

mano José testa
1962

READINGS IN URBAN GEOGRAPHY

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AN OPTIMUM SIZE FOR CITIES

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AN OPTIMUM SIZE FOR CITIES

In recent years, faced with the trend within Western culture toward increasing urbanization, planners and other social scientists have begun to think about the problem of how far urbanization will go. Should the larger centers be allowed to grow indefinitely in population and area or should the development be arbitrarily stopped? If the development is to be halted, at which stage should it occur with respect to a city's population and area? This question immediately raises the basic problem of what should be the optimum size for large urban centers, known generally as cities.

This problem has been examined by a number of town planners and sociologists. For the most part their investigations have been brief and in many cases quite limited in scope. The criteria used for determining an optimum size for cities have varied greatly. Duncan (1) and Ogburn (2) indicate a selected optimum of 50,000-100,000 people, based on the per capita cost of municipal services in urban centers in the United States with a population greater than 25,000, i.e., on a selected quantitative statistical basis without considering as both Duncan and Thomas Sharp (3) point out the quality and the scope of these services as well as the length and continuity of their operation. Ebenezer Howard (4) whose op-

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(1) O. T. Duncan, "The Optimum Size of Cities," Reader in Urban Sociology, ed. P. K. Hatt and A. J. Reiss (Glencoe, Ill.: Free Press, 1951), pp. 632-45.

(2) W. F. Ogburn, Social Characteristics of Cities, (Chicago: International Managers' Association, 1937)

(3) T. Sharp, Town Planning (London: Pelican Books, 1940), p. 69.

(4) M. S. Briggs, Town and Country Planning (London: Allen & Unwin, 1948), p.24.

timum is 30,000 people (5) and Le Corbusier, (6) , who considers a city of 3,000,000 as ideal, based their estimates on what they personally believed to be the best size, i.e., their estimates were entirely subjective. Still others like Brennan, (7) whose optimum is 10,000-20,000, based their findings on a desirable social life for the inhabitants.

None of these observers, however, mentioned the problems raised by the very meanings of the words "optimum size for cities." The Shorter Oxford English Dictionary defines "optimum" as the "best" or "most desirable"; "size" as the "best" or "most desirable"; "size" as the "magnitude," "bulk," "bigness," or "dimensions" of anything; and "city" as a name for any urban center greater in size than a town. The application of these terms to urbanism and to town planning has the following implications:

If one considers an optimum size for cities, the question immediately raised is, The optimum for what? -- for internal ease of movement, for economic provision of services, for a desirable social life, for "urban life," or for defense in time of war? When one considers the word "size," its several aspects in this case become rapidly apparent. Urban centers cover a horizontal area and also have a vertical extent. Size here also means total population, a population which can be concentrated by vertical accumulation or dispersed thinly over a broad horizontal area. The word "city," according to the above, means an urban center greater in population than a town. Within our culture the popul-

(5) Many followers of the English school of town and regional planners which developed following Howard's Garden City principle believe the optimum size for cities to be 30,000-50,000 people.

(6) Charles E. Jeanneret-Gris (Le Corbusier, pseud.) *City of Tomorrow and Its Planning*, trans. from the 8th French ed. of *Urbanisme* by Frederick Etchells (London: Architectural Press, 1947), p. 172.

(7) T. Brennan, *Midland City* (London: Dennis Dobson, Ltd., 1949), p. 47.

ation size for cities has been defined legally. In Ontario, for example, it is an agglomeration of 15,000 people; in Saskatchewan it is a population of 5,000 people concentrated on 640 acres or less; in Wisconsin it is a population of 1,000 on 320 acres or less. It is quite obvious, then, considering all the implications of the above, that an answer to the question, What is the optimum size for cities? can be given only after a very great number of complex criteria have been examined, analyzed, weighed, and a synthesis attempted in order to resolve the contradictory nature of many of the various factors. Any estimates such as those submitted by the sociologists and planners mentioned would be wholly inadequate unless they were closely linked to the geographic character, distributions, and functional patterns of the regions within which the centers were to be found.

Despite this, however, there are several general considerations which do apply to the resolving of the problem. First, size may be taken to refer almost completely to the total population of the urban center, for the distribution of this population over a horizontal and /or a vertical area will depend on the physical nature of the site and the general cultural levels of all the people occupying the site, that is, their felt needs and desires for social living and the technical skills they have to translate these feelings into actuality. Second, in each major geographic region there seems to be a hierarchy of interrelated urban centers. This hierarchy is based on the services and functions of the individual centers. The interrelationships are not permanent but change with time, as the culture of the region changes. In an open economy based on competition such as one finds in those regions occupied by western European culture, not only can functions change in the long period of time when the entire culture changes, but they can also change within a short period of time, within the same cultural period. In a closed economy, in a region dominated by a single strong central authority,

it is possible for the functions and therefore the hierarchy to remain static or rigid within any one cultural period. Changes in function in the latter are also subject to very tight control by the central authority.

If one assumes that the hierarchy of interrelated functions of urban centers is a valid concept, then one can arrive at an optimum size for each of the centers on the hierarchy. This optimum size cannot have an absolute value but will be a range in population. It will have a maximum and a minimum figure based on the greatest efficiency of operation of all the functions of the individual urban centers. The greater the number of functions for any one center, the greater this range will be. Whether the efficiency or the degree of efficiency is translated in terms of production or money or social living or some other criterion, will depend on the general culture of the geographic region.

