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**Some Illusions of Urban/Industrial
Paradigm of Development**

By

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Professor of Estate Management



OBAFEMI AWOLOWO UNIVERSITY PRESS LIMITED



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PREAMBLE

The Vice-Chancellor, Fellow Scholars, Students of this Great University, Ladies and Gentlemen,

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PREAMBLE

The Vice-Chancellor, Fellow Scholars, Students of this Great University, Ladies and Gentlemen.

It is a great pleasure and honour for me to give this Inaugural Lecture. I believe it is the second one to be given by a Professor from the Faculty of Environmental Design and Management since it was established as a Faculty seventeen years ago. The topic of my Lecture is "Some Illusions of Urban/Industrial Paradigm of Development".

INTRODUCTION

The motivation for my intense interest in the urban/industrial paradigm of development was provided by a feeling that policy makers in Nigeria and other developing countries face tremendous problems in formulating effective spatial investment strategies aimed at facilitating regional development because of the paucity of data relating to spatial performance of the economy and the effectiveness of crucial development mechanisms. This lecture constitutes a major input I have made in unravelling and illuminating the propositions of the urban/industrial paradigm of development, identifying in the process the basic illusions which have questioned its general applicability and thus provoking a search for an alternative paradigm. After all, no development strategy can function more efficiently than its basic assumptions and working propositions upon which it is structured.

For the past five decades developing countries, including Nigeria have become increasingly interested in problems of regional development. This growing and widespread interest in the spatial dimension of development has been attributed to the following factors: The first factor is the belief in the usefulness of regional development planning as an instrument for promoting national development. The second factor stems from the emergence of regional problems and inequalities and the political and social consequences associated with their persistence (Mabogunje, 1978a, p. 3). Regional problems have

been defined as circumstances about which the predominant opinion in regions feels a sense of collective grievance (Brown, 1977, p. 16). (A typical example is the Niger Delta regional problem). These circumstances touch on regional economic welfare, about which the central government feels some unease and hence may take action to remedy the situation. For example, there is a tendency for people in a region to be aggrieved, if the prevailing average incomes in that region are observably lower than what obtains in other regions. Similarly, communities in a region may complain if their region is subjected to persistently higher unemployment or environmental degradation. Lastly, the interest in the spatial dimension of development stems from the need for rational planning in space of scarce infrastructure.

In Nigeria, policy makers have shown some interest in regional development. This interest can be seen firstly in the creation of States and Local Government all aimed at facilitating the speed of development across the country. It is possible to argue that this renewed interest may be attributable partly to political pressures. People in poor areas do have votes" but more significantly, to a belief in the utility of regional development planning as an instrument for stimulating national development.

Against this background it is inevitable that regional development should emerge as a major policy issue. Thus political social and economic circumstances have thus combined to stimulate a lively argument about the "where" of economic development. Faced with this pressing problem of planning for regional development, there arises the need for precise information not only on the spatial performance of the economy but on the effectiveness of some development mechanisms and the relevance and validity of paradigms or models of development. The areas where development efforts will be most profitable will be revealed.

As my contribution to our knowledge of the validity of the efficacy of regional development tools, I have focussed my research efforts on the urban/industrial paradigm or model of development. In this

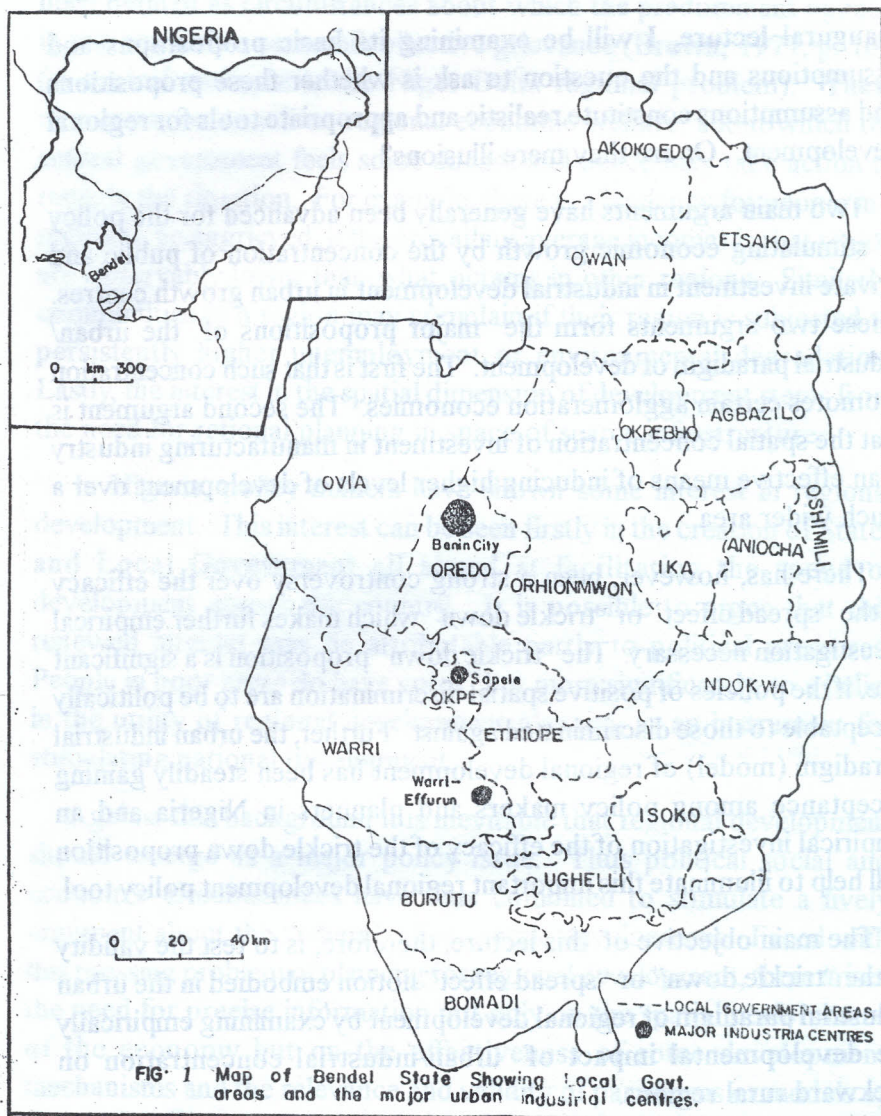
inaugural lecture, I will be examining its basic propositions and assumptions and the question to ask is whether these propositions and assumptions constitute realistic and appropriate tools for regional development. Or are they mere illusions?

Two main arguments have generally been advanced for the policy of stimulating economic growth by the concentration of public and private investment in industrial development in urban growth centres. These two arguments form the major propositions of the urban/industrial paradigm of development. The first is that such concentration promotes certain agglomeration economies. The second argument is that the spatial concentration of investment in manufacturing industry is an effective means of inducing higher levels of development over a much wider area.

There has, however, been a strong controversy over the efficacy of the "spread effect" or "trickle down" which makes further empirical investigation necessary. The "trickle down" proposition is a significant one, if the policies of positive spatial discrimination are to be politically acceptable to those discriminated against. Further, the urban industrial paradigm (model) of regional development has been steadily gaining acceptance among policy makers and planners in Nigeria and an empirical investigation of the efficacy of the trickle down proposition will help to illuminate this important regional development policy tool.

The main objective of this lecture, therefore, is to test the validity of the "trickle down" or "spread effect" notion embodied in the urban industrial paradigm of regional development by examining empirically the developmental impact of urban/industrial concentration on backward rural regions.

This lecture focuses on urban industrial centres of Benin City, Warri and Sapele in the Old Bendel State, Nigeria (Now Edo and Delta States) (Fig. 1). The Old Bendel State provides a suitable test bed for examining the impact on backward rural regions of urban industrial concentration because these three urban industrial centres have witnessed considerable industrial growth in recent years. Warri



and Sapele are national ports while Benin City was the administrative Capital of the Old Bendel State. It is thus possible to contrast and compare the spatial impacts in more than one urban centre.

SOURCE OF DATA

The data for this lecture derived from two main sources. The primary data were collected in a questionnaire survey. The second type of data consisted of industrial directories published by the Statistics Division, Ministry of Economic Development of Bendel State.

REGIONAL PROBLEMS IN NIGERIA

Since the late fifties, successive Nigerian governments have emphasised the need to accelerate the rate of economic and social development. A central thrust of this developmental effort has been the promotion of industrialisation through a policy of import substitution, export promotion and by the establishment of a system of economic and physical infrastructure. In these efforts, however, no explicit policies on the spatial distribution of manufacturing activity have been adopted. This trend has generated many regional problems.

These are as follows:

(a) Disparities in the Geographical Distribution of Economic Activities:

Available statistics on commercial and industrial growth of the country indicate the continuous concentration of industrial activities in few clusters. There are four of such clusters namely: (See Fig. 2).

- (i) Lagos Metropolitan, Abeokuta and Ibadan Areas.
- (ii) Port-Harcourt, Aba, Enugu and Onitsha Axis.
- (iii) Kano, Kaduna, Zaria and Jos Axis.
- (iv) Benin, Sapele and Warri Cluster. These four areas of urban/ industrial clusters alone account for over 65% of the national

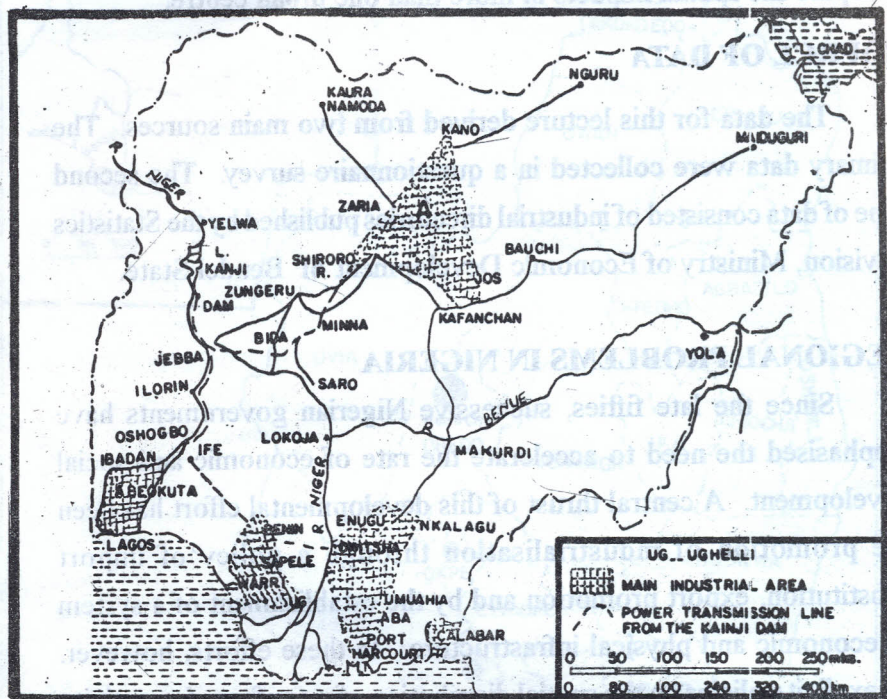


Fig. 2

Nigeria

AREAS OF URBAN/INDUSTRIAL CONCENTRATION

Source

Ajagbu, M. I. *Urban and Rural Development in Nigeria*

Meinemann, London, 1976, p. 53.

total of manufacturing establishments in the country.

