is contended here that such a new formulation might be derived, at least in part, from the structural contingency model in organisation theory,

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elements of which might profitably be incorporated into industrial geography.

However, the introduction of an organisational perspective into industrial geography is more than the replacement of an outmoded conceptualisation with a more thorough conceptualisation of the organisation. The study of economic activity as a whole can be considered as taking place on three different, but not altogether discrete, scales: a *macro scale* dealing with the political economy involving analyses at the societal level; a *meso scale* dealing with the interactions between places (which has been the primary concern of economic geography); and a *micro scale* operating at the level of the individual organisational and the forces within it, which has been primarily the domain of organisation theory. An adequate understanding of the operation of organisations within a spatial framework must integrate elements from all three levels of analysis, although this is a task of considerable magnitude.

Industrial geography has been preoccupied with the meso scale, a middle ground, and has given little attention to more general issues of societal impacts and pressures on organisations, or more specific issues of the internal structuring of organisations and the decision-making processes within these frameworks. This is not to say that there has been no geographic work aimed at clarifying these more general or more specific issues, for this would devalue the contribution of attempts to develop precise decision-making models in industrial geography, on the one hand, and of attempts to introduce societal considerations in work adopting a Marxist stance or dealing with the social responsibility of corporations, on the other.

This book focuses on the micro scale, the more specific level of the individual organisation or enterprise, to expand appreciation in industrial geography of the processes shaping organisational structures and, therefore, influencing their operations in space. These processes might be internally generated or externally imposed but, through the exploration of causal relationships, it might be possible to throw light on the extent to which environmental and technological forces influence the organisation, its structure and the decision-making processes within an explicitly spatial framework. Furthermore, it may also allow some estimation of the extent to which the organisation or enterprise is in at least partial control of its own destiny insofar as it is able to influence the environment within which it operates. Therefore, this volume represents a first attempt to develop an adequate conceptualisation of the organisation in industrial geography and to specify more fully the range of considerations necessary to provide an adequate understanding of the operations of organisations and their component parts in the space economy.

In combining industrial geography with concepts developed in organisation theory, the present study therefore seeks to establish a more broadly based geography of organisations. Three major problems confront this task:

- (1) To distil the essential dimensions of organisational structure and

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organisation–environment interaction from the structural contingency model.

- (2) to determine the general propositions on spatial aspects of organisation–environment interaction that can be gleaned from linkage and information flow studies in industrial geography.
- (3) To integrate these conceptual notions and empirical regularities within an *a priori* model to explain the structure, functioning and location of organisations within an explicitly spatial framework.

These three problems are the concern of the first part of this volume. The second part then attempts to test the validity of this model using information from the UK electronics industry. Although this verification exercise deals exclusively with manufacturing organisations, these are used as the basis for experimentation rather than the focus for conclusions. It is important to stress this point, for there is a need in geography to go beyond the traditional preoccupation with manufacturing plants and firms to a fuller treatment of all types of organisation.

In developing a more broadly based geography of organisations within the present study, there are, however, a number of preliminary issues which must be dealt with concerning definitions and general background. The first issue concerns the definition of terms used to distinguish organisations and their component parts. The second concerns the current conceptualisation of the organisation in industrial geography, especially in the regional development literature which the present study seeks to modify. The third issue concerns the selection of the electronics industry as a suitable vehicle for empirical investigation.