There are, however, a number of cases which tend to qualify this approach to determining an optimum size. These are the urban centers whose functions do not readily seem to fit into any hierarchy, such as resort towns, military towns, university towns, or isolated mining and pulp mill towns. The optimum, or rather the maximum-minimum range in population for these will vary in a manner similar to those urban centers which find themselves at the bottom of a hierarchy, that is, those concerned with the production of primary products. The population will vary as the rate of exploitation of the available resources, be they minerals, timber, fish, university lecturers, or a sandy stretch of coast line in a semitropical climate. For the former and for other centers of primary production in a geographic area which has had a relatively long period of settlement, knowing the rate of exploitation of the available resources, the planner can predict quite safely the optimum size for the community whose function it is to exploit or directly service the exploiters of each particular resource, sub-

ject, of course to the vagaries of "market prices." This can be illustrated by a number of Ontario examples. According to the 1951 (9th) Census of Canada, the population of the nation has been growing over the past four decades at an average rate of 2.1 per cent per annum (except for the depression decade 1931-41). During the past decade the increase in population has taken place in the urban centers while the rural population of Canada was reduced 6 per cent in relation to the total population. Centers with more or less stabilized single functions showed a general population increase of 0 to 1.75 per cent per annum, whereas centers with a number of functions increased at a general rate of 2 to 3.5 per cent per annum. Small farm service and market centers (some with light manufacturing), mining towns and pulp and paper towns illustrate the former. Regional capitals and distribution centers, which are to be found near the top of the hierarchy, illustrate the latter. Table 1 indicates the stability of population in the former. They are, however, dependent in their size on the population of the hinterland they service. This population is dependent, in turn, on the length of the period of settlement, the patterns of occupation (e.g., farming types) and the resulting density of population. A number of centers in Lambton County illustrate this point. Although Arkona, Thedford, and Watford fulfil similar functions, the population of each is quite different, although each is stabilized. Oil Springs is an example of what can happen with a change in function. An oil-producing center from 1861 to 1866, it had reverted to a farming market and service center by 1871. A boom in the oil industry saw a rapid climb in population in answer to the added function of oil production. The rapid decline of the Oil Springs field shortly after 1901 resulted in the center again becoming unifunctional, with a stable population unable to maintain many of the former services, such as specialized shops. Sarnia, also in Lambton County, is an example of a regional capital performing a number of functions. It provides a number of services for a large hinterland, but this hinterland is limited extent to the south

TABLE 1

THE FUNCTIONS AND POPULATION GROWTH OF CERTAIN URBAN CENTERS IN ONTARIO

Urban Center	Functions	Populations						
		1891	1901	1911	1921	1931	1941	1951
Arkona.....	Farm service center	463	468	424	420	420	406	370
Theford.....	Farm service center	616	633	559	524	559	623	616
Warford.....	Farm service center	1,299	1,279	1,092	1,059	979	1,076	1,201
Oil Springs ...	Farm service center and oil production	1,138	1,018	646	490	394	458	433
Sarnia.....	Multifunctional re- gional capital	6,692	8,176	9,947	14,877	18,191	18,734	34,697
Iroquois Falls.	Pulp and paper man- ufacturing	1,178	1,476	1,302	1,342

and east by the service areas of Chatham and London. Sarnia, however, because of its manufactures serves the nation as a whole and southern Ontario in particular. Its population thus has continued to grow almost directly proportionally to the increase in the manufacturing function, for its other functions, such as administration provision of services, recreation, and transportation, have remained more or less the same. In this respect one can place it in the rank of small multifunctional regional capitals such as Sault Ste Marie, Guelph, Brantford, and Kingston.

New techniques of production may, in time, alter the validity of the production of an optimum in the case of unifunctional centers of the type noted above. With respect to resort centers, as an example of an unstable unifunctional center, there is less possibility of adequately predicting an optimum size, since the frequenting of such places is usually subject to the general felt needs and desires of a great number of people in many regions. The popularity of a particular resort is thus subject to the public whim. When one considers Atlantic City, Blackpool, Miami, and even Grand Bend in Ontario, it seems that there is almost no maximum in size to be set. However, the maximum in this case is the one which can efficiently bear the cost of the municipal services for the seasonal maximum, that is, the least number of visitors necessary during the season to maintain the "plant" established.

In summation, for a planner or a sociologist or a geographer, or anyone else to predict the optimum size for cities and other urban centers, he must recognize a number of factors. The first of these is that the trend toward urbanization of the world's population is part of general culture change and to attempt to predict where or when it will stop is practically impossible, since no man knows for certain what the future holds in store. But one factor that can be recognized and predicted more or less definitely is that each urban center performs certain functions in relat-

ion to all other urban centers and to the area about it. These functional relationships vary from region to region throughout the world and are inexorably linked to the cultural levels of the peoples occupying the different regions. It must be recognized that these functional relationships are not static, particularly in an economy dominated by competition, but change with time within each region and from region to region as the processes of diffusions and acculturation take place.

For each urban center there appears to be an optimum range in population based on the efficient operation of its particular functions, subject to the changing values and felt needs of its occupants. Thus it is evident that the optimum size for any urban center can be determined only after a comprehensive understanding has been obtained of the character and interrelationships of the regions within which it is located.

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