- (b) Derivable from the two problems discussed above is yet another problem of income differential between urban and rural areas caused by the limited opportunities in rural areas. This rural urban income gap has resulted in rural urban migration.

Although there is concentration of economic activities and social infrastructure in urban areas, unfortunately, the employment generation capacity of urban centres is not capable of absorbing all immigrants. The most serious of the repercussions are urban unemployment, urban diseconomies, migration of factor inputs, rural depopulation especially the younger and more vigorous elements.

- (c) Regional disparities in the provision of social services and in environmental quality. The distribution of social amenities in the country shows a concentration of these amenities in a few urban centres and State capitals to the total neglect of the rural areas.

BROADLINES OF ENQUIRY

In seeking to examine the spread effect efficacy of urban/industrial paradigm of development, I have focussed my research on three major urban/industrial centres of Benin City, Warri and Sapele as indicated earlier.

An urban industrial growth centre paradigm (model) is used as the theoretical framework and the nature, pattern and periodicity of linkage between the urban industrial centres of Benin City, Warri and Sapele and their backward rural regions is examined to establish whether growth in such regions is enhanced or limited by the rapid development of the major centres. In this connection the broad questions asked are as follows:

1. What was the impact of urban industrial concentration on the spatial distribution of economic development and prosperity in

the Old Bendel State. In this connection attempts will be made to examine how far the benefits from urban industrial development have accrued to all areas and how far they were concentrated in the urban areas. Attempts will be made to ascertain whether the benefits from urban-industrial development were as urban-biased as industrial development itself.

2. What evidence is there to establish the notion that the benefits of economic development and development impulses are spreading from the urban centres into the rural areas. If economic development and prosperity do spread outwards from urban centres and are influenced by the friction of distance, then over time it might be expected that some pattern of socio-economic gradient may develop in which the highest level of development might be found in the urban centre and the lowest levels in the distant rural periphery. Evidence will be sought to support such a gradient and the spread of benefits from economic development and prosperity into the rural areas in Bendel State.

Following the discussion of these issues, I will draw out policy implications for industrial and regional development. This will be considered from the positive and normative viewpoints and attempts will be made to suggest policies in the light of the empirical findings.

THEORETICAL AND CONCEPTUAL FRAMEWORK

The Concept of Paradigm

The concept of Paradigm has been defined by Kuhn (1975, p. 5) as universally recognized scientific achievements that for a time provide model problems and solution to a community of practitioners".

Harvey(1979, p. 120) sees a paradigm as a set of concepts, categories, relationship and methods which are generally accepted throughout by a community at a given time. Essentially therefore a paradigm comprises a set of facts principles, procedure, concepts and theories. It offers an important framework for verifying what is and

what is not a fact in a field of enquiry.

URBAN/INDUSTRIAL PARADIGM OF DEVELOPMENT

That industrial growth should be spatially polarised and concentrated in urban centres is not a uniquely Nigerian phenomenon. Such imbalances are to be found in most developing countries. Indeed Hirschman (1958, pp. 183-184) observes that "in a geographical sense, growth is necessarily unbalanced" and that "we may take for granted that economic progress does not appear everywhere at the same time" and that once it has appeared strong forces make for spatial concentration around the initial starting point. It has thus been contended that spatial concentration is an expected and probably a necessary feature of growth process. In this process, there is an implied notion that with time there will be a trend via spread or trickling down effects towards an equalisation in the economic condition of the various regions (Myrdal, 1957, Hirschman, 1958). This notion of the spread of developmental effects emanating from unbalanced or polarised spatial development has provided some justification for a policy of spatial concentration of economic, industrial and other activities in selected places or growth centres. Spatial concentration is then seen as an efficient and equitable means of promoting higher levels of development over a much wider geographical area. According to Berry (1969, p. 288), "growth impulses and economic development..... trickle down to smaller places and ultimately infuse dynamism into even the most tradition bound peripheries". But there has been strong controversy over the efficacy of the notion of spread or "trickle down."

The notion of developmental impact on backward rural regions

of urban/industrial concentration is rooted in the urban industrial growth centre paradigm (model). It is thus appropriate that the model should provide the main theoretical and conceptual framework within which to examine the spatial developmental impact of urban industrial concentration in our study areas. The background and the main propositions of the growth pole/growth centre model have been extensively discussed elsewhere (Darwent, 1969). Only a brief examination of the main propositions that are germane to this lecture is attempted here.

The growth pole model was first propounded by Perroux (1950, p. 95), in an effort to comprehend the processes by which developmental impulses are transmitted throughout the economy. He defined growth poles as foci or centres in abstract space "from which centrifugal forces emanate and to which centripetal forces are attracted. Each centre being a centre of attraction and repulsion has its proper field which is set in the fields of other centres". Perroux notes that growth does not appear everywhere all at once. It appears according to him, "in points or development poles with variable intensities, it spreads along diverse channels and with varying terminal effects for the whole of the economy."

Essentially, Perroux's focus was on firms, industries and their sectoral relationships conceived in non-spatial entities. The growth pole was basically an abstract economic notion which was associated with the propulsive linkages among firms and industries.

THE PROPULSIVE OR LEAD FIRM

A key notion in the growth pole model is the propulsive firm. This notion stems from Perroux's claim that economic growth flourishes at certain poles from where the growth is diffused. Propulsive or lead firms play important roles in this diffusion. Propulsive firms have been defined as those industries which exert direct and indirect dominating influence on all other activities. They also operate in oligopolistic conditions and are in a position to combine price

leadership with keen anticipation of trends in their sector and associated industries (Darwent, 1969, p. 204; Boudeville, 1966, p. 112; Beyers, 1974, p. 204; Lasuen, 1969). This notion of propulsive firm is synonymous with the 'lead firm' idea of Erickson (1972). Three fundamental features of propulsive or lead firm have been identified:

- (a) A high degree of dominance.
- (b) Intensive linkage with other firms.
- (c) Large size.

These firms are said to achieve faster growth than others and this growth has a cumulative dominating effect. This enables the propulsive firms to have great influence on the suppliers of its inputs and also on other firms who depend on them for their inputs. The most important strength of the dynamic propulsive firm will be a relatively large size, the capacity to generate innovations and transmit growth impulses within its environment.

DOMINANCE AND INTER-INDUSTRY LINKAGES

Dominance is a basic concept in the Perrouxian hypothesis of growth and change. Hansen (1967, pp. 713-14) observes that "dominance consists of irreversible or partially reversible influence exercised by one unit upon another. An economic unit exercises this effect by reason of its dimension, its negotiating strength, the nature of its activity or because it belongs to a zone of dominant activity." Darwent (1969, p. 7) has argued that a firm acquires a high level of dominance over others if it supplies 60% of their inputs and buys 60% of their outputs.

Dominance can be clearly understood by reference to the concepts of backward and forward linkage effects. These are important mechanisms for the operation of dominance.

Backward and forward linkages are important because they provide channels through which direct and indirect influences of the propulsive

or dominant firms and industries are transmitted. The influences that are important for development are those that are generative of innovations. Perroux's interest in the leading industry's capacity to adopt innovations as an important catalyst for further growth, is perhaps an offshoot of the influence of Schumpeterian hypothesis. This hypothesis postulates that the critical determinant factors for economic development lie in the level of entrepreneurial innovations. The adoption and diffusion of innovations is thus an important concept of the Growth Pole Theory.

DIFFUSION OF INNOVATIONS

Development has been defined as innovation diffusion process, leading to the structural transformation of the entire social system (Friedmann, 1973, p.43). It can also be argued that from the economic point of view, innovations may be described as the promotion of innovations in the sectors in the economy. It can be deduced in this way that development and the adoption of innovation is an integrated process. The introduction and extent of acceptance is crucial to the rate of growth of those sectors that adopt the innovations.

The consequences of innovations for linked industries are increased productivity, through the reduction of costs, or a significant increase in output. Innovations may occur either through technological or organisational changes. The impact of such innovative impulses leads to a significant structural transformation in the economy. This transformation is a critical distinction between growth and development (Friedmann, 1973). It can therefore be argued that the development process is a result of innovation adoption and diffusion. The way in which, and degree to which, a firm responds to new technology and innovation has been said to depend on the following factors (Thomas, 1972, p. 68).

- (a) The relative size of the firm.
- (b) Its growth rate.
- (c) Its liquidity position.

(d) Anticipated profitability of the new technology; and

(e) The age of its management.

An important conclusion on Perroux's hypothesis is that it was mainly focussed on economic development in organisational and industrial spaces, with emphasis on the level of growth of firms and industries, their inter relationships and the propulsive forces occurring in the process.

The growth pole model has been used as an instrument for regional development policies. The basis of this policy is the belief that a growth pole contains propulsive firms which are members of key industries. These industries are the growth-inducing dynamo of the growth poles. Their main features are those of dominance, possession of intense linkage relation, and the capacity to generate innovations throughout the economy. The linkages between the firms within the growth pole result in the high multiplier effects if there is any significant change in the output of the propulsive or lead firms.

GROWTH CENTRES AND GEOGRAPHICAL SPACE

It has been argued earlier that when Perroux developed his theory of growth pole, he intended that it would apply to development in abstract economic space. But the theory has been adopted and has now come to be applied mainly in a regional context, that is in geographical space (Hermansen, 1972, p. 173). Hermansen observes that the reasons for this geographical focus are as follows:-

- (a) 'Economic activity necessarily takes place in geographical space. Organisational and industrial changes in functional space occurring during economic growth can be projected into and manifest themselves in geographical space'
- (b) All economic activities including the dominant and propulsive industries have locations at a given point in time. Just as the growth of these firms may generate cumulative differentiations and clusterings in functional spaces, a similar cumulative differentiations and clustering may take place in geographical space.

Boudeville (1966) was the first to conceptualise the notion of growth pole in a spatial or geographical context. He argued that economic space is an application of economic variables on or in geographical space through a mathematical transformation which describes an economic process.