Definitions

Industrial geography suffers from a profusion and confusion of terminology with terms such as ‘factory’, ‘establishments’, ‘firm’, ‘plant’ and ‘enterprise’, having, through common parlance, been made virtually interchangeable. More properly, these terms should be regarded as defining a hierarchy of units comprising the organisation (Figure 1.1). The smallest unit is the *establishment*, a single locus at which an organisation operates. In the manufacturing situation such a locus might also be referred to as a *plant*, a *branch plant*, a *factory*, or a *works*. In a non-manufacturing situation the establishment can be an *office* or a *warehouse* or, in a more general sense, simply a *centre of operations*. One or more establishments or centres of operations comprise a *firm* or

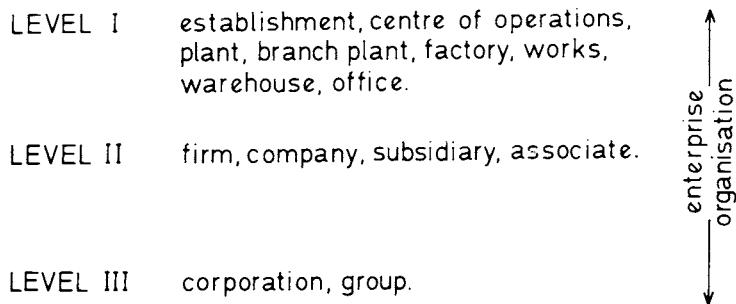


Figure 1.1 The definition of terms

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company. Unfortunately, the term ‘firm’ has been particularly misused. In a legalistic sense it is a structure designed to meet government regulation, cash flow, and taxation requirements (Stopford and Wells, 1972). However such a designation may have little functional meaning when the firm is only a *subsidiary* of a larger *corporation* or *group*. But, an especially large measure of imprecision has been given to this term from its use in the classical and neoclassical theory of the firm. An essential tenet of this theory is that all organisations operate in a similar fashion to attain a single, profit maximising goal (the dictates of the assumption of economic man). Therefore, all organisations are fundamentally similar, if not the same, and this apparent similarity is further increased by the aspatial nature of the theory itself. Reduced to only one type of organisation, only one label is required to distinguish the decision-making unit, *the firm* – not a battery of unambiguous terms. Within this framework, then, a plant, a company or a corporation can all be called a ‘firm’ and there is no need to define degrees of autonomy between the levels of the hierarchy. The conflict between this use of the word ‘firm’ and its use in a legalistic sense is only too plain.

For the purpose of the present study the hierarchic relationship of the terms that are used to distinguish decision-making units can be expressed in diagrammatic form (Figure 1.1), reflecting the discussion above. However, two additional terms are also used: *enterprise* and *organisation*. These are used interchangeably in a generic sense to distinguish relatively autonomous decision-making units. Obviously, there is a major problem involved in measuring autonomy in any precise manner, just as there is a problem in defining ownership and control in the corporate situation (Berle and Means, 1932; Lerner, 1966), but here the intention is to use ‘enterprise’ and ‘organisation’ to define formal, purposive organisations and production systems. These might be single plants and sites, as in the context of the single plant firm, but they might equally be autonomous subsidiaries or divisions of a corporation or, indeed, the corporation itself.

The organisation and its conceptualisation in industrial geography

The operation of organisations in space has, in the past, been conceived very narrowly in industrial geography with attention directed almost exclusively to the issues of location, the consequences of location decision-making and the patterns of industry distribution that have resulted. In general, industrial geography has not been studied as an end in itself, but as a means to a variety of social and economic ends. For example, the distribution of industrial activity has been investigated to help explain urban, national and even international patterns of economic development and trade flows. At another level, a knowledge of industrial location trends and needs has influenced local infrastructure and service planning and investment. The selective encouragement of economic investment in different areas, particularly within a regional welfare framework, owes much to the observations and generalisations developed in industrial geography. Indeed, the lessons learned from industrial geography and some of the normative principles of location theory have influenced, and are reflected in, the investment decisions of

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individual organisations, especially those which undertake formal planning. At a more abstract level, models of plant and organisational behaviour in space, which make up industrial location theory, have contributed substantially to the development of multidisciplinary spatial economic theory. Although industrial geography has been largely descriptive and fundamentally preoccupied with pattern, this approach has clearly been fruitful from a variety of points of view.

