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# Spatial Aspects of Rural Development

By Clark Edwards\*

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## Abstract

Traditional economic theory has ignored the spatial aspects of rural development. This article reviews literature which focuses on the functional relationships between geographic space and rural development. Spatial considerations affect the size and location of individual firms. They also affect geographic patterns of economic activity and the formation of regions. Three empirical approaches to regionalization are reviewed—administrative, homogeneous, and functional. Rurality is defined according to concepts of central place, hinterland, and hierarchy. Much of the literature of regional economic development represents an urban point of view, but some represents a rural point of view and indicates that the development of a rural area depends partly on factors affecting location and regionalization.

## Keywords

Rural economic development, Growth, Location, Region

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Rurality is partly a geographic concept. Rural places can be located on a map, and rural development is a spatial phenomenon. This much follows by definition. Because of the formal connection between rural development and geography, it is somewhat surprising that functional or behavioral connections between development and space are so often overlooked in the literature.

It is fair for Siebert to say that "traditional theory has long ignored this spatial aspect of economic behavior" (79, p. 1). Jutila adds, "an economic model should be subject to an extension by exogenous introductions of such dimensions as space, distance, and location" (46, p. 95). Isard and Liossatos refer to the omission of spatial considerations when they observe "that there exists a major gap [which] pertains to development theory, growth theory, evolutionary theory, theories of transition and change (cyclical and secular), and in general, dynamic social theory" (42, p. 9).

The purpose of this article is to review some of the literature which relates geographic space to economic development—and to rural development—and to persuade the reader that the character of economic development in rural areas is strongly, although not solely, influenced by spatial factors.

The importance of space in economic development has never been totally ignored. Smith (80) and Ricardo (71) recognized the role of spatial location in rent theory,

Smith devoted considerable attention to the differential influences of town and country on the wealth of nations, and von Thunen (106) developed his seminal approach to the location of economic activity more than a century and a half ago. Although spatial aspects of economic development were included when the discipline of economics was founded, these aspects were lost sight of in mainstream theory and practice for about a century.

Efforts early in this century to include locational information in economic analyses were largely descriptive. For example, Taylor (91) included the geographical method in his list of five methods used in agricultural economics research. His geographical method was to arrange on maps large quantities of data collected by the Bureau of the Census and by market reporting agencies.

Spatial economics is largely a post-World War II phenomenon (30, pp. 7-8) for which the underpinnings were laid during the previous two or three decades. Two books by Isard (39, 40) were of paramount importance in expanding these beginnings into a discipline which is helpful in explaining the functional relationships between geography and economic development.

"Growth occurs in space," says Siebert, "it is influenced by the spatial structure and it has a feedback upon the economic landscape" (79, p. ix). Efforts to study these feedbacks have sometimes suffered for want of a consistent theoretical approach. Kerr and Williamson note that "regional economists have borrowed theories, principles,

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and analytical tools from general economics and adapted them for their own specific purposes" (48, p. 6)

Subregional development is a function of national development, according to Cumberland "Disaggregation of national experience by space is as essential as disaggregation by time and by industry in advancing understanding of the phenomenon involved" (18, p. 1) That is, the parts are explained in terms of the whole

Others turn the logic around and explain the whole in terms of its parts. Richardson explains the bottom-up mechanism involved in relating geographic to economic space "Growth rates vary with location over time because the relative strength of agglomeration and dispersion factors alters over space and inter-temporally" (73, p. 2)

Policy implications of space are emphasized by Friedman and Alonso "The decision about how much of a given resource to allocate to a specific function must ultimately involve the question of where this allocation is to take effect, if only because its contribution to national economic growth will tend to vary greatly with location" (25, p. xv)

Recently, progress has been made in integrating spatial theory with static economics, integration with dynamic economics is still incomplete (41, 42). Richardson's model (72) is based on the neoclassical equilibrium framework that, by itself, neglects spatial factors affecting economic development. He seeks to incorporate in this model the spatial effects of diffusion, agglomeration, and cumulative causation. Richardson (73, pp. 5-6) explains why the attempt at integration will likely remain incomplete: the spaceless neoclassical model has certain implications which conflict with spatially explicit formulations of the development process.

Borts believes of Richardson (72) that "what started out as an attack on neoclassical growth models winds up as an interesting, potentially testable, and useful synthesis of locational variables which might strengthen the neoclassical approach" (10, p. 546). Borts notes that the model Richardson (72) presents at the end of his book embraces "precisely those neoclassical relations spurned at the beginning" (10, p. 546). Von Boventer comments that Richardson's main thesis is "fully correct—that the significance of neoclassical adjustment mechanisms has, on the whole, been overrated and that cumulative processes and agglomeration factors should be given much more attention than has been the case in the past" (105, p. 2).

Spatial studies may take the microscopic view of where one added firm would locate, if everything else were in place, or they may take the macroscopic view of the spatial pattern of all economic activity. The next section reviews selected literature pertaining to the location of

individual firms, households, or projects. This points to one of the unique contributions of regional economics—the importance of spatial relationships in economics. Following that is a review of spatial patterns. This points to another unique contribution—the concept of a region as a unit of analysis. The remaining sections turn to rural development matters such as growth center strategies and rural-urban balance.

