Entrepreneurship in the northern region

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'Entrepreneurship in the Northern Region.'

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ABSTRACT

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There has been a tendency to ignore the role of the entrepreneur in regional development. An examination of economic literature indicated that he performed functions essential to the efficient use of resources and to technological advance, while relying heavily on information for knowledge on which to act. In carrying out such functions the entrepreneur was central to the whole of economic activity in the production of goods and services and in economic change. Consideration of growth and location theories did not alter these conclusions. Regional data on indicators of entrepreneurship led to the conclusion that in recent years indigenous entrepreneurship has been relatively low. This situation was in contrast to that existing in the 19th. century when the Northern Region was a leading industrial centre of the world. An investigation of growth in the Region traced the rise of the major industries in the 19th century and their subsequent decline in the 20th century. The development of the large industries led to particular forms of organisation, marketing and geographic isolation for many firms and workers. The result was that for many, experiences were limited and information flows restricted. When shifts in demand came in the 20th century from heavy capital goods to lighter consumer goods, entrepreneurs in the North were unable to bring about the industrial changes necessary to rejuvination of the region. Government action was needed with mobile plants becoming the corner-stone of regional policy in employment terms. The signs of long-term self-sustained growth were not so encouraging. With real constraints on the supply of mobile plants in the future the Region will have to rely more heavily on its present resources of industry and entrepreneurship to promote further economic growth than it has done in the past.

Contents.

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INTRODUCTION

The Northern Region is defined as a development area, for economic purposes, and as such is in receipt of considerable government aid. Despite this assistance, over many years, the problems associated with depression persist and the standard of living in the region, measured by conventional means, remains at a level significantly below that of the national average. Policy measures to reduce unemployment and to relieve the worst symptoms of distress have been relatively successful but the achievement of 'self-sustained growth' has not materialised.(1) Therefore government support will continue to be required in the forseeable future.

It is contended here that the entrepreneur carries out a function central to the productive process and economic development which has direct relevance to regional prosperity. Economists, governments and even empiricists have tended to ignore the role of the entrepreneur in regional change and as a result a vital explanatory variable is excluded from policy considerations. The results obtained from those policies implemented in the regions appear inexplicably to fall short of expectations.

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(1) Hailsham Report, The North East, Cmnd.2206 H.M.S.O. (1963) p.5

If an attempt was to be made to establish the level of entrepreneurship in the Northern Region it was essential to have a working definition of the term 'entrepreneur'. As the term was used freely in economic literature no difficulty was envisaged in obtaining a satisfactory description of his role and function in society. However, a brief examination of the literature showed that there was little consensus of opinion amongst economists as to who was the entrepreneur or the part he performed in the economy. As a selection of definitions at random seemed unlikely to produce the desired result, a survey of economic literature was undertaken to trace the use and meaning of the term from its introduction into the French language in the 12th century to the present day. A description of that investigation is given in Chapter 1.

The entrepreneur who filled a specific post in the earliest periods was a bearer of uncertainty by the time of Cantillon. (2) Say, in the early 19th century, described the entrepreneur as a person who gathered together the factors of production and put them to work. (3) The contemporary English School saw the entrepreneur as a capitalist, a view that persisted until it was destroyed by Walker, (4) Knight (5) and Schumpeter.(6) The last

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(2) Cantillon, R. Essai sur la Nature du Commerce en Général Trans. H.Higgs, F. Cass & Co.Ltd. (1959) Reissue.
(3) Say, J.B. A Treatise on Political Economy. Trans. C.R.Prinsep (1880) Kelley (1971) Reprint.
(4) Walker F.A. Political Economy, 3rd Ed. Macmillan (1896)
(5) Knight, F. Risk, Uncertainty & Profit, Harper Torch Books (1965) Reprint of 1921
(6) Schumpeter. J. The Theory of Economic Development, trans. R. Opie Harvard (1934) O.U.P. Reprint 1969

assigned a dynamic role to the enterprising man; that of an innovator. In more recent times economists such as Galbraith have stated that the entrepreneur had been absorbed into the technostructure or organisation, while others have offered the broadest of generalisations. (7) Taking into account all the information generated in the study, the conclusion was reached that the entrepreneur acted in uncertain situations where information was incomplete. It was a discontinuous task and so he was part of no distinct social class. He was responsible for the organisation of factors into productive units and for the introduction of new knowledge into the production process. He was the diversifier in established firms but was also the source of new firm formation. In carrying out such functions the entrepreneur was central to the whole of economic activity in the production of goods and services and in economic change.

If the entrepreneur performed such a role then his actions appeared to be crucial to the rate and direction of economic growth and development. A considerable literature both theoretical and empirical existed on economic growth and an examination of part of this was carried out in case this might lead to a modification of the perceived entrepreneurial role in regional development. The outcome

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(7) Galbraith, J.K. The New Industrial State, Penguin (1967) See also Evans, G.H. Jnr. The Entrepreneur and Economic Theory, American Economic Review (1949)

of this study is described in Chapter 2. In many of the works studied the factors of paramount importance in regional growth of output were inputs of Labour, Capital, Technology and the location of industry whilst the entrepreneur was virtually ignored.

Gross Regional Product (G.R.P.) might be increased by additional labour inputs or a rise in output per man employed. The former could be brought about by employing more labour or varying the hours worked whilst the latter could be achieved through labour training or transferring workers from low to high productivity employment.

Considerable attention was devoted to the importance of capital in the form of investment as a stimulous to growth stemming from Keynes work which showed how an increase in investment spending could bring about an increase in G.R.P.(8) Subsequently Harrod (9) and Domar (10) indicated that for economic growth to be sustained it was necessary for investment to be increased in each time period. The view of investment as a crucial element in growth received support from other theorists (11) and in the empirical findings of Denison (12) and Matthews (13). If increased factor input did not explain total growth there was a tendency to attribute the

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(8) Keynes, J.M. General Theory, Macmillan (1936)
(9) Harrod, R.F. An Essay in Dynamic Theory, Economic Journal (1939)
(10) Domar, E. Capital Expansion, Rate of Growth & Employment Econometrica (1946)
(11) See Kaldor, N. Alternative Theories of Distribution, Review of Econ. Studies 1955-56
(12) Denison, E.F. Why Growth Rates Differ, Brookings, Inst.(1967)
(13) Matthews, R.C.O. Some Aspects of Post-War Growth in the British Economy. Univ. of Cambridge Reprint Series No.240 (1965)

unexplained residual to technological progress. In the neo-classical model additional inputs of embodied or disembodied technical progress could produce increased total output and output per unit of Labour or Capital input. Solow basically used this model in his empirical study of the U.S. economy in which he postulated that seven-eighths of economic growth between 1909 and 1949 was due to advances in technology. (14)

The growth models mentioned above have been adapted to fit into a regional context but they gave very limited acknowledgements to the activities of entrepreneurs.

On a more practical basis the industrial structure of a region was seen as highly influential on past and future growth patterns (15) where present structure depended upon past locational decisions taken within firms. The classical cost minimisation models proved unsatisfactory predictors of the precise location of the firm perhaps because theorists were more concerned with constructing elegant models of locational equilibrium than with practical application. (16) The behavioural theories reject the calculating automatism of classical theory but their anecdotal approach inhibits any generalisation from their results. If location is indeterminate then the structural models did not

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(14) Solow, R. Technical Progress & the Aggregate Production Function, Review of Economics and Statistics (1957)

(15) See Richardson H.W. Regional Economics, Weidenfeld & Nicolson (1969)

(16) Keeble, D. Industrial Location & Planning in the U.K. Methuen 1976 p.2-4

satisfactorily explain how the present structure in a region came about or how change could be brought about which would influence regional growth in the future.

The growth models studied appeared to concentrate upon the necessary conditions for growth which were not sufficient in themselves. Therefore there seemed no reason to modify the view that the entrepreneur was an essential ingredient in the growth process but this study had brought about a realisation that, taken in isolation, entrepreneurship alone would not produce regional growth.

In Chapter 3 information was gathered from numerous sources in an attempt to assess the level and quality of entrepreneurship demonstrated in the Northern Region in recent years. The results led to the tentative conclusion that entrepreneurship was lacking or unusually constrained in the North.

McClelland had shown that high 'N-Achievement' and entrepreneurship were related with a significant proportion of the former being found in a particular social class; the middle class.(17) The North has a disproportionately low number of households falling into this category with migratory flows tending to reduce this number still further.(18) On the basis of McClelland's work the expected density of entrepreneurs to be found in the Northern Region would be

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(17) McClelland D.C. The Achieving Society, Van Norstrand (1961)

(18) N.R.S.T. First Interim Report, July 1975.

lower than the national average. An important function carried out by the entrepreneur was that of innovation. Analysis of the data provided by the Queen's Award to Industry Scheme indicated that the North received proportionately fewer 'mentions' for innovation than the regional population and employment size would have led one to expect.

The Queen's Award Scheme suffers from serious drawbacks as a measure of regional innovation so it was necessary to look to improved performance of Northern industry as a sign of enterprise, efficiency and innovation. Output per man and per person employed was lower in most sectors of industry in the North than the national average.(19) The level of investment was similar to the national average apart from in chemicals and the metal industries where it was higher. Approximately half of total manufacturing investment outside the Chemical and Metal industries was carried out by mobile firms so despite government subsidy investment by indigenous Northern Industry, was low. The efficient use of capital was not reflected in capital/output or incremental capital/output ratios and the return per unit of capital investment was equal to the national average.

The mobile firms created a disproportionately large number of jobs in the region compared with established industry in recent years but few links have been formed between the 'new' and 'old' plants. A high level of

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(19) N.R.S.T. Technical Report No. 4 p.1

entrepreneurial activity might have led to a large number of small firms or new firm formations but evidence suggested these units were under-represented in the North.(20)

The evidence suggested that entrepreneurship could be lacking or was constrained in many sectors of the local economy which was in strong contrast to the position in the North a century ago. Over the 19th century the Northern Region became one of the leading industrial centres of the world with enterprising men such as Stephenson, Hawthorn, Parsons and numerous others producing marvellous innovations. It was hypothesised that the development of the major basic industries might have led to a pattern of operation which would inhibit future diversification and entrepreneurial activity that could persist until the present day. In Chapter 4 an examination of the growth of the traditional Northern industries was carried out.

It was discovered that the basis for growth and prosperity in the region lay initially in the possession of coal and increasing demand for this product in London, the South and the Continent. The removal of such a high weight/low value product in vast quantities called for new methods of transport overland and sea. These needs were satisfied through the development of the steam locomotive, the railway system and the iron screw collier. In resolving

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(20) N.R.S.T. First Interim Report 1975 p.20

these problems the large dynamic industries of ship-building, rail-construction, iron, steel and heavy engineering were developed which brought great prosperity to the region and its inhabitants. Men of ideas moved to the North to demonstrate their skills; others migrated from Ireland, Scotland and other regions of Britain to work.

The possession of mineral and water resources and a recognition of effective demand brought forth the entrepreneurial talents of indigenous and migrant men to exploit those favourable conditions calling on the services of land labour, capital and technology to meet industrial and consumer needs. By the end of the 19th century the North had clearly demonstrated its resourcefulness and its products were known throughout the world.

In the 20th century conditions changed, shifts in demand took place and the traditional industries were reclassified as slow growth sectors. Regional performance began to fall and the North came to lag behind other regions in which the new growth industries emerged. Heavy migration from the region began and capital became more difficult to attract and retain. The crisis came in the inter-war years when unemployment of resources reached unprecedented heights.

Since that time, the region has been in receipt of government aid but appeared unable to regenerate the

industrial base through its own efforts and has required the injection of new industry from outside. In the traditional industries entrepreneurship continued in the form of new innovations but otherwise appeared to be constrained. Assuming an adequate supply of factors of production, for a firm or individual successfully to change out of the production of one product group into another it was necessary to know which goods to produce and have the technical knowledge to produce them. The development of the large industries of the 19th century led to particular forms of organisation which gave employees a restricted view of the overall operation of the firm within limited occupational groups. In addition, if the basis of the firm was the extraction or treatment of natural resources, workers were often geographically isolated, contacting few men with experiences or knowledge different from their own. Northern industry specialized in certain product groups, markets and technical knowledge. The products were, in general, classified as heavy capital goods and marketing was often carried out through agents or at a personal level (i.e. they were not marketed direct to the general public but through selected outlets) and in the field of heavy industry the North excelled technologically.

In the 20th century, when the export market collapsed and domestic demand shifted from capital goods

to consumer goods, Northern entrepreneurs entered a period of great uncertainty. Their technical and market knowledge in the new product groups was virtually non-existent. This resulted in a tendency to cling to the old ways which seemed more certain then to step out into the unknown.

Government action brought industry to the region with new techniques, products and markets but in many instances experience within these plants was limited to the productive operation. The majority of mobile plants were branches or subsidiaries of larger firms and some have not brought their marketing, purchasing or management services sections with them to the region. The valuable market and technical knowledge necessary for the promotion of self-generating growth remained constrained.

The impression obtained from the total study was that the role of the entrepreneur in regional development was a neglected area of research. (Chapter 5.) A fuller understanding of what information and stimulous entrepreneurs required to become active would lead, perhaps, to a modification of government policies, that would encourage growth in the longer term.

The lessons learnt from Northern experience should be borne in mind when examining the pattern of growth in the prosperous regions at the present time. Economic

conditions, directions of thought and policy change over time and there was reason to believe that the attraction of mobile firms (the cornerstone of regional policy) to the North would be more difficult in the future. If this situation arose, the region would have to rely more heavily upon its present resources of industry and entrepreneurship to promote future economic growth than it has done in the past.

CHAPTER 1

'The Entrepreneur'

"The Heffalump is a rather large and very important animal. He has been hunted by many individuals using various ingenious trapping devices, but no-one so far has succeeded in capturing him. All who claim to have caught sight of him report that he is enormous, but they disagree on his particularities. Not having explored his current habitat with sufficient care, some hunters have used as bait their own favourite dishes and have then tried to persuade people that what they have caught was a Heffalump. However, few are convinced, and the search goes on."

(P.Kilby) (1).

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(1) Kilby P. (ed). Entrepreneurship & Economic Development. The Free Press (1971). p 1

The word 'entrepreneur' was introduced into the English language in the late 19th. century to increase the descriptive and definitional powers of the authors of current economic literature. Since that time the term has been used frequently but in general, vaguely, by economists. Any enquiry into the role and function of the entrepreneur in economic development, is constrained by this lack of a satisfactory definition.

It would have been possible to select one definition from amongst those offered by leading economists, but the problem then arises as to which one to choose, and from which time period. Should one accept the definition of Schumpeter(2) or Evans (3), Knight (4), Cole (5) or some other? After careful consideration it was decided to use none of these. Instead in order to obtain a fuller understanding of the concept the use and development of the term was traced from its introduction into the French language to the present time.

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(2) Schumpeter J.A. The Theory of Economic Development. trans. R.Opie. Harvard (1934) Reprint Ox.Univ.P. (1969).

(3) Evans G.H. (Jnr.) 'Business Entrepreneurs, Their Major Functions & Related Tenets.' Journal of Economic History (1959)

(4) Knight F. Risk, Uncertainty & Profit. (1921) Reprint Harper Torchbooks (1965)

(5) Cole A.H. 'An Approach to the Study of Entrepreneurship: A Tribute to Edwin F. Gay.' Journal of Economic History (1946) Supp..

In England, prior to the popular acceptance of the word 'entrepreneur', terms such as 'Adventurer', 'Undertaker' and 'Projector' were used and are considered here.

The verb 'entreprendre' meaning 'to do something' dates from the 12th. century.(6) The noun 'entreprendeur' had developed by the 14th. century and after modification took on its modern form of 'entrepreneur' in the 15th century. By that time the term was applied to someone who assumed some task, usually of large scale.(7)

Over the period under discussion the initiation of large schemes was limited, in the main, to the Church, the Monarch or the State, who ordered the construction of abbeys, cathederals, castles, fortifications and a few public buildings. These projects were organised on a line different from that existing in most developed economies today. For instance, should the Church wish to build an abbey, it would appoint one of its servants to plan the work, another to gather together materials and labour and a third to supervise the actual construction. It was always possible for all three functions to be performed by one person. The work itself tended to be open-ended, with the plans subject to considerable

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(6) Hoselitz B.F.'The Early History of Entrepreneurial Theory.' Explorations in Entrepreneurial History Vol 111. (1951)Much of the material in this section is drawn from this article. Hoselitz in turn drawing from other sources which he acknowledges.

(7) Hoselitz B.F. op cit p. 196.

revision and elaboration. Work continued whilst funds lasted, the entrepreneur completing as much of the plan as possible within this constraint. He bore no risk of loss, except to his reputation, if the project went awry.

With the passage of time a transfer of power took place from the Church to the Monarch or State. This was reflected in the decline in the number of buildings constructed for spiritual purposes, whilst castles, harbours , fortifications and public building undertakings continued. Gradually the term 'entrepreneur' came to be associated with someone who performed a task for the Crown or central authority. These tasks were often carried out under contractual arrangements. Unlike in earlier periods, it became a common occurrence for the entrepreneur to do so on his own account, thus introducing the element of risk. Examples of such contracts between the Crown and another party, are the construction of defences, the supply of provisions to the army, the leading of military expeditions or even the settlement of colonies. (8)

Other changes were taking place in the occupational structure of the community; labour was becoming more specialized and the engineer and the architect were identifiable categories of worker with distinct functions in society. A clearer view of these figures in the economic process allowed observers to differentiate between them and the entrepreneur. The entrepreneur no longer necessarily performed the complete

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(8) Hoselitz B.F. op.cit. p.194
See also Redlich F., 'The Military Enterpriser: A Neglected Area of Research', Explorations in Entrepreneurial History, Vol.VIII (4) (1956)

task from planning to construction. He shed the specialized functions and carried out the remainder.

De Belidor, in the early 18th century described the entrepreneur as someone carrying out a task for the Crown and went on to discuss the contractual obligations of each party in some detail. (9) So far as the Crown was concerned the principle obligation was that of payment. The entrepreneur on the other hand, had a duty to gather together the necessary factors of production and to provide the tools and materials for the project. He would then construct, or carry out work to the agreed plan within a given time limit. All work was subject to the scrutiny of Crown employees and payment by installment would be made to the entrepreneur, if the inspection reports were favourable. From de Belidor's description it is apparent that the entrepreneur received a fixed price for his labours but his costs were uncertain. Therefore, he bore the risk of profit or loss, the size of which was unknown in advance. Because government contracts were less secure than they are in most developed societies today, he would bear also the risk of default.

Cantillon, a contemporary of de Belidor, rejected the idea that the entrepreneur acted only as a contractor to the Crown and gave a more general description that fitted into his analysis of the economic system. (10) The basis of this system was land.

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(9) De Belidor B.F. La Science des Ingeniérs dans la Conduite des Travaux de Fortification et D'Architecture Civile. Quoted by B.F. Hoselitz in The Early History of Entrepreneurial Theory. E.E.H. Vol. III(4) (1951)

(10) Cantillon R. Essai sur la Nature du Commerce en Général (1755) trans. H. Higgs. F. Cass & Co. Reissue (1959)

"The Land is the Source or Matter from whence all Wealth is produced. The Labour of man is the Form which produces it: and Wealth itself is nothing but the Maintenance, Conveniencies and Superfluities of Life." (11)

Unlimited wealth was to be found in the land but men were required to extract it. Increasing the size of the labour force would bring forth more produce that could be brought to the market place. (12) In the process of winning and distributing such produce from the land, the entrepreneur played a major part.

"The circulation and exchange of goods and merchandise as well as their production are carried on in Europe by Undertakers, and at a risk." (13)

The 'undertaker' operated the productive unit and also acted between the producer and consumer. The entrepreneurs were listed and described in some detail by Cantillon. The farmer who paid a fixed rent, and sold his produce at uncertain prices, was an entrepreneur. So was the carrier who purchased agricultural produce and conveyed it to market. He paid the farmer a fixed price but was uncertain of the sum he would receive in the city. Would the revenue received cover material and transport costs? Would it leave him sufficient profit on which to live? As he did not know these things in advance he existed under uncertainty.

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(11) Cantillon R. op.cit. p.3
(12) Mirabeau, Marquis de, Letter to J.J.Rousseau (c.1767) quoted in R.L.Meek, The Economics of Physiocracy, Harvard (1963) p.16
(13) Cantillon R. op cit p. 47, Heading to Chapter XIII.

In a similar vein Cantillon went on to describe how the following of many other occupations and professions incurred uncertainty and completed his analysis with a general definition.

"By all these inductions and many others which might be made in a topic relating to all the Inhabitants of a State, it may be laid down that except the Prince and the Proprietors of Land, all the Inhabitants of a State are dependent; that they can be divided into two classes, Undertakers and Hired people; and that all the Undertakers are as it were on unfixed wages and the others on wages fixed so long as they receive them, though their functions and ranks may be very unequal. The General who has his pay, the Courtier his pension and the Domestic servant who has his wages, all fall into this last class. All the rest are Undertakers, whether they set up with a capital to conduct their enterprise, or are Undertakers of their own labour without capital, and they may be regarded as living at uncertainty; the Beggars even and the Robbers are Undertakers of this class. " (14)

Where de Belidor's entrepreneur had a fixed selling price with unknown costs, Cantillon described the undertaker with fixed costs and unknown revenue. Cantillon's entrepreneur was not necessarily a capitalist nor was there mention of a

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(14) Cantillon R. op cit p.55

need to plan, supervise or control.(15) The role of the entrepreneur was to bear uncertainty which existed in all walks of economic life except those of the 'Princes' and landowners.

In the mid 18th century a number of intellectuals with a common interest in economics gathered together to form the 'Physiocratic School' of thought. The founders, Francois Quesnay and the Marquis de Mirabeau were joined by disciples such as Nicholas Baudeau and Du Pont de Nemours. In addition other scholars became associated with them, Turgot being the outstanding example. (16)

Where Cantillon thought that an increase in the supply of labour would bring about an increase in wealth, the Physiocrats believed that the net product of agriculture determined the level of activity in the whole economy. The agent responsible for increasing the net product by obtaining greater output from a unit of land was, for Quesnay (and other Physiocrats), the wealthy farmer, as opposed to the peasant or small-holder. The Physiocratic entrepreneur was subject to uncertainty for a variety of reasons. His costs of wages and rent were regarded as fixed whilst his revenue was unknown in advance. His receipts would fluctuate in response to the outcome of the harvest which was in turn affected by the weather, demand, market price and other such factors. (17)

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(15) Hoselitz B.F. op.cit. p.214
(16) Meek R.L. The Economics of Physiocracy. Harvard University Press (1963) p.27
(17) Hoselitz B.F. ibid.

In this sense Quesnay agreed with Cantillon in viewing the entrepreneur as buying at fixed and selling at unknown prices but restricted his analysis to the farmer. In the 'Tableau Économique' (18) Quesnay gathered together his ideas to postulate the operation of the whole economic system but in so doing he described a static society in which there was no capital accumulation nor uncertainty.(19)

At this stage of the analysis the Physiocratic School had indicated no advance upon the line of thought pursued by Cantillon, if anything it was more restrictive. However, Nicholas Baudeau, following Quesnay, suggested that the farmer, faced with fixed costs and uncertain prices, could take action which would be beneficial to him. Application of his full knowledge and experience of agriculture to farming could lead to increased production or a reduction in the number of men employed. These, in turn, could result in improved profitability of the enterprise. The opportunity for the individual to take advantage of such possibilities was limited to the extent of his knowledge. Recognising this fact, the Physiocrats devised many schemes for the dissemination of information to the agricultural entrepreneur. Through this action it was believed that not only farmers would prosper but total net product would be increased, bringing benefits to all. The role of the entrepreneur as an innovator had been recognised, at least in agriculture. (20).

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(18) Quesnay, F., Tableau Économique Eds. M. Kuczynski and R.L.Meek, Macmillan (1972)
(19) Hoselitz B. F. ibid.
(20) Hoselitz B. F. op.cit. p.209

Whilst not all the Physiocrats were totally committed to the cause of agriculture, most only made short excursions outside of the accepted doctrine, to which Turgot was a notable exception. Turgot's entrepreneur was associated with manufacturing industry perhaps reflecting a growing awareness of the approach of a new industrial age.

"Thus the whole Class which is engaged in meeting different needs of Society with the vast variety of industrial products finds itself, so to speak, subdivided into two orders: that of the Entrepreneurs, Manufacturers, and Masters who are all possessors of large capitals which they turn to account by setting to work, through the medium of their advances; the second order, which consists of ordinary artisans who possess no property but their own hands, who advance nothing but their daily labour, and who receive no profit but their wages." (21)

Quesnay, Baudeau and Turgot concentrated on the importance of large scale operation, but the possession of a large productive unit was restricted to those few people who had adequate capital backing. For Quesmay and Baudeau the entrepreneur happened to be a wealthy agriculturalist, but Turgot's entrepreneur was a rich industrialist or merchant, an employer of labour, who accumulated capital and put it to work; accumulation assuming greater importance than the possession of land. (22)

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(21) Turgot A.R.J. 'Reflections on the Formation and Distribution of Wealth ' (1766) taken from R.L.Meek (ED.) Turgot on Progress, Sociology and Economics. Camb. Univ. Press (1973) p.153

(22) Hoselitz B.F. op.cit. p.210

The definitions of entrepreneur offered by the Physiocrats were more restrictive than that of Cantillon in that the sector in which the individual commentator's interest lay, largely dictated who the entrepreneur should be i.e. Quesnay's 'farmer' and Turgot's 'capitalist manufacturer'. Despite this shortcoming the Physiocrats had recognised that innovation was important in economic progress and it was a function of entrepreneurship. They recognised also that manufacturing industry could contribute to national product. The role of the entrepreneur as uncertainty bearer, capital accumulator, employer and innovator, had been examined at some length, even if the overall concept remained confused.

Jean Baptiste Say rejected the sectoral approach of the Physiocrats and implied that all production of goods and services arose from the multifarious combinations of inputs that were possible. He is credited with having differentiated between the factors of production; land, labour and capital which allowed him to ascribe a catalytic role to the entrepreneur in the productive process. (23)

"..... a manufacturer..... should have at first made himself master of all that was known of that particular branch of industry, and afterwards have accumulated, or procured the requisite capital, collected artificers and labourers, and assigned to each his respective occupation."(24)

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(23) Koolman G., 'Say's Conception of the Role of the Entrepreneur', Economica (1971)

(24) Say J.B. A Treatise on Political Economy 4th Ed. (1819) trans. C.R.Prinsep & C.C.Biddle (1880) Reprint Kelley, New York (1971) p.82

The entrepreneur thus gathered together the factors of production and in the light of his technical and commercial knowledge put them to work. The entrepreneur was active also between the factors of production and the consumer.

"The wholesale employers of industry, or adventurers as they have been called, are but a kind of brokers between venders and the purchasers, who engage a quantum of productive agency upon a particular product, proportionate to the demand for that product. The farmer, the manufacturer, the merchant is constantly occupied in comparing the price which the consumer of a given product will and can give for it, with the necessary charges of its production; if that comparison determine him to produce it, he is the organ of a demand for all the productive agency applicable to this object.

On the other hand, the agents of production, animate and inanimate, land, capital and human labour, are supplied in larger or smaller quantity, according to the action of the various motives.....; thus forming the other bases of the value at which their agency is rated." (25)

The entrepreneur was a vital link in the operation of the economy and existed in all sectors of industry. He continually sifted the information that flowed from the market place, in the form of prices, seeking opportunities to exploit.

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(25) Say J.B. op.cit. p.315

Should he come to a favourable conclusion with regard to the production of some good to satisfy consumer needs, he would demand the services of the other factors paying in return rent, wages and interest.

