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RELEVANCE OF THE CHICAGO CLASSICAL MODELS IN URBAN MORPHOLOGY OF THE GURUGRAM-MANESAR URBAN COMPLEX, INDIA

Preeti Devi [1]*, Apala Saha [2]

[1] Department of Geography, Faculty of Arts, Banaras Hindu University, Varanasi - 221005
[2] Geography Section, Mahila Mahavidyalaya, Banaras Hindu University, Varanasi - 221005

*Corresponding author email**:** preetidevi12298@gmail.com

Abstract

The urbanisation rate in Gurugram has dramatically increased over the decades. The expansion of Gurugram fits well with the Chicago School's traditional urban models. Gurugram's urban morphology has been transformed significantly, which can be observed in various phases. This study incorporates data from several sources to map the morphological changes of the city. The study is based on a descriptive and evidence-based investigation of the urban morphological transformation in Gurugram within the general theoretical framework of the classical models of the Chicago School. In Gurugram, the concentric nature of urban expansion stayed intact until 2000, and thereafter, these concentric belts started to deform. Since then, the expansion of Gurugram began to be observed in sectors, within which some patches started emerging as new urban centers. This study intends to predict the morphological patterns of the city based on the classical urban models and current urban processes.

Keywords: Urban Morphology, Chicago School, Gurugram

1. Introduction

Urban morphology refers to 'urban form'; it explains how cities physically evolve over time, and how the various elements of the urban fabric come to exist, interact, and transform. It is noted that urban morphology is multidisciplinary and multi-scalar. Geography, history, architecture, urban studies, economics, and other disciplines contribute theoretically and empirically to understanding urban forms. Urban morphology is instrumental in addressing perpetually relevant issues such as growth, planning, urbanisation, and related issues (Chiaradia, 2019).

The Chicago School of Sociology has contributed significantly to understanding urban morphology. In their attempt to understand urban spaces and the spatiality of social processes, the Chicago School has put forth widely acknowledged and studied models of city shapes and city spaces (Knox & Pinch, 2010). Any research undertaken in the field of urban morphology has found invariable references to the Chicago School models. However, owing to their American bias, deterministic perspective, and congruence with

laws of the natural sciences, these models have also received significant criticism through the behavioral, welfare, and post-modern paradigms in social sciences.

Nevertheless, during the recent decades, increasing relevance has been identified with cities of developing economies like Beijing, where significant road networks, ring roads, and radial outers form a complex network and is thus a good example of the concentric zone theory by Ernst Burgess (1925) (Tian *et al.,* 2010). Mapping land use through remote sensing and GIS, China's Xinjiang City exhibits how the expansion through time can be delineated into concentric zones (Seifolddini & Mansourian, 2014). The Nigerian city of Ibadan can be separated into Old Ibadan and New Ibadan through various eras. In the early 20th century, New Ibadan City grew in concentric semicircular zones, with commercial areas to the north, west, and east (Splansky, 1966). The city of Benin in Nigeria's urban expansion does not adhere to any Chicago classical theory. However, it simultaneously exhibits the characteristics of concentric zone theory, sector model, and multi-nuclei (Odjugo et al. 172).

The zones of land use that Burgess had created are evident in Bangalore City, an Indian metropolis, which has grown spatially in a concentric manner. This city's transport infrastructure also follows a radial plan (Sen, 2013). Based on functional land use and morphogenetic type of plans, five separate geographical zones were identified: Inner, Inner fringe belt, Intermediate, Outer, and Suburban Zone in Ahmedabad (Jha *et al.,* 2019).