## Individual Location

The theory of location of an individual firm generally assumes a profit-maximizing firm with perfect knowledge in a free market (1). Most firms respond to specific locational influences. For example, those with relatively high transportation costs locate to minimize such costs, and those with high labor costs are labor oriented. Some firms respond to more than one locational influence; the profit-maximizing location may be based on marginal tradeoffs between, say, labor and transportation costs. Some firms have no particular locational orientation and are called footloose.

Transportation costs tend to concentrate industries; a new plant tends to locate near existing ones because of its orientation toward resources, markets, junctions, transshipment points, or median locations. Avoidance of high rent and the hope of establishing a local monopoly are examples of dispersive locational forces causing new plants to decentralize and locate away from existing plants. Thus, the optimal location for some firms is an urban place, whereas other firms fare best in a rural area. This phenomenon applies to farms as well as to nonfarm firms. Truck farms may do best close to markets, whereas cow and calf herds are maintained in distant and open spaces.

Weber (108) examined the least-cost location of a firm with respect to regional variation in the cost of labor and transportation. Hoover (36) extended the analysis to include other factors and characterized the location of firms relative to inputs or markets with respect to whether production is weight-increasing or weight-decreasing. "Until fairly recently, location theory laid an exaggerated emphasis on the role of transportation costs," according to Hoover (38, p. 23).

The spatial dimension was integrated by Isard (39) into the conventional theory of the firm. Later extensions showed that one can make serious errors in firm analysis by ignoring nonspatial factors, just as errors were made earlier when spatial ones were ignored. Greenhut (31) summed it up by observing that longrun competitive equilibrium in the space economy simply requires that marginal cost equal marginal revenue and that average cost equal price in spatial as well as in nonspatial dimensions.

Complete integration of spatial with nonspatial economics is not so simple as it first appeared. For example, equilibrium models are hard to build because the relationship of information to distance makes it difficult to assume perfect knowledge and because recognition of spatial monopoly makes it difficult to assume perfect competition. However, these efforts show that one needs to take geographic space into account when analyzing the economic behavior of firms, households, and government projects.

Useful variations of location theory result from relaxation of assumptions about the goal (12 chaps 1 and 2, 39, p 221), about knowledge (107), and about the market structure (31). The objective to be maximized is usually assumed to be one held by the firm manager. When the viewpoint of society is taken instead, a different location is likely to be optimal, the profit maximizing location of a plant may not be the optimal site from the perspective of access to jobs by residents of a depressed region. An externality from the point of view of management may be internal from the point of view of labor.

Business activity tends to become more concentrated when there is uncertainty about spatial relationships. Webber (107) drew upon game models, probability models, and hypothetical simulations in his discussion of the relations between space and uncertainty. Firm managers' uncertainty about markets, sources of supply, and levels of productivity, says Webber, tends to send them to the obvious, or safe, location—the center of the market. This location may not be optimal, given complete knowledge. Uncertainty can raise distance costs, increase inventories, reduce the size of plants, and increase external economies of scale. Innovation is thought to be more probable in a concentrated area, and diffusion processes, or learning curves, may result in accelerated growth in concentrated areas relative to remote, sparsely populated areas. Thus, uncertainty about spatial relationships tends to concentrate and urbanize plant location beyond what would be socially optimal under conditions of perfect knowledge. Reduction of uncertainty through communication and planning may lead to a less concentrated, more rural-oriented society.

Economic and social characteristics of a region affect the likelihood that an economic activity will locate there. Spiegelman (84) regressed the growth during the 1947-58 period of 53 manufacturing industries in 506 multicounty areas of the United States on 75 local explanatory economic and social characteristics. He found, for example, that the industry manufacturing upholstered, wood, household furniture (SIC-2512) grew the fastest in areas with a small proportion of prosperous farms, a large proportion of lower-income farms, and low building construction costs.

Regional variations in tax structure affect growth according to Struyk (86, 87). He argued that "there is an inverse relationship between growth and degree of taxation." Hady (32) is representative of the more popular view that there is little relationship between regional growth and the local tax structure. Kaldor (47) concluded that higher taxes can destroy incentives to locate firms, but can also be spent in a way that will enhance available resources and promote development.

The location of a plant in a specific region affects the prospects for further change. The relationship of an individual plant location to economic development is usually seen through multiplier analysis. If a locality creates the economic conditions that attract firms, then the locality will grow, not only by the direct attraction of more firms but also by the indirect multiplier effect on related jobs and income. Regional development practice has concentrated on industrial plant location because of the assumed "growth generating nature of manufacturing" (57).

The impact on a local economy of a new plant is variable. Sometimes there is a strong, positive multiplier (59), sometimes a small one (45), sometimes the longrun impact is negative (27). When a new plant fails, it can leave a rural area with more unemployment than before the plant was moved in (17). Some of the variation in multipliers has been explained by variation in type of industry, scale of industry, and location of a plant relative to a regional trade center (3, 4).