"He was the linchpin, holding together landlord and capitalist, technician and labourer, producer and consumer.... and was able to profit from his knowledge and the ignorance of others." (26)

Say saw the clear distinction that existed between capitalist and entrepreneur; a fact that eluded most of his contemporaries and predecessors except Cantillon. The entrepreneur still bore risk but this was to his reputation, as he operated in an uncertain world where the probabilities of success or failure were incalculable. The importance of knowledge, even superior knowledge, and the use of machinery in production was stressed. (27) But Say did not emphasise the innovative role of the entrepreneur and there was little examination of the process of capital accumulation. (28)

By the early 19th century in France a relatively sophisticated definition of the entrepreneur as an organiser of production had emerged. He belonged to no social class but performed a distinct economic function as the agent who, recognising a consumer need, brought together the factors of production in order to produce some economic good, paying in return rent, wages and interest. His own income was uncertain

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(26) Koolman G. op.cit. p.273
(27) See Say J.B. op.cit.pp.74 to 82
(28) Koolman G. op.cit.

and he risked his reputation in the venture. The good, produced in order to satisfy the consumer, was no longer necessarily some large project or undertaking and the association with the Monarch or State had disappeared. If the innovative role of the entrepreneur had not been developed very far at least it had been recognised.

II

The development described above, which took place in France, also had its parallel in England. As the expression 'entrepreneur' was not used by writers in English until the second half of the 19th century the words 'Undertaker', 'Adventurer' and 'Projector' were considered. The choice of these particular terms was not completely arbitrary, they were selected because those persons described as undertakers appeared to perform similar functions to the French entrepreneur in the earliest period. 'Undertaker' and 'Adventurer' were used in translations of French literature into English (29) and Projectors were associated with invention and more importantly, innovation.(30) All three terms tended to fall from common use by 20th century to be replaced by 'entrepreneur'.

In medieval France, anyone carrying out some task on a large scale for the Church or Government was referred to as an entrepreneur. In the same period in England a person

(29) See for example C.R.Pricep's translation of J.B.Say, A Treatise on Political Economy, Kelley, New York (1971) or Higgs' translation of R. Cantillon, Essai sur la Nature du Commerce en Général. F. Cass & Co. (1959)

carrying out similar duties was called an undertaker. As in France, the undertaker first undertook the work without financial involvement, and later the work was performed on his own account. Once this latter stage had been reached he undertook the risk of loss. There is evidence to show that in Elizabethan times undertakers contracted with the Crown to settle estates or supply the army in Ireland.(31) Later they obtained concessions from the Crown to exploit mineral deposits, and still later the term became associated in a more general way with anyone who undertook some sizeable project from which the return was uncertain. By the middle of the 18th century the size of task carried out by the undertaker was unimportant and he was simply any businessman with uncertain income. (32)

In some situations the term 'adventurer' would appear to have acted as a substitute for 'undertaker'. For instance the settlement of estates in Ireland described above as being the work of undertakers, is very similar to the settlement of colonies and plantations in America carried out by 'adventurers'.

"..... those ..... who undertake either by themselves or in companies, the settlement of colonies and plantations in America; which distinguishes them from the planters, by the same proprietors of such lands, colonies or plantations. The latter are employed in planting and cultivating the lands and

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(30) See J. Bentham 'In Defense of Usary'. Jeremy Bentham's Economic Writings. W. Stark (Ed.) Vol. I Allen & Unwin (1952)

(31) Hoselitz B.F. op.cit. pp.201 to 204

(32) Hoselitz B.F. ibid.

the others lend them money, and hazard or adventure it, in the hopes of the profits they are to receive thereby." (33)

But there was a significant difference. The adventurer, unlike the undertaker did not appear actually to carry out any work himself. He supplied capital and was at risk. Later this person would be described as 'capitalist' and perhaps more accurately today as the supplier of venture capital. Elsewhere Postlethwayt used the term 'Merchant Adventurer' to describe someone who sent ships to sea in search of trade, from which profits could be made. (34) Here again the adventurer appeared to provide the capital or means for such a venture, but did not set out in search of trade himself.

Where Postlethwayt described some specific roles that the adventurer could occupy, Samuel Johnson defined the word in much more general terms.

"He that seeks occasion of hazard; he that puts himself in the hands of chance." (35)

The generally accepted meaning from an economic viewpoint is not clear. Postlethwayt made more than a suggestion that the adventurer provided capital without involving himself in the organisation or operation of the scheme, while Johnson's definition suggested the adventurer operated in any area where the outcome was unknown in advance.

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(33) Postlethwayt M. The Universal Dictionary of Trade and Commerce. Vol. I London (1757) p.22

(34) Postlethwayt M. ibid.

(35) Johnson S. A Dictionary of the English Language. W. Strahan (1755) quoted in B.F. Hoselitz op.cit. p. 200

By the late 18th century the term, for economic purposes, was falling into disuse. It was reserved, in more common parlance, for describing men of whom rich Regency and Victorian ladies should beware and by the present day for a plausible rogue or someone who lives by their wits. (36)

'Projector' was another word used in this period as a close subsisute for 'undertaker' but closer examination reveals significant differences. Whereas 'undertaker' referred to a businessman, 'projector' was more commonly used to denote an innovator. The former term was usually associated with an honest man whilst the latter might be used in a derogatory sense.

The terms 'project', 'projector' and 'innovation' were in common use by the early 17th century to describe the introduction of new ideas into society and those persons who carried the projects through to completion. In this period the myth existed that the world was gradually deteriorating from some 'Golden Age' of yesteryear. Innovation was therefore extremely valuable to society as: ".... a means of arresting or at least retarding the decline of an ever deteriorating world." (37)

It would have been logical for the projector to have been applauded as a beneficiary of mankind, but all innovations were not successful and many backers lost their money. The common view of the projector became one of a trickster intent

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(36) Wyld H.C. The Universal Dictionary, Routledge & Sons (1946) p.16

(37) Redlich F. The Role of Innovation in a Quasi-Static World, Francis Bacon and his Successors, Explorations in Entrepreneurial History, Vol. III (1954-55) p.16

on parting honest men from their money in order to finance some less than viable scheme.

This description of doubtful honesty continued in the writings of Brugis (38), Sprat (39) and Defoe (40) added to which was the confusion between the role of the inventor and innovator that was not resolved by using the same term 'projector' to describe both characters. Brugis expressed the current belief of inevitable world decline but by the time of Sprat and Defoe a change was taking place in man's view of the future. The outlook was no longer hopeless; progress was possible and innovation was a powerful instrument for advancement. As a result the projector was seen in a different light. He was not necessarily dishonest, indeed he was often misjudged. Postlethwayt differentiated between the honest and dishonest projector for us. He spoke of the unhappy fate of those men who did not use the reason given them. Some escaped the unhappy world by suicide, others tried stealing, and still others, more cunning ".... turn their thoughts to private method of trick and cheat ...." or "... turn their thoughts to honest invention founded upon the platform of ingenuity and integrity. These last two sorts

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(38) Brugis T., The Discovery of a Projector Shewing the beginning progresse and the end of the Projector and his Projects. London (1641) quoted by F. Redlich in 'The Role of Innovation."

(39) Sprat T. The History of the Royal Society of London for the Improving of National Knowledge (1667) quoted by F. Redlich in 'The Role of Innovation ....'

(40) Defore D., An Essay upon Projects (London 1697) quoted by F. Redlich in 'The Origin of the Concepts of "Entrepreneur" and "Creative Entrepreneur"' Explorations in Entrepreneurial History Vd. 1(2) (1949)

are those we call Projectors .... But the upright and honourable projector is he who by fair and plain principles of sense, honesty and ingenuity, brought any contrivance to a suitable perfection, makes out what he pretends to, picks nobody's pocket, carries his project in execution and contents himself with the real produce of his useful invention." (41) The dishonest projector appeared to be the lowest of the low whilst the honest projector should benefit from his honest schemes. The latter should be supported and encouraged by the public as through his efforts discoveries and improvements were and are made. (42)

By the middle of the 18th century in Britain, the undertaker was regarded as an honest businessman carrying out work on his own account and incurring risk of loss. The meaning of the term 'adventurer' was less clear but references were made to those who accepted uncertainty and/or provided capital. The description was closer to capitalist or rentier as there was no hint of organising, supervising or controlling any enterprise. The projector was an innovator or inventor bringing forward new schemes that could benefit mankind. Unfortunately there were many rogues numbered amongst this group of whom undertakers should be wary. Occasionally the terms 'projector' and 'undertaker' would appear to have been used synonymously.

Over the remainder of the century Britain's economy changed from that of a relatively pure agricultural society to that of the leading industrial nation in the world. Land,

(41) Postlethwayt M. op.cit. Vol. II p.554
(42) Redlich F. op.cit. (1954-55) p.22

described by the Physiocrats as the source of wealth, declined in importance; industrialists and businessmen were the new and rising groups.

Adam Smith reverted to the idea first expressed by Cantillon, that labour was the means by which wealth was produced. (43) Here the similarity of ideas end; Smith believed that wealth could be created by labour in the manufacturing and commercial sectors of the economy as well as in agriculture. The effectiveness of labour could be dramatically increased through specialisation and the employment of capital in any venture.

"He has traced the various means by which labour may be rendered most effective; and has strikingly exhibited the prodigious additions made to its power by its division among different individuals and countries, and by the employment of accumulated wealth, or capital in industrious undertakings."(44) The accumulation of capital became the prime objective of the businessman in the pursuit of profit. Once he had funds at his disposal the industrialist put other factors to work to increase his profit and by this mechanism the economy would expand, augmenting the wealth of the nation.

"As soon as stock has accumulated in the hands of particular persons, some of them will naturally employ it in setting to work industrious people, whom they will supply with materials and subsistance in order to make a profit by the sale of their work..... something must be given for the profits of

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(43) Smith A. An Enquiry into The Nature and Causes of the Wealth of Nations. (1776) J.R.McCulloch (Ed) Adam & Charles Black (1863) Introductory Discourse

(44) Smith A. op.cit. p.XLV

the undertaker of the work, who, hazards his stock in this adventure." (45) The failure to differentiate between the capitalist and the undertaker is apparent from the above passage. That Smith realised there was a difference between the lender and borrower of capital, is implied but not explicitly stated in his works, nor does he describe fully the function of each in the productive process. (46) The focus of attention upon the provision of funds to industry naturally thrust the capitalist to the fore and he appeared to be the dynamic force in the economy. In a world of limited financial markets much of new industry was financed by the owner who also acted as operator of the enterprise: the role of the capitalist and undertaker fused into one. The capitalist organised industry and provided the funds for tools, materials and subsistance. He was the entrepreneur and bore the risks associated with the enterprise. Subsequently the use of the term undertaker came to mean those who performed all the duties connected with the burial of the dead.

The view of the risk-bearing capitalist as the entrepreneur was to dominate the writings and the thoughts of English economists for the greater part of tne 19th century together with the concept that such persons formed an independent social class. (47)

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(45) Smith A. op.cit. p.22
(46) Schumpeter J.A. History of Economic Analysis E.B.Schumpeter (Ed) Oxford University Press (1954) p.555 Footnote.
(47) Meek R.L. op.cit. (1973) p.33

Of the three terms considered, the entrepreneurial functions of the undertaker and the adventurer were absorbed by the term 'capitalist'. The remaining term 'projector' continued to be used to describe the 'innovator' or 'inventor'. As Jeremy Bentham wrote to Adam Smith:

"I mean projectors: ..... under which invidious name I understand you to comprehend, in particular, all such persons as, in the pursuit of wealth, strike out into any new channel, and more especially into any channel of invention." (48) Bentham defended the projector and whilst admitting that prodigals existed, suggested that had the usury laws not discouraged projects the prosperity of the nation would have been greater. He succeeded in differentiating between capitalist and projector, if at the same time he failed to see clearly the difference between inventor, innovator and imitator.

"..... let him have invented a new and more convenient machine, or a new and more profitable mode of husbandry, a thousand dyers, ten thousand mechanics, a hundred thousand men may repeat and multiply his success....."(49)

In summary, by the first quarter of the 19th century the use of the terms 'adventurer' and 'undertaker' had declined to be replaced by the word 'Capitalist'. The value of the projector increased particularly when it was realised that innovation could improve profitability, but the overtones of dishonesty remained. (50) It was never made clear whether

(48) Bentham J. In Defense of Usury, Jeremy Bentham's Economic Writings, W. Stark (Ed) Vol.I Allen & Unwin (1952)p.168
(49) Bentham J. op.cit. p.182
(50) Ricardo D. On Principles of Political Economy & Taxation, Vol.I P.Sraffa (ED) C.U.P. (1951) p.387

the innovator was regarded as a special type of entrepreneur or capitalist, or whether he fell into some other category altogether. It seems probable that on the discovery of some new process or good, he either pursuaded others to make use of it, in which case he was an inventor; borrowed capital to innovate himself, in which case he was a 'creative entrepreneur'; or possessed funds himself and utilised these to set up production acting as a capitalist entrepreneur. (51) As a clear distinction between 'inventor' and 'innovator' was not established, neither was the exact function of the 'projector' in the economic process.

For half a century the English economists never approached in rigour, the analysis of Say; and on the continent his theory advanced no further.

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(51) Redlich F. The Origin and Concepts of "Entrepreneur" and "Creative Entrepreneur", Explorations in Entrepreneurial History Vol I(2) (1949)

III

In Britain, the period covered by the 'Classical' economists was one of unprecedented change. In every industry men from all walks of life devoted their energies to the production of new goods and services and in many instances introduced new methods of manufacture or organisation. Compared with the present day the scale of operations remained small and the existence of many owner-managers was apparent to any keen-eyed observer. As the owner lived from the profits of his enterprise, and profit in this period was seen primarily as a return on capital, (52) the ultimate distinction between entrepreneur and capitalist was slow to be made. For a firm to operate successfully, the main requirement was an adequate supply of capital, not entrepreneurship.

"Ricardo, the Ricardians, and also Senior ..... almost acomplished .... an impossible feat, namely, the exclusion of the figure of the entrepreneur completely. For them ..... as well as for Marx .... the business process runs substantially by itself, the one thing needful to make it run being an adequate supply of capital." (53)

With such a view prevalent at the time it was not surprising that considerable attention was devoted to the process of accumulation, the returns to capital and the analysis of profit. A closer examination of profit indicated

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(52) O'Brien D.P. The Classical Economists, Clarendon Press (1975) p.118

(53) Schumpeter J.A. op.cit. (1954) p.556

that it covered more than just a reward for the loan of capital. J.S. Mill described the situation thus:

"The gross profits from capital, the gains returned to those who supply the funds for production, must suffice for these three purposes. They must afford a sufficient equivalent for abstinence, indemnity for risk, and remuneration for the labour and skill required for superintendance."(54) All three returns were not necessarily received by one and the same person. The capital might be borrowed, in which case the lender receives interest in return for his abstinence and gross profit less interest, was the reward of the undertaker for his exertions and risk. In a footnote Mill commented:

"It is to be regretted that this word (undertaker) in this sense, is not familiar to the English ear. French political economists enjoy a great advantage in being able to speak cufrently of les profits de l'entrepreneur." (55)

From these passages above it can be seen that Mill viewed the entrepreneur as a bearer of risk and superintendent of a business enterprise whose reward was insurance and wages. Interest was strictly speaking the same in all forms of employment, but it was otherwise with gross profit.

"It depends on the knowledge, talents, economy and energy of the capitalist himself, or of the agents whom he employ s..... " (56)

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(54) Mill J.S. (1862) Principles of Political Economy, Book II p.245-6

(55) Mill J.S. op.cit. p.246 footnote.

(56) Mill J.S. op.cit. p.249

To Mill, is attributed the introduction of the term 'entrepreneur' into the English language and it appeared that he was going to make a clear distinction between the role and function of this character and those of the capitalist. The last passage contradicts this belief. The entrepreneur, to Mill, was a risk-bearing superintendent possessing the skills and talents of some superior form of labour. The capitalist remained the driving force in the economy and no mention was made, so far as we are aware, of the innovative role of the capitalist or enterpriser.

As the 19th century progressed there emerged business enterprises on a larger scale than previously observed. Legislation allowed the formation of the joint stock company which was a permissive element in this process of development. F.A.Walker described how the increasing complexity and size of unit of production developed into a situation where a new class of people was required to operate it: the entrepreneurial class. (57) These people were not capitalists, for whom interest was reserved; they possessed exceptional talents that were rewarded by profit. The entrepreneur must have special ability because the direction of labour and capital was an extremely difficult and onerous task that only a few could perform successfully. He enforced discipline on the workforce, provided technical skill, commercial knowledge and powers of administration. He decided what was to be made, how many and what price should be charged.

(57) Walker F.A. Political Economy, 3rd Ed. Macmillan (1896)

"The armies of industry can no more be raised, equipped, held together, moved and engaged, without their commanders, than can the armies of war." (58)

The entrepreneurial function was distinguished from that of the capitalist by Walker in a way that Mill never succeeded in achieving. The entrepreneur appeared to have been a superior sort of labour, a leader, an employer of men. He was an organiser of production but more than this he was an ' energiser'. (59) These attributes singled him out from the crowd, giving him command over the resources of labour and capital and a dyhamic role to play in economic society.

"It is no longer true that a man becomes the employer of labour because he is a capitalist. Men command capital because they have the qualifications to employ labour."(60)

It is in Marshall's later work that we see the gathering together of many of the French, English and American thoughts on the subject. (61). Observation had shown Marshall that businesses were often to be found in the hands of the undertakers. This latter term "..... habitually used on the Continent, seems to be the best to indicate those who take the risks and the management of business as their share in the work of organised industry." (62). Organised industry and its development was described in some detail by Marshall, reminiscent of Walker. The Outwork system gave way to the

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(58) Walker F.A. op.cit.p.75
(59) Walker F.A. op.cit.p.76
(60) Walker F.A. op.cit.p.234
(61) Marshall A. Principles of Economics 8th Ed.(1920) Macmillan
(62) Marshall A. op.cit.p617 footnote

workshop owned and run by wealthy employers, which in turn gave way to a complex of large businesses:

"..... controlled by the specialized ability of capitalist undertakers." (63)

"But in the greater part of the business of the modern world the task of so directing production that a given effort may be most effective in supplying human wants has to be broken up and given into the hands of a specialized body of employers, or to use a more general term, of businessmen. They 'adventure' or 'undertake' its risks, they bring together the capital and the labour required for the work; they arrange or 'engineer' its general plan and superintend its minor details. Looking at businessmen from one point of view we may regard them as a highly skilled industrial grade, from another as middlemen intervening between the manual worker and the consumer." (64)

The passage above appears to combine in one statement the views of Say, Mill and Walker. The entrepreneur was not necessarily a capitalist but he undertook risk and was an employer of men. He gathered together the factors of production and supervised and controlled each activity. Elsewhere Marshall stated that certain businessmen sifted the market for information to aid them make correct decisions. (65)They were aware of consumer desires and altered production accordingly. On innovation Marshall was less explicit, stating that manufacturers

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(63) Marshall A. op.cit. p.619.
(64) Marshall A. op.cit. p.244
(65) Marshall A. op.cit. p.246

tended to devise new machinery for their own use.(66) Whether the manufacturer was classified as a businessman or entrepraneur, is not certain.

Marshall frequently referred to leadership, undertakers, businessmen, capitalists and employers of men. He described their rise and fall, their lack of common background, their trials and tribulations but what constituted the entrepreneurial function and who performed it was not clear. In modern industry the power-house of the firm supplying it with energy lay somewhere within the organisation. As a result Marshall offered this latter term as a fourth factor of production.(67)

The uncertainty about economic theory under which scholars found themselves in the early 20th century was reflected by Knight who postulated that:

"..... there is a strong undercurrent of discontent with loose and superficial thinking and a real desire, out of sheer intellectual self-respect, to reach a clearer understanding of the meaning of terms and dogmas which pass current as representing ideas. ..... this essay purports to make a fuller and more careful examination of the role of the entrepreneur or enterpriser, the recognised 'central figure' of the (free enterprise) system ....." (68)

Knight maintained that in a society devoid of uncertainty entrepreneurship would not exist, because all outcomes would

(66) Marshall A. op.cit.p.234
(67) Schumpeter J.A. op.cit. p.899
(68) Knight F. op.cit.pp.IX to XI Preface to first ed.

be known or at least be predictable.

"The flow of raw materials and productive services through productive processes to the consumer would be entirely automatic."(69) Everyone would perform routine tasks and there would be a concentration upon 'doing' things. If uncertainty was introduced then men would have to act upon opinion rather than fact, the principle activity then became one of deciding what to do and how to do it. Just as men differed in their manual and intellectual powers, so would they vary in their ability to cope with uncertain situations. Not only would this be true, but these same men would differ in the degree of confidence they had in their own judgement and the courage to act upon it. Only a relatively small group in any society would be courageous and confident enough to act upon their foresight, thus specialising in bearing uncertainty. These were the entrepreneurs who accepted the uninsurable risks that uncertainty produced.

The entrepreneur offered guarantees of income to the owners of factor services payable in the form of fixed wages, rent and interest in return for control over the direction of these same factors.

"Under the enterprise system, a special social class, the businessmen direct economic activity; they are in the strict sense the producers, while the great mass of the population merely furnish them with productive services, placing their persons and their property at the disposal of

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(69) Knight F. op.cit.p.267

this class; the entrepreneurs also guarantee to those who furnish productive services, a fixed remuneration." (70)

The offer of guarantee would be taken up only if owners also had confidence in the entrepreneur's knowledge and ability. In offering guarantees the entrepreneur was assuming responsibility for the correctness of his judgement and when these were taken up he assumed control and direction of the other factors. In an uncertain world he was at the centre of economic activity, exercising responsible direction and making responsible decisions. Amongst the decisions made was that of introducing new knowledge into the productive process but within modern business one particular decision was of crucial importance, that was the selection of men to make other decisions. He who selected the men was responsible; those selected only carried out routine decisions to the highest level of their judgement. Thus entrepreneurship was possible in the large as well as the small enterprise. The entrepreneur did not necessarily own capital nor operate the business but he accepted responsibility for its direction in an uncertain world using new knowledge in the pursuit of the profit it brought him. The penalties of failure were not specified but as the total relationship was based upon confidence and self-confidence, it assumed that one or the other or both would be damaged, in which case further entrepreneurial activity would be either prevented or abandoned.

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(70) Knight F. op.cit. p.271

Despite Knight's rigourous analysis it was not clear who ultimately bore the responsibility for decisions made under uncertainty in the real world, particularly when ownership was divorced from control. In the latter case the argument appeared to become circular with the owners of the factors of production offering, accepting and being responsible for the same guarantees.

"To whom is the responsiblity ultimately transferred when the entire conduct and policy of a business are in the hands of a hired manager? The answer is obvious: to the owners of the productive services used in the business...."(71)

Knight's work has preceded that of Schumpeter in this section over-riding strict chronological accuracy because it was felt the approach of Knight was closer to the 19th century theorists described above than that which follows.

If many theorists, due to their concentration upon maximisation or static equilibrium models, had either ignored the entrepreneur, or at least left him as a shadowy figure in the background, then Schumpeter brought him to life. He placed the entrepreneur in the centre of the stage with a positive role to play in economic development.(72) The entrepreneur was a pure innovator. He introduced new goods to consumers, new methods of production, discovered new markets, new sources of supply or new ways of organising industry.

"The carrying out of new combinations we call 'enterprise', the individuals whose function it is to carry

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(71) Knight F. op.cit. p.299
(72) Schumpeter J.A. The Theory of Economic Development. trans. R. Opie (1934) O.U.P. Reprint (1969)

them out we call 'entrepreneurs'." (73)

The entrepreneurs combined factors in new ways which generally meant the formation of new firms with new men.

".... in general it is not the owner of stage-coaches who builds railways." (74)

The entrepreneur was not content to respond only to consumer desires, he created or initiated economic change; he did not adapt to the requirements of a slowly advancing society, he caused the discontinuous leaps forward. He disturbed the equilibrium or any tendency toward equilibrium.

In a traditional society advancing very slowly production was routine and many of the inhabitants could act rationally because they were sure of their ground and worked within the area of established precedent. Outside this area uncertainty existed. Most people did not contemplate crossing the boundary from security to uncertainty, they had to be shown the way by a gifted few who possessed the foresight and courage to do so. Knowledge in a progressive world was advancing all the time and available to numerous people. At a certain moment in time someone, more adventurous than the rest, would believe he could act upon this information and thereby make a profit.

"..... the leader type appears only when new possibilities present themselves." (75)

"He 'leads' the means of production into new channels."(7

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(73) Schumpeter J.A. op.cit. p.66
(74) Schumpeter J.A. op.cit. p.74
(75) Schumpeter J.A. op.cit. p.88
(76) Schumpeter J.A. op.cit.p.89

The entrepreneur reduced uncertainty for others, and as a result, businessmen with less knowledge, courage or confidence could and did follow his lead. This clustering effect explained the acceleration upward in the business cycle and the entrepreneur therefore became a dynamic element in economic progress. He did not carry out the routine tasks of organisation and control, these were the job of management. The observation of many innovators who had subsequently taken over the everyday running of an enterprise led Schumpeter to conclude that entrepreneurship was not a continuous function but only lasted so long as new combinations were being made. The fact that entrepreneurship was not a vocation, meant that those who temporarily performed the innovative function did not belong to any particular class. A clear distinction was made between the capitalist and the entrepreneur indicating that the latter did not bear risk.

From this description the entrepreneur appeared as a sharply defined character in any society. He should have been easily recognisable but one major difficulty with the innovative approach was that of establishing what constituted an innovation. Schumpeter's implication that it should be of a substantial nature did not resolve the problem. Despite this criticism Schumpeter gave the entrepreneur a clear role to play within a theory that has influenced economic thought ever since.

The English translation of Schumpeter's work came at a time when governments all over the world were searching for an explanation of their countries' poor economic performances. His theory offered one possible explanation and basis for action, but how innovation could be stimulated was not, and has not been, resolved.

Progress throughout the 20th century had brought increasing complexity to industry, organisation and the whole of economic society with the entrepreneur becoming more difficult to visualise and identify. The role of organiser and employer given by Marshall and Walker gave way to the controller and decision-maker. (77) In the early 1940s a revived interest in entrepreneurial theory led to the foundation, at Harvard, of the Research Centre in Entrepreneurial History. Schumpeter, as a member of the Centre, continued to present his earlier views of the entrepreneur but these did not go unchallenged by other research workers. One of the founders of the Centre, A.H.Cole, suggested that entrepreneurship included not only innovation but also some managerial elements. In his view the nature of entrepreneurship had changed over time, in response to the external influences of technology and improved knowledge.(78) John Dales went further than Cole to posit that the maintenance of a firm in a healthy, stable condition was just as important to the economy as innovation and so should be included as one of the essential functions of entrepreneurship. (79)

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(77) Robinson J. Economics of Imperfect Competition. Macmillan (1933)

(78) Cole A. H. An Approach to the Study of Entrepreneurship: A tribute to Edwin F. Gay. Journal of Economic History (1946 Supp.)

(79) Dales J.A. Approaches to Entrepreneurial History. Explorations in Entrepreneurial History Vol. I(i)(1949)

G. H. Evans perhaps took this line of thought to its ultimate in describing the entrepreneur as the person who: "determines the kind of business that is to be operated."(80) This obscurity fitted in well with Galbraith's theory that the technostructure had taken over and the entrepreneur had died. (81)

Other hypotheses viewed the entrepreneur as a function of the current economic climate; the role changed as opportunities and conditions changed externally and internally to the firm. In each role the entrepreneur would attempt to reach different goals of power, security and adventure. (82) Leibenstein postulated that contracts and production functions were incomplete, so an agent was needed to fill the gaps, this was the role for the entrepreneur. (83) Kirzner, to some degree following Leibenstein, expressed the view that the entrepreneur transmitted knowledge from buyers to sellers thus tending to bring about equilibrium prices, quantities and ultimately his own demise. (84) The entrepreneur recognized disparities in purchasing and selling prices from which he could profit. This forcibly reminds one of de Belidor and Cantillon, but Kirzner's entrepreneur might be aware of both prices of inputs and outputs, the uncertainty lay in the productive process. Could he successfully combine the factors of production in such a way as to leave him with a profit when production

(80) Evans G.H. Jnr. Business Entrepreneurs, Their Major Functions and Related Tenets, Journal of Economic History (1959) p.250
(81) Galbraith J.K. The New Industrial State, Penguin (1967)
(82) See Evans G.H. Jnr. The Entrepreneur & Economic Theory. A Historical and Analytical Approach. American Economic Review (1949)
(83) Leibenstein H., Entrepreneurship and Development, American Economic Review (1968 P & P)

functions were incomplete? He did not know in advance, therefore he was subject to uncertainty.