In this study, an attempt has therefore been made to re-acknowledge the relevance of these almost century-old models owing to their resemblances to urban expansions in developing economies like India. Gurugram, a post-global Indian city, has experienced fairly steady development, and there has been a noticeable rise in factors and phenomena that sum up to what is broadly identified as 'urbanisation'. Its physical growth may be separated into two primary components: Old Gurugram and New Gurugram, both of which have developed rather quickly. The Gurugram-Manesar Urban Complex has come to exist due to the expansion and emergence of New Gurugram and its consequent intrusion into Manesar. This brand-new, growing metropolis is built on the outcomes of liberalisation, globalisation, industrialisation, and the emergence of the corporate sector. Although the city is newly developing within a developing nation, its developmental pace and resultant first-world-looking spaces are comparable to Western cities, and this is possibly an important reason for its physical formations and transformations being effectively explained by models of the Chicago School. Thus, the primary objective of the study is to understand the developing morphology of the Gurugram-Manesar Urban Complex and explain the same using the classical models of the Chicago School.

2. Theoretical Framework: The Chicago School

Rapid population growth, immigration, and industrialisation in the first decades of the 20th century significantly impacted the structure and operation of American cities. The term 'Chicago School' describes a particular group of sociologists who worked at the University of Chicago in the early 20th century. The main idea of the Chicago School was to

study urban and social phenomena using the human ecological approach based on naturalistic observations (Sibley, 1990). The eminent scholars (Figure 1) from the school built a strong foundation for urban research. Two distinct eras can be distinguished within the Chicago School. Early Chicago school refers to the years between 1894 and 1940, whilst Post-World War II Chicago school is the years between 1945 and 1960 (Hart, 2010) (Figure 2).

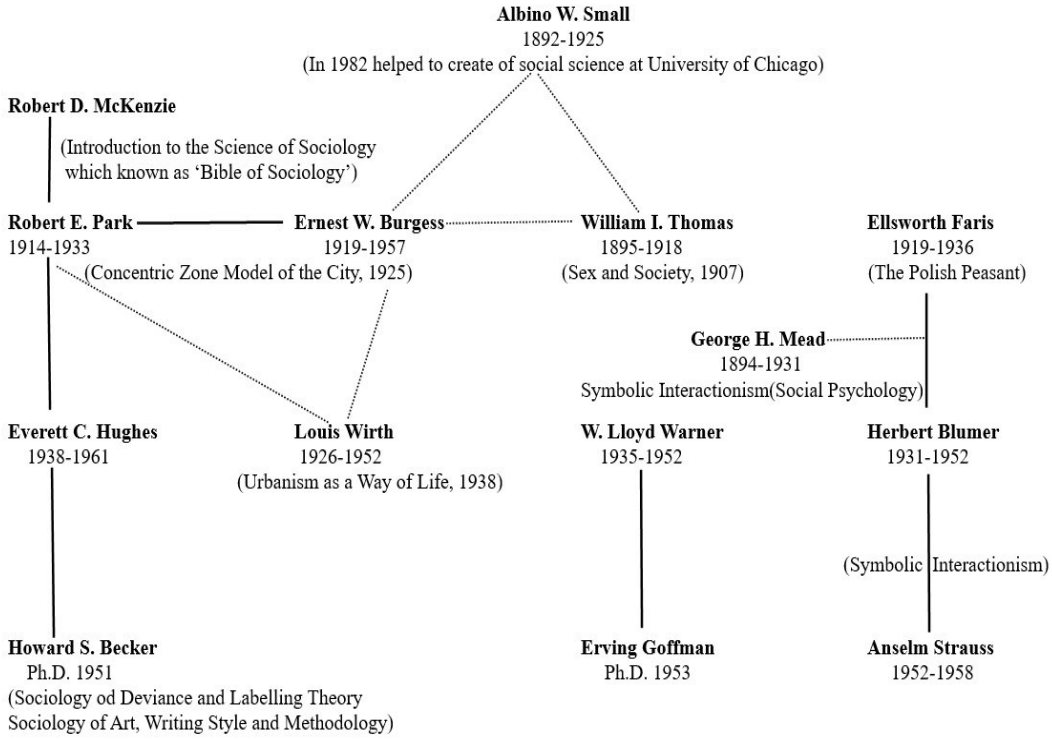

Figure 1: The relationships between the important researchers from the Chicago School are depicted in the diagram. A straight line denotes relationships between advisors and students, whereas a dotted line denotes additional potent connections (Wayne & Ackerman, 1996)

