

Unit 6

Models of Urban Growth : Concentric Zones, Sectors, Multiple Nuclei, Exploitative, Symbolic

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Learning Objectives

After studying this unit you should be able to:

- discuss the structure of cities;
- describe the concentric zone model of studying the structure of cities;
- explain the sectors model;
- describe the multiple nuclei model;
- discuss the exploitative model; and
- explain the symbolic approach to the study of city.

6.1 Introduction

Under the rubric of urban ecological process and theories, you have already learnt about the processes of invasion, succession, concentration, centralisation and segregation which characterise different kinds and dimensions of cities. Here in this unit you will learn further about the different aspects of cities and their formations.

As you already know, urban society is defined as a relatively larger, dense, permanent, heterogeneous settlements whose majority of inhabitants are engaged in non-agricultural occupation. The development of such urban society is very much determined by socio - cultural organisation, climate, topography and economic development. The earliest cities of the world originated near river valleys such as early civilization of Indus (Mohenjodaro, Harrappa), Tigris - Eupharates (Lagas Ur, Uruk), Nile (Memphis, Thebes)

and Hwang Ho (Chen-Chan An Yang). These early development of urban settlements evolved with changing technology and human needs. Trade and commercial activities and settled agriculture were major facilitators; even today these factors are very much relevant in the growth of a city. As cities are viewed as the places where markets, governments, religious and cultural centres exists.

6.2 Structure of Cities

The distinct features and characteristics of cities have evolved over time and vary significantly in time and space. The concept of city in ancient society was different from medieval and modern city. The growth was irregular in form, sensitive to changes in the habits of people, and dynamic in character. They began as free cities, which were settled voluntarily. Geometrical form often emerged. It was introduced according to the structure of the land and nature of society. Early development of city structure is discernible in two basic urban forms: the walled town and open city. Within these basic forms a wide variety of patterns can be observed in different shapes and designs. Different cities are shaped by the different character of their society. More than the structures, it is the dwellings of the people that mark the different cultures of cities.

For Max Weber the city is a market place as mentioned in the previous unit. Market has always been the focal point of the city, a centre for the exchange of goods in pre-industrial cities about which you will learn more in the next Block. The development of transportation and money systems transformed this barter system to a form of retail enterprise. Thereafter, cities were known as modern business centres. Weber also observed changes in demographic features that the more dense sections are, in general, losing population and the areas on the outer zones of cities are gaining population. In between the area is predominantly either static or shows moderate growth.

Each city has certain degree of internal organisation and regularities in its growth. This internal organisation of cities includes both physical as well as human aspects—the land use pattern and residential settlements. The city constitutes all the people who inhabit it, the entire collection of houses the people live in, the shops in which they work, the streets they traverse and the places in which they trade. The industrial revolution was a significant turning point where urban development is concerned. Industries have attracted labour force and also created a market for their produce. Charles Colby 'analysed' these forces and explained the movements of people in the form of centripetal and centrifugal forces. Centripetal forces are the results of a number of attractive qualities of the central portion of the city. Centrifugal forces on the other hand are not only opposite forces, but are made of merging influences – a desire to live in one part of the city or an urge to move to another part of the city, such as, suburbs.

The 'internal structure of city' refers to the location, arrangement and interrelationships between social and physical elements in the city. Hence, the purpose of this unit is to explain the spatial distributions and the interactions between these distributions. The spatial distribution of a

particular city also depicts social organisations and cultural relationship with structure of that period. The form and structure of the modern city is the result of numerous economic, social and cultural factors operating through many decades since their evolution. Some of the most significant factors of modern urbanization are rapid and massive growth, a heterogeneous population, changing forms of urban transportation, growing spatial and social mobility. The classical studies of modern American cities are some examples.

The major theories of the internal structure of urban settlements has been given after the study of western urban society, as the proposition is based on empirical studies of North America and Europe. Hence, the growth pattern of cities is part and parcel of American society that accounts for the increasing importance and dominance of American culture, society, and economy.