## Approaches to Regionalization

In much of the literature on economic development, there is confusion about what it is that changes—that is, "What is a region?" A region is sometimes understood to be a contiguous and bounded geographic space delineated for a purpose. This definition is broader and looser than one drawn directly from considerations of transportation and central place, however, it is useful for following the theory and practice of delineating regions in a country like the United States.

Three procedures for delineating regions have been recognized: administrative, homogeneous, and functional (11). An administrative region is a legal one designed to implement decisions. States and counties are administrative regions, so are cities. A homogeneous region is one whose internal elements are statistically similar to one another and dissimilar from those of other regions. For example, one rural region might be delineated as homogeneous with respect to corn production and another as homogeneous with respect to wheat. Farms within each region are somewhat like one another, but farms in different regions are unlike. A functional region is comprised of a central place and its hinterland that function together as an eco-

nomic unit. A functional region is generally heterogeneous with respect to the criteria used to delineate homogeneous regions. The homogeneity in this case is with respect to internal economic function.

### Administrative Units

The primary purpose of an administrative region is political. However, once political units such as States, counties, and municipalities are delineated, they prove to be convenient units for describing and analyzing economic development. There are some references in the literature to interjurisdictional units composed of several counties or of several States, and numerous references to communities

Gilbertson noted, "the counties were derived originally for communities in a state of nature—few people widely scattered, all but oblivious to the existence or need of government" (29, p. 171). He argued that the cities which became functional units were those that saw the need for local rule and usurped some of the functions of county government. Counties tended to defend themselves against the cities at some point short of annihilation, and we now have both types of government operating, often with duplication, at the local level. Gilbertson (29, p. 152) cited the *New York Times* as having proposed in 1915 to abolish existing boundaries of the New York counties and substitute 8 administrative districts. He traced why these consolidation efforts, however logical they might be, will generally fail (29, p. 152). In fact, history was moving in the opposite direction, a 62nd county—the Bronx—was created out of New York county in 1914.

A multicounty structure is sometimes superimposed on the county structure for political convenience. Multicounty coalitions usually are formed for special purposes, such as coping with interjurisdictional matters related to health, transportation, water, air, or natural resources. The multicounty structure for political, administrative purposes that comes closest to blanketing the entire United States was one promulgated by the U.S. Office of Management and Budget (OMB) (101) through its circular A-95.

A report by the U.S. Department of Agriculture (USDA) recommended a regional approach to rural development "which would allow local input in the determination of priorities, yet assure that decisions and funds were all being used toward national goals" (96, p. 23). Multistate regional centers are proposed as well as substate multicounty regions. The report says, "one of the most promising approaches is substate districts required by OMB Circular A-95" (96, p. 25).

The issue of whether it pays to analyze anything but a political region is raised in a report by the National Academy of Sciences (65, pp. 48-49) because it is the only

type of region for which leaders can be identified and for which policies can be implemented. The report points out that "in most cases a region is not identified with a specified political unit or governmental body." It suggests that isolating policies to promote regional development in such cases "may be a futile intellectual exercise."

During the sixties, multistate regions were designated that shared problems of economic distress or lag that extended beyond the capability of any one State to solve (94). These regions, which were designated by the Secretary of Commerce with the concurrence of the States involved, helped overcome difficulties resulting from the fact that "the region does not have a formal legal place in the political system" (95, p. 1). Multistate regions were delineated for Appalachia, the Ozarks, New England, the Four Corners, the Coastal Plains, and the Upper Great Lakes (102, 103). These regional development commissions proved to be useful organizations for coping with interjurisdictional problems that transcend State lines. However, each multistate region was defined in isolation from rather than in relation to economic patterns of the Nation, so the geographic area was unevenly covered despite recent re-delineations and additions. Hansen (34) found that the delineation tended to exclude from some of the regions the nearby urban places that could be expected to help solve an economic development problem.

### Homogeneous Units

An early example of mapping the country into homogeneous regions is provided by Odum and Moore (66). They delineated six multistate regions "approximating the largest available degree of homogeneity measured by the largest number of indices available for the largest possible number of purposes" (quoted in 69, p. 332). Later, Odum expressed dissatisfaction with using State boundaries to delineate "societal regions" (69, p. 332).

Mangus (58) used county boundaries to delineate 264 rural cultural subregions with homogeneous economic and social structure. He then combined these subregions into 34 rural cultural regions. Woofter (110) superimposed rural industrial activity on Mangus's map and renamed the 34 regions to suggest more of a cultural, and less of a geographic, connotation. Colby, Marschner, and Haggerty used 235 "livelihood areas," which did not follow county boundaries, as units of area analysis (100). These areas were then combined into 34 regions approximating those by Mangus.

The value of homogeneous locality units in social science was examined by Raper and Taylor (69, p. 339). Lively and Gregory believed that their 16 rural social areas in Missouri, which were delineated according to homogeneity of culture, should be useful "in the administrative analysis of rural social problems" (55, p. 1).

