CHAPTER 1
INTRODUCTION

The city represents one of the oldest, fundamental and perhaps the most momentous spatial manifestations of civilization. The rise of the urban form of settlement has been associated with such characteristics as social stratification, division and specialization of land and labour, the creation of political and religious hierarchies, development of the written language and the creation of monumental and ceremonial structures. The city, therefore, has historically symbolized a transformation of social, political, economic and religious institutions, along with a cumulative growth in technology, resulting in a profound increase in the scale and complexity of society. From being small, compact centres of protection, royalty and priestly power, modern cities have emerged as large, dispersed, multifunctional nodes. In addition, the present technologies of instant communication, message storage and rapid transportation have widened the scope of human activities and interaction, creating the global city.

Town Planning has existed ever since towns emerged as a major settlement form, functioning as nodes for the socio-economic and spatial organization of regions. At its core have been such primary concerns as safety, convenience, efficiency and pleasure in urban living. Town plans and planning practices, down through history, have been spatial expressions of the prevalent political ideologies, social values, economy and technology.

The existence of the first planned towns can be traced to the ancient riverine civilizations of Mesopotamia, Egypt, China and Persia. Excavations of towns in these civilizations revealed an 'orderly disposition of compact buildings along straight footways' (1). This was essentially the grid iron pattern as we know it today. In these ancient cities, the grid iron pattern had a religious connotation and was a spatial expression of the harmony between earthly and celestial forces (2). There were some attempts to legalise town plans and maintain order, for example, Hammurabi's Laws of Justice, one of which provided for harsh punishment to irresponsible builders (3). The classical city of the Greeks and Romans was synonymous with civilization as opposed to barbarity and chaos (4). Most of the towns were laid out on the grid iron pattern, a layout
credited to Hippodamus, who formalized it during an era of active town establishment. The outstanding example is that of Miletus (5). While the Greeks formalized many concepts of town planning, the Romans are credited with the development of a proper water supply and drainage system, and the enactment of laws for creating urban order, for example, laws that specified the widths of streets, forbade encroachments and restricted the height of tenements (6). More importantly, the political stability and military security associated with the Roman Empire resulted in widespread diffusion of these concepts through the vast expanse of the Roman Empire, and in the coming up of well planned and visually spectacular cities in many parts of Europe and the Mediterranean (7).

Due to the turmoil and political insecurity following the fall of the Roman Empire, a planned medieval town was the exception rather than the rule. Most medieval towns were heavily fortified and grew within the confines of the city walls. Consequently, with the passage of time, these towns became characterized by congestion, squalor and pestilence. The few planned medieval towns were established by kings and nobles on new sites to defend newly acquired territories and attract settlers and traders. These towns, variously called newton, novus burgus, nova villa etc. are more popularly known as Bastides (8). The Bastide towns had a rectangular layout, with the church and market place forming the nucleus.

During the Renaissance, town planning gained importance due to the resurgence of the institution of monarchy. The need for stronger fortifications and the use of the horse-drawn carriage resulted in a change in street widths and the laying out of formal gardens and avenues in the existing towns. Thus came into existence piazzas, avenues and squares for which cities such as Karlsruhe, Florence and Versailles are famous. However, behind these facades of piazzas and avenues, the congested urban populace continued to live as meanly as before. Although the Renaissance city lacked sanitation and suffered frequent epidemics, this period saw the publication of a number of books detailing the ideal layout of cities, for example, Thomas Moore’s Utopia in 1516 and Tommaso Campanella’s City of the Sun in 1623. Filarete’s eight pointed star design for an ideal city, Sforzinda, inspired the later day radial concentric pattern (9).

The rise of the nation states in the 14th and 15th centuries, and the establishment of the tradition of explorations from the 15th century onwards expanded the limits of the
known world. The overseas colonization and conquests resulted in the establishment of new towns and cities based on existing European town layouts, for example, Philadelphia (grid iron, 1682 A.D.) and Washington D.C. (radial, 1791 A.D.). The subsequent expansion in trade and commerce necessitated an enlargement of trading and transportation facilities in the existing European cities, resulting in the development of the mercantile city in Europe, usually centered around the port (10).

The Industrial Revolution in the 19th century is commonly accepted as the main force in initiating the Modern Period of urban growth and expansion. Aided by developments in transport and communication, and the use of inanimate sources of energy in both agriculture and industry, cities expanded rapidly, and in most cases, haphazardly and bereft of any planning norms. While the population increased at a tremendous pace, the existing urban facilities proved grossly inadequate, resulