

Land Use Models



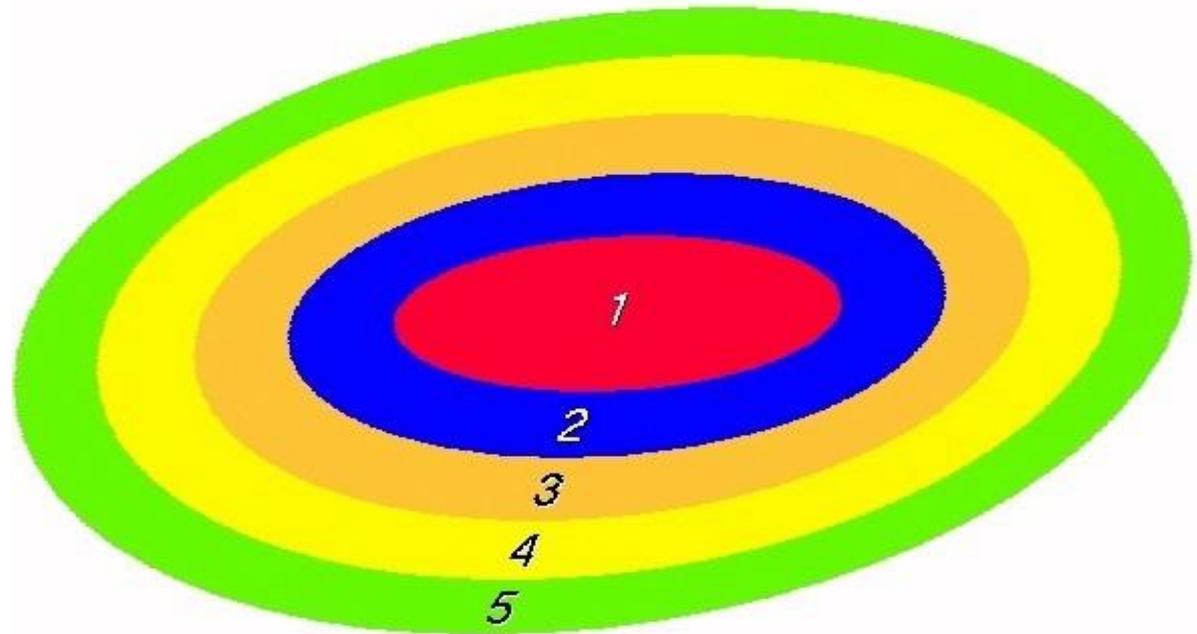
What do we always say about models?

- ❑ Most importantly - they are just models
- ❑ Models only represent patterns in space
- ❑ The landscape does NOT look exactly like the model
- ❑ Models are thus representations of the landscape to help better understand patterns



Agricultural Land Use Model

VON THUNEN MODEL



- 1. City*
- 2. Intensive Agriculture*
- 3. Forest Resources*
- 4. Grain Farming*
- 5. Livestock Farming*

The MODEL

- ❑ The Von Thunen model of agricultural land use was created by farmer and amateur economist J.H. Von Thunen (1783-1850) in 1826
- ❑ Von Thunen's model was created before industrialization and is based on the following limiting assumptions:



THE MODEL

- ❑ The city is located centrally within an "Isolated State" which is self sufficient and has no external influences.
- ❑ The Isolated State is surrounded by an unoccupied wilderness.
- ❑ The land of the State is completely flat and has no rivers or mountains to interrupt the terrain.



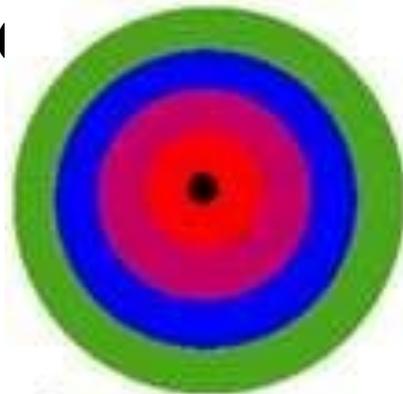
Central City
Intensive Farming/Dairying
Forest
Extensive Field Crops
Ranching/Animal Products
© M. J. Hutchinson, 1997

MOVEMENT

- ❑ The soil quality and climate are consistent throughout the State.
- ❑ Farmers in the Isolated State transport their own goods to market via oxcart, across land, directly to the central city. Therefore, there are no roads.
- ❑ Farmers act to maximize profits.

RINGY DINGY!