One of the explicit purposes for which regions were delineated was to promote national economic development

the part of wisdom is to study the local economy of each section of the country. This areal approach is in harmony with the fact that the strength of the nation in peace as in war lies in the effective utilization of all of its resources of men and material (100, p. 40)

Bogue and Beale (9) subdivided the United States into clusters that were as homogeneous as practical regarding their general livelihood and socioeconomic characteristics and that would utilize available sources of descriptive statistics. They accomplished this by grouping similar counties. The result is 506 State Economic Areas (SEA) covering the entire land area of the 48 contiguous States. The purpose of these economic areas is different from those cited for some of the earlier homogeneous area delineations. In this case, the intention was to provide a descriptively useful way to summarize county data collected by the U.S. Census.

Homogeneous units have proved convenient for descriptive purposes, like things are grouped, and unlike things are separated. However, homogeneous units lack the political cohesion so important for the administrative units. They also lack the unity of economic interdependence that characterizes the functional units.

### Functional Units

Von Thunen (106) considered a central place with its agricultural hinterlands and examined the spatial pattern of the whole region. Weber (108) emphasized the importance of agglomeration economies in plant location. Many subsequent studies of agglomeration have been concerned with spatial concentration of firms in a single industry. But the concept is probably more important for its focus on the economics of spatial proximity of apparently unrelated industries. Isard, Schooler, and Vietorisz (43) extended the agglomerative concept and developed the idea of "industrial complex analysis," which focuses on flows of goods and services among different industries within a region. A consideration of agglomeration turns one's attention to the macrolevel outcome of decisions not only by many firms and households but also by local institutions or groups.

The emergence of rural communities before the automobile replaced the horse and wagon was studied by Galpin (26). He delineated 12 trade centers in Walworth County, Wis., that were in stable adjustment to available transportation. Galpin found it difficult, if not impossible, to avoid the conclusion that the limit of the trade zone of one of these rather complete agricultural civic centers formed the boundary of an actual, if not a legal, commu-

nity. Galpin conceptualized a system of communities formed of trade centers with circular hinterlands of approximately 50 square miles. A system of such communities on a featureless plain would consist of a series of circles, whose outer edges overlapped, and whose trade centers were some 8 miles from one another.

The agricultural hinterland around Louisville, Ky., was examined by Arnold and Montgomery (2). They found empirical support for von Thunen's idea that the distance from a city influences the type of farming. Truck crops and potatoes were dominant, close-in enterprises. This was shown to be largely a function of the access of truck farmers to city sources of manure. Field crops like corn, wheat, hay, hogs, and cattle were more important as distance from the city increased. Dairying was also more important with distance. The value of land per acre was shown by Arnold and Montgomery to decrease as distance from the central place increased.

Time had changed the areas Galpin had studied. This was noted by Kolb and Brunner.

While farmer and villager have united in the building of a larger community, the contacts of both with the city have increased both directly and indirectly. Naturally, therefore, as one observes the pattern of life in concentric zones around the city the old differences between urban and rural begin to fade (50, p. 552).

McKenzie added, "Smaller communities within a wide radius of every urban center have lost much of their former isolation, provincialism, and independence" (60, p. 443).

Christaller (16) was unaware of Galpin's work (26) when he introduced central place theory, which incorporated the idea that the economic development of a city depends on its specialization in various functions and on the demand for central city services. Christaller saw a region as composed of a central place and its hinterlands; the economic fortunes of a region depend on the interplay among its parts. He analyzed dynamic processes mainly in terms of comparative statics, although he did pay some attention to technical change and to economic development.

Spatial relationships were studied by Losch (56) under assumptions of noncompetitive markets. He extended the analysis to problems of general location patterns and to the network of economic regions. Losch presented a single, geometric basis for unifying spatial arrangements which Christaller had considered independent. The honeycomb pattern of regular hexagons considered by Christaller and Losch as a possible geographical configuration of functional economic areas would have resulted from Galpin's

framework, if Galpin had drawn straight lines in his figure 10 to divide equally the overlapping segments of his circular trade areas. Soap bubbles clustered on a plane between two nearly touching plates of glass assume the same efficient, natural, hexagonal structure.

Losch examined economic forces influencing the varied pattern of economic landscapes and showed how the hierarchy of markets is modified by a consideration of administrative needs and cultural factors. Spiegelman (82) believed that Losch's work failed to precipitate the anticipated revolution in regional analysis; Meyer (61) hailed the work as having given location theory an identity.

These considerations of firm location and agglomeration suggest that regionalization affects economic development. In central place theory, the center and its hinterland are complements. The center provides goods and services to residents of the hinterland, and it offers jobs, shopping, and cultural attractions to commuters or migrants from the hinterland. The hinterland produces rural-oriented goods, like food, textiles, minerals, and timber products, and it furnishes workers to fill central-place jobs. It may supply residential and recreational sites for central city workers. It may also provide sites for decentralization of central-place activities. For example, it may offer a low-rent site to a manufacturing firm that is dependent on the central place for transportation and financial services.