Attempts to account for the patterns that have been described in industrial geography formerly made recourse to the normative concepts of classical and neoclassical economics. More recently, however, explanation has emphasised the influence that the behaviour of decision-makers may have in shaping these patterns. With the development of this 'behavioural' stance in industrial geography during the past decade, the focus of interest has been widened from the simple description of pattern to embrace all aspects of investment decision-making in firms and organisations. In other words, industrial geography has become more wide-ranging in its examination of spatial behaviour. But, to expand this focus of attention at all adequately, and to raise industrial geography above the level where behaviour is merely described to a level where causal relationships and directions of causality are explored rather than inferred, requires a much fuller and more extensive conceptualisation of the problem under consideration. Indeed, Smith (1971) could not have spelled out this issue more clearly when he complained that industrial geography is long on fact but short on theory.

The need for an organisation-level approach in industrial geography is now acute. Having drawn its conceptualisation in large measure from normative economics, and having rested heavily on the principles of economic man, industrial geography has tended to disregard the individual organisation and treat all decision-making units in much the same manner – as black boxes, capable of a limited number of actions and responses, which are themselves embedded within, and their actions determined by, particular environmental contexts. Notwithstanding the demise of economic man, whose excesses (and contradictions) have been widely debated, the influence of this concept lingers on in the absence of any replacement. Its lingering finds expression in the fact that many studies in industrial geography remain external to the organisation, taking the organisation and its internal processes as given and having no direct bearing upon spatial patterns of production. Nowhere is this stance more apparent than in the cost surface approach to locational explanation in which the organisation is treated as a single plant firm which is no more than a locational 'actor' – one dot in a dot distribution.

Only in behavioural studies of linkages and information flows in geography has any consideration been given to the variable character of organisations, and then only in a very elementary fashion. These studies have started to open the black box of the enterprise using crude and frequently gross variables to describe organisational attributes. But, the absence of a full and adequate conceptual framework to guide the direction of these studies and their choice of variables detracts from

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the contribution they can make to any understanding of the operation of firms in space. Consequently, the provision of such a conceptual framework in industrial geography and industrial location theory is critical for the future development of these fields of study and their interdisciplinary contribution.

The organisation and regional development

Although regional economic planning has found little of value to policy formation in explanations of location that have relied heavily upon normative economics, a large proportion of the work in industrial geography has, nevertheless, been placed in a regional development context. Constrained by a conceptualisation of the organisation similar to that adopted in more traditional studies of industrial location in geography, diagnoses of regional economic problems have most frequently been grounded in macro-economics. Consequently, the adoption of an organisation-level approach to the study of the spatial aspects of industrial activity would appear to be as urgently required and as potentially important for the formulation of regional development policies and strategies as it is for industrial geography. Indeed, the major significance of policy implications derived from studies adopting an organisation-level approach has already been alluded to in an interregional context (Keeble and McDermott, 1978; Wood, 1978). The adoption of such an approach may also be important for a proper understanding and adequate explanation of the recently raised question of inner city decline in developed countries (Thrift, 1979), for it is possible that the decentralisation of manufacturing from these locations may be not so much a consequence of government policy, but more a coincidental change in the nature of firms and organisations which has led to a dispersal of productive facilities.

The British government has recognised a regional 'problem' since the 1930s (Barlow, 1940), and post-war policy has emphasised the creation of employment opportunities in peripheral areas to redress an apparent imbalance (McCrone, 1968). Major strategies to achieve this aim have included the movement of manufacturing facilities from the south of England and the Midlands to areas designated for assistance (Howard, 1968; Beacham and Osborne, 1970; Keeble, 1971; Manners, 1972), and the encouragement of direct investment in new facilities by external, and frequently foreign, enterprise (Forsyth, 1972; Dicken and Lloyd, 1976). Such strategies find sanction in the belief that regional development differentials are a product of the inefficient spatial allocation of production capacity in comparison with the distribution of both labour and infrastructure (McCrone, 1968). Moreover, policies aimed at achieving spatial equilibrium could be simultaneously directed towards the redress of what was conceived as one of the major underlying causes, namely insufficiently diversified regional economies inherited from 19th century industrialisation (Toothill, 1961; Brown, 1972; Warren, 1972). Explanation of these disparities has also drawn on neoclassical location theory, suggesting that spatial variations in factor costs and accessibility – and therefore in the marginal costs associated with transport – have created competitive disadvantages for industry within

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the peripheral regions (Cameron and Reid, 1966; Smith, 1971; Brown, 1972).