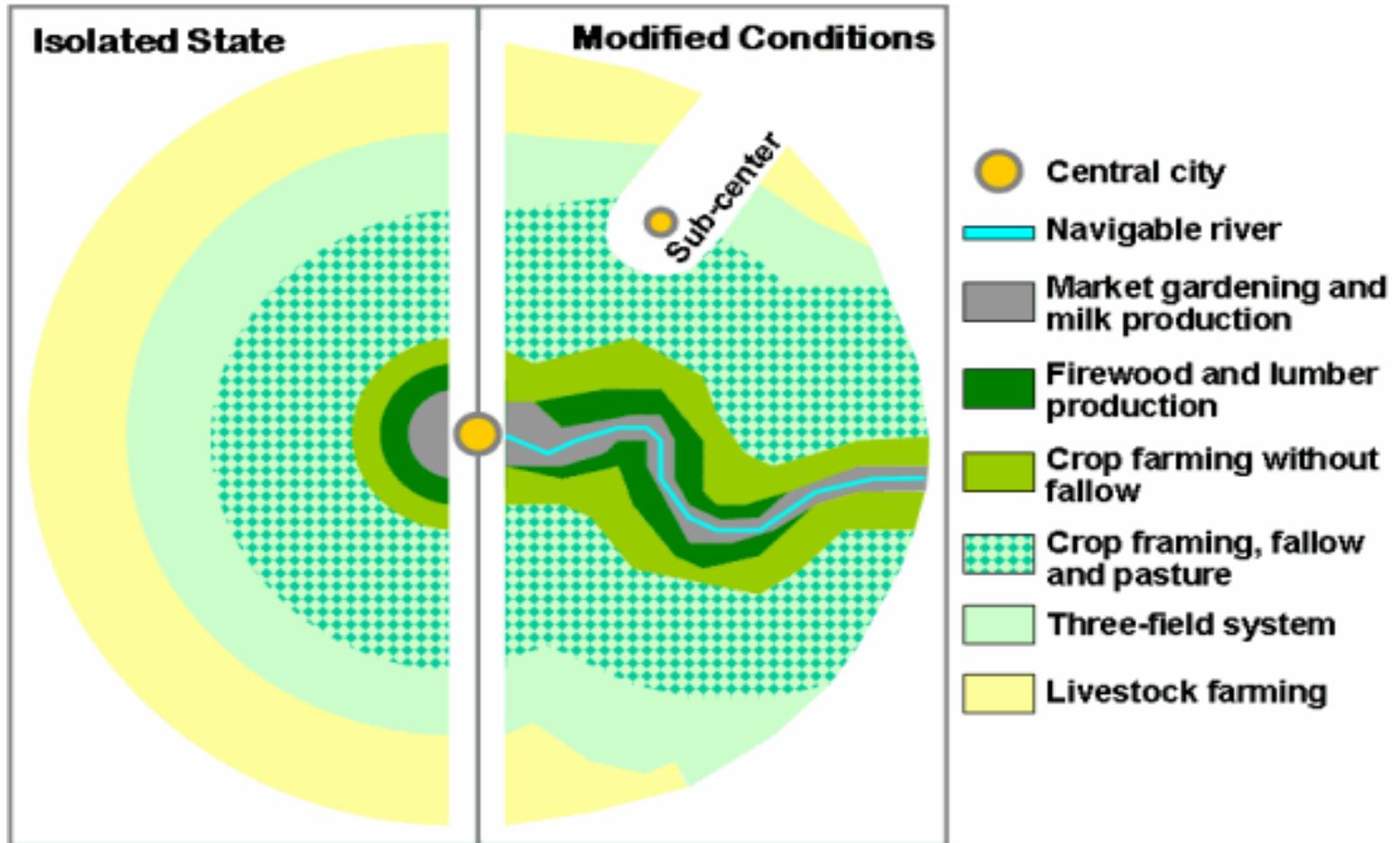
❓ In an Isolated State with the foregoing statements being true, Von Thunen hypothesized that a pattern of rings around the city would (



Central City
Intensive Farming/Dairying
Forest
Extensive Field Crops
Ranching/Animal Products
AMT Teaching, 1997

- 
- ❑ There are four rings of agricultural activity surrounding the city.
 - ❑ Dairying and intensive farming occur in the ring closest to the city.
 - ❑ Since vegetables, fruit, milk and other dairy products must get to market quickly, they would be produced close to the city (remember, we didn't have refrigerated oxcarts!)

THE MODEL



LAND USE MODEL

- ❑ Von Thunen's regional land use model is the oldest. It was initially developed in the early 19th century (1826) for the analysis of agricultural land use patterns in Germany.
- ❑ It used the concept of economic rent to explain a spatial organization where different agricultural activities are competing for the usage of land.
- ❑ The underlying principles of this model have been the foundation of many others where economic considerations, namely **land rent** and **distance-decay**, are incorporated.
- ❑ The core assumption of the model is that agricultural land use is patterned in the form of concentric circles around a market
- ❑ Many concordances of this model with reality have been found, notably in North America.



Urban Land Use Models



❑ Three Classic Urban Models

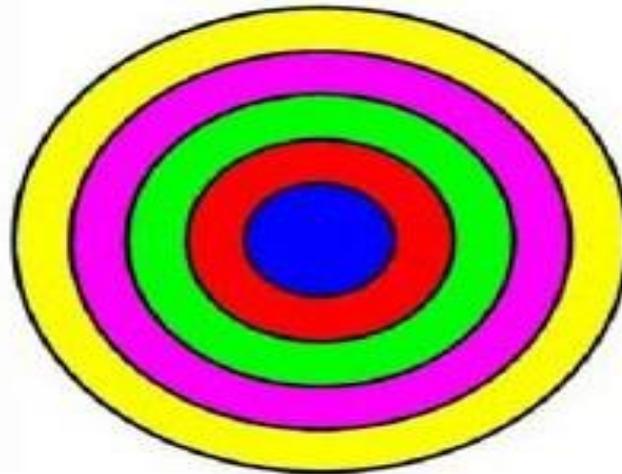
❑ Other Urban Models

Burgess Concentric Zone Model

<http://www.lgfl.net/lgfl/leas/barnet/accounts/migration/web/Land%20Use/documents/burgess-re-done.jpg>