6.3 Concentric Zone Model

Ernest Burgess propounded the concentric zone theory in order to explain the structure and growth of city. The hypothesis of this theory is that cities grow and develop outwardly in concentric zones. In other words, the essence of the model is that as a city grows, it expands radically from its centre to different concentric circles or zones. Burgess offers a descriptive framework in which both aspects of human ecology – physical land use pattern and human relationships are implicit. Using Chicago as an example, Burgess viewed that as cities expand outwards, the interaction among people and their economic, social and political organisations also create radical expansion outward and form a series of concentric zones.

The concentric model is based upon a process of invasion and succession about which you learnt in the previous unit. Invasion is a process which necessitates continual expansion of inner zones into outer zones, due to the natural 'aggression' of the migrant into the city. While succession occurs when an area becomes dominated by the activity invading that zone. There is competition in city among people for limited space. Only those can succeed who can afford best to pay and get the desirable location for their business and homes. Therefore, concentric zone theory reflects on going conflict between city dwellers and periphery villages. It also describes the process of concentration and segregation of social groups with the growth of city structure.

According to this theoretical model there are five major concentric zones. These are as following:

1. Commercial centre
2. Zone of transition
3. Working class residence
4. Middle/ higher class residence
5. Commuter zone

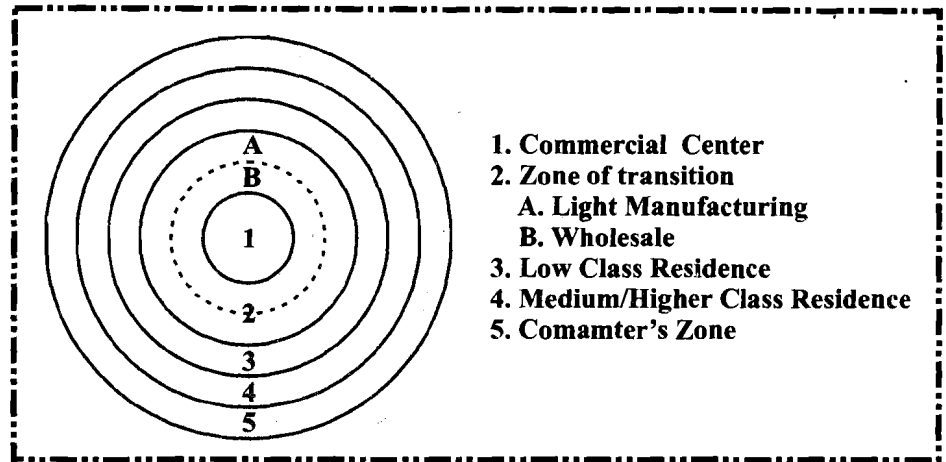


Figure 6.1

First, the inner most ring zone or nucleus of the city is a **commercial centre** also called Central Business District (CBD) in North America and western countries. This zone is characterized by high intensity of commercial, social and civic amenities. It is the heart of the city which includes department stores, office buildings, shops, banks, clubs, hotels, theatres and many other civic buildings. Being the centre of commercial activities and location, it is accessible from all directions and attracts a large number of people. Therefore, it is a zone of the highest intensity land use and social interaction. High intensity of land use further indicates the high value of land and rents. As a result, the residential population in this zone is very small. People are always in search of cheaper, spacious and pollution free accommodation away from the core of the city. This is one of the reasons that the congested city area is deserted at weekends or on non-working days.

Burgess further describes that the morphological structure of CBD is changing rapidly with our changing needs. Morphological structure of city includes buildings, roads and infrastructure. These rearrangements occur, in part, through demolition and new building construction. This is a continuous process of rebuilding since city began. Hence, it is obvious that older parts of the city are rebuilt and old land uses replaced. Study reveals that these changes in rebuilding are from lower to higher density, higher uses and higher rents.

Zone of transition: Light Industries and slums mainly occupy this zone, may be seen in as many American cities. This zone was the home of numerous first generation immigrants. It has low income households, retrogressing neighbourhoods, one room houses and homeless men. It is a breeding place of crime, gambling, sexual vice and other social deviances. The physical deterioration and social disorganisation leads to concentration of poor housing, poverty, juvenile delinquency, family disintegration, physical and mental diseases. Burgess studied Chicago city and the found second concentric zone to be transitory in nature, comprising an area of residential deterioration due to congestion and encroachment. The zone surrounds

the CBD area and fulfils their needs, like light industrial production and business extension houses. He also predicts that CBD will expand in this zone, as it will grow.

Working class residence : Basically it is planned residential area, close to places of economic activity which often shift and moved to the outward rings. Being close to transition zone it is influenced by that zone, in terms of quality of life. It reflects the negative impact of industrial pollution and the cultural impact of slums. The working class residences subsequent outward ring/ rings are occupied by middle or higher-class residences. These may be separated in different rings in terms of class character and corresponding facilities. This is a residential area with all modern amenities of civic society. People who reside in these areas are native born Americans in single-family houses or apartments. The houses are spacious in a pollution-free zone. Sanitation, health facilities and all other requirements of a good quality life are found here. Proper transportation, communication and parking facilities are an added feature of this residential zone. The above features of this concentric zone clearly indicate a particular class character.

Commuter zone: it is located in the outermost concentric zone, beyond the area of higher class residence. This is a ring of encircling small cities, towns, and hamlets which taken together constitute the commuter zone. People from these areas commute on a daily basis towards the CBD or commercial centre for employment and business purposes but live in their small cities, towns and hamlets. Commuter zone is characterized by low density. It is relatively isolated and located in suburbs and satellite towns. Later on Burgess writes that there was no circle of towns or cities in the outer concentric zone of Chicago but a pattern of settlement existed along the railroads radiating out from CBD like - spokes of a wheel.

Burgess made a first brilliant and comprehensive analysis of pattern of city structure. In the 1920s, there was a tremendous growth of urban population throughout the world, particularly in the United States and European Countries. This growth has changed the form and social structure of urban communities. At this time, Burgess' Concentric Zone model is the earliest effort to explain the internal structure of city within the framework of the ecological theory. The application of this theory to American cities was widely accepted and considered a significant contribution and a guide to understand other subsequent studies of city patterns.

The theory has also limitations as it is based on Chicago city or North American cities. It is unable to explain the structural pattern and growth of cities in developing countries. It is not applicable to all developing countries. Homer Hoyt 'refutes' this concentric model and argues that the growth of city didn't always form a circle completely. It is often rather distorted by major transport and topographical features. In this theory, Burgess assumed that succession and invasion are determinant processes in structural growth of city. He ignored the significant role of endogenous forces.

Reflection and Action 6.1

You have just read about the Concentric Zone model given by Burgess in his study of the city of Chicago, U.S.A. As you know India belongs to the developing countries, do you think any city structure in India can be explained using this model? Try to apply it to your own city/ town/village and write a report of two pages on “The structure of My City and the Concentric Zone model”.

Discuss your report with your Academic Counsellor and other students at your Study Centre.

6.4 Sectors Model

Following Burgess, Homer Hoyt, an economist, propounded an alternative proposition of urban structure and its growth pattern in 1939. Through sectors model, Hoyt tried to overcome the weaknesses of the earlier theory. It was mainly based on residential rent pattern and impacts of transportation development. This theory is the result of an empirical study of 34 American cities, in which he observed that high rent areas are located in one or more sectors of the city. He prepared a map showing how rent changed by sectors irrespective of concentric circle. Generating from the maps of housing features and land uses pattern of cities, he analysed the impact of transportation the recreational areas and other changes.

