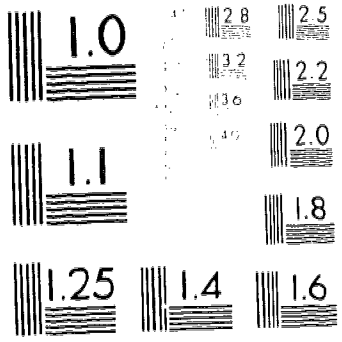

DOCUMENT RESUME

ED 128 247 SO 009 315

TITLE	Urban Geography: Topics in Geography, Number 1.
INSTITUTION	National Council for Geographic Education.
PUB DATE	May 66
NOTE	42p.; For related documents, see SO 009 316 and 317
AVAILABLE FROM	NCGE Central Office, 115 North Marion Street, Oak Park, Illinois 60301 ($7.00)
EDRS PRICE	MF-$0.83 Plus Postage. HC Not Available from EDRS.
DESCRIPTORS	*City Planning; Community Change; Curriculum Development; *Curriculum Research; Essays; Geographic Concepts; *Geography Instruction; Higher Education; High School Curriculum; *Human Geography; Secondary Education; Urban Areas; Urban Environment; *Urbanization; *Urban Studies

ABSTRACT

The scope, objectives, and some of the findings of urban geography are discussed in this paper. Curriculum development in urban geography at the high-school level is also briefly described. The first of six articles, "Aspects and Trends of Urban Geography," explains the urban geographer's interest in internal city structure, interaction of static functions within the city as well as changing patterns over time, and use of mathematical models of urban characteristics. The second article, "Historical and Comparative Urban Studies," defines cities as centers of exchange and traces urbanization historically and geographically. The elements of Christaller's central place theory are explained in the third paper, which includes definitions of central place, central goods and services, and the range or complementary region of a good. "Public Policy and the Central Business District" (CBD), the fourth article, compares the CBD's assets and deficits and explores the need for public policy when growth in outlying areas is sapping its strength. The last two articles discuss the urban unit of the High School Geography Project and the need for urban geography in U.S. high schools. (AV)

TOPICS IN GEOGRAPHY
Number 1

URBAN GEOGRAPHY

National Council for Geographic Education

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National Council for Geographic Education
Illinois State University
Normal, Illinois 61761

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TOPICS IN GEOGRAPHY SERIES

No. 1 Urban Geography

All of the articles in this booklet on "Urban Geography" have been reprinted from the May, 1966 issue of *The Journal of Geography*. The Publications Center of the National Council for Geographic Education is grateful to Dr. Herbert H. Gross, Editor of *The Journal of Geography*, for planning and editing this special issue on "Urban Geography" and also for permission to reprint from this issue.

Kermit M. Laidig
Director of Publications
May, 1966

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To Understand Urban Environments

Arthur and Judith Getis

At no time in our history has there been a more pressing need to understand urban environments than today. About 70 percent of the population of the United States presently lives in urban areas, as contrasted with only 58 percent at the end of World War II. It has been predicted that of the projected 300 million Americans in the year 2000, about 80 percent, or 240 million will live in urban areas. In other words, our urban population will nearly double in the next generation. This trend in urbanization is not peculiar to the United States, but is a recurrent phenomenon throughout the world.

Many educators are aware of the growing importance and complexity of cities, and of the need for our students to understand this new kind of environment. An increasing number of articles and books, teaching units, seminars and institutes are being devoted to urbanization and its implications for education. This awareness is well reflected in the discipline of geography. For example, the steering committee of the High School Geography Project, composed of men who are among the most respected professional geographers, has decided to incorporate about seven weeks of work on urban geography into the thirty-week course now being developed for use in American secondary schools. They point out that the majority of U. S. high school students today live in or adjacent to cities. Teaching units which incorporate such an environment thus begin with the familiar; the city is an ideal starting place from which to lead the student to an understanding of geographic principles and methods of study.

In addition, for the past several years some of the outstanding research in geography has dealt with urban problems. Nearly every issue of each of the professional geography journals has at least one article on various aspects of urban areas. One disappointing facet of this growing scholarly interest in urban geography, however, has been the researchers' inability or lack of interest in communicating with teachers at all academic levels. Very few elementary and secondary school teachers and surprisingly few college instructors have a clear notion of just what problems are being attacked by professional urban geographers and what they have found.

It is this aspect of the communications breakdown coupled with the growing interest in cities that has motivated the ed-

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itor of the *Journal of Geography* to publish articles which make clear what it is that professional urban geographers are doing. A fitting place to start was at the Urban Geography Institute held at Rutgers University in the summer of 1965, supported by the NDEA. At this institute scholars from a number of universities and high school teachers from all over the country came together to explore the field of urban geography. At the end of the institute, Professors Ronald R. Boyce (University of Washington), Barry J. Garner (University of Bristol, England), Arthur Getis (Rutgers-The State University), and Rhoads Murphey (University of Michigan) put together a series of papers which seek to show the scope, the objectives, and some of the findings of urban geography.

The first article, "Aspects and Trends of Urban Geography," by Prof. B. J. Garner, was written in an attempt to outline briefly just what it is that urban geographers presently study. Their interest in the interaction of activities within and between cities is most evident. The effect of change in patterns of interaction is increasingly being studied. For example, researchers are questioning how desires for suburban land affect land use patterns and interaction among functional elements in cities. The methods that the urban geographer employs to answer such questions are discussed briefly. As in each of the articles, terms that urban geographers use in their work are italicized and explained.

Professor Murphey reviews briefly the concerns of urban geographers when they study the origin of cities. The factors which enable cities to achieve greatness are explored with reference to different areas of the world and to different time periods. Murphey shows how geographic principles help us to understand city development in any time period.

The work of Walter Christaller has stimulated a considerable amount of discussion among urban geographers. A large segment of present day research in the city-hinterland relationships, patterns of city location, and internal structure of cities has its roots in Christaller's work. Although much of what Christaller said has been modified and expanded by recent writers, it was thought most appropriate to include an article telling briefly of Christaller's famous theory: central place theory. Too often writers have assumed a knowledge of this theory on the part of the reader, when in fact it has been lacking. We have attempted to make clear the basic tenets of this oft-mentioned work.

Professor Ronald Boyce, in the next article, shows how a geographer's knowledge can be helpful in understanding an important urban problem—that of the well-being of the central business district. He demonstrates the practicality of urban geographic research by extending his understanding to recommend action for the solution of an urban problem.

These four articles are examples of many which could have been written to introduce interested people to the nature of urban geography and to inform them about it. We hope that they will give the reader an idea of the scope of the field and also increase interest in urban geography.

Finally, a short statement is included which tells of experimental work in the development of materials for the study of urban geography at the high school level.

Aspects and Trends of Urban Geography

Barry J. Garner

Perhaps the most general, although surely the least satisfactory, definition of geography is, "Geography is what geographers do." Accompanying the continuing trend toward urbanization in the world, an increasingly large part of contemporary geographical literature comprises studies of various aspects of the urban environment. Geographers are doing the city. But what are they doing in the city? What problems do they study? What are their concepts about the city? How do they, as distinct from sociologists, for example, approach the study of urban areas? Can the findings be useful in helping to improve the social and economic health of cities, which, it has been suggested, represents one of the gravest challenges in the twentieth century? This paper will answer some of these questions—perhaps not as fully as they deserve, but as adequately as space will allow.

It is often said that geographers are "Jacks-of-all-trades" since they seem to study a little of everything, much of which borders on other fields of study. One has only to glance at the table of contents of a geography textbook to see how true this is. In the same way, the subject matter of urban geography is a rich and varied potpourri. Moreover, there are many different approaches to the geographical study of towns, although perhaps two are most common. First, the town can be considered as forming a discrete phenomenon in the general fabric of settlement. Concepts and generalizations may be formed regarding their distribution, size, function, and growth. Areas served by urban places may be delimited and the spatial interaction between places may be studied. Second, the town may be studied in terms of its layout and build, which express its origin, growth, and function. Concepts and generalizations may be related to the character and intensity of land use within the urban area and to the spatial interaction between its constituent parts.

Perhaps the best way to understand the topics studied and the concepts used in urban geography is to imagine a town and view it through the eyes of an urban geographer and the studies he might undertake there. The first question he might ask is, "Where is it?" It has a *site*, the actual ground on which it stands. Why did it grow up here and not somewhere else? It also has a location, both an absolute and, more important, a relative location, a *situation* with respect to other physical and human things around about it. Today, many of the early site factors have ceased to be important. Similarly, relative locations have changed with improved communications.

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The communications have enabled distances to be covered more cheaply and in less time than ever before and have resulted in the intensification of interaction between places. Site and situation characteristics are thus constantly changing through time. The nature of these changes, the processes underlying them, and the effects they have on the changing spatial relationships between towns constitute one set of problems in urban geography.

The study of the town itself may be from an aggregative or an elemental viewpoint; that is, the geographer may consider the town as a discrete whole, as a collection of elements which distinguish it from others, or he may pay specific attention to some or all the constituent elements within it as separate parts that go to make up the whole. In both cases the studies may be cross-sectional in that they present the situation at a given point in time, or they may be time-oriented with emphasis on tracing the evolution of the present pattern. In fact, most studies contain elements of both of these approaches.

Most aggregative studies are concerned with form and function. In answer to questions about form or shape, concepts from biology have proved useful and various measures of shape have been attempted by geographers. In distinguishing towns by the functions they perform, analysis is usually in terms of the dominant activities revealed in census materials on employment and/or occupations, in terms of the presence or absence of functions difficult to quantify, such as government or universities, and in terms of their roles, for example, as service centers or ports. The end product of these studies is the formulation of generic (type) classifications of towns, not only as ends in themselves, but also as a way of ordering information conveniently for the purpose of further analysis and investigation.

STUDIES OF INTERNAL CITY STRUCTURE

The town itself occupies an area of appreciable size, and activities are separated from one another within it. It has an internal structure which can most easily be expressed in terms of the differences in character and intensity of land uses at various locations. When the geographer recognizes residential areas, shopping districts, or industrial zones, he is also identifying different functions and forms, all of which give the basis for the recognition of uniform regions—areas which are homogeneous in terms of specified characteristics—within towns. He might say that it is the description of the nature of these urban regions, their disposition and their social interdependence, that constitutes a geographical analysis of the internal structure of the town.

Residential Land Use

A geographer may very well want to consider only one of the major functions or land uses within the town in isolation from all the others. Many studies are of this nature. For example, attention might be focused on residential land use, and questions pertaining to the patterns and the principles underlying those patterns would most surely be asked, for there is considerable internal variation in residential structure. The older, inner areas of the town are usually ones of high density, with old and multi-story buildings, whereas the outer and progressively newer parts are lower in density. He can view this as a surface of differing intensity and character of use and apply concepts of density gradients, decreasing outward from the core of the town, for purposes of analysis. Identifying the shapes of these gradients and studying the changes in them over time and in different-sized urban areas are increasingly important research topics.

Business and Commercial Structure

The commercial structure of towns has received much attention in recent investigations. The complex business structure of the town can be disaggregated into various component parts, such as ribbon development along arterials, into clusters or centers of activities of varying size and functional composition, and into specialized concentrations of similar types of function, such as printing or medical districts. A geographer would want to understand these patterns and would rely in part on the concepts of the *threshold size* (the minimum amount of support necessary for a business to survive in the economic landscape) and the *range of a good* (which defines the area from which this support can be obtained), for these help determine the spacing of business activities. He could use concepts of agglomeration of economic activity and of differences in shopping habits in the analysis of the location, functional composition, and interaction among activities.

