



Architecture & Town Planning

Lecture 5:
Land Use Models &
Location Theories

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Land Use Vs. Land Cover

Land Cover: The observed biophysical cover on the Earth's surface. This definition includes what exists on land surfaces —the natural biophysical features of vegetation, water, ice and even bare rock and soil.

Land Use: It is about the use people make of the Earth's surfaces.

Examples:

- Grasslands can be considered as a land cover. If human activity on the grasslands is cattle grazing, this is considered as land use.
- Forests can be considered as land cover. However, some forests are selectively used for recreational walking or riding. These activities classify the forest as land use.
- A natural lake is land cover but when it is used for water sports or for irrigation, then it is land use.



Land Use

It is the human use of land.

- Municipal governments divide the land into various land uses in order for an urban area to function effectively and to meet all the needs of citizen .
- It involves the management and modification of natural environment or wilderness into built environment such as fields, pastures, and settlements.



Land Use Planning

- Land Use Planning is the term used to regulate land use in an efficient way.
- It is the systematic assessment of land and water potential, alternatives for land use, and economic and social conditions in order to select and adopt the best land-use options.
- In comprehensive planning approach, a land-use plan provides a vision for the future possibilities of development in neighborhoods, districts, cities, or any defined planning area.

Function:

- Land Use Planning involve zoning, Transport and Infrastructure planning. Because it ensures land use efficiency for the benefits of economy and population as well as to protect the environment.



Land Use Models

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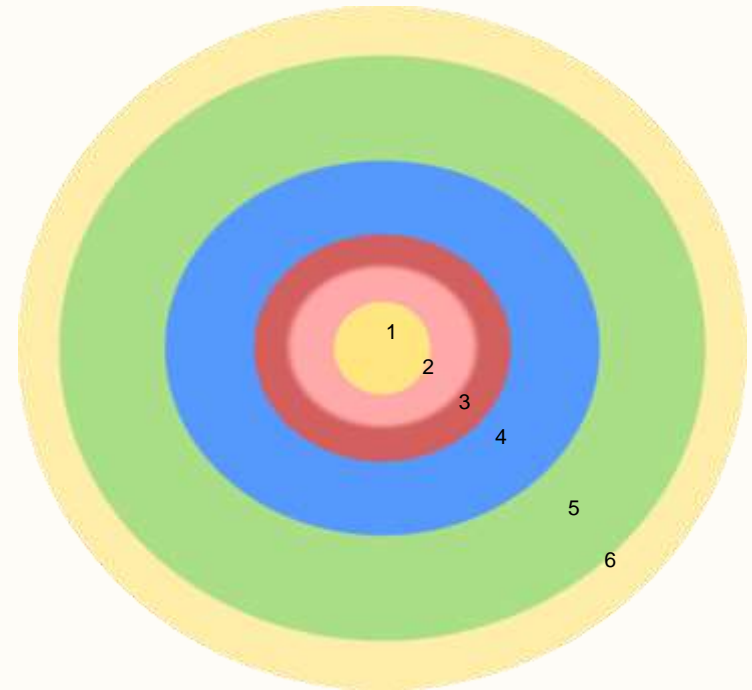
CONCENTRIC ZONE MODEL



1. Concentric Zone Model

Presented in 1925 by Ernest Burgess

- correlation between the distance from the CBD and the wealth of the inhabited area
- wealthier families tended to live much further away from the CBD
- CBD guides the direction of expansion



1. CBD
2. Factory Zone
3. Zone of Transition
4. Working Class Zone
5. Residential Zone
6. Commuter Zone

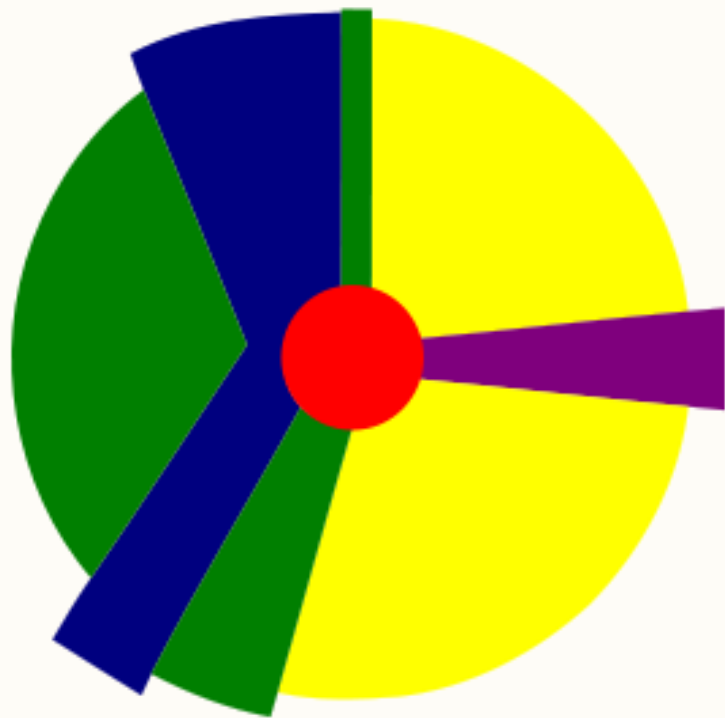
SECTOR MODEL



Sector Model

- **Developed in 1939 by Homer Hoyt**
- A modification of the concentric zone model
- This model include the fact it allows for an outward progression of growth
- **States that a city develops in sectors, not rings**
- According to this model most major cities evolved around the nexus (**connection or focal point**) of several important transport facilities such as railroads, sea ports, and trolley lines that spread out from the city's center.
- Hoyt theorized that cities would tend to grow in **wedge-shaped patterns, or sectors**, spreading out from the CBD and centered on major transportation routes.