Hoyt further provided factual evidence through his survey of Washington DC metropolitan area in 1954. Apart from North American cities the evidence from Latin American cities showed that the finest single family homes and apartments were located on one side of the city only, such as Guatemala city, Bogota, Lima La Paz, Quito, Santiago, Buenos Aires, Montevideo, Rio de Janerio, Sau Paulo, and Caracas. Further the main concentration of high-income group families was found in the form of scattered clusters. He also illustrated similar observations from New York metropolitan area and Latin American cities as well.

Sectors Model

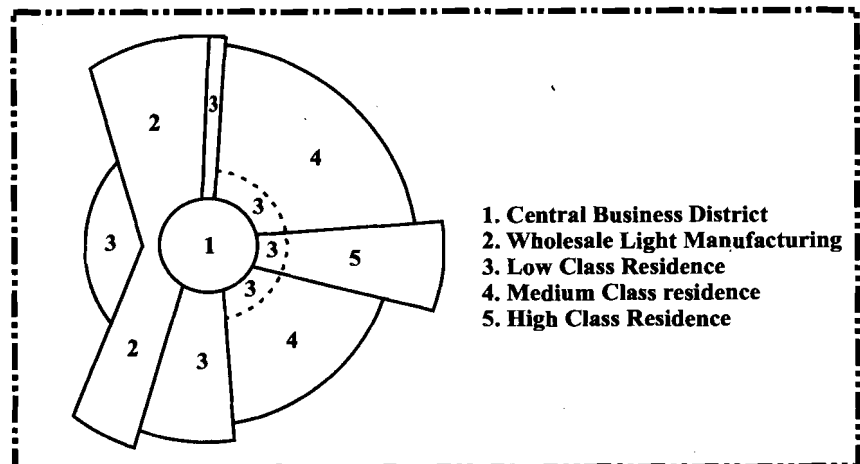


Figure 6.2

Both propositions, sectors model and concentric zone, have the common concept of CBD i.e., the Central Business District and outward expansion. Where former differs in terms of differential radial growth from CBD or centre. He explained that sectors develop because of the difference in accessibility from outlying portions to the core region. Thus, it also includes the development of concentric patterns within the zone (see Figure-6.2).

Contrary to Burgess' Concentric Zone theory, the sectors theory assumes that land rents changes from Sector to Sector not in the form of successive concentric ring area. The development of a Sector is determined by various factors, such as, planning, transportation, class character of residents and other facilities available to that particular Sector. Within the residential sector it has been observed through study that the inner portions are found to be having older houses and newer constructions are found on the outer fringes.

6.5 Multiple Nuclei Model

The third classical theory of internal structure of city is multiple nuclei model developed by Chauncy Harris and Edward L. Ullaman in 1954. The basic assumption of this theory is that "cities are not homocentric" but they rather have many minicentres which play a significant role in the development of a city. These minicentres originally developed independently with the specialised advantages that they offered or similar activities clustering in these areas.

Multiple nuclei theory differs from the earlier theories, like sectors and concentric zone theories. It believes that city has not developed around a single centre or CBD but it has a group of many minicentres. However, the phases of development may be simultaneous or in different periods. The multiple nuclei type is further divided into ten major areas—central business, wholesale or light manufacturing, low income residential, medium income residential, high income residential, heavy industry, outlying business, residential suburb, industrial suburb, commuters area. While these various parts of city are fairly clear when analyses of the social organisation of the city is made. It has developed through a natural process rather than a planned process.