He would most certainly recognize that part of the business structure consists of a hierarchy of vari-sized shopping centers—both newer, planned ones and older, unplanned nucleations—ranging from the smallest street corner cluster to the most complex concentration in the central business district, or the downtown area. Each level or center in the hierarchy can be characterized by the numbers and types of activities it contains. The central business district alone furnishes ample study topics, ranging from its delimitation to an analysis of its internal structure and the interconnections existing within it. He would identify a *core*, comprising a number of highly interrelated functions, and a surrounding *frame* of loosely connected and less intensive land uses, and trace the connections between them.

Industrial Structure

Differences exist also in the nature and distribution of industries within and between towns. Some industrial types are highly concentrated in the inner, older parts of the city, while others are located in isolation toward the periphery. Clusters of similar types occur in some areas while others consist of apparently disparate kinds. Indeed, towns themselves are in many instances characterized by dominance of a single kind of industry or by the diversification of types. In the analysis of patterns of industrial location the geographer could use concepts of *scale economies*—which relate quantity of goods produced directly to costs of production—to understand the localization and grouping of industries within the town. He could also use the *economic base concept* (the idea that most cities exist primarily as centers of employment opportunities) to identify those activities which are *basic* to the town's existence, in that they bring money into the town from outside by trading with other areas, and those which are *nonbasic*, or city serving, in that they serve the people living within the area of the town itself. He would relate the town's growth and economic well-being to the basic industrial structure, since towns cannot exist without trade with other areas.

INTERACTION WITHIN THE CITY

We have asserted that activities occupy different locations within the city. For example, place of residence is separated by varying distances from place of work for most people. Linkages and movements between the various parts must therefore take place. People and goods must overcome distance in order to satisfy their demands, and in so doing they give rise to a variety of patterns of movement and flows, the most pronounced one being, of course, the daily commut-

ing patterns. These interactions are reflected in the amount, direction, time, and character of movements between the various functional areas. Consequently, the study of urban transportation has become a major topic in urban geography. The town, in fact, comprises a complex system of overlapping functional areas and of nodes and foci about which human activity is organized. Concepts of *intervening opportunity*, of least-effort behavior resulting in minimizing distances traveled, and the principles relating trip generation to the character and intensity of land use afford partial explanations of these patterns.

Movement and focality are intimately connected with the concept of *accessibility*. Since activities have different needs from the viewpoint of accessibility, and since some locations are more accessible than others to the various parts of the urban area and its functions, there is competition for the use of land, and this competition affects its value. The economic concepts relating land values to differences in accessibility are fundamental to the analysis of the distribution and intensity of land uses within the urban area. Urban land can be represented as a rent surface, which, in general, resembles a contour map of a hill in that values and rents are highest in the core of the town, where accessibility is presumably greatest, and decrease by differing amounts in various directions to the periphery. Regularities exist in the relationship between this surface and the distribution of urban functions.

THE DYNAMIC NATURE OF CITIES

So far we have considered the town as static. In reality, however, its internal structure is constantly changing. New buildings replace old ones, and land uses are changed as functions move from one location to another or disappear altogether. Patterns are in a state of flux as adjustments are made to changing conditions. Centripetal forces of various kinds attract activities to the centers of towns while centrifugal forces result in decentralization and dispersal. At the same time, areas of one kind of land use are invaded by other uses which eventually take over, resulting in change in function, in intensity of use, and in form.

An urban geographer would therefore be interested in the processes of residential decentralization, in the expansion of the suburbs at the town's periphery. He would note that the older, inner areas of the town, no longer meeting the requirements of the original users, decline and are taken over by alien uses. He would study slums and trace the evolution of uses at any given location by means of the concept of *sequent occupance*. He would study the changes in business structure as the quality of the market deteriorates and changes occur in the technology of retailing. He would note other changes—the growth of out-of-town shopping centers and the associated reductions in sales volumes and vacancy rates in the downtown area, the emergence of commercial blight as areas run down, and the trend toward industrial decentralization as older sites with their congestion, scarcity of land for expansion, and high costs become increasingly less suitable for most kinds of modern industry. He would want to know the effect of such changes as these on the patterns of movement within the city. In fact, he is interested in defining the relationships that exist and in identifying the processes underlying the changing internal structure of the town.

Towns do not exist only to serve the people living within their bounds; they are also intimately connected with the areas surrounding them. Another major group of study topics is thus concerned

with the interaction between towns and the areas that comprise their hinterlands. The city has a sphere of influence, a trade area, in the same way that a magnet has a field of influence. People go to towns to purchase goods or attend a game and, through its function as a collecting and distributing center, the town serves the surrounding area in a variety of ways. The urban geographer would want to know what these relationships are. He would delimit the trade area, and analyze its character and size.

The extent of trade areas is directly related to the proximity and functional structure of other settlements. He would look at the size and spacing of towns in a region, asking questions about the degree of clustering or dispersal of settlement. He would find the ideas related to *central place theory** useful in understanding patterns. He would be concerned with the principles underlying distributions of towns and the evolution of patterns of town-spacing over time.

METHODS OF STUDY

Although the foregoing does not exhaust the concepts associated with urban geography, a word about methods and techniques is in order at this juncture. Much geographic representation is purely descriptive in character. The identification of patterns, their description, and the generation of classifications are the traditional and necessary prerequisites for geographical study. However, much of the recent work appears to be markedly different from this, although on closer inspection it will be found that the differences are mainly in the way research is undertaken rather than in the kinds of problems studied. Greater emphasis is being placed on the use of mathematics as an analytical technique, and there is increased concern with the general rather than the specific. The subject is changing from an idiographic one, in which the emphasis was on the intensive study of individual cases, to the nomothetic approach, in which there is a search for general laws and spatial regularities.

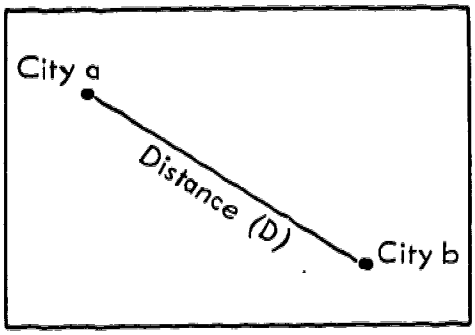
We are really saying that the subject is becoming more scientific, with greater emphasis on the explanation and prediction of geographic phenomena. For, although description may be a logical starting point, it is inadequate by itself, since it can only lead to a rearrangement of the facts without adding principles from which to strike out anew. Moreover, once we emphasize explanation, we become engaged in the search for theories. It is in this connection that another interesting change has taken place in the approach to urban geography, namely, the increasing use that is being made of models.

The usual concept of a model is that of a miniature; for example, a model railroad set. This really is an analogue to the real thing. It is, in fact, not an exact replica but a likeness, since only the most salient features have been represented. Models are just that—abstractions or simplifications of the real world in which the irrelevant material is discarded to lay bare the bones of what are considered to be the simplest and most significant aspects of the problem under investigation.

Although models can be of various kinds, those most widely used in urban geography are mathematical ones, in which words are replaced by mathematical symbols, and consist of a set of mathematical assertions from which consequences can be derived by logical mathematical argument. For example, in studying the field of influence of a town, we draw the analogy to the magnetic field. Physicists tell us that if two magnets are placed near each other, the

* See "Christaller's Central Place Theory" in this issue of the *Journal*.

boundary of their magnetic fields is directly related to their size or strength, and inversely related to the distance separating them. In the same way, the boundary between the trade areas of towns and the interaction between towns is also related to their sizes and to the distances between them. Translating this to symbols, we can express the same thing simply as P_aP_b/D where P_a and P_b stand for the size of the two towns and D represents the spacing. Using this very simple model, we can estimate the extent of trade area of say place *b*, or the amount of interaction expected between towns *a* and *b*.



More complicated models have been developed recently to help in the study of journey-to-work and journey-to-shop patterns. They have been applied to the analysis and explanation of the distribution of land uses within the city; for example, to residential land use and to commercial structure. Much effort is now being devoted to the development of models which can simulate entire urban areas to aid in the formulation of planning policies.

But the model gives us an artificial situation which must be compared to the findings obtained from actual field observation. There is, as a result, a problem of appraisal. It is in the testing of theoretical results derived from the use of a model that we find an added departure from the traditional way of doing things. The traditional way was largely to use "eyeball" methods of direct visual comparison—methods which are both highly subjective and generally inaccurate. In order to gain greater objectivity and reliability, more and more urban geographers are turning to the use of statistical methods of testing hypothesis or in evaluating results.

Mathematical methods are also being used now to describe phenomena (in the description of patterns, for example, or in the formulation of classifications) and in the identification and measure of relationships or correlations between phenomena. Recent work has therefore tended to become more quantitative with (a) greater problem orientation, (b) hypothesis testing using mathematics, and (c) emphasis on the building of models as an aid in the formulation of theory.

Once explanation is available, predictions may become logical. It is here that urban geography appears to be able to make an even greater contribution to urban planning than it has in the past. Continued search for the understanding of the spatial structure of the city can help in making decisions about its future. It is the application of the findings of geographical studies to this purpose that many urban geographers consider to be their most worthwhile goal. They are contributing in a large way to the understanding of the urban world and the eventual betterment of this environment for an increasingly urbanized society.

FURTHER READING

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Historical and Comparative Urban Studies

Rhoads Murphey

The city is as old as civilization. The two words come from the same root, which originally meant city, suggesting an interrelation which was especially close in the early historical period, but which is still relevant. *Civilization* is generally equated with a literate tradition preserved by organized groups, or societies, living in permanently fixed clusters rather than in small, scattered units. These groups are also characterized by some *division of labor* or task specialization, which includes a variety of *secondary* and *tertiary* (trading, services, manufacturing) rather than merely *primary* (agriculture, fishing, hunting, and gathering) activities. Such a description also fits the city. Historically the first cities began to appear with the emergence of a division of labor. It seems reasonably certain that this development first took place somewhere in the hill country bordering the Tigris-Euphrates Valley, where the wild ancestors of wheat and barley were native, and where, well before the appearance of cities, goats, pigs, dogs, and cattle had been domesticated and permanent field agriculture had begun to produce consistent surpluses. Only when this stage was reached could a division of labor take place so that some members of the population could engage in non-food-producing activities and still be fed from surpluses produced by the remaining farmers.

CITIES AS CENTERS OF EXCHANGE

There were obvious advantages in conducting most of these non-agricultural functions in a concentrated center—a city where trade goods, raw materials, and food could most conveniently be assembled and from which a set of goods and services could be made available to surrounding rural areas or to other cities as trading partners. The first cities profited in these ways from *economies of scale* (lower costs resulting from size and concentration of the enterprise) and demonstrated the universal function of all cities at every time and place—as *centers of exchange*. Some aspects of this function, as in nearly all cities now, may not have been strictly economic, for example, political administration, religious and ritual services, or the wider social and cultural rewards present in a large community, which is also more diverse than a farmers' village. From the time of its origin the city has been the chief engine of economic and institutional growth and change through specialization based on exchange.

But in order to perform every aspect of its function as a center of exchange, the city depended, as it still does, on good access to and from the areas served, the city's *hinterland*. Any city implies and is based on *spatial interaction*, or relations between places. It cannot

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exist as an isolated unit, but only as it can receive from outside the city, often from great distances, the materials and food which it needs, and can provide in return a set of goods and services to consumers in its hinterland. It must therefore be concerned with maximizing *transferability* (the means of moving goods from one point to another at bearable cost) by building artificial routes of easy movement, such as roads, and/or by selecting a site and a situation which make access to and from the city easy. *Site* refers to the actual ground on which a city is built, *situation* to the wider pattern of spatial interactions with other places. Situation is thus by definition a relative term rather than an absolute one. It describes the relation of a given place to other places in simple distance, or, more importantly, in cost or effort. It can, and usually does, change over time, especially as accessibility and spatial interaction are affected by changes in transport or transferability.