Hoyt Sector Model Key



CBD



Factories/Industry



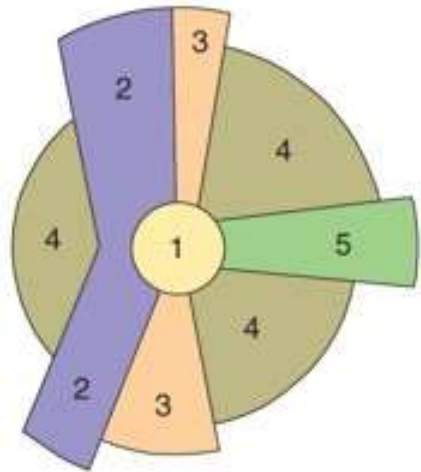
Low class residential



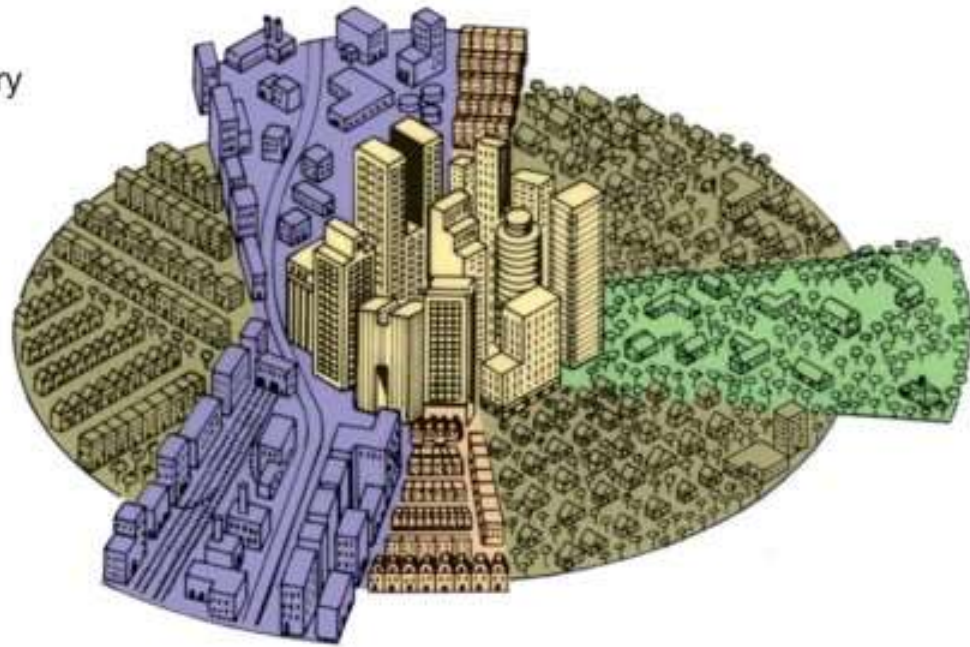
Middle class residential



High class residential



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



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Different Sectors

Industry

- Industry follows rivers, canals, railroads, or roads
- Lower class workers work here. Paid little, bad working conditions.
- Produces goods or other domestic products for city

Low Class Residential


- Low income housing
- Near railroads that feed factories or
- Inhabitants tend to work in factories
- Live near industry to reduce transportation costs
- Pollution or poor environmental conditions due to industry (traffic, noise and pollution make it cheap)

Middle Class Residential

- More desirable area because it is further from industry and pollution
- Access to transportation lines for working people who work in the CBD, making transport easier
- Largest residential area

High Class Residential

- Housing on outermost edge
- Furthest away from industry
- Quiet, clean, less traffic
- Corridor or spine extending from CBD to edge has best housing

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- It is a mono-centric representation of urban areas
 - According to Hoyt, other land uses cluster around CBD
 - **But important factor is not distance from CBD as in the concentric zone model, but direction away from CBD**
 - As growth occurs, similar activities stay in the same area and extend outwards
 - The Hoyt model realized that transportation (in particular) and access to resources caused a disruption of the Burgess model.
 - For example a rail line or major highway to a nearby city may result in business development to preferentially develop parallel to the rail line or major highway. So one side of a city may be completely industrial with another sector may be completely rural.



Limitations

- The theory is based on early 20th Century rail transport and does not make allowances for private cars that enable commuting from cheaper land outside city boundaries.
- The theory also does not take into account the new concepts of edge cities and boom burbs (large rapidly growing city that remains essentially suburban in character, even as it reaches the population of urban core cities), 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 may restrict or direct growth
- The theory lacks the idea based on land topography which may limit the outward growth of a sector