This section opened with the capitalist forming an entrepreneurial class but for a period the enterprising function was ignored in favour of the analysis of accumulation, interest and profit. This lack of attention was encouraged by the concern of economists with static or maximisation models. A realisation that the current explanations were unsatisfactory led to the work of Knight in which he clearly differentiated between risk and uncertainty, reserving the latter area for entrepreneurial activity. The tasks performed by the enterpriser required courage, self-confidence and the confidence of the owners of the factors of production. Entrepreneurs accepted the uninsurable risks that uncertainty produced and for which they had no precedent to guide them. The entrepreneur was no longer necessarily a capitalist but his association with a specific social class remained.

Schumpeter destroyed this myth in describing the entrepreneur as a pure innovator forming new combinations and new firms. He was a dynamic element in society confronting uncertainty by acting upon beliefs in his own foresight or vision. This was a discontinuous function so the entrepreneurs could form no distinct class of their own.

Schumpeter's view was perhaps too neat and restrictive for other economists who subsequently offered alternative

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(84) Kirzner I.M. Competition and Entrepreneurship. University of Chicago Press (1973)

definitions, some only remarkable for their vagueness. Recent works have explored the possibility of degrees of entrepreneurship, as enterprising action differed with the shortcomings of contracts or production functions.

IV

Throughout this study it has been evident that commentators have regarded the entrepreneur as one who carried out some task that set him apart from the remainder of society. The role he played has also been described as vital to productive organisation and economic progress.

In the earliest period the entrepreneur was entrusted with large projects because of his managerial abilities. Later, when the work had to be carried out under contract on his own account, the entrepreneur became subject to risk. He was tied to performing satisfactorily within the constraints of cost, price and time. Therefore his knowledge must cover the time period of the project. In a slowly changing society, contracting for the state could be done with some degree of certainty. However, once any businessman or producer was recognised as an entrepreneur the concept of entrepreneurship had altered quite dramatically. The enterpriser was now without a contract price if he produced for a general rather than a specific market. Even if his costs remained relatively static or at least predictable, his revenue would be uncertain and profit could take on negative values. He had to rely upon the accuracy of his own forecast of costs, prices and consumer desires in order to make a profit, particularly when more rapid changes were taking place. He existed under uncertainty. His prediction of the future

would be formed as a result of information received. This information was available to many people in society but only a few would foresee its value and even fewer would have the courage and confidence to act upon it. An even smaller group would win the confidence of others to the extent of gaining control over the factors of production. This latter group consisted of the entrepreneurs who profited from their knowledge and the ignorance of others. They were central to the whole productive process.

Say, in identifying the triad of factors, land, labour and capital, was able to describe the entrepreneur as the agent who gathered them together and put them to work, paying in return, rent, wagesand interest. This destroyed two myths. First, that the factors of production drifted together of their own accord to form productive units. The entrepreneur demanded the services of the factors and they were fused together to form a productive force by positive action. Secondly, the capitalist and the entrepreneur were not necessarily one and the same. Capital was used by the entrepreneur and was hired from the owners in return for interest; similarly land and labour were hired and rewarded.

Knight maintained that in a society devoid of uncertainty, entrepreneurship would not exist because all outcomes would be known or predictable. Even in a changing society most people preferred to stay within the bounds of

tradition where they felt secure and decisions could be based upon precedent and routine. Left to this general category of person economic progress would have been evolutionary rather than revolutionary. By contrast the entrepreneur acted in uncertain situations.

One area of economic activity where the outcome is often unpredictable is that of innovation. The value to society of the diffusion of information resulting in increased output per unit of input, was realised as early as the 18th century, the value of innovation even earlier. What was required was an agent willing to respond to such information and introduce it into the productive process but the outcomes of such ventures were not guaranteed. The innovator had the vision, courage and confidence to use information of which others were ignorant, afraid or chose to disregard. He introduced new methods, goods, markets and organisations to society reducing uncertainty for others who were then able to follow his lead. He demanded the use of factor services to carry out the routine tasks associated with the innovation, offering income and security in return. The entrepreneur was the innovator; he was an instrument of change, an energiser in routine society, a specialist in confronting uncertainty and interpreting information bringing about rapid economic progress.

In conclusion, the entrepreneur does not exist in a certain or completely predictable environment where routine and precedent are adequate guides to present and future activity.

He acts in uncertain situations where information is incomplete. He uses his interpretation of the existing information to predict the course of events and then alters the combinations of factors to bring them into line with his view of the future. He must have the ability to gather and interpret information, have vision of its use in an uncertain future and the courage, willingness and ability to act.

The bits of information missing from any area of consideration will vary in size, so varying degrees of enterpreneurship will be required to resolve different problems. A few outstanding or aggressive entrepreneurs will attempt to bridge the larger gaps whilst a substantial number of less vigorous types may try to span the small breaks in information. Situations are rare in which a person is called upon always to make entrepreneurial decisions and so the role is not continuous. As entrepreneurship is an intermittent characteristic the entrepreneur cannot form a social class but only perform an economic function. If within a firm he is prevented from acting upon his knowledge he will form a completely new unit which is to his satisfaction. He is active rather than passive and a disturber of the equilibrium. He is responsible for the organisation of factors into productive units and the absorption of new knowledge into the productive process.

The description given above did not lend itself readily to measurement, so for the purposes of the remainder

of the study it was found necessary to translate this definition into the functions one might deduce the entrepreneur would carry out. As the entrepreneur was strongly influenced by knowledge, in a sophisticated industrial society, he would be expected to set up formal information gathering organisations. The utilisation of information in the productive unit could lead to innovation and imitation. Active entrepreneurship would be expected to lead to a high level of demand for at least one of the factors of production and their efficient use in the productive process. The entrepreneur in response to opportunities would bring about diversification within the existing firm. Where the present combinations of factors were found unsatisfactory or inhibiting the entrepreneur could spin-off to form new enterprises. He would bring about structural change within an economy to meet the needs of a changing society and contribute to changing that society.

CHAPTER 2

Influential Factors in Regional Economic Growth

"In a growth conscious world I remain convinced that encouragement of the entrepreneur is the key to the stimulation of growth."...W. J. Baumol (1)

If the entrepreneur was central to the whole production process as postulated in the previous chapter, then his actions would appear to be crucial to the rate and direction of economic growth. It was known that a considerable literature existed on the theory of economic growth (2) and an examination of that might lead to a modification of the perceived entrepreneurial role. In recent years the promotion of regional growth has been seen as a means of overcoming the observed disparities between the prosperous and depressed areas of Britain so the theoretical examination was confined within a regional context.

The first section is a brief discussion of the reasons for governmental concern with regional growth rates. This is followed by an examination of some of the major aspects of regional growth theory, and in the final section some comments are made on the entrepreneurial role in regional growth.

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(1) Baumol, W.J. 'Entrepreneurship in Economic History,' American Economic Review (P & P) 1968 p.71

(2) Hahn, F.H. & Matthews R.C.O. 'The Theory of Economic Growth: a Survey,' Economic Journal 1964

I

Rather than being a recent phenomenon, regional disparities in levels of prosperity have existed over the centuries perhaps becoming more noticeable since the Industrial Revolution. As economic development took place, shifts in demand and trade patterns occurred which caused prosperity to be brought to one region whilst another declined. Economic development and regional problems would appear to complement each other in a less than fully planned economy. (3)

Prior to the 20th century the problems associated with depression were resolved, in the main, by market forces but during the inter-war years the harsh realities of unemployment and poverty were thrust upon the nation with sufficient force to stimulate governments into action. Commitment to the reduction of unemployment levels and relief of the worst features of depression led to an awareness that certain sectors of the community had suffered more heavily than others and distress was not evenly distributed over space. (See Table 1)

One of those regions hardest hit was the North of England with unemployment in Jarrow of 77%, Cleator Moor 64% and Saltburn a staggering 91% in January 1933. (4) As the

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(3) McCrone, G. Regional Policy in Britain, Allen & Unwin (1969) p.13
(4) McCrone, G. op.cit.p.91

TABLE 1

% Unemployment rates in Selected Counties G.B. 1934

County	% unemp.	County	% Unemp.
Bedfordshire	4.6	Lanark	29.4
Middlesex	6.1	Durham	34.2
Worcestershire	12.7	Cumberland	28.7
Glamorgan	36.9	Northumberland	25.2

Source: Table 36 Beveridge W.H.
Full Employment in a Free Society
Allen & Unwin (1944)

years passed there came the added awareness that many of the problems associated with depression were persistent.

Long term depression in the Northern Region was reflected in many undesirable characteristics of the local economy. For many decades there have been higher than national average levels of unemployment with low activity rates and few job opportunities in certain occupational groups. Output per head of the Northern population remained relatively low and housing standards were poor in comparison with the more prosperous areas of the country. The level of health of the local population was low, yet the numbers of patients per doctor, dentist or hospital bed compared unfavourably with national average figures. Fewer pupils in the region remained at school after the minimum leaving age to go on to higher education and there was a continuing outward migration of the more highly qualified elements in society. The local environment was marred by relatively high levels of water pollution and derelict land. (5)

Early government schemes directed toward reducing unemployment were extremely limited and had little effect. Subsequent policies in the region were stronger and continued to emphasise the reduction of unemployment in the region as a primary objective, (6) but in the post-war years regional policy expenditures have been expected to achieve other aims such as improved economic growth, although these were not

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(5) Northern Region Strategy Team, First Interim Report July 1975.

(6) N.R.S.T. Technical Report No. 2 Appendix A (1975)

always overtly publicised and were usually assumed to be part of such policies. (7) The underlying argument for promoting regional growth broadly speaking, was as follows. If a rate of growth higher than that of the national average could be achieved in the development areas, then income would be generated with which to resolve many of the outstanding problems listed above, and ceteris paribus, the inequalities between the depressed regions and the national averages would be narrowed, even eliminated. Regional dependence upon central government for support would be gradually reduced and in addition a valuable contribution by the regions to improving the rate of national economic growth would be made.

There were then, valid reasons for promoting regional growth and in the next section the theoretically influential factors in such development are examined, in conjunction with the few empirical growth studies that exist. It was expected that this would allow entrepreneurship to be placed in perspective with other factors contributing to the growth process and assisting in the task of evaluating the level of entrepreneurship in the Northern region.
(See chapter 3)

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(7) Sant, M. Industrial Movement and Regional Development: The British Case, Pergamon Press (1975)

II

The element that differentiated regional from national economics was that of distance with all the costs and implications associated with that variable. In many economic theories distance costs were assumed to be zero , a courae that should not be adopted automatically in a regional context unless they were known to be irrelevant. If the discussion on the impact of transport costs on plant location still continued, how much more uncertain must be the details of the less tangible costs of distance such as access to customers, to suppliers and to information.(8) Factor mobility assumptions should be treated with similar caution. Many models assumed either zero or infinite factor mobility which might not hold in a regional context where sociological, economic or institutional arrangements either assisted or hindered transfers from one geographic area to another. These warnings are given because some theories orignally developed to apply to national economies have been adapted to fit into a regional framework. In general, most of these models were concerned with the growth of output resulting from the varying inputs of Labour, Capital and Technology.

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(8) See Toothill Report, Inquiry into the Scottish Economy 1960-61, Scottish Council 1962
Edwards, S.L. Transport Costs in British Industry, Journal of Transport Economics 1970

Labour Inputs as a Source of Growth.

The construction of the neo-classical growth model was such that it allowed labour, capital and technology, separately and in combination, to contribute to regional economic expansion.(9) With substitution possible, the factors of production were assumed to have been paid their marginal products and would move in response to differences in returns in alternative employment. Perfect competition was assumed to exist. With all available factors assumed to be fully employed, growth of output in any region 'i', (Y_i) in any time period (t) became a function of changes in the supply of Labour (Li), Capital (Ki) and advances in Technology(T_i).

So: $Y(it) = f(i)\ [L(t), K(t), T(t)]$

If it was assumed that constant returns to scale existed and that labour and capital were paid total regional product, with only small changes in input of each factor, then:

$$(1) \qquad \Delta Y_{it} = \Delta L_{it} \cdot MPP_{iL} + \Delta K_{it} \cdot MPP_{iK} + \Delta T_{it}$$

where MPP iL = Marginal Physical Product of Labour in Region 'i'

MPP iK = Marginal Physical Product of Capital in Region 'i'

If the marginal physical product of the factors differed from each other then the effect on output of independent but identical proportional increases in each factor would also differ. If it was assumed that the MPP_L was twice that of the MPP_K then

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(9) For a more detailed examination of this theory in a regional context see Richardson H.W. Regional Economics Weidenfeld & Nicholson (1969)

a 1% increase in the supply of Labour per time period would increase output by twice that of a similar increase in the quantity of capital with technology held constant.

In equation (1) above technology was disembodied so an increase in output per unit of input was possible for existing and new sets of factors. Increases in Labour input would improve total output but Labour productivity could be increased only through increases in capital input exceeding those of Labour inputs or through technical progress. If both embodied and disembodied technical progress were included in the model then total increase in output due to increases in inputs could be described as:

$$(2)\quad \Delta Y_{it} = \alpha \Delta T_{iL} \Delta L_{it} + \beta \Delta T_{iK} \Delta K_{it} + \Delta T_{it}$$

where ΔY_{it} = change in output in region 'i' in time period 't' brought about by the MPP_L (α) multiplied by the technical progress embodied in additional Labour ($\Delta T_{iL} \Delta L_{it}$) plus the MPP_K (β) multiplied by embodied technical progress in new capital ($\Delta T_{iK} \Delta K_{it}$) plus disembodied technical progress (ΔT_i) for all factors.

If Labour, Capital or Technology advanced more rapidly in one region as opposed to another, then the individual growth rates of the regions would differ. In this model a shortage of one factor could be offset by substituting more

of another thus regional inequalities in factor endowment might not prove an overriding handicap.

In the theory described above an increase in Labour inputs would bring about an increase in output or increase in the absolute level of Regional G.D.P. In practise Labour inputs can vary between regions for a number of reasons. First, the natural increase in regional populations might vary and thus the number of potential workers also will vary between regions. Second, population growth did not accurately indicate the size of the workforce in any economy or the total working hours an economically active set of people might supply. From Table 2 below it can be seen that activity rates vary between regions and nation and between the sexes at different periods in time. Similar populations might supply differing amounts of labour at similar wage levels. Thirdly, the size of the labour force could be altered by changing school-leaving or pensionable ages that would not necessarily produce identical results in different regions if the age structure of society in each region differed. The workforce contributing to regional performance could be subject to considerable variation even in a society without population growth. Other factors influencing labour supply such as migratory flows, have not been discussed nor the contribution to output of improved quality or effective organisation of manpower resources.

TABLE 2

Activity Rates, Northern Region & Great Britain % Economically active.

	1961		1966		1971	
	North	G.B.	North	G.B.	North	G.B.
Total	57.8	60.1	59.4	62.1	59.3	61.2
Male	86.1	86.3	82.8	84.0	80.2	81.4
Female	31.3	37.5	37.8	42.2	40.0	42.8

Source: N.R.S.T. Economic Activity Rates in the Northern Region Technical Report No. 7 (1976)

The simplified model described above indicated that increases in labour input would result in an increase in output. By adapting such a model it would be possible to incorporate quality changes in the labour force through education and learning processes so that the theory more closely related to reality. However, one could replace the model to take account of Kaldor's theory in which an attempt was made to explain Britain's poor growth record in comparison with its European neighbours. (10) Kaldor's theory postulated that an improvement in output could be obtained with a static workforce by transferring workers from low to high productivity employment. This would result in a higher aggregate level of productivity and it was possible that the sectors of industry from which the labour removed would also show increases in productivity because under-employment could be eliminated and factor substitution might take place.

Empirical evidence suggested that in the U.K. the growth of employment measured in man-years has been relatively low since 1948 in comparison with previous periods and some other countries. (11) Denison in his analysis of the period 1950-62 estimated that from an average annual growth rate of 2.29% only 0.60% could be attributed to total labour inputs.(12)

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(10) Kaldor, N. Causes of the Slow Rate of Economic Growth of the U.K. Inaugural Lecture. C.U.P. (1966)

(11) Matthews, R.C.O. Some Aspects of Post-War Growth in the British Economy in Relation to Historical Experience, No. 240 Reprint series, Univ. of Cambridge (1965)

(12) Denison, E.F. Why Growth Rates Differ, The Brookings Institute (1967)

Of this 0.60%, 0.50 percentage points were due to increased employment and 0,29 percentage points were due to education. The difference of -0.19% between the sum of increased employment and education effects were attributed to changes in hours worked and to changes in the age/sex composition of the work force. In line with general expectations of low population growth in the future, Denison forecast that labour inputs would contribute less to future British growth of output than they had done in the past.

In theory an increase in the quality of labour or the transfer of workers from low to high productivity sectors could bring about an increase in output and in output per head. The North is one region with potential for growth from increased labour input without net inward migration. The North has a reserve of unemployed persons; activity rates below that of the national average; declining sectors from which labour could be transferred to the growth sectors and a net outflow of migrants from the region. The region appeared to satisfy the conditions for increased output by taking the opportunities that this labour situation presented.

History has shown that the possession of a well educated and trained workforce of sufficient size would not automatically bring about desired ends. (13) More important than the availability of factors was the way in which they were used. The theoretical and empirical sources studied

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(13) Postan, M.M. An Economic History of Western Europe (1945-65) Methuen (1967)

did not resolve these crucial problems. What was required was a recognition of effective demand for goods and services which was translated into a demand for labour by the entrepreneur. Without him the possibilities provided by an adequate supply of labour never materialised.

Capital Inputs as a Source of Growth.

The Neo-classical growth model described above indicated that an increase in capital inputs would bring about an increase in total output and a greater output per unit of labour input. A number of other theories also devoted considerable attention to the role of capital in the development process.

The relationship between capital inputs and economic growth has been a source of discussion since the time of Adam Smith but in recent times it was Keynes who stimulated more intensive interest in the subject. Keynes had drawn attention to the role of investment in increasing effective demand by showing that any upward and sustained increase in investment was subject to the multiplier and in times of unemployment this would bring about increased output.(14) Because the addition to the total capital stock through net investment in any time period was small in an advanced economy, Keynes was able to assume that capacity was constant in the short term.

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(14) Keynes, J.M. General Theory (1936) Macmillan (1964)

Harrod and Domar following Keynes accepted that any change in the rate of investment had an income creating effect but noted that net investment must also increase capacity.(15) If this additional capacity remained unused in the next time period, then investment, income and the rate of growth of the economy would decline. This discovery implied that if capacity, and the labour force associated with it, were to be fully employed in each successive time period then an increase in investment per period was essential.

It was assumed that the propensity to save (s) could be treated as a constant, with fixed coefficients in production and a labour force growing at a fixed rate. (16) Equilibrium growth in region g(i) required that investment should grow at a rate determined by the ratio of the marginal propensity to save (s(i)) and the capital output ratio (V(i) ... "The value of the capital goods required for the production of a unit increment of output." (17)) the outcome of which was constrained by population (labour) growth (n(i)).

So: $g_i = n_i = \frac{Si}{Vi}$

As n, s and v were determined independently this relationship would only be fulfilled by chance.

In a national setting the probability of the conditions being satisfied was remote. In a regional context

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(15) Harrod, R.F. An Essay in Dynamic Theory, Economic Journal 1939 pp.14-33
Domar, E. Capital Expansion, Rate of Growth & Employment, Econometria (1946)
(16) Richardson, H.W. Elements of Regional Economics, Penguin (1969)
(17) Harrod, R.F. op.cit. p.17

it was possible for factors to move relatively easily so that labour or capital would transfer from centres of under utilization to those where shortages existed. These movements might bring about equilibrium growth conditions in one region but there was no reason to suppose that all other regions would be similarly satisfied. In practise the establishment of equilibrium conditions in one region might bring about a flow of factors that was disequilibrating for other areas. The possibility of factor movement between regions did not disguise the overriding engine of growth within that model, namely investment.

The importance of capital inputs to the growth process in theory was supported by empirical studies leading to statements such as that of Maddison: "..... we consider investment to be of major importance in explaining the acceleration of growth....." (18)

Denison attributed the prime influence of capital on growth to that portion of total capital spent on non-residential structures and equipment. (19) These items overrode the value from inventories, dwellings and international assets as stimulants to expansion. Denison calculated that of the total U.K. growth rate of 2.29% per annum 1950-62, 0.51 percentage points were due to Capital inputs of which 0.43 percentage points were attributed to non-residential structures and equipment.

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(18) Maddison, A. Economic Growth in the West, Allen & Unwin 1964 p.77

(19) Denison, E.F. op.cit.

Capital was not a homogeneous factor and so equal investment in different projects could have brought about varying returns in terms of growth. For example investment in the rapidly expanding sectors of the chemical industry would produce different growth results from those achieved from a similar level of investment in residential building or road construction. The extent to which capital was fully utilized might not be evenly distributed over space and regional variations in capital/output and incremental capital/output ratios were known to exist. (20) In one industry or region capital deepening might be taking place whilst in another capital widening was the objective, so different results from investment could be expected in each region. Crucial to the rate of growth experienced in a region was the choice of investment project and this would be based upon available knowledge, resources and experience.

Britain's post-war problems have often been described in terms of a basic failure to invest, a criticism that could be extended to the regions. A low rate of investment could be due to problems of supply or demand for capital, a lack of opportunity or political and social constraints.

According to Postan the supply of finance to British industry has not been a major obstacle to investment except

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(20) Northern Region Strategy Team, Technical Report No. 4

for those who feared dilution of control or those who operated in small firms. (21) In a general sense this might have been true but firms rely heavily upon internally generated funds, the size of which has not been remarkable in recent years and their real value has been subject to serious eroson. (See Table 3)

In a region such as the North with large declining industries running down over many years, the ability to generate investment funds has been extremely limited. (22) As a result firms have been compelled to consider the use of external resources, the cost of which they might rate more highly than internal cmonies. The ability to attract such investment capital would depend to some degree on previous profitability of the firm but of equal importance was the project put forward for support and the confidence of the lender in the quality of the borrower. The supply of capital in that case might be adequate but poor projects and limited entrepreneurship might deter lenders from offering funds. In a regional context if a shortage of funds existed in one region they might be transferred from amother to meet demand. This was easier, but not necessarily fulfilled, in Britain, where sophisticated financial markets existed. On the other hand, experience in the United States suggested that regional banks have varied in their attitude towards

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(21) Postan, M.M. op.cit.
(22) Quince, R. Social & Economic History of the Northern Region. N.R.S.T. Discussion Paper No.6 1974

TABLE 3

RETURN ON CAPITAL %

	Historic cost	Replacement cost*
1960	18.8	13.2
1961	16.4	11.4
1962	14.9	10.4
1963	16.0	11.3
1964	16.7	11.7
1965	16.0	11.2
1966	14.3	9.8
1967	13.9	10.2
1968	14.7	10.0
1969	13,8	8.9
1970	13.5	7.8
1971	14.3	8.3
1972	16.1	8.9
1973	18.9	8.2
1974	18.8	5.2
1975	15.7	3.9

*After deductions stock appreciation

Source: Dept. of Industry.

supplying risk capital, in which case particular firms or industries might have difficulty in obtaining finance because of their location. (23)

The evidence seemed to suggest that, with certain exceptions, most firms operating in Britain since the war have had access to adequate supplies of financial capital but this has produced neither high aggregate levels of investment in manufacturing industry, nor rapid economic growth. As Carter and Williams state : "Broadly speaking, the influences causing fluctuations in the desire to invest seem to us to have been more important than those causing fluctuations in the ability to invest." (24)

This suggested that investment was not an automatic process which occurred if funds were available, the adequate supply of finance was only a permissive factor and other conditions needed to be satisfied before investment would take place. These conditions included the influence of the general economic climate and the expected return on capital invested in any product or process, which in turn could be altered by technological advance. Crucial to the whole process was the role of the individuals who interpreted the information available at any moment in time and upon whose expectations investment was or was not carried out. The theoretical and empirical studies which did not take into account entrepreneurial characteristics, but relied upon

(23) Deutermann, E. Seeding Science Based Industry New England Business Review, (1966)

(24) Carter C.F. & Williams B.R. Investment in Innovation, O.U.P. (1958)

mechanistic comparisons of mathematical calculations did not explain satisfactorily the investment process. It was the entrepreneur who demanded funds and dictated the direction that investment would take, which in turn was highly influential on the rate of regional economic growth and development.

Further capital investment could improve the growth performance of the Northern Region by widening or deepening the capital structure expanding existing projects or constructing new ones. These possibilities existed but they needed to be converted into action; the catalyst in this process was the entrepreneur. If the necessary information flows by-passed the Northern Region or were ignored or discounted by entrepreneurs then the demand for financial capital would be low and could not be compensated by adequate supply of funds with the attendant consequences upon regional growth.

Technological Input as a source of growth.

The neo-classical model discussed earlier indicated that technical progress could bring about an increase in output or output per head. The cause of technological advance was left unexplained by treating it as being determined exogenously.(25) Attempts were made to resolve this problem by linking investment and learning, with the latter, a function

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(25) Sen, A. Growth Economics, Penguin (1970) p.25

of the proportionate rate of growth of investment. (26) Other theories notably those of Robinson, allowed a choice of new techniques as machinery was replaced. (27) But the behavioural characteristics of the entrepreneur in bringing about technological change and choosing between alternative techniques has not lent itself easily to theoretical consideration and the models remained unsatisfactory.

Technological progress took place as new techniques were developed and introduced into the productive process. The possibilities provided by technology to produce economic growth was in developing new processes, new products or new methods of organisation and operation of the firm. New processes could shift down existing costs and supply curves giving firms cost advantages in national and international markets. If, as a result, demand for the products increased then further economies of scale might be obtained bringing further advantages. New products could allow firms to capture large portions of existing markets through substitution or to expand the economy creating completely new demands in addition to those associated with existing products. New methods of organisation or operation could make a firm more effective in all sectors of its operations which might give it a competitive advantage over its rivals. The result in aggregate was that technical progress permitted increased output per

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(26) Kaldor, N. & Mirrlees J.A. A new Model of Economic Growth Review of Economic Studies (1961/2)

(27) Robinson, J. A Model of Accumulation from Essays in the Economic Growth, Macmillan (1962)

unit of labour and capital input and provided there was not a drastic reduction in factor utilization (unemployment) permitted increase in total output. Before technology could have any impact upon the economy it was essential that it was incorporated into production processes, the rate and extent of acceptance determining its total effect upon economic growth.

Empirical studies confirmed the importance attached to technological progress in economic growth by theory. Solow, in a pioneering study, suggested that from 1909 to 1949 seven-eighths of United States economic expansion was due to technical progress. (28) The term 'technical'progress' was that part of actual growth which could not be accounted for by additional Capital and Labour inputs. Denison attempted to differentiate between the elements in 'technical progress' and concluded that advances in knowledge accounted for 0.76 percentage points of the total average growth rate of 2.29% in the U.K. from 1950 to 1962, or approximately one-third of the total growth achieved. (29) These findings did not remain undisputed, the principal criticisms being levelled at the methodological bases of measurement. (30) If the actual contribution to economic growth by technological advance remained uncertain, that improvements in techniques and knowledge added to growth was in general accepted.

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(28) Solow, R. Technical Progress and the Aggregate Production Function, Review of Economics & Statistics (1957)

(29) Denison, E.F. op.cit.

(30) Jorgenson, D.W. Griliches, Z. The Explanation of Productivity Change, Review of Economic Studies (1967) See also Kenedy C. & Thirlwall A.P. Surveys in Applied Economics: Technical Progress, Economic Journal (1972)

Theoretical and most empirical studies acknowledge that a greater input of technology would bring about an increase in total output and an increase in putput per unit of labour or capital input. What was not taken into consideration was the role of the entrepreneur in recognising the opportunities that advancing technology produced and deciding to introduce new techniques into the productive process. Without the entrepreneur increased knowledge would have little impact on economic growth. If technology was to benefit any geographic area it was essential that sufficient entrepreneurs existed to take up those opportunities on behalf of the region. Technology was not automatically incorporated into economic activity as some models would suggest.

