

URBAN GEOGRAPHY

Presentation By
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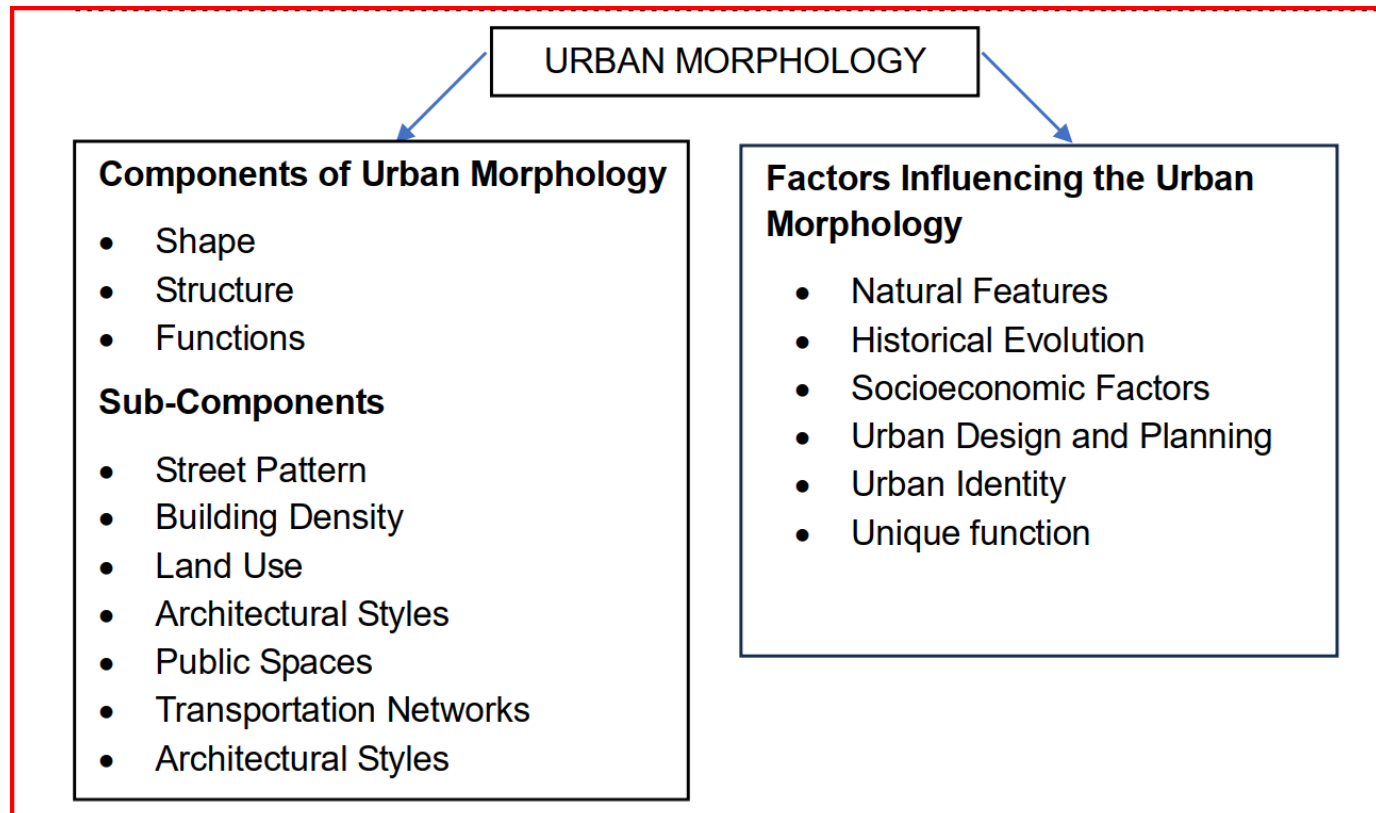
UNIT - III

- **Urban morphology: Land use structure, urban sprawl, unland and periphery, Theories of city structure (Burgess, Hoyt, Harris and Ullman, White), Social area analysis – CBD delimitation – Urban ecology – Quality of urban life.**



Urban Morphology





- Urban morphology is the study of human settlements. This term '**morphology**' was first used by German poet Johan Wolfgang von Goethe in the 18th century and later it was extensively used in bioscience. Morphology is the study of shape, form, external structure and its arrangement methods.
- ***Urban morphology includes the study of a city's physical layout and its changes over time or the spatial transformation of a city. Urban morphology is also called the study of urban tissues, which includes neighbourhood morphology*** (arrangement and distribution of buildings and open spaces).