In this broad sense all cities are *central places*. They are nodes or nuclei of their respective hinterlands, performing in one concentrated and easily accessible (or central) place specialized functions on behalf of the wider area which they serve. A final essential basis of exchange, the city's universal function, is *complementarity*—the actual or potential relationship between places which possess different sets of goods or services and which therefore have a basis for mutually profitable exchange. No two places are alike, and each place tends to have its own set of *comparative advantages* for the production of different sets of goods. Complementarity results in trade, however, only if transferability between the places concerned is great enough to overcome the friction of distance at bearable cost, and if no *intervening opportunity* lies between them where either potential trade partner could satisfy its needs with less effort. These are universal conditions for and characteristics of cities in every area and at every historical period.

EARLY CITIES OF MESOPOTAMIA AND EGYPT

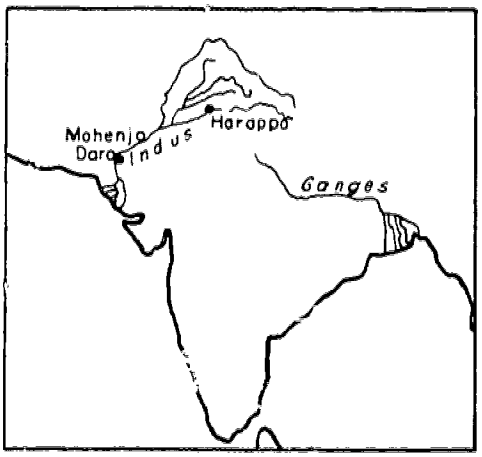
One of the results of historical or comparative urban studies is their demonstration of urban universals rather than differences. By about 4000 B.C., city building in the Middle East seems to have spread from its probable earlier hearth in the hill country of Syria, Palestine, and Iraq down onto the flood plain of the Tigris-Euphrates, and perhaps equally early to the lower Nile Valley in Egypt. These are both potentially productive areas where exchange was relatively easy and transferability great. The Nile and Tigris-Euphrates are both exotic rivers, rising in well-watered highlands and flowing across a desert to reach the sea. Their annual floods deposited highly fertile alluvium, especially in the deltas, and in addition provided semi-automatic irrigation. It was possible on this basis to produce large and reliable food surpluses and thus to enable a division of labor as well as to create a prosperous hinterland for cities to serve. But the advantages of both areas for the growth of large and numerous cities for the first time were at least as importantly derived from the relative ease with which goods could be moved and therefore centers of exchange could function. Both areas were level and largely or entirely treeless, so that movement overland was relatively easy. The cities which arose, however, made more important use of the rivers themselves as easy routes of spatial interaction where transferability was maximized. City sites were riparian (on the river banks) and their situational advantages meant that they could assemble by water transport and at low cost, large and bulky ship-

ments of delta-grown grain, dates, and other food commodities, and could also bring in heavy materials like stone or metals from great distances in addition to trade goods, since they could use sea as well as river routes. Goods and services could be distributed from these cities in the same way. Transport costs tend to vary inversely with the capacity of the carriers, especially for heavy or bulky goods. For many millennia after the first cities arose and until the development of the railway, large cities could not be maintained except on navigable waterways.

The early cities of Mesopotamia and Egypt also depended, as all cities do, on complementarity as a basis for exchange. The fundamental complementary relationship is between the city itself and the non-urban agricultural or primary-producing areas in its hinterland. But even in the ancient period the lower Nile and Tigris-Euphrates were devoid of stone, wood, or metal, and these commodities had to be imported to the cities, which were thus involved in complementary exchange (finished goods or services in exchange for raw materials) with a variety of places by river and sea routes. Cedars came to Egypt by sea from Lebanon, stone in great quantities from quarries along the upper Nile, metals and ores from many distant sources. In the early cities of Mesopotamia, even nails and simple tools were originally made from sun-dried or kiln-fired clay until exchange had been established with distant sources of ores and metals as well as wood and stone. There was thus a relatively rapid expansion of a commercial network, or field of spatial interaction, accompanying the rise of the first cities.

URBANIZATION IN ASIA

Connections of this sort were established with complementary areas as distant as India (to which the Mesopotamian urban model spread by at least 2500 B.C.). Cities of the Indus plain, notably Harappa and Mohenjo Daro, became trade partners with Mesopotamian cities in a mutually profitable exchange. There was little or no exchange between these early Indian cities and Egypt, since

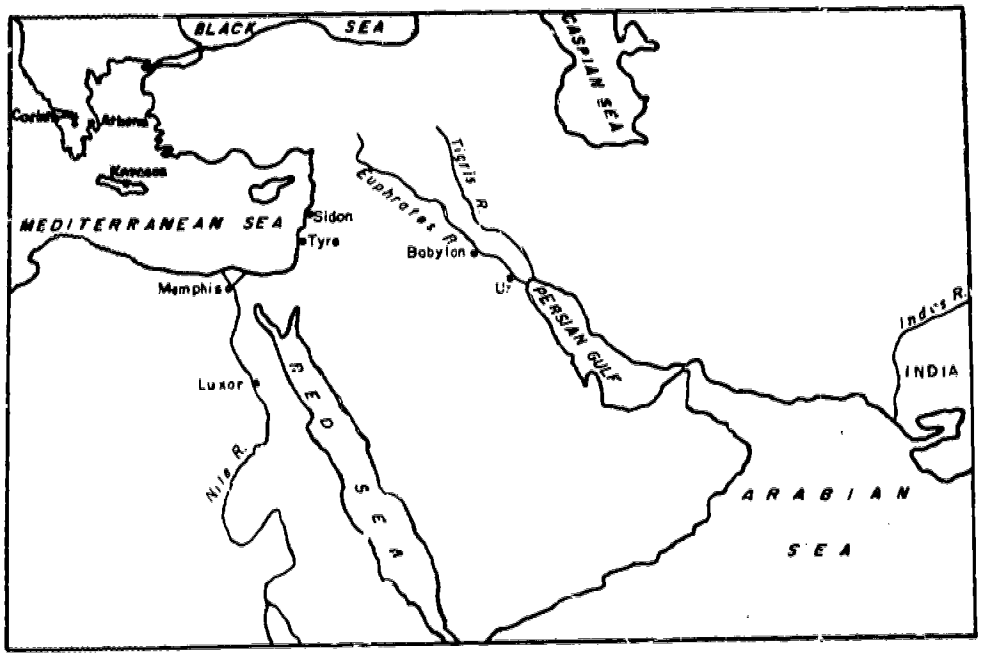


urban Mesopotamia presented an intervening opportunity. Similarly trade and cultural exchange between Mesopotamia and China was apparently both late and weak, since the Indus cities intervened spatially and since transferability between Mesopotamia and India was much greater by sea routes along the shores of the Persian Gulf and Arabian Sea. The flood plain of the Yellow River in north China was probably in historical terms the third major center of urbanization to develop (by about 2000 B.C.). It and the Indus plain shared the same set of physical characteristics as had earlier favored the rise of Mesopotamian and Egyptian cities—exotic river systems flowing across an arid but level and largely treeless plain where fertile alluvial soils and water for irrigation were combined with high transferability. Within each of these Asian areas urbanization spread first along the major rivers and their tributaries and distributaries, as avenues of easy access to and from productive agricultural areas. Asian urbanization is still heavily water-oriented.

With the rise of the first territorial empires in Asia, however, the dominant urban function became increasingly one of political administration and cultural synthesis. Trade did, of course, continue to grow in and from urban bases, but most traditional Asian cities were only secondarily involved in trade or manufacturing in terms of employment or investment, and were more importantly concerned with managing the administrative machinery of large bureaucratic states, including government trade monopolies. As with many modern political capitals, they also played an important cultural and ceremonial role as centers of the literate, intellectual, and artistic tradition in each area, and invested a large share of urban resources in monument building for both political and religious rather than strictly economic goals. City sites and situations had still, nevertheless, to maximize access, which is as important for an administrative city dealing in services as for a commercial city dealing in goods.

URBANIZATION IN THE WEST

From the beginning of the urban tradition of the West, however, the city was predominantly a commercial center. By the first millennium B. C., the dynamic centers of urbanization and expanding trade had for a variety of reasons shifted from Mesopotamia and the Nile into the Mediterranean Basin. A small enclosed sea, generally free of storms and with a highly indented coastline, the Mediterranean was one of the earliest hearths for the growth of navigation and ocean transport. Transferability within the basin was high, once the elementary techniques of navigation had been mastered. It is to Phoenician, Cretan, Greek, and Roman forms that the principal direct roots of modern Western urbanization extend, rather than to Luxor, Memphis, Ur, or Babylon. Tyre, Knossos, Athens, Syracuse (and Rome, to a degree) were centers of trade on a greatly increased scale and spatial spread. While it is true that ancient urban Mesopotamia



and Egypt show striking similarities to modern urbanism, confronted many of the same problems, and solved (or failed to solve) them in many of the same ways, the modern parallel with the pre-classical and classical Mediterranean is closer still, as part of a continuous Western urban tradition which stretches at least from Sidon and Carthage to Corinth, Rome, London, New York, and San Francisco. The great majority of Western cities has been and remains dominantly commercial rather than administrative or symbolic, although, as in traditional Asia (where the proportions were reversed), most cities have performed both functions. The *polis*, or city-state of classical Greece, and the colonies which Greeks founded elsewhere along the Mediterranean shores as their trade by sea expanded, were primarily commercial centers involved in widely-extended spatial interaction patterns stretching from the Black Sea coasts and the Crimea to the Pillars of Hercules, where the Mediterranean joins the Atlantic. These sorts of cities, of which the Greek developments were prototypes, have been labelled *heterogenetic*—influenced by and involved with a variety of interactions with a great range of distant and different places—as opposed to the *orthogenetic* cities of the great Asian empires, which were proportionately more shaped by and involved in interactions within culturally homogeneous hinterlands and which functioned as urban pinnacles of the several Asian "Great Traditions."

ROMAN CITIES

With the rise of the Roman Empire, the dominantly commercial nature of the Greek *polis* was overlaid by a new and wider set of administrative functions. The city of Rome, aided by its dual function in both trade and administration and by its central position within the Mediterranean for assembling and distributing food and other goods by sea, was probably the first city in history to reach or approach a population of one million. Its size was a reflection of the enormous extent and productivity of the hinterland it served. People and goods were transported by sea and by an impressive network of paved roads, all of which proverbially led to Rome and greatly augmented transferability and centrality. Cities founded or expanded by the Romans throughout their empire in Europe, North Africa, and the Middle East bore the imperial stamp of central authority. Many began as military camps or garrison towns, grew to provincial or regional capitals, and acquired some commercial functions as well. They were usually walled and in most instances carefully laid out on a gridiron plan, with major avenues leading from each of the gates at the four points of the compass. In this they resembled the administrative cities of the contemporary Chinese empire as its spatial extent also expanded and was marked by the establishment of walled regional centers of control laid out spatially on a uniform imperial plan.

The collapse of Roman control in the West was followed by a period of several centuries in which both the number and the size of cities shrank. Roman roads degenerated, transferability was everywhere lessened by brigandage and civil disorder, and commercial production was similarly affected. The basis for urban growth was thus sharply reduced as compared with the period of the *Pax Romana*, when exchange and transferability were maximized. The city of Rome itself may have shrunk to as few as 5,000 inhabitants at its lowest point, a dramatic illustration of what happens to a city when it loses its hinterland. No political or administrative functions remained, and economic functions were reduced to those of a tiny local exchange center for the immediate environs of the town. Elsewhere in the former empire urban-

ism was also in retreat. Many of the cities which survived the Dark Ages did so because they had become the seats of bishops (cathedral towns) or grew up in the shelter or even within the walls of the fortified castle of a feudal lord. As in Italy itself, lowland sites of easy access which had attracted cities under the *Pax Romana* were often abandoned, and nearly all cities sought the protection of elevated or defensible sites where accessibility was sacrificed for security.

