

## THE CITY OF TOMORROW

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In 1932 I was privileged to organize the Geography Section of this Academy and tonight owing to your generosity and spirit of tolerance I am allowed to celebrate the tenth anniversary of that occasion. Again I may boast of a privilege, namely, the fact that you have for the first time risked the presidency in the hands of a geographer who is not associated with or shall I say not "contaminated" by a Department of Geology! Fully aware of the skepticism toward geography which oftentimes lurks in the minds of workers in the exact sciences I approached the task of preparing this address with certain fears and trepidation.

Sometime ago I was introduced as a geographer to a professor from a university in another state. "O yes," he said, "we have some of your kind in my institution. They are the fellows who include everything in their field." I must admit that the science of geography treats with the earth. The word geography still remains one of those words in the English language whose Greek root retains its original meaning. However, I know of no geographer who is either so bold or so naïve as to defend the concept that his science includes a study of all the physical and biological earth. Nevertheless, the fact remains that the list of aspects of geography of possible interest to an audience such as I face this evening is long, but the list which I myself might treat satisfactorily is limited. At first I was tempted to discuss the history and philosophy of my science, thus for "all time," to disabuse your minds of some of the impressions you may hold with respect to the present-day meaning of geography. However, to do justice to so vast a field in less than an hour seemed futile. Instead, I decided to treat with a phase of the field of urbanism, a field of particular interest to me, one which is relatively new in America and one which must command our serious attention not only after the war but even during its prosecution. And so for the next few minutes I ask you to bear with me while I consider some aspects of The City of Tomorrow as viewed by a geographer.

One of the amazing phenomena of American History is the fact that little energy has been expended either by individuals or governments in the study of cities. Only in the last few depression years under the stimulus of the National Resources Planning Board has official recognition been given by the United States Government to the city as a resource and as a part of the nation worthy in itself of intensive study. This board has appropriately stated "The prosperity and happiness of the teeming millions who dwell (in the cities) are closely bound up with that of America, *for if the city fails, America fails.*" The first important general treatise on cities was published by the national government. It was entitled "Our Cities" and was produced by the National Resources Planning Board only five years ago. Other publications of a more technical and intensive nature have followed. The first national conference on city planning held in this country occurred just six years ago.

Throughout its history the nation seems to have been far more concerned with rural problems than with urban. This has been especially manifest during the depression years, when politicians, paradoxically enough, have vied with each other to save the tiller of the soil from starvation at the expense of the non-food producing small merchant and manufacturer in the cities. This keen interest in

the farmer shown not only by the politician but by many other citizens has no doubt been actuated by selfish motives. We who live in urban communities, always dependent upon the farmer for our food supply, have neglected to study the cities not because we love them less but because we love our food more. Happily, a new era is dawning in which this selfish bias is about to be replaced by a better logic in the relations between rural and urban life structures, for unlike an earlier time in our history, today three-fifths of the nation's population inhabits our cities and only 17.6 per cent of the nation's workers is engaged in agricultural pursuits. Remarking upon the close association between rural and urban peoples, Mark Jefferson, one of America's able geographers, has well said, "What is rather carelessly called rural population is only the least nucleated part of a nucleated whole. Rural folk awake and at work are tied up to the city in every act of life."

Cities as human institutions are essentially as old as man himself. They have not always been large settlements measured in thousands of inhabitants. In fact, so far as concerns the geographer, the terms city, town or village have no more than political significance. As you know, some years ago the United States Census Bureau arbitrarily established a floor of 2500 as the minimum for urban centers. Some states use a higher figure. In Ohio, for example, no aggregate of people may qualify as a city until its numbers reach 5,000. But, functionally, what can distinguish between a community of 5,000 and one with 4,990? Obviously the distinction is purely one of convenience. Accordingly, some geographers are dispensing with size differentials and instead throwing all settlements into the single category "trade center." You may be interested in the fact that whereas on the basis of the Census Bureau's limiting number of 2500 for urban centers, the urban population of the United States exceeded the rural for the first time in 1920. If the Bureau had lowered the floor to incorporated places of 1000, then the 1910 census would have revealed an excess of urban population. And if unincorporated places had been included the excess would probably have been established in 1900. One geographer defines the trade center as an aggregation of people attached to a limited area of the earth's surface to derive such benefits as co-operative effort may yield. Hence when I use the expression trade center, you will understand that I may mean city, town, or village, incorporated or unincorporated and without regard to political limitations. Before viewing the City of Tomorrow, we need to examine the city of today.