The Burgess Model

- CBD
- Factories / Industry (Transitional)
- Low Class Residential (Old Inner City Areas)
- Medium Class Residential (Inter-war Period)
- High Class Residential (Modern Suburbs)

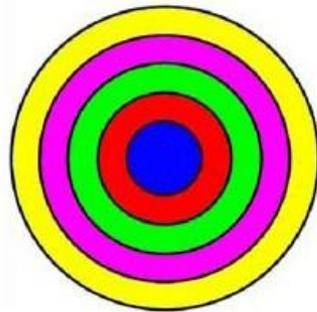


Characteristics of Concentric Zone

en.wikipedia.org/wiki/Ernest_Burgess

The Burgess Model

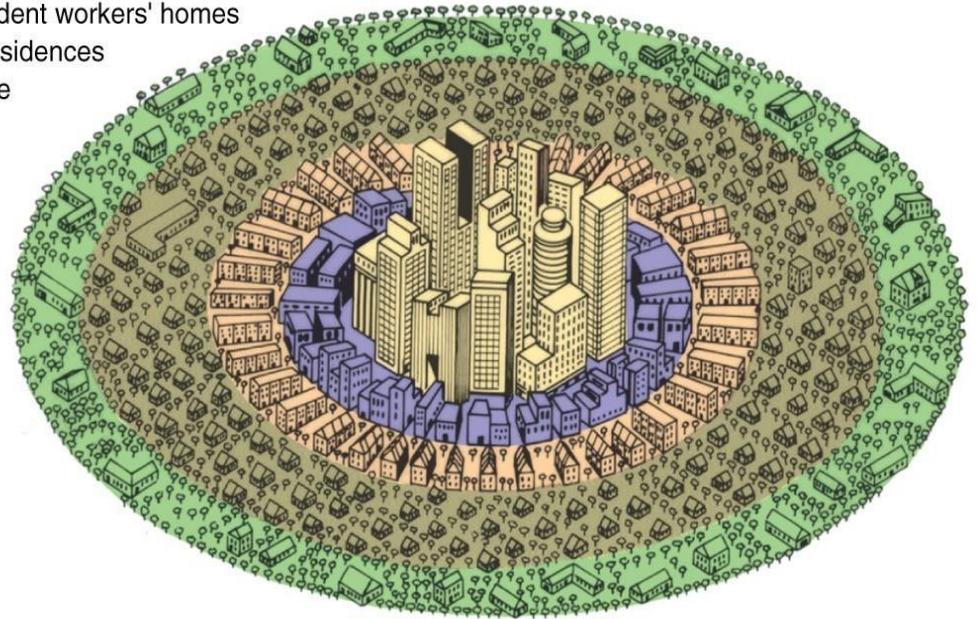
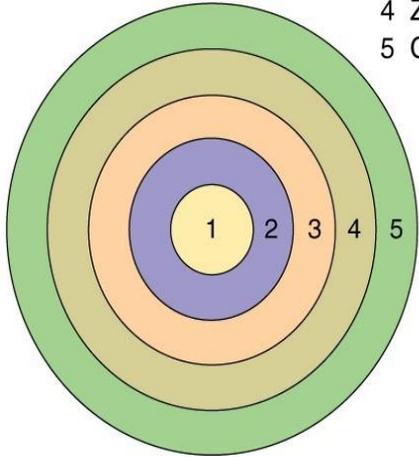
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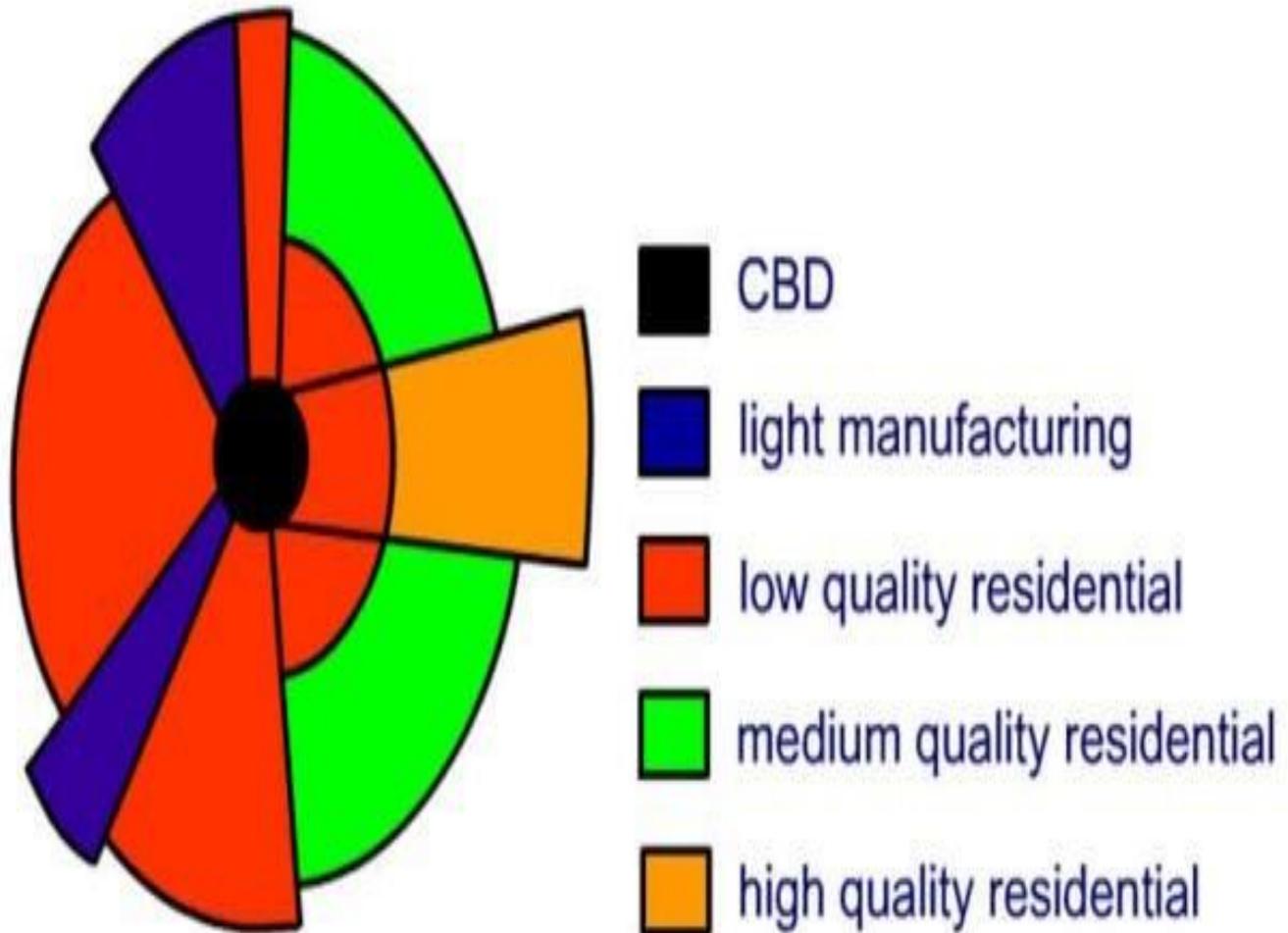
- ❓ **Burgess studied 1920s Chicago to make this model**
- ❓ **5 concentric zones**
- ❓ **Burgess suggested that immigrants lived in inner zones which caused affluent residents to move further out**
- ❓ **Concentric Zone's weakness is that it does not allow for change in the city**
- ❓ **Concentric Zone does not allow for physical geographic barriers**