CITIES IN THE MIDDLE AGES

Venice is the most notable example of a city which arose during the chaos following the Roman collapse as a protected refuge—in the marshes near the seaward edge of the Po River delta on the Adriatic—and was able to combine defensibility with high transferability by sea. With the combined advantages of its site and its situation at the northernmost extension of the Mediterranean, where it could serve the north European market and could assemble goods by sea from the Levant and the Orient, Venice became the biggest city in medieval Europe. Elsewhere in the West exchange was to a large extent provided by periodic fairs, as an adjustment to conditions of low transferability and limited commercial production. Fairs in effect brought the market to the hinterland on a rotating basis in the same way and for the same reasons that periodic fairs or markets still operate in areas of low transferability and restricted commercial production, such as large parts of North Africa or rural China.

Toward the close of the Middle Ages, and for a variety of reasons, larger and better-ordered political units began to grow, security and transferability began to increase, roads reappeared, barrier forests were removed, trade began to revive, and cities once more increased in numbers and size. The age of the great discoveries and the rapid improvements in shipping and navigation from the 15th century on meant a further and enormous widening of the limits of spatial interaction by sea routes which soon encompassed the entire world. This, incidentally, meant the decline of Venice, since first its old rival Genoa and then the new port cities along the northwest coast of Europe now stood as a series of intervening opportunities between Venice and the new sea routes to world markets, which no longer flowed eastward through the Mediterranean but westward and southward in the Atlantic to the New World and to Asia around Africa. The Asian tropics, in particular, offered the basis for a strong complementarity with Europe as producers of spices and a growing variety of other goods which Europe demanded but could not produce. For the same reasons of complementarity and high transferability by sea, a large and profitable trade in sugar arose with the West Indies.

COMMERCIAL CENTERS AND THE COMING OF THE INDUSTRIAL REVOLUTION

Booming urban commercial centers grew in northwest Europe to manage the expanded volume of trade, with the greatest advantages accruing to those cities with the most appropriate situations—ports in the Low Countries near the mouths of the Rhine which offered easy access to the variety of continental markets, and on the other side of the Channel, the city of London, well placed at the head of the Thames estuary to serve as a major *entrepôt* (center of assembly and distribution of goods by water) for the European market as a whole. This same urban model—the commercial city dominated by merchants—spread across the Atlantic and was reproduced in Boston, New York, Philadelphia, Baltimore, and other North American centers. It later spread to Australia-

New Zealand and to parts of Latin America where commercial production of primary goods for export became prominent and required large urban centers of exchange and commercial services, such as Sydney, Melbourne, Buenos Aires, or Montevideo, whose shipments of grain and meat helped to feed the mushrooming urban populations of Europe and North America.

The coming of the industrial revolution reinforced the growth of most of the earlier-established commercial cities, for they were centers of investment capital and of cheap access for the assembly of raw materials and the distribution of finished goods. But there was also a new growth of manufacturing cities close to sources of the bulky materials which industrialization now required in enormous amounts and which therefore meant greatly increased sensitivity to transport costs. Manchester, Birmingham, Sheffield, Essen, Düsseldorf, Pittsburgh, Breslau, Magnitogorsk, Jamshedpur, Anshan, Yawata, and other virtually new cities arose in association with local deposits of coal or ore. The spread of railways did, however, make a greater degree of urban concentration possible. The railroad and other innovations, such as the steamship, and ultimately the truck and the pipeline, so heightened transferability at low cost that even the older commercial centers, far from raw material sources, could bring in what manufacturing required and could also bring in food to maintain urban populations of considerable size. One result of the rapid increase in the size of ocean carriers was that many of the harbors adequate for an earlier age could no longer accommodate them. *Outports* had to be developed, farther down the river or estuary on which the city lay, or harbors had to be artificially deepened or enlarged on the coast. Thus, for example, Le Havre came to serve as the outport for Paris, Southampton and Gravesend for London, Cuxhaven for Hamburg, and Kobe for Osaka.

As one consequence of the expansion of trade and the growth of a worldwide trade network, exchange between Europe and the Afro-Asian area greatly increased. In Asia there had in the past been few predominantly commercial cities, and in particular few coastal ports. The cities of the Great Tradition had been inland centers of administration. European traders and later colonial merchants had therefore to establish, or to expand from small indigenous nuclei, a whole set of new port cities to handle the new trade and to service the expanding commercial hinterlands from which they drew their export goods. From Karachi, Bombay, Madras, Colombo, and Calcutta through the major ports of Southeast Asia to Hong Kong, Shanghai, Tientsin, and Yokohama there arose a series of similarly organized cities which were either founded by Western traders where none had existed before or were largely developed by them (in Japan, by what were clearly Western methods). Not merely their coastal sites and their situations, which maximized access by sea, but their physical appearance and their institutions, which were designed to generate and safeguard the accumulation of commercial capital, the increase of trade, and the security of the private entrepreneur and his goods, were replicas of the urban models already developed by post-Renaissance Europe in the merchant cities of the modern West. With the coming of national independence in the wake of the second World War, many of these Western-developed colonial cities have also become political capitals. In every country of Asia (if Tokyo may be regarded as a city developed on Western lines, if not in Western hands), the colonial or semi-colonial (e.g., Bangkok) port became well before independence a strong or even overwhelming *primate* city, i. e., a city which

is at least twice as populous as its nearest domestic rival. In the several small countries of Southeast Asia, in particular, the ex-colonial primate city almost monopolizes commercial and industrial as well as political functions for the entire state, and thus has no rational rivals as a national capital despite its alien origins. Urban development in parts of Africa during the past century has followed parallel lines. Colonial port cities were built by Europeans to handle the export of primary products and became much larger than the indigenous inland urban centers. Similarly, many of these ports, originally colonial, have become primate cities and, with national independence, political capitals.

THE GROWING SIMILARITY OF CITIES

With the creation of a global commercial network, the spread of industrialization, and the technological revolution in transport and transferability, cities everywhere are becoming more like one another. The urban differences which once distinguished various cultural and economic areas are lessening. The degree of urbanization, or the proportion of the total population living in cities, tends strongly to vary with the level of commercialization of the economy. Hence, for example, Australia, Uruguay, Germany, or Japan are much more highly urbanized than China, India, Mexico, or the Congo. But all cities are increasingly involved in spatial interaction with each other and with other parts of the world. This interaction involves what is more and more the same set of commercial and industrial functions dependent on the same kinds of techniques and confronting the same sorts of problems. The growing spatial spread of *conurbations* (city clusters and expanding metropolitan areas) is appearing in Asia and Africa and Latin America as in Europe and North America. The foreshadowings of *megalopolis* (literally, giant city, a growing together over a vastly extended urban area of what were originally widely separated cities) are apparent not only in southern England or between Boston, Massachusetts, and Richmond, Virginia, but between Tokyo and Osaka-Kobe, along the Hooghly River, and along the Rio de la Plata. The growth of the city since urban-based civilization first developed some 6000 years ago is still continuing and the city still functions as the center of exchange which increasingly unites all areas of the world.

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Christaller's Central Place Theory

Arthur and Judith Getis

Much present-day research in urban geography has its roots in the work of Walter Christaller, a German scholar from Bavaria.* He was attempting to find the laws which determine the number, size, and distribution of towns. He was convinced, he wrote, that just as there are economic laws which determine the life of the economy, so are there special economic-geographic laws determining the arrangement of towns.

Since 1933, when his book on central places in southern Germany was published, many writers have praised and criticized, reformulated and expanded parts of Christaller's theory. Today very few accept all aspects of his work, but they realize that it stimulated some of the most advanced scientific work in geography. The following summary of the rudiments of central place theory is included here in order to acquaint the reader with the meaning of some of the terminology prevalent in urban geography today—a terminology introduced into our literature by those dealing with Christaller's work. Hopefully this will be a reference when reading about urban geography.

No attempt is made to summarize all of Christaller's work. The emphasis is on Christaller's marketing principle or k = 3 network. Other networks were derived which had their foundation in principles of transportation and administration.

A CENTRAL PLACE

The chief function or characteristic of a town, Christaller said, is to be the center of a region. Settlements which are prevalently centers of regions he called *central places*. In contrast to these are dispersed places, i.e., all those places which are not centers. They might be areally-bound places (the inhabitants live from their agricultural activities), pointly-bound places (the inhabitants make their living from resources which occur at specific locations, such as mining settlements, customs places, and so on), or settlements which are indifferent with regard to their location (monastery settlements). Christaller was concerned with the central places only.

Some central places are more important than others—their central functions extend over regions in which other central places of less importance exist. Christaller devised a means of measuring the centrality of towns—their relative importance in regard to the surrounding region.

CENTRAL GOODS AND SERVICES

Goods produced at a central place, and the services offered there, are called *central goods and services*. Dispersed goods and services, in contrast, are ubiquitous; they are offered and produced

* Walter Christaller, *Die zentralen Orte in Süddeutschland*, trans. C. Baskin (Jena: Gustave Fischer, 1933, and Charlottesville: University of Virginia, Bureau of Population and Urban Research, 1954).

everywhere. Further, an industry using raw materials imported from outside the local region and shipping its products out of the local area would not constitute a central service. The goods must be produced for the surrounding region.

THE RANGE OF A GOOD

This is the distance the dispersed population is willing to travel to buy a good offered at a central place. The good has both an upper and a lower limit to its *range*. The *upper limit* is the maximum radius of sales beyond which the price of the good is too high for it to be sold. The upper limit may be either an ideal or a real limit.

Ideal limit: the maximum radius results from the increase of price with distance until consumers will no longer purchase the good.

Real limit: the radius is determined by the proximity of an alternate center which can offer the good at a lower price at a certain distance from the first center. The *lower limit* of the range encloses the number of consumers necessary to provide the minimum sales volume required for the good to be produced and distributed profitably from the central place. This has been called the *threshold level* of the good. It should be noted that there is no fixed distance between the lower and upper limits of a range; sometimes the distance between the two is small, at other times it is great.

Each good will have its own range, due to the fact that the prices of various goods increase at different rates with increasing distances from the center, and to the fact that different goods have different thresholds. Further, Christaller notes that the range of any one good may be different at each central place and at each point in time.

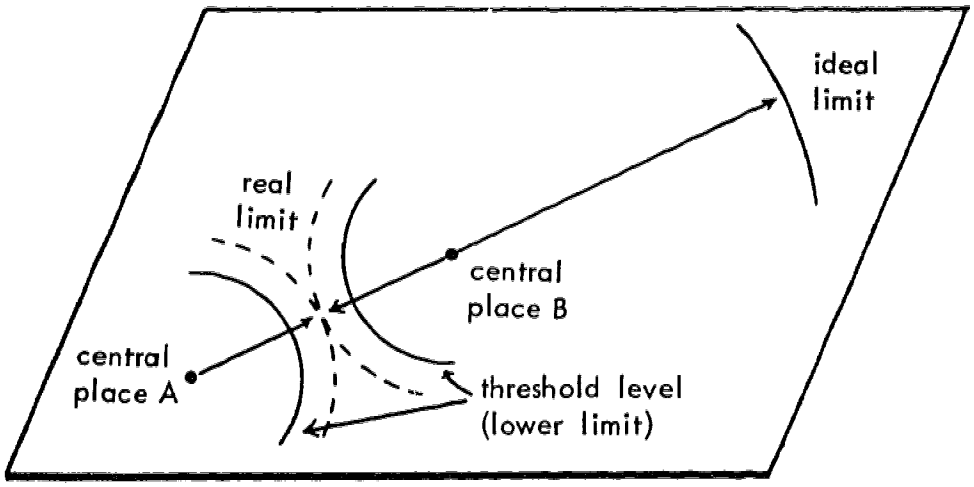

FIGURE 1. The range of a good, say a radio, offered at both A and B. Since the threshold level is less than the real limit, both central places will produce it. The real limit, halfway between the two central places, shows the trade area for radios for each place. Those living beyond the ideal limit must either do without radios or establish a new central place supplying the good.