Trade as a Means of Regional Growth.

The full benefits obtainable from technological advance might be denied in a region if the market area served was small. Limited markets might prevent the full exploitation of economics of scale, factor substitution or the introduction of processes which would increase capacity far beyond consumer demand. If local market size acted as a constraint on development then the export of goods and services was one possible solution to the problem.

Theoretical models have been constructed which ".... imply that the growth of a region depends upon the growth of its export industries and that the expansion of demand external to the region is the main determinant of regional growth." (31) Despite their shortcomings these models did emphasise the considerable impact upon regional prosperity of national economic conditions. (32)

The basic hypothesis put forward was that expansion of the export base would have multiplier effects, an implication of which was that a region increasing its exports would grow faster than another region that did not. A weakness of that argument was that unless there were leakages abroad all regions could not run an export surplus. The theory also failed to take account of regional size where a large region would in all probability be more self-sufficient than a small region and in which exports would be of lesser importance. There were also considerable practical difficulties of measurement and identification of the export base.

Whilst being logically consistent as well as intuitively reasonable the export base models did not explain why certain industries or firms within a region exported whilst others did not, nor did they suggest how the export base might be extended. A realisation of what might be achieved in a region through increased exports did not automatically bring it about.

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(31) Richardson, H.W. op.cit. pp.50-51
(32) For a recent study of this subject see Morley, R., Unemployment, Profits Share and Regional Policy in A. Whiting (Ed.) The Economies of Industrial Subsidies, H.M.S.O. (1976)

Such activity needed to be directed toward satisfying or stimulating consumer desire in export markets, a problem left untouched by these models.

The Structural Approach to Regional Growth.

The basis for this model was empirical rather than theoretical, the hypothesis being that the growth of the region would be largely determined by the industrial structure found in the area. If the region possessed many fast growing industries then its economic expansion could be expected to exceed that of another region where only slow growth industries existed. Total regional growth therefore, depended upon the industrial mix and upon the performance of each regional industry. Shift-share analysis was used to establish whether it was the composition of the industrial structure or industrial performance within the region that accounted for any deviation from national averages.

The particular industrial structure present in a region at any moment in time was the result of past locational decisions. The earliest theories, such as that developed by Von Thünen (33) predicted that firms would locate where transport costs were minimised. Products which incurred high transport costs relative to their value would be produced close to the market whilst those with low transport

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(33) Von Thünen, J.H. Von Thünen's Isolated State, trans. by Wartenberg, C.J. Pergammon Press (1966)

costs relative to value would be produced further from the selling point. Weber developed this theme further, stressing the importance of material costs in addition to transport costs in the locational decision.(34) Dependent upon weight loss or gain in the productive process and the costs of transport associated with this technical consideration, the firm would locate where costs were at a minimum.

Subsequently Weber, and more recently Isard, introduced into the model the further costs of labour, rent and the benefits of agglomoration which were believed to vary over space and so between regions. (35) The profit-maximising firm would locate in geographic space where total costs were minimised. Unfortunately even if all such information was available and the total costs were taken into consideration there was no reason to suppose that a unique or single optimal position existed and so location of the firm remained indeterminate. Extensions of such theories to include demand and possible scale economies led to equally unsatisfactory conclusions. (36)

Klaassen departed from the costs associated with physical distance from markets or suppliers to examine "communication" costs i.e. those incurred with "economic distance". (37) The concept of distance implicitly or explicitly used by the entrepreneur included communication with other producers linked forward or backward to the

(34) Weber, A. Alfred Weber's Theory of the Location of Industries.trans. G.J.Freidrich, Chicago (1929)
(35) Isard, W. Location and Space Economy (1956)
(36) Richardson, H.W. op.cit. p.79-81
(37) Klaassen L.H. Methods of Selecting Industries for Depressed Areas, O.E.C.D. Paris (1967) pp.41-44

producer in question. Shorter physical distance between them implied quicker delivery, easier contact or perhaps smaller inventory holding. Consumer contact was important if swift response was to be made to changing tastes with fewer misunderstandings between the supplier and his customer. More frequent and more personal contact with local government generally led to a better understanding. If these elements were incorporated in a model then a fuller understanding of the location of industry would have resulted.

Klaassen perhaps bridged the gap between the classical view and the more recent behavioural approach to location. "The ..... behavioural approach to industrial location theory focuses on the geography, growth and behaviour of the firm, not as an optimizing rationally - economic decision-making unit, but as one characterised by conflicting goals, limited levels of knowledge and control of its environment, irrationality of perception and behaviour and so on." (38)

One major problem associated with such an approach was that firms were regarded as individual units from which the validity of generalisations must have remained in question. Townroe's study of mobile industry attempted to discover behavioural regularities between firms in their search for a satisfactory location but the results were disappointing.(39)

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(39) Townroe, P. M. 'Some Behavioral Considerations in the Industrial Location Decision.' Regional Studies (1972)

(38) Keeble,D. Industrial Location and Planning in the U.K. Methuen, 1976 p.2

The extractive industries based upon proximity to natural resources had their choice of location restricted in a way that was not applicable to much of modern industry. Empirical studies suggested that for many firms transport costs form a small proportion of total costs so theories based substantially upon the former lost much of their relevance in locational decision. (40) Location based upon total costs minimisation, demand or exploitation of economies of scale assumed a breadth of knowledge which rarely existed for, or was sought after by, the firm. Given a free choice of site, the firm tended to stay within the geographic area in which its knowledge was greatest or uncertainty minimised. Thus firms, once established moved infrequently but if forced to remove selected sites as close as possible to the original location.(41) Only if these locations proved unacceptable would more distant sites be examined which increased psychic costs. For similar reasons to those given above the new firm was established generally in the home town of the entrepreneur.

The classical theories considered above did not satisfactorily predict the precise location of the firm in practise, perhaps because the theorists were more concerned with the construction of elegant models of locational equilibrium than with practical application. (42)

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(40) Toothill Report Inquiry into the Scottish Economy 1960-61 H.M.S.O. (1963) for a contrary view see Edwards, S.L. op.cit.

(41) Loasby B.J. Making Location Policy Work, Lloyds Bank Review (1967)

(42) Keeble, D. ibid.

They drew attention to important factors in the decision process but in an uncertain world of limited knowledge numerous sites of apparently equally low cost might exist. Some agent was then required to select one site from amongst the various alternatives.

The behavioural theories reject the calculating automatism of classical location theory but their micro approach limits any possible generalisation from the enquiries. This limitation should not be allowed to disguise the real advances in understanding of location patterns that the behavioural studies have made. (44)

One of the major discoveries was that, in general, firms did not carry out the cost minimising exercises, described in classical theory, before selecting a particular site for a new production unit. Other factors considered of apparent equal importance were less tangible than cost and perhaps reflected recognition of some entrepreneurial role in the final analysis. It was the entrepreneur who set the time preferences of the enterprise, the weight to attach to psychic costs and who ultimately decided where the new location would be, in which case it was recognised that plants would not be attracted to the development areas solely on a minimum cost basis. Successful regional policies based on re-locating industry in a less than fully planned economy would have to take account of entrepreneurial behaviour.

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(44) Keeble, D. ibid.

The structural approach to regional growth examines the existing industrial pattern and uses this to explain past performance and predict future growth from any emerging trends. It does not explain how the present structure arose nor how it might change in the future. Relevant to the structural argument is Location theory which attempts to determine the distribution of industry over space. The classical cost-minimising approach tends, in the simpler model, to ignore the role of the entrepreneur unless he was a profit maximiser or in the more complex models where a value is put on psychic costs, which can then be minimised. An alternative view is that of the behaviourists who come much closer to recognising that the location of the firm is a more complex issue moving away from purely economic man to the decision maker who is influenced by lack of knowledge and personal preferences. Unfortunately the individualistic approach leaves us without a ".... well-defined single polistic behavioural location theory....."(45) However there is at least an implicit recognition of more realistic human and entrepreneurial behaviour.

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(45) Keeble, D. op.cit.p.4

III

In many economic and social respects the Development Regions lagged behind the more prosperous areas of the country. One method of reducing some of the discrepancies was to promote regional growth at a rate higher than the national average. Growth theory with its practical motivation might have been expected to retain close links with reality but much of it has been concerned with rather esoteric issues. (46) The models tended to concentrate upon the supply of, or demand for, Land, Labour, Capital and Technology in the growth process and the conditions under which equilibrium or steady state growth paths might be achieved. In equilibrium or predictable states the entrepreneur was without a function and theoreticians could safely ignore him. But the entrepreneur disturbs equilibriums by seizing opportunities which have repercussions throughout the economy by way of factor or product substitutions and the displacement of existing patterns of industrial operation. Therefore equilibrium models could not satisfactorily incorporate the entrepreneur into the growth process. Similarly in classical location theory the entrepreneur becomes an inanimate minimizer and only in the behavioural location models did he achieve some individuality and independence of action.

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(46) Sen, A. Growth Economics, p.9

Examination of the theories and empirical studies did emphasise the complexity of economic growth and the danger of attributing too high a role to any one factor in the process. In a region, excess supply of Labour or Capital or Land or even technology in themselves have never produced rapid economic growth. It is by using these factors that output and economic growth was achieved but this required a demand for their services. This was the function of the entrepreneur who recognised consumer demand and employed factors to satisfy those economic needs. Therefore there seemed no need to modify the hypothesis that the entrepreneur was a crucial factor in regional economic development.

Over the past fifty years the Northern Region has had an excess supply of labour illustrated by relatively high levels of unemployment, low activity rates and net outward migration. The existing skills have not always been those in demand but considerable shifts in occupations have occurred in response to positive and recognisable signals. From 1967 to 1977 employers received a subsidy for workers employed in manufacturing industry to encourage the use of labour. There was little evidence to suggest that Northern Industry had been starved of capital and the government had offered investment incentives to firms

wishing to modernise, extend their operations or remove to the region. Land was plentiful and the local and central authorities actively encouraged new developments in the depressed regions. Less was known of the availability of technology in a regional context but without evidence to the contrary it was heroically assumed that in an advanced industrial and small country such as Britain, all regions could have access to the same information if they so wished.

Despite these favourable supply conditions the Northern economy has not expanded at a remarkable rate in recent years nor attracted new industry without government control and assistance. Therefore there was reason to believe that the level of indigenous entrepreneurship was lower than elsewhere or unusually constrained in its actions.

CHAPTER 3

Entrepreneurship in the Northern Region.

"What people want, they somehow manage to get, in the main and on the average, though..... other factors can modify the speed with which they get it." D. C. McClelland (1)

The entrepreneur tends to be ignored in economic theory but he remains important to development because of the vital functions he performs. The quantity and quality of entrepreneurs acting within a region might be expected to have a significant impact on the rate of economic growth unless their actions are constrained. In this chapter some attempt is made to examine what little data are available to gain some impression of the quantity and quality of entrepreneurship present in the Northern Region.(2) In Chapter 4 the way in which certain constraints inhibiting entrepreneurship might have developed are dealt with in some detail.

I

The prolific use made of the term 'entrepreneur' by economists could lead one to assume that there would be few problems associated with establishing the number of enterprising men who exist in any given society. Unfortunately this proves not to be the case. Little empirical work has been done on how to identify the entrepreneur, the exceptions being biographical

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(1) McClelland D.C. The Achieving Society. Van Nostrand Co. Inc. (1969) p.105

(2) See Appendix I for a definition of the 'Northern Region' and the data problems associated with studies in a regional context.

or autobiographical studies and these have been of little value as a basis for generalisation.(3) In the absence of this information two approaches to the problem are made here. First, by using McClelland's work on 'N-Achievement' and applying it to data on the Northern Region , an attempt is made to establish the present and future supply of entrepreneurs in the region. (4) Secondly, in carrying out the functions described in foregoing chapters, the entrepreneur makes demands upon resources; the level of demand for these resources giving some indication of entrepreneurial activity within the region. Both approaches are less than satisfactory but they give some tentative indications of the level of entrepreneurship in the region which suggests further areas for research.

II

A unique study on entrepreneurship was that of D. C. McClelland who approached the problem of accounting for observed differences in economic development between countries through the eyes and experience of a psychologist.(5) McClelland observed that different rates of growth were experienced by societies possessing similar characteristics of climate, land, labour and capital. He noted also that those economies which led others in one age could decline and lag behind in some subsequent time period. He postulated that the rise and fall

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(3) For example see Ford H. My Life & Work, Heinemann (1923)
(4) McClelland D.C. op.cit.
(5) McClelland D.C. op.cit.

of one society relative to another did not depend solely upon the possession of physical inputs but upon factors not traditionally considered, namely, the characteristics of the people who formed the societies.

Every society was composed of a number of individuals each of whom contributed in some unique way to the whole. Education (in the broadest sense) and skills varied as did physique, aptitude and the many other characteristics that contributed towards the whole 'person'. In addition, every individual might have motives and attitudes that differed from those of his neighbour, varying in their degree of divergence. Examination of such societies would reveal subsets of the population, the individual members of which would possess some specific characteristic that identified them to the observer. The subset which was of great interest to McClelland was that in which the individuals set for themselves high standards of performance which they needed to achieve in order to satisfy themselves. These were the 'high N-Achievers'(6) and this feature in their personalities set them apart from all other members of the community. McClelland hypothesised that if one society as opposed to another possessed a larger proportion of people highly motivated to achieve (high 'N-Achievement') then it would advance more rapidly than a second society given the same conditions and constraints.

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(6) McClelland D.C. op.cit. p.43.

"..... a society with a generally high level of N-Achievement will produce more energetic entrepreneurs who in turn will produce more rapid economic development."(7)

It was known from previous psychological studies that if individuals were each subjected to some specific stimulus they reacted in not one but a variety of ways. (8) In particular, a small section of the community appeared to be strongly motivated to achieve when actual performance had achievement significance for themselves. It was observed that this group had more 'aroused' thoughts than others under normal conditions, indicating a stronger motive to achieve and an 'inner concern' with achieving. An empirical test of 750 businessmen and comparison groups in four countries was carried out which confirmed the earlier hypothesis that high 'N-Achievers' would form the business elite in a society.(9)

In order to test past growth performances of nations or economies in relation to aggregate levels of 'N-Achievement' samples of folk tales and children's stories were evalutated for 'aroused' statements in the belief that these would act as a crude index of the general level of 'N-Achievement' present in the society from which they came, at the relevant time period. When these tests were applied to historical data the results indicated that high levels of 'N-Achievement' represented by the stories preceded rapid development of the states, countries or nations concerned. The relationship between 'N-Achievement'

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(7) McClelland D.C. op.cit. p.205
(8) See McClelland D.C. et al The Achievement Motive, Appleton - Century-Crofts (1953) also ATKINSON J.W. & REITMAN W.R. 'Performance as a function of motive strength and expectancy of goal attainment'. Journal of Abnormal Social Psychology (1956) quoted by McClelland (1969) op.cit.
(9) McClelland D.C. op.cit. p.60.

levels and growth performance was statistically significant.

Such tests as those described briefly above could only be carried out in the Northern Region through the commitment of large resources to the task. This type of test, being quite beyond the skills of the writer, must be left to the psychologists. However, McClelland noted that high 'N-Achievement' was associated with other personal characteristics which might lend themselves more easily to measurement. High 'N-Achievers' had a preference for sombre colours (10), a tendency to travel more widely and to 'doodle' more energetically. McClelland also discovered a weak relationship supporting Weber's Protestant Ethic. (11) Establishing the extent to which these elements exist in a region would not be impossible but in some cases very nearly so. This leaves the one finding of McClelland's that is testable against existing data: that of the influence of social class upon 'N-Achievement' levels in children, in particular those of middle class origin.

"..... the best place to recruit business managers is from the middle class because they are more apt to have higher 'N-Achievement' from that background than if they come from a lower or upper class background." (12)

In his analysis McClelland used the six social classes described in columns (a),(b) and (c) of Table 1. Using these descriptions and those accompanying the Occupation

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(10) Confirmatory evidence of this point is offered in Carmignani, R.P. 'Color choice as affected by N-achievement Naffiliation & N-Power.' Experimental Psychology 1972

(11) McClelland, D.C. op.cit.p.53

(12) McClelland, D.C. op.cit. p.279

TABLE 1

Social Classification

Class (a)	Class No. (b)	Description (c)	Census 1971 Class No.(d)
Lower	1	Unskilled	V
Lower	2	Semi-skilled	IV
Lower	3	Skilled labourers, Foremen Public Service Workers and Tenant Farmers.	III (M)
Lower Middle	4	Clerical or Sales Occupations Small Farm Owners, Small Business	III (N)
Middle	5	Minor Professionals, Executives and Owners	II/III(N)
Upper Middle & Upper		Major Professionals, Executives and Owners	I/II

Source McClelland op.cit. p.277 & Classification of Occupation 1970 H.M.S.O.

Tables of the Office of Population Census and Surveys, a rather arbitrary cross classification of social classes was made in order to apply McClelland's hypothesis to British data. (13) McClelland expected that in general children from Classes 4, 5 and 6 would exhibit higher levels of 'N-Achievement' than those drawn from Classes 1, 2 and 3. (Column (b) Table 1) (14) In Britain the sources of the greatest proportion of high 'N-Achievers' would appear to be found in Classes I, II and III (N) as opposed to Classes III(M), IV and V (Column (d) Table 1).

Inspection of data from the 1951 Census of Population in England and Wales indicated a significant difference in the distribution of social classes over space. (See Table 2 (15).) Whilst not strictly comparable with McClelland's work it was evident, from the figures illustrated in Table 2, that a greater proportion of the Northern population was categorized as coming from the lower classes than in the aggregate for England and Wales or for London and the South Eastern Region. A correspondingly lower proportion of the Northern population came from the higher 'N-Achieving' classes than was to be found in the other two areas considered. The importance to the region of the class proportions in 1951 was that children born at that time are the up-and-coming entrepreneurs and potential entrepreneurs.

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(13) H.M.S.O. Classification of Occupations
Office of Population Censuses and Surveys (1970)
(14) McClelland, D.C. op.cit.
(15) H.M.S.O. Census 1951

TABLE 2.

Males: % of Economically Active and Retired by Social Class 1951 & 1971

	1951 Census			1971 Census		
Class	England & Wales	London & South East	Northern Region	Great Britain	South East	Northern Region
I	3.31	4.9	2.3	4.7	6.22	3.56
II	14.54	16.4	11.79	17.06	19.64	14.26
IIIN IIIM	52.9	54.11	51.42	11.30 36.54	14.01 31.74	9.37 41.56
IV	16.13	11.87	20.49	17.22	15.71	16.83
V	13.12	12.82	14.00	8.17	6.74	10.15
UnClassified				5.0	5.94	4.26

Sources: Census 1951
Census 1971 (10% sample)

Future entrepreneurs will be drawn from that group of children born in the last few years. Data from the 1971 Population Census were used to illustrate the social class structure existing in the Northern Region in comparison with that in Great Britain and the South East. (See Table 2)(16) The classes in which McClelland anticipated the majority of high 'N-Achievers' would be found, remained under-represented in the North.

On the basis of McClelland's work and analysis of the social class structure of the Northern Region and other areas, the conclusion was reached that, ceteris paribus, proportionately fewer high 'N-Achievers' were to be found in this region than in the South East or the country as a whole. If high 'N-Achievement' and entrepreneurship are highly correlated, as McClelland suggested, then the North would produce comparatively few enterprising men.

The problem of too few entrepreneurs in a region could be resolved by migration. If adequate numbers of persons from high 'N-Achievement' groups could be attracted to the region this would compensate for any local deficiency. In recent years the net outward migratory flow from the North has been declining from approximately 48,000 persons 1961-66 to 25,000 persons 1966-71.(17) In the earlier period there was a net loss of 12,870 managerial, professional and intermediate non-manual

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(16) H.M.S.O. Census 1971 (10% sample)
(17) N.R.S.T. First Interim Report (July 1975) p.28

workers from the region to other parts of the country. This loss from those groups producing the greatest proportion of high 'N-Achievers' occured despite an in-flow to the region of 31,600 people from the same categories over the same period. (18) Despite the reduction in the net loss on migratory flows, the North in the second period, could still expect to lose population from the enterprising groups, unless a considerable change took place in the occupational structure of migrants. The evidence suggested that the resource pool from which present and future entrepreneurs would be drawn was becoming more shallow rather than more deep. The difference between the class structure of the Northern Region and the national average was so great that it would take a considerable shift in migratory patterns in the future to remove it.

III

If, as the section above suggested, the supply of high 'N-Achievers' in the North was low in comparison with the national average, it would be possible for the shortfall in quantity to be balanced by superior quality of entrepreneurship in the region. Some measure of entrepreneurship in the North (Quantity weighted by quality) could be made by evaluating the performance of the functions attributed to the entrepreneur in earlier parts of the study.(19)

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(18) N.R.S.T. First Interim Report (July 1975) ibid.
(19) See Chapters 1 and 2 above.

It was rather unusual for anyone to complete their formal education and then immediately to take on some entrepreneurial role unless that was the outcome of their training e.g. engineering design or research. The majority of people first entered industry (defined in the broadest sense) as employees. Therefore the firm acted as the principal seedbed for entrepreneurs and outlet for their talents. These talents were expressed in a number of ways, many of which were observable.

The entrepreneur depended, for success, upon the information he received and the interpretation he put on it which might result in action. Existing firms containing vigorous entrepreneurs might be expected to organise the systematic collection of, and search for, information on which to base decisions. As a result of the knowledge gained from such activities the entrepreneur might introduce new products or processes to the firm, or modify those that already existed. He might also use the information generated to help him discover new markets, new consumers and new tastes.

If the information gained was embodied in machinery then capital would be demanded to enable the entrepreneur to invest. The capital goods would be put to work with labour to obtain at least a modicum of profit. The latter would be more certain for a firm in a development area if regional incentives were taken up vigorously to achieve the goals of the enterprise.

In existing firms, those willing to take on an entrepreneurial role might be frustrated , which could result in them spinning off to form new enterprises. In this function they might be joined by members of the community 'forced' into activity through reduncancy or unemployment and others who wished to test their knowledge independently. Evidence of this form of entrepreneurship would be found in the level of new firm formation in the region. These establishments would be small initially in employment terms and entrepreneurial vigour would be reflected in large numbers of small firms or self-employed persons in the region.

Information.

An individual might fortuitously occupy a position within a firm that supplied him with knowledge that the firm or he, personally, might exploit. To reduce the element of chance from this situation the individual could actively seek information or the firm could set up some organised search and evaluation process. As the 20th century has advanced technology has become increasingly scientific and complex, so if a firm was to benefit from operating at the boundary, a deeper and broader information base was required than that necessary in previous ages. The usual method of establishing this base and approaching the boundary was through organised research using specialists. (20) As a result, in the

(20) Freeman, C. The Economics of Industrial Innovation, Penguin (1974)

developed industrial economies of today, many Research and Development establishments have been set up. A high level of entrepreneurship could be reflected in the amount of resources devoted to research and development in a region to reduce uncertainty and to promote the early development of new products and processes or to modify existing projects.

To our knowledge details of total sectoral expenditure on research and development by regions are non-existent. However, Buswell and Lewis have gathered together what little information there was to estimate the geographic distribution of research activity in the United Kingdom. (21) In 1968, excluding the centres of higher education, the Northern Region possessed 3.8% of total U.K. Research units. Of total U.K. Research establishments, the North had 2% of private, 2.2% of Research Associations and 2.1% of Government units. Since R. and D. expenditure appeared to be positively related to firm size (22) and in the North there were proportionately more large units than the national average (23), R.and D. activity was expected to exist within many firms in the region. According to Harrop, the North possessed 4.9% of all firms in the U.K. carrying out research within industrial units.(24) This figure indicated a respectable level of research being carried out by local units and was a remarkable finding when

(21) Buswell, R.J. & Lewis, E.W. 'The Geographic Distribution of Industrial Research Activity in the U.K.' Regional Studies (1970)
(22) Norris K & Vaizey J., The Economics of Research & Technology, Allen & Unwin (1973)
(23) N.R.S.T. Technical Report No. 8 (1975) p.35
(24) Harrop, Research Publications quoted by Buswell & Lewis op.cit.

such functions were thought to be located predominantly in the South-East.

Crum and Gudgin's analysis indicated that the North had preportionately less scientific and technical (S & T) staff than the national average but the shortfall was only slight (25). S & T staff was defined as including general engineers, scientists, technicians, methods and planning engineers, instructors/teachers and draughtsmen(26). Their study showed that the coefficient of variance across industries was highest in the S & T group of all groups of non-production workers in manufacturing activity. Those industries which employed the highest percentage of S & T staff were chemicals, coal and oil products and electrical engineering. The structure of industry would appear to influence the expected number of S & T staff found in a region which might explain, in part, the perhaps surprisingly high number found in the Northern Region. Unfortunately details were not given of the numbers in each category making up the S & T groups as if a very high proportion were draughtsmen then their contribution to research could be small. In addition, in certain industries engineers might devote much of their time to research whilst in others they might carry out none at all. As further investigations did not reveal the facts the evidence tends to confirm the earlier view that private industry in the North carried out a respectable level of research.

Employees engaged on R&D work within commercial units would, in the majority of instances, be included within the

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(25) Crum R.E.& Gudgin G. Non-Manufacturing Activities in U.K. Manufacturing Industry. Univ. of E. Anglia(1976)

(26) Crum R.E.&Gudgin C. op cit p.6

employment totals of the industrial sectors which employ them, e.g. chemicals, food. But there are those who are engaged by firms whose primary activity, for classification purposes, was research(MLH 876) (27).

In 1973 the North gave employment to only 2.2% of G.B. Research and Development staff which confirms the earlier figures that few self-contained research units have been set up or attracted to the area. (28).

To be successful the entrepreneur usually needed technical knowledge and also market information. The latter was necessary if he was to accurately assess the direction of consumer demands and tastes or to seek out new markets. He might wish also to bring to the attention of the consumer the range and quality of his products. To do this he might expend sums on market research and advertising. Some large firms might engage labour to carry out this function but many other firms of varying size might employ external agents. Vigorous pursuit of market knowledge could lead to the establishment of a number of units employing persons primarily engaged in the collection and dissemination of market and product information.

In 1973, a total of 430 persons were employed in Advertising and Market Research in the Northern Region or 1.4% of total employment in G.B. in those industries.(29) Northern industry either performed those services for themselves, bought them from sources external to the region, or made little use of such services.

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(27) H.M.S.O. Standard Industrial Classification. (1968).
(28) N.R.S.T. Technical Report No. 8 p.35
(29) N.R.S.T. Technical Report No. 8 ibid.

Innovation.

The quantity of R. & D. carried out in a region was one crude estimate of the inputs to inventive activity. Of greater importance to economic growth was the output from both organised research and any other factors that brought about technological change in a region. Knowledge by itself had no economic impact until it was introduced into the productive process (broadly defined). The level of innovation and rate of adoption of new techniques by industry in a region could have considerable impact upon the rate of economic growth.

In a previous section Denison, Matthews and Solow were quoted as supporters of the view that technological change was extremely important to economic development, a stance supported by Borestsky. (30)(31)

It was also suggested that entrepreneurs were an essential ingredient in the innovation process. This latter point was given support by Langrish et al who studied 66 firms that had won the Queen's Award to Industry for 88 innovations in 1966 and 1967.(32) One of the keys to success was the existence of a 'top' or 'other' person in the group responsible for an innovation. The 'top' person made some special contribution to the success of the innovation by identifying the area of activity, ensuring that resources were made available and generally throwing his weight and drive behind

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(30) See Chapter 2 above.
(31) Borestsky M. 'Trends in U.S. Technology', American Scientist (1975)
(32) Langrish J. et.al Wealth from Knowledge, Macmillan (1972)

the scheme and encouraging the other members of the team. The 'other' person tended to have some specific knowledge without which the scheme might have foundered. Corroboration of the importance of these 'committed' individuals to an innovation was given by Schon. (33)

It was postulated that if one region, rather than another, possessed more alert and high 'N-Achieving' entrepreneurs, then more numerous and more substantial discoveries would be made. This would occur because entrepreneurs with a high level of perception and foresight would more easily link technological possibilities with practical reality resulting in a high level of innovation and the adoption of best practise techniques leading to a high level of efficiency. No information existed on the rate of adoption of new techniques by industry or firms in a regional context so effort was concentrated upon attempting to establish the level of innovation in the Northern region using what little, and unfortunately weak, evidence that was available.