Or, how about this?

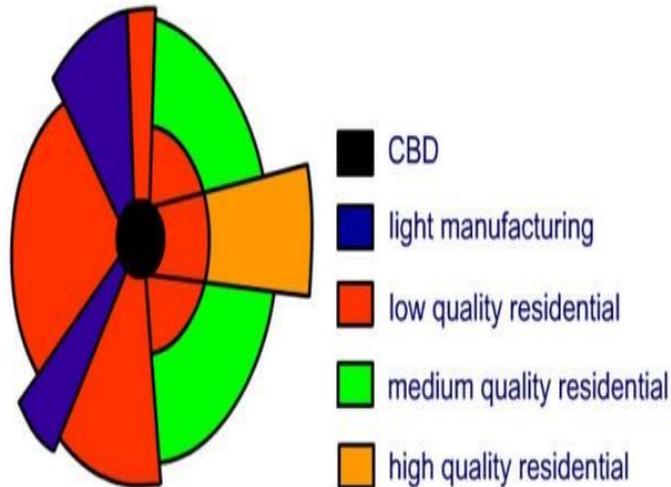
- 1 Central business district
- 2 Zone of transition
- 3 Zone of independent workers' homes
- 4 Zone of better residences
- 5 Commuter's zone



Hoyt Sector Model

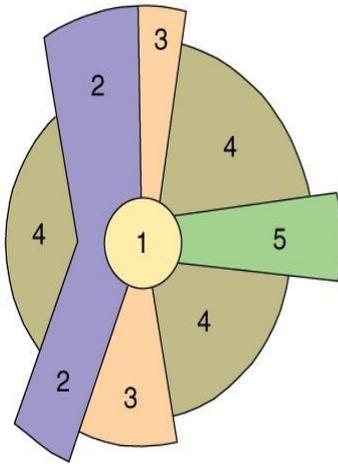


Hoyt Sector Model

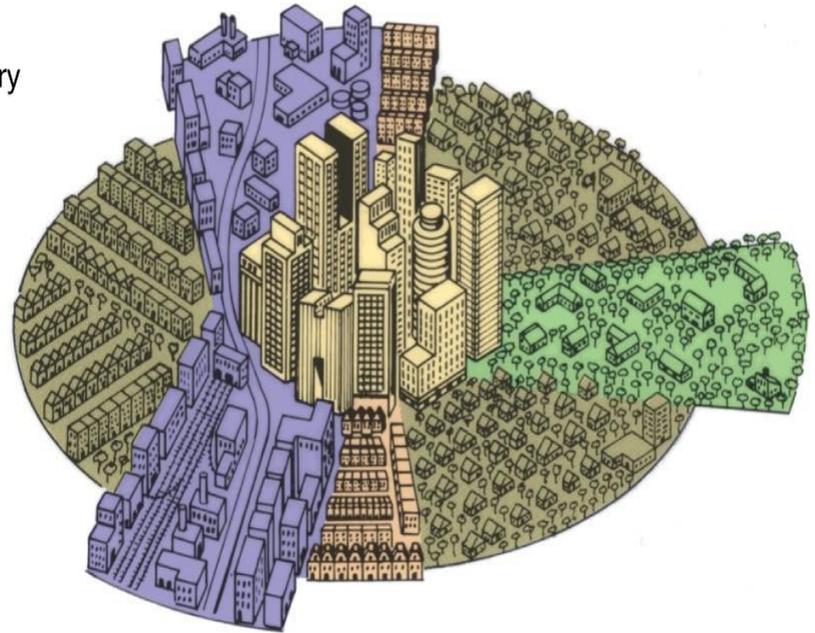


- ❓ Late 1930s
- ❓ Answered the drawbacks of Burgess Model
- ❓ Hoyt said growth created pie-shaped urban structure