THE COMPLEMENTARY REGION

This is the area enclosed about a central place by the range of a good. Christaller assumes that the central place has a monopoly in the supply of the good to its complementary region by virtue of the price at which it can offer the good.

Ideally, each central place would have a circular tributary (market) area, with itself at the center. However, either un-

served places would exist, if this were the case, or the circles would overlap, in which case the condition of monopoly would not be fulfilled. Next to circles, hexagons are the most efficient figures both to serve an area (central places and distances traveled will be minimized) and to fill an area completely, as the figure below indicates. Therefore the complementary region of a central place assumes the form of a hexagon.

(1) An unbounded plain with soil of equal fertility everywhere and an uneven distribution of resources.

(2) An even distribution of population and purchasing power.

(3) A uniform transportation network in all directions, so that all central places of the same type are equally accessible.

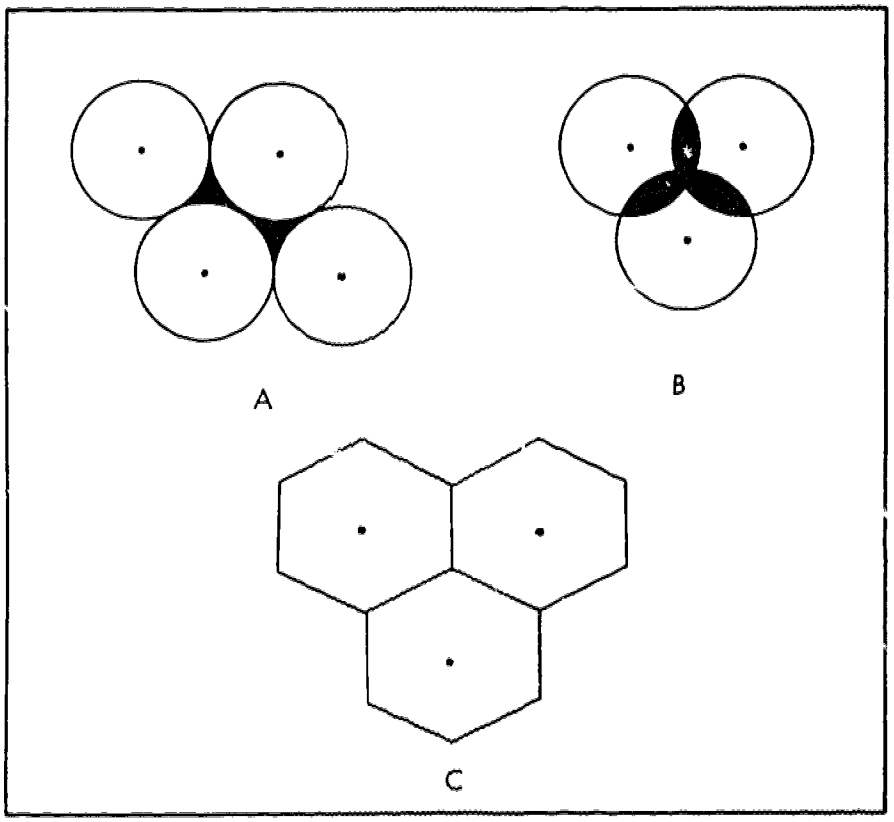

FIGURE 2. Three Arrangements of Complementary Regions.

A. The unserved areas are shaded.
B. Shaded areas indicate places where the condition of monopoly would not be fulfilled.
C. Hexagons completely fill an area, with no overlap.

Using the terms defined above, and a set of assumptions and conditions, Christaller evolved a system of central places. The assumptions, which are listed below, tell us about the kind of landscape on which his system would be erected.

(4) A constant range of any one central good, whatever the central place from which it is offered.

Given this landscape, we have to know what the desires of the people are—i.e.,

what constraints will exist on the system. These conditions follow:

(1) A maximum number of demands for the goods and services should be satisfied.

(2) The incomes of the people offering the goods and services should be maximized.

(3) Distances moved by consumers to purchase the goods and services should be minimized; i.e., goods are purchased from the closest point.

(4) The number of central places should be the minimum possible.

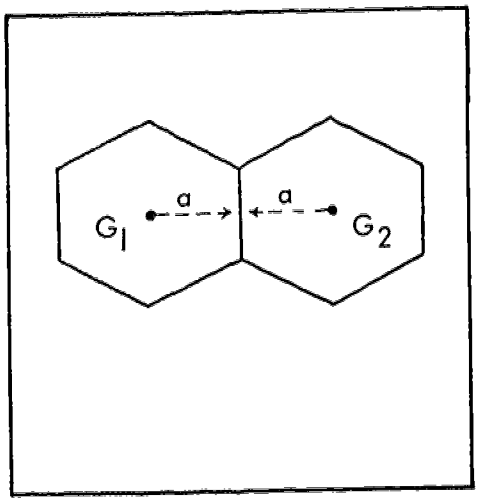

FIGURE 3. Real range of good 1 is shown by distance a.

THE SYSTEM OF CENTRAL PLACES: THE k=3 NETWORK

Under the assumptions and conditions stated above, Christaller's system of central places may be derived. Let us assume first that there are two central places, called G centers, which offer all of the goods and services, from a good or service called order 1 with the highest threshold, to a good or service of order 100, with the lowest threshold. Of necessity, the two G centers have the largest market areas (complementary regions) of all central places. The "real" range of the highest order good demanded, good of order 1, defines the boundary between the two G centers. Therefore, the two hexagon-shaped complementary regions have one side in common.

As was noted above, the ranges of the goods decline successively; good of order 2 has a smaller range than that of order 1. As the ranges decline, larger and larger numbers of consumers are left between the two G centers. With some good, say good of order 30, there are enough "surplus" consumers over and above the thresholds of the G centers to allow the development of alternate centers. These are called B centers.

B centers supply goods 30,31, . . ., 100 at lower prices than the G centers *in the areas between the threshold ranges of those goods from the G centers.* B centers are located at the maximum economic distance from the G centers—i.e., on the outermost edges of the areas defined about G centers by the real range of good of order 1. In this way, consumer movements are kept to a minimum, and a maximum number of demands are satisfied from a minimum number of centers.

B centers in turn leave progressively larger numbers of surplus demands, and with some good, say good of order 50, these are large enough to permit the existence of a third rank of centers: K centers. K centers provide goods 50, 51, . . ., 100. The existence of four other types of centers is accounted for in the same manner.

Besides its definite spatial pattern two things should be noted about Christaller's system. First, a very rigid class structure has been described. That is, each central place supplies all the goods and services—the *identical* goods and services —that the centers below it provide, plus some additional ones. It is due to this fact that Christaller was able to assume

that discrete population levels could be assigned to centers of the same type. Since the population of a town depends upon the number and types of functions it performs, then centers performing similar functions will have similar populations. Further, since no centers not of the same type offer identical goods and services, the population levels will be unique.

Second, the system of central places and their complementary regions is characterized by interdependency. All centers except the smallest have other centers dependent upon them for the supply of certain goods. Thus, B centers have K

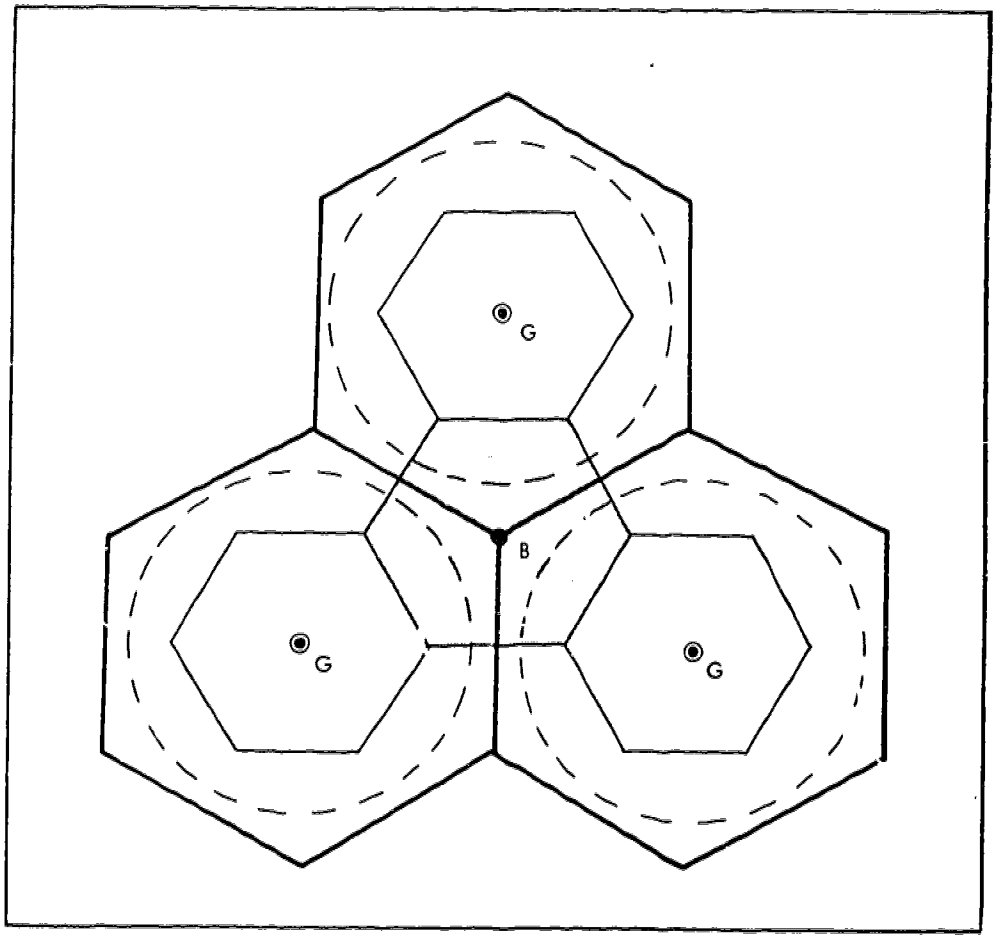

FIGURE 4. The Creation of a B Order Central Place.

Each G center serves good or service 1 to its entire complementary region. All goods, from 1, 2, . . ., n, are supplied by G centers.

Threshold of good or service 15. It encloses areas less than the real limit. However, the area between the thresholds of the three G centers is too small to allow the establishment of new central places able to supply good or service 15.

Threshold level of good or service 30. It encloses areas small enough to allow the establishment of a new central place between the G centers.

The real limit of good or service 30 supplied by a new order central place, B. B centers supply goods 30, 31, . . ., n. G centers also supply these goods and services, as well as those of higher order.