The Chicago School's academics were the first to present an urban growth model and to divide the city into various zones according to a few predetermined criteria. After conducting a thorough analysis of the city of Chicago, Ernest Burgess proposed the Concentric Zone Model in 1925. The city's Central Business District (CBD), Zone of Transition, Zone of Independent Workers Homes, Zone of Better Residences, and Commuter's Zone are the five distinct zones identified by the model. Hoyt (1939) developed the Sector Theory after researching 142 American cities. Six zones of a city were defined under the Multiple Nuclei Theory proposed by Harris & Ullman (1945). In 1964, Vance proposed the Urban Realm paradigm and expanded the Multiple Nuclei paradigm. He

suggested four domains: the CBD, the New Downtown, the Commercial Centers, and the Suburban Downtown. A model provided by Mann (1965) identifies four distinct zones in a city. According to White (1987), modification of the Burgess Model, urban centers can be classified into the core, zone of stagnation, pockets of poverty and minorities, elite enclaves, the diffused middle class, industrial anchors, epicenters, and corridors.

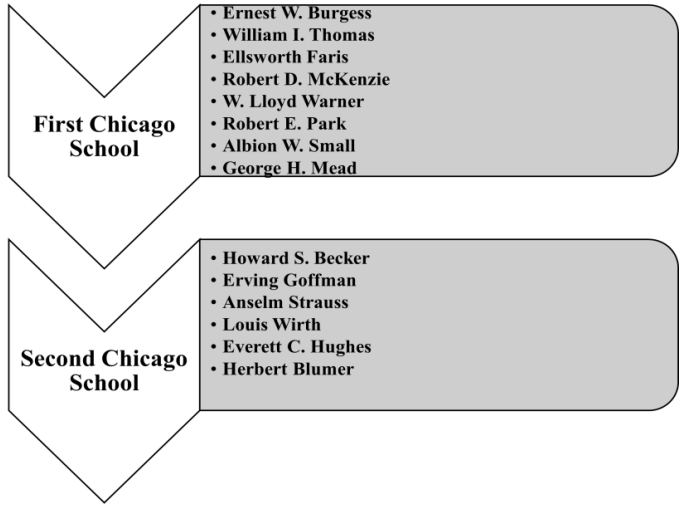

Figure 2: List of Scholars in the First and Second Schools of Chicago (Lutters & Ackerman, 1996)

The Chicago study gained significant depth and richness from its anthropological proximity. Later on, the school's most outstanding liability was its over-dependence on qualitative techniques at the expense of sound quantitative metrics (Lutters & Ackerman, 1996). The Chicago School's impact years lasted from the beginning of the twentieth century to the late 1950s, with its peak years occurring between the First World War and the conclusion of the Great Depression, both of which saw significant growth and change. The increasing population transfer from the rural, homogeneous, agrarian community to the large, heterogeneous, industrial city was one notable trend during this time. At this time, Chicago became an 'instant' city, one of many American cities undergoing rapid growth.

3. Database and Methods

The Chicago Classical Models have been used to analyze the changes in morphology, as these models are reflected in morphological changes observed within the Gurugram-Manesar Urban Complex (GMUC). The study included both descriptive and evidence-based analysis. Using descriptive analysis, this study, based on the socioeconomic conditions of the cities, which were observed in the Chicago School models, as well as the commonalities among the numerous studies of GMUC, has been analyzed (Elets, 2019). The Central Business District (CBD) of Gurugram has been determined

based on the similarity of characteristics found in a CBD with published research papers (Murphy & Vance, 1954). Google Earth imagery has been used in this research paper to understand the process of morphological changes through urban built-up areas in the GMUC. The morphological changes have been analysed from 1985 to 2000 and from 2000 to 2021, when the National Capital Region (NCR) planning was declared.