Contribution of different Schools in the Study of Urban Morphology

Name of the School	Scholars	Main Contribution
British School	M R G Conzen; J W R Whitehand	The developed city layout maps or land use maps of Alnwick, and other British towns. The word townscape is used to define a city's landscape Fringe Belt and Burgage Cycle concept
Italian School	Saverio Muratori	Architecture based development- mainly typology of houses are studied
French School		Started with architecture, but later incorporated socio-political factors in urban studies.
Chicago School	E W Burgess, Hoyt, C. Harris and E. Ulman (1920-1945)	Gave three enduring theories on urban morphology- concentric zone theory, sector model and multiple nuclei theory
Los Angeles School		Urban morphology of global cities and world cities. They developed as the critics of the Chicago school.

Scalar analysis of urban space

Example	Escale	Generalization Level	Evaluation
	Urban Land Use	Regional (1:100.000 - 1:1.000.000)	Urban dynamics: Usage processes (suburbanization); Natural impacts; Natural hazards.
	Urban Morphology	Wide (1:25.000 - 1:100.000)	Biotope Structure; Settlement Pattern.
	Urban Structure Types	Intermediary (1:25.000 - 1:1.000)	Degree of impermeability; Degree of mixed or homogeneous structure; Potentials in the use of local structure; Environmental Qualityl.
	Structure Element	Local (Specific) (> 1:1.000)	Urbanas Dynamics: Construction of houses, demolition of buildings; (Prevention of) Disasters: Ecological / vulnerability; Economic and resilience Disasters: loss / evacuation of persons.











Urban form Typology			Description	
Footprint	Representative 3d view	Sectional view		
UFT0				high-rise compact type with high aspect ratio (i.e height of building \geq distance between buildings). Height of the buildings are $=</math><math>< 24\text{m}</math>.$
UFT1				high-rise open type with low aspect ratio (i.e height of building \leq distance between buildings). Height of the buildings are $>24\text{m}</math>.$
UFT2				low-rise compact type informal settlements commonly known as <i>slums</i> with extremely low aspect ratio. Height of the buildings are $\leq 5\text{m}</math>$
UFT3				mid-rise open type representing the low-income social housing. Height of the buildings are in between $10\text{m} \leq 12\text{m}</math>.$
UFT4				mid-rise compact type with extremely low aspect ratio. These were developed for the low-income group under slum rehabilitation policy. Height of the buildings are $\leq 24\text{m}</math>.$

Urban Form typologies

Building types			1. 19th c rowhouse 2. Chinese shophouse
Street types			3. Limited access highway 4. Tree-lined street
Tissues (urban fabric)			5. Perimeter block (Cerde) 6. Italian basic building
			7. Residential suburb 8. Burgage plots
			9. Middle Eastern tissue
City/region Patterns			10. Extension and fringe belt 11. Desert oasis
			12. Ridge line roads 13. Chinese walled city
			14. Japanese castle town

Urban form



	VKT ELASTICITIES	METRICS TO MEASURE	CO-VARIANCE WITH DENSITY ³⁷	STYLIZED GRAPHIC
DENSITY	Population & Job Residential Household Job Population	- Household / Population - Building / Floor-area Ratio - Job / Commercial - Block / Parcel - Dwelling Unit	1.00	Low Carbon →  High Carbon → 
	Diversity & Entropy Index Land Use Mix	- Land Use Mix - Job Mix - Job-housing balance - Job-population balance - Retail Store Count - Walk Opportunities	--	Low Carbon →  High Carbon → 
CONNECTIVITY	Combined Design Metrics Intersection Density	- Intersection density - Proportion of Quadrilateral Blocks - Sidewalk dimension - Street density	0.39	Low Carbon →  High Carbon → 
	Regional Accessibility Distance to CBD Job Access by Auto Job Access by Transit Road-Induced Access	- Population Centrality - Distance to CBD - Job accessibility by auto and/or transit - Accessibility to shopping	0.16	Low Carbon →  High Carbon → 