The reworked concept of growth poles, with its explicitly spatial or geographical orientation by Boudeville is now generally known as the growth centre model or paradigm. It retains a number of the propositions in the growth pole model but is explicitly conceived within a Euclidian space. Hansen (1972, p. 269) has provided an operational definition of a growth centre as:

“a complex consisting of one or more communities or places which taken together, provide or are likely to provide a range of cultural, social, employment, trade and service functions for itself and its associated hinterland.”

Hansen defines a growth area as “an extension of the growth centre itself. It is the adjoining area likely to experience residential and employment growth because of proximity to a centre or location between centres”.

The hinterlands “are the surrounding rural areas which rely upon the growth centres and the growth areas for services and employment. The hinterlands contribute resources and manpower to the overall district economy.” A fundamental notion in the urban industrial growth pole/growth centre paradigm (model) of regional development is that “in many instances economic growth starts and propagates from poles. This raises two important questions. The first centres on whether the injection of capital investment into an urban centre will foster self-sustaining growth in that urban centre. The second question is whether once a growing urban area has been established, its growth

will naturally spread or diffuse outward into the less developed or lagging regions without any further inducement from planning authorities. According to Hirschmann, once growth takes a firm hold on one part of the national territory, it obviously sets in motion ~~certain~~ forces that act on the remaining part (Hirschman, 1958). However, there is no agreement that the beneficial effects of spread are all that occur. Many have argued that two sets of opposing forces are set in motion by a propulsive growth centre, namely (a) spread or positive effects; (b) backwash or negative effects.

SPREAD EFFECTS

Mabogunje has defined spread effects as "the expansionary momentum generated from a centre of economic growth and directed towards other regions resulting in a substantial and sustained increase in demand, incomes, investment and production" (Mabogunje, 1978). The main channels and mechanisms of spread effect transmission are the recruitment and movement of labour, the purchase by industrial enterprises of materials and services, industrial linkage (purchase of raw materials, subcontracting, marketing links and establishment of branch plants). Others include the spatial flows of the expenditure of personal income generated by urban industrial centres. These take the form of purchase of foodstuffs by urban industrial workers, remittances and other capital flows emanating from urban industrial workers to the home origin.

BACKWASH EFFECTS

Backwash or 'polarisation effects' set in motion negative effects which are unfavourable to the more peripheral or economically backward areas. They are caused by the greater opportunities which exist in the growth centres. The effects result in the lack of expansionary momentum within the region. According to Moseley

(1973b) 'backwash effects relate specifically to the tendency for the factors of production to be drawn from the periphery to the centre the more enterprising elements of the peripheral community are attracted by the supposed opportunities for labour or entrepreneurship in the centre. Similarly, capital, and raw materials are drawn to the centre to fuel the latter's expanding economy. The consequence of this type of centripetal flow of labour, capital and raw materials and enterprise is to accentuate regional inequality in development.

HYPOTHESES

The propositions of the urban/industrial growth centre model with regard to the form of spatial developmental impact (spread effects) and the results of the empirical studies on anticipated spatial impact on urban-industrial concentration suggest that the urban industrial growth centre is the point in a region at which development may be expected to be at its highest level. This means that in a region, area variations in the level of development exist and the levels of development achieved by a settlement in the region will be influenced by the response of such settlements to development stimuli from the urban industrial centres.

From the propositions of the growth paradigm centre model regarding the patterns or forms of urban industrial spatial impact, several testable hypotheses can be derived. The following five hypotheses, which are relevant to the main objectives of this lecture have been formulated:

1. In a rural region, there exists a development surface, arising from a set of forces of economic development and prosperity. This development surface initially is highly influenced by the manufacturing industry.
2. The level of economic development and prosperity described by this surface is inversely related to the distance from a major urban industrial centre. This means that the higher the level of development attained by an area, the nearer such an area is to an industrial/urban centre.

3. The level of urbanization in the Old Bendel State is associated with the degree of manufacturing activity.
4. The level of development described by this surface is strongly associated with the degree of urbanization.
5. Agricultural incomes are highest near the urban/industrial centres. These five hypotheses were measured in terms of the following variables: (i) Manufacturing impact hypothesis; (ii) Distance from major urban industrial centres hypothesis; (iii) Urbanization hypotheses and (iv) Revenue from Agricultural products.

The selection of the above independent variables for explaining pattern of development in old Bendel State does not suggest that these are the only ones that can explain such a phenomenon. These are the ones that are relevant to the achievement of the objectives set out in this lecture and the ones for which data have been available.

METHODOLOGY

Two techniques were adopted for this lecture, both aimed at establishing a correspondence between the spatial pattern of the impact of the urban industrial concentration and the processes. The first technique takes periodic measures of the level of economic development and prosperity and tries to relate observable changes to distance from an urban industrial growth centre. This technique uses some form of multivariate statistical analysis and seeks to infer causation from the analysis rather than trace causation by empirical observation. The second method focuses on the processes by means of which the urban industrial developmental impact might occur by an analysis of the various spatial flows or channels and the mechanisms of impact emanating from an urban industrial centres to their end product. My work is actually the first to combine both techniques in a single study area - a procedure which has been advocated in order to establish a consistency between pattern and process.

The procedures adopted for testing the hypotheses postulated above

follows the techniques employed in similar studies by Moseley, (1975) Robinson and Salih (1978). The technique takes periodic measures of the level of economic development and tries to relate observable changes to distance from an urban industrial growth centre. This technique uses some forms of multivariate statistical analysis and seeks to infer causation from the analysis. The technique involves the following elements.

(a) The derivation of a multivariate development surface (hypothesis I) by means of a principal components analysis of the relevant indicators of development (See Table 1).

Table 1: Indicators (Variables) of economic Development and Prosperity used in identifying development Levels in Bendel State, Nigeria.

Numbers	Indicators (Variables)
1.	Estimated percentage population change 1963-1977
2.	Percentage of population in retail in 1977
3.	Proportion of working population in agriculture and primary activities.
4.	Number of Banks per 50,000 population 1977.
5.	Primary School enrolment as percentage of total population in 1977.
6.	Number of telephone points per 1,000 population in 1975.
7.	Number of motor vehicle per 1,000 population in 1975.
8.	Local Government Revenue per capita 1977.
9.	Road density per square kilometre in 1975.
10.	Average population per traditional periodic market in 1977.
11.	Number of doctors per 1,000 population in 1977.

Table 2: Correlation Matrix for Eleven Variables

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11
X1	1.0000	0.77610	-0.86826	0.75328	-0.16871	0.63383	0.4782	0.43445	0.48817	0.54093	0.61286
X2	0.7610	1.0000	-0.91227	0.74625	0.27201	0.63548	0.77658	0.43038	0.63490	0.12540	0.55195
X3	-0.6926	-0.01227	1.0000	-0.90729	-0.22262	-0.60543	-0.88105	-0.45566	-0.62753	-0.39562	-0.74243
X4	0.5323	0.74628	-0.90789	1.0000	0.31812	0.94814	0.92007	0.53755	0.59983	0.49397	0.88520
X5	-0.6871	0.27201	-0.22262	0.31812	1.0000	0.88978	0.34168	-0.04567	0.46079	-0.26267	0.29841
X6	0.3383	0.63548	-0.80543	0.94814	0.38973	1.0000	0.83543	0.50231	0.63440	0.46997	0.05962
X7	0.4742	0.77653	-0.88105	0.92007	0.34168	0.53543	1.0000	0.53776	0.47142	0.37579	0.74589
X8	0.3445	0.43038	-0.45566	0.53755	-0.04567	0.50231	0.53776	1.0000	-0.06083	0.30343	0.52423
X9	0.48817	0.63400	-0.62753	0.59983	0.46979	0.63440	0.47142	-0.06083	1.0000	0.08333	0.59867
X10	0.54093	0.1350	-0.39562	0.49397	-0.26267	0.46997	0.37579	0.30343	0.08333	1.0000	0.44566
X11	0.61286	0.5586	-0.742243	0.28580	0.29841	0.95582	0.75589	0.52423	0.59567	0.44566	1.0000

Variable Labels:

- X1 Estimated percentage change 1963-1977
X2 Percentage of population in retail 1977
X3 Proportion of working population in agriculture and primary activities 1977
X4 Number of Banks per 50,000 population 1977
X5 Primary school enrolment as 5 of total population 1977
X6 Number of telephones per 1000 population 1975
X7 Number of motor vehicles per 1000 population 1975
X8 Local government revenue per input 1977
X9 Road density per square kilometre 1975
X10 Average population per periodic market 1977
X11 Number of Doctors per 1000 population 1977

The analysis of data began by first determining the overall strength and direction of relationship among the eleven indicators in the 19 Local Government Areas. This was conducted by means of correlation analysis. The correlation matrix (Table 2) of the variables gives a good indication of the associations among the pairs of input variables of economic development and prosperity in various parts of Bendel State.

Principal components analysis to the correlation matrix extracted two important components. One problem confronting a researcher in principal component analysis is deciding how many components extracted from the variable matrix should be considered. This was decided by adopting Kaiser's suggestions that the number of components should be equal to the number of eigen values greater than one (Harman, 1960, p. 363; King, 1969, p. 174). The two components extracted had eigenvalues of more than one.

Another problem in analysing the output of principal component analysis is interpreting and labelling the components. It has been suggested that components should be named after the variables with high loadings in the same direction. Loadings of + 4 were not interpreted (Table 3).

INTERPRETATION OF RESULTS

The first component, accounting for 83% of total variance provided particular interest. If we consider as high loadings, those in excess of 0.4, it is clear that the first component loads highly on variables of prosperity and also on measures of entrepreneurship and indices of purchasing ability (Banks, marketing and retail). This is clearly an index of development, since it indicates both material prosperity, increasing population and ability to consume. The percentage population in retail trade and transport, banking facilities and marketing (variables reflecting entrepreneurship and ability to consume) are highly loaded in this component. Weinand (1973) has suggested that in such a situation such a component may indicate the existence of growth poles.

Table 3: Loading on the Two Related Components

Variable Number	Variables	Components	
		1	2
X1	Estimated population change 1963-1977	0.88	-
X2	Percentage population in retail trade 1977	0.63	0.50
X3	Percentage of working population in agriculture and primary activity 1977	-0.82	-0.49
X4	Number of banks per 50,000 population 1977	0.83	0.50
X5	Primary School enrolment as percentage of total population 1977	-	0.80
X6	Number of telephone per 1000 population 1975	0.72	0.59
X7	Number of motor per 1000 population 1975	0.73	0.52
X8	Local Government Revenue per caput 1977	0.57	-
X9	Road density per square kilometre 1975	-	0.66
X10	Average population per traditional periodic market 1977	0.62	-
X11	Number of Doctors per 1000 population 1977	0.70	0.50
	Eigenvalue	6.55	1.34
	Percentage of total variance reproduced	83.00	17.00
	Loading between 0.40 and - .40 are omitted.		