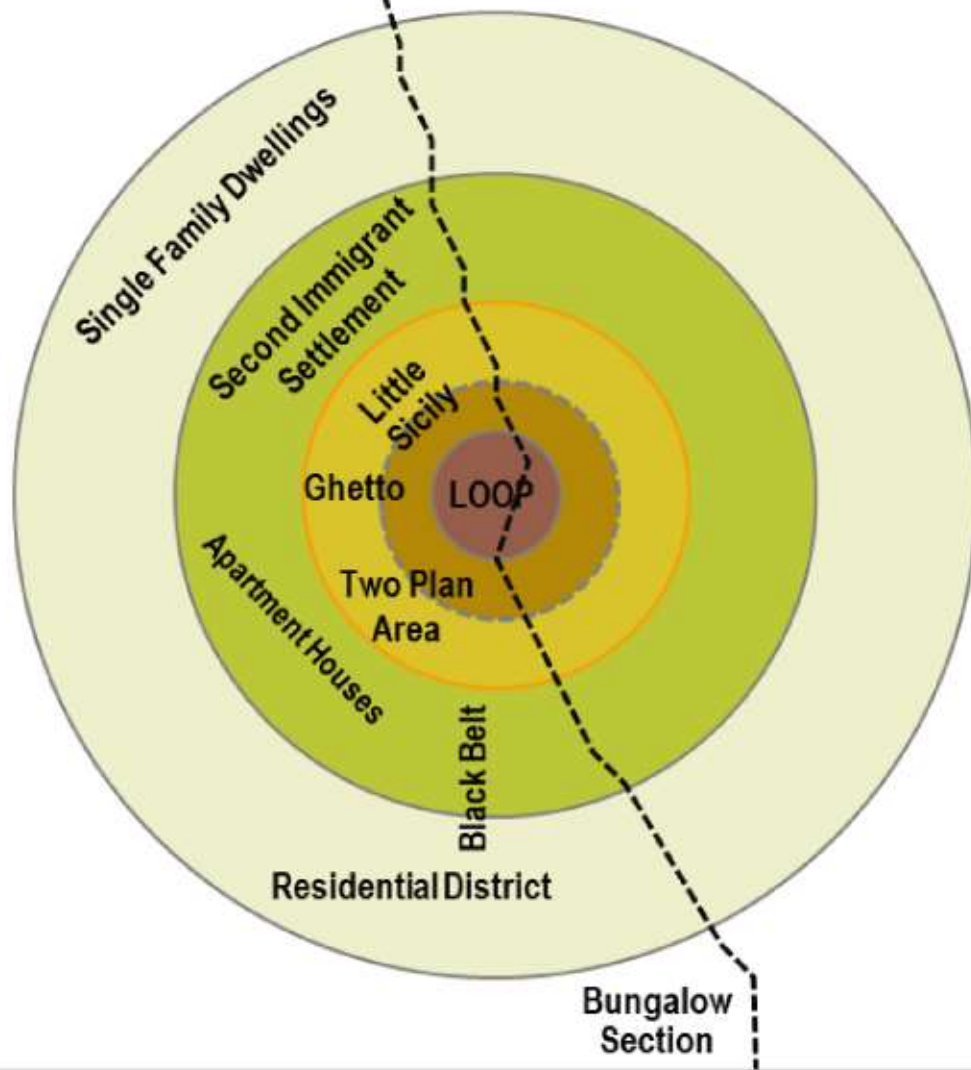
CASE STUDY (CHICAGO)

Older cities follow the Hoyt model and more recent cities follow the Burgess (concentric zone) model.

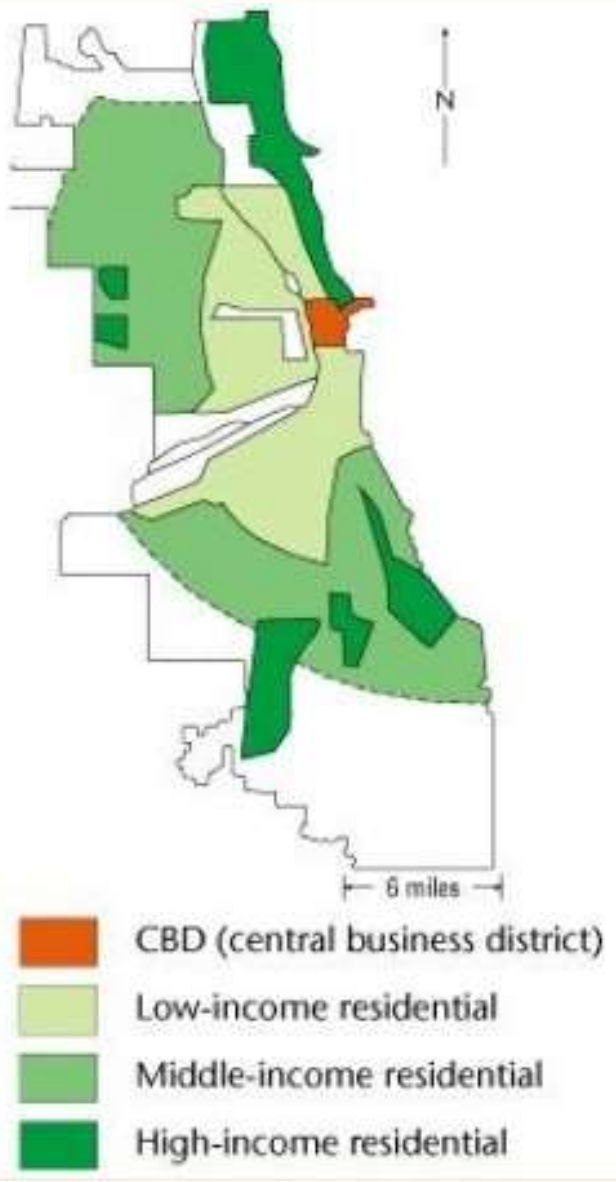
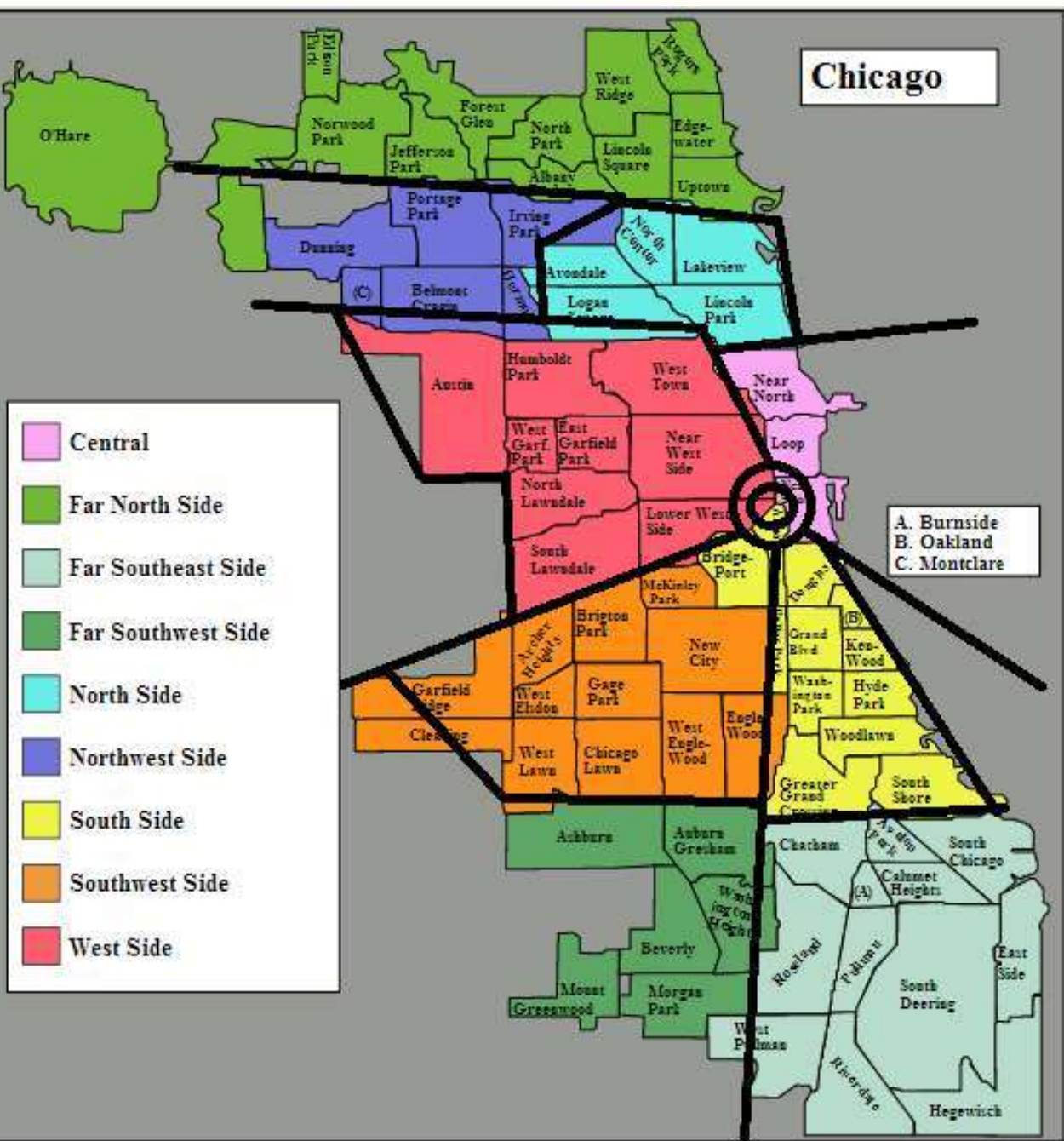