Urban form and structure



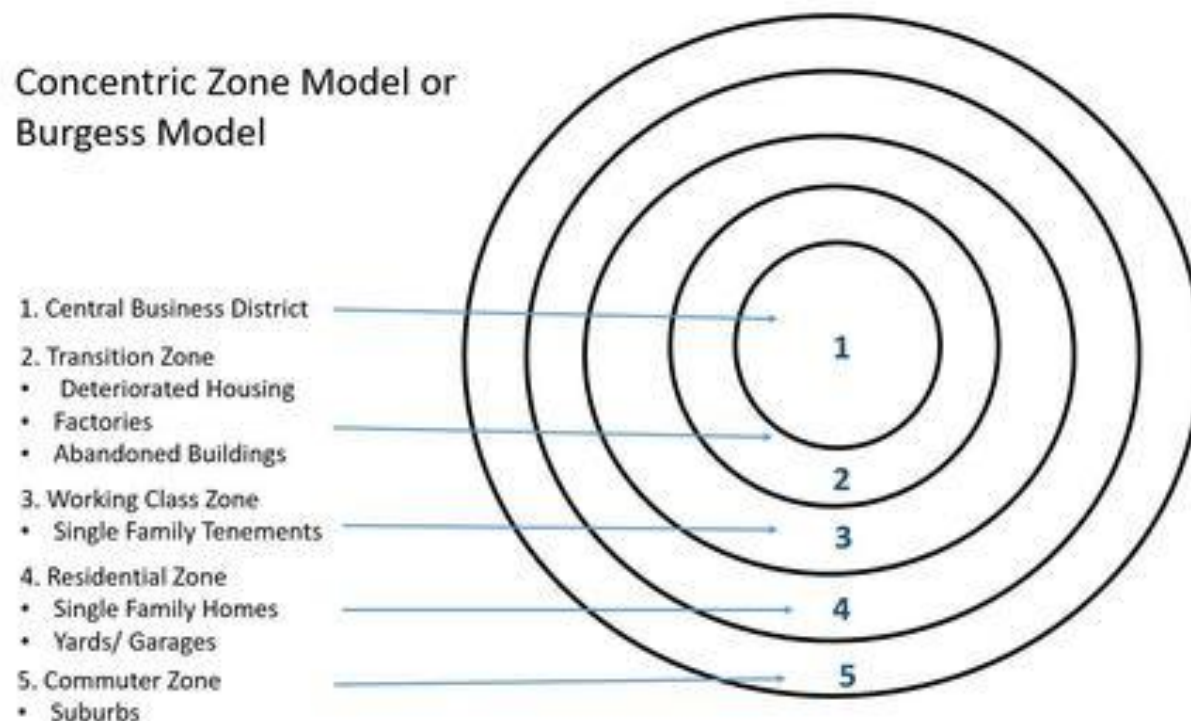
Understanding the Concentric Zone Model

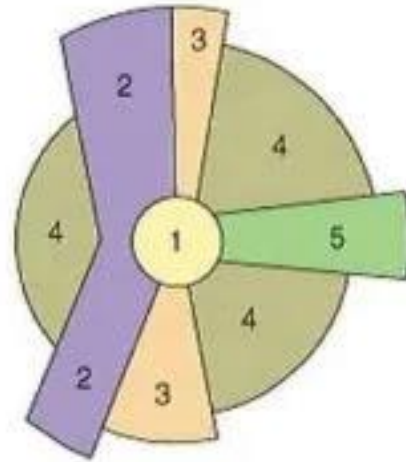
- The concentric zone “model” designed by Ernest Burgess was developed and considered as an urban planning “model” regardless of its nature and context. It would appear that the commonality in meaning is “abstraction of reality,” with the aim of either better understanding a real system or being able to predict its behaviour in relation to the cities.