4. Results and Discussion

4.1 Changing urban morphology of Gurugram

A city's good and seamless development is determined by its organic and orderly spatial expansions. However, some Indian cities have developed quickly in response to the globalisation policies, causing them to reach their peak at unexpected times. This is best illustrated by Gurugram, whose development peaked as a result of the National Capital Region Policy and rising foreign investment. Thus, the urban morphology of Gurugram has undergone a fast but orderly transformation.

4.2 Phase-1 (1985-2000): Concentric Zones

In his theory, Burgess believed that five zones make up any urban ecology; thus, he developed the concentric zone plan, which was undoubtedly not intended to be exclusive to Chicago (Figure 3). Concentric rings of growth became visible in Gurugram City between the years 1980 and 2000. Delhi Lease and Finance (DLF) and Ansal Properties began purchasing land in Gurugram at this time and began constructing large-scale private enclaves. DLF began acquiring property for commercial use in addition to residential areas, providing incentives for the city to grow outwardly. These observations are similar to the quick expansion of Chicago's industries and retail sectors in the early 20th century (William, 1992).

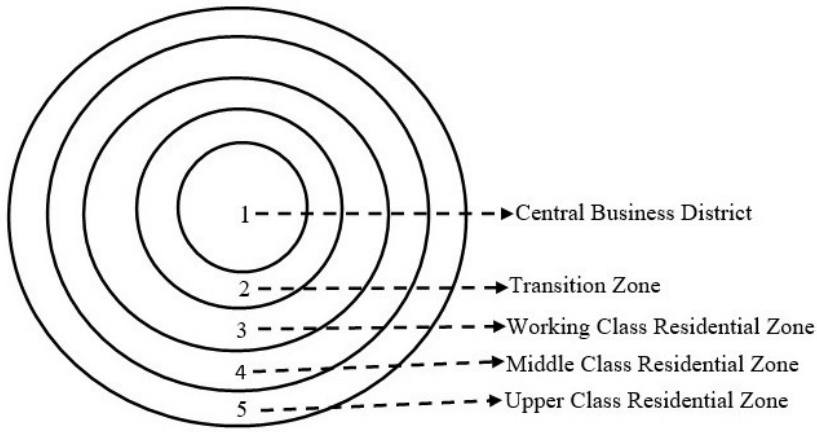

Figure 3: Concentric Rings are given by Park & Burgess (1925)

During the initial phase, Gurugram city was transformed into a suburb of Delhi, with manufacturing and residential areas (Bedi & Mahavir, 2022). The city's growth was moderate during this time. Businesses significantly influenced the growth of Gurugram in the auto parts, telecommunications, and clothing industries. Honda and Hero Motors established a motorbike manufacturing facility here in 1980. Maruti-Suzuki Automobile Plant, an Indo-Japanese joint venture, was also founded in Gurugram in 1982, along with its subsidiary factories. General Electric also began working with Indian businesses in 1989. During this phase, India started pursuing a liberalisation strategy in 1991, in which private businesses were attracted by liberalisation.

In 1985, Gurugram expanded around Sadar Bazar. During the period, it served as the primary trading hub, resulting in the concretisation of concentric zonation. Until 2000, Gurugram only experienced concentric growth, which is illustrated in Figure 4. The construction of Palam Vihar was just starting at the time, whereas the DLF Phase had grown to a vast area. Sikandarpur, the urban transmission was being done at the time. As seen in the concentric zone model, till 1985-2000, Sadar Bazar was a single urban market in Gurugram with further urban expansion around it. This is similar to the post-World War I immigration from non-European regions to Chicago (Holli & Jones, 1995). The city was also in its early stages of growth at the time. Consequently, new luxurious high-rise apartments were built, attracting some of the wealthiest residents. Simultaneously, Chicago was experiencing a high level of crime and violence at this time, and there was an increasing number of domestic homicides. Additionally, some family homicides and murders of immigrants were observed at a higher level (Adler, 2003), causing significant segregation within the city. Observing these characteristics, sociologist Burgess developed his theory of concentric zonation by analyzing Chicago's social urban structure and the circumstances present at that time.