An immediate problem was that of defining innovation, a term often associated with new products or processes or new market discoveries. In manufacturing industry it was usually associated with the introduction to the firm or industry of a new or substantially modified product; or a new or modified process or method which led to an increase in output per unit of input or reduced the costs of producing a given level of

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(33) Schon D.A. Champion for Radical New Inventions. Harvard Bus. Rev (1973). See also Globe S, Levy G.W. & Schwartz C.M. Key Factors and Events in the Innovation Process, Research Management (July 1973) Science Policy Research Unit, Success & Failure in Industrial Innovation, Centre for the Study of Industrial Innovation, Univ.of Sussex (1972)

output. It was decided to use the broader definition of innovation i.e. the first commercial use of a new product, process or method with the implicit understanding that innovation was associated with improvement. (34)

Langrish's work offered a possible method of comparing the spatial distribution of innovations in Britain through the information provided by the Office of the Queen's Award to Industry. (35)

The Queen's Award scheme was set up in 1965 to give national recognition to firms for outstanding achievement by increasing exports or by technical innovation. (36) The Award was to be related to the production of goods by any branch of British industry and was valid for a period of five years from the date of receipt. The list of recipients would be published each year in the London Gazette on 21st April, the Queen's birthday.

Industrial concerns were invited to apply to the Award committee which had a duty to identify,wherever possible, the particular unit of any organisation which had earned the honour. Before an Award could be made, certain criteria had to be met (See table 3) which themselves were subject to qualifications, the most notable of which were that exports should be 'visible' and assessed over a three year period, while Awards for technological advance should reward "... the practical application of scientific research and development."(37)

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(34) Norris K & Vaizey J. op.cit.
(35) Langrish et al op.cit.
(36) H.M.S.O. The Queen's Award to Industry (1965)
(37) H.M.S.O. The Queen's Award to Industry (1965) p.4

Table 3

Criteria for the Award.

We recommend that the Award should be made for industrial efficiency, assessed in terms of achievements such as:

(i) A substantial and sustained increase in total exports over a period of three years.

(ii) A substantial and sustained increase in the percentage of total export sales to total business over a period of three years.

(iii) A percentage of exports to total business which is considerably and consistently higher than the average for the applicant's sector of industry.

(iv) A spectacular increase over a shorter period than three years where there is a reasonable prospect that the performance can be maintained.

(v) A breakthrough in a particularly difficult market.

(vi) The greatest value of export sales by any group or company in a given year.

(vii) A significant advance in the application of advanced technology to a production or development process in British industry. Recognition should only be accorded under this head if greater efficiency results from the process.

(viii) The production for sale of goods which incorporate new and advanced technological qualities.

In respect of (vii) and (viii) credit would be given for earnings from royalties and manufacturing licences, and fees from designs, particularly when received from abroad.

Source: Queen's Award to Industry, H.M.S.O. (1965)p.3

The Award was not to be given for invention or to inventors but was for the practical application of advanced technology in the form of new products or processes. Selection of award winners was by a small committee who screened applications and made recommendations. In 1970 the scheme was extended to cover export services, and a wider definition of certain terms, such as 'origin' of goods, was introduced.

A straightforward analysis of the data provided by the Award Committee and published in the London Gazette was not possible because a single award could cover both the export and technological performance of a single multi-plant firm. In addition, a number of specific plants might have been named as contributors to one honour. It was decided to allocate one 'mention' to each named plant,for example:

> The British Drug Houses Ltd. (B.D.H.) London N.1. for export achievement by the Laboratory Chemicals Division, Poole and for technological innovation in organic chemical processing by the Pharmaceutical Division, London. (38)

B.D.H. would qualify for two mentions; one to Poole for export performance and a second to London for technological innovation. The number of 'mentions' recorded naturally exceeded the number of awards made.

From 1967 to 1976 inclusive, the number of 'mentions' made of G.B. establishments successful in the Award scheme was 1050 of which 782 were for export performance and 268 for

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(38) London Gazette (Supplement) April 1967

technological improvements. Over the same period Northern units received 32 export and 10 technological 'mentions'. The 10 'mentions' for innovation accounted for 3.7% of total G.B. mentions for technology and the 32 export 'mentions' formed 4.1% of total G.B. export references. (39) Over this period the North had approximately 6.1% of total G.B. population and approximately 5.7% of G.B. employees in employment.(40)

Analysis of the performance of units from the South-East and West Midland regions painted a somewhat different picture. The South-East with approximately 32% of total G.B. population gained 49.4% of export and 52.8% of technological 'mentions'; the West Midlands with approximately 9.4% of total G.B. population gained 6.4% of export'mentions' but 10.7% of mentions for technology (see Table 4).(41) In export mentions per head of population, the West Midlands and North perform equally badly being clearly surpassed by the South-East. In technological mentions, the North lags behind the South-East and West Midland regions. On the basis of these figures, innovation, upon which the present and future performance of firms and industries depend, was carried out at a lower level in the North than in the more prosperous regions.

The figures quoted above and in Table 4, as the number of 'mentions' disguised the fact that some local plants and firms earned more than one award or commendation e.g. local units of I.C.I. Ltd. four; Cummins Ltd., three; and two

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(39) London Gazette (Supplement) April 1967-76
(40) North of England Development Council, North of England Facts and Figures (1975)
(41) London Gazette op.cit. N.E.D.C. ibid. Population Census 1971 (1% sample)

TABLE 4

	1971 % G.B. pop. (a)	% Export mentions (b)	% Innovative mentions (c)	$\frac{b}{c}$ x 100	$\frac{c}{a}$ x 100
G. B.	100	100	100	100	100
S. E.	32	49.4	52.8	154	165
W. M.	9.4	6.4	10.7	68	114
North	6.1	4.1	3.7	67	61

Sources: Col.(a) Population Census 1971 Office of Population Census & 1% sample H.M.S.O. (1973)

Col.(b) and (c) London Gazette (Supplement) 1967-76 April.

went to Dunlop Ltd. Therefore the number of firms gaining recognition was lower than the number of 'mentions' allocated to Northern units.

There are a number of serious drawbacks to using the Queen's Award scheme as an indicator of the level of entrepreneurship present in any region so any figures derived from the data must be imterpreted with extreme caution. First, the Award was by application so that many deserving firms might not be considered. However, an application in itself could be interpreted as an entrepreneurial act of marketing, public relations or similar function where lay, presumably, the greatest value of the award to a firm. Secondly, when doubt existed as to the precise location of the award winning performance, the committee offered the award to head offices which tended to be concentrated in London and the South-East. (42) Under this arrangement the number of mentions allocated to the South-East would tend to overstate the facts and understate the position of regions such as the North. Thirdly, the value of each mention for either export or innovation is not necessarily equal. The contribution to the total economy from each might vary considerably so that although Northern firms had not earned relatively large numbers of mentions, quantity might be offset by quality.

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(42) Parsons, G.F. 'The Giant Manufacturing Corporations and Balanced Regional Growth in Britain.' in Blunden J. et al (Eds.) Regional Analysis and Development. Harper & Row, London (1963).

If the Queen's Award scheme gave any indication of entrepreneurial activity in the Northern region in innovation or marketing then it suggested that, with exceptions, the performance was subdued. Plants existing in the region did not appear to be in the vanguard of innovation nor to be vigorously seeking out new markets.

Capital.

The description of innovation in the section above concentrated upon the 'first in the field' but it was possible for a firm to gain most of the benefits and few of the costs associated with innovation by being an active imitator. The imitator had the advangage of waiting until the initial problems accompanying innovation were resolved and trouble-free production could be carried out. Entrepreneurship, therefore, would be reflected in the rate of adoption of new techniques by indigenous firms. Unfortunately no data existed directly measuring imitation. However, one vehicle by which new technology was introduced into the productive process was capital. The active entrepreneur wishing to modernise his equipment and take advantage of technological or market opportunities might purchase capital equipment or demand funds. This role of the entrepreneur coincided with that function described earlier as he who selected specific projects in which to invest and thus forged the link between the capital

market and production. (43) Gross investment included replacement and new or additional capital equipment. Net investment indicated the grasping of new opportunities or the awareness of increases in market demand beyond the scope of existing capacity.

In 1972 the manufacturing sector of Northern Industry produced approximately one third of Regional Output. Over the previous decade the same sector had carried out approximately half of all industrial investment. (44) In 1970 this investment amounted to £197 million equivalent to 9.2% of total national capital expenditure whilst output and employment in the region formed 5.1% and 5.7% respectively of total national manufacturing output and employment. Over most of the post-war period the North's share of manufacturing investment has exceeded its share of manufacturing output and employment.

Since 1963 investment in manufacturing plant and equipment taking place in development areas has been subject to government subsidisation. These incentives were assumed to have made a significant difference to the size and location of such expenditures. Such was the case in the Chemical and Metal industries which accounted for 67% of total Northern manufacturing investment in 1970. If chemicals and metals were deducted from the total then the remainder of manufacturing

(43) See chapter 2.
(44) This section draws heavily upon the work of the N.R.S.T. Technical Report No. 3. Change & Efficiency in Manufacturing Industry in the Northern Region 1948-73 (1975)

investment per employee was no better, if not slightly worse than the national average despite subsidies.

The tentative conclusion was reached by N.R.S.T. that: "..... investment by establishments moving into the Region may have accounted for between a half and two-thirds of the investment in manufacturing (excluding the chemicals and metals industries) in 1968 and 1970."(45) 'Mobile' firms formed an important but small sector of total manufacturing industry and output in the region. If chemicals and metals industries carried out two-thirds of all manufacturing investment and mobile industry, half of the remainder indigenous firms invested approximately one-sixth of the total amounting to 1.5% of national manufacturing investment in 1970.

The evidence suggested that most indigenous firms outside of the chemical and metal industries were small investors despite considerable government assistance and subsidisation of regional industry. If this low level of investment in indigenous manufacturing industry was replicated in other sectors of Northern industry then entrepreneurial activity in terms of investment was not demonstrably large.

An apparently low level of investment could be compensated by superior choice of project or utilization of funds bringing greater returns than to the average investment. This efficient use of funds could be expected to produce a high output per unit of capital input.

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(45) N.R.S.T. Technical Report No. 3 p.39

In 1970 N.R.S.T. estimated that the region's industries required 7.3% of the nation's capital stock to produce 5.1% of G.D.P. (46) The large investments of the chemical and metal industries introduced bias into the figures but when these were excluded Northern industry still required a greater stock of capital to produce any given level of output than did the nation on average. These anomalies might be due to the structure of Northern industry, if the sectors of industry dominating the regional economy required greater quantities of capital to support any given level of output then any implied criticism in the previous passages is invalidated. However, if the rate of investment by indigenous firms was no better than the national average (see p.118 above) then the stock would gradually approach that of the national average over time as capital wore out and was not replaced. The effect of this movement would need to be explored more fully to predict the likely implications.

Examination of changes in output brought about by changes in capital inputs indicated that the region required larger changes in investment to bring about the same change in output as the national average. This situation was heavily influenced by investment in the chemical industry. Once the effects of this sector's investments were removed from the total regional figures the remaining industries appeared to have similar incremental capital output ratios (I.C.O.R.)

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(46) N.R.S.T. Technical Report No. 3 p.40

to those found in the remainder of the country taken as a whole. (47)

In considering data on I.C.O.R.'s it is necessary to take account of both the short and long term effects of investment. The passage above was based on short term data and ignored the long term possibilities. In manufacturing industry some forms of investment bring benefits in the long term only, in which case the description in the preceding paragraph understated the gains that would be realised in the future and viewed in the short term would reflect adversely upon Northern entrepreneurs.

Growth of output and productivity might result from increases in the capital stock and from increased rates of growth of that same stock. If technology was embodied in capital goods the more rapid the growth of the capital stock or more rapid the replacement of existing capital, the more modern the technology that would be in operation in a region. On the assumption that the same level of knowledge was incorporated in capital goods produced in the same time period, the greater the growth of the capital stock in one region relative to that of another, the larger the expected relative increase in productivity or output per man. Analysis showed that the Northern region required a greater rate of growth of the capital stock in order to produce the same increases in productivity of labour as did the country on

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(47) N.R.S.T. Technical Report No. 3 p.41

aggregate.

To summarise: over the past fifteen years Northern manufacturing industry has invested consistently more than the national average. However, most of this capital has gone to the chemical and metal industries, approximately half of the remainder to 'mobile' plants, leaving a relatively small amount distributed between the indigenous firms. The response to capital incentives by indigenous firms would appear to be low. Larger quantities of capital were needed to support any given level of output in the region compared with the national average and greater increases in the capital stock per time period were required to bring about the same change in the rate of output as that obtained in the country as a whole. The demand for capital by indigenous entrepreneurs in the North appeared to be low and the schemes in which the funds were invested tended to bring a lower rate of output per unit of capital input than might have been expected based on national average figures.

Labour.

The entrepreneur in siezing opportunities for himself often provided job opportunities for others. Having decided to carry out some project he calculated the manpower requirements necessary to its operation, then entered the market to demand labour in return for the payment of wages.

In a region where many such schemes were promoted there would be evidence of a high level of demand for labour.

The Northern Region and other assisted areas of Britain have suffered from excess supply of, rather than a high level of demand for, labour over past decades. Persistently high levels of unemployment have characterised the regional economy. At times there has been excess demand for certain skills but, in aggregate, demand for labour in the Region has remained lower than the national average. How well then have indigenous entrepreneurs performed in creating jobs for others over recent years in the Northern Region?

Analysis of employment data was complicated by the rapid structural change which took place in this Region in particular since 1960. The rate of change was more rapid in the North than that which took place elsewhere in the country but was not exceptional when compared with that of other advanced economies. In 1961 the percentage of regional employment in Primary production was 14%, Manufacturing 38% and Services 48%. By 1971 there had been a fall of 52% in Primary employment, a gain of 4% in Manufacturing employment and an increase of 6% in Service sector employment. Following the national trend, total employment in the region fell by 5%. (48)

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(48) N.R.S.T. Technical Report No.10

Employment in the Primary sector fell principally because the traditional extractive industry of the region, coal, declined and contracted. The changes in employment in the Manufacturing sector 1961-71 which proved a source of additional job opportunities, are illustrated in Table 5. Column (a) shows that employment over the period 1961-71 declined in Chemicals, Metals, Shipbuilding and Marine Engineering, Vehicles, Bricks, Pottery and Glass. Over the same period the principal gains in employment were made in Electrical Engineering, Mechanical Engineering, Paper, Printing and Publishing, Textiles, Clothing and Footwear, Food, Drink and Tobacco, Instrument Engineering and other Metal goods. The total change in manufacturing employment was a gain of 19,722 jobs from 1961 to 1971.

From 1961 to 1971 firms moving in to the region created 37,800 jobs (Column (b) and (c) Table 5) representing approximately 8% of manufacturing employment or 3.2% of total regional employment. If it was assumed that new enterprises (Column (d)) were formed entirely by indigenous entrepreneurs the total employment creation from this source was 1537. Therefore, entirely new enterprises and indigenous units together (from Columns (d) and (e) Table 5) created 28,931 jobs representing approximately 6% of total manufacturing employment. (49) From the above it was evident that firms new to the region created many additional job opportunities

(49) N.R.S.T. Technical Report No. 10 p.10

TABLE 5

Northern Region.

Components of Manufacturing Employment Change 1961-1971

N.R.S.T Industry	Employment Change by 1971 resulting from: Total change in employment 1961-71 (a)	Ex-regional moves 1961-65 (b)	Ex-regional moves 1966-71 (c)	Enterprises new to manufacturing 1966-71 (d)	Residual (e)	Indigenous Increases in employment (d) & (e) (f)	Indigenous losses in employment (e) (g)
C. Food, drink, tobacco	+ 2,164	+ 279	+ 1,620	+ 103	+ 162	265	
D. Chemicals	- 5,514	+ 517	+ 1,593	+ 10	- 7,634	10	7,634
E. Metal manuf.	- 12,286	0	+ 1,315	+ 84	-13,685	84	13, 685
F. Mechanical Eng.	+12,925	+ 3,485	+ 1,859	+ 301	+ 7,280	7,581	
G. Instrument Eng.	+ 2,071	0	+ 1,037	+ 105	+ 929	1,034	
H. Electrical Eng.	+19,716	+ 488	+ 5,263	+ 181	+13,784	13,965	
I. Shipbuilding & Marine Eng.	-14,531	0	0	0	-14,531		14,531
J. Vehicles	- 3,591	+ 3,632	+ 431	+ 23	- 7,677	23	7,677
K.Other Metal goods	+1,999	+ 1,214	+ 757	+ 39	- 11	39	11
L. Textiles	+ 5,458	+ 692	+ 3,391	+ 136	+ 1,240	1,376	
M. Leather goods	+ 707	0	0	0	+ 707	707	
N. Clothing & Footwear	+ 3,916	+ 2,235	+ 514	+ 152	+ 1,015	1,167	
O. Bricks, Pottery,Glass	- 669	+ 478	+ 354	+ 66	- 1,567	66	1,567
P. Timber, Furniture	+ 606	+ 237	+ 361	+ 40	- 32	40	32
Q. Paper,Printing Publishing	+ 5,782	+ 1,084	+ 2,421	0	+ 2,277	2,277	
R. Miscellaneous Manuf.	+ 969	+ 564	+ 1,966	+ 297	- 1,858	297	1,858
	+19,722	+14,905	+22,882	+1,537	-19,602	28,931	46,995

1. The table shows total employment change broken down into its identifiable components; i.e. for each industry and for the total, Column (a) = columns (b),+(c) + (d) + (e)

for the local population and were essential to make good the considerable net employment loss from indigenous plants of nearly 18,000 jobs over the same period (Column g - f) Table 5.

These aggregates disguise sub-industry and firm performance where, in the indigenous mechanical and electrical engineering sectors, firms created many job opportunities over the period under consideration. The figures do not illustrate the considerable shifts in the type of job undertaken by labour within indigenous industry that might have taken place as firms changed to meet new market demands. However, the fact remains that other regions in this country and overseas, which were also experiencing transition, were able to maintain rates of unemployment considerably below that of the Northern Region and in addition exported many jobs to the peripheral areas. Entrepreneurs in the prosperous regions were able to provide sufficient opportunities in their own areas to keep the workforce close to full employment but in addition were persuaded to transfer excess demand for labour to the development areas.

Conditions have existed in the Northern Region for successful production within the manufacturing sector of industry illustrated by the operation of 'mobile' plants. But even with government aid available it was left, to a large extent, to outsiders to recognise opportunities and to seize upon

them, providing new jobs for the indigenous population.

The second source of employment growth in the Northern Region was the Service sector. In both a National and Regional context there has been a rapid expansion of the Service sector in recent years. Unfortunately little data are available detailing this movement, the principal regional source being the N.R.S.T. Technical Report on Office activity in the Northern Region which gave only partial coverage. (50)

In comparison with the national average the proportion of the working population occupied in office work was low. (51) If "the primary and distinctive feature of office activity is that it is concerned more or less exclusively with the generation, processing and exchange of information, ideas and knowledge,"(52) then local entrepreneurs appeared to attach relatively less importance to this activity than elsewhere in the economy. The fact that the number of office workers was increasing in the Northern Region in the same proportion as that of the national average meant that the gap between them was not closing.

Growth of the office sector was due to increased demand for office and management services that accompanied the increasing complexity and operational difficulties associated with modern business. Because productivity gains

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(50) N.R.S.T. Office Activity in the Northern Region, Technical Report No. 8 (1976)

(51) See N.R.S.T. Technical Report No. 8 also Crum R.E. & Gudgin G. Non-Manufacturing Activities in U.K. Manufacturing Industry, Univ. of E.Anglia (1976)

(52) N.R.S.T. Technical Report No. 8, p.7

in offices tended, on the whole, to be low over time, increasing demand for services led to larger numbers of workers being employed in this sector of service activity. Those office occupations that have shown the greatest proportional increases in employment terms from 1961 to 1971 are given in Table 6.

From Table 6 it can be seen that the largest absolute increases in employment were of Clerks, Cashiers and Office Machine Operators, numbering 23,700 or 45.5% of the total change over the period under consideration. Many of these office jobs in both government and private establishments removed to the region because of government intervention to influence the location of administrative and industrial units. If these jobs are deducted from the increase in office employment growth, employment in indigenous sectors was below the increase indicated by national averages.

For the creation of new jobs and opportunities for others in both the manufacturing and service sector, the region has had to rely heavily upon entrepreneurs from the prosperous areas of the country and from abroad. In addition many 'office' jobs have been transferred to this region from the South-East by central government. On the limited evidence available the conclusion is reached that indigenous entrepreneurship by itself would not have provided the level of employment that at present exists in the region.

TABLE 6

Percentage and Absolute Change in Office Occupations N. R. 1961-71.		
	% change 1961-71	Absolute change
Technical & related workers N.E.C.	140.6	5,260
Civil Servants, Local Authority Officials	132.0	1,980
Mechanical Engineers	124,6	2,630
Sales Managers	94.3	2,340
Professional Workers N.E.C.	75,0	930
Clerks, Cashiers, Machine Operators	21.2	23,700
Total change in Office employment		52,050

Source: N.R.S.T. Table A2 Appendix A
Technical Report No. 8

Spin-off, self-employed and small firms.

Individuals within an existing organisation might become aware of some technical or marketing opportunity that the firm for which they work cannot or will not exploit. As individuals they had the choice of seeing chances pass by or of setting up their own units spinning off from the existing firms. Spin-offs occur for a variety of reasons but might be expected to occur more frequently in a society where comparatively rapid change was taking place rather than one that was relatively static. The North has experienced rapid structural change as the traditional industries have declined and new firms have migrated to the region, introducing individuals to new techniques methods and markets. Under such conditions of change it might be expected that a large number of opportunities would be presented to form linkages between local entrepreneurs and the new units or to set up new units to innovate.

When firms relocated even if the major services and supplies were drawn from existing sources, certain services might be looked for in the new area. Vigorous entrepreneurs would attempt to step in and to break the links between the 'new' firm and its traditional suppliers. Evidence suggested that few new linkages have been formed within the region by mobile industry. (53) Thus opportunities have not been exploited and the old linkages remain.

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(53) Townroe, P.M. Branch Plants and Regional Development. Town Planning Review. (1975).

In a society where large firms predominate as they do in the North, many small enterprises usually exist alongside them to provide specialist goods and services. They were able, and often encouraged, to produce, by the inactivity of the larger unit in performing certain functions for itself. Many firms tended not to get 'involved' in providing intermittent services or 'one-off' goods for themselves; they demanded these from the market. If a small firm could survive on the basis of this demand from one or a number of larger units then an enterprise might be formed in close proximity to its customers. Similarly, many large firms did not take up all the opportunities brought to their attention; many were uneconomic to satisfy under their conditions of organisation and production. As a result spin-off might occur to fill those gaps, and to satisfy a recognised need in the local economy. Thus, with rapid structural change and large firms in a region there was reason to expect the existence of many small units and a rapid pace of new firm formation.

In the Northern Region in 1961 and 1971 the proportion of self-employed (representing the ultra-small unit) as a percentage of the total employed labour force was lower than in the U.K. as a whole. (54).

"In 1972 only 1.7% of manufacturing employment in the North was in plants employing 10 or less, as against 3.3% in the U.K." (55)

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(55) N.R.S.T. 1st Interim Report p.20
(54) N.R.S.T. Technical Report No. 4 p.52

The numbers engaged in those establishments primarily concerned with business services in the region in 1973 were extremely low in comparison with the equivalent national figures.

New firm incorporations in the Northern Region from 1966 to 1973, reflecting opportunities grasped, averaged 1.05% of the national firm incorporations. (See Table 7)(56). The reason for this low level of small firm activity was not to be found in terms of differences of reward between regions because profitability has been reasonably high in the region and evidence suggested that earnings from self-employment did not differ significantly from those obtained in the remainder of the country. (57)

IV

Regional economic performance could be constrained by a lack of entrepreneurs or a failure to utilise their talents. On the basis of McClelland's work it was concluded that present and future numbers of entrepreneurs coming from the indigenous population was likely to be lower than the national average.

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(56) I am indebted to Dr. P.S.Johnson, University of Durham, for access to his unpublished data on New Firm Incorporation. As he points out there are severe limitations to interpretations of this data in a regional context, not least of which is that the location of Registered Office of the company may not mean a great deal.

(57) Kent-Smith D & Pritchard, A. Further Estimates of Regional G.D.P. Economic Trends, May 1975
N.R.S.T. First Interim Report. July 1975.

TABLE 7

Northern new firm incorporation as Percentage of G. B. total 1966-1973

Year	1966	1967	1968	1969	1970	1971	1972	1973
N.E.F.% of G.B. Total	1.02	0.91	1.37	1.14	1.02	1.11	0.9	0.9

Source: Johnson P.S. New Firm Incorporation 1966-73
Unpublished mimeograph.
University of Durham (1976)

Analysis of the performance in carrying out the functions of entrepreneurship in the regions produced results that indicated a certain lack of enterprise. In the systematic collection of information the region had attracted or formed few public and independent private research institutions and employed a small proportion of total G.B. research staff employed in such establishments. Within private industry the picture was more encouraging with the number of units engaged in research and the number of non-productive scientists and technicians employed in industry approaching the number expected based on the size of regional population. In seeking market information the North appeared to have few people engaged in independent units and less than might be expected based on the proportion of the national population in the region.

The number of innovations attributed to the region was lower than expected based upon the information provided by the Queen's Award to Industry and the demand for capital expressed in investment terms by indigenous industry was low (excluding chemicals and metals). In addition Northern firms required greater amounts of capital to produce a given level of output than was required in the country taken as a whole and a greater rate of investment was required to increase productivity at any given rate. From 1961 to 1971 indigenous

firms created approximately 29,000 manufacturing jobs but this was more than offset by the loss of employment from other indigenous plants. In office employment creation local enterprises appeared to have lagged behind the performance of similar enterprises nationally. The incidence of spin-off was low in the Northern Region and fewer self-employed or small firms exist there than expected from national average figures. Bearing in mind the unreliability of the data, the tentative conclusion is reached that either entrepreneurial talent is lacking in the region or it is unusually constrained in its actions there. The result is that for industrial and employment performance, the local economy had come to rely heavily upon the mobile plant and to a lesser extent upon the movement of offices and civil servants. The mobile plants introduced new methods, techniques, products and markets to the local economy plus nearly 38,000 jobs and substantial investment from 1961-71. Without these 'new' units and external assistance the regional economy would have continued to decline with high levels of unemployment and distress.

The evidence suggests that the functions of the entrepreneur have not been vigorously carried out in the Northern Region in recent years. This contrasts with the performance in those regions that supplied the mobile plants

where entrepreneurs consistantly maintained a level of employment above that existing in the Northern Region and were able to grasp sufficient opportunities to enable them to export 150,000 jobs to the peripheral areas from 1963 to 1970.* The great majority of investment in the region had been left to two industries and to outsiders. Few individuals in the region were prepared to step outside of tradition to set up independent units upon which future Northern prosperity might well depend.

If there are proportionately fewer entrepreneurs in the Northern region at present, this is in stark contrast to the position there in the 19th century when the same region led the world in technological advance and enterprise. The apparent reduction in the numbers of local enterprising men since the 19th century is often regarded as having been brought about through migration of the more able members of the population. A fruitful line of study would be to investigate why they should wish or need to leave the region. It might be revealed that many emigrated because they were constrained from fulfilling their ambitions within the local environment. As net outward migration still continues, it might be hypothesised that those constraints persist. If the more enterprising continue to leave the region a more feasible explanation for this movement and for the relatively poor performance of indigenous industry might lie in the constraints on entrepreneurship that

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* See Moore B. & Rhodes J. 'Evaluating the Effects of British Regional Economic Policy.' Economic Journal (1973).

exist in the region rather than lack of entrepreneurs. Constraints which were built up by the development in the Northern Region before the opening of the 20th century and later reinforced, are examined more fully in the following chapter.

APPENDIX I

The Northern Region is that area of England which lies between the Scottish border in the North and the southern boundaries of Cumbria, Durham and Cleveland counties in the South. This 'new' region differs from the pre-1974 'old' region by including the Furness Peninsula and other small sectors of Cumbria whilst excluding most of North Yorkshire. In the foregoing chapter an attempt to estimate the levels of entrepreneurship exhibited in the 'new' and 'old' regions in the recent past was based largely upon information gathered on the 'old' area.

The relative ease with which regional boundaries are drawn and redrawn, confronts research workers with certain difficulties. First, the criteria upon which the 'new' and 'old' boundaries were drawn may not be compatable with the study undertaken. In this particular study there is a need to include within one 'area' the place of work and also the place of residence of the industrialist so that both may be examined together from one data base. Secondly, the data from the two areas are not strictly comparable. When a 'new' area is defined the total population of variables will change as also may their distribution. Hypotheses or evidence based on the 'old' area may have only limited applicability to the 'new' region. The problem is greatest where important

industrial centres are included in the region under one set of criteria but excluded under some subsequent set or vice versa. In the case of the Northern region boundaries, the changes that have taken place have not been so dramatic but the considerable industry of Barrow-in-Furness is now within the region whilst much of agricultural and residential North Yorkshire is excluded. It is possible that the data from the 'old' region may not truly reflect the characteristics of the 'new' and absolute values will change for at least some of the regional variables.

Having noted some of the problems for the analyst we must unfortunately use those data of which we have cried "Beware", namely 'old' data. This is because of a need to reduce the confusion associated with switches from 'old' to 'new' data but principally because there is inevitably a lag in the collection and publication of statistics and little exists on the 'new' region. As the 'new' region has existed only since April 1974 the data base is too small for meaningful interpretation. We therefore made the assumption that the figures and data that exist on the 'old' region represent the true facts of the 'new' population and capture the characteristics of the Northern entrepreneur.

On examination of the available regional data it was realised that detailed statistics have been collected for

a relatively short period of time only, and the resource pool was small. We would acknowledge, therefore, the considerable debt owed to the Northern Region Strategy Team for the majority of the information on the Northern Region used above.

CHAPTER 4

Development of the Northern Region.

"From coal then, one may say, developed the industrial structure of the region."..D. J. Rowe (1)

By the late 19th century the North of England was one of the leading industrial regions in the world, having achieved its position through the vigorous exploitation of natural resources and the dynamism and ingenuity of farsighted men. Within half a century the region experienced the worst effects of depression with the large basic industries operating at a fraction of their capacity and much of the workforce idle. Recovery to the present level of relative prosperity has been accompanied by considerable government assistance and has taken over forty years.

Many opportunities have exited in the 20th century, for entrepreneurs to enter what later proved to be growth industries but in the main the North has failed to participate in such activities and has left them to be taken up elsewhere. It is difficult to believe that the enterprise which raised the region to the heights of industrial prosperity by 1900 had subsequently died or faded away. It seems more probable that certain constraints had been built up in the region over previous ages which prevented many of those who had the ability from acting in the crucial period at, and beyond, the turn of the century. This failure to act then, strengthened those

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(1) RoweD.J. 'The Economy of the North East', Northern History Vol. 6 (1971) p.124

constraints in subsequent time periods which meant that when the need arose the region was unable to rejuvenate itself without assistance. The government provided incentives but many of the constraints have proved difficult to break down in the short term. The policies brought less than the expected results and support continues to be needed.

It is postulated here that the above mentioned constraints arose out of the way in which the industries of the region developed in the 19th and early 20th centuries and acted as a brake on any entrepreneurial talent which existed in the region. The particular emphasis of government policy does not resolve the problems and the return to parity with the average indexes of national prosperity will be slow.

II

Like many other areas in Britain before the industrial revolution, the ecohomy of the Northern region was based upon agriculture. The most important social and economic figure in such a society was the large land or estate owner of whom the North had its share. What differentiated many Northern landowners from their counterparts elsewhere was the possession of coal measures in close proximity to navigable water and the sea.

Coal has been used as a domestic fuel in Britain since Roman times, a fact recent discoveries in forts along Hadrian's wall have confirmed.(2) It was also used in the early industries of smithing and lime burning. By the 13th century a considerable trade in the commodity had developed within the region and in exports to London and the South.(3) For those who owned the shallow accessable seams close to the coast or rivers of the North-East this trade provided relatively large incomes. The prominent owner in this period was the Church, represented by the Priors of Tynemouth and the Bishop of Durham. (4) (5)

Mining technology was primitive and the scale of operation small; a handful of men digging into the exposed seams and 'pits' of the area with primitive tools provided by the local iron industry. The coal for export came from workings close to the banks of the rivers Tyne and Wear. It was transported by basket, packhorse or wagon on land and by coble or small ship on water. Most of the equipment was constructed and owned locally except the sea-going ships which were owned mainly by shippers from Ipswich and King's Lynn. (6) Little capital investment was required on the part of the producer and labour was probably unspecialised

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(2) Smith R. Sea Coal for London, Longmans (1961)
(3) Dunn M. View of the Coal Trade, Pattison & Sons, Newcastle (1844)
(4) Chandler G. Four Centuries of Banking Vol. 2 Batsford (1968)
(5) Pollard S & Crossley D.W. The Wealth of Britain 1085-1966 Batsford (1968)
(6) Dougan D.J. The History of N.E. Shipbuilding, Allen & Unwin Ltd. (1968)

in that each man fulfilled a number of roles as they still do in many rural communities today e.g. miner, agricultural worker or fisherman. Whilst little is known of the marketing function, many goods and services in such a community were possibly provided against specific orders rather than for a more general market.

With the passage of time the population of Britain increased without any long term diminution of income per head as a result demand for goods and services rose. For technical, economic and reasons of tradition, wood was the principal fuel used for industrial and domestic purposes but expanding needs led to near exhaustion of timber resources. The South-East and London suffered most from this problem. (7) By Tudor times an alternative source of heat had to be found if a fuel crisis was to be averted. The shipment of coal from the Northern coalfields provided a solution to the problem. Besides households, many wood-burning industries namely salt, sugar, soap, alum copperas, saltpetre, dyeing, brewing, pottery, maltmaking and a host of others began to use coal. (8)

The increase in demand for coal led to a greater rate of extraction which made large inroads into the measures close to the surface and to water. In order to take advantage of the opportunity this high level of demand provided the mineowners needed to find untapped deposits and to introduce methods by which coal found at a greater depth could be

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(7) Pollard S & Crossley D.W. op.cit. p.105.
(8) Pollard S & Crossley D.W. op.cit. ibid.

brought to the surface. In a period of high wood prices and increasing coal prices a relatively large investment could bring high returns to the venturesome. Because profits were large the leases to work mineral deposits assumed considerable value.

The leases appropriated by Henry VIII on the closure of the monasteries eventually were let to merchants and adventurers who were willing to risk their money in such projects. (9) Thus, the lands of the Priors of Tynemouth came under new control, the prime objective of the lessee being to extract coal. Investments were made in the sinking of numerous short shafts on the banks of the river Tyne. Additional labour was engaged to mine the coal, much of which came from the agricultural sector. Coal output expanded under the direction of entrepreneurs who engaged increasingly large numbers of men in the extractive process.

In Elizabethan times, through a series of transactions, the marketing of all coal exported from the Tyne fell into the hands of the 'Hostmen' of Newcastle in the form of the 'Grand Lease'. This Lease forced mineowners, who wished to ship coal from the Tyne, to sell their product to the Hostmen who in turn sold it to London merchants.(10) A monopoly had been created and the coal trade was controlled by a few powerful men. Many of the Hostmen were successful merchants and tradesmen,

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(9) Chandler, G. op.cit. p.340
(10) Archer, M. A Sketch of the History of the Coal Trade of Northumberland and Durham. King, Sell and Railton Ltd., London (1897)

others owned land and collieries.(11) The Lease was to increase their power and wealth and that of their families. They and their descendants used this wealth to purchase further leases, to increase their land-holdings and to invest in mining and other industries. The future coal industry on the Tyne and surrounding area was to be dominated by this powerful group and their descendants for the next three centuries.

The population of London increased rapidly from 50,000 in 1500 to 530,000 in 1696. Meanwhile the city's coal consumption rose from 12,000 tons per annum in 1575-80 to 450,000 tons per annum by 1700, most of which was supplied from the Northern Coalfield. This rising level of demand for household coal plus a growing demand from industry placed a great strain on existing colliers in the North. The incentive to expand production was provided by the profit that could be made but constrained by the level of mining and transport technology.

The shallow workings of up to 60 fathoms in close proximity to the Northern rivers were reaching points of maximum output or even exhaustion. Coal was thought to exist at greater depths and known to exist further inland. What was needed were ways of exploiting these deposits. The zest with which North countrymen attacked those problems

(11) Archer, M. op.cit. p.58

eventually led to success. In 1844 Dunn was able to describe the process and level of achievement thus:

> "As it is justly remarked that necessity is the mother of invention, so does it necessarily follow that colliery engineering may be said to have arrived at a state of greater perfection in this district than in any other part of the world." (14)

Drilling was carried out more clearly to establish the whereabouts, extent and depth of the coal deposits. New shafts were sunk to a depth twice that known elsewhere. The old chain and bucket system of drainage, no longer adequate, was replaced by pumps driven by atmospheric and later steam engines. Ventilation of the mines was improved by constructing passageways through which the circulation of air was stimulated by the use of strategically placed fires. The old 'corfe' system of drawing coal along underground passages in baskets was replaced by tram and wagon. Coal was lifted up the shaft first by horse operated gin, later by engine and eventually by a tub and cage system. (15)

One method of increasing output was through new mining methods, a second possibility lay in the drawing of coal from seams more distant from the waterways. The latter was constrained by the need to rely upon the inadequate transport system provided by pack horses and horse drawn wagons. The transport of coal was possible but the cost was extremely high. In the 18th century methods of

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(14) Dunn, M. op.cit.p.38
(15) Atkinson, F. The Great Northern Coalfield 1700-1900 Durham County Local History Society (1966)

transporting bulk materials over land were subject to considerable modification and improvement.

The packhorse and horsedrawn wagon on public highways gave way to specially constructed wagons pulled by horses across wooden 'ways' which led from the pit head to the ship's side. These wagon ways were constructed from timber and provided a smoother surface for wagons than the primitive roads that then existed. Another great advantage of these ways was that they were passable in adverse weather conditions. Railways superceded the 'ways' first having wooden, then iron rails placed on sleepers upon which the wagons were mounted and drawn along by horses. These 'new' methods showed considerable savings in time and horsepower per ton mile over previous methods and the exploitation of more distant sites became a viable proposition.(16)

With a large market external to the region, and water still the cheapest means of transporting a bulky material such as coal over long distances, it is not surprising that the Tyne and Wear became such active ports. The increasing importance of Sunderland was due to the existence of coal deposits close to the Wear and to the restrictions placed on shipments from the Tyne by the 'Hostmen'. At first ordinary cargo vessels were engaged in the coal trade many of which came from Kings Lynn and the South.(17) Later, special

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(16) Allen, C.J. The North Eastern Railway. Ian Allen Ltd. (1964)

(17) Dougan D. J. (1968B) op.cit.p.20

ships were constructed and yards opened on the banks of the local rivers where suitable facilities existed for boat building. At this time the industry was made up of numerous small firms many of which built ships of a poor standard. (18)

When the Industrial Revolution began towards the end of the 18th century, a major coal extracting industry already existed in the North. Effective demand for the product came from the households of London and the growing needs of an industrialising society. The pressure of demand raised coal prices to a level where satisfactory profits could be earned from coal extraction. Even if considerable expenditure was required to construct and operate wagon ways and to pay the heavy wayleave charges, coalmining remained profitable. But the sums of money involved were now so great that only a few wealthy men or landowners could obtain the necessary funds for such ventures. They raised finance from family and friends or obtained credit from the new banks. The latter were springing up across the country to transfer savings from individuals to the growing industrial sector and to provide other banking facilities to firms. (19) Landowners in particular were able to obtain finance because they could offer considerable collateral for loans in the form of rents or land. These economic conditions meant that the

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(18) Dougan, D.J. (1968B) op.cit.p.27

(19) Chandler, G. op cit

bulk of the coal trade especially exports, was controlled by a few individuals. With the expansion of production and a low level of technology, large numbers of unskilled workers were required in the mines. As coal was often found in isolated spots, mining communities were built up around the pitheads drawing men away from the land into the more specialized form of wage labour. For many men, and their families, working and social life revolved around the colliery with few opportunities to exchange knowledge and information with others who had significantly different employment and experiences. However, the problems facing mining in general required men with ideas to resolve them. The demand for the product, the funds and the incentives were there; what was needed was the technology. Indigenous inventors and innovators were supported; men from other regions migrated to the North to try out their ideas under encouraging conditions. This group of men, the mining engineers, formed the nucleus for future growth not only in coal but in railways and heavy engineering in the next century.

The marketing of coal from the North continued to be carried out through 'fitters', agents, factors or merchants whose expertise was increasing in the London and foreign markets. Northern producers came to rely upon these groups to sell

their products, a relationship which was strengthened by custom, combination and legislation. (20)

III

In the 19th century the city of London and manufacturing industry continued to grow providing an expanding market for Northern coal. The increased level of coal shipments brought about significant changes in the regional economy, the most important of which was the transformation of the transport system. The system was revolutionised by the application of the steam engine to the railways and subsequently its widespread use in ships.

> ".... by 1804 (Richard Trevithic) had produced the first steam locomotive to run on a railway track.... " (21)

The great value of this innovation was soon appreciated in the North and locomotives were constructed by John Blenkinsop, William Hedley and George Stephenson. The last is given the greatest credit because his engines included significant modifications to the original designs which improved efficiency and reliability. Men such as these earned for the North the reputation of being the home of the railways. This is only justified on the basis that the region needed a new transport system and its engineers gathered together the information necessary to successful

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(20) Smith, R. op.cit.
(21) Allen, C.J. op.cit.p.9

construction, modifying where necessary, to produce the most efficient means of transporting heavy bulky loads known at that time. New industrialists came to the North to observe these methods at work and to gain what knowledge they could.(22) The region possessed a number of courageous entrepreneurs and financial backers at this time who were willing to utilise knowledge from other regions in addition to their own ideas.

The Northern mining industry used many engines and provided a training ground for future engineers and a ready market for the products of the emerging heavy engineering industry. Once the main teething troubles with locomotives had been resolved, the interest in railways and steam-traction grew at an astonishing rate. Firstly as a means of transporting heavy goods and then passengers. Railway mania swept the country in the 1830s and 1840s. By November 1845, The Times estimated that some 620 railway schemes had been proposed, the cost of which, if carried out, would be over £563,000,000.(23)

Railway construction called for new bridge designs and the undertaking of many civil engineering schemes for which there was no precedent. The growing industry attracted to it those who enjoyed the challenge that the new problems produced and also venture capitalists who would finance the projects. Much of the railway finance was raised through the

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(22) Allen C.J. ibid.
(23) Allen C. J. op.cit.p.88

issue of shares or bonds, the volume of such issues led to the formation of the Newcastle Stock Market in 1845.(24) Other sources of finance were notably the Pease family of Stockton, the Backhouses and their Quaker Brethren elsewhere,also capitalists in London and the South. (25)

The physical construction of the permanent way called for large numbers of unskilled men to dig tunnels and cuttings, build embankments and contour the local landscape to the requisite shape. The indigenous population was unable to provide all the labour required so many families were drawn into the region to work from Ireland, Scotland and the other regions of Britain. The regional population began to expand rapidly due to this heavy migratory flow, in addition to the natural increase. Once the railways were established they continued to demand relatively large numbers of unskilled workers to maintain the track, rolling stock and to provide porterage and freight handling.

As with many ventures which capture the public imagination, a considerable number of the railway schemes were financially unsound. Competition was fierce, bankruptcy, regrouping, merger and amalgamation took place after inauguration as the realities became known. By the 1850s combination was taking place on a much broader scale. In 1854 as a result, over the years, of twenty companies coming together, the final

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(24) Killick R.S. & Thomas W.A. 'The Northern Stock Exchanges' Northern History, Vol. 5 (1970)

(25) North G. A. Teeside Economic Heritage County Council of Cleveland (1975)

step was taken and the North Eastern Railway was formed to become the largest single railway undertaking in the country with a total capital of £23,000,000.(26)

In the following half century the railways in the region and elsewhere became renowned for their time keeping service and safe travel. Technology permitted the achievement of these results but the rigid application of rules and regulations to the workforce ensured them. As a result the majority of employees were not encouraged to use their initiative or take individual action. The rapid advance of the railways and locomotives soon outpaced the horse as a means of transport and traction. On land the railways only faced a weak challenge from canals as the prime means of moving goods or passengers in the century before the motor car and there appeared to be little need to market the service as the alternatives were so unattractive.

The 19th century also saw fundamental changes undertaken in the construction and operation of sea-bourne transport with two significant effects upon the regional economy, one positive and the other negative. Over this particular period Britain was the centre of the trading world. This stimulated shipbuilders to provide the means of transporting the increasing flow of goods. One such product was coal, thus while the demand for general cargo vessels was increasing so too was the demand for colliers. With suitable construction

(26) Allen, C.J. op.cit.p.107

and launching sites, adequate water facilities and access to raw materials, the shipyards of the Tyne, Wear and Tees grew in strength and reputation.

Early cargo vessels and colliers were small and suffered from the vagarities of the weather. Sailing conditions in winter were so poor in the North Sea that coastal shipping movements virtually came to a halt between December and March, causing serious stocking and financing problems for coal owners and merchants. (27) Any means of bringing improvement to shipping costs and reliability would fall on receptive ears. As far as coal owners were concerned the situation was made more acute by the growing influx of 'railway' coal into London which had brought about the breakdown of their restrictive agreements, setting prices and output. A large portion of their livelihood was in danger unless they could find a cheap, reliable method of transport to supercede the wooden sailing ship. The answer was provided by the steam-driven screw collier.

Development of the ship-building industry in the North had been taking place over the years in response to the demands of the coal and world trade conditions. Shipyards in the region were changing from small builders of unspectacular and poorly designed ships into large concerns that were to lead the world in construction, inventiveness and technology. Dougan described the rise of the North-East shipbuilders thus:

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(27) Smith, R. op.cit.

> "The main reason is that the entrepreneurs in the North East were more prepared to accept change, to understand and implement technical innovation.... Steampower had been accepted within twelve years of its first marine application. Iron was to be adopted within a similarly short period. " (28)

With the implementation of these ideas new to shipbuilding costs of construction increased from approximately £1,000 for the average wooden sailing ship of 264 tons capacity, to as much as £10,000 for a steam driven collier of 650 tons capacity. (29) For the operator, the advantages of the screw collier over the sailing ship, were its ability to operate in poor weather conditions, shorter journey times between ports and the saving in storage costs. These gains meant that the cost per ton of coal transported by steam collier was below that of the sailing vessel but the initial purchase price was high and contracts for large quantities of coal were required in order to earn profits. The new gas companies in London provided the answer to the contract problem by placing orders for at least 100,000 tons of coal at one time.

> "When orders were placed on that scale, coal owners found it economically worthwhile to build steam colliers for the express purpose of dealing with deliveries to a single buyer." (30)

Finance for the purchase of steam colliers, however, was available only to the larger concern which restricted the advantages to the large operator.

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(28) Dougan, D.J. History of North East Shipbuilding, M.A.Thesis University of Durham. (1968A) p.21
(29) Dougan, D.J. (1968B) op.cit.p.42
(30) Smith R. op.cit.p.387

The screw collier was built in large numbers and whilst Northern household coal continued to be sold, increasing attention was paid to the needs of large productive units of private industry, government or public utilities. This trade became a staple area for marketing with the construction ofspecial vessels capable of servicing the particular needs of each unit e.g. the shallow draught vessels with collapsable masts and funnels used to carry coal to the upper river sites on the Thames.

The increased demand for iron screw-driven ships led to the expansion of the larger shipyards and docking facilities. The work of excavation and construction was carried out by armies of labourers, many of whom were recruited from outside the region adding to the growing pool of unskilled workers employed in the coal mines and on the railways. Within the dockyards there was a growing demand for fitters, boiler makers, carpenters and the like, whose job skills in many instances were specific to the industry. However ".... the growing need for specialized components made shipbuilding increasingly an assembly industry with perhaps only 20 per cent of the cost of the ship generated within the yard."(31)Some firms grew very large indeed and they dominated the geographic area in which they were situated. In the 1860s Palmers employed 3,500 men

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(31) Smith J.W. & Holden T.S. Where Ships are born Thos. Reed & Co. Ltd. Sunderland (1953) p.43

(including the steelworks) most of whom resided in Hebburn.(32) Armstrongs created Elswick and Sunderland became the largest shipbuilding town in the world.

Despite the growing size of unit, many or most of the shipbuilding firms were "family" affairs; Redheads, Doxfords, Mitchells, Laings, Austins, Bartrams, Hunters and numerous others, a feature which continues to the present day. Most of these families were extremely active in promoting the growth of the firms and the reputation of the North as a first-class shipbuilding region.

As the coal and world commodity trade expanded, a ready market appeared for technically advanced ships. The North-East coast led the world in ship construction and so attracted purchasers to the builders' gates.(33) Lasting relationships were built up between fleet-owners and builders often on a personal basis.

> ".... in 1878 John Redhead had been introduced to Edward Hain .... They liked the look of each other and Hain placed an order for a screw steamer, 'Trewidden'. That was the beginning of an extraordinary association. Between then and 1888 fifteen ships in all were built by Redheads for Hain. But this was only the start .... to date Redheads have built eighty-seven ships for the Hain company..... " (34)

Although this may have been an extraordinary feat it was not unusual for builders to sell a number of vessels to one owner over a number of years e.g. Leslies sold 41 ships to Lampart & Holt between 1861 and 1892. (35) These

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(32) Dougan D.J. (1968A) op.cit. p.41.
(33) Smith J.W. & Holden T.S. op.cit.p.43
(34) Dougan D.J. (1968B) op.cit.p.73
(35) Dougan D.J. (1968B) op.cit. p.46

relationships presumably stood the shipbuilders in good stead when competition was fierce or orders were slack. Another important purchaser of North-East ships was the Royal Navy who placed orders regularly over many years with firms such as Armstrong and Mitchells. Foreign governments were also a major source of orders and warships were built at Elswick for Japan, Chile, China, U.S.A., Brazil, Argentina, Norway, Portugal, Italy, Roumania and Spain. (36) Charles Mitchell had even sent his brother-in-law Charles Swan to live in St. Petersberg to handle negotiations with the Russian government.(37). The impression is gained of two relatively small select groups of people who formed certain special relationships upon which the shipbuilding industry prospered. On the one hand existed the yard-owners, their families and senior personnel, and on the other hand the purchasers who were a relatively small group of ship-owning firms/ families, financiers, government agents or wealthy men.

Effective demand and a willingness to innovate brought great prosperity to North-Eastern shipbuilders, operators and workmen, but technological improvement in ship construction and operation also destroyed industries, narrowing the economic base of the region. At the beginning of the 19th century ships had taken coal and other goods from the Tyne to return in ballast. Industries developed in the region largely based

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(36) Dougan D.J. (1968B) op.cit.p.76
(37) Dougan, D.J. (1968)B op.cit. p.74

upon the cheap raw materials that ballast could provide. Glassmaking flourished on imported sand; pottery on imported china clay and certain chemical treatments were also undertaken.

> "By the 1830s Tyneside and in particular South Shields, was producing about one-third of the country's output of glass." (38)

The use of water as ballast introduced into ships of more modern design (after 1850) ended the era of cheap raw materials and the glass and pottery industries declined as more favourable locations elsewhere in the country, with lower costs, were discovered or expanded.

According to Hobsbawn* the railways were responsible for the large increases in iron output and virtually created the steel industry in the 19th century. The existence of iron ore deposits in close proximity to coal gave the Northern region natural advantages in the production of iron. Early smelting sites were chosen in close proximity to known ore and coal deposits such as those at Tow Law, Witton Park and the Derwent Valley.

The discovery of Cleveland ores in the second half of the 19th century increased the local sources of supply but had to wait until further technological advances in steel-making had been made before the full potential of the find could be realised. Exhaustion of the ore deposits on the early sites brought about the closure of smaller firms but

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(38) Truckle, N. The Industrial Revolution, Its Implications in N.E.England, Geography Seminar paper University of Newcastle 1969

* Hobsbawm E.J. Industry and Empire. Penguin. 1968.

the operators who survived became very large indeed through expansion of the firm or amalgamation or both. (39) As the enterprises expanded capital requirement increased as did the need for large numbers of workers. The iron-work sites were not close to centres of population so considerable movement of workers took place intra and inter-regionally. New towns were created around the firm, a typical example of which was Consett.

Household consumption of iron was increasing but at nothing like the rate observed in the railway and ship building industries. Coal mines continued to demand iron for use in the construction of shafts, winding gear, supports, rails, tubs, picks and shovels. Of heavy industry's inputs, after labour, and capital, metal, coal and transport were of major importance. The iron industry itself used the coal, machinery and transport of the area besides selling its own products to the firms who supplied it with goods and services. The growth of interdependence between the industries basic to the region was taking place. Little is known of how the iron industry marketed its goods but much of the output went as intermediate goods to the other basic industries of ship-building, railways and heavy engineering. Some entrepreneurs such as Palmer, were involved in more than one industry and could be expected to influence the direction of purchasing.

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(39) Allen, C.J. op.cit. pp.117-119

With relatively few producers and a number of large users it seems probable that the major selling and purchasing decisions were made between a relatively small group of people. It is known that in the export market the Crowleys' sold through merchants to relieve them of the inventory costs and the risks of default, a practise other firms may have followed. (40)

The collieries in the region had used engines for pumping and lifting from an early date and employed engineers to attend and repair them. From this same group of mining engineers came men who were to act as pioneers in the early heavy engineering industry. Men such as George Stephenson and Hawthorn were former colliery enginemen and formed the first enterprises in the world to produce locomotive engines.(41) Technically these men, and other colliery engineers like them, were amongst the most knowledgeable in the world with regard to engines and machines. The demand for coal was increasing. If they could resolve some of the problems associated with the extraction and transportation, then great profits could be earned. The conditions were right for entrepreneurial talent to be used; explicit, effective demand, technical knowledge, obvious problems to be solved, profits to be made and a society in which those who were powerful were tolerant of change if not actively encouraging it.

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(40) Flynn, M.W. Men of Iron.
The University Press, Edinburgh (1962) p.145
(41) Dougan, D.H. (1968B) op.cit.pp.29-30

By using their own ideas or those from other regions, the men developed the steam locomotive and ship's engine. The demands of a trading nation in an area where 'heavy' goods were produced led to the development of Armstrong's crane; one innovation in a long line of inventions designed to make loading and unloading more easily and efficiently accomplished. Being the first to utilise new knowledge successfully meant that many firms such as Armstrong's, Stephenson's and Hawthorn's were given a 'headstart' on their subsequent rivals. Due in part to lack of competition and the size of unit of product, plants were often large and, similar to those in coal, steel and the ship-building industries, came to dominate the locality of the plant. Examples can be found in Shildon and Darlington where the loco-shops were the major source of employment in the district. Armstrong's engineering enterprise employed approximately 25,000 men in 1900 (including those engaged in the armament and ship-building activities) and was the dominant firm in Elswick and Benwell,(42)

The North in the 19th century was an area of growing industrialisation, change, prosperity and dynamism. The coal industry already large at the opening of the century, continued to expand in order to supply household, coking and steam coals to home, industry and shipping. Significant innovations were

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(42) Dougan, D.J. op.cit. (1968A) p.23

carried out in the mines but those of the greatest importance took place above ground. The development of the locomotive and iron and steel railways revolutionised the transport system and provided the basis of a heavy engineering industry. The transport of coal by water was the impetus necessary to the complete redesign of ships and motive power. The large iron and steel requirements of these industries together with adequate natural ore deposits led to the growth of a fourth basic industry in the region; that of iron and steel. Throughout the century innovation and technical change continued to take place and at its close the North was the centre of the industrial world containing four large inter-related industries.