Chicago, 1920s

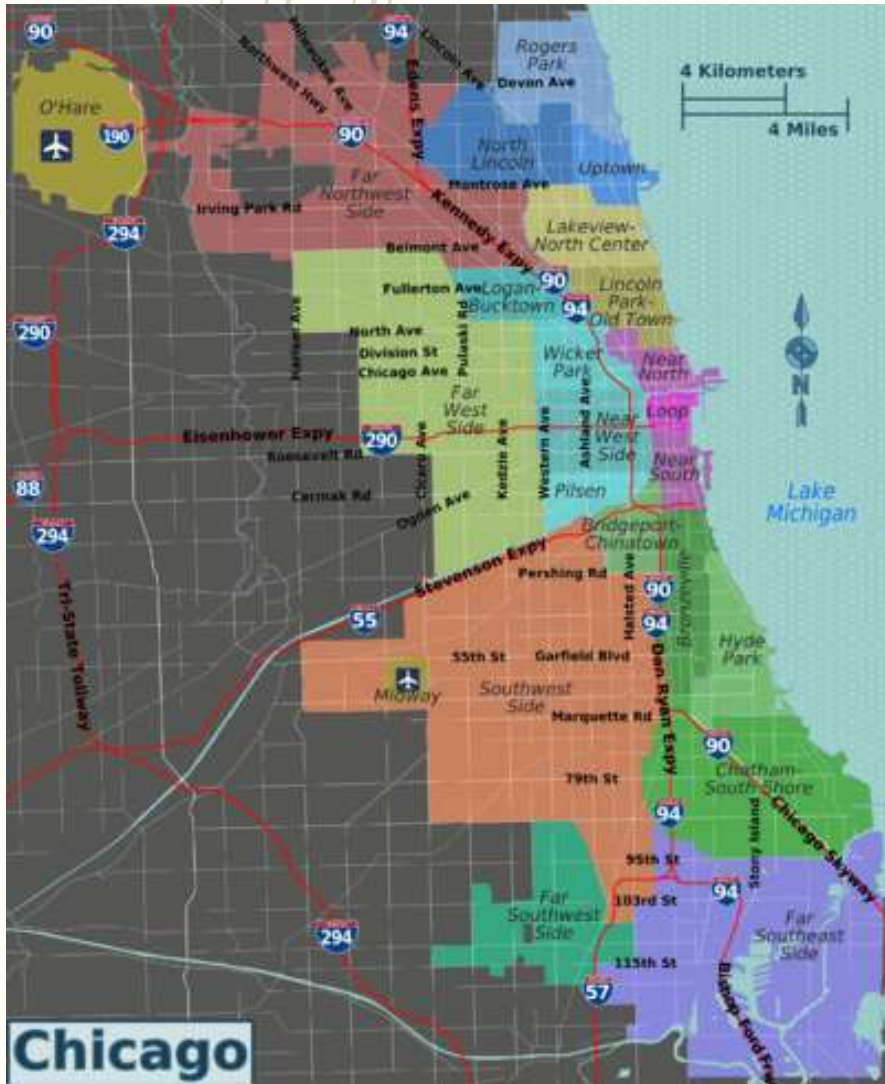
Model



-  I - Loop (downtown)
-  II - Factory zone
-  III - Zone of transition
-  IV - Working class zone
-  V - Residential zone
-  VI - Commuter zone