- ❓ Hoyt said his pie-shaped zones could reach from the Core (CBD) to the edge of the city (e.g. low rent sector 3 from CBD to outskirts of city)
- ❓ Sector Model says that the CBD is not as important as Burgess indicated
- ❓ Sectors were developed along transport routes (e.g. highways, RRs, etc.)

Or, how about this?

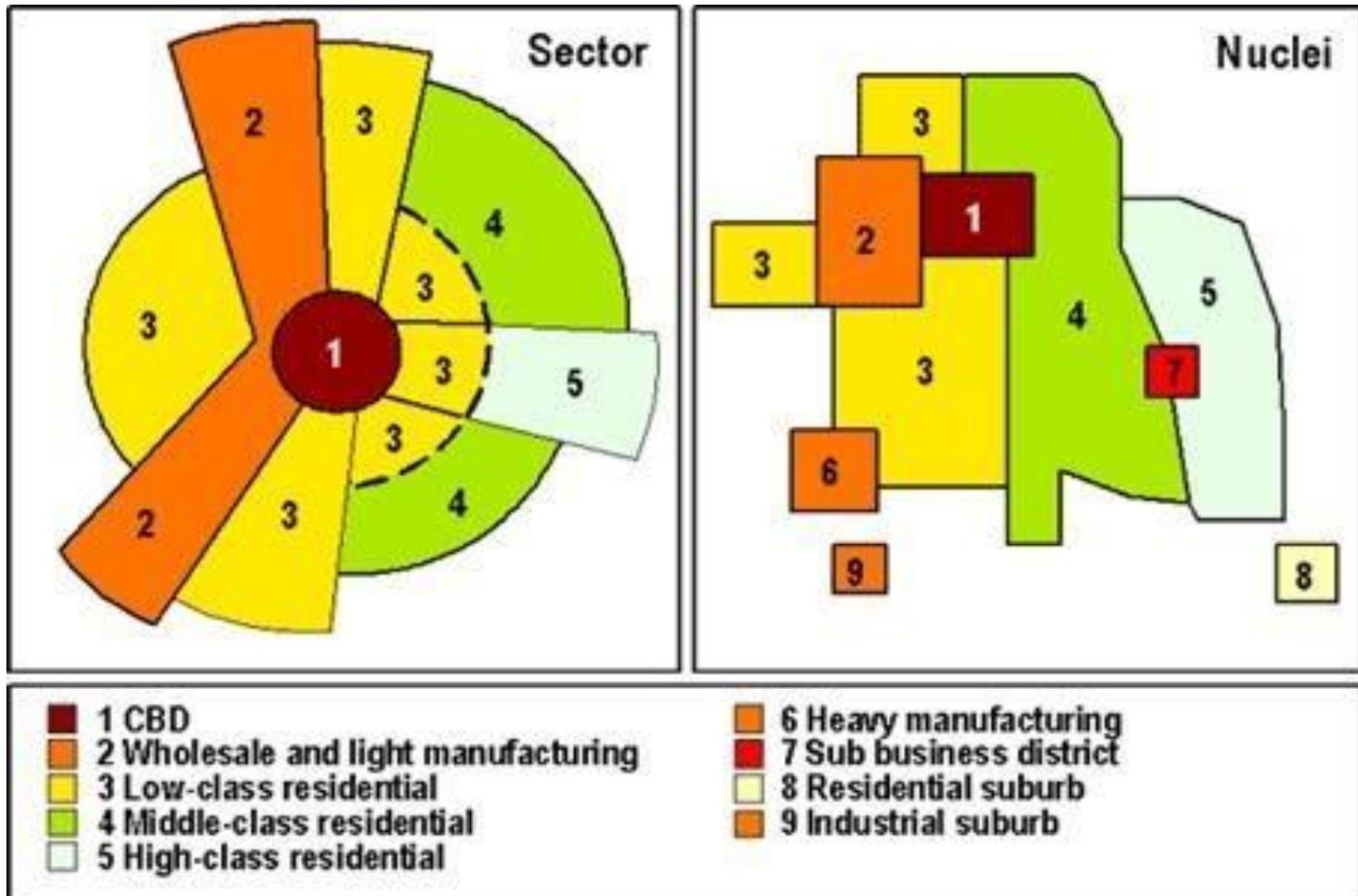


1. Central business district
2. Transportation and industry
3. Low-class residential
4. Middle-class residential
5. High-class residential

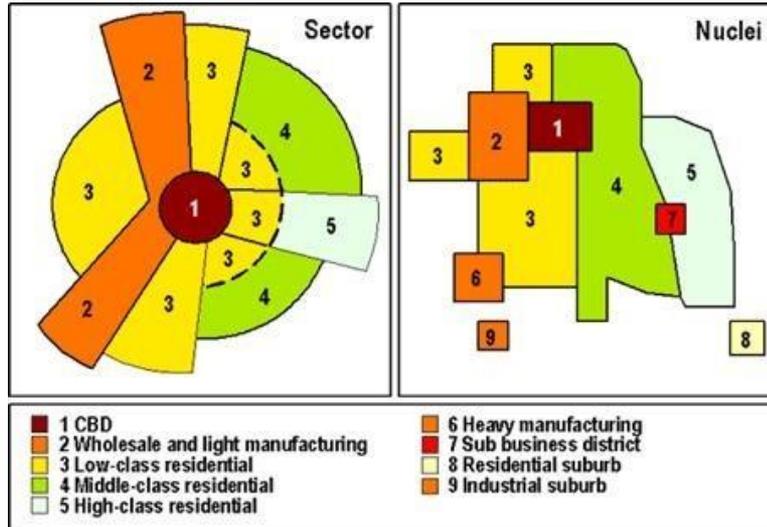


Harris & Ullman - Multiple Nuclei

<http://teacherweb.ftl.pinecrest.edu/snyderd/APHG>

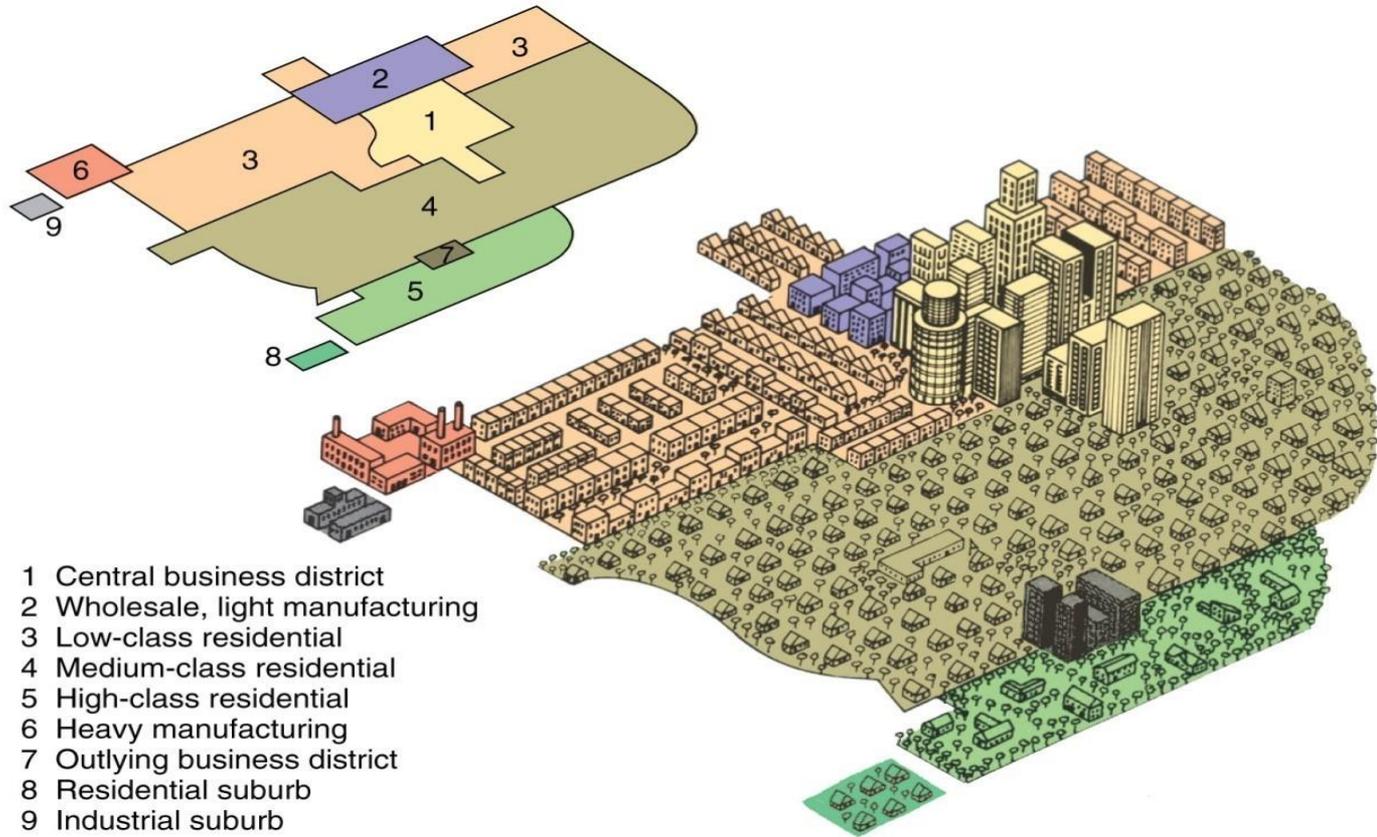


Multiple Nuclei



- ? 1940s
- ? Harris & Ullman hypothesized the CBD was further losing its dominance
- ? CBD no longer the nucleus of the modern city, thus emergence of 'nuclei'
- ? Reflects decentralization and nucleation of urban functions
- ? Nuclei are disconnected and do not necessarily rely on each other

Or, how about this?