The impact of change in the central place on economic activity in the hinterland may be positive or negative. Miron (63) reviews the spread and backwash hypotheses. The spread hypothesis, he says, asserts that outlying areas expand when the center expands; the backwash hypothesis asserts that such areas decline. Miron describes a spatial equilibrium model which incorporates both hypotheses. He explains the spread effect by increased demand and the backwash effect by changes in technology that result in the substitution of more central city resources for fewer hinterland resources (63, pp 151, 152).

For a central place to be formed, some threshold in demand for its services must be reached. Downs (20) called this threshold a "critical mass." Demand for central place services increases as the hinterland becomes more densely populated, grows larger, increases income per capita, reduces transportation costs, or experiences a change in tastes. The threshold is much lower for some industries than for others. Until an industry's threshold has been reached in a specific region, that industry will not locate there. The threshold concept is used in central place theory to explain hierarchy of central place, where both smaller villages and larger cities provide goods and services which have lower thresholds, but where only the larger cities provide specialized functions which have higher thresholds.

The conclusion of the regional economist is that functional economic areas, each composed of a central place and its hinterland, are appropriate units of analysis. Homogeneous units are proposed because they have descriptive value, but functional units can also be descriptively useful. However, if the functional units lack political unity, they may be less useful than are administrative units for policy-oriented analysis. A regional system is most useful when a single delineation meets the needs for administration, description, and function.

## Empirical Delineation of Functional Economic Areas

The theories of von Thunen, Weber, Galpin, Christaller, Losch, and others suggest that for purposes of describing and explaining economic development, the geography of a nation can be subdivided into a number of regions, each with its central place and hinterland. Since 1961, Fox has written many papers on the concept of functional economic areas (23, p 13). He seeks a practical approximation to the theoretical idea by delineating hinterlands within commuting distance of central places (22). Fox (21, 51, pp 163-172) points out that counties may have functioned as units when they were formed, with the county seat within commuting distance by horse and buggy for most residents. However, he says to those who treat a nine county area in Iowa functioning as an economic unit as if it were nine separate areas: "What the people have put together, let not the politicians and the administrators put asunder" (23, p 22). Fox recommends that the functional economic area concept be used for analysis and for implementation of economic development programs that rely heavily on local initiative and local recognition of mutual interest (23, p 55).

Commuting patterns reported in the *US Census of Population, 1960* were analyzed by Berry (7) to establish commuting fields around central cities. He found that 87 percent of the US population lived within the commuting fields of cities exceeding 50,000 people. Another 9 percent lived within the commuting fields of cities with more than 25,000 people. He delineated 305 commuting areas containing 96 percent of the population. The remaining 4 percent lived outside functional economic areas as he defined them.

Rand McNally (68) publishes a map which divides the 50 States into 494 Basic Trading Areas. The boundaries of these areas follow county lines and are based on studies of physiography, population, newspaper circulation, economic activity, highway facilities, railroad services, suburban transportation, and subjective field reports from sales analysts. The Rand McNally areas approximate functional economic areas, as do those of Fox, Berry, and others, and they have the additional advantage of blanketing the entire land area of the Nation.

The Bureau of Economic Analysis (97) delineated the 50 States into 183 multicounty areas called BEA economic areas (see also 99). Three basic guidelines were used: (1) include all counties, (2) have regions large enough that estimates of income and other economic and social attributes have statistical reliability, and (3) conform to functional economic area logic to the extent that limited time and research budgets permit. Snead (81) described the BEA areas and he discussed many of their analytical and operational properties. He illustrated the suitability of using them in analyzing and implementing Federal programs. These areas are useful units of analysis for many subnational problems, but they are relatively large in terms of trading and commuting patterns.

A statistical analysis indicates that the Rand-McNally areas, the BEA areas, and an additional set known as Basic Economic Research Areas (BERA)—which was worked out by USDA economists—are substitutes for one another to the extent that correlations, regressions, and factor analyses tend to produce about the same results. The statistical properties of the three functional economic areas are different from those of the homogeneous State Economic Areas delineated by Bogue and Beale (9) and different from those of administrative areas like counties and States. Their statistical properties are similar, however, to those of the substate planning districts delineated by the governors of the various states under Circular A-95. This result suggests that it is feasible to delineate regions that are functional, political, and descriptive.

Analysis of commuting and trade patterns suggests that the United States is probably composed of some 500 functional economic areas which are relatively closed with respect to trading and commuting. Fox says:

[Functional economic areas] form areas of very strong common interest with regard to economic development policy. Larger areas would include too many subsets among which economic transactions would either be nonexistent or very remote. Smaller areas would produce a situation with too many issues where the communities of interest would straddle regional borders. (52, p. 138)

Functional economic areas fit into a hierarchy in which some are fairly rural and can themselves be considered as a hinterland to some of the relatively more urban-oriented multicounty areas which provide central city services to residents beyond commuting distance. About half of the 500 functional economic areas contain one or more cities exceeding 50,000 persons and the other half are relatively rural. Hence, the word "rural" can take on two meanings: (1) the hinterlands of each of the 500 functional economic areas, or (2) the 250 or so functional economic areas that

are generally rural in character because they have relatively small cities as a central place.