TRANSPORTATION ROLE



MULTIPLE NUCLEI MODEL



Multiple Nuclei Model

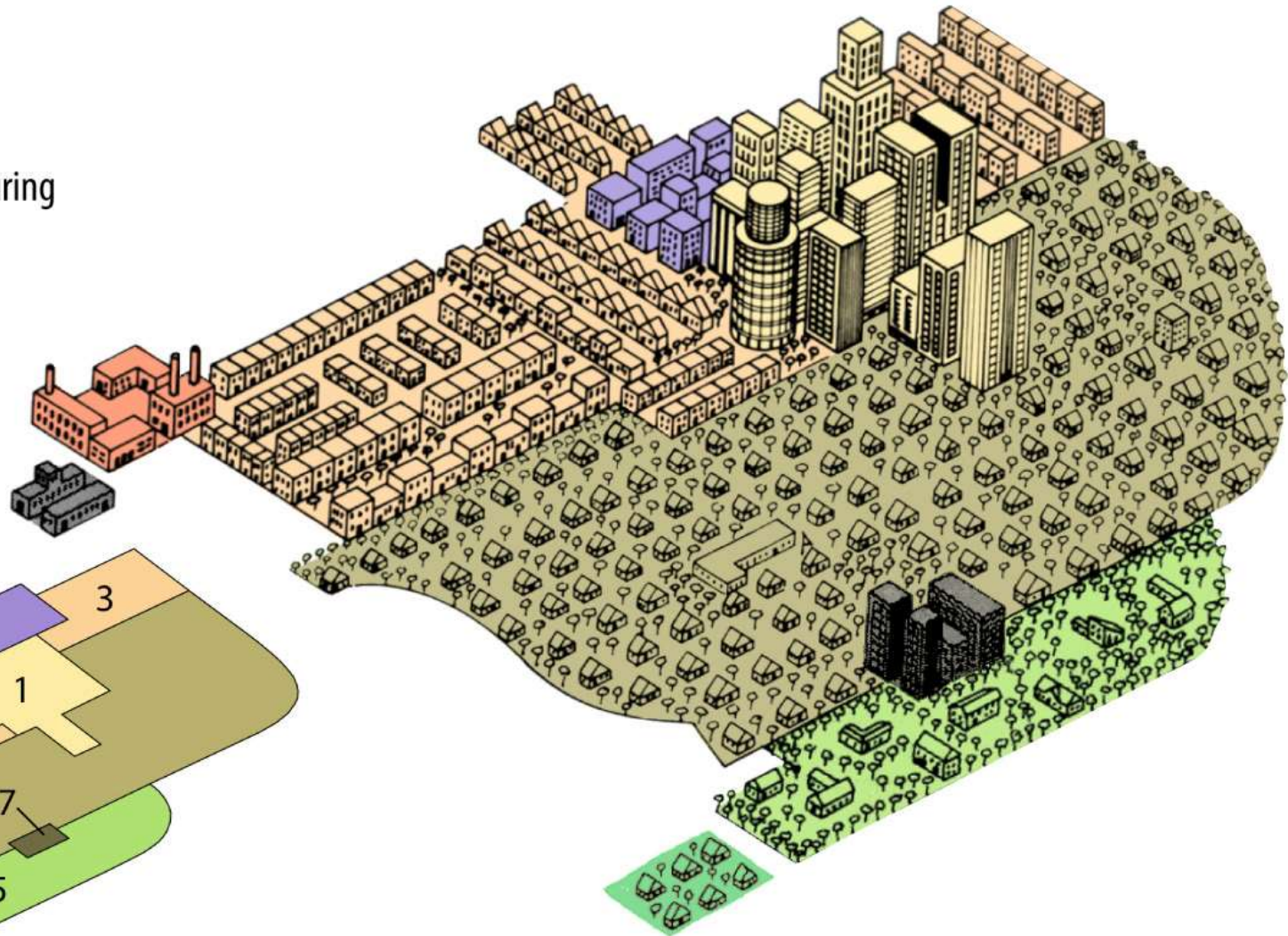
- The multiple nuclei model is an economical model created by Harris and Edward Ullman in 1945
- This model describes the layout of a city, it is based off of Chicago
- It notes that while a city may have started with a central business district, similar industries with common land-use and financial requirements are established near each other. These groupings influence their immediate neighborhood.



Multiple Nuclei Model

- Each nucleus acts as a growth point
- Growth occurs outwards from each nucleus, until they all merge into one large urban area
- It says even though a city may have begun with a CBD, it will have other smaller CBDs develop on the outskirts of the city
- If other CBDs develop on the outskirts of a city they would be around valuable housing areas to allow shorter commutes to the outskirts of the city

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





Placement of Classes

- **Low Class:** Low class residential areas are closer to the manufacturing jobs which tend to be skilled jobs. They also tend to have low wages which in turn lead to a low class residents
- **Medium Class:** Medium class residential areas tend to be close to the CBD. It also has more space to spread out to support the population which are doing the skilled-labor jobs
- **High Class:** High class residential areas tend to be on the outskirts of the medium class residential area. The area is also touching the outlying business district. The jobs that the people in this district do are usually skilled labor and have high incomes.

