tells us that the *n*th largest city will be 1/*n* the size of the largest city. For example, the 2nd largest city will be ½ the size of the first-ranked city, and the 5th largest city will be 1/5 as large as the first-ranked city. The rank-size ordering often describes the pattern of urban area sizes in complex economies where urbanization is well-established, such as the United States. It does not usually describe areas where urbanization is more recent, as in many less developed countries. In some countries the **primate city** is so dominant that no other cities fit the rank-size rule; they are far smaller than the primate city. An example is South Korea where Seoul is the primate city with all other cities being far smaller. Even in more developed countries in Europe, the rank-size rule does not apply – London dominates Britain, and Paris dominates France. In countries where a primate city dominates, the rest of the country depends on it for cultural, economic, political, and major transportation needs. On the other hand the primate city depends on the rest of the country as paying consumers of the cultural, economic, and political services produced in the city.

Rank-size often reflects the distribution of wealth in a country. If an urban hierarchy exists according to the rank-size rule, it often means that economic goods and services are spread throughout the countryside, and inequalities between rural and urban living standards are lessened. In contrast, countries with primate cities often have a large gap between standards of living in the city and the countryside. It may mean that there is not enough wealth in the society to pay for a full variety of services.

Start Here

Central Place Theory

Central place theory views urban settlements as centers for the distribution of economic goods and services to surrounding nonurban populations. The theory is based on the work of Walter Christaller in a 1933 book entitled *The Central Places in Southern Germany.* Christaller provided a model for settlement patterns that rested on several assumptions:

- No topographic barriers
- No difference in farm productivity
- An evenly dispersed farm population
- People with similar life styles and incomes
- Differing thresholds, or minimum number of consumers necessary to support different products (lower threshold for inexpensive items, higher threshold for expensive items)
- Purchase of goods and services at the nearest center

Christaller made these assumptions for the sake of developing a consistent model to explain settlement patterns, even though he knew that in reality these factors vary. His results have formed the basis of central place theory ever since:

1) The landscape is divided into noncompeting market areas – **complementary regions** – where each individual urban center and its merchants have a sales monopoly.
2) The market areas form a series of hexagons that cover the area, with no area unserved and no area with equal service from two centers.
3) The central place is at the center of each hexagon, and it will supply all the goods and services to consumers in that area.
4) The size of the market area of a central place is based on the number of goods and services offered; the larger the number of goods and services, the larger the market area.

5) Within each hexagon, or around its edges, lie smaller hexagons with central places that serve smaller areas. This nesting of small hexagons within larger ones creates a **hierarchy of central places**, with small centers providing lower-order services than the large centers do. The small centers may provide goods with low thresholds (like bread, milk, and other basic foodstuffs), and the larger centers provide more expensive items, like automobile or farm machinery.

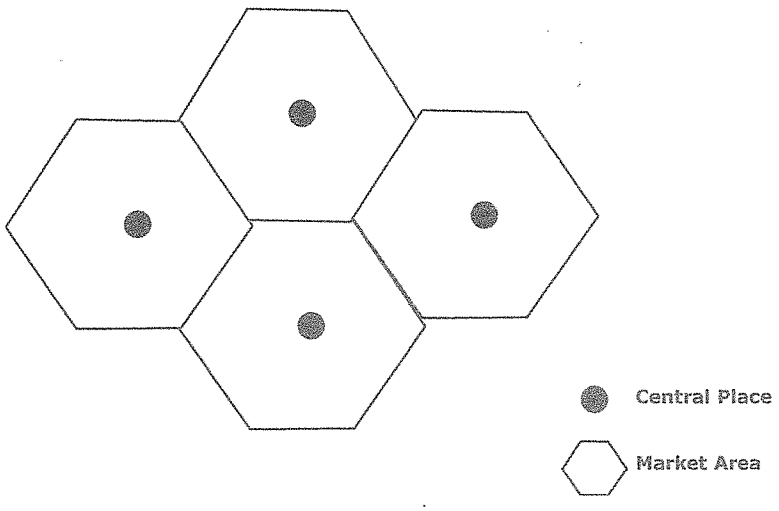
Christaller came to two important conclusions regarding settlement patterns:

1) Towns of the same size are evenly spaced because they are in the center of like-sized market areas. Larger towns will be farther apart than smaller towns because their market areas are larger.
2) Towns are part of an interdependent system. If a central place is eliminated, the entire system readjusts, altering the spatial pattern to meet the needs and demands of the inhabitants. A smaller town might grow to be larger, or a new town might appear, but changing one hexagon will automatically alter the arrangement of all the others because customers will be willing to travel further distances for luxury items than for everyday necessities.

Christaller's conclusions apply to widely differing areas of the world. They describe agricultural areas particularly well. In areas where cities are multi-functional, the model is less applicable, but it does fairly accurately describe special-function cities as well as transportation-based cities.

INTERNAL CITIES

A second sub-field of urban geography is the study of internal cities. Whereas the rank-size rule and central place theory focus on systems of cities and how they are located, other geographers analyze the internal land space of cities and the varying uses that it serves. Cities are often arranged in similar ways, allowing geographers to develop models for urban land use. These models are influenced by several factors:



Complementary Regions. According to Christaller's central place theory, market areas form hexagons in order to cover all markets without overlap. Circles would create overlap and areas not served by the central place, so markets tend to form hexagons instead. Smaller hexagons form within the larger ones with smaller central places, forming a hierarchy of central places.

1) **Accessibility** – In order to operate effectively, the city requires that its functions be fulfilled in spaces accessible to its inhabitants. For example, in early industrial cities, factories had to be within walking distance of where workers lived. As a result, high-density housing built up around the factories in as compact a space as possible.

2) **High cost of accessible space** – Because city functions must be located in close proximity, the cost of land goes up because space is at a premium. With the advent of mass transportation (subways, automobiles), the amount of usable space grew, allowing workers to move farther away from the places where they worked. However, competition among inhabitants generally has remained keen for the best, most accessible places to live, so population density has pushed prices of land and other commodities higher.

3) **Transportation** – Since uses of land are determined by accessibility, lines of transportation often determine the growth of the city. When subway lines are built, houses and stores tend to be built within walking distance of those lines. Houses and stores also follow roads (and eventually highways) that lead to the center city, with accessibility again the key to the city's development. Land with the highest accessibility is the most desirable, and as a result, generally more expensive.

End here

4) **Societal and cultural needs** – Economic competition is an important determinant of land use, but some highly desirable land is usually set aside to meet societal and cultural needs. Examples include schools, libraries, and parks.

MODELS OF URBAN LAND USE

Three models help explain different land uses within cities: the concentric zone, sector, and multiple nuclei models. The three models were all developed in Chicago, a city on flat land, with only Lake Michigan to the east to disrupt the physical landscape. All the models include a **central business district (CBD)** and residential areas by various income levels of inhabitants. The concentric zone model was developed first, and the sector and multiple nuclei models built on and altered the ideas first presented by the concentric zone model.

Concentric Zone Model

The **concentric zone model** was created in 1923 by sociologist **E.W. Burgess**, and it views cities as growing outward from a central area in a series of concentric rings, much like the growth rings of trees. The size and width of the rings vary from city to city, but Burgess believed that the model fit most cities of the time. The zones he identified are:

- **Zone One** – The innermost zone is the central business district, where nonresidential activities are concentrated. Very few residences exist in this ring, and property costs are quite high.

- **Zone Two** – The **zone in transition** contains light industry and housing for the poor, and serves as a transition zone between the businesses in the CBD and the more purely residential areas in the outer zones. Industries located in Zone Two may be too large to fit into the relatively small Zone One, or their owners may be seeking cheaper land. Houses may have been formerly occupied by the wealthy, who have moved farther out, leaving the homes to deteriorate.