However, there are contradictions implicit in traditional approaches to the explanation and reduction of regional economic imbalance. Over and above reservations which might be expressed regarding the usefulness of neoclassical location theory (Chisholm, 1971a; Massey, 1974), a diagnosis grounded in *macro-economics* is inconsistent with policy instruments which operate at the level of the *individual organisation*, and intrude directly upon the decision-making process. In Britain, these instruments are based upon selective tax and building subsidies, and capital and employment subsidies, augmented by the disincentive scheme of Industrial Development Certificates applied to more prosperous areas (Chisholm, 1974; Hallett, 1973). Even research into regional policies has, with notable exceptions (Luttrell, 1962; Cameron and Clark, 1966), been concerned mainly with their impact in macro-economic terms (for example, Keeble, 1976; Moore and Rhodes, 1976). Few attempts have been made to gauge the impact of policies on the decision-making in individual companies, that is, the translation of policies designed to correct problems at a macro-level into behaviour at the micro-level (Stewart, 1974; McDermott, 1979). With the exception of work by Green (1974) and Sciberras (1975), this major gulf and research deficiency persists, despite evidence that location decision-making at the firm level does not take place in a manner consistent with the assumptions which underlie macro-economic policies (Townroe, 1969, 1971, 1972; North, 1974; Cooper, 1976).

Although traditional policies may have ameliorated some regional problems in Britain (McCrone, 1972; Donnison, 1974; Keeble, 1974, 1977a), regional economic and social disparities persist (Diamond, 1974; HMSO, 1972). In addition, considerable evidence has accumulated that the importance of some of the 'causes' of these disparities has either been overrated or has diminished (Sant, 1967; Cameron, 1971, 1974; Chisholm and Oeppen, 1973). This has led to the necessary re-evaluation of both problems and policies. Chisholm (1974, 1976) has continued in the macro-economic tradition in his reappraisal of British policy, seeing regional problems as a manifestation of national difficulties, in much the same manner adopted by Lutz (1962) for the interpretation of Italy's regional problems.

At the same time, there has been increased interest in the micro-level of analysis. Of particular concern has been the nature of enterprise and the role it may play in regional economic performance. Attention has been drawn to the major impact that large corporations have on regional performance and development (Parsons, 1972a; Watts, 1972; Evans, 1973; Goddard and Smith, 1978) and to the spatial impact of the reorganisation and rationalisation processes occurring within these firms and organisations (Leigh and North, 1976, 1978; Massey and Meegan, 1976). The spatial impact of a high concentration of branch plants (Townroe, 1975; Sant, 1974) and the implications of high levels of external investment for the further growth of the regional economies (Hamilton, 1976, 273–75) have also been questioned, and doubts have

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been expressed regarding the employment:capital ratios of establishments which may respond to regional incentives in the form of capital subsidies (Buck and Atkins, 1976). Finally, concern has been expressed about the quality of entrepreneurship and the performance of indigenous enterprise in depressed peripheral economies (Firn, 1974, 1975; Sant, 1974).