#### CITY ORIGINS

Cities originate under varying circumstances. I cite a few of them. Cities have arisen for reasons of protection, individuals finding greater strength in numbers than in themselves alone. Cities have arisen around the central market place to which farmers have brought for exchange their various wares, either foodstuffs or handicraft or both. Cities have evolved from fortress centers, or at points along trade routes where bulk had to be broken. Religious shrines have given rise to city origins, as has the discovery of mineral hot springs with medicinal value, or climates for sports or health, or landscapes for the delectation of man's esthetic sense. Each of you will immediately recall certain centers that fit some one of these categories. But these are not all of the origins nor necessarily the most interesting. Some trade centers have been established by individual dictation or conscious group planning. Leningrad and Berlin were ordered by monarchs. Washington, D. C., and Canberra, Australia, were established by general governmental decree. So, too, were the recently created government "Greenbelt Towns" one of which is located just outside of Cincinnati, named Green Hills. The latter are unsatisfactory experiments in the realm of the City of Tomorrow. Some cities have been erected by owners of single industries, among which may be noted Gary, Indiana, or Port Sunlight, in England.

Cities by decree are of particular interest to us because they involved planning and planning required an investigation of city structures, both present and past. In turn, these studies revealed the complexity of urban units and still more important, their deficiencies. Findings of planners of new centers also aroused many persons living in established communities to the need for study of their respective habitats. At the turn of the century, sociologists, social workers, and geographers began to focus their energies upon studies of cities and, today, as I have already indicated, the national regime and some fifteen hundred of our urban centers have established special committees under various names, such as planning boards and planning commissions, to give consideration to planning for tomorrow. American geographers had lagged behind Europeans in their urban researches, but today they are not only abreast of them but probably are devoting even more attention to this subject and endeavoring to see into the future.

#### STRUCTURE

Before we may plan intelligently, we must have a full appreciation of the nature of the structure to be planned and of the function it is to perform. Let us look at structure first. Cities are three dimensional formations. They rest upon the plane of the earth's surface, and their buildings coincide with an intersecting vertical plane. In these two planes the works of man assume various forms. There is the design in the horizontal plane as reflected by the street patterns. These patterns may be classified as rectangular, radial, or a combination of both. The rectangular pattern is usually characteristic of flat or level surfaces, but examples are legion of this pattern in hilly cities where no regard has been shown toward steep gradients—where streets literally stand on end. Such a design is bad enough where climates are salubrious, but where we find it in cities where winters are noted for snow or freezing rains, one wonders that even the element of trial and error could have produced such effects. Clearly the radial or irregular pattern involving curved streets or those that deviate from right angles with each other is the logical for localities of considerable relief. On the other hand, we find in regions of flat topography, streets as fantastic as a mystic maze due either to accidental circumstance or conscious planning by some land developer—a design meant for the expression of beauty. Curved arteries sometimes make for beauty, but on flat terrain they certainly do not make for efficiency.

A rectangular pattern provides the possibility of numbered streets and a decimal system for the numbering of both business and residential buildings. A number may be assigned to a street, a letter to indicate direction of its axis in terms of the cardinal system and building numbers may be limited to 100 to the block, these numbers corresponding to the street numbers. No such arrangement is possible in a radial design. If we recall that streets are highways for communication, we shall appreciate that their arrangement in a manner to facilitate the locational function is of primary importance. Few persons can orient themselves on straight streets. Imagine their utter bewilderment in exploring irregular arteries.