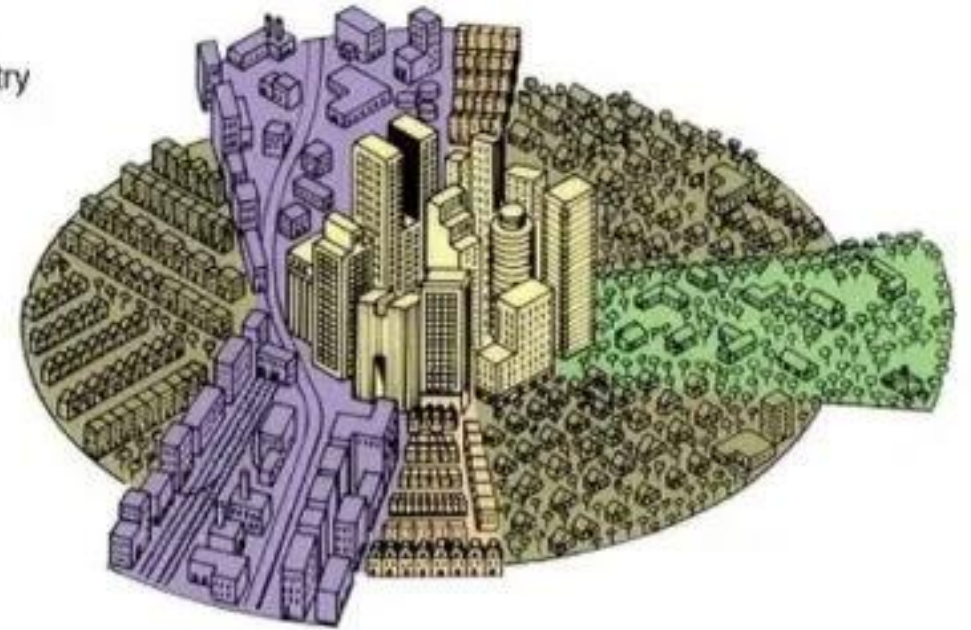
The Burgess Model (also known as the Concentric Zone Model) is an attempt to comprehend spatial organization and settlement patterns. For several decades, urban areas have been the subject of study. The way people live, where urban structures emerge, and how people interact and behave has always been an intriguing issue. With the expansion of urban population and urban development over time, we humans have inhabited practically every area of the planet. Human adaptation necessarily occurs later when environmental changes takes priority. Humans can adapt to the extremities of living environments and develop living conditions in deserts, flood plains, tropical locations, cold areas, and anywhere else they desire to. This has been made feasible by rising technological advances and the ability to manage and regulate the environment.