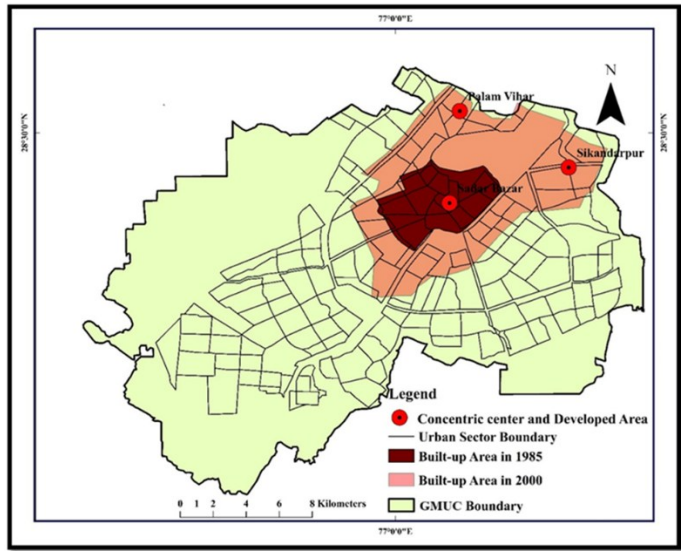

Figure 4: Concentric Expansion of Gurugram City (1985-2000)

4.3 Phase-2 (2000 to present): Sectors

In Gurugram, the concentric nature of urban expansion stayed intact until 2000, and thereafter, these concentric belts started to deform. Since then, the expansion of Gurugram began to be observed in sectors, within which some patches started emerging as new urban centers, similar to Homer Hoyt's (1939) sector model (Figure 5).

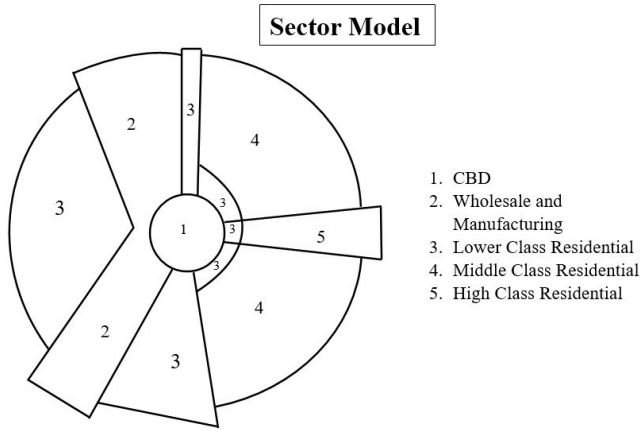

Figure 5: Graphical Representation of Sector Model by Hoyt (1939)

Chicago experienced rapid growth during the 20th century. In 1925, 700,000 inhabitants were added, with roughly 5,000 apartment structures and 9,400 single-family homes constructed (Beauregard, 2016). Hoyt endured significant losses due to the 1929 stock market crash in Chicago, which was a significant economic event at that time. Hoyt examined a connection between business cycles and real estate. At that time, Burgess's concentric ring model of Chicago was highly accepted, but because of the city's then-current development and strategic location for investors, a form of land that would provide greater profit and lower risk to investors, developers, banks, and real estate firms was desired. As these processes expanded and became more prominent, Hoyt created a method for it. This gave birth to the sector model in urban morphology.