The radial pattern yields numerous isolated triangles, circles or irregular islands which rarely are usable economically for building purposes. They are good for parks, monuments and other kinds of ornamentation. But there is a question as to the virtue of these latter uses in proportion to the cost involved. One constructive quality which the curved avenue contributes to urban life, is the maintenance of the pedestrian's interest. As he looks ahead the distant landscape is always framed and his interest, not to say curiosity, in what is just beyond him is continually revived by the unseen around the bend.

I do not argue for the utter elimination of the radial design. The pattern should be adapted to the topography. However, I voice objection to it when the terrain does not compel it as the most practical device.

## FUNCTIONAL ELEMENTS

Upon the areas facing these streets and avenues, must be erected the functional elements of the trade center. In practice the functional pattern and physical surface may not be divorced. All too rarely have heights of buildings been related to widths of streets and widths of streets to projected heights of buildings. We have ignored the angle of the sun's rays at different seasons of the year and the consequent varying lengths of shadows cast by structures of different heights. We have failed to relate traffic flow of workers in and out of buildings and density of general traffic flow to width of highways.

Functional patterns of trade centers tend to fall into stereotyped forms. In the downtown district is a miscellany of public buildings, retail stores, autobus and railroad stations. Next to them are wholesale houses and some manufactural industries, then a poor residential zone, a better residential area and on beyond the region of the homes of the well-to-do. Major arteries of bus or street car services radiate from the center of the city. Strung along these avenues are emergency supply shops or neighborhood marketing centers. Parks, playgrounds, schools and churches are scattered about, not always with reference to actual needs.

Some of this conglomeration is in process of transformation. Industries are moving out of the heart of the city; schools and playgrounds are being located with reference to actual population, accessibility and needs; street car tracks are being removed; railroads are being electrified and their tracks in some instances placed below ground where they enter the city or enter railroad stations. Even the skyscraper, with its contribution to congestion and all that this implies, is relegated to the past. These and many other changes are being effected. In fact, because some years ago these rearrangements were in process of being made independently of each other and in some instances upon a trial and error basis, zoning laws were formulated in an effort on the part of those with an appreciation of the value of planning, to prohibit the recurrence of an unco-ordinated building of the city. Concerning planning, I shall have more to say momentarily. First, I wish to consider the other half of the story of city structure, namely, the environment to which the internal urban structure is closely related.

## UMLAND

I have alluded to the political limits of a trade center, within which lies that area technically called city or village. Immediately adjacent are located suburbs, farm and vacant lands, in which the inhabitants look to the city for their economic and cultural well being quite as much as do the people within the city. This region I call the umland, resurrecting a term used by the Germans some years ago and subsequently dropped from common parlance. The suburbanites are largely parasitical. I do not mean to offend suburban dwellers. But it is a fact that they receive many of the benefits of the city for which they pay nothing. Public utilities of the city are generally drawn upon by the umland and their construction within the city is frequently affected by their extension beyond the city limits. And then there is that sharp line of demarcation, the political boundary between the city and the umland where city laws cease to have effect often to the advantage of the umland resident. Because of this close association of the people of the umland and the city, Mark Jefferson has said the United States Census of population is misleading. He states it is the census of our population "asleep" and does not give an accurate account of the location of our population "at work."

## THE CONTINUOUS HINTERLAND

The umland is not only a part of the trade center, but in a sense is also a part of a larger area which I call the continuous hinterland. However, for my purposes, the inner limit of the continuous hinterland is the outer limit of the umland. I conceive this hinterland to include that area in which the residents look to the

major trade center for most of their trade relations and much of their cultural inspiration. Like most natural boundaries, its outer edge is zonal. The influence (upon the city) of the occupants of the continuous hinterland may be less than or greater than that of the residents in the umland. The existence of most trade centers is probably due to the sum total effects of the natural elements in the region of the continuous hinterland. And here one may pose a question quite as difficult as the proverbial one which seeks to know whether it is the chicken or the egg which appears first. Does the city or the continuous hinterland appear first? I shall not stop to expound upon this question but shall merely assert that in most instances the relationship between city and hinterland is reciprocal once the city is established. On the other hand, with few exceptions, no city would exist were it not for the elements which constitute the continuous hinterland.