Although seven variables load highly on component 2, the component accounts for only 17% of the variance. Highly loaded on this component are such variables as primary school enrolment, road density and telephones. This is the infrastructure component.

The performance of each of the local government areas with regard to the two clusters (components) of socio-economic indicators was identified through their scores on the two components. In order to obtain an overall pattern of the development in the State, the scores

of each local government area on component one were employed in grouping them. The grouping produced four types of local government areas which are at different stages of development (component one, Figure 3) and infrastructural provision (component two, Fig. 4). In the development component, three local government areas (Oredo, Okpe and Warri) record the highest scoring and therefore represent Bendel State's most developed region in terms of the indicators used in this study. A visual impression conveyed by Fig. 3 is that the most developed areas lie on the Benin-Sapele-Warri axis, which in turn, is situated on the North (Western and South-Western strip of the State. These most developed local government areas also have the major urban industrial centres. This axis of the most developed areas represents the core of the Old Bendel State space economy, according to Friedmann criteria. The Local Government areas with the reasonable level of development represent the upward transitional areas. The Local Government areas in the North, North-Eastern and South-Eastern parts of the Old State record very low scoring in terms of component one and therefore represent the less developed and backward areas. They depict the underdeveloped periphery according to Weinard criteria.

The second element in furtherance of our objective of examining the development impact of urban/industrial concentration on the identified spatial pattern of development, involved the following procedure.

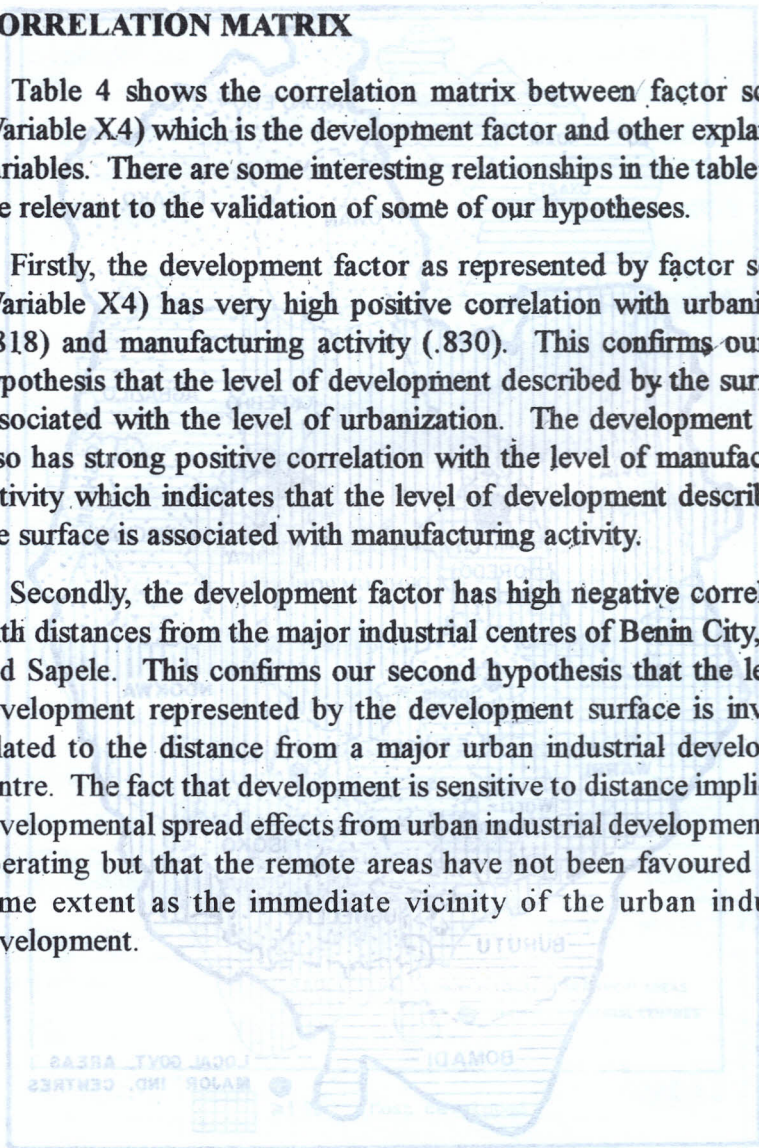
Components scores pertaining to the development surface were incorporated as a dependent variable in correlation and regression analysis in which some of the independent variables were the distances from the major urban industrial centres of Benin City, Warri and Sapele (Hypothesis 2). Attempts were made to improve the level of explanation by including additional independent variables relating to manufacturing industry, degree of urbanization and agricultural development.

CORRELATION MATRIX

Table 4 shows the correlation matrix between factor score 1 (Variable X4) which is the development factor and other explanatory variables. There are some interesting relationships in the table which are relevant to the validation of some of our hypotheses.

Firstly, the development factor as represented by factor score 1 (Variable X4) has very high positive correlation with urbanization (.818) and manufacturing activity (.830). This confirms our third hypothesis that the level of development described by the surface is associated with the level of urbanization. The development factor also has strong positive correlation with the level of manufacturing activity which indicates that the level of development described by the surface is associated with manufacturing activity.

Secondly, the development factor has high negative correlations with distances from the major industrial centres of Benin City, Warri and Sapele. This confirms our second hypothesis that the level of development represented by the development surface is inversely related to the distance from a major urban industrial development centre. The fact that development is sensitive to distance implies that developmental spread effects from urban industrial development were operating but that the remote areas have not been favoured to the same extent as the immediate vicinity of the urban industrial development.



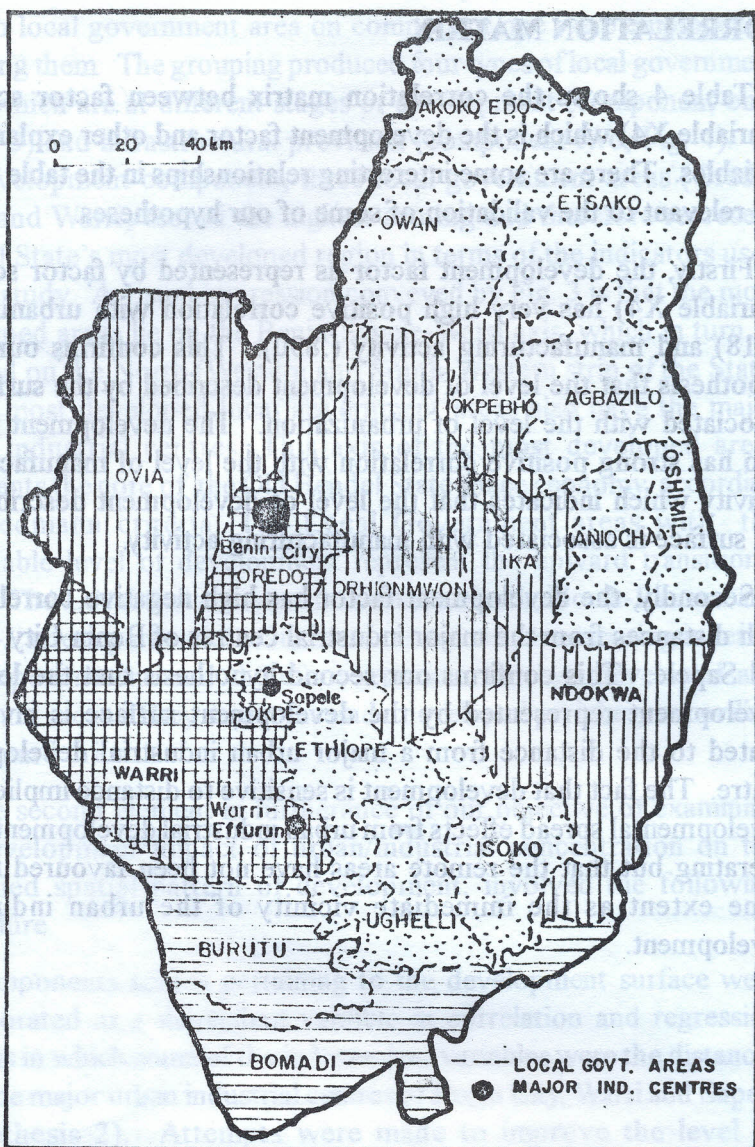


Fig. 3 An index of the development of local Government Areas in Bendel State:

Standardized scores on Components.



≤ 1.00 Most developed



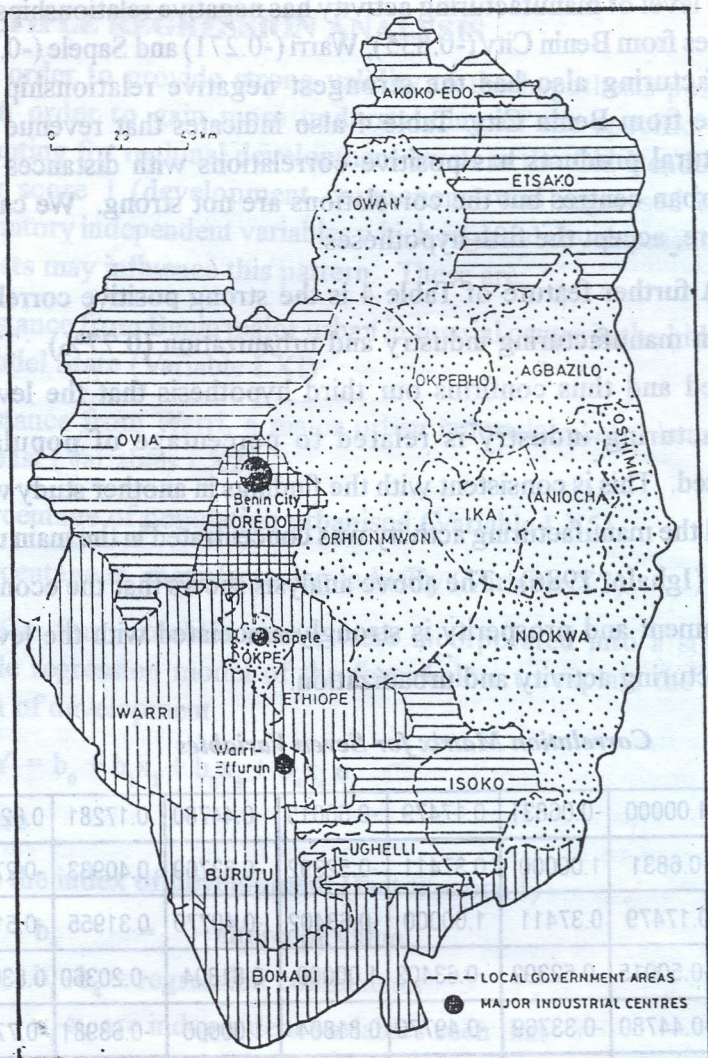
0 to 0.99 Reasonable level of development





0 to 0.49 Low level of development




≤ -0.5 Backward



 ≥ 1.50 Most developed

 0 to 1.49

 0 to -0.49


 ≤ -0.5

Figure 4.