Concentric Zone Model or Burgess Model



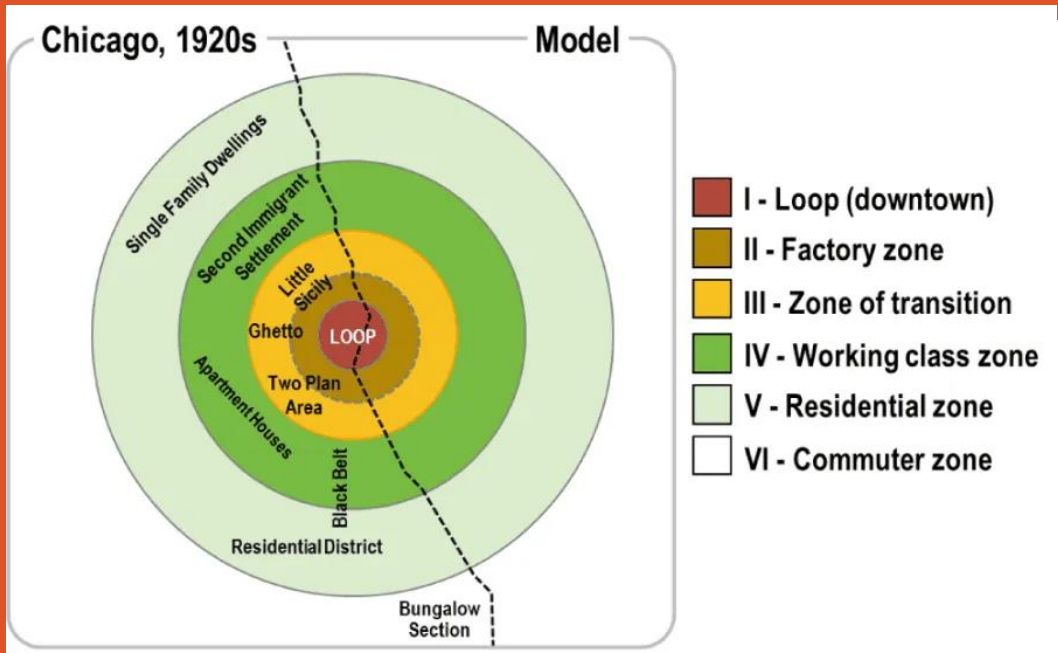


1. Central business district
2. Transportation and industry
3. Low-class residential
4. Middle-class residential
5. High-class residential



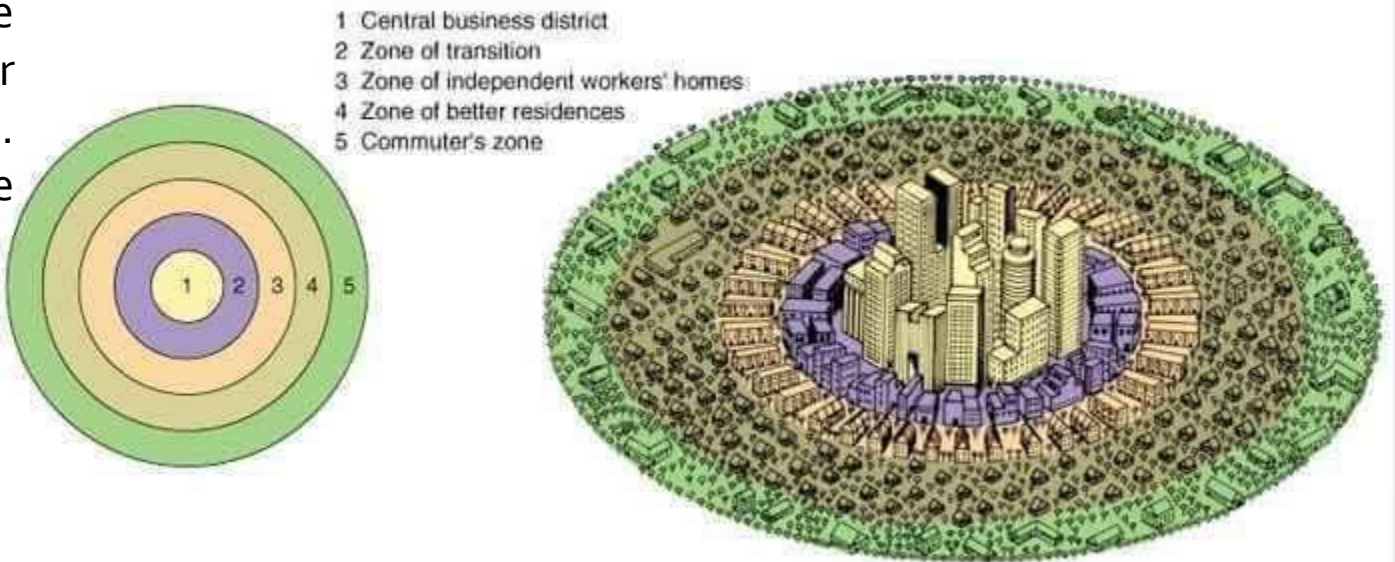
- The Burgess model takes into account the positive correlation between economic status and distance from downtown. This is sometimes also referred to as concentric zone model or simply concentric model or concentric theory.
- This considers, better the socio-economic status more the distance from the central area. The central area has high density, and the availability of land is scarce. In attempt to explain the structure and growth of cities, he proposed the concentric zone theory. This theory proposes that cities grow and develop externally in concentric zones. In other words, the model's primary tenet is that when a city grows, it expands radially from its core to several concentric circles or zones.