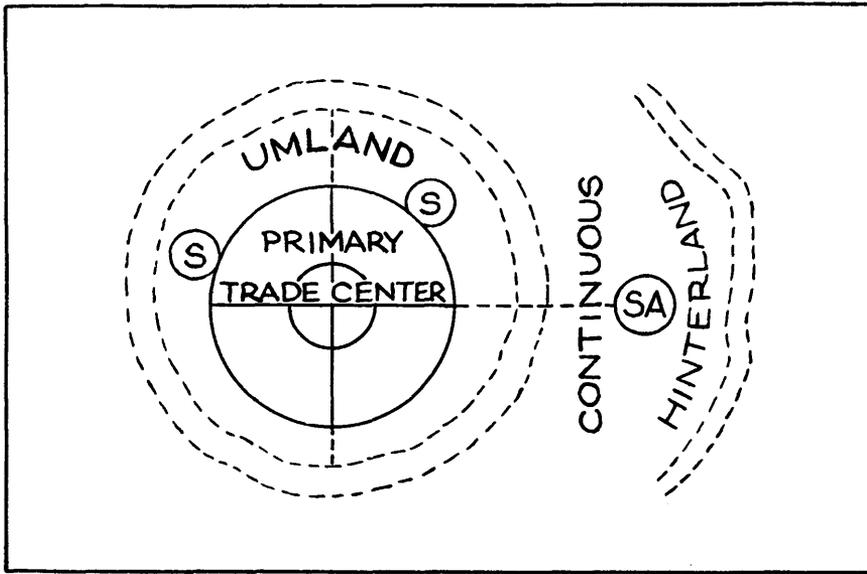


FIG. 1. The Primary Trade Center plus the Umland constitute the geographical or metropolitan city. The Umland includes the suburbs (S) and other areas immediately adjacent to the primary trade center which behave economically and socially as though they were politically a part of the trade center.

Although the Umland may be interpreted as a part of the Continuous Hinterland, its relations are so much more intimate with the primary trade center, that its distinction from the Continuous Hinterland seems desirable. The latter incorporates that territory beyond the Umland, to and including satellite (SA) centers with their Umlands, in which there is much dependence upon the primary trade center, but less than that indicated for the Umland area.

Boundaries of both Umland and Hinterland are shown to be zonal.

PLANNING

In the light of the habitat status of people in our cities it seems obvious that the future of our trade centers can best be developed through the medium of planning. By planning, I do not mean regimentation. I do imply regulation of some ways of life and the removal of certain of those personal liberties about which Americans have so glibly spoken since the founding of this nation, but which we have never fully enjoyed. As we have said, cities are areas of the earth occupied by people, not people as individuals, rather people as societies, people seeking certain benefits through co-operative action. We as part of a society contribute to the defrayment of the cost of fire and police protection, of water supply, of street improvements, of recreational facilities and of public education. We submit to

laws that say we may not drive down the left hand side of the street; to signs which warn us to keep off the grass; to symbols which prohibit us from parking our automobiles in certain places and to many other restrictions. Sometimes we feel as though our personal liberties were being infringed upon, but on second thought we accept the law because we recognize that no organization can long survive if the individual members do not make some personal sacrifices for the benefit of the whole.

In the light of this willingness to co-operate, it seems strange that the progress of city planning has been so slow; that objections are so numerous. Often, individuals object to the erection of a filling station next door to the residence into which they may have poured much of their life's savings or are still doing so. Yet, they become irked when they are prohibited by zoning laws to sell a piece of property for similarly objectionable purposes located next door to some person unknown to them; or they object to the widening of a street in front of their property or to some other improvement in the interest of the public welfare. Sometimes these objectors eventually become enthusiastic supporters for projects forced upon them, after the projects are completed.