These studies mark a growing concern for, and awareness of, the role of individual organisations in shaping differential regional performance. However, having rejected a conceptualisation of the firm and organisation which was consistent with a macro-economic approach to the problem, these studies are left without an appropriate conceptual framework which might lead to their integration. It may be inappropriate to place strong emphasis on cost structures as an integrating device since previous investigations into spatial variations in profitability and productivity have been largely inconclusive (Cameron, 1974; Chisholm, 1976; Parsons, 1972*b*). Instead, attention might more properly be directed towards the nature of the regional environment within which an organisation operates, and which might have bearing upon its structure, behaviour and performance. The network of linkages an organisation establishes within this environment might be conditioned both by the nature of the environment and by its own internal structure. Such an organisation-centred approach coincides with that adopted in the structural contingency models of organisation theory. Should it prove valid as an explanatory framework it could challenge the relevance of regional policies sanctioned by the definition of regional problems at a macro-level.

The UK electronics industry

The electronics industry is an ideal vehicle for investigating the relationships between organisations and their external environments in order to further our understanding of the spatial dimension of enterprise and to assess the policy implications of such an understanding for regional economic planning. Internationally, the electronics industry is a modern growth sector much sought-after both to alleviate regional economic problems and to initiate industrial development. It is also a sector in which inter- and intra-organisational information flows are critical, potentially providing insight into a central concern of the present study. In the United Kingdom context, it has a distinctive distributional pattern and is located not only in the expanding core but also the disadvantaged periphery. Furthermore, the electronics industry has been subject to policy attention in the UK as a means of fostering development in regional areas (McDermott, 1976, 1979; Booz, Allen and Hamilton, 1979).

As a modern, highly scientific and dynamic industry, electronics manufacturing has a record of rapid development based upon occasional major innovations, continuous technological refinement, and progressive extension of market applications. It encompasses a technology which impinges upon a wide range of processes and markets, making the boundaries of the industry somewhat difficult to determine. Electronics manufacturing has its origins in a variety of engineering and electrical

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activities, while its products are found throughout productive, administrative, distributive, and service sectors. It follows that there is no easy division between electronics and other forms of industry. Boundaries are imposed by the need for consistent terms of reference rather than as a result of any obvious grouping of activities and products.

The British Economic Development Committee for Electronics, a member of the National Economic Development Office (NEDO), recommended adoption of the industry definition proposed by the Electronics Industries Association of the United States (NEDO, 1974):

The electronics industries are engaged in that branch of science and technology which deals with the study and application of techniques to direct and control the conduction of electricity in a gas, vacuum, liquid or solid state material. Electron tubes and semi-conductors are combined with resistors, capacitors, transformers and similar components in equipments which detect, measure, record, compute and communicate information. (EIA, 1968: 86)

This 'technical' definition emphasises the role of *active* components, which manipulate and direct the flow of electrons and *information* processing. Electronic goods are distinguished from electrical products by the currents they handle, dealing with flows of electrons perhaps millions of times smaller. The flow of electrons is manipulated to produce a series of impulses by which information is registered, transmitted, processed or stored. However, the output (processed information) is usually transformed into usable form by the application of electrical or electro-mechanical devices and processes. Herein lies a major difficulty in distinguishing the limits of the electronics industry as such. While electronics goods depend primarily upon the presence of active components, they are characterised also by a variety of non-electronic components and subassemblies. Conversely, an increasing proportion of electrical and engineering equipment relies for control upon the presence of electronic circuits which programme the sequences to be followed.

Notwithstanding the suitability of this industry as a vehicle for the empirical exercise, it must be stressed that the present study is not simply an examination of the electronics industry. The industry is the subject of experiment as much as a focus for conclusions.

The structure of the study

The task of developing an organisation-level approach in industrial geography and regional economic planning divides the present study into two parts: the elaboration of an explanatory framework; and its testing within the context of the UK electronics industry. In Part I, Chapter 2 attempts to make good the absence of a detailed and thorough conceptualisation of the firm and firm development in industrial geography through a review of organisation theory. Emphasis is placed on the open systems paradigm with particular attention being paid to the contingency model of organisational structure. The three key components of this model, environment, technology and structure, are critically reviewed to identify its strengths and weaknesses as a conceptual foundation for an expanded industrial geography. The relationships between organisations and their environments are examined in