Similarly, General Electronics established call centers in Gurugram in 1997. Business process outsourcing firms were founded, including American Express, EXL, IBM, Microsoft, Ericsson, and others (Elets, 2019). Multi-national businesses like Siemens, Coca-Cola, Pepsi, Hyundai, and Honda were established. National Highways have significantly influenced the construction of new nuclei in Gurugram, and as a result, urban expansions have happened towards the south and southwest. The National Highway 48 (NH 48) runs from Delhi to Gurugram in the southwest and has been built as an Expressway up to Kherki Daula. When NH 48 was built, Manesar (a satellite town of

Gurugram till then) ceased to exist as a separate town and amalgamated with Gurugram, becoming the Gurugram-Manesar Urban Complex. IMT (Industrial Model Township) Manesar emerged as an alternate nucleus in Gurugram's urban expansion. Eastern Gurugram experienced urban sprawl when South City and DLF were built (Yadav and Sengupta, 2021). To the southeast of here, Wazirabad and adjacent villages have undergone urbanisation. Gurugram has grown from Kherki Daula through Panchgaon to IMT Manesar in the southwest.

Gurugram's growth has been further accelerated by the construction of the Delhi Metro and its proximity to the Indira Gandhi International Airport. This way, industrial and infrastructural development became key reasons for developing sectors (Figure 6).

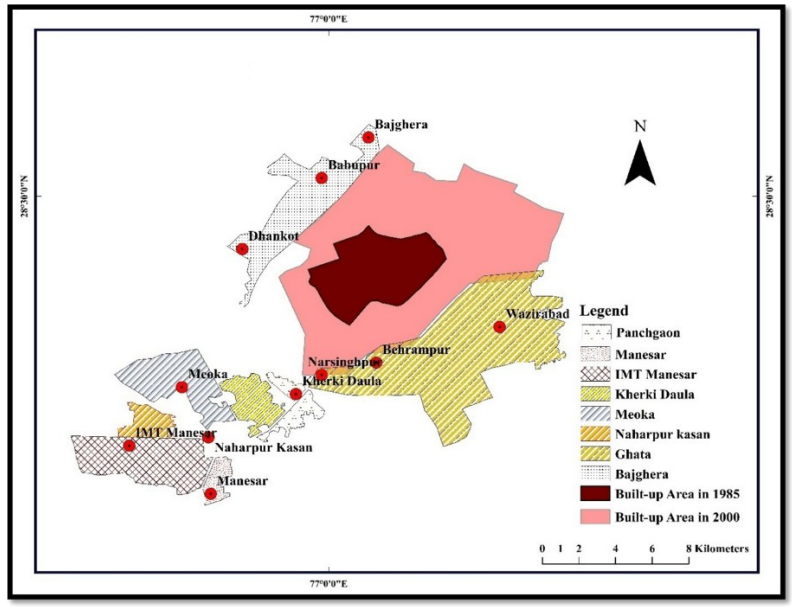

Figure 6: Urban Expansion of Gurugram-Manesar Urban Complex, 2000-2021

According to Hoyt (1939), as a city grows, its urban area begins to expand, and activities that once took place within the city now extend outside of it. In Gurugram, industries were established along important railroads and roadsides in the South, Southwest, and Northwest. With the adoption of the National Capital Region Policy, liberalization, and globalisation, extensive agricultural land was acquired in and around Gurugram, which eventually led to the expansion of core-like activities and lifestyle, developing sectors rather than zones, for reasons as explained by Hoyt for Chicago.

4.4 Present scenario of Gurugram city's development

Unlike Burgess and Hoyt's models, horizontal expansion did not continue organically and singularly in Gurugram because of its location in the Aravalli foothills. In

addition, privatised real estate markets, extremely uneven geographical development, farmer protests, and so on, make vertical expansion a simultaneous process in the city.