Planning as viewed by the geographer is not merely a matter of street improvements, bridge building, zoning, park construction, architectural control or any other one element among the many which compose the cultural landscape. The geographer views the composite as an expression of the earth's landscape. Just as the physicist and chemist look upon atoms as parts of the structure of matter, so the geographer conceives of the works of man as integral parts of the life elements of the earth's surface. The cultural landscape is just as truly a part of the earth's configuration as the forest or the mountain.

Man possesses that intangible and more or less mystical quality called consciousness, which can be overrated. An old Greek proverb says "The strength of a city is in the virtue of its citizens" and citizens of a city such as Chicago whose motto is "I will," seem to believe it is man alone that makes a city. However, while virtue and will may give man a certain power of direction for his acts, they do not release him from dependence upon the realm of nature of which he is a part. Level land, hilly land, poorly drained surfaces, surfaces interrupted by wide rivers, small streams, or waters flowing through deep canyons may well yield different reactions in terms of building construction and distribution. Rock outcrops, thin soils, bedrock deep below the surface, clays, sands, and deposits of metallic minerals give rise to further varying responses. The local climate, natural vegetation and native animal life are not without their effect upon the possible behavior of potential settlers. These local conditions, which we might have supposed to be self-evident, we are just beginning to appreciate—albeit a little late. Yet perhaps we should not condemn man too hastily for having resorted to the trial and error method in land occupation. Man as the species *Homo sapiens* has been on the earth according to some students of evolution only 60,000 years, and although he has led a communal existence for a large part of this period, the evolutionary process demands patience. However, we should take heart because we have in a sense arrived at a stage involving an appreciation of the fact that varying geographic conditions call for varying treatment. There is abundant evidence that we shall not have to await the passing of another 600 centuries before we transform this realization into action.

As a part of the earth's landscape, the trade center has form and structure. These qualities vary as individuals or even groups may vary in their inherited biological traits, but are conditioned by the inanimate and lower animate phenomena of the region in which the trade center comes into being. As you well know, the physical structures which man erects, occur in great assortment, ranging from sharply pointed cylindrical grass or reed huts of a primitive folk to complex skyscrapers in our modern cities. The geographer seeks to understand these forms and structures insofar as their existence may be the consequence of the elements of the earth among which they are located.

## THE CITY OF TOMORROW

Thanks to planning and a scientific analysis of our cities with respect to structure, form, and function, the city of tomorrow no doubt will be much different from that of today. Our present experiments in city building, our conscious appreciation of the city as an integrated area for occupation by man will yield a different form if not a different function. However, that new form must be largely the response to function. Naturally, prediction in detail is hazardous, for man has inventive genius which gives rise to situations we cannot anticipate. Who would have built a city 50 years ago with streets wide enough to accommodate the automobile? Who would have even dared support the construction of airports as parts of the then modern cities? Who would have dreamed that urban profiles even in small cities would include the outlines of skyscrapers and that the skyscraper would so soon after its conception be rated as undesirable? So, I say, to forecast what the city of tomorrow shall be is to assume considerable ego. Yet we may make some statements as to the direction in which cities shall move and though these must be speculative they may become realities.

The large city of tomorrow may be smaller both in area and population than it is today while small cities may be somewhat larger. Aerial transportation will move people nearer in point of time to all of those advantages, imaginary or real, which large cities afford and thus eliminate the desire of persons in small communities to resettle in larger centers. Conversely, persons with aversion to residence in large centers who are there only by virtue of necessity will remove themselves to smaller centers and commute by plane. Thus, we may look for a redistribution of population as among cities.

You may ask "How many persons should constitute a satisfactory number for the American city? That is a difficult question to answer but I have ventured to forecast and hence hardly dare shirk the responsibility of an answer. In making this forecast I am reminded of Lincoln's response to the question, "How long should a man's legs be?" "Just long enough to reach from his body to the ground," was his *scientific* answer. An engineer, Klaber by name, has devoted considerable attention to this subject which has been helpful in enabling us to reach some conclusions. He has shown how the law of diminishing returns operates as a city grows in numbers. He divides a city into neighborhoods and demonstrates that the potential interrelations among these neighborhoods increases by a geometric ratio as the number of neighborhoods increases. He thereby arrives at a classification of cities involving three divisions, namely, "Micropolis" with four neighborhoods, "Megalopolis" with sixteen and "Metropolis" with sixty-four. Klaber shows that the co-ordination of civic interests becomes decreasingly practicable as the city grows and that business and industry should be made "a function of the employment and consumption needs of the people and not the cause for which people live." The planners of Letchworth, England, some years ago provided for a city of 35,000. That seemed large enough. Some new Soviet cities, in the post-World War I years, planned for 75,000 persons.

