

**TOPIC: -**

**URBAN STRUCTURE AND LAND USE**

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## URBAN STRUCTURE AND LAND USE

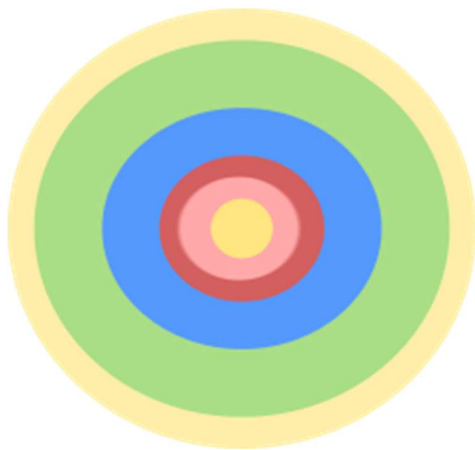
Urban structure is the arrangement of land use in urban areas, in other words, how the land use of a city is set out. Urban planners, economists, and geographers have developed several models that explain where different types of people and businesses tend to exist within the urban setting. Urban structure can also refer to urban spatial structure, which concerns the arrangement of public and private space in cities and the degree of connectivity and accessibility.

In essence, there are three model to explain the distribution of social groups within urban areas:

- Zonal Model
- Sectoral Model
- Multiple Nuclei Model

### ZONAL MODEL: -

The zonal model also known as concentric zone model, Burgess model or the CCD model is one of the earliest theoretical models to explain urban social structures. It was created by sociologist Ernest Burgess in 1925.



**Key (from outside to inside)**  
**Commuter zone (outer ring)**  
**Residential zone**  
**Working class zone**  
**Zone of transition**  
**Factory zone**  
**Central business district (Centre)**

Based on human ecology theory done by Burgess and applied on Chicago, it was the first to give the explanation of distribution of social groups within urban areas. This concentric ring model depicts urban land usage in concentric rings: The Central Business District (or CBD) was in the

middle of the model, and the city is expanded in rings with different land uses. It is effectively an urban version of Von Thünen's regional land use model developed a century earlier. It influenced the later development of Homer Hoyt's sector model (1939) and Harris and Ullman's multiple nuclei model (1945).

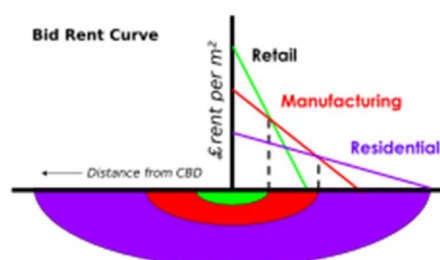
The zones identified are:

1. The center with the central business district,
2. The transition zone of mixed residential and commercial uses or the zone of transition,
3. Working class residential homes (inner suburbs), in later decades called inner city or zone of independent working men's home,
4. Better quality middle-class homes (outer suburbs) or zone of better housing,
5. Commuter zone.

The model is more detailed than the traditional down-mid-uptown divide by which downtown is the CBD, uptown the affluent residential outer ring, and midtown in between.

Burgess's work helped generate the bid rent curve. This theory states that the concentric circles are based on the amount that people will pay for the land. This value is based on the profits that are obtainable from maintaining a business on that land. The center of the town will have the highest number of customers so it is profitable for retail activities. Manufacturing will pay slightly less for the land as they are only interested in the accessibility for workers, 'goods in' and 'goods out'. Residential land use will take the surrounding land.

### BID RENT CURVE



### **CRITICISMS FOR THIS MODEL: -**

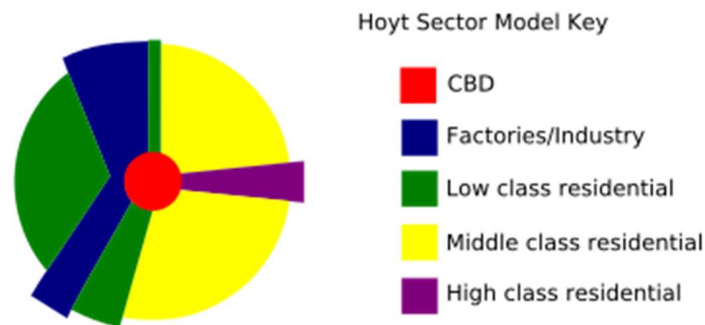
The model has been challenged by many contemporary urban geographers. First, the model does not work well with cities outside the United States, in particular with those developed under different historical contexts. Even in the United States, because of changes such as advancement in transportation and information technology and transformation in global economy, cities are no longer organized with clear “zones”.

- It describes the peculiar American geography, where the inner city is poor while suburbs are wealthy; the converse is the norm elsewhere.
- It assumes an isotropic plane – an even, unchanging landscape.
- Physical features – land may restrict growth of certain sectors; hills and water features may make some locations unusually desirable for residential purposes.
- Commuter villages defy the theory, being a distant part of the commuter zone.
- Decentralization of shops, manufacturing industry (see Industrial suburb), and entertainment.
- Urban regeneration and gentrification – more expensive property can be found in formerly 'low class' housing areas.
- Many new housing estates were built on the edges of cities in Britain.
- It does not address local urban politics and forces of globalization.
- The model does not fit polycentric cities, for example Stoke-on-Trent.