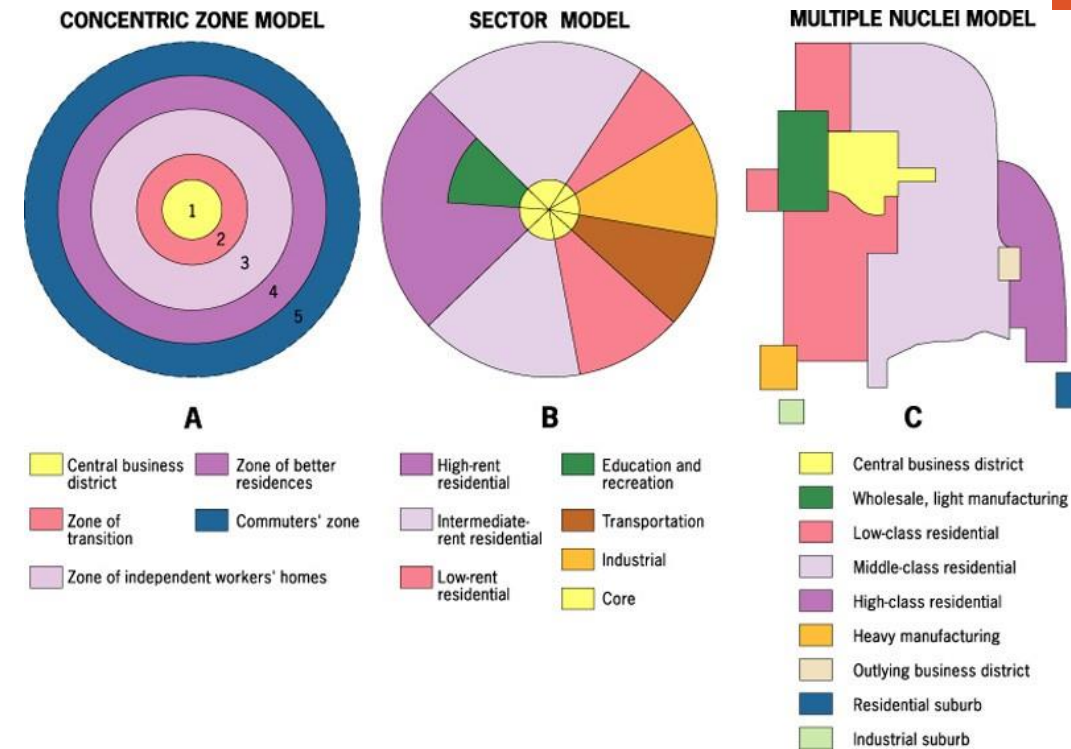
1. **(Zone I)** is the city's centre and comprises shops, offices, hotels and restaurants, theatres, banks, and other amenities.
2. The CDB is surrounded by a transition zone, which is being invaded by business and light manufacturing **(Zone II)**.
3. Workers in **Zone III** work in industries that have moved out of the degradation zone (Zone II) but still wish to reside close to their workplace.
4. Beyond this are high-end apartment complexes' residential zones **(Zone IV)** or exclusive 'restricted' single-family home districts.

5. The commuter zone **(Zone V)** extends beyond the city limits and comprises suburban communities or satellite cities within 30–60 minutes of the CBD. 'Invasion' and 'succession' have been used to describe the process of change in residential spatial patterns.