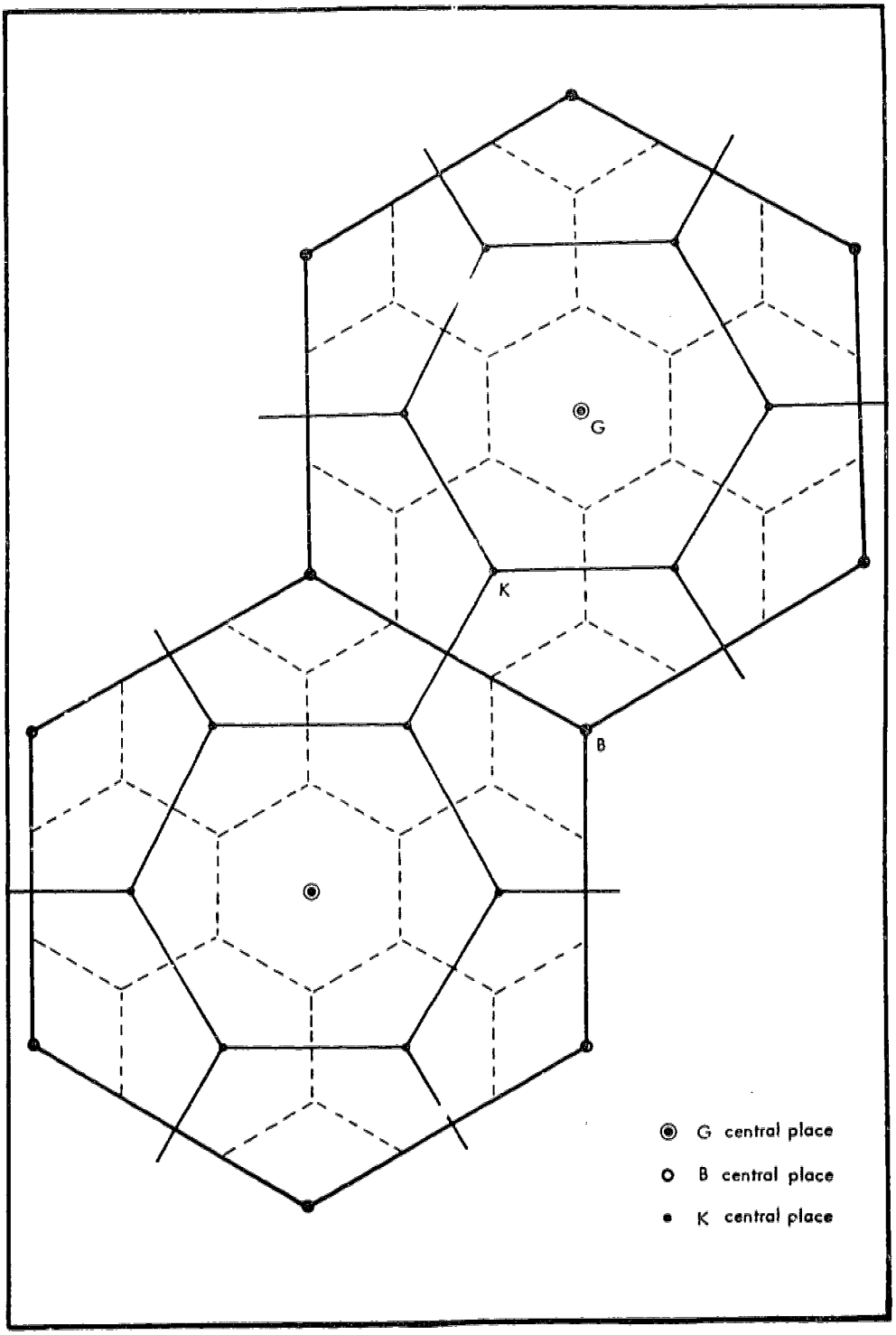

FIGURE 5. The $k = 3$ network.

centers and their complementary regions, and all centers of a lower rank than K, dependent upon them for the supply of goods 30, 31, . . ., 49. In turn, B centers and their complementary regions depend on G centers for the supply of goods 1, 2, . . ., 29. Each complementary region of a B place is served with those goods by three G centers, and Christaller assumes that one-third of its trade goes to each. Each G center thus serves its own region for the supply of goods 1, 2, . . ., 29 as well as one-third of the complementary regions of the six B centers. In all, a G center serves three total B-type regions. This is called a k = 3 network, where k equals the total number of complementary regions of next lowest order served by the central place of next highest order. Likewise, of course, three complete K-type regions are served with goods 30, 31, . . ., 49 by a B center, and so on.

In summary, the chief contribution of Christaller to central place theory is, of course, its basic formulation. More specifically, his identification of concepts relevant to the location of cities, his logically-derived system of central places, and the conclusions following from it are to be noted. Further, it should once more be pointed out that there is much in the book which has not been mentioned here. Christaller recognizes certain deficiencies of his system and qualifies it whenever he deems necessary. In general, he notes that:

> The strict mathematical scheme developed previously is imperfect in some respects. It is even incorrect in this strictness. The scheme should approximate reality; therefore we should study the factors under whose influence it undergoes change (p. 217).

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Public Policy and the Central Business District

Ronald R. Boyce

The nature, future place, and importance of the *central business district*, or CBD as it is commonly called, is a subject of extreme controversy. Some say it is no longer necessary—indeed, is an anachronism. For example, the geographer Edward Ullman said, "If we were to apply private enterprise depreciation principles to the inner portions of cities we would write them off, just as machinery is scrapped, and throw them away. But where would we throw them?"

Others claim that the CBD is so vital an organism in the metropolitan anatomy that any city without a healthy CBD is dead or in danger of dying. They argue that the CBD should be restored to its former and rightful place as the heart of the metropolis—indeed, should surpass anything it was in the past. Charles Abrams, a planner, recently claimed that "without the CBD the suburbs cannot exist" because they are not viable without it. In this light the CBD is looked upon as an opportunity to build a truly representative symbol of our urban civilization.

These two different conclusions result largely from two very diverse perceptions as to what the city is. The social scientist, on the one hand, views the city as a laboratory for analysis, as a phenomenon which primarily serves and reflects man's needs and technology. He sees the city as population clustered tightly together in order to serve better the assembly, production, service, and distribution needs of its inhabitants; he sees it as a tightly knit web of spatial, economic, and social interconnections. Melvin Webber, former president of the American Institute of Planners, recently stated that "the history of city growth, in essence, is the story of man's eager search for ease of human interaction." Viewed in this light cities, and the CBD, are expected to change and to adjust to man's changing technology and needs.

This perspective of the city is vastly different from that of those who view the city as an artifact, or as an ideal expression of our civilization. Thus, the architect-designer is ever proposing utopian, or ideal, urban designs. In this context the city must have order, beauty, harmony, and symbolic meaning as an entity. Each structure should complement all others in a vast symphony of concrete and pattern. The city is viewed as a single expression with finite boundaries and discernible internal sub-units. Urban sprawl is therefore treated as a disease. This philosophy was perhaps best expressed by the late architect-city planner Eliel Saarinen, who said, "Just as any living organism can be healthy only when that organism is a product of nature's art in accordance with the basic principles of nature's architecture, exactly for the

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same reason town or city can be healthy —physically, spiritually, and culturally— only when it is developed into a product of man's art in accordance with the basic principles of man's architecture."

Almost all concerned are in complete agreement that the CBD is unsuited to present needs and, furthermore, has been rapidly losing its monopolistic and dominant position in the metropolis. This is demonstrated by the rapid and continuing decline in CBD retail sales, by the dilapidated and dis-functional condition of many downtowns, and by the continual erosion and decentralization of activities to outlying locations.

This article attempts to do three things: to look objectively at the major assets and deficits of the CBD in terms of the two stated perspectives, to attempt to pose some reasons for the many problems and trends which are affecting the CBD, and to present conclusions as to the public policy which I think should be adopted for the American central business district.

ASSETS OF THE CBD

The central business district is an outstanding asset for at least two reasons: First, it contains a concentration of activities and employment, and it exerts control over the urban fabric. Second, it has symbolic, cultural, and historical value. The first asset is one perhaps most appreciated by the geographer; the second one is most appreciated by the architect-designer.

The concentration of activities and employment is demonstrated by the fact that well over one-half of all employment in most central cities occurs, in, or very near, the central business district. About 80 percent of all department store sales, and about 90 percent of all banking occurs in the CBD of even the largest metropolises. The small sub-CBD nodes of Wall Street, LaSalle Street, and Market Street undoubtedly control the finances of much of the nation. The daytime population in downtown Chicago, for example, amounts to almost 300,000 persons—more than the total population of Greater Des Moines, Iowa. Such concentration is reflected in the value of land and buildings in the CBD, which often amounts to upwards of 15 to 25 percent of the physical value of the entire city. Over one million dollars an acre was recently paid merely for air rights in downtown Chicago; $10,000 a front foot is not an unusually high price for CBD land in our largest cities.

The cultural and historical value of downtown is equally impressive. It contains the great hotels, restaurants, night clubs, movie houses, and theaters. In addition, it represents the initial beginnings of the city and contains the historical buildings and places. It is the area which most people associate with any given city. In short, it is the distinctive attribute of the metropolis. The subdivisions and industrial parks look much the same from city to city, but the downtown is different. It is most representative of the character and nature of any given city. Because of this and other reasons, a business location in the CBD carries with it great prestige. By the same token, the vitality of the downtown is often taken as the bellwether of a city's growth by the casual visitor.

DEFICITS AND PROBLEMS

If the assets of downtowns are impressive, the deficits are even more so and are surely the reason for paying so much attention to the CBD. The major difficulties or problems of the CBD are primarily related to its inability to adjust to new needs. This inability is most clearly reflected in the problems of obsolescence. The buildings of most downtowns date back a half century—before

the motor car—as do their streets and general physical layout. As a consequence such structures and blocks are not suitable for many of today's space needs.

One has only to observe the space now being used by outlying business and industry to note the disparity. Many industries occupy the equivalent of 10 or 20 downtown blocks. The new Prudential office building in Houston alone occupies some 28 acres. Yet many of our largest CBD's contain only about 50 acres. It is not unusual for a new regional shopping center to cover 100 acres.

The general appearance of downtowns is also a severe handicap. The dilapidated and unesthetic appearances are partly the result of the age of the structures. In addition, there is a great lack of landscaping and general architectural style as well as a void in the physical coordination of structures. Most buildings have been placed with little regard as to how they would fit into the general scheme of things. Finally, many downtowns are characterized by a great deal of broken frontage where buildings have been torn down and used for parking lots, thus making great gaps in the business pattern. There has been little thought as to the best arrangement of functions inside of the central business district, and consequently many institutions such as banks, insurance companies, and the like are so located that a shopper must walk farther to get between stores than would be necessary if conscious thought had been given to the order and arrangement of functions, as in modern shopping centers.

The most talked about problem in the central business district is, of course, traffic and parking. Congestion has reached huge proportions in many downtown areas. There is a great lack of parking space, and many people visiting the downtowns have to walk considerable distances or pay very high parking fees. Although high-rise parking ramps are being built, they are still inadequate to serve the needs in most cities. Mass transit has been continually deteriorating in both service and quality, while the price has been increasing, and it is no longer nearly as convenient as formerly. Moreover, transit does not truly serve many of the outlying residential territories adequately.

Many of the problems in the central business districts are the result of the extreme governmental fragmentation in our metropolises. Central city municipalities, which often contain only about half the total metropolitan population, are greatly concerned about their central business districts and do, in fact, undertake various renewal and redevelopment schemes which would not ordinarily be undertaken if the metropolis were under one municipal government. This, of course, creates a tax burden on the population within the city limits. It also causes the central city government to become gravely concerned about the decentralization and new placement of functions and activities which would otherwise be welcomed. The decentralization of retailing to outlying locations is in many regards a real asset and benefit to the consumer. The problem of the central city government is that such relocation generally occurs outside of its particular municipal boundaries.

A lack of progressiveness is also evident in most central business districts. This is reflected in decor and general appearances, as outlined previously, as well as the parking problems, which have been referred to. Although many downtowns have now developed various "save downtown" associations, few of these are of significant value. Most are concerned with promotional and superficial schemes rather than with obtaining a solid base on which to make decisions.

REASONS FOR CBD CHANGE

But what are the major reasons for such central business district problems? Let's examine some of the changes which have been occurring in the central city—the municipality which contains the central business district. A metropolitan area includes the central city, the county in which it is located, and other surrounding counties which are significantly associated with the central city. Metropolitan areas increased in population 26 percent between 1950 and 1960, whereas the central city has barely held its own, populations averaging an increase of only one and one-half percent during this time. Many central cities of large metropolises have actually lost population in the last fifteen years. Such population decline has had a major impact on the downtown area.