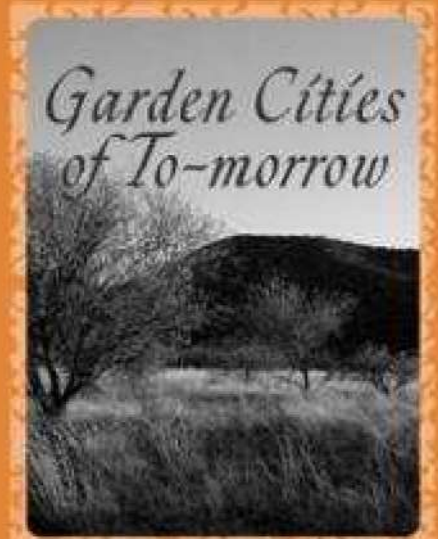


Garden City Movement

Garden cities of Tomorrow

Wrote by Ebenezer Howard in 1880

- **Ebenezer Howard** is known for his publication **Garden cities of tomorrow (1898)**, the description of a utopian city in which people live harmoniously together with nature.
- The publication resulted in the founding of **the garden city movement**, that realized several garden cities in great Britain at the beginning of the 20th century
- **This book offered a vision of towns free of slums and enjoying the benefits of both town (opportunities, amusement and good wages) and countryside (beauty, fresh air and low rents etc.)**



Ebenezer Howard



Howard's Garden City Vision

- The overcrowding and deterioration of cities was one of the troubling issues of the time.
- Howard's garden city concept combined the town and country in order to provide the working class an alternative to working on farms or 'crowded, unhealthy cities'
- London (and other cities) in the 19th century were in the throes of industrialization and were exerting massive forces on labor markets of the time
- Massive immigration from the countryside to the cities
- To Howard the cure was simple – reintegrate the people with the countryside

THE THREE MAGNETS.





The Three Magnets

- One magnet lists the advantages and disadvantages of town life and another is accompanied by the positives and negatives of country life (Village Life). The third magnet communicates Howard's proposal of a Town-Country which have attractive features of both town and country life
- In the centre are The People who, having previously been stuck with a difficult choice between town and country lifestyle, will now be attracted to Howard's proposal. Such a re-arrangement would provide the basis for a more prosperous (**flourishing financially**), co-operative and liberated (**free from confinement**) human experience



Howard's Utopian Vision

A **Utopia** is an imagined community or society that possesses highly desirable or nearly perfect qualities for its citizens. One could also say that utopia is a perfect "place" that has been designed so there are no problems.



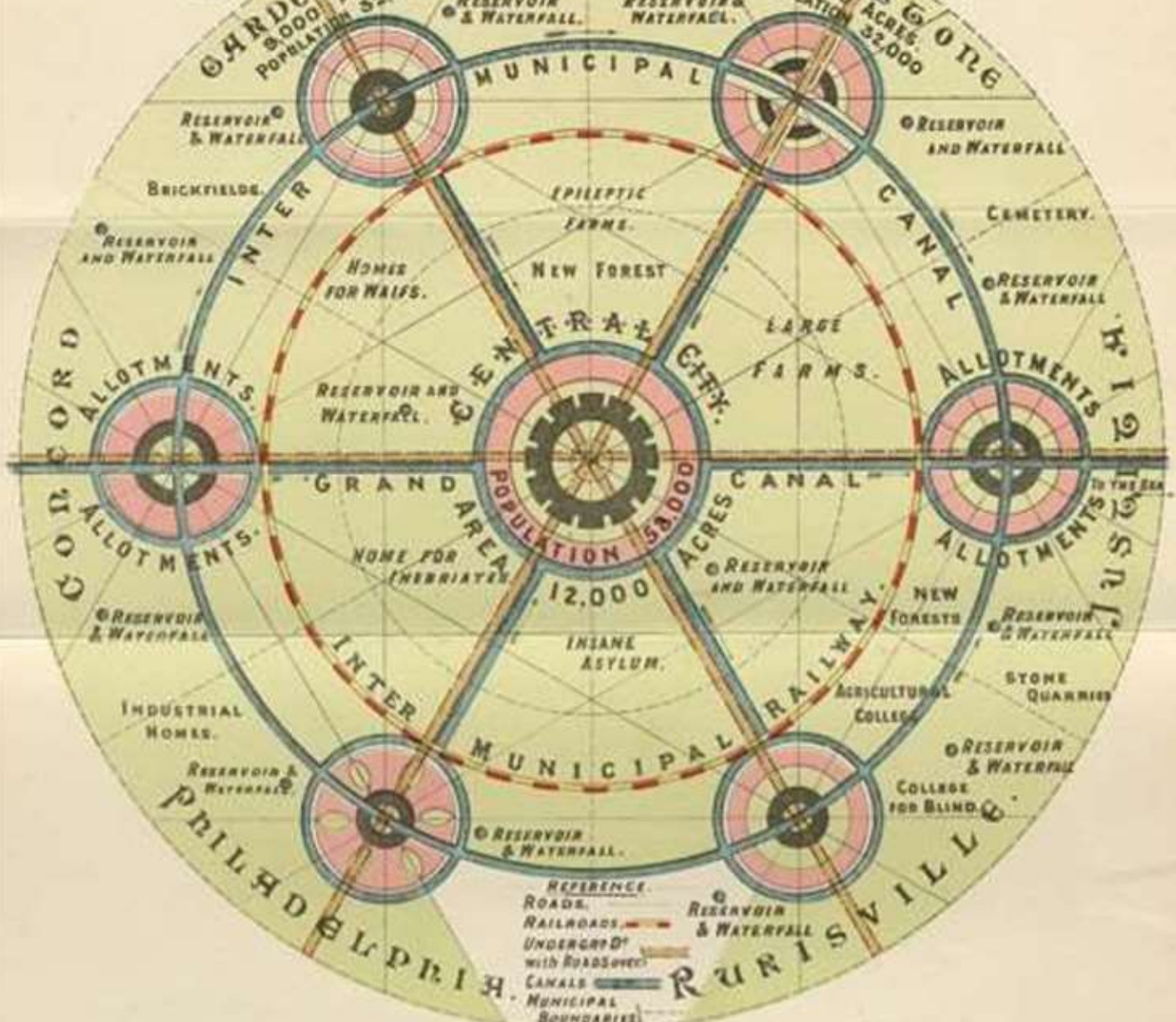
Garden city

- Garden cities were intended to be planned, self-contained communities surrounded by "greenbelts", containing proportionate areas of residences, industry and agriculture.