## Growth Centers

Central places perform their centralized functions whether or not they are growing, yet the terms "central place" and "growth center" are frequently used as if they were synonymous. The concept of central place is carefully and consistently defined but the concept of a growth center is not. Some authors apparently use the term to mean any urban place that grew during some recent period. For example, Hansen says, "Growth centers are SMSAs in which population growth from 1960 to 1970 was more rapid than in SMSAs as a whole" (34, p. 509). This overlooks that some urban places which grew may have been satellite rather than central places, and that some urban places which did not grow may have been satisfactorily performing their central place functions. Hansen's definition implies that only SMSAs are to be considered as centers, whereas the central places of half the functional economic areas in the United States are smaller than SMSAs. Darwent (19) clears up much confusion about the terms "growth pole" and "growth center" (see also 75, p. 28). Bird (8) implies that growth centers which are also central places of functional economic areas have a key role to play in national economic development, and he mentions that national programs are weakened when centers are designated in response to political pressures, community pride, and other considerations.

Some studies suggest that there are diminishing returns (or increasing costs) once a threshold has been reached and that there is an optimal city size (93). Other authors simply associate growth centers with size. Thompson (92) points out that, during the fifties, all SMSAs with more than 500,000 persons gained in population. Only two SMSAs between 250,000 and 500,000 persons lost population. After considering why this might have happened, Thompson concluded that irreversible growth may be attained once a threshold size is passed. It was two decades later that Census data demonstrated the dubiousness of his conclusion. During the sixties, two-thirds of the fastest growing quintile of functional economic areas were urban-oriented (that is, their central places were SMSAs). And only one-fifth of the slowest growing quintile (including areas with population losses) were urban-oriented. This experience was consistent with the ideas held by Hansen and Thompson about growth centers. However, during the seventies, the scene changed, half the members of the fastest growing quintile were rural, and half the slowest growing were also rural. There were several functional economic areas with central places of more than 1 million persons in the slowest growing quintile during the seventies, a result contrary to Thompson's view, none of the areas with such large cities had fared so poorly during the sixties.



Multiplier theory is often used to explain the relationship of growth centers to economic development "The underlying idea of growth center theory," according to Richardson, "is that the spatial concentration of economic activity in an urban center of an underdeveloped region will raise the economic performance of the region as a whole" (74, p 28)

Programs of the U S Economic Development Administration (EDA) concentrated on locating firms in the central places of areas with low income or high unemployment on the theory that "accelerating the creation of employment opportunities in or near such centers was believed the most effective and timely approach to providing jobs for residents of neighboring depressed areas" (98, p 10) Berry elaborates the EDA view "The task of regional policy is seen as one of strengthening key urban centers that can bring growth to the peripheries and the pockets of isolation beyond" (5, p 9) Research is needed, he continues, to identify "potential growth centers capable of exerting uplifting spread effects on their hinterlands" The EDA approach to growth centers became popularly known as the "trickle-down" theory

After 7 years of operating EDA programs, the U S Department of Commerce concluded that the programs were "successful in locating jobs, generating income, and stimulating the development process in economically depressed areas" (98, p 78) Cameron (15, chap 3) lists several theoretical reasons why growth center policies for regional development have merit, he adds several practical reasons why growth center policies might fail

Statistical evidence has been compiled that the multipliers assumed in the trickle-down theory might not always work Milkman (62, chap 8) analyzed several EDA growth center projects that had been justified on the basis that accelerated economic activity in the center would benefit the entire redevelopment area In the growth centers evaluated, there was almost no impact on the redevelopment areas or their residents (62, p 209) Lewis and Prescott (54) found that 86 labor market areas were relatively stable regions that might respond better to uniform and direct development policies than to indirect multipliers through growth centers In a study of 85 smaller SMSAs and their hinterlands, Stewart and Benson discovered that population growth in the hinterland was positively correlated with growth in the center during the sixties, but that per capita income was negatively correlated Their general conclusion was that linkages between the smaller SMSA and its hinterland are very weak (85, p 439)

Hoover concluded that "the multiplier effect through local purchases does not seem to furnish any real rationale for the strategy of concentrating stimuli in growth centers Indeed, it would seem just as reasonable to invoke this

effect in advocating that growth ought to be initiated in the hinterland—to create income and employment in the central place" (37, pp 14, 32, 33)

The evolution of rural development programs in USDA was traced by Sundquist and Davis (89) They explained how USDA's rural development activity began as a program for low-income farmers and was expanded to include the rural, nonfarm sector of the economy

USDA reversed the multiplier logic of EDA and encouraged plant location in rural areas outside the central place.