Moreover, such population decline has not been offset by increases in nonresidential activities, as was formerly the case. In fact, the population remaining has become far less affluent than that which preceded it. The zone immediately surrounding many downtowns is often characterized by slum conditions.

The factors which have caused central business district decline are reflections of the new mobility of the population as represented by the automobile, the increased leisure time, and the general technological advancements made in construction since World War II. Such changes are reflected most clearly in what is commonly termed suburbanization. Subdivisions, planned industrial parks, and planned shopping centers have augmented the population decentralization. The great increase in the importance of and territory occupied by municipal airports during the past decade have, in turn, sparked outlying residential, industrial, and commercial development. Development of freeways is exerting tremendous decentralization pressures by providing outer circumferential highways and encouraging people to live even further from their places of work.

As monopolistic effects have been broken, the end result is that the central business district has continued to become more off-center. Until the past decade, most cities occupied very small territories. Today, however, with large subdivisions and the generally more generous use of land, the location of the central business district has become problematical. Although it is still the focus of the major transit routes and even the interstate freeway system, distance has become a major factor in determining whether people will patronize or work in this center. Generally, as a city grows the central business district tends to become more off-center inside of the metropolitan complex. As cities continue to expand into new rural territories, the location problem with regard to CBD's will surely become of even greater significance.

DEVELOPING A PUBLIC POLICY FOR THE CBD

Given these few facts, what should one conclude about the CBD? All signs point to a continuation of the rapid decline in the CBD and a continuation of rapid growth in most of the other parts of the urban complex. If current trends continue, the CBD will become but one of the many nodes of commercial activity in the metropolis; and perhaps not even the dominant node. It is also clear that the architectural thesis that the city is dead without a healthy CBD is unjustified. In fact, Los Angeles, the city in search of a CBD, is one of the most rapidly growing in the nation and now is the second largest metropolis in the United States and the sixth largest in the world.

This kind of argument perhaps obscures the real policy questions, however. The first question is not really whether the metropolis *can* effectively operate without a CBD, but whether it should or must. It clearly can. The second question is whether deliberate intervention is necessary in order for the city to operate effectively. The CBD is truly tied to other urban components, and, if not operating effectively, can have a deleterious effect on the entire urban system.

My conclusion with regard to the first question is that, given existing conditions and investments in the CBD, almost every metropolis should probably continue to have one, but not to the present extent for any given sized city, and surely not an augmented and symbol-laden CBD as envisaged by many architect-designers. Although presently there are many functions exclusively limited to the CBD, I can think of no single function, or activity, which must of necessity be located here in the future. While the CBD might be the best location, given the location of complementary activities for many functions, especially in smaller cities, there is no compelling reason why such functions should be encouraged and promoted here. The variety, pedestrian contacts, and other generally desirable urban features can be created in outlying locations in perhaps better form than is possible in remodeling our central business districts.

My conclusion with regard to the second question is that the CBD has indeed become a drag on the urban system, inasmuch as it is overbuilt, and requires a catalyst for change which will diminish its prominence. It seems abundantly clear that without major governmental intervention the CBD will never again regain its former high position of value, prestige, and general importance in the metropolis.

But if one accepts these premises, what specifically should the CBD be like in the future? What specific catalytic actions and public policies are necessary in order to achieve this?

Lest the reader think that I am going to untie the Gordian Knot, let me hastily assure you that I really do not know the answer. I can partly describe the role of the future CBD by describing what I think should *not* be the nature of things in the future. First, I do not think that the city should be looked upon as an artifact of mankind for the simple reason that I think the city is far too important to be used as a monument or a museum. Neither do I think the future CBD should be the captive promotional device of special interest territories or groups such as the central city municipality or various "save downtown" groups. It is necessary that goods and services be distributed throughout the metropolis in a way which best serves the total metropolitan citizenry, not just a selected few. Many downtown functions might best be decentralized as soon as possible so as to be within closer range of the consumers. Finally, I do not think plans for downtown or the central city should be made independent of the entire urban complex, and perhaps even the composite urban interests of the nation. This, in simple terms, means that most city planning departments which serve merely central city governments are obsolete.

This, in turn, leads to a major public policy statement: planning should be done on a super-metropolitan basis. This necessitates metropolitan government or some such alternative. Despite the many pitfalls and bitter experiences connected with attempts at metropolitan government, this policy must be continued with renewed energy. Indeed, one might argue that the metropolitan unit is already far too restrictive a concept for

today's and especially tomorrow's urban residential patterns.

Second, the U.S. Government should establish a more comprehensive department of urban affairs than that currently envisaged, so that major and comparative research on the city complex can be undertaken. It is a national disgrace that there is probably as much information available on the swamplands of Florida as is available on the cities of the United States. For example, it is not even known within thousands of acres how much land is now occupied by urban residents in the United States. Almost nothing specifically is known on a comparative basis about the location and extent of many major components of the metropolis. Until more information is available, and more comprehensive studies are made, we must continue to operate partly in a vacuum.

FURTHER READING

Gruen, Victor, *The Heart of Our Cities: The Urban Crisis, Diagnosis and Cure.* New York: Simon and Schuster, 1964.

Horwood, Edgar M. and Boyce, R. R., *Studies of the Central Business District and Urban Freeway Development.* Seattle: University of Washington Press, 1959.

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THE ORIGIN OF TOWNS

It is an old saying that cities are as ancient as civilization, yet the etymological kinship expresses a depth of truth that is not always fully appreciated. The rise of civilization has been intimately bound up with the gathering of men to live in cities because the two phenomena have a common geographical basis. From the relations between human societies and the land upon which they are settled city and civilization require the emergence of certain common conditions without which neither can exist. Urban communities can be supported only when the material foundations of life are such as to yield a surplus of food over and above the consuming needs of the food-producers, and when the means are also available to concentrate this surplus at particular spots. Equally, unless society has reached this stage, the opportunities for that accumulation of knowledge and transmission of experience which is civilization remain extremely limited. In the absence of trained specialist classes whose business it is to develop and pass on the social tradition, progress can only be slow and restricted, and must always be precarious. . . . The professions only become possible as each man working on the land becomes able to grow more food than his family needs. Thus it is no mere accident that in human history the invention of writing and the appearance of city life are twin features that date from the fourth millennium B.C. Cities ever since have been the chief repositories of social tradition, the points of contact between cultures, and the fountainheads of inspiration.—Arthur E. Smailes, *The Geography of Towns.* London: Hutchinson & Co. (Publishers) Ltd., 1953.

The Urban Unit of the High School Geography Project

Arthur Getis

One of the most notable trends in American education of the last decade has been the development of curriculum reform projects. Although curriculum reform started in mathematics and physics, it soon spread to other fields. Chemistry, biology, and earth sciences have reform projects several years old; many of the most recent projects are in the humanities and social sciences. One of the youngest curriculum reform projects is geography, represented by the High School Geography Project (HSGP), supported by the National Science Foundation.

The HSGP is now in the process of developing materials to be offered, after suitable testing, to schools throughout the country. The course is planned for the tenth grade level. Various teaching units, all centered around a "settlement theme," are being developed by specialists at different universities. One of the first units to be developed, under my direction, is that in urban geography.

Two important considerations led to the selection of urban geography as one of the early units to be written. It was pointed out in the introduction to this issue that the majority of high school students today live in or adjacent to cities. A unit which interprets such an environment thus begins with the familiar. Second, we have seen that for the past several years some of the outstanding research in geography has dealt with urban problems. Urban geography is an intellectually fruitful field, teeming with new ideas. To translate these exciting new developments into terms that the high school student can comprehend is important, both for the student and for the discipline.

Urban geography, as we know, is a broad field. Whatever is to be presented in a teaching unit of short duration (about four weeks) necessarily demands careful selection. After preliminary research and informal school trials of materials, it was decided to center the unit around four subject matter concepts. In order of their presentation in the unit, these are as follows:

I. It is possible to determine favorable locational characteristics for settlements.

II. Cities survive and grow by producing goods and services and selling these to people in other areas.

III. The concept of accessibility is useful in accounting for important aspects of land use patterns in cities.

IV. Local land use planning is necessary to create and maintain desirable living conditions in urban areas.

Each of these concepts is treated in a section of the Urban Unit, and made meaningful by subdivision into a number of subordinate ideas. For example, Part I of the unit deals with the location of settlements. The first concept stated above has been rewritten in the following terms.

1. Some sites are better than others for the location of settlements.

2. Attractive characteristics of favorable sites are nearness to transportation facilities, nearness to natural resources, and conditions conducive to health, safety, and comfort.

3. Favorable locational characteristics change over time.

The other parts of the unit deal with principles of city growth, the relationship of accessibility to land use patterns, and the importance of land use planning in alleviating urban problems. Each part has concepts as specifically outlined as those listed above for Part I.

Each idea or concept is presented in a number of ways through a variety of activities. A consideration of accessibility and land use patterns, for example, entails the following activities: three written exercises, the use of "accessibility diagrams" of hypothetical areas, a manipulative device called the accessibility board, reading of appropriate sections in the student text, and outlines for discussions. These activities all deal with the relationship of accessibility to land use patterns, but they approach it differently. Certain students do well with one kind of activity; others profit more from a different approach. The purpose is to make it possible for all students to arrive at an understanding of the topic, permitting each to attain the goal in the way best suited to him.

The written exercises are based on subject matter hitherto reserved for college students, but developed in such a way that the average high school student can see how they illustrate the principle or concept being considered. For example, the three written exercises about accessibility and land use patterns deal with the idea of time-distance, the effect of accessibility on land values, and population density gradients.

One manipulative device, the accessibility board, has already been mentioned. There are three such devices in the unit. The accessibility board consists of a piece of molded plastic and some marbles. It simulates a traffic situation where the character of the transport system and the urban population are subject to change. The board furnishes the students with an opportunity to decide what accessibility is and how it may be measured, and to develop hypotheses concerning the effects of changes in certain variables upon accessibility.

Another device consists of a large, specially-made map of a city which has been given the name of Portsville. The map is designed to receive pieces representing various categories of land use. Students learn about the history of Portsville's development, and place pieces on the map according to their ideas of suitable locations. This procedure fosters an understanding of how cities grow both economically and spatially.

It becomes apparent that in this urban geography unit the student does not memorize the facts about a dozen or so cities. Instead, there is an attempt to teach the fundamentals: why cities are found where they are, how they grow, why they are arranged internally as they are, and so on. As the foregoing articles in this journal illustrate, these are some of the basic concerns of urban geography.

It should be mentioned that the material in the unit just described will be followed in the HSGP course by a second unit in urban geography, this one dealing with intercity analysis. The unit is now being developed by Professors Edward Taaffe and Leslie King of Ohio State University. As presently conceived, the unit will be centered around the following topics:

The functions a settlement performs are related to its size.

Cities interact with one another by the flow of goods, people, ideas, and services among them.

Cities and trade areas are interdependent. The size and importance of a city are in part a function of the areal extent, population density, and wealth of its trade area.

Urbanization has altered the system of American settlement in a revolutionary way.

Both urban geography units of the HSGP course are in the initial stages of development and field testing, and will be modified and revised during the coming months. What is significant about them is that they reflect an awareness on the part of the geographic profession of the growing importance and complexity of cities, and represent an attempt to lessen the gap between what professional geographers do and what goes on in the secondary school classroom.

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GEOGRAPHY AND URBANISM

Urban geography is concerned with the study of the economic base of cities; with interpretation of the relationships between the city as an important form of man's occupance of the land and the activities within the city's hinterland or economically contributary area which focus upon the city and which give rise to urban occupance. It is not possible, for example, to understand the extent and patterns of industrial and commercial areas within urban agglomerations without an understanding of the nature and distribution of those activities that produce raw materials for the industries, carry the materials to the factories and the products to the markets and the consumers, convert the materials into marketable products, and use the products to secure economic and social advantages.