### **SECTORAL MODEL: -**

The sector model, also known as the Hoyt model, is a model of urban land use proposed in 1939 by land economist Homer Hoyt. It is a modification of the concentric zone model of city development. The benefits of the application of this model include the fact it allows for an outward progression of growth. As with all simple models of such complex phenomena, its validity is limited.

### A basic version of the Sector model



#### **APPLICATION OF SECTORAL MODEL: -**

This model applies to numerous British cities. Also, if it is turned 90 degrees counter-clockwise it fits the city of Monchengladbach reasonably accurately. This may be because of the age of the cities when transportation was a key, as a general rule older cities follow the Hoyts model and more recent cities follow the Burgess (concentric zone) model.

#### **LIMITATIONS: -**

The theory is based on early twentieth-century rail transport and does not make allowances for private cars that enable commuting from cheaper land outside city boundaries. This occurred in Calgary in the 1930s when many near-slums were established outside the city but close to the termini of the street car lines. These are now incorporated into the city boundary but are pockets of low cost housing in medium cost areas. The theory also does not take into account the new concepts of edge cities and boom burbs, which began to emerge in the 1980s, after the creation of the model. Since its creation, the traditional Central Business District has diminished in importance as many retail and office buildings have moved into the suburbs.

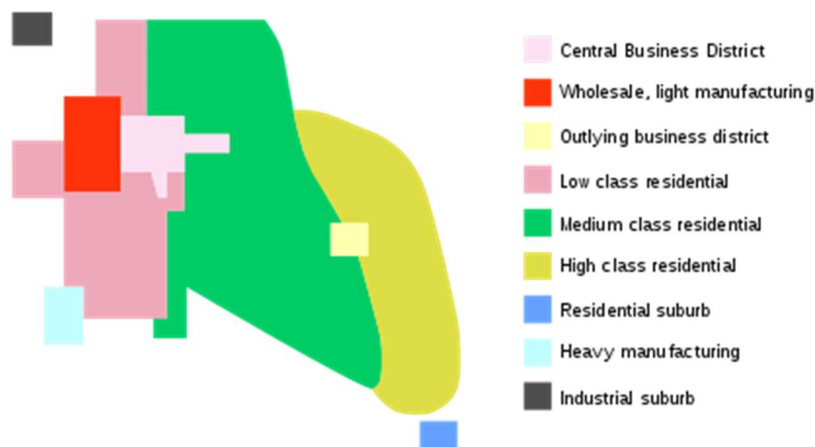
- Physical features - physical features may restrict or direct growth along certain wedges
- The growth of a sector can be limited by leapfrog land.
- The theory too lacks the idea based on land topography.

## **MULTIPLE NUCLEI MODEL: -**

The multiple nuclei model is an economical model created by Chauncey Harris and Edward Ullman in the 1945 article “The Nature of Cities”.

### **MULTIPLE NUCLEI MODEL**

**Harris and Ullman's Multiple Nuclei Model**



## **THE MODEL: -**

The model describes the layout of a city, based on Chicago. It says that even though a city may have begun with a central business district, or CBD, other smaller CBDs develop on the outskirts of the city near the more valuable housing areas to allow shorter commutes from the outskirts of the city. This creates nodes or nuclei in other parts of the city besides the CBD thus the name multiple nuclei model. Their aim was to produce a more realistic, if more complicated, model. Their main goals in this were to:

1. Move away from the concentric zone model
2. To better reflect the complex nature of urban areas, especially those of larger size

The model assumes that:

1. is not flat in all areas
2. Even Distribution of Resources
3. Even Distribution of people in Residential areas
4. Even Transportation Costs

### **REASONS FOR THE MODEL: -**

Harris and Ullman argued that cities do not grow around a single nucleus but several separate nuclei. Each nucleus acts like a growth point.

The theory was formed based on the idea that people have greater movement due to increased car ownership. This increase of movement allows for the specialization of regional centers (e.g. heavy industry, business parks, retail areas). The model is suitable for large, expanding cities. The number of nuclei around which the city expands depends upon situational as well as historical factors. Multiple nuclei develop because:

1. Certain industrial activities require transportation facilities e.g. ports, railway stations, etc. to lower transportation costs.
2. Various combinations of activities tend to be kept apart e.g. residential areas and airports, factories and parks, etc.
3. Other activities are found together for their mutual advantage E.g. universities, bookstores and coffee shops, etc.
4. Some facilities need to be set in specific areas in a city - for example, the CBD requires convenient traffic systems, and many factories need an abundant source of resources.

### **EFFECTS OF MULTIPLE NUCLEI MODEL ON INDUSTRY: -**

As the multiple nuclei develop, transportation hubs such as airports are constructed which allow industries to be established with reduced transportation costs. These transportation hubs have negative externality such as noise pollution and lower land values, making land around the hub cheaper. Hotels are also constructed near airports because people who travel tend to want to stay near the source of travel. Housing develops in wedges and gets more expensive the farther it is from the CBD.