The basic theory underlying these efforts is that rural industry can bring about sufficient economic growth to resolve problems of unemployment, underemployment, and low income the growth center concept should not be over-emphasized modern communication and transportation make decentralized development entirely practical (109, p 6)

Berry (5) characterized this approach as "the hot-house industrialization of rural areas" In contrast to the EDA growth center approach, USDA seems to imply that beneficial effects "trickle up" from the hinterland to the center In general, no such beneficial effects have been substantiated Many plants placed in locations remote from access to central city services have succeeded, but many others have failed The success or failure of plants located under these programs was probably due to factors other than either the "trickle down" or "trickle up" process

Even if short-run gains from government programs are greater in the growth center than elsewhere, according to Johnson (44, p 217), we should be cautious about concentrating developing programs in such centers because "short-run wisdom may be long-run folly" as spatial income disparities may widen further

An explanation of how to conquer space will likely never be arrived at by reducing spatial theory to simple multiplier relationships The problems of communication and transportation over space and their consequences for economic development are more complicated than that

## Urban and Rural Development

Urban economic activity is considered as the basis for progress by some regional development authors, whereas others emphasize the rural areas, and the agricultural sub-sector in particular, as the basis As the terms "rural" and "urban" have geographic connotations, these authors imply spatial variations in the sources of progress Georgescu Roegen says, "the interests of the town conflict with those of the countryside" (28, p 8)

The literature on central place and on agglomerative relationships, according to Spiegelman (83, p 1), is written mostly from the urban, not the rural, point of view. For example, Friedmann and Miller, in developing their concept of an urban field that extends far beyond existing metropolitan cores, support the idea of expansion of urban life into the rural regions that "intervene among metropolitan regions" (24, p 313). This intermetropolitan periphery is likened to "a devil's mirror, much of [which] has developed a socio-economic profile that perversely reflects the very opposite of metropolitan virility" (24, p 313).

Metropolitan markets trade with each other and, when threshold conditions are reached, they develop a self-regenerative growth pattern according to Berry (6). He asserts that growth in the periphery, or hinterlands, depends on capturing a share of downward-filtering industries which develop slowly and yield lower returns. This leads Berry to a view of rural-urban differences in which "the basic regional distinction is, therefore, that between self-regenerative metropolitan America, and the hand-me-down intermetropolitan periphery, condemned to progress characterized at best by lagged emulation and second-hand growth" (6, p 10).

In reviewing the report of the President's National Advisory Commission on Rural Poverty (67), *The People Left Behind*, Hansen (33, p 238) finds that it was concerned with the places, not the people, left behind. He sees no need for Government programs to attract industry to the countryside, either from an efficiency or an equity standpoint. However, he finds that Federal investment for education, health, and migration of rural people benefits both rural and urban areas. Hansen would concentrate Federal expenditures for economic development in cities of at least 250,000 persons. He finds that such programs are best based on what he calls intermediate sized cities, ranging in size from 250,000 to 750,000 persons, because it is easier to accelerate their growth than to accelerate growth in a lagging region. Berry (5) explains the rationale: it is not generally feasible to base a national strategy on the industrialization of rural areas, our largest metropolitan areas are already too big, and emphasis on growth in intermediate-sized places provides an alternative to rural poverty other than the metropolitan ghetto.

The strategy described by Hansen and Berry would focus national policy not only away from that half of the functional economic areas which do not have an SMSA for a central place, but also away from a hundred or so more which have a small SMSA at the center. Richardson summarized the urban point of view when he concluded, "cities then become the engine of regional growth" (76, p 154).

The view that there is a one-way flow from urban to rural areas was challenged by Redfield and Singer (70). They

traced vital interaction and feedback between the two sectors in their discussion of the cultural role of cities. Johnson warned that, despite the greatness of our cities, we ought not to be blinded to their limitations. "Metropolitan centers are both creative and parasitic, elegant and squalid, majestic and pathetic" (44, p vii). "If these [rural] communities did not exist," according to Yasseen and Fulton, "they would have to be invented. They are absolutely essential for the needs of our expanding and decentralizing industry" (111, p 3).

European policies that treated only the largest cities as growth centers were examined by Sundquist (88). He found evidence of "a gradual shift in emphasis from the larger to the smaller centers" (88, p 27). Richardson is speaking of developing countries when he says of rural-oriented growth centers: "The traditional view is to interpret their role as 'parasitic,' draining the rural hinterland of resources. However, from another perspective their location in rural areas could be viewed as a potential advantage, provided that policymakers can capitalize on this important locational advantage" (75, p 135).

The distinction between rural and urban is more than geographic. The literature abounds with distinctions that are physical, economic, political, social, cultural, and religious. Heilbroner (35) has such distinctions in mind when he speaks of "intellectual and ideological boundaries" in addition to geographic boundaries. But there are others who feel that these distinctions are becoming blurred. Leven (52) notes that abrupt demographic changes of the past decade and the spatial dispersion of large, polycentric metropolitan areas. From this he concludes (echoing Kolb and Brunner (50)) that "the distinction between metropolitan and nonmetropolitan—or even between urban and rural—may lose, finally, any real definition" (52, p 110).