Cities exist primarily to provide goods and services for the people who live outside the urban boundaries. No city can exist purely as a self-sufficient unit; it is a focus or area of concentration for a variety of activities serving areas beyond the city itself. In return for such activities and services, cities receive, directly or indirectly, sustenance from the areas which they serve. The extent to which any given urban activity serves the people outside the urban area is a measure of the relative importance of that activity as an urbanizing force. The economist devises measures of the relative importance of these activities; the geographer studies them in association with one another. He measures and interprets their relative importance in the various portions of the area the city serves and the location, intensity, and character of occupance of the land within the city itself which is used or is potentially usable for servicing those activities.—Harold M. Mayer and Clyde F. Kohn, eds., *Readings in Urban Geography*, © 1959 by the University of Chicago.

The Need for Urban Geography in Our High Schools*

J. Lewis Robinson

Teachers and school administrators are well aware that our cities are growing rapidly. Every day they face overflowing classrooms in their schools, and traffic problems between home and school. Because more than 70 percent of the people in Anglo-America live in urban areas, most students who are taught geography live in cities. The facts of urban life—industrialization, residential sprawl, social problems—are with most people of "European" culture every day. Geographers should be concerned, therefore, about the fact that there is very little urban geography in our high school textbooks, and very few theories or generalizations concerning the geography of urban living in the total curriculum.

For a long time geography textbooks and teaching have concentrated on the environmental characteristics of area to the neglect of the distributional characteristics of people. It is probable that good students come out of their school geography courses with a fair understanding of regional differences in the physical environment of the world. They know, for example, the broad climatic and vegetation regions and probably can visualize landform differences. But what do they know about people?

One of their main concepts of human geography is the distribution of agricultural regions, and therefore the differences in agricultural occupations from place to place throughout the world. The only time that most people are introduced effectively to high school regional analysis is in a discussion of world agricultural regions. These understandings are worthy goals for a teacher to develop, since agricultural activities cover a large area of the effectively-occupied part of the earth's surface. They also relate to a large percentage of the world's population outside of Europe and Anglo-America. Urbanization is increasing, however, in the non-European world, and so is our need to know how these cities are different from or similar to ours.

DE-EMPHASIZING THE MAN-LAND LEGACY

This emphasis on agricultural regions, which sometimes stresses products rather than people, is a legacy of our geography texts of the 1920's and 1930's, and gives a distorted image of present-day North Atlantic society. Since much of the "economic geography" of 30 and 40 years ago quite properly dealt with the relationships of man and his environment in a rural setting, we accepted this as a major theme in geography. Adult teachers of 30 years ago probably were raised

* Based on an address, "Problems of Urbanization" given to the meeting of the National Council for Geographic Education in New York, November 1965. The author expresses thanks for the helpful comments of Dr. Walter Hardwick, University of British Columbia and James Maxwell, federal Geographical Branch.

on farms, and undoubtedly they had a genuine interest in the "man-land" problems of the Dust Bowl, the Pioneer Fringe, or the Corn Belt.

One of the reasons for the decline of geography as "a study of man-land relationships" was the recent rise of urban-centered European society. To these urban-oriented people of the past 20 years, the theories of man and his environment became less vital as they concentrated in cities where the physical environment was less obvious. Some of these concepts also fell into disrepute together with the decline in environmentalism, which, in particular, traversed the fields of rural or agricultural geography. Rapid advances in agricultural technology, improvements in transportation, and urban man's confidence in his ability to conquer or change his material environment—all combined to discount some of the tenuous theories concerning man's relationships with his physical environment.

This "man-land" study is declining in importance in the universities, but the change is not yet apparent in our high school texts. The questions being asked in universities often involve concepts of technology and culture when discussing man and environment. There has been no radical change in geographical methodology. We must simply focus our attention on different things. We must ask ourselves and our students different questions about cities.

This deficiency in the presentation of the geographical characteristics of urban areas and people has not gone unnoticed. The urban unit being prepared under the auspices of the High School Project of the Association of American Geographers and some of the papers read at the 1965 meeting of the National Council for Geographic Education are evidences of this concern. These are important steps in the presentation of some principles of urban geography for high school teachers.

STUDYING CITIES

Some may argue that the study of cities is already in our school texts, since the index to most geography books will list many of the major cities of the world, or of the continent being studied. These city names are certainly listed, but a critical reading of the few paragraphs usually devoted to the largest cities will show that they are seldom even described—let alone "discussed"—insofar as their geography is concerned.

What do we say about cities? Put in another way, what do we expect our students to learn about them? We locate the city by placing the dot in the right place on an outline map. This is important, but only if its purpose is to train the pupil in locational relationship thinking. We want the student to know where the place is in relation to some other feature(s). We list its population and record its population increase. If there is a section which explains this population increase, it is often in vague terms, such as the increase in industries or the value of its port activities. However, this does not explain *why* the port is important. Seldom do we explain how or why the functions or purposes of the city have changed. In offering weak generalizations we are as guilty as the history teacher who asks for "three reasons for the Civil War" when she knows that

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there may be 30 reasons and most are quite complex! There are many reasons why cities grow. We are still trying to find out what some of them are and which ones are more significant than others. Are we aware of the complexity of our question when we ask for "three reasons for New York's growth in population?"

Inadequate Information

One of the characteristics of most city descriptions in our texts is the list of "leading manufactures." Because it has been possible to obtain statistics on the number of workers, or the value of industrial production for large cities (often without knowing the problems or limitations of these figures), many generations of students have had to memorize the "chief manufactures of . . . . . ," or, if it was a seaport, the list of its exports and imports. These inevitable "lists of manufactures" have helped as much as anything to give geography its reputation among pupils as a boring subject. One has to look hard for examples explaining *types* of manufacturing, or descriptions of similarities and differences in the *combinations* of manufacturing industries from city to city, or why some particular industries chose to locate in certain cities.

Do we attempt to describe or discuss the distribution of functional zones within a city? The geographical distribution of groups of occupations, activities, or land uses are just as significant to city dwellers as are the soil zones or bedrock outcrops in the country. Our students know that there is a local "theater section" or a "used-car row," but do they know that these patterns are repeated in most Anglo-American cities? Students know that "rich kids come from certain sections of the town and poor kids from other parts," but do they study the distribution of these sociological or economic conditions in the context of zones or distribution patterns within the total city?

COMPARING CITIES

Undoubtedly, one of the factors inhibiting comparative study of cities in the United States was the lack of a common system of land use mapping. If the new Standard Land Use Coding Manual published in 1965 by the Urban Renewal Administration in Washington, D.C., is accepted by various urban mapping groups, then comparison will become easier. In Canada, the federal Geographical Branch in Ottawa is half through a project, sponsored by the Emergency Measures Organization, of mapping land use and other features of the largest Canadian cities on the same scale and with similar symbols. Such maps are tools for research or comparison, but they also will make useful wall maps for the display of certain urban distributions.

Where do we find the interesting studies of cities which bring out their "geographical personalities," in the same way that our literary geographers have written colorful accounts of the countryside? We give our students numerous sample studies of a characteristic farm, but how often do we look at the geographical characteristics of a section of a city? We will spend several weeks of class time studying the environmental conditions of the "cotton belt" (which hardly exists any more!) or the changing distribution of the wheat belts, but say little about geographical patterns in the urban centers of these belts, such as New Orleans or Minneapolis. We will prepare lists of minerals found in the Rockies, but say nothing about the distinctive characteristics of mining towns. How long will it be before we teach that cities are *part of* a region, and not simply considered as separate entities *within* a region?

There are many generalizations about cities which are urban geography rather than a "mere collection of facts" about cities. What are some of the characteristics of cities which we would like our students to know?

Site and Origin of Certain Cities

If the course has a historical slant, then it would be well to know the physical geography (site) conditions of that city at the time of its settlement. One may speculate on the locative factors which may have influenced the growth of a city, or a group of cities, but one should discuss such "determinants" carefully because the historical evidence may be lacking. Urban historians still have much to do.

The City Itself

This refers to a city's internal structure in terms of present functional zones and morphology; in other words, the relative importance and purposes of the parts of the city and how they work together in a complex, operating unit.

The City-Hinterlands

The area(s) served by the city functions, and, in turn, the part which the area around the city plays in its growth are involved here. For example, this could be a study of the repeated phenomena of residential suburban sprawl into the rural areas, or a study of the distribution of natural resources which are transported into the city for processing.

The Inter-City

Implied here are the hierarchy of size and spacing of towns and cities; the transport and communication of goods, services, and ideas between cities; and the "working together" of cities in a nation. Urban geographers could list many more subjects for study. The above topics suggest, however, the types of information which our urban-dwelling students should find more valuable and interesting than "leading manufactures."

In defense of textbook writers and teachers, we should recognize that the fault is not entirely theirs. Part of the trouble is "academic inertia"—the lag of 10 to 15 years between the time of academic research in the universities and its appearance as generalizations in high school textbooks. Urban geography has really come into significance in university geography departments only in the past decade. There were some descriptive articles on the geography of cities in the professional literature of the 1930's and 40's, but few had reached the stage of illustrating broad principles or concepts which must characterize a "field of study." Urban geography in the universities today still does not have the wide choice of good text books which is available for physical or economic geography.

EXPLORING UNCHARTED AREAS

Academic urban geographers have made good progress in the past few years, but there is much to be done. Where are the comparative studies of American or Canadian city growth? Where do we find the descriptive studies of the urban patterns of individual cities or regional groups of cities? How can we criticize teachers for not discussing the relationships of functional zones in Houston, St. Louis, or Vancouver, if we have not published these studies in our professional literature? Where are the studies of areal variations in types or urban centers? Do Canadian cities differ from American cities? Do eastern cities look different from western cities? Why do we talk glibly of "spatial interaction" when we have so few analytical studies which demonstrate the connections be-

tween the city and its hinterland or between city and city? It is discouraging to think that the "theory of academic inertia" says that 10 or 15 years will pass before current academic urban research reaches the high school texts. One hopes, therefore, that geography teachers will bypass this line of delay and read about urban geography in our professional literature—and that geographers will write so that the teachers can understand them.

USING MEASUREMENTS

Teachers who have the task of distilling the products of academic research and making them available to the lower levels of students and pupils may be disturbed by the mathematical direction in which much of urban geography seems to be going. The "quantitative revolution" which is disturbing the geography profession is often led or directed by urban geographers, together with those who are "getting on the band wagon" with the purpose of confusing us with figures rather than enlightening us with principles. Measurement has always been a part of geography, whether it is the use of climate statistics or the calculation of bushels per acre, and exactness is to be encouraged. Perhaps the future will show that the young mathematical wizards now coming through our school system will demand more accurate measurements from geographers.

For the present, there is a problem of proper communication between some types of urban geographers and other geographers, in addition to the lag in utilizing urban geography generalizations in the high schools. Many of the advantages of quantifying information may become more apparent to the profession when we have more specific examples which show their practical value. There may be a parallel between the hopeless groping for man-land relationship laws and principles of the environmentalist days of rural geography, and the new quantitative developmental models of urban geography. Will the type of misguided environmentalist law which said that "wheat grows best on the semi-arid fringes of agriculture" be matched by modern mathematical gyrations to prove that "highway-oriented industries locate on highways?"

TEACHING PRINCIPLES

Geography courses in Anglo-American high schools are not doing justice to their students if they omit teaching the most important part of the environment in which most of them live—the city. Such teaching about urban areas can be done in several ways, but, in general, an urban area is simply another region (smaller, and with more people). Many of our established methods of teaching regional geography can still apply to these urban regions. Just as we deplore the teaching of regional geography which became "a miscellaneous collection of irrelevant facts about a part of the earth's surface," so should we take care to select and organize our information about cities so that we are teaching proper principles of urban geography.