Multiple Nuclei Model

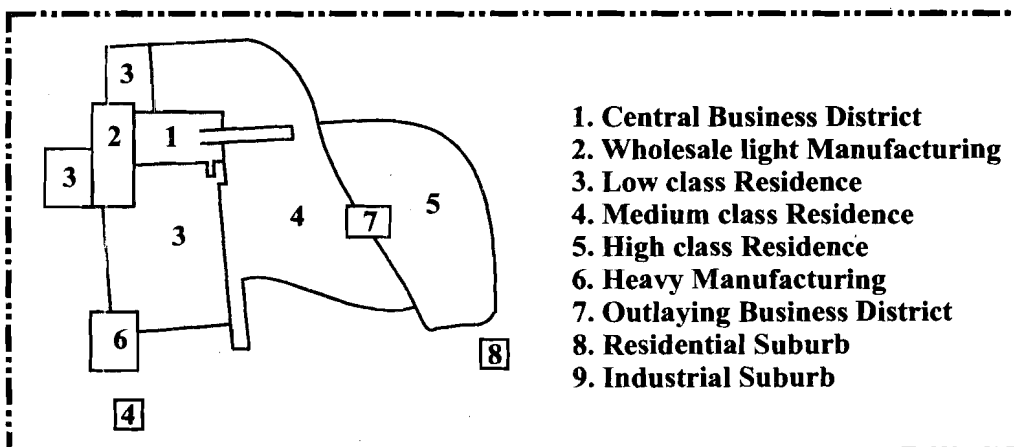


Figure 6.3

6.6 Exploitative Model

The exploitative model divides the city into three semi-circular concentric zones on the basis of ownership of resources and ability to pay. It clearly shows how money flows from inner-city to outward zones towards affluent urban sections. He formulated three semi-circular concentric zones as follows:

- 1) The city of death
- 2) The city of need
- 3) The city of superfluity.

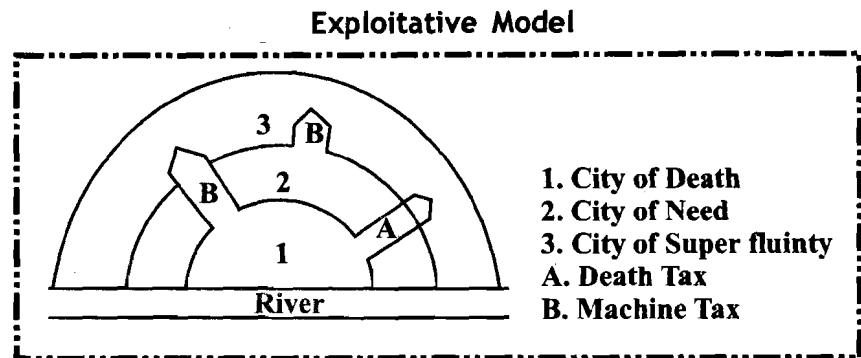


Figure 6.4

The city of death is the inner-city characterized by a centre of exploitation by the rest of the two areas. People living in this zone are poor who are exploited through paying two different taxes—Machine tax and Death tax (Figure-6.4). Machine tax is paid through wage payments below the workers worth. Hence, if workers are paid less than their work output surplus exaction is viewed as machine tax. The poor residents in this area also pay a death tax in terms of paying higher price of food, housing, other consumer items and services. Not only this, this area suffers additionally from a lack of city services and civic amenities due to congestion and encroachment and has status of a slum.

The city of need occupies an intermediate location between the city of death and the city of superfluity. Like working class zone in Burgess' concentric model, the blue-collar working class inhabits 'the city of need'. William Bungee characterised these inhabitants as the hard hats, the solid union members of middle class America. This area is also exploited by the suburban based business interests and politicians. Like inner city residents, they also pay the 'machine tax' but are relieved from the 'death tax'.

The third and the outermost ring is called 'the city of superfluity'. This area is a home of the elite entrepreneurs, managers and higher-class people, who live a leisured life and indulge in mass consumption at the cost of the other two cities. According to this model, the population of this outer zone city is small in number but the very affluent group which reside here controls the allocation of resources and this play a decisive role in governance.

Therefore, the exploitative model provides the picture of exploitation and problems of inner-city dynamics. The poor people of inner-city have less

opportunity of jobs, enhancement through skill development and training due to perpetual system of exploitation. They pay more tax in various forms that reduces their chances of growth or development.