Component Scores of Factor 2: Infrastructure Factor

The level of manufacturing activity has negative relationships with distances from Benin City (-0.835), Warri (-0.271) and Sapele (-0.513). Manufacturing also has the strongest negative relationship with distance from Benin City. Table 4 also indicates that revenue from agricultural products has positive correlations with distances from three urban centres but the correlations are not strong. We cannot, therefore, accept the fifth hypotheses.

A further feature of Table 4 is the strong positive correlation between manufacturing industry and urbanization (0.77%). This is expected and thus confirms our third hypothesis that the level of manufacturing industry is related to percentage of population urbanized. This is consistent with the findings in another study which showed the manufacturing activity was concentrated in the main urban centres (Ighalo, 1986). The above analysis shows that the economic development and prosperity is strongly associated with the level of manufacturing activity and urbanization.

Table 4: Correlation Matrix for Seven Variables

LX1	1.00000	-0.06831	0.17479	-0.50015	-0.44780	0.17281	0.82572
LX2	-0.6831	1.00000	0.37411	-0.52392	-0.33769	0.40933	-0.27147
LX3	0.17479	0.37411	1.00000	-0.63402	-0.49770	0.31955	-0.51198
X4	-0.50015	-0.52392	-0.63402	1.00000	0.81804	-0.20360	0.83060
X5	-0.44780	-0.33769	-0.49770	0.81804	1.00000	-0.63981	-0.77541
X6	0.17281	0.40933	0.31955	-0.20360	-0.03961	1.00000	-0.21748
X7	-0.83572	-0.27147	-0.51198	0.83063	0.77541	-0.21748	1.00000

LX1 - Distance from Benin City

LX2 - Distance from Warri

LX3 - Distance from Sapele

X4 - Factor Score one - development factor

X5 - Percentage of population urbanized

X6 - Revenue from perennial agricultural products

X7 - Percentage of population employed in manufacturing industry.

MULTIPLE REGRESSION ANALYSIS

In order to provide strong validity to the hypothesis postulated and in order to gain more understanding of the specific factors accounting for regional development levels in the Old Bendel State, factor score 1 (development component) was regressed on four explanatory independent variables which regional development theory suggests may influence this pattern. These are.

Distance from Benin major urban industrial centre in the hitherland of Bendel State (Variable LX1)

Distance from Warri, a major urban industrial centre located on the Coast (Variables LX2).

Percentage of population urbanised (Variable LX5)

Percentage in manufacturing industry (Variable X7).

The four variables above were incorporated into a stepwise multiple regression model of the form below to explain the spatial pattern of development.

$$Y_i = b_0 + b_1x_1 + b_2x_2 + b_3x_3 + b_4x_4 + e$$

where

Y is the index of development (factor score 1)

b_0 = intercept value

$b_1 - b_4$ = regression coefficients

$x_1 - x_4$ are independent variables such that

x_1 is log distance from Benin City (Variable LX1)

x_2 is log distance from Warri (Variable LX2)

x_3 = percentage of population urbanized

x_4 = percentage in manufacturing (Variable X7)

e = error term

The computer programme used for analysis is the statistical

package for the social sciences. The programme computes a sequence of multiple linear regression equation in a stepwise procedure.

INTERPRETATION OF THE RESULTS FROM THE REGRESSION OF X4 & LX1, LX2, X5 & X7

The results of the multiple regression analysis applied to the index of development as represented by factor score 1 (Variable X4) is summarised in Table 5. Attention is focused on the level of explanation provided by the four independent variables. This level of explanation is based on R^2 . R^2 is the coefficient of determination. This measures the amount of variation in the dependent variable statistically explained. The standard error in the estimate is also computed and this shows the accuracy of the regression.

Table 3 shows that 84% of the variation in the level of development is explained by the four variables. From Table 3, the percentage of population employed in manufacturing is the most important variable, as can be judged from the "t" value and the contribution to variation in the dependent variable explained. It explained 69% of the variation. Distance from Benin City and Warri and the urbanization variables did not prove important in explaining the variation in the dependent variable. This is evident from their "t" values and their percentage contribution to the level of explanation in the dependent variable. Their "t" values are not significant at the 5% level.

This analysis firmly confirms our first hypothesis that the development surface in Bendel State is highly influenced by the level of manufacturing activity. The explanation for the importance of employment in manufacturing industry and the level of urbanization is as follows. Employment opportunities exist in urban areas because there is a concentration of manufacturing and service industries, education facilities and government agencies. Along with these are the provisions of infrastructural facilities in urban areas. As more industries locate in urban areas, additional infrastructural facilities will be provided and greater employment opportunities are created.

resulting in the general economic development and social welfare of the areas in relation to rural areas. Since the most developed surface in Bendel State (Figure 2) is associated with manufacturing activity and urbanization, it may, therefore, be firmly regarded as the core region of Bendel State.

Table 5: - Regression of Index of Development (Variable X4) on Four Independent Variables

Independent Variables	Coefficient b	Standard error of b	Multiple R %	+ Level of explanation	Increase in the level of
X7 - Percentage population in manufacturing industry	0.2751167	0.12183	0.830	89.0	89.0
LX1 - Distance from Benin City	0.268828	0.24470	0.902	81.4	12.4
LX2 - Distance from Warri	-0.1537205	0.10565	0.913	83.3	1.9
X5 - Percentage of Population urbanized	0.01328958	0.01247	0.91965	84.6	1.3

* Significant at 5%

** Significant at 10%

*** Significant at 15%

+Based on R^2 (coefficient of Determination)

The results of our analysis show that hypotheses 1-4 have been validated. An important finding in the above-hypothesis is the fact that the level of development surface varies from the major urban centres indicating that the spread effects are only felt within the vicinity of the urban industrial centres. The analysis suggests, therefore, that the proximity of a major urban/industrial core is an important factor causing spatial differentials in economic development and prosperity within rural areas and that the spread effects do not affect areas distant to the major urban industrial centre. We have therefore inferred causation from the statistical analysis.

ANALYSIS OF PROCESSES (CHANNELS AND MECHANISMS) OF IMPACT

The first technique used in highlighting spatial patterns of the development impact (spread effects) of urban industrial concentrations is basically descriptive, involving the drawing of inference from statistical analysis.

Further examination of the efficacy of urban industrial spread effects of Bendel State is carried out by means of quite a different methodology. Here we propose to examine the processes (channels and mechanisms) by which urban industrial concentration influences regional development levels identified earlier. This is accomplished by an empirical consideration of the range of spread effects emanating from urban industrial concentration. In this way, it is hoped to identify the channels of impact and the particular indicators of spread mechanisms and hence highlight the processes by which the regional development levels in the Old Bendel State occur.

The application of the descriptive method used earlier in this lecture and the process approach adopted in this section produce an integrated process-response model in which an understanding of both the process and form of spatial developmental impact by urban industrial concentration on rural regions is gained by their successive examination.

The data on which this analysis is based derived wholly from a comprehensive industrial questionnaire survey. The main aim of the survey was to collect the relevant information relating to channels and mechanisms of spread effect emanating from urban industrial development. The survey focussed on (i) impact via labour movement and labour recruitment; (ii) impact via industrial linkage; and (iii) impact via the personal expenditure of industrial workers. In addition to a management survey, there was also a workers' survey.

ANALYSIS OF SPREAD-BACKWASH EFFECTS EMANATING FROM URBAN/INDUSTRIAL DEVELOPMENT: EMPIRICAL FINDINGS

Various spread and backwash mechanisms have been identified earlier in this lecture. We can now empirically examine each in turn.

(a) Migration - Commuting - Employment Expansion:

It has been observed that the creation of industrial employment, particularly in the commuting zone, constitutes an important spread mechanism. We analysed the industrial employment created by urban industrial development to ascertain to what extent some of this employment originated within or beyond the commuting hinterland. In the industrial survey, the industrialists were asked to indicate their employment sizes between 1976 and 1981 (5 year interval). The results showed that between 1976 and 1981, manufacturing industries in the three major urban centres recorded some employment expansion. A high proportion of the industrial workers originated beyond the commuting zones of the urban/industrial centres. The analysis showed a high level of inter-regional and intra-regional migration, with most of migrants originating from the rural backward regions of the States. The pattern of inter-regional and intra-regional migration from the poor and backward rural regions to the urban industrial centres in the Old Bendel State can be interpreted as having backwash effect.

This argument is also supported by the fact that although the urban industrial centres had absorbed a group of unemployed persons from the periphery, yet most of the absorbed workers were reasonably educated and skilled. Thus the recruitment and movement of labour have not produced a spread effect but have rather created a backwash effect and thereby further widening the disparities between the urban industrial centres and the rural periphery.

(b) Industrial Linkage

It has been indicated earlier in this paper that one of the channels and mechanisms of urban-industrial spread effects is through inter-

industry linkage. The linkages between the urban centres firms and firms in the surrounding hinterland thus provide channels for the creation of indirect employment impact. In this section, it is proposed to assess the impact of the major urban centre firms in terms of possible indirect employment created through linkages with other firms in the surrounding areas. Source of linkages considered are:-

- (i) Sources of raw materials/components;
- (ii) Subcontracting;
- (iii) Decentralisation of branch plants;
- (iv) Marketing.

These spread effects mechanisms were examined by an empirical consideration of the spatial flows between the urban industrial centres and the extended growth space. The industrial questionnaire from which the data for this analysis was based had aimed to quantify the flows in financial terms but most of the industrialists were reluctant to give financial estimates of their materials. This analysis, therefore, does not include any financial quantification of raw material/inputs. This is not a serious shortcoming since the main aim of the survey was to identify the existence of sources (areas) of raw materials and then speculate on the multiplier effect.

(i) *Main Sources Of Raw Materials/Input (By Volume)*

In the industrial survey, firms were asked to indicate the main source of their raw materials at the time of survey and five years earlier. The returns showed the areas important as main source of raw materials/inputs in this period. The returns showed that in 1976, 57.7% of the firms surveyed obtained their main raw materials from the Old Bendel State. By 1981, 68% were drawing their materials from within the state. This indicates that Old Bendel State had increased in importance as a source of raw materials.