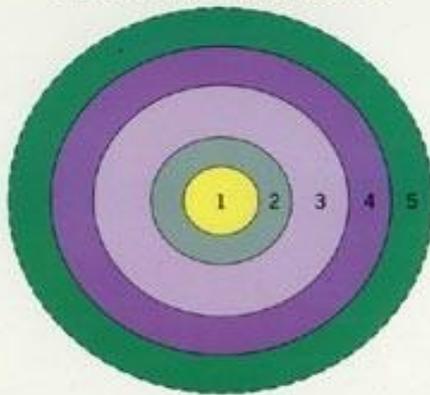


Let's look at all three now

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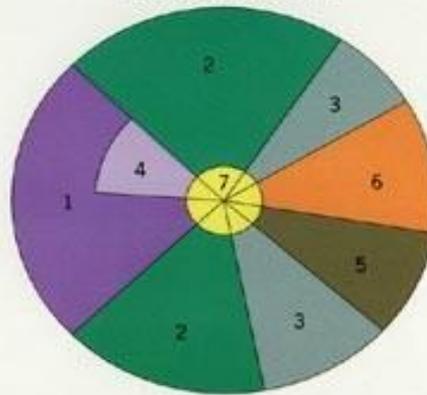
CONCENTRIC ZONE MODEL



A

- | | |
|---|------------------------------------|
| 1 Central business district | 4 Zone of better residences |
| 2 Zone of transition | 5 Commuters' zone |
| 3 Zone of independent workers' homes | |

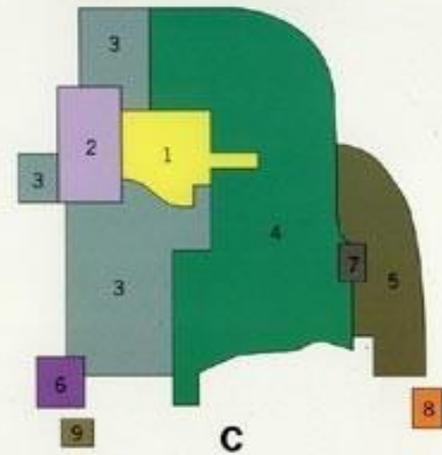
SECTOR MODEL



B

- | | |
|--|-----------------------------------|
| 1 High-rent residential | 4 Education and recreation |
| 2 Intermediate-rent residential | 5 Transportation |
| 3 Low-rent residential | 6 Industrial |
| | 7 Core |

MULTIPLE NUCLEI MODEL



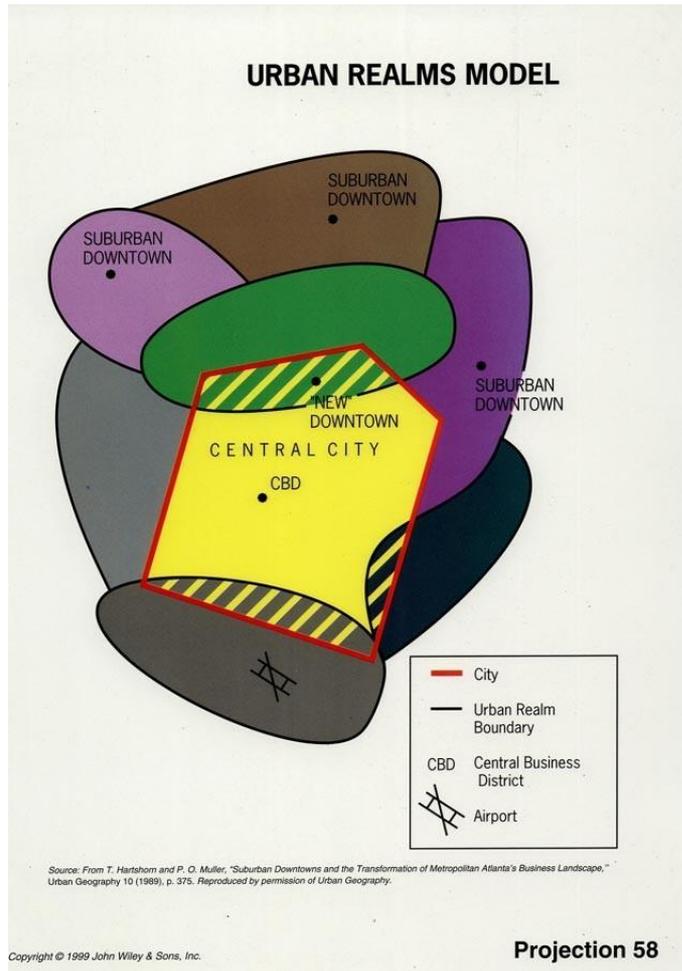
C

- | |
|---|
| 1 Central business district |
| 2 Wholesale, light manufacturing |
| 3 Low-class residential |
| 4 Middle-class residential |
| 5 High-class residential |
| 6 Heavy manufacturing |
| 7 Outlying business district |
| 8 Residential suburb |
| 9 Industrial suburb |