An agricultural point of view toward the geographic source of growth is reflected in much of the literature of agricultural economists. Agriculture is viewed as a fundamental or leading industry; as agriculture expands, the rest of the region follows. Mosher (64) illustrates a broader rural point of view toward central place theory and spatial relationships as a basis for growth in his framework for a progressive rural structure to serve a modern agriculture.

The importance of urban centers to agricultural growth was noted by Schultz (78, chap 9), who proposed an industrial-urban development hypothesis. He emphasizes the spatial element in the development of the agricultural sector and points out that "the process of economic growth does not necessarily occur in the same way, at the same time, or at the same rate in different locations." Schultz notes that demand for agricultural products is inelastic, which tends to limit agricultural growth as the economy

grows. He discusses the importance of resource availabilities and, in particular, of participation in the labor force. He calls attention to resource productivity and emphasizes the importance of education and the quality of labor in that productivity. He notes institutional relationships and emphasizes markets that lead to factor-price equalization. Schultz's hypothesis is that all these factors tend to work better near the urban center of a location matrix and work less well around the periphery (13, 14, 90). Vining (104) detects what he terms a "lack of clarity" owing to "the ambiguity of certain concepts" in Schultz's analysis and seeks to clarify it.

Most of the rural economy in the United States is a nonfarm economy. Rural development is not equivalent to agricultural growth. In fact, technical progress in agriculture can release redundant agricultural labor into the nearby nonfarm rural economy and can thereby have a depressing, rather than a stimulating, effect. A growing commercial agriculture may have closer economic ties with the highly developed urban economy, where it sells products and purchases inputs, than with the spatially contiguous, rural nonfarm economy. An interesting discussion of progress in the nonfarm rural economy by Johnson (44, p. 138) recognizes the role of central place in rural development and traces the contributions of Galpin (26), Kolb and Brunner (50), Kolb (49), and Sanderson (77).

## Conclusion

As the national economy develops, each of its functional economic areas can be expected to change (expand or contract) differently. Regional variations in natural features, such as availability of natural resources and amenities, and the presence of coasts, lakes, rivers, mountains, or plains are enough to guarantee that. Many economic forces are at work differentiating areas even when natural features are equal. Some of these forces are cohesive and lead to the formation of central places and to urban-oriented, functional economic areas. These cohesive forces include transportation costs, risk avoidance, economies of scale, externalities, and agglomerative efficiencies. Other forces are dispersive and lead to the formation of hinterlands to central places and to rural-oriented, functional economic areas. These dispersive forces include access to scattered resources or markets, access to amenities, avoidance of high rent, diminishing returns, and personal preferences.

National policy is needed not only with respect to the distribution of people over geographic space, but also to the distribution of economic opportunity, including access to central city services. Most national distribution policies reviewed here are urban oriented, and they depend on multiplier effects to reach the hinterlands. Such policies may be of negligible benefit to rural residents, either because the residents do not live within the range of influ-

ence of a major urban place or because the multiplier fails to function as intended.

Many rural counties are in the hinterlands of functional economic areas that have SMSAs at their centers. A small number of these centers are very large—over 1 million people. Rural residents or urban-oriented areas generally have commuting access to metropolitan centers for markets, shopping, nonfarm employment, and cultural attractions. Economic development for the rural counties depends not only on access but also on the development prospects for the central city. For example, during the seventies nearly a dozen functional economic areas with central cities of more than 1 million persons suffered a setback from the 1960 growth trends and were included in the slowest growing quintile of all functional economic areas. The rural counties in such areas absorbed some of the nearby urban loss; they grew faster because of the urban setback.

An alternative perspective on rurality has been reviewed here. In this view, many functional economic areas have central places which are smaller than an SMSA. Rural residents in the hinterlands of such areas have commuter access to a different kind of economic activity than do rural residents of urban-oriented areas. Urban oriented development policy that depends on multipliers to reach rural people can be of little help to residents of rural-oriented areas. Yet the prospects for economic development in such areas are far from hopeless. About a fourth of these rural-oriented areas were in the slowest growing quintile of functional economic areas during the seventies but another fourth were in the fastest growing quintile—evidence that isolated rural areas have the capacity for economic development. Those who direct policies toward residents of rural-oriented areas need to recognize that these residents have access to central places which are not only smaller but also different in character than are the centers of urban-oriented areas. The socioeconomic and physical characteristics of these smaller central places influence the prospects for economic development on nearly half of the U.S. land area, which contains more than an eighth of its people.

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### In Earlier Issues

The first condition for the development of any branch of research is that it shall attract scholars of imagination and technical ability

*Frederick V Waugh (quoting Richard Stone)*  
*Vol 7, No 1, Jan. 1955, p 23*

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### In Earlier Issues

If there were some magic formula that explained the demands for all commodities, at all places and at all times, research in this field would be purely routine. All data could be fed into the electronic computer, together with standard instructions, and we would get the answers without need for thinking. Then we would not need to attract scholars of imagination and technical ability

*Frederick V Waugh*  
*Vol 7, No 1, Jan. 1955, p 24*

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