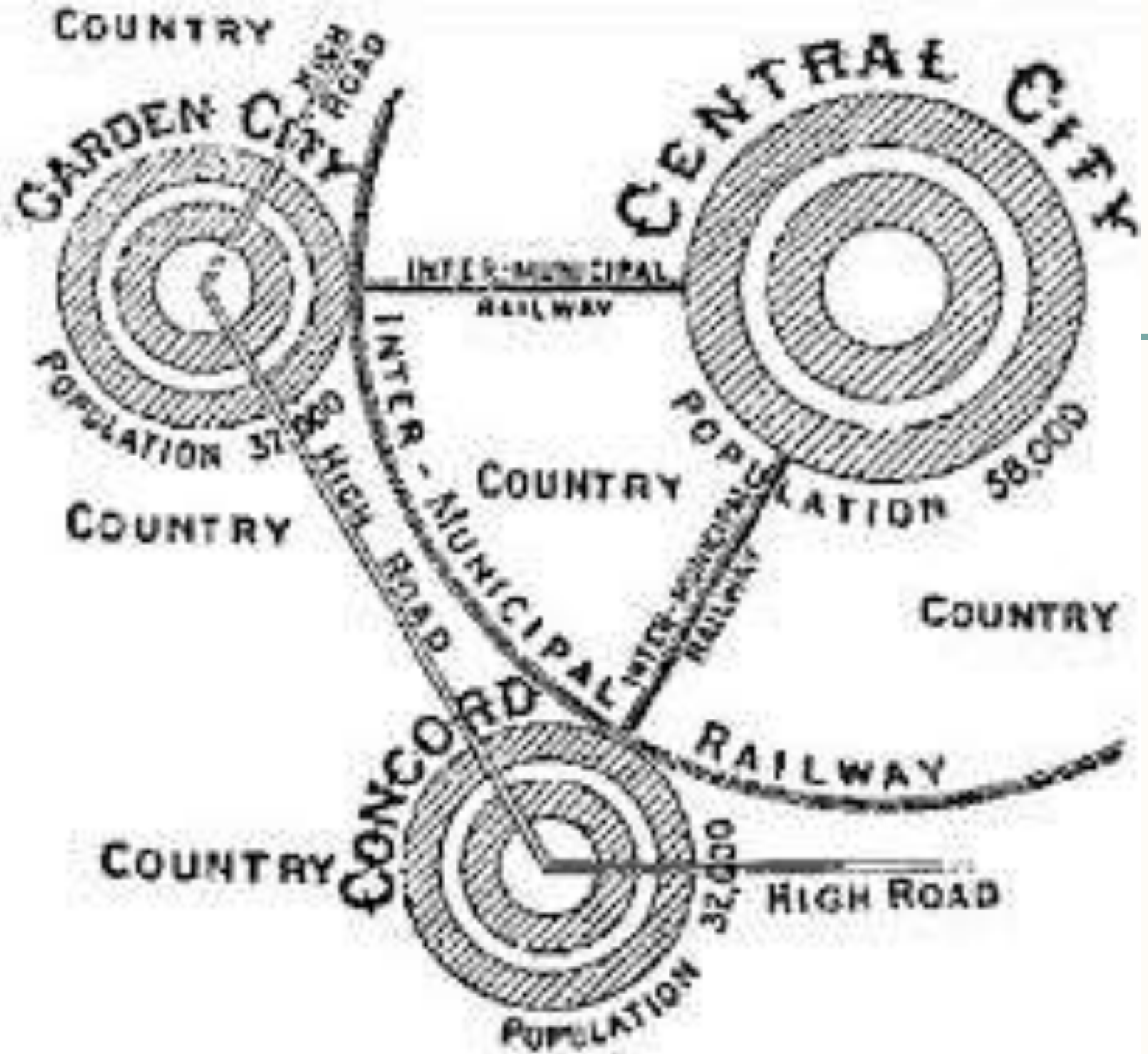
Affordability

- Howard wanted garden city for **all incomes**
- Most originally for those of **modest incomes**
- Their attractiveness as living environments has often made them more popular with better off people