The results also clearly showed that the three urban centres of Benin City, Warri and Sapele continued to be important sources of

raw materials. This suggests that the beneficial effects of such sources would be confined to the urban centres.

A further analysis showed that firms in urban centres obtained their raw materials from the immediate vicinity of the urban centres in which they are located. For example, the sawmilling and rubber industries located in Benin bought their raw materials from Benin and its environs (within 30 kilometres of the urban centre). Similarly, plants in Sapele obtained their materials from Sapele and its immediate surroundings. Most of the mineral industries in Warri received their raw materials from Warri and its immediate surroundings. This is consistent with the findings of a study on industrial location theories which indicated that accessibility to raw materials was one of the factors influencing the location of manufacturing industry in the urban centres in the Old Bendel State (Ighalo, 1987).

The above findings, therefore, suggest that the indirect employment impact produced by the purchasing of raw materials by major urban centres firms has been channelled to the main urban centres themselves and their immediate surrounding areas. The peripheral rural areas remain largely unaffected.

(ii) *Subcontracting To Subcontractors*

The purchases of the services of subcontracting firm is similar, as a channel or mechanism of impact to the purchase of raw materials. Subcontracting in the industrial questionnaire refers to industrial services or facilities provided by or for establishments outside the firm. Firms were asked whether they put out work to contractors. Of the 111 firms interviewed, only 40 (36%) of the firms put out work to subcontractors. The firms were then asked to indicate the location of the subcontractors. The subcontractors were to be located within 30 kilometres of the major urban centres where the firms offering the contracts are located.

The analysis showed very little inter-urban subcontracting between the urban centre firms and rural areas. On the whole, the inter-firm

subcontracting had been confined to the urban centres. The multiplier effect of this will, therefore, be restricted to the major urban centres. Thus subcontracting had not functioned as a 'spread effect' mechanism.

(iii) Decentralisation Of Branch Plants

The decentralization of branch plants is generally regarded as a mechanism of spread effect. The analysis showed that those parent firms which had established branch plants in the Old Bendel State located such plants within or near the urban centres in which the parent firms were located. No branch plant had been located in the peripheral areas of the state. No inter-urban decentralisation of branch plants had in fact taken place.

(iv) Marketing Linkages

Another mechanism by which firms generate indirect employment is through marketing linkages. Marketing linkages are the ties which an enterprise has with other firms that aid in the selling and distribution of goods (for example, packers, wholesalers, agents and transportation concerns). An increase in production in these enterprises may induce expansion in market linked firms, with a resultant multiplier effect in employment. The analysis showed that it is with the major urban centres that marketing links had been forged by firms in those centres. Although marketing agents were used by firms in the urban centres, these agents were however, located in the urban centres. In conclusion, marketing has not been an effective mechanism of promoting spread effect from the urban industrial centres.

THE FLOW OF EXPENDITURE OF PERSONAL INCOME GENERATED BY URBAN ACTIVITY

It has been indicated earlier that the expenditure of personal income generated by urban industrial activity constitutes a mechanism by which urban industrial development might be expected to generate induced impact in the surrounding areas. The instruments by which this might be effected include the purchase of local foodstuffs by urban industrial

workers, remittances and other capital flows emanating from urban industrial workers.

PURCHASE OF LOCAL FOODSTUFFS BY URBAN INDUSTRIAL WORKERS

In the industrial workers' questionnaire, the workers were asked to indicate the urban centres where they normally bought their major food items. 87.4% of the industrial workers interviewed bought their food regularly from the major urban centres where they worked. Similarly, 85% of the workers bought their durable goods from the major urban centres.

From the analysis of the purchase of food and durable goods, it is clear that the expenditure of personal income of the workers had been beneficial mainly to the urban centres. It is, therefore, reasonable to posit that any extra activity or employment generated by the expenditure will be confined mainly to the urban centres.

REMITTANCES AND OTHER CAPITAL FLOWS EMANATING FROM WORKERS

In the industrial workers' questionnaire, the workers were asked whether they regularly sent cash and other gifts home. The questionnaire revealed that about 89% of the workers in the urban centres did remit money and non-cash gifts home. Although there has been almost total participation in this practice of remitting money to relations left in the rural areas, the wide discrepancies in the figures quoted and the income of the workers cast some doubt on this practice making any impact in the rural areas. In addition, with the increasing high expenditure on food and other items, the proportion of earnings with which the workers could part was hardly enough to make any impact.

Other sources of capital flows emanating from the urban industrial workers to the rural areas included loans, buildings and other development projects. The incidence of these practices was very low.

Only 4.3% of the workers lent money to people in the rural areas. Only 10.8% of the workers were engaged in any personal development projects.

Other sources of capital flows into the rural areas included the urban workers' participation in community development projects in the rural areas. The workers were asked if they participated in any community development projects. About 70% of the industrial workers claim to subscribe cash and non-cash contribution to community development projects back home. Again the amount of contributions quoted by the workers appeared to have been inflated, thus making it difficult to estimate its spatial impact.

Although with the rather spurious information on remittances and other capital flows, it is difficult to draw conclusions as to their efficacy as a spread mechanism, nevertheless it is reasonable to posit that the high cost of living in the urban centres suggests that only a small proportion of the income of the workers could be remitted or spent on community development projects in their rural areas. The impact of this is likely to be low. The foregoing analysis on the flow of the personal expenditure of the industrial workers suggest that its impact appears to be confined to the urban centres.

From the foregoing analysis, the following conclusions can be drawn.

- (a) The development of urban industrial activity has produced intra-regional migration in the Old Bendel State. This migration originated beyond the commuting hinterland of the urban centres. The migrants were, to a large extent, attracted by the employment opportunities in the manufacturing sector. Although the development of urban industrial activity has created increased employment opportunities, the recruitment and movement of labour from rural areas has produced backwash effects.
- (b) Regarding the regional impact of industrial linkage, it is clear

that additional industrial activity has been created in the Old Bendel State by the purchasing of raw materials, within the State and by the small use of local contractors, but the impact had been confined to the main urban centres. The few branch plants that have been established were either confined to the urban centres or set up outside the State. The rural areas have been unaffected. Marketing linkages also appeared to have been beneficial only to the urban centres.

- (c) The flows of expenditure of workers had also been generally favourable to the urban centres only.

It is clear from the foregoing analysis that spread effects emanating from manufacturing activity have not functioned effectively to make any substantial contribution to rural development. Thus the direct, indirect and induced employment effect that are likely to have been created have been channelled to the major urban centres. Many of the "spread effects" do not operate and those that operate have limited spatial range confined to the vicinity of the urban centres. The processes are, therefore, consistent with our findings in the first technique adopted which show that the level of development had its peak at the urban centres and varied inversely with distances from major urban centres of Benin City, Warri and Sapele. The failure of the urban industrial concentration to generate and transmit spread effects in this empirical study is consistent with similar findings of studies in other parts of the world (Gilbert, 1975, Mosley, 1973a, 1973b). The notion that urban/industrial growth centre would induce development spread effects in the backward rural regions is therefore not a realistic proposition. It is an illusion.

PROBLEMS IN THE APPLICATION OF URBAN/INDUSTRIAL PARADIGM OF DEVELOPMENT IN NIGERIA

It is necessary at this juncture to provide some explanations for the inapplicability of the urban industrial paradigm of development.

From my extensive study (Ighalo, 1986, 1989 and 1992) the failure

the urban/industrial concentration to generate spread effects is attributable to the following factors: There are two basic assumptions in the successful operation of urban/industrial paradigm. The first relates (a) to the existence in a space economy of a well-ordered and articulate spatial settlement structure with some level of integration between the urban industrial centres and their surrounding rural periphery. (b) A certain level of infrastructural facilities and transport networks. (c) Some level of spatial interaction within the region manifested in commodity flows and intra-regional movement of goods and capital. I found in my research that the spatial structure of the Old Bendel State does not conform to the optimal structure required for the diffusion of spread effects from urban industrial growth centres. The spatial structure of Old Bendel State is characterised by the following:-

- (i) Imbalance in the hierarchy of urban centres (with a dominance of three major urban centres located in the South Western part of the old State and several scattered settlements.
- (ii) An absence of medium size or intermediate centres that can provide the basis of establishment of social services to rural inhabitants and which will enable spread effects from major centre to be absorbed. A major result of the absence of medium size towns is the high cost of involvement between remote villages and a few available towns in areas where few good roads exist. There is thus a weak structural link between the urban industrial centres and the rural areas.

The second assumption implicit in the urban industrial growth pole/growth centre model and which is necessary for the generation and transmission of spread effects from urban industrial concentration, relates to the industrial structure of these centres. The urban industrial pole/growth centre model stipulates that such industries should be large-scale, dominant (propulsive), fast growing and highly innovating. They must also exhibit intense inter-industry linkage relations with the rural economy. I found, however in a previous study (Ighalo, 1987) that the industrial structures in the major urban centres do not

conform with these characteristics. In my research I found that the industrial landscape is characterised by a pre-dominance of small scale and low technology establishments. My research also revealed that no intense linkage existed between the urban industrial centres firms and the vast rural surrounding hinterland. The operational problems connected with the two basic assumptions of the urban/industrial paradigm constitute additional illusions of that model. There is no space economy particularly the ones relating to developing countries with colonial spatial settlement structure that can satisfy these assumptions and facilitate the operation of developmental spread effects. These propositions of the urban industrial paradigm of development are therefore mere illusions. The research clearly shows that urban industrial growth denudes backward rural regions of their most productive assets, does not create additional demands for their products and does not aid the process of structural adaptation. There is the need for an alternative paradigm of development in Nigeria.

Having identified the illusions in the urban/industrial paradigm of development, I now wish to provide what I regard as the implications of my findings and my recommendations.

POLITICAL IMPLICATIONS OF THE FINDINGS

The concentration of economic development and prosperity (associated with industrial concentration and urbanisation) in the south-western part of the Old Bendel State, and the failure of urban industrial spread effects to extend to rural areas, has certain political implications in Edo and Delta States and in fact, in Nigeria as a whole. The areas that are favoured by the concentration of industrial and other activities (see Fig. 3) relate to three main ethnic groups – the Binis in Oredo Local Government Areas, the Urhobos in Okpe, and the Itsekiris in Warri Local Government Areas. The fairly developed areas (Burutu and Bomadi Local Government Areas) relate to the Ijaw ethnic groups. The less developed and backward local government areas relate to four other main ethnic groups, which form some part of the Niger Delta which is now in turmoil. In a country where ethnic differences

are strong, disparities in development which coincide with these ethnic differences will militate against political and national stability, as Brewis (1965) has observed in his study of income disparities in Canada. Kuznets (1955, p. 26) stressed the same problem when he raised the question whether under-developed societies can "withstand the strain which further widening of income inequality is likely to generate"?