At the opening of the 20th century the industrial pattern and structure of the region had been laid down and changed little in the next fifty years. In all four major industries the scale of operation was large even by modern day standards with massive investment in specialized plant and equipment. Coal mines, shipyards and engineering works all employing over 1,000 men each were quite common. (43) The iron industry employed whole towns. Such large units required some form of organisation, Burns and Stalker suggest that at this time the only examples to follow were those of the Church, State or Army and this led to a

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(43) Truckle, N. op.cit.

mechanistic form of organisation which could later prove less receptive to change. (44) Whilst the natural increase in population of the region had been large, it was impossible for the indigenous population to provide the labour needs of industry. Heavy migration to the region took place from other areas of the British Isles; technicians and engineers came from Scotland and the South, miners and labourers from Cornwall and Ireland. Due to the nature of the industries, large numbers of unskilled labourers were required in coal mining, railway construction, dock extensions, material handling and transhipment. Even when much of the basic industrial structure had been completed there continued to be a heavy demand for unskilled workers and other workers with skills that were not easily transferable to alternative occupations. In 1901, 131,009 men in the Northern region or nearly 20% of the employed male population worked below ground in the mines, 79,270 of them hewing coal or shale.(45) A further 11,540 worked above ground in collieries and an added 10,000 worked in ironstone, lead or stone mining or quarrying. Presumably the major qualification for these jobs was a strong back and the ability to handle a pick and shovel. The Railways employed 21,758 Engine drivers, stokers, guards, signalmen, labourers, porters and servants. The Engineering firms, 14,535 blacksmiths strikers and the

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(44) Burns, T & Stalker G.M. The Management of Innovation Tavistock (1961)

(45) Census 1901 for counties of Cumberland, Durham and Northumberland.

Shipyards 16,788 platers and rivetters. Thus nearly 30% of the employed male population occupied unskilled and often monotonous tasks or possessed skills specific to the industry, in which little initiative was expected or encouraged, for administrative or safety reasons. Due to the large average size of the firm, few of these men were employers or worked on their own account. (46)

If the occupations were often unskilled the location of the firm tended to group the people together into working and social units; the pit village, the steel or ship-building town; Ryhope, Ashington, Bedlington, Consett and Wallsend are all examples of this and many of the characteristics continue to this day. (47) As a result individuals possessed very limited experience of the rest of the world, information flows tending to be circular, work-home-work, with by and large this environment unshaken by new people, new knowledge and new experiences. Traditions of working and social life built up around the "works" and such tradition became difficult to break.

The basic industries were interdependent and as such relied upon the strength and prosperity of one to ensure the continued growth of the other. In the early days of the industries, customers had made their way to the doors of Northern firms because there were few, if any, alternative places to go. Rapid technological change had kept them

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(46) Census 1901
(47) See the 'Financial Times' Thursday, 4th November 1976

ahead but when the local and national demand for their product slackened, attention was successfully turned to the export market, a number of firms setting up agents abroad. Only coal produced a product marketable directly to the general public and here there was a tendency to operate through factors and agents in dealings external to the region. The railways provided a service to the public but, in the absence of a viable alternative and one dominant firm, marketing was not really a problem. The industries tended to buy from and sell to a small group of individuals rather than the general public. These relationships became established over time probably standing many firms in good stead in temporarily difficult times, due to personal loyalties between the small number of buyers and sellers.

Finance for the firms had originally been drawn from private sources but as the needs of industry grew and the financial markets became more sophisticated funds were drawn from further afield; the joint stock company legislation assisting such a movement. Due to the originality and dynamism of local industry the North does not appear to have suffered more than other regions from a shortage of financial support.

III

As the 20th century opened a depression in the ship-building and Iron and Steel industries led some firms to adopt the defensive strategy of amalgamation in order to survive. The most notable outcomes of the mergers which took place in this period were the giant steel firms of Dorman Long and South Durham Steel located in the Teeside area. (48) Meanwhile other nations were increasing competition in those product areas and markets the North, by tradition, had called its own, and some local firms were finding operations more difficult e.g. Palmers of Hebburn.(49)

Wars had always increased demand for Northern goods and that of 1914-18 was no exception. The shipyards and iron and steel industries increased output and there was a considerable increase in rail traffic. On the cessation of hostilities each major industry faced the problem of adjusting to peacetime operation. The coal mines and the railways were in poor condition because they had received little attention or maintenance for four years. The shipyards and steel industries were suffering from over capacity because of the large expension of facilities that had taken place to meet wartime needs. When the post-war boom collapsed in the early 1920s, all four industries basic to the Northern economy faced a crisis.

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(48) House, J.W. The North East,
David & Charles: Newton Abbott (1969) p.123
(49) Dougan, D. J. (1968B) op.cit.pp.118-121

Competition had been increasing in markets traditionally supplied by Northern industry before the war as other countries in Western Europe and North America became industrialised. The war dislocated world trade and many countries were cut off from their usual source of supplies. The North lost markets that it may have retained in the absence of war, as countries turned to alternative sources of supply or in some instances began manufacturing the goods themselves. In the post war period these markets were difficult to regain, especially when tarrif barriers were raised by many nations to protect their indigenous industries. The position already grave, deteriorated further when Britain returned to the Gold Standard at an overvalued rate for the pound. British export goods were then more expensive than those of her competitors. In order to maintain the value of sterling in foreign exchange markets, it was necessary for the Bank of England to keep interest rates high, which deterred investment in British industry. Over capacity in shipping and a low rate of growth in world trade led to the cancellation of orders for new vessels, idle shipyards and a low level of demand for iron and steel products. With this state of affairs existing, it was inevitable that the heavy engineering industry would suffer too. The basic industries were operating far below full capacity and many

valuable resources were idle, as a result the regional income declined as the effects spread through the local economy.

Britain slowly emerged from the depths of depression but the basis for future growth and development had shifted in a way detrimental to Northern progress. First, the export market had collapsed and world trade was in recession, the industries of the North were reliant on foreign buyers to fill their order books, the shipyards needed a bouyant world trade to maintain the level of demand for new ships. Second, the industries that were showing growth potential were dissimilar to those existing in the North. Their technology was different and the process of production was virtually unknown in this region. Third, the purchasers were a different set of people. Where Northern industry had sold to individuals or a limited set of people, the new demands came from the mass home market where knowledge of consumer desires was important.(50) The old contacts with governments, shipowners, railways executives and coal factors were largely redundant. The new growth industries were those of electrical goods, (not heavy electrical gear)motorcars and services. At this time also there were the early signs of other growth sectors such as air travel, elementary electronics and synthetic fibres. The great benefits from these industrial

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(50) Pollard, S. The Development of the British Economy 1914-67 2nd Edition Arnold (1969)

were not to be felt until after the Second World War but the basis for the future expansion had been established in the inter-war period, most of it in the South and Midlands.

In the North, very little structural change occurred from the traditional sectors into the new industries. The government saw the solution to the North's problems in terms of increasing efficiency in the old industries by lowering costs and making them competitive once more whilst introducing new firms and industries to the region on subsidised industrial estates. In addition, the work transference scheme assisted workers to move from the region in search of work. The rationalisation schemes went ahead under the guidance of industrial committees but 'new' jobs were difficult to find in times of depression and the government expended very small sums on subsidies or assistance. The result was to be years of unemployed resources which left its mark both on the countryside around Tyne, Wear and Tees and on the people of those areas.

Northern industry was not alone in facing these problems in the thirties but in many respects it did not cope with them as well as some other areas. This appears a strange phenomenon when half a century earlier it had been a centre of prosperity. It seemed as if all the entrepreneurs had vanished from the region. Instead of

reviewing the situation and regrouping resources to take advantage of the trend towards new goods, entrepreneurs concentrated upon salvaging what they could from the ruins in the apparent belief that the old industries could be rejuvenated and at some future date revitalise the regional economy. Innovation and mechanisation continued in the traditional sectors and some diversification was attempted with mixed results.

What had gone wrong? Why did local entrepreneurs not act? First, the economic climate of the thirties was anything but encouraging and the risk of failure in a depressed market would appear particularly high. But as we have already noted, the signs of change were evident before the onset of depression, so with hindsight, there appears to have been time for manoevre. Second, the massive investment in the traditional industries was of a specialised nature and in many cases very difficult, if not impossible, to transform into the production of alternative goods. A coal mine has few alternative uses; the same applies to a slipway, foundry or dry dock. These obstacles are difficult to overcome but not altogether insurmountable if one has access to funds, but more importantly, viable schemes to put forward.

External finance will only be forthcoming in support of schemes that have some chance of success as did the 19th century ventures of Northern entrepreneurs. The opportunities

were there to bring about change but in the main they passed by Northern businessmen to be taken up elsewhere. Many areas were suffering from depression; some that lacked a history as impressive as the North, emerged in a condition more favourable to future expansion than did this region. The local entrepreneurs would appear to have been prevented from acting by constraints that may not have applied elsewhere. These constraints are additional to those more general comments made above and resulted from the 19th century development of the occupational structure and information flows built up in the traditional industries.

Entrepreneurship is not only a characteristic of high 'N-Achievement' that some individuals possess and others do not; it is also dependent upon the experience of that individual. To be a successful entrepreneur the individual must meet the existing or created needs of some user. This means the entrepreneur must be aware of changing technical and market conditions. In the 19th century sufficient individuals of talent had stood in the mainstream of information flows responding to the signals and were successful in providing for the needs of government, shipowner and agent. When the market changed from heavy capital and export goods to the satisfaction of a rising home consumer demand, the man from the North stood in the backwaters. (51)

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(51) Pollard, S. op.cit.

Local businessmen recognised the shift out of locally produced goods because they were no longer demanded in such large quantities. This information stream led directly to the producer. What he failed to see were areas into which he should switch production that would lead to future expansion, a function he had performed well in the past. There was no way, in the short term, that the information flows which carried knowledge about current consumer desires or new technologies could be built up. Years of concentration on completely different markets and technologies had left the Northern entrepreneurs ignorant of the new growth areas. Any move to diversify was, therefore, fraught with danger and uncertainty. The less risky course appeared to be that of remaining in a smaller but hopefully more efficient industry that they knew well and on which they had expert knowledge.

If existing entrepreneurs were constrained from diversifying the situation could have improved had sufficient enterprising men 'spun-off' to form new firms within the growth sectors. This would have given the North some participation in the future growth of these industries and perhaps made a real contribution to future regional prosperity. But the general economic constraints of the time applied to the individual as well as the firm. The prospective entrepreneur also faced additional difficulties.

Earlier it was mentioned that in the 19th century the size of firm in the region grew to be very large indeed. In such units there is proportionately less senior staff, those who have the opportunity of an overview of the operation and running of an enterprise. (52) A very large proportion of workers in the region remained ignorant of basic principles of starting and operating a business.

The skills that men had developed in the staple industries and their technical knowledge were, in the main, not transferable to the new industries. Education and proper training could have filled some of the gaps but in the North there was a tendency for children to leave school and obtain apprenticeships or jobs in the old industries, thus tending to perpetuate the situation. In the new science-based industries the practically trained man was at a disadvantage because progress depended to a large extent upon having a basic scientific knowledge of the industry in which one operated. (53)

Formal education has been an important factor in advancement within the firm but of equal importance is informal training provided by the work environment. Some occupations and locations providing more than others with relevance to entrepreneurship, marketing experience and knowledge being particularly valuable. It has been suggested that many entrepreneurs in the North had a market knowledge restricted

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(52) N.R.S.T. Tech. Report No. 8
(53) Lewis R & Stewart, R. The Boss, Phoenix House (1958)

to the capital goods sector. The occupational structure of these basic industries where large numbers of unskilled workers were employed with limited experience, would reduce the likelihood of spin-offs. In addition if these same workers tended to live in isolated villages or towns where practically the whole of the working population was employed in one firm, then the experience gained will be of one industry and perhaps only a small section of that. These individuals will largely be ignorant of the technology, work methods, product advantage or disadvantage in other industries. The occupational, industrial and locational structure in the Northern Region would have depressing effects upon potential entrepreneurial talent.

The products that spin-off firms produce are most likely to resemble closely those of the parent firm.

> "In 85% of the cases studied in Palo Alto, the new firm served the same general market or used the same general technology as the parent company or companies." (54)

As already stated the product groups present in the region were not easily exploited by small firms and the technology and experience gained within the existing corporations was largely inapplicable elsewhere. The limitation to spin-off is seriously increased. For successful spin-offs it seems necessary to have sufficient incubator firms within the region providing the necessary technical and market knowledge.

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(54) Cooper, A.C. 'The Palo Alto Experience', Industrial Research May (1970A) p.59

> "Whether an established company functions as an incubator depends on the nature of its business and in particular, whether potential entrepreneurs within the organisation are developing skills that can be exploited easily by a new firm."(55)

In general, in the North, the basic industries were not providing this environment for the emergence of substantial spin-off effects into future growth sectors.

Another discovery of the Palo Alto study was that most successful spin-off entrepreneurs knew people who had already carried out such a venture. (56) Within the close-knit communities of mining, shipbuilding, heavy engineering or railways the numbers of self-employed or small units was possibly restricted to the small shopkeeper. Even in this area the North was loyal to the centrally administered Co-operative Society. Those who owned businesses were 'different' from the remainder of the village of small town society. Cooper also discovered that entrepreneurs in the past were a source of entrepreneurial funds in the present, thus providing practical support to new ventures as well as example and advice. (57) Banks and government in the inter-war years provided little venture capital to industry. Basic banking principles were applied in order to conserve depositors and taxpayers monies rather than support new ideas and enterprise.

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(55) Cooper, A.C. ibid.
(56) Cooper, A.C. Entrepreneurial Environment, Industrial Research, Sept. 1970B
(57) Cooper, A.C. ibid. 1970B

The inter-war years did not produce an economic climate conducive to change into completely new product groups by either established or new enterprises. The lack of effective demand reduced any expectations of success from such ventures. The physical structure of the major Northern industries made any radical change difficult, low profitability well nigh impossible through internally generated funds. Even with such overwhelming difficulties the entrepreneurs whose forebearers had raised the basic industries to the heights in the 19th century, could have carried the change through if they had known which way to turn. A viable scheme would still have received support as it did in other regions and out of which could have developed new growth industries.

Concentration of attention on the capital goods markets in the last century meant that when demand was shifting to consumer goods, Northern entrepreneurs were certainly aware that a shift was taking place but only received the negative signals. Their sources and channels of information were too restricted to enable them to forecast the directions the changes were taking. By the time they did realise the way things were moving they lacked the technology, expertise and funds to do anything about it, so they were compelled to rationalise and hang on until things

improved. They were unaware of consumer tastes, desires and methods of marketing to him; they were used to production to order, not production for the faceless masses; one-off production rather than mass or flow techniques; practical rather than scientific technology; robust rather than delicate goods. All these things could not be learnt or taught in the short term.

The individual wishing to start an enterprise of his own was possibly worse off with even greater restrictions on his market and commercial knowledge with his skills redundant and examples of entrepreneurship to follow few and far between. The great industries of the North still had entrepreneurs, innovations were taking place, as too was reorganisation, but in their pattern of growth they had left most owners and employees with a restricted view of the world which was obsolescent before the 1914-18 war and obsolete in the inter-war years.

IV

The depression dragged on and little change took place in the structure of Northern industry, government schemes having very little effect. As the Second World War approached, re-armament brought new orders to the North and

once more the traditional industries were operating close to full capacity. The War itself kept the area busy producing ships, guns, ammunition and all the general paraphernalia of modern warfare. For strategic reasons some industrial relocation was encouraged but this would only be effective whilst hostilities lasted.

In the immediate post-war period governments were concerned to honour their full-employment pledges and to promote exports. It was possible that both commitments could be more easily met through an active regional policy. Into the early 1950s the resources of traditional industries were fully employed and through control of industry new firms set up in the development regions, including the North. In the mid-fifties, government controls were relaxed and fewer firms moved to the development areas. At the end of the 1950s the strength of the post-war demand for the products of the traditional industries in the North weakened and many firms found themselves in serious trouble, unemployment was rising and another recession was feared. The government reassessed and revitalised its regional policies in order to help resolve some of the existing problems which, by the mid sixties, led to a period of intensive activity by central and local authorities. Carrots and sticks were shown to entrepreneurs in the more prosperous areas in an

attempt to persuade them to settle in the North. Carrots were offered on the assumption that indigenous and 'foreign' entrepreneurs had not appeared in the area due to differences in cost of operation between the North and elsewhere. The stick, in the form Industrial Development Certificates (I.D.C.s) allowed the government to control or prevent further expansion of firms in the prosperous regions, many of which were persuaded to set up units in the peripheral areas due in large part to government policies.

The structure of Northern industry has changed rapidly since 1945 and in particular since 1960. The traditional industries have declined in importance and there has been considerable movement into the area of new mobile firms from the more prosperous regions of the South and Midlands. It was suggested in the previous chapter, in the long term there may be a limit to the number of mobile firms available in the future. Pressure is being applied to government to alter its regional strategy and entry to the E.E.C. and possible devolution in the future may weaken the government's power to direct industry, as it has done in the past. In which case, the North will have to rely more heavily upon its own talents. But empirical evidence shows that the mobile firms with the exception of chemicals and metals, have been the major investing force, not indigenous firms.(58)

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(58) See Chapter III above for details.

Mobile firms have created proportionately more new jobs than established firms. The conclusion could be drawn that indigenous firms, on aggregate, continue to miss the major opportunities and local individuals do not spin-off to form new units so readily as they do in other areas.

Education for all has given increased appreciations of modern technological methods; the opportunities to advance up the managerial ladder are broadening with education.(59) New units are providing new experiences or organisation, technology and methods of production. Given time potential entrepreneurs may gain confidence in their ability to handle the new information that is beginning to flow through the Northern region and so diversify or spin-off and establish a new growth pattern for the regional economy. Once more the North may lead the rest of the country in expertise, courage and innovation.

The situation existing in the region today is an improvement on the depressed years between the wars and even on the early 1960s but there remain certain important gaps in the region's structure that will seriously constrain the rate of independent growth as determined by indigenous entrepreneurship. From the evidence put forward in Chapter III indigenous entrepreneurship remains dormant. The established industries still contain the constraints placed

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(59) Clements, R.W. Managers, A Study of their Careers in Industry. Allen & Unwin (1958)

upon them by 19th century development. The organisational and occupational structure in operating and marketing leaves most of the employees outside the information streams necessary to awareness of new opportunities outside of the traditional spheres. Where established firms have made moves to improve their overall market awareness, the quality or quantity of information channels have not reduced risk to an acceptable level under which diversification or spin-off would occur.

The plants that have moved to the North and other development areas have been, in the main, subsidiaries, branch plants and transfers with very few completely new enterprises being set up. (60) Linkages inter and intra industry within the region have shown little signs of the development expected. (61) One possible reason why this may be so is that many of the subsidiaries and branch plants that moved to this area could be accurately described as production units. New technology and methods have been introduced but many of the jobs created are at best described as semi-skilled often performed by women. The occupational structure has changed but experience remains severely limited. Perhaps of greater importance, few firms coming to the area have set up a fully autonomous plant by which it is meant, complete with full marketing, purchasing and management services division.

(60) N.R.S.T. Technical Report No. 10
(61) Morley, R., Employment, Investment & Regional Policy in the Northern Region. N.E.D.C. (1976)

In a study of the realities of Regional Policy within the Northern Region, Richard Morley interviewed the managers of 117 plants, 70 of which were either subsidiaries or branch plants of parent plants located elsewhere. (62) Of the 70, 31 local managers took no responsibility for marketing and a further eight worked under some set limitations. 14 plants possessed no purchasing section and a further eight had limited powers to buy. An interesting point arising out of this study was that local plants established in the 19th century but taken over by extra-regional companies had lost their marketing and purchasing powers to head office. Take-over activity could provide a threat to future regional development. Secondly 'mobile' plants established in the region for over ten years remained without marketing or purchasing sections, indicating that the lack of these functions in a plant was not just a temporary readjustment while the new unit 'settled down'. Measured in terms of employment, one unit employing over 1,000 workers carried out no independent marketing function. Morley emphasises the short comings of the study and the sample bias but if the data on functions carried out by dependent plants represent the facts on all such units in the region, this will have two major effects. First, the job opportunities for local workers remain restricted and the overall operation of a firm is not learnt. Second,

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(62) Morley, R. 1976 op.cit. The figures given above were taken from the original questionaires by the present author who is grateful to Richard Morley for access to these data.

the information flows necessary to meet an experienced consumer desire are not built up. The resolution of marketing, production and supply problems are dealt with elsewhere. Problem solving exercises are great stimulants to new ideas, improvements to operation, and ultimately diversification or new enterprises.

V

The basic industries which took the Northern Region to the heights of prosperity in the 19th century built up a pattern of organisation, jobs and location which inhibited the flow of information other than that necessary to carry on the traditional industries. When the shift in demand came in the 20th century from the heavy capital goods industries into the new industries, using new technology and fuels, the established firms were unprepared and unable to change. The government intervened and in recent years has been successful in moderating the increase in unemployment by bringing about structural change. Rationalisation has taken place in the old industries and new growth industries have been attracted to the area providing valuable jobs and experience for the local population. But this experience in many instances has been limited to the production process

with little awareness gained of the overall operation of the firm, of marketing or purchasing, or general management services. The broader spectrum of job opportunities has not been realised. If diversification and spin-off rely upon a recognition of a market need then many branch plants and subsidiaries do not provide the answer. As a result the region will be slow to react to changing consumer desires and lag in the establishment by indigenous entrepreneurs, of growth-orientated industry. The region will remain dependent upon government for support into the forseeable future and policy instruments will have limited effect.

The lessons learnt in studying the past and recent developments in the Northern Region lead to the question of whether or not the same constrained conditions are being developed in those regions of the country which at present are categorised as prosperous. Should significant shifts in demand take place out of the goods produced in the basic industries of the prosperous regions, e.g. motor cars, would these regions be more capable of re-orientating production to new growth areas more quickly than has proved possible in the North over the past half century or would they too decline and become depressed? In the concluding chapter, some ways of increasing the possibilities of greater involvement of the indigenous entrepreneur in future Northern development are discussed, which are not without relevance to industrialists in the prosperous regions.

CONCLUSIONS.

The term 'entrepreneur' had been in use since the Middle Ages and had been given various meanings over time with the result that no consensus of opinion on a definition existed at any one time. The study revealed that the entrepreneur was regarded as economically active rather than passive and carried out certain tasks which set him apart from the rest of society. In an industrial nation such as Britain, a large proportion of the male and female population participated in the production of economic goods and services but the majority spent their working lives within traditional boundaries of skill and occupation making only rare and short excursions from the paths of convention. These people were totally dependent on others to provide them with opportunities to use their factor endowment. The agent who created such opportunities for them was the entrepreneur.

Those persons possessing the highest degree of entrepreneurial talent actively sought alternative paths to tread; those of lesser talent responded to circumstances, such as the prospect of unemployment, to avoid any penalties such changes might impose upon them. Both types changed existing factor combinations and through their activities

new methods of production, new products and new experiences were introduced to society. It was the entrepreneur who brought about the active shifts in resource allocation traditionally signalled by the price mechanism in a free monetary economy. The result was greater output per unit of input and a wider choice for consumers over the disposal of an increased income.

The entrepreneur had the courage to remodel the activities of the firm in the light of new information, basing his actions upon his own interpretation of the data and the opportunities he foresaw. The resultant activity produced diversification and re-organisation of the existing firm or produced completely new enterprises to complement or challenge existing units. On the basis of the extent of his knowledge of costs constrained by psychic influences the entrepreneur would determine the site on which production would take place. To carry out his plans, the entrepreneur would enter the market to demand the services of local and national factors of production paying rent, interest and wages in return, so transmitting the effects of entrepreneurial activity throughout the regional and total economy. The entrepreneurs formed, therefore, the dynamic element in society and without them progress would be evolutionary rather than revolutionary. In any region, ceteris paribus,

the quantity and quality of unconstrained entrepreneurial talent would largely determine the possible rate of economic growth. If it was assumed that potential entrepreneurs were evenly distributed throughout the population, the crucial issue would become one of the quantity and quality of information available in any region.

An examination of a limited number of theoretical growth and location models together with empirical studies did not produce results that invalidated the role assigned to the entrepreneur in regional development but illustrated clearly the dangers of attributing too high a role to any individual factor in isolation. The writers in general concentrated upon the growth possibilities obtainable from increased inputs of labour, capital and technology whilst failing to enquire into what caused such increased to take place. The present study concentrated upon causal factors but actual growth was unlikely to take place without access to other inputs to the productive process. If land, labour, capital and technology were the vehicles of growth then the entrepreneur was the driver.

Information available on the Northern Region indicated that entrepreneurship was low relative to the nation taken as a whole. This conclusion was reached after examining the data on the social structure of the local

society and the level of performance of functions suggested as being carried out by the entrepreneur. On the basis of McClelland's work the social structure of the Northern Region suggested that proportionally fewer entrepreneurs would exist and be produced in the future than the proportion of national population would have predicted. The indigenous firms had a relatively low rate of investment and job creation despite considerable government subsidisation. Efficient utilization of resources was not reflected in capital/output ratios or incremental capital/output ratios, productivity or return on capital employed. There existed a low rate of new firm formation and relatively few people in the region were self-employed or worked in small firms. Regional performance and the present level of prosperity appeared to be heavily dependent upon a few industrial sectors, mobile plants and central government assistance. That dependence upon external support was in contrast to the position in the 19th century when the region led the world in inventiveness and enterprise. But the nature of development in the traditional industries inhibited change in the 20th century which proved a persistant handicap to regeneration and self-sustained growth.

The major Northern industries reached their peak in the late 19th century at which time the region was

dominated by a few interdependent sectors made up from a number of very large firms employing a major proportion of the local workforce. The experience associated with the total operation of a business was limited to a small group of owners and senior employees; the vast majority of the labour force was restricted to experience within their own department.

Many jobs required specialist skills which were of little use outside the particular industry in which they were employed whilst others performed unskilled tasks which gave little training useful in alternative employment. The products tended to be of large unit size and of low technology by mid 20th century standards. They were marketed to a very limited, if influential sector of the world community through agents, factors or personal contact. When markets for the products ceased to expand rapidly at home, other outlets abroad were sought for the same product range. The general impression was gained of a rather blinkered and specialized outlook on the world.

In the 20th century due to technological change, wars, rising personal incomes and increased competition, the demand in peace time for home-produced, heavy capital goods did not grow as rapidly as it has done in the past. The region faced a recession which was exacerbated by the loss of export markets and a return to the gold standard

with an over-valued currency, preventing any possibility of recapturing them. The recession deepened accompanied by mass unemployment in the old industrial areas.

There were numerous explanations offered for the catastrophic decline of the Northern region in the inter-war period, amongst which was the disruption to trade brought about by the war and the subsequent moves abroad to protect infant industries in the post-war years. Consideration should also be given to the nature of much of the fixed capital in traditional industries that could not easily be put to alternative use. The skills of the work force were in many instances obsolete and so unsuitable for transference to new industry. But of greater importance than the availability of factors, entrepreneurs needed information and experience of consumer requirements or expected needs, and knowledge of the techniques necessary to produce 'new' goods. This expertise was lacking in the North and could not be built up in the short term.

The specialisation which had brought prosperity in the past had developed particular information networks to link technology, producer and consumer but in the 20th century the sectors of growing importance demanded a completely different set of goods and technology requiring information the old channels did not convey. The old links were obsolete

and until new ones and information flows could be developed, local entrepreneurs would find it difficult to bring about change. The uncertainty associated with rationalisation and movements to increase efficiency would be less than that associated with radical changes into new technology, products and markets.