GROUP OF SMOKELESS CITIES.
 TOTAL AREA 66000 ACRES. POPULATION 250,000



REFERENCE.
 ROADS ———
 RAILROADS ———
 UNDERGROUND with ROAD OVER ———
 CANALS ———
 MUNICIPAL BOUNDARIES ———

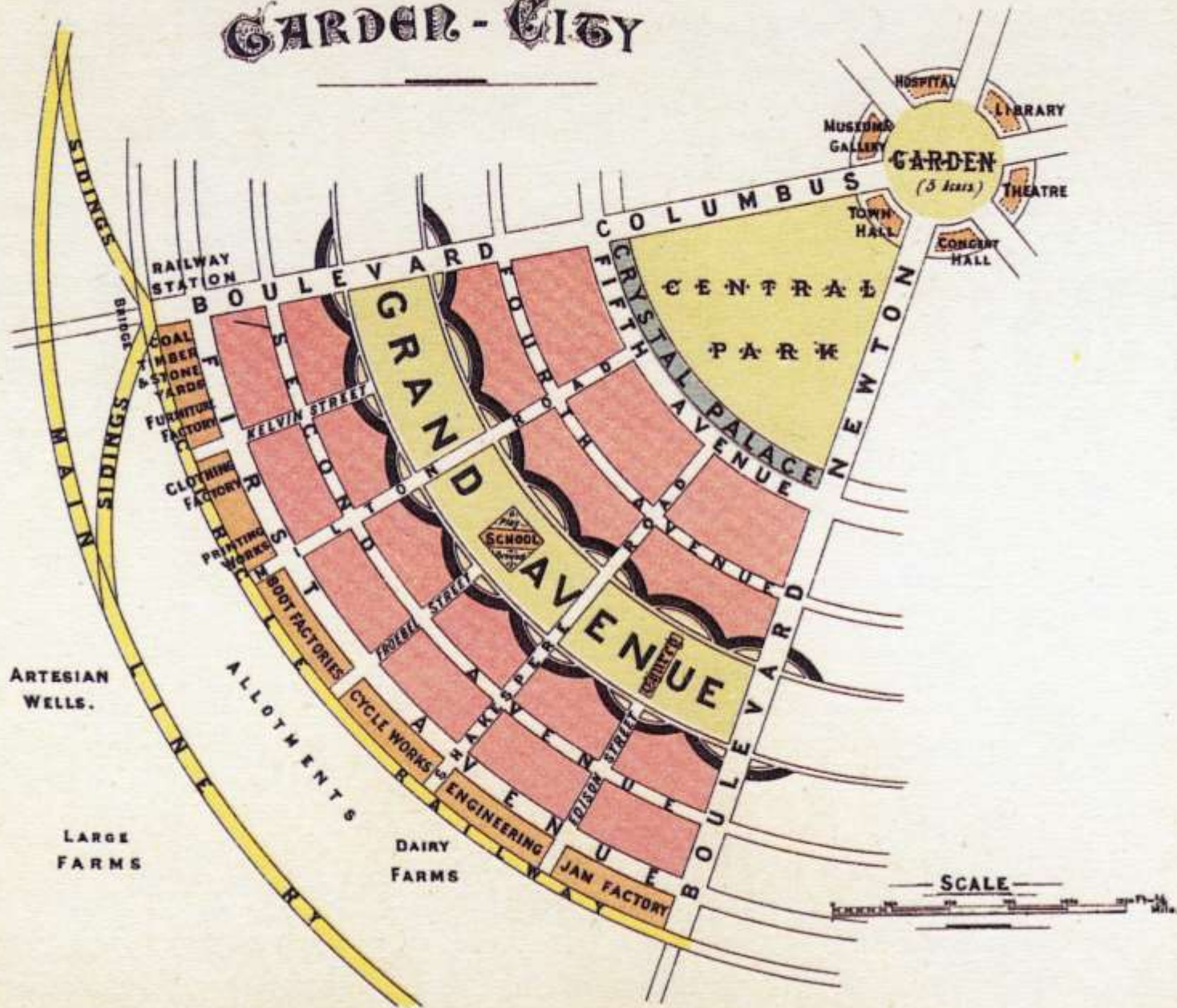


CITY. 1,000 ACRES AGRICULTURAL LAND 5,000 ACRES POPULATION 32,000



N. B.
DIAGRAM ONLY.
 PLAN CANNOT BE DRAWN
 UNTIL SITE SELECTED

GARDEN - CITY





Garden city

- Ideally his garden city would accommodate **32,000 people on a site of 6,000 acres**, planned on a concentric pattern with open spaces, public parks and **six boulevards** (**large road running through the city**), 120 ft. wide, extending from the centre.
- When it reached full population, another garden city would be developed nearby.
- Howard envisaged (**forecast/ predict future**) a cluster of several garden cities as satellites of a **central city of 58,000 people**, linked by road and rail.
- A density of housing occupying 1,000 acres at the centre accommodating 30,000 people, with the surrounding 5,000 acres allocated to agriculture, welfare provision (**government provisions for unemployed, aged people etc.**), leisure activities, and home for 2000 people, with cow pastures, farmlands



Conceptual Layout

Circular city growing in radial manner

- Divided into six equal wards by six main boulevards radiated from the central park/garden
- Civic institutions (Town hall, hospital, museum etc.) placed around the **central garden**
- The central park enclosed by a crystal palace acts as an arcade (covered passage with arches along one side or both side) for indoor shops and winter gardens (outdoor garden with flowers and plants maintained during winter)
- The streets for houses are formed by a series of **concentric ringed (encircled by a ring)** tree lined avenues
- Distance between each ring vary between **3-5km**



Smart Growth



Smart growth

- **An urban planning and transportation theory,** promotes concentrating growth in the center to avoid urban sprawl

Promoted by:

- **Compact:** mixed use development that encourages **choice in travel mode, less open space requirement**
- Prioritizing the maintenance and revitalization of existing neighborhoods rather than investing to create new infrastructure and development that spreads out from existing area



Common Thread

- There is **no real unified set of specific smart growth policies** as many different groups with **different views** of smart growth are involved
- **The common thread is:** revitalizing central cities and older suburbs, support public transit, promotes walking and bicycling and preserve open spaces and agricultural lands



10 Principles

1. Mix land uses.
2. Create **walk able neighborhoods**.
3. Take advantage of **compact building design**.
4. Create a range of **housing opportunities and choices**.
5. **Preserve** open space, farmland, natural beauty, and critical environmental areas.
6. **Encourage community** and stakeholder collaboration in development decisions.
7. Strengthen and direct development towards existing communities.
8. Provide a variety of **transportation choices**.
9. Make development decisions **predictable, fair, and cost effective**.
10. Foster distinctive, attractive communities with a strong sense of place.