Gurugram's morphological structure shows horizontal expansion along National Highway 48, which is simultaneously vertical (Figure 7). Vertical cities are common and desired in the twenty-first century. It is thought to be the finest method for creating master plans for the growth of new cities and skyscrapers (Novikov & Gimazutdinova, 2021). Liberal economic policies and globalisation have significantly influenced the swift development of Gurugram and its changing urban morphology in the last few decades. In recent years, Gurugram has been developed under a predefined plan in which the development policies of the National Capital Region (NCR), along with Udyog Vihar and IMT Manesar, developed by HSIIDC, have given a new shape to the development of the city. The Master Plan-2031 for the city is also prepared by the state government, considering the city's prospects.

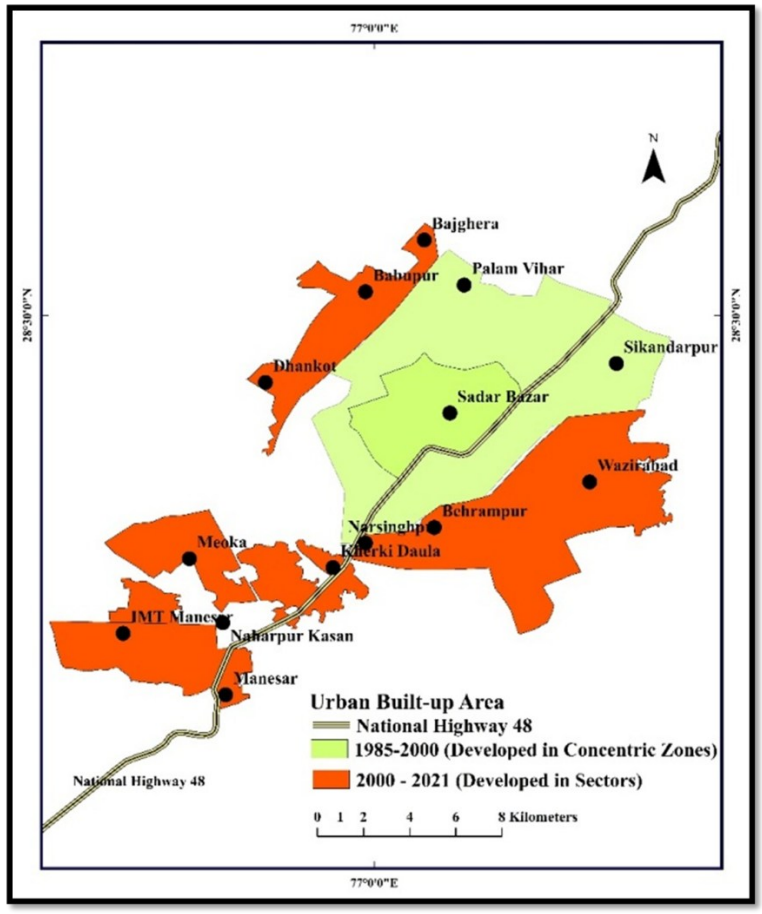

Figure 7: Morphological Changes and Expansion of Gurugram-Manesar Urban Complex (1985-2021)

As high-resolution images have not been available for some areas of GMUC for certain years, the accuracy of built-up delineation, especially in 1985, is limited.

Conclusion

There have been many morphological changes in the development of Gurugram from 1985 to 2021, similar to the models of the Chicago Schools. Gurugram expanded like Chicago in its initial phase, but the physical structure and various government policies affected its development. The recent industrial development of IMT Manesar and its connectivity with National Highway 48 has given a vertical form to the urban expansion of Gurugram, and it is emerging as a new center of urban attraction. Metro and Rapid Metro projects have provided rapid growth to the city, which has led to the expansion of real estate, top retailers, and high-rise buildings. Aravalli Hills, National Park, lakes, agricultural land, greenfield areas, government policies and plans, and transportation networks have all played an important role in the urban morphological structure of Gurugram. The problems of land scarcity, ecological issues, such as degradation of wetlands, illegal tree cutting, illegal construction, and lack of infrastructure owing to population expansions, are the major developmental concerns of the city.

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