While no absolute limit can as yet be set for the ideal size of city, consideration of what may be required to establish adequate cultural and economic facilities for a satisfactory pursuit of happiness, leads us to the conclusion that few cities need to attain a population size of over 300,000 to 500,000 persons. This number certainly is subject to challenge. However, elaboration of the conclusion is not possible this evening.

## AREAS

In the future, areas of cities may be reduced, or if not reduced, it is unlikely they will be enlarged. We shall make apartment house living more attractive as is being done today in many cities. Clearly, story piled on story provides for more living space upon a given area than does a single family dwelling. Among attrac-

tions of the new apartments will be community or co-operative kitchens not only reducing enormous waste of time and energy now involved in repetitive kitchens, but increasing living space. There will also be abundant park and play surfaces immediately associated with apartment buildings. Areas of trade centers will be reduced because of the complete elimination of smoke through the adoption of electrical heating supplied by current from concentrated sources. This reform will make livable the central portions of cities and thus return to more general use areas in such districts now abandoned. Sunlight will be adequate and gardens may be grown. There will be advantages derived from one's living within walking distance of his place of employment. There is no intrinsic reason for the maintenance of blighted areas in the inner city.

Whether the city pattern will consist of uniformly broad streets or some narrow and some broad as of today will depend upon the extent of the reforms just mentioned; also upon the continuance of the large automobile or its replacement by smaller ones; and upon the eventual character of the airplane for individual and public use. In any case the pattern will conform more nearly to the topography and to the elements of accessibility than it does today.

Characteristics of buildings facing avenues of transportation will likewise be affected by these probable changes in transportation forms. Landing fields atop buildings or small fields on the ground to be reached by vertical descent of planes will certainly affect both the architecture of most structures and the general urban pattern. The form of future buildings and the width of streets may be further influenced by air conditioning and by artificial lighting which will possess the therapeutic value of natural sunshine. If transportation facilities do not require broad streets, we may be content with narrow ones, since we shall be dependent neither upon direct air supply from the out-of-doors through windows, nor upon the angle of the sun's rays in relation to building spacing. If these new devices come to pass, then areas of cities may be still further reduced.

Our chemists tell us that Uranium 235 may provide all the energy needed for heat and power. Does this mean the elimination of the great power plants of today as well as all small installations? Will the use of Uranium mean that we shall have no more use for chimneys, for coal storage bins, for trap doors in sidewalks, or for filling stations? Herein may lay a further possibility for the reduction of areas or increases in park space without corresponding increases in urban areas. Herein lies another potential difference in the physiognomy of the city of tomorrow and that of today.

All of these fundamental changes will permit a freer play of our esthetic sense. We shall not tolerate the ugly urban landscapes composed of the present structures either for residential or business purposes. We shall have more citadels of Commerce, inspiration in the neighborhood store and more abundant color on the facades of all buildings whether for business or residential purposes, color applied with an appreciation for harmony.

In the city of tomorrow utility lines, if they are needed at all, will perforce be located underground. Street cars and trolley buses will have vanished entirely, except from the museums of transportation; street car tracks of course will be unknown to future generations. Perhaps all public conveyances will operate underground or in the air.

We are in imminent danger of destroying our cities by virtue of unplanned building suddenly thrust upon us by the war emergency. We are paying a terrific price today because yesterday we did not plan for the city of tomorrow. Our posterity shall pay also because we today are not planning adequately for tomorrow. Today we should plan, plan scientifically, for the City of Tomorrow, on the assumption that the city plus its continuous hinterland is the climax expression of a nation's level of civilization.