The findings in this study also have political implications for other States in Nigeria and perhaps in other developing countries where industrial development is concentrated in urban centres – a concentration created by colonial heritage and accentuated by policies of import substitution and export promotion. If economic development and prosperity, associated with urban industrial concentration is confined to the urban centres and their vicinities, with the rural areas remaining largely unaffected as evidenced in this study, then such a situation threatens the social and political unity of Nigeria and other developing countries. There is therefore the need to reduce this imbalance between the urban industrial core and the rural periphery with a view to promoting national unity.

OTHER IMPLICATIONS OF FINDINGS

It was found in this study that economic development and prosperity (associated with urban industrial development) was confined to the urban centres and their vicinities and that urban industrial concentration did not automatically induce rural and regional development and cannot do so without direct government efforts. It was found that the spread effects emanating from urban/industrial centres are illusory. We can therefore infer from this that there is something inherently wrong with some aspects of the urban/industrial paradigm of development. The model is not an appropriate instrument of spatial policy in developing countries. The other alternative of spatial dispersion provides the answer.

The writer believes that investment strategies which are based on the assumption that capital invested in urban industrial growth

centres will spread development to the surrounding periphery must be reappraised in the light of the resultant distance decay effect. Urban based industrial and investment strategies will therefore inevitably lead to an intensified pattern of rural urban developmental inequality. It is thus essential for planners to examine the efficiency of urban based industrial and other investments against the inequality which they produce.

Alternative spatial investment strategies include those which are more dispersed, specifically investing in a greater number of smaller centres and hence promoting the accessibility of the rural areas to social services.

RECOMMENDATIONS

These recommendations apply not only to Edo and Delta States but to other States in Nigeria and in fact other Developing Countries with urban/industrial concentration and backward rural hinterland.

1. Regional Policy For Edo And Delta States

I firmly believe that the regional policies for Edo and Delta States should be geared towards the encouragement of overall growth while ensuring at the same time a redistribution of welfare so as to reduce regional inequality in development. Policies should be based on the level of development of the different areas in the states. It is of course difficult to view the basic needs of each region in isolation.

Policies to provide the need of a particular region may frustrate the ability to offer the needs of other regions. Consequently, the regional problem is usually "how to meet effectively the challenges of economic transformation in all the regions simultaneously" (Friedman 1966).

The policies should be based on:

- (a) The Characteristics of the areas.
- (b) Policies should be based on the resources of the different areas.

in the States.

2. The need to modify the current urban/industrial paradigm of development research clearly reveals that development policies (predominantly of the urban/industrial paradigm) have not been able to improve the living levels in the backward areas. There is need therefore to devise alternative measures. There is need for spatial dispersion of investment with its thrust on the promotion of development from "below" by injecting capital investment direct into the backward rural areas. The guiding element is that the development of the territorial units should be primarily based on the full mobilisation of their natural, human and institutional resources. The following should be the components of development strategies from "below", and a policy of dispersal of investment to mitigate regional imbalance.

- (i) Provision of broad access to land and other territorially available natural resources. To this effect, the Land Use Decree should be overhauled to remove the bottlenecks at speedy land availability and security of tenure.
- (ii) New territorially organised structures should be introduced for equitable communal decision making.
- (iii) Some level of self determination should be granted to the peripheral areas to promote diversified peripheral development. This is where the Agro Politan Concept becomes relevant. The concept is attributed to Friedmann and Weaver, (1979). These writers observe that growth centres imply an urban industrial strategy and instead suggest that aspects of urbanism should be injected into rural areas through a "cities-in-the-fields" approach. This procedure involves the establishment of a spatial unit larger than the villages designated as the "agropolitan district". The district provides services, off-farm employment and is self-governing. It would have an average of population density of 200 persons per square kilometre, include a core town of 10,000 - 25,000 with a commuting radius of 5-10 kilometres. A large proportion of the workforce would be agricultural, but there would be some small-scale light industry,

agro-processing and agro-supplying industries and a range of service activities. The functions of the district would be funded by keeping local savings, the transfer of capital from primate city to rural areas and the alterations in the terms of trade to the benefit of the agricultural sector.

The main difference between the agro-politan and the urban growth centre is that the former is designed to resist urbanisation, whereas the latter is ideally incorporated within a national urban policy.

This idea of agro-politan district has relevance to Nigeria. The concept would be suitable for the policy of spatial dispersion of economic activities which has been advocated in this lecture.

- (iv) An appropriate technology should be introduced to promote labour intensive activities in rural areas.
- (v) Priority projects should be introduced for the satisfaction of basic needs of rural areas - food, shelter and basic services.
- (vi) National pricing policies which offer favourable terms of trade to agricultural products in the peripheral areas should be introduced.
- (vii) Grants from Federal Government should be provided for the satisfaction of basic needs of the rural dwellers.
- (viii) There should restructuring of the urban and transport systems to improve accessibility of the population in all parts within and outside the rural areas.
- (ix) There should be improvement of rural to rural transport and communication systems into improve commodity and service markets within the backward rural areas.

3. Rural Industrialisation And Rural Development

It has been widely accepted that industrialisation can make significant contributions to the rural development in the following ways (United Nations, 1978; Sigurdson, 1978; Mabogunje, 1980, 1981):-

- through increased rural production and productivity and the raising of per capita income and hence the level of national and regional income;
-) through the creation of employment opportunities and satisfaction of basic needs, and the slowing down of the exodus of rural workers to cities;
-) through the creation of linkages (and the resultant multiplier effect) with other sectors of the economy;
-) by promoting the diversification of trades in the rural areas and assistance in the improvement and modernization of agricultural methods;
-) through helping to reduce regional inequality.

In the light of the above claims, some amount of rural industrialisation is suggested for rural development in Nigeria. However, in order that the above claims can be effected, industrial policies need to be integrated with those of rural development. Towards this end, appropriate institutions need to be created at all levels and industrial programmes have to be developed within the context of explicitly defined socio-economic objectives.

Rural poverty in Nigeria is characterised by subsistence farming, isolation from the mainstream of development and a generally poor quality of life. The causes of poverty is attributable to low agricultural yields and low productivity of labour, increasing population pressure on natural resources, high rates of absolute and disguised unemployment, and poor provision of infrastructural facilities.

Any attempt to reduce this poverty in Nigeria must therefore be specific to particular areas and the problems encountered. Rural development must therefore aim to raise the incomes and satisfaction of the basic needs for good quality of life. Industrial development as has been indicated has an important contribution to make by helping satisfy some of the basic needs of the rural dwellers.

Rural development involves a process of profound transformation

in society as a whole, in the local community and most important, in the role of the individual. It is essentially an issue of increasing the opportunities available to the individual as well as the ways of utilizing those opportunities.

However, because of the limitations of our possible understanding of the problems and the limited resources (financial and human) available, there is therefore the need to identify priorities to which development resources should be directed and to search for the multipliers that might enhance and strengthen the impacts of the inputs available. A strategy for rural development/must therefore aim to enhance the efficiency of current patterns of activity and to initiate new opportunities and instruments of development. Increased investment in rural areas should assist in improving the productivity of labour, provide more employment for rural dwellers.

Priority Industries For Rural Industrialisation

At the policy level, there is the need for explicit ideas on the types of products to be given priority within the rural industrialisation schemes so that public resources for long-term investment and assistance can be channelled accordingly. These priorities can be formed on the basis of resource endowment, availability of raw materials, energy supply and skills and market possibilities.

The variety of products suitable for rural industrialisation programmes in the country are as follows:-

- Production of agricultural inputs
- Processing of agricultural produce
- Processing of minerals and natural resources
- Production of building materials
- Production of consumer goods and basic needs items
- Traditional handicrafts
- Repair and maintenance services for other local industries (spare parts could also be produced).

Provision of inputs and services for other local industries (including subcontracting)

Suitable branch plants to industries in the major urban centres could be established.

4. An Integrated Rural Development Approach For Edo And Delta States

An important component part of the rural industrialisation and development policy in Nigeria is the idea of integrated rural development. The idea of integrated rural development stems from the necessity to integrate sectoral policies and programmes established by several agencies, focussed on the solution of the broad problems of rural development. This embraces fashioning a policy or programme not only to the special requirements of target groups but also taking into account other policies or programmes which aim to extend to the same target groups (Hogg, 1978). The concept aims also to provide wider opportunities for a larger proportion of the population. This means that the concept goes beyond individual projects and thus requires policies capable of reducing the disparity in development between urban and rural areas and promoting self-reliance in rural areas.

Integrated rural development can therefore be defined as a consciously formulated, systematic, multi-sectoral programme aimed at achieving the integration of the people in the rural areas in the mainstream of income groups in a country. It rests on the premise that economic and social progress are mutually reinforcing, requiring all the natural technical, economic, social and institutional links and their changes to be taken into account and that they should be combined in a manner that is likely to promote general well-being and integration. The foregoing discussion suggests that all the development strategies concerning human and physical resource planning, industrialisation, agriculture, economic infrastructure social services and social development constitute inputs into the process of integrated rural development.

The implementation of rural development programmes would require the deployment of skilled personnel, finance and material resources from various agencies of government. This suggests the need for a properly coordinated and comprehensive approach to the formulation and implementation of plans for rural development projects. It is suggested that a strategic master plan on rural development be formulated by all the States of the country.

If the changes in the current rural socio-economic base of Nigeria are to be created by integrated rural development planning, the inertia which is a feature of the spatial patterns in the rural areas has to be overcome. This requires an evolution of new and different spatial arrangements and patterns of settlement.

5. Policies To Integrate The Nigeria Economy

A principal regional planning problem in Nigeria is devising ways of linking the more and fairly well developed areas with the less developed and backward areas. This issue involves how to forge economic linkages within each State.

The findings in my research in the Old Bendel State suggest that the less developed and backward areas remain isolated from the more developed areas. This is evidenced by the absence of any inter-industry linkages between the urban industrial firms and the surrounding periphery and the focus of transportation networks on the three major urban centres of Benin City, Warri and Sapele, and the resulting weak links between these urban areas and rural areas. It is mainly in this context that Friedman (1966), observes that the problem in the developing countries is one of lack of spatial integration.

Measures to promote the spatial integration of the economy in Old Bendel State now Edo and Delta States will involve the following:-

- (i) the creation of an inter-regional and intra-regional system of transportation and communications;
- (ii) the planning of transportation networks to offer the greatest access of rural population to growth points as well as points

outside the region;

- (iii) the restructuring of the current settlement pattern and the promotion of a well-articulated system which caters for small and medium-size (intermediate) centres, rural service and market centres.