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Other Models

The above described models of city's spatial structure of economic activities and residential areas are some of the major studies of internal structure of city. One such study made by Mann (1965), who tried to apply Burgess' concentric zone and Hoyt's sector model to three industrial towns in England-Huddersfield, Nottingham and Sheffield. He assumed that because the prevailing wind direction from the southwest, the higher-class housing would be in the southwestern part of the city, while industries would be located in the north east of the CBD. Some significant conclusion of his study are as follows:

- The higher-class residences are not concentric of CBD but are located on one side of a few pockets of the city.
- Like Sector model, he observed that industries are found in sectors along main lines of communication.
- Further he called the lower class housings area 'the zone of older housing' whereas area of higher-class housings are relatively modern houses and situated away from industries and smoke.
- Unlike Burgess and Hoyt, he also describes the role of local governance in slum clearance and gentrification. As a result of this the emergence of large council estates protect the interest of working class/ low income group in the city.

Mann's study is different from the existing models, as his observation is based on European city which has its own historicity and social structure which is different from American cities. Secondly, he suggests that even through a small sample we can generalize the fact. His model shows that a variety of approaches are possible to the study of urban structures.

6.7 Symbolic Approach

Another model to study urban structures is the symbolic approach. It developed as a corrective to the ecological and functional approach to the study of the internal structure of cities. Walter Firey (1945) first contributed to this approach and analysed the land uses in Central Boston. He has highlighted the importance of symbolism as an ecological variable which emphasized the independent role of social symbolism as a major force in shaping the internal structure of cities, particularly with respect to historically meaningful public buildings and open spaces. Later on, major developments in this approach occurred with Wheatley's two studies of Asian cities - the Chinese Cities (1971) and the Japanese Cities (1978).

According to him, ancient cities developed in terms of their religious or cosmological meanings. The site of the city or particular structure has its own symbolic meanings and is regarded as the centre of the world. The alignment of the walls, gates, roads and other designs often reflects its context. The structure consists of temples,

power. Similarly, modern skyscrapers have become as much a symbol of corporate activities as a place of work in modern cities.

6.8 Conclusion

All the above four theories of city structure and growth pattern developed during the early twentieth century and is based on the study of the American urban society. The major factor of changes in city structure and organisation due to population growth, changing technology, growing economic activities, transportation etc. All these models assume that as cities grow, the residential areas move outwardly and the concentration of population in suburbs increases invariably. Both Concentric and Sectors model are similar in this assumption. However, vary in spatial distribution. Harris and Ullaman in Multiple Nuclei theory also explain this proposition through the concept of 'minicentre', which also changes with time. They reject the over emphasis on one commercial centre.

They also agreed on differential residential patterns based on their class. The first three theories explicitly locate lower, middle and higher classes residential areas. Similarly, exploitative model describes three different cities in semicircular pattern representing three different classes and levels of exploitation. The residential pattern is based on land value or rent but depicts the kind of social hierarchy and mutual relationship of city. Hence, all these cities structure and growth explains the rigid social segregation found in different cities.

Recent changes and transformations in urban structure in the above theories have altered the basic assumptions and expected outcomes of these classical models. These changes include the impact of the automobile, population growth after the Second World War, housing construction, shopping facilities, social and industrial mobility. Hoyt in his review also observed that the apparent rigidity of older patterns in the city has been substantially reduced by increases in city size, personal income, and mobility. Brian Berry synthesizes the transformation in three aspects of research to understand the internal structure of the city. These are urban population densities, the socio-economic pattern of neighbourhood, and the changing pattern of retail and service business.

6.9 Further Reading

Max Weber, (1905). "The City", Translated and edited by Don Martindale and Gertrud Neuwirth, New York, Free Press.

Burgess, Ernest W., (1925). "The Growth Of The City: An introduction to a Research Project", In Robert E. Park and Ernest W. Burgess (eds). The City, pp. 47-62 Chicago: University of Chicago Press.