Projection 57

Urban Realms Model

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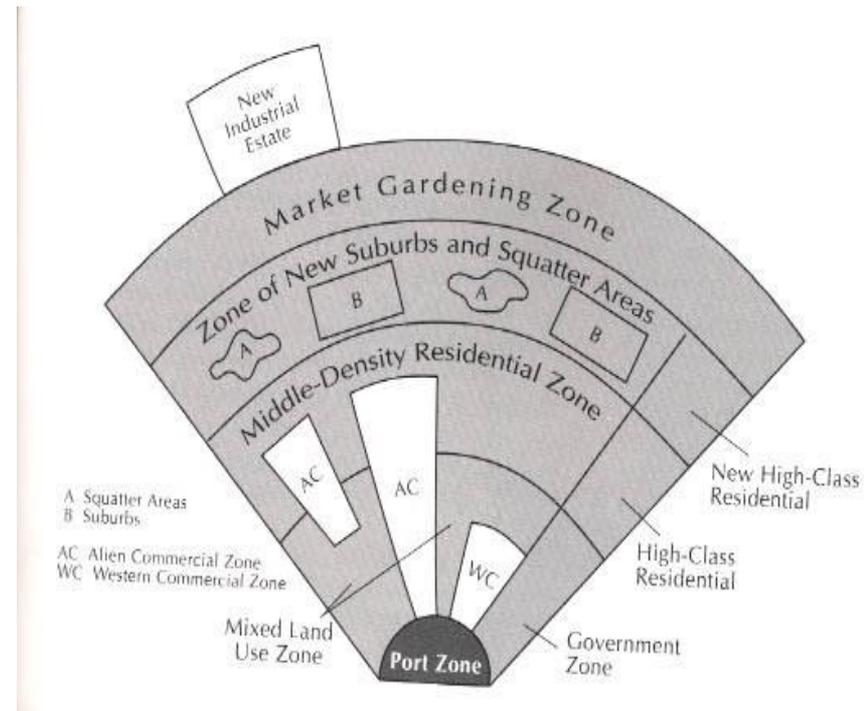
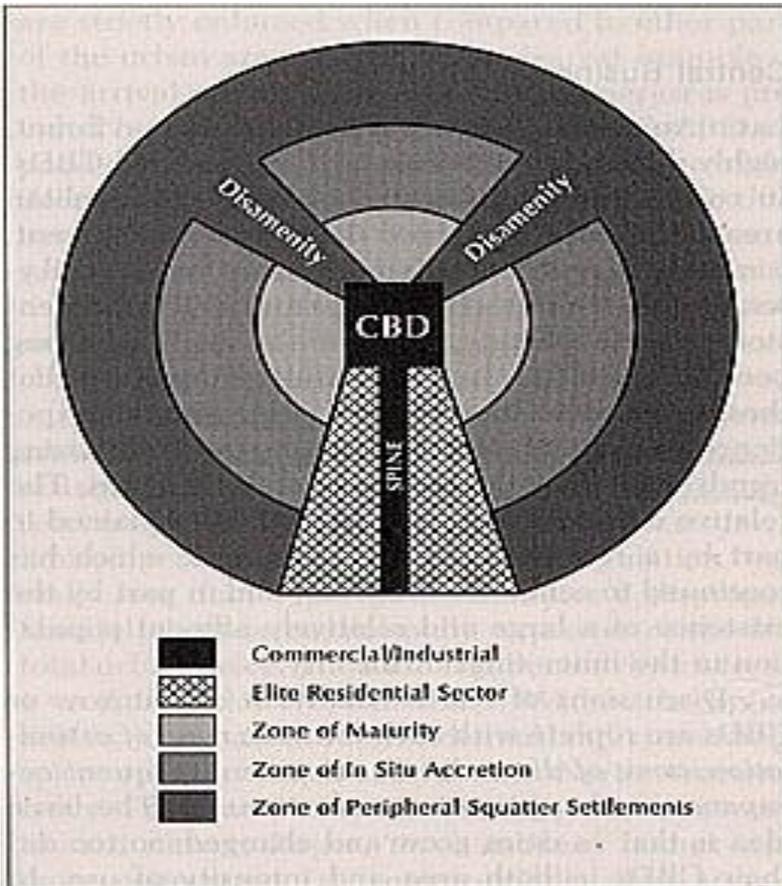


- ❑ Hartshorn and Mueller
- ❑ 1980s
- ❑ Modeled after cities like Atlanta and Los Angeles
- ❑ Further metamorphosis of multiple nuclei

World Urban Models

www.macalester.edu/.../amartin/urbanstruct.html

www.macalester.edu/.../tsadowy/Jabotek.html



Let's look at all three now