Some writers have suggested the use of central place theory as a framework for choosing which towns to promote to urban status and to be the recipient of services and infrastructure. In Edo and Delta States, it is suggested that some of the headquarters of the local government areas should be expanded to the status of medium-size centres. The government can then provide positive incentives to steer industries (particularly small-scale industries) to these areas. These will provide employment and intercept potential migrants to the major urban centres. The market centres, it is hoped, should receive the impacts of major and medium-size centres and in turn transmit these impacts to the rural dwellers.

A component part of the restructuring of the settlement system in order to facilitate the even spread of development is the rural integrated development planning. In virtually all development plans so far executed in Edo and Delta states the focus of rural development has been on the agricultural production. This of course does not suggest that no consideration has been given to the need for institutional change in land tenure, land distribution, rural education and a range of other institutional elements related to the rural areas. These aspects have been distinctively linked with the effort to expand agricultural production. One main effect of this traditional rural development procedure in the states has been the trend towards the promotion of scattered and often unrelated investments, on a more or less *ad hoc* basis.

A major shortcoming of this approach has been the absence of spatial framework for rural development. In effect, rural development planning in the States seems to have been conducted on the assumption that the present rural settlement pattern (comprising scattered small

villages in most parts of the State) provide a permanent and satisfactory settlement pattern.

The above shortcoming, associated with the traditional rural development strategy further stresses the need for an integrated arrangement. If the changes in the current rural socio-economic base of Edo and Delta States are to be promoted by integrated rural development planning, the slow development which is a feature of the existing spatial pattern in the rural areas has to be tackled. There is therefore the need to reorganise the current patterns of rural settlement (comprising of scattered villages). It has been suggested that some of the ways of doing this are through village regrouping and through the creation of central market towns in specific parts of the rural landscape (Onokerhoraye, 1980; Onibokun, 1981; Gana, 1978). The current settlement patterns and sizes in rural areas make it difficult and uneconomical for government to provide all settlements with basic infrastructural facilities. Indeed, the Federal government recognised this problem by observing that:

"There are several obstacles in the way of community development in this country. These include the small size of many rural communities and their location, for they are often scattered and inaccessible, making it difficult to supply them with basic infrastructure and social amenities" (Federal Republic of Nigeria, 1975; 321).

Regrouping of villages has therefore been suggested as a strategy for rural development, particularly for overcoming the constraints to development caused by the small sizes and scattered nature of rural settlements in Nigeria. Thus in the Edo and Delta States, the regrouping of scattered villages will result in the creation of settlements that will be large enough to justify the provision of infrastructural and other facilities. However, I feel that the regrouping of villages for rural development should be supported by the people themselves. This support can be gained by policy makers having dialogues with the

village dwellers on the benefits to be derived from the regrouping of their areas. In addition, market towns should be established based on the following:-

- (a) the relative growth and significance of the informal sector particularly in small-scale trade, commerce and business;
- (b) the relative social attraction and importance of a place;
- (c) the level of transport and communications linkages with its surrounding areas;
- (d) relative community participation in matters affecting the centre.

The preceding issues on the restructuring of the settlement pattern in Edo and Delta States are aimed at creating an integrated and effective regional settlement structure. Thus there will be three main levels – (i) the major urban centres (comprising Benin City, Warri and Sapele); (ii) the secondary urban system, comprising the local government headquarters; and (iii) primary urban system consisting of market towns. Such integration, it is hoped, will result in the organization of the development space which ensures the minimisation of distances involved in the operation of peoples social, economic and other activities and bring the rural areas within effective distances of spread of development which, as I have found in my research, has distance-decay effect. In other words, the integrated settlement pattern should be evolved to enhance development and reduce or remove regional inequality in the States.

6. The Significance Of Public Investment

Two kinds of public investment may be identified for planning purposes. One relates to growth-inducing investments on such large-scale projects as irrigation, road and port construction schemes and the setting up of large-scale factories, such as iron and steel factories. The other relates to welfare investments in public infrastructural facilities, such as schools, hospitals, water supply and electricity.

In Nigeria, it is clear that the first priority of the government ought

to be an emphasis on welfare investments in the less developed and backward regions. In addition to devising measures to induce industries to move to these areas, the government could locate welfare investments in the poor regions. The welfare investments themselves possess some generative effects in their attraction or private investment. By locating welfare investments in the lagging areas, growth in these areas will be influenced, since the location of private investment to a high degree, follows public investment. An important locational barrier in the country is the lack of essential infrastructure (roads, water supply, electricity, etc) necessary for the location of industries in most areas. The effect of this is that private investments go to the few areas where such facilities are provided. This results in the concentration of industrial and other activities in a few areas and the widening of regional inequalities. The provision of basic infrastructure or welfare investments in most places will therefore facilitate the mobility of private investment.

7. Institutional Changes

The suggestions highlighted above obviously pose a challenge to governments and require urgent meaningful and effective institutional changes. I am suggesting the creation of a full Ministry of Urban and Regional Development which should take over the task of Regional development across the country. Counterparts of this Ministry should be established in all States of the Federation. The Federal Ministry of Urban and Regional Development should provide guidelines to States which should be charged with the preparation and implementation of regional plans. The States will prepare regional development plans (including strategic rural development plans). This of course suggests a change in the current revenue allocation to give the States more resources to carry out this responsibility. The Federal Government will monitor the preparation and implementation of regional plans. A group of States can combine to prepare a broader regional plan depending on the problem and the scale of that problem. Regional development planning should be based on a strategic approach. The

current spasmodic approach to regional problems such as the current approach to the Niger Delta regional problems, should be discouraged. Instead, a strategic and more comprehensive or holistic approach should be encouraged. I sometimes ask what the impact of a major Bridge constructed in the Niger Delta would have in opening up the areas for development. The construction of such a bridge is not an issue that can be conceived within a few weeks of a response to an unrest. It should be part of an overall strategic plan for the area and for the country.

MY CONTRIBUTION TO KNOWLEDGE

Mr. Vice-Chancellor, Distinguished Audience, on an occasion such as this, it is perhaps necessary for me to state briefly my contribution to my discipline of Estate Management. I am perhaps one of the most fortunate scholars in this country because my discipline straddle three professions - Estate Management at the Undergraduate, Urban and Regional Planning at the Masters, Development Economics at the Doctoral level. These three disciplines have provided me with strong analytic tools for my research into the Urban and Regional Development. I can claim without sounding immodest, that I am responsible for the innovative inclusion of Urban Economics into the Estate Management discipline in this country. I used the opportunities of my participation in the various accreditation exercise over the years to convince other Universities on the need to broaden and deepen the discipline of Estate Management by the inclusion of Urban and Regional Economics. Mr. Vice-Chancellor I am proud to say most programmes in Estate Management in almost all Nigerian Universities that offer that course have adopted the Ife model. From the excellent reports we get from the employers we are told that our graduates have a robust understanding of the various factors creating property values. They are able to write more lucid and penetrating feasibility studies and as a result they are able to give sound advice to property investors. Perhaps I should mention that I have supervised eleven master's degrees and two Ph.Ds including the current Head of Department of Estate Management. I am currently supervising two Masters students

Apart from the contribution I have made on the understanding of the basic propositions of the urban/industrial paradigm of development, there are other areas where I have made contributions which are relevant to Estate Management.

Measurement Of Industrial Diversification

The other area where I have made important contribution is the design of a methodology for measuring the industrial diversification of cities in Nigeria – (Lagos, Warri, Benin City, Sapele) using some form of lorenz curve. I have used this technique in predicting the economic stability of cities and this has been of vital utility to property investors (Ighalo, 1985).

The measurement of industrial diversification of cities can be taken at periodic intervals and from the results, one can predict the stability of a particular city. I introduced this technique in this country, and it has helped to illuminate some aspects of urban economics.

Identifying Regional Development Levels

I have also contributed to our knowledge on devising the technique for identifying the regional development levels and then designing regional policies to suit such levels (Ighalo, 1985).

Industrial Concentration And Urban Growth

From my research efforts, the detailed relationship between urbanization and industrialization has been clearly identified. In a study carried out by me (Ighalo, 1986), I found that the link between Industrial Development and Urbanization was a crucial factor in the process of growth in the major urban centres and this has contributed to the shaping of the settlement pattern in the Old Bendel State of Nigeria (Ighalo, 1986).

Industrial Location Analysis

In a detailed study I carried out on Industrial Location, I identified the major factors influencing the location of manufacturing industry in the major urban centres as follows:-

- Labour Accessibility
- Factory availability
- Accessibility to raw materials
- Availability of agglomeration advantages
- Accessibility to good transport network
- Proximity to sea port and accessibility to linked producers
- Availability of financial incentives (grants tax exemption)

The seed bed growth factor, political factors, government activities and government spending.

Some of these findings constitute empirical validation of the proposition of industrial location theory.

INDUSTRIAL ESTATES AND REGIONAL DEVELOPMENT IN LAGOS STATE

In a research conducted with one of my postgraduate students, we examined the impact of industrial estates and regional development in Lagos, in terms of generation of employment, promotion of industrial diversification and the creation of an environment conducive to self-sustaining growth. The study focussed in four industrial estates at Ikeja, Ilupeju, Iganmu and Apapa. The study used amongst others, extensive and original survey materials and published data and found that Industrial Estates made tremendous contributions to the generation of employment in the state and fostered inter industry linkages among firms within Estates. Further, the growth of productive employment led to the growth of other employment in auxiliary activities even without direct government assistance. Diversification indices computed for the estates and for Lagos State as a whole in 1962 and 1980 showed that diversification of industrial employment decreased in the state as a whole but created slightly within the estates.

Based on these findings a number of recommendations were made regarding the use of industrial estates as a regional policy tool. These include the provision of fully packaged estates of different types, formulation of a new allocation structure, thorough pre-investment analysis to avoid failure of investment and the introduction of supportive institutional devices such as industrial advisory services, co-operatives to complement the opportunities offered by industrial estates. This study has to date constituted a vital input in the use of industrial estates in the promotion of regional development in this country. This study has been published as a book (Ighalo and Agagu, 1993). National and international recognition of my contributions have been manifested in numerous invitations to conferences and seminars both within and outside the country.

The above contributions have over the years cumulatively enriched me and I believe have lent immense stimulus and resourcefulness to my teaching of Urban and Regional Economics in the Department of Estate Management at Obafemi Awolowo University.

For all these I will therefore always remain indebted to this Great Citadel of Learning for providing me the enabling environment to make these contributions.

Mr. Vice-Chancellor, Distinguished Scholars, Students, Ladies and Gentlemen, I thank you all for listening.

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