Hoyt model

- Geographers have formulated models of land use to show how a 'typical' city is laid out. One of the most distinguished of these is the "*Burgess*" or "*concentric zone model*".
- This model is based on the concept that land values are highest in the centre of a city or town. This is because competition is greater in the central parts of the settlement.
- This leads to high-density buildings, high-rise being found near the Central Business District (CBD), with sparse, low-density developments on the edge of the town or city. Another urban model is the "*Hoyt model*".



Different Land Use Models



- The model that we will be discussing in this article is the Hoyt (sector) model. The sector model also known as the Hoyt model was brought forward by economist Homer Hoyt (1895-1984) in 1939.
 - In his long accomplished life, he put forward path-breaking research on land economics, refined local area economic analysis, developed an influential approach to the analysis of neighbourhoods and housing markets and was a major figure in the development of suburban shopping centres in the decades after World War II
- A city develops in a series of sectors, not rings.
 - Different areas attract different activities by environmental factors or by chance.
 - As the city grows, activities within it grow outward in a wedge shape from the Central Business District (CBD).
 - Hoyt modified the concentric zone model to account for major transportation routes.
 - Most major cities evolved around the nexus of several important transport facilities such as sea ports, railroads, and trolley lines that radiated from the city's centre.
 - It is a monocentric representation of urban areas.
 - As growth occurs, similar activities stay in the same area and extend outwards.
 - Hoyt realized that access to resources and particularly transportation caused a disruption of the Burgess model.





- The Central Business District (CBD) is the area of the city where retail and office activities are clustered, and is the centre of the city, economically and geographically.



The low income residential tend to be close to railroad lines, and commercial foundations along the business areas. These are mainly occupied by the poorer people who usually work in the factories, so they have to live close to the industry to save transportation costs. The places, due to traffic, noise, and smells and pollution emitted from the industries, tend to be less desirable for living.



- The high income residential are the most expensive housing and have the greatest distance from industrial sectors, which make this area to be having a cleaner environment with less traffic jams, cleaner air and sounds. There is something called the spine, from the CBD to the outer edge of the city, which is where the most desirable housing is found.



•The industry sectors are predominantly set up along transportation lines such as water canals and rail lines. It provides an income for the low income people of the society and the needs for the people.

•This model was created without considering cars. Many people at that time did not have access to cars because of them being less popular and expensive, and creating risks of safety. People at that time used public transportation, such as trains and street cars. At that time, cities were relatively crowded, and the process of urbanization had not happened.



Hoyt suggested that high rent sector would expand according to four factors:

- 1.It moves from its point of origin near the Central Business District(CBD), along established routes of travel, in direction of another nucleus of high-rent buildings.
- 2.It will progress along waterfronts or toward high ground, when these areas are not implemented for industry.
- 3.It will move along the route of fastest transportation.
- 4.It will move toward open space.



Limitations:

- There is no reference to out of town development.
- There is no reference to the physical environment.
- The theory is based on nineteenth century transport and does not make allowances for private cars which allow commuting from outside city boundaries where land is much cheaper. This occurred in Calgary in the 1930s when many near-slums were put up in the outskirts of the city but close to the termini of the street car lines. These are now applied into the boundary of the city but are pockets of low cost housing in medium cost areas.
- The growth of a sector can be stopped with land use radiating out of the inner city.
- It does not consider the new concepts of edge cities and boom burbs, which came up in the 1980s, after the creation of the model. Since its creation, the traditional CBD has diminished in importance as numerous office and retail buildings have moved into the suburbs.
- Like all models of urban form its validity is limited.



Advantages of the Sector Model:

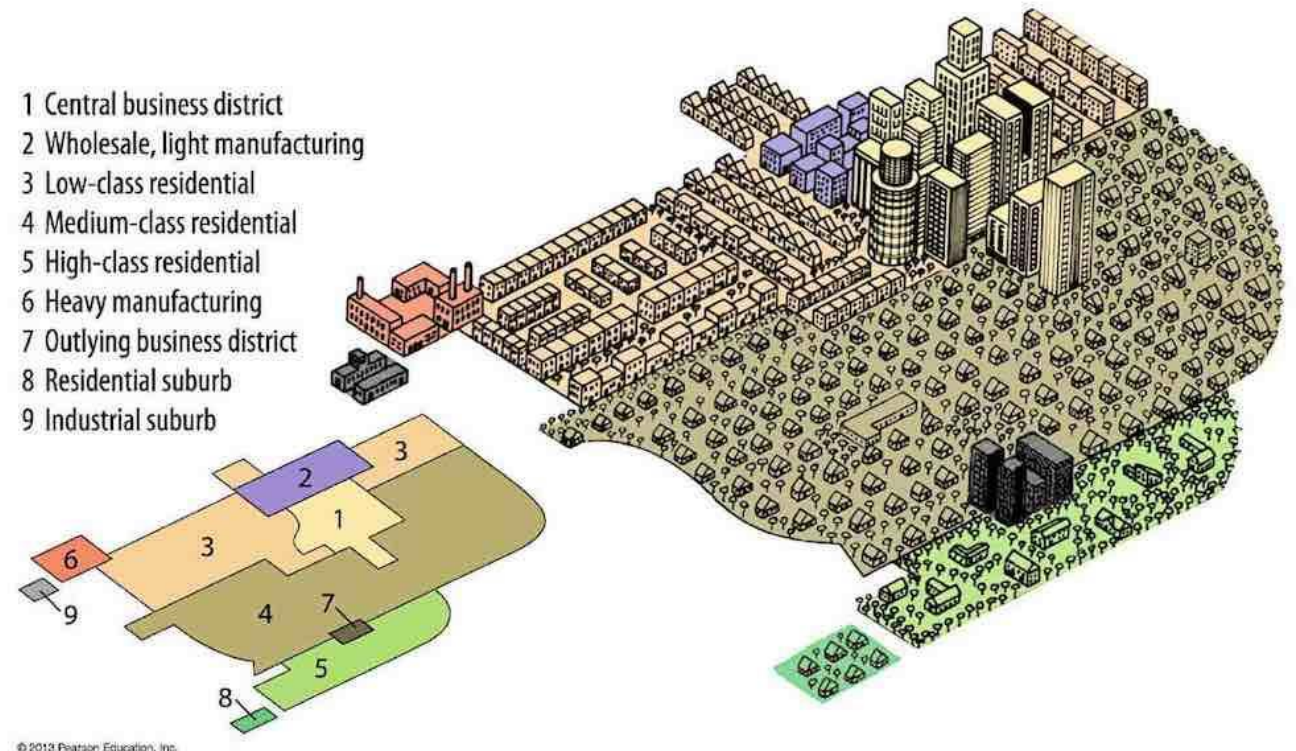
- It looks at the effect of transport and communication links.
- Numerous cities do seem to have followed this model. If turned 90 degrees anti-clockwise, the Hoyt model fits the city of Newcastle upon Tyne reasonably accurately.
- Pie shaped wedges made by Hoyt compensated for the drawbacks of the Ring model.
- Though not perfect it takes into account the lines of growth.
- It allows for an outward progression of growth.



Multiple Nuclei Model in Urban and Regional Planning

The **Multiple Nuclei Model** is a theory in urban and regional planning that was developed by geographers Chauncy Harris and Edward Ullman in 1945. The model suggests that cities are not organized around a single central business district (CBD) like the Concentric Zone Model proposes, but rather around multiple centers or nuclei of activities and development. These nuclei can attract and generate various functions, creating a more complex and decentralized urban structure

- Negligence of the height of buildings.
- Non-existence of abrupt divisions between zones.
- Each zone displays a significant degree of internal heterogeneity and not homogeneity.
- Unawareness of inertia forces.
- No consideration of the influence of physical relief and government policy.
- The concepts may not apply to Asian cities with different cultural, economic and political backgrounds.



- **Urban growth** is a critical cause of **Sprawl** - as cities get bigger, they expand around their Peripheries. But sprawl is more specific in nature, it is defined as 'uncoordinated growth': the expansion of a community without a real concern for consequences of poor environmental conditions or environmental impact.

Analyzing urban spatial patterns and trend of urban growth