When entrepreneurs failed to bring about change in the region the government stepped in to relieve the distress this caused and to create work for the unemployed. In the post-war years, attention has been devoted largely towards encouraging firms to move from the prosperous and congested areas of the South and Midlands to locate in the peripheral regions of the North and West, bringing with them new job opportunities, expertise and technical knowledge. If linkages between the mobile units and existing or new industry could be formed this would have regional multiplier effects and through the flow of information entrepreneurs would see opportunities to diversify or spin-off to participate in or to form the growth units of the future.

The main instruments of policy have been the control of factory building (I.D.C.) in the prosperous areas and subsidisation of the factors of production in the development regions. (1) I.D.C. control has had its main impact in the growth industries, more specifically on those firms wishing to expand and on those firms displaced from existing premises.

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(1) For a brief and concise summary of incentives see N.R.S.T. Technical Report No. 2 App. A

Mobile units have received capital incentives, wage and rent subsidies and many have been accommodated in new premises built on trading estates.

The policies have proved successful in moving many new plants to the Northern Region whilst the effectiveness of individual policy measures remained the subject of considerable debate.(2) The 'mobile' firms have provided new jobs that otherwise would not have been available in the region while the local labour force has proved very adaptable in transferring from heavy to light engineering and from mine to the factory floor when adequate training and the opportunities have been provided. These growth-oriented plants have formed a dynamic group within the regional economy and with their assistance regional economic recovery was expected to take place leading to eventual independence from government support. Unfortunately these hopes have not been realised and government aid will continue to be needed if the region is not to face further economic decline.

The main objective of government policy has always been the creation of employment in the development areas and the mobile plant has proved the major vehicle through which success has been achieved. (3) The longer term objectives of regional policy are less clearly defined,

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(2) See Moore, B & Rhodes, J. A 'Quantative Analysis of the Effects of the Regional Employment Premium and Other Regional Policy Instruments', Economic Journal (1973)
Mackay, R.R. The Impact of the Regional Employment Premium in The Economics of Industrial Subsidies, A. Whiting (Ed.) H.M.S.O. 1976

(3) N.R.S.T. Technical Report No. 2 (1975) App.A

and not always overtly publicised with some being taken for granted. (4) Similarly, the expected impact of 'mobile' plants upon the local economy is not explicitly stated, except in terms of employment, but implicitly people believed there would be a substantial amount of secondary development,(5) with the new plants forming linkages with other firms and introducing new concepts and ideas to indigenous entrepreneurs stimulating diversification and growth.

A significant difference between mobile firms and most indigenous plants is that the former are, in general, from the growth sectors of industry. The new firms are thus the result of entrepreneurs perceiving a use to which local factors can be put, a fact which largely escapes indigenous enterprisers. If the local entrepreneurs could learn this essential expertise from incoming plants the longer term results obtained by government intervention might be more substantial and more rapidly achieved.

Mobile units employ local labour and bring workers into contact with successful ventures, new methods, new products and new techniques. However, the labour employed in many plants is predominantly female and not noted in the past, for its entrepreneurial behaviour. A large number of

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(4) Sant, M. Industrial Movement & Regional Development. Pergamon. (1975)

(5) McCrone, G. Regional Policy in Britain. Allen & Unwin (1969).

these jobs are in production and demand a relatively low level of skill. There is, therefore, the danger of developing a section of the local working population with more modern skills but without broadening their commercial experience. The greater proportion of the mobile units moving to the region were branch plants or subsidiary companies of larger organisations based outside of the Northern Region and many did not bring the functions of marketing, purchasing or management servicing with them, thus further restricting the cognizance of employees.

The small range of functions devolved to regional plants might reflect the stage of the technological or product cycles at which secondary production units would be established. Vernon maintained that in the early stages of product development, production would be retained close to or within the parent unit so that any problems arising could be dealt with rapidly. (6) Only when production had been, to a large degree, standardised and when technological change was not taking place very rapidly would it be devolved to regional plants. Standard products did not need to be accompanied by sophisticated management or purchasing services; they could be retained with marketing at some central servicing site where economies of agglomeration or of scale might be exploited. This hypothesis also raises the question of

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(6) Vernon R. Sovereignty at Bay, Penguin (1971)

whether the most advanced technologies are sent to any peripheral area from which the local population might gain experience or were they only the tried and tested techniques. The experience gained by operatives was not, therefore, in the van of technological advance but rather in the mature stage with few problem-solving requirements.

Branch plants would appear to have fewer intra-regional purchasing linkages than does established industry.(7) The impact upon the local industry and economy is therefore less substantial in encouragement of growth terms than was implicitly expected by many observers. Another consequence of few linkages is that the channels by which information might be transferred from the newcomers to indigenous plants is restricted. Sales are relatively high from branch plants to the region, however, and information might be passed to recipient firms in the form of the products themselves or through the technical support certain sales might require.

Regional policy has attempted to stimulate the Northern economy by offering subsidies and incentives to indigenous and mobile industry thus reducing the costs of operation in the area. In addition, public work schemes have improved the infrastructure and environment of the locality making it a more pleasant place in which to reside and work, besides creating employment and adding to regional

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(7) N.R.S.T. Final Report (1977) Vol.II Economic Development Policies. p.44

income. But the information on marketing, technology and the experience of operating a firm so necessary to entrepreneurial development has, in many cases, not materialised. Governments have paid relatively little attention to the quantity and quality of knowledge necessary to entrepreneurial activity and consequently self-suatained growth may be constrained. The valuable information channels continue to by-pass the region to the collection points in other areas and there is a danger that because of this the region could become a centre for productive units only.

With suitable modification of existing policy, government could improve the quantity andperhaps quality of information reaching plants established in the development regions. Some form of additional incentive could be offered to firms moving to the area in an effort to persuade them to bring marketing, purchasing and technical services with them. There is also the added possibility of persuading firms with branches or subsidiaries already in the region to devolve some of their functions that have direct relevance to the operating plants such as problem solving services, as well as buying and selling departments. Such activities if carried out locally, may necessitate the mobile plant 'plugging-in' to local information networks to increase the flow of knowledge and to stimulate responses from other establishments. Greater effort should be directed toward encouraging the established firm to improve its performance. Govermment agencies, already existent in the region, could more actively promote their services instead of being purely

responsive elements in the local economy and where possible they could re-interpret their information on government aid in specific rather than general terms. This requires more contact with individuals and with firms in an attempt to 'sell' them government aid rather than take advertising space in national newspapers in the hope that the message will get across.

The government might also involve itself in the collection and dissemination of information on market opportunities or capacity.(8) Trade missions, exchange visits and exhibitions should receive additional support whilst directories of local firms' productive capabilities should be made more comprehensive and the quality of the information contained in them subject to regular re-appraisal. The implications for entrepreneurship of the trend towards larger corporate units by aquisition and merger should also be examined in a regional context which might call for policy re-appraisal and modification.

By these means it is hoped quality information will begin to flow in sufficient quantity, inter- and intra-regionally that entrepreneurs will perceive links between technology and market opportunity that will permit expansion of existing industry, diversification and rapid new firm formation. Only when this situation is achieved in the Northern Region will self-sustained growth become a realistic aim.

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(8) N.R.S.T. Final Report (1977) Vol II p. 126.

These results will not be achieved in the short term but are of a long term nature. However, time is of the essence and changes in policy should be considered and initiated as soon as possible. The urgency arises from the suggestion that the government approach to industry and the regions is being completely re-thought together with the likelihood that the number of mobile plants, the basis of policy success, moving to the Northern Region might be lower in the future.

Governments have been dependent largely upon growth of firms and industries to provide 'mobile' units which are likely to be more plentiful in a situation of aggregate economic expansion rather than that of stagnation or decline. In the latter situation the firm is limited to the possibilities arising out of substitution or exports. Because of the present and short term economic position in Britain the number of units available for transfer to the peripheral areas is likely to be low in the future.

Rising unemployment levels have been features of all regions, both prosperous and depressed, in recent years which has added a new dimension to job transference. With relatively high unemployment existing in those areas that traditionally have supplied the majority of 'mobile' units, mounting pressure is exerted upon government to relax

development control in the prosperous regions. In the past I.D.C. control has been relaxed in times of mild economic recession and may be once again reducing the number of plants available to the North and other development regions.

If, in the short term there are fewer mobile plants available for transfer there is likely to be increased competition for their favours amongst the development regions. In addition in the short and longer term mobile firms may be able to choose from a greater number of locations all of which are to some degree in competition with each other.

The first, and perhaps most serious source of competition is the European Economic Community (E.E.C.). By the Treaty of Rome, members of the Community are committed to reducing barriers to mobility of capital and labour between each member country. The refusal to grant an I.D.C. in the prosperous regions of the U.K. does not mean, automatically, that a firm will set up in one of the U.K. peripheral areas; if it builds a new unit at all, it may just as easily do so on the continent of Europe. The balance of investment between Britain and its E.E.C. partners has grown worse since the U.K. joined the Community. In 1973 and 1974, U.K. net direct investment in the E.E.C., excluding oil, totalled £886 million, of which £440 million was in manufacturing industry. In the same period E.E.C. net

direct investment in the U.K. excluding oil and insurance was £177 million of which £53 million was in manufacturing industry. (9)

Secondly, in recent months, there has been considerable concern expressed in Parliament and the country as to the plight of the Inner City Areas. The traditional centres of employment and economic activity in the older urban areas have suffered from considerable job loss as the city centres have been cleared, suburbs expanded and new towns created. New or replacement industry has been encouraged to set up on specific, predetermined greenfield sites to the detriment of the city centre. It is now realised that high unemployment exists in the old urban centres, many of which lie in the heart of prosperous regions.

The government has committed itself, in advance of any committee report, to assisting those areas of deprivation and has exhorted local authorities to encourage small businesses and job creation wherever they can to relieve the problems of the inner cities. (10) The cities may not wish to compete with the development areas for the larger mobile unit, but they may do so for the small and completely new units and certainly for funds from a limited resource pool.

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(9) **Hansard**, Vol 923, Cols. 1023-5, 10.1.1977.

(10) Hansard, Vol 929, Cols. 1226-9, 5.4.1977

The present economic climate and predictions for the future are likely to bring out the conservative element in any businessman contemplating expansion of capacity. Recent government activities have perhaps increased uncertainty with regard to choice of location in the form of the Devolution Bill now before Parliament.(11) If Scotland or Wales were to achieve autonomy over a substantial portion of expenditure they may decide to devote more resources to attracting new industry in which case additional rewards may come to those firms who can delay location decisions. If devolution for Scotland is seen as a stepping stone to independence with North Sea Oil, a firm may wish to reconsider its expansion plans in the light of this possibility. Whilst the above remains conjecture the conclusion is that the businessman has an increased number of 'unknowns' to consider, uncertainty is greater, and unless the need for additional plant is pressing those benefits of delay may outweigh the costs of inactivity.

Uncertainty and the present economic climate will probably reduce the number of mobile units in the short term, whilst in both the short and longer term, government controls are likely to be less effective in directing industry to the peripheral regions of the U.K. So far as the North is

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(11) House of Commons Bill 1976/77, No. 7. Scotland & Wales.

concerned, the tools of regional policy have become blunted and in the absence of remedial action may deteriorate further with the result that few firms will remeave or set up subsidiary or branch plants within the region.

Governments, in the past, have expended considerable sums on regional aid but with national economic difficulties increasing, there are now fewer resources available with which to stimulate industrial development in the U.K.. There are indications that the government is moving away from indiscriminate support of employment, except on a temporary basis, and toward selective assistance of schemes which are seen to be viable in the future. The abolition of R.E.P. and the setting up of the National Enterprise Board, Selective Financial Assistance Scheme, Foundry Aid Scheme, Machine Tool Aid Scheme are examples of this movement. In the future unless regional firms take positive steps to improve their competitive position, or can show that they will be viable in the future they may be barred from receiving government assistance. One means of increasing the possibilities of assistance and improving firm and regional performance is through entrepreneurial activity.

All of the above considerations tend to thrust more responsibility upon those firms that exist, at present, in the region, independent, subsidiary and branch plant, for future economic growth and job opportunities. The concept of self-sustained growth necessarily implies that the firms

in a region are fully capable of meeting competition in the market place at present and in the future. This can only be achieved through active entrepreneurs who are in receipt of, and willing to act upon, new information. Policy needs to be re-examined, perhaps re-oriented and revitalised in the immediate future because there are inherent dangers in delay.

II

This thesis was based upon an exploratory view of the complex problems associated with regional development. It appears unlikely that the regional problem will be resolved in the short term as some had hoped and others had demanded. In the analysis there are lessons to be learnt not only by the depressed areas but in the prosperous areas too, in that they should beware of falling into the same traps. The problems discussed require research on a wider basis than that of traditional economics so that the reasons and conditions for entrepreneurial action and motivation can be identified. Such analysis may require a fuller understanding of the implications for the future of occupational, or organisational structures and the formation of information channels. An attempt has been made to step outside of the more conventional interpretations of regional phenomena and to suggest alternative lines of enquiry.

BIBLIOGRAPHY.

ALLEN, C.J. (1964) — The North-Eastern Railway. Ian Allen Ltd.

ANDREWS, P.W.S. & BRUNNER, F. (1959) — The Life of Lord Nuffield. Blackwell.

ARCHER, M. (1897) — A Sketch of the History of the Coal Trade of Northumberland and Durham. King, Sell and Roulton Ltd., London.

ATKINSON, F. (1966) — The Great Northern Coalfield 1700-1900. Durham County Local History Society.

ATKINSON, J.W. & REITMAN, W.R. (1956) — 'Performance as a Function of Motive Strength & Expectancy of Goal Attainment'. Journal of Abnormal Social Psychology.

BAUMOL, W.J. (1968) — 'Entrepreneurship in Economic History'. American Economic Review. (P & P).

BELIDOR DE, B.F. — La Science des Ingeniérs dans la Conduite des Travaux de Fortification et D'Architecture Civile. Quoted by Hoselitz (1951) op cit.

BENTHAM, J. — 'In Defence of Usuary' in Jeremy Bentham's Economic Writings. Vol. 1 W. Stark (Ed) Allen & Unwin 1952.

BORETSKY, M. (1975) — 'Trends in U.S. Technology'. American Scientist.

BRUGIS, T. (1641) — 'The Discovery of a Projector showing the beginning, progress and the end of the Projector and his Projects'. London, quoted by F. Redlich in "The Role of Innovation ..."

BURNS, T. & STALKER, G.M. (1961) — The Management of Innovation. Tavistock.

BUSWELL, R.J. & LEWIS, E.W. (1970) — 'The Geographic Distribution of Industrial Research Activity in the U.K.'. Regional Studies.

CANTILLON, R. (1755) — Essai sur la Nature du Commerce en Général. trans. H. HIGGS. Re-issue F. Cass & Co. (1959).

CARMIGANI, R.P. (1972) — 'Color Choice as affected by n-achievement n-affiliation and n-power'. Experimental Psychology.

CARTER, C.F. & WILLIAMS, B.R. (1958) — Investment in Innovation. Oxford University Press.

CENSUS (1901) — Counties of Cumberland, Durham and Northumberland.

CHANDLER, G. (1968) — Four Centuries of Banking. Vol. 2 Batsford.

CLEMENTS, R.W. (1958) — Managers. A Study of Their Careers in Industry. Allen & Unwin.

COLE, A.H. (1946) — 'An Approach to the Study of Entrepreneurship: A Tribute to Edwin F. Gay'. Journal of Economic History. (Supp).

COOPER, A.C. (1970A) — 'The Palo Alto Experience'. Industrial Research.

COOPER, A.C. (1970B) — 'Entrepreneurial Environment'. Industrial Research.

CRUM, R.E. & GUDGIN, G. (1976) — Non-Manufacturing Activities in U.K. Manufacturing Industry. University of East Anglia.

DALES, J.A. (1949) — 'Approaches to Entrepreneurial History'. Explorations in Entrepreneurial History. Vol.I.

DEFOE, D. (1697) — An Essay on Projects. London, quoted in F. Redlich 'The Origin of the Concepts of "Entrepreneur" and "Creative Entrepreneur". Explorations in Entrepreneurial History. Vol. I (1949).

DENISON, E.F. (1967) — Why Growth Rates Differ. Brookings Institute.

DEUTERMANN, E. (1966) — 'Seeding Science-based Industry'. New England Business Review.

DOMAR, E. (1946) — 'Capital Expansion, Rate of Growth and Employment'. Econometrica.

DOUGAN, D.J. (1968A) — History of North-East Shipbuilding. M.A. Thesis. University of Durham.

DOUGAN, D.J. (1968B) — The History of North-East Shipbuilding. Allen & Unwin.

DUNN, M. (1844) — A View of the Coal Trade. Pattison & Sons, Newcastle.

EDWARDS, S.L. (1970) — 'Transport Costs in British Industry'. Journal of Transport Economics.

EVANS, G.H. (Jnr.) (1949) — 'The Entrepreneur and Economic Theory'. American Economic Review.

EVANS, G.H. (Jnr.) (1959) 'Business Entrepreneurs, Their Major Functions and Related Tenets'. Journal of Economic History.

FLYNN, M.W. (1962) Men of Iron. The University Press, Edinburgh.

FORD, H. (1923) My Life and Work. Heinemann.

FREEMAN, C. (1974) The Economics of Industrial Innovation. Penguin.

GALBRAITH, J.K. (1967) The New Industrial State. Penguin.

GLOBE, S., LEVY, G.W. & SCHWARTZ, C.M. (1973) 'Key Factors and Events in the Innovation Process'. Research Management.

HAHN, F.H. & MATTHEWS, R.C.O. (1964) 'The Theory of Economic Growth: A Survey'. Economic Journal.

HAMBERG, D. (1971) Models of Economic Growth. Harper & Row.

HANSARD Vol. 923. Cols. 1023-5, 10th Jan. 1977. E.E.C. Investment.

HANSARD Vol. 929. Cols. 1226-9, 1-7th April, 1977. Inner City Debate.

HARRAP RESEARCH PUBLICATIONS (1968) Industrial Research in Britain. International Publications Service.

HARROD, R.F. (1939) 'An Essay in Dynamic Theory'. Economic Journal.

H.M.S.O. (1951) Population Census.

" (1963) The North East. Cmnd. 2206 (HAILSHAM REPORT).

" (1965) The Queen's Award to Industry.

" (1968) Standard Industrial Classification.

" (1970) Classification of Occupations. Office of Population Censuses and Surveys.

" (1971) Population Census.

HOBSBAWM, E.J. (1968) Industry and Empire. Penguin.

HOSELITZ, B.F. (1951) 'The Early History of Entrepreneurial Theory'. Explorations in Entrepreneurial History, Vol.III.

HOUSE, J.W. (1969) The North East. David & Charles. Newton Abbot.

HOUSE OF COMMONS BILL No. 7 (1976/77) 'Scotland & Wales'

ISARD, W. (1956) Location and Space Economy. M.I.T. Press.

JOHNSON, P.S. (1976) New Firm Incorporation. Unpublished Mineograph, University of Durham.

JOHNSON, S. (1755) A Dictionary of the English Language. W. Strahan quoted by B.F. HOSELITZ op cit.

JORGENSON, D.W. & GRILICHES, Z. (1967) 'The Explanation of Productivity Change'. Review of Economic Studies.

KALDOR, N. (1955-56) 'Alternative Theories of Distribution'. Review of Economic Studies.

KALDOR, N. (1966) 'Causes of the Slow Rate of Economic Growth of the U.K. Inaugural Lecture. Cambridge University Press.

KALDOR, N. & MIRRLEES, J.A. (1961/62) 'A New Model of Economic Growth'. Review of Economic Studies.

KEEBLE, D. (1976) Industrial Location & Planning in the U.K. Methuen.

KENNEDY, C. & THIRLWALL, A.P. (1972) 'Surveys in Applied Economics: Technical Progress'. Economic Journal.

KENT-SMITH, D. & PRITCHARD, A. (1975) 'Further Estimates of Regional Gross Domestic Product'. Economic Trends.

KEYNES, J.M. (1936) The General Theory of Employment, Interest and Money. Macmillan.

KILBY, P. (Ed.) (1971) Entrepreneurship & Economic Development. The Free Press.

KILLICK, S.R. & THOMAS, W.A. (1970) 'The Northern Stock Exchange'. Northern History. Vol. 5.

KIRZNER, I.M. (1973) Competition and Entrepreneurship. University of Chicago Press.

KLAASEN, L.H. (1967) — Methods of Selecting Industries for Depressed Areas. O.E.C.D. Paris.

KNIGHT, F. (1921) — Risk, Uncertainty & Profit. reprint Harper Torch books (1965).

KOOLMAN, G. (1971) — 'Say's Conception of the Role of the Entrepreneur'. Econometrica.

LANGRISH, J. et al (1972) — Wealth from Knowledge. Macmillan.

LEIBENSTEIN, H. (1968) — 'Entrepreneurship and Development' American Economic Review. (P & P).

LEWIS, R. & STEWART, R. (1958) — The Boss. Phoenix House.

LOASBY, B.J. (1967) — Making Location Policy Work. Lloyds Bank Review.

LONDON GAZETTE — 1967-1976.

MACKAY, R.R. (1976) — 'The Impact of the Regional Employment Premium' in The Economics of Industrial Subsidies. A. Whiting (Ed.) H.M.S.O.

MADDISON, A. (1964) — Economic Growth in the West. Allen & Unwin.

MARSHALL, A. (1920) — Principles of Economics. 8th Edition. Macmillan.

MATTHEWS, R.C.O. (1965) — 'Some Aspects of Post War Growth in the British Economy'. University of Cambridge reprint series no. 240.

McCLELLAND, D.C. (1961) — The Achieving Society. Van Norstrand.

McCRONE, G. (1969) — Regional Policy in Britain. Allen & Unwin.

MEEK, R.L. (1963) — The Economics of Physiocracy. Harvard University Press.

MILL, J.S. (1862) — Principles of Political Economy. Book II. London.

MIRABEAU, Marquis de (c1767) — Letter to J.J. Rousseau. quoted by R.L. Meek in 'The Economics of Physiocracy'. Harvard University Press (1963).

MOORE, B. & RHODES, J. (1973) 'A Qantative Analysis of the Effects of the Regional Employment Premium and Other Regional Policy Instruments'. Economic Journal.

MOORE, B. & RHODES, J. (1973) 'Evaluating the Effects of British Regional Policy'. Economic Journal.

MORLEY, R. (1976) Employment, Investment and Regional Policy in the Northern Region. North of England Development Council.

MORLEY, R. (1976) 'Unemployment, Profit's Share and Regional Policy'. in A. Whiting (Ed.) The Economics of Industrial Subsidies. H.M.S.O.

NORRIS, K. & VAIZEY, J. (1973) The Economics of Research and Technology. Allen & Unwin.

NORTH, G.A. (1975) Teeside Economic Heritage. County Council of Cleveland.

NORTH OF ENGLAND DEVELOPMENT COUNCIL (1975) The North of England Facts and Figures.

N.R.S.T. (1975) Change and Efficiency in Manufacturing Industry in the Northern Region 1948-73. Technical Report No. 3.

" (1975) 'Evaluation of the Impact of Regional Policy on Manufacturing Industry in the Northern Region'. Technical Report No. 2.

" (1975) First Interim Report.

" (1976) 'Growth & Structural Change in the Economy of the Northern Region since 1952'. Technical Report No. 4.

" (1976) 'Movement of Manufacturing Industry: The Northern Region 1961-73'. Technical Report No. 10.

" (1976) Office Activity in the Northern Region. Technical Report No. 8.

" (1977) 'Economic Development Policies'. Final Report Vol. II.

O'BRIEN, D.P. (1975) The Classical Economists. Clarendon Press.

PARSONS, G.F. (1963) — The Giant Manufacturing Corporations and Balanced Regional Growth in Britain'. in BLUNDEN, J. et al (Eds.). Regional Analysis and Development. Harper & Row.

POLLARD, S. (1969) — The Development of the British Economy 1914-67. 2nd Edition. Arnold.

POLLARD, S. & CROSSLEY, D.W. (1968) — The Wealth of Britain 1085-1966. Batsford.

POSTAN, M.M. (1967) — An Economic History of Western Europe 1945-65. Methuen.

POSTLETHWAYT, M. (1757) — The Universal Dictionary of Trade & Commerce. Vols. I & II. London.

QUESNAY, G. (c1765) — Tableau Économique. M. KUCZYNSKI & R.L. MEEK (Eds.) Macmillan (1972).

QUINCE, R. (1974) — 'Social & Economic History of the Northern Region'. N.R.S.T. Discussion Paper No. 6.

REDLICH, F. (1949) — 'The Origin and Concepts of "Entrepreneur" and "Creative Entrepreneur". Exploration in Entrepreneurial History. Vol. I.

REDLICH, F. (1954/55) — 'The Role of Innovation in a Quasi-Static World, Francis Bacon and his Successors'. Explorations in Entrepreneurial History. Vol.III.

REDLICH, F. (1956) — 'The Military Enterpriser: A Neglected Area of Research'. Explorations in Entrepreneurial History. Vol. VIII.

RICARDO, D. (1821) — On Principles of Political Economy & Taxation. Vol. I P. Sraffa (Ed.) C.U.P. (1951).

RICHARDSON, H.W. (1969) — Elements of Regional Economics. Penguin.

RICHARDSON, H.W. (1969) — Regional Economics. Weidenfeld & Nicolson.

ROBINSON, J. (1933) — Economics of Imperfect Competition. Macmillan.

ROBINSON, J. (1962) — 'A Model of Accumulation' in Essays in Economic Growth. Macmillan.

ROBINSON, J. (1970) — 'Model of Accumulation' in A. Sen (Ed.) Growth Economics. Penguin.

ROWE, D.J. (1971) — 'The Economy of the North East'. Northern History. Vol. 6.

SANT, M. (1975) — Industrial Movement and Regional Development: The British Case. Pergamon Press.

SAY, J.B. (1819) — A Treatise on Political Economy. 4th Edition. trans. C.R. Prinsep & C.C. Biddle (1880). Reprint Kelley, New York (1971).

SCHON, D. (1973) — Champions for Radical New Inventions. Harvard Business Review.

SCHUMPETER, J.A. (1954) — History of Economic Analysis. E.B. SCHUMPETER (Ed.) Oxford University Press.

SCIENCE POLICY RESEARCH UNIT (1972). — Success and Failure in Industrial Innovation. Centre for the Study of Industrial Innovation. London.

SEN, A. (1970) — Growth Economics. Penguin.

SMITH, A. (1776) — An Enquiry into the Nature and Causes of the Wealth of Nations. J.R. McCulloch (Ed). Adam & Charles Black (1863).

SMITH, J.W. & HOLDEN, T.S. (1953) — Where Ships are Born. Thos. Reed & Co. Ltd. Sunderland.

SMITH, R. (1961) — Sea Coal for London. Longmans.

SOLOW, R. (1957) — 'Technical Progress & the Aggregate Production Function'. Review of Economics & Statistics.

SPRATT, T. (1667) — The History of the Royal Society of London for the Improving of National Knowledge. Quoted by F. REDLICH in 'The Role of Innovation....'.

TOOTHILL REPORT (1962) — Inquiry into the Scottish Economy 1960-61. Scottish Council.

TOWNROE, P.M. (1972) — 'Some Behavioural Considerations in the Industrial Location Decision'. Regional Studies.

TOWNROE, P.M. (1975) — 'Branch Plants and Regional Development'. Town Planning Review.

TRUCKLE, N. (1969) — The Industrial Revolution. Its implications in N.E. England. Geography Seminar Paper, University of Newcastle.

TURGOT, A.R.J. (1766) — 'Reflections on the Formation & Distribution of Wealth' taken from R.L. Meek (Ed.) Turgot on Progress, Sociology and Economics. Cambridge University Press (1973).

VERNON, R. (1971) Sovereignty at Bay. Penguin.

VON THUNEN, J.H. Von Thunen's Isolated State. trans. WARTENBERG C.M. Pergamon Press (1966).

WALKER, F.A. (1896) Political Economy. 3rd Edition. Macmillan.

WEBER, A. Alfred Weber's Theory of the Location of Industries. trans. G.J. FRIEDRICH, CHICAGO (1929).

WYLD, H.C. (1946) The Universal Dictionary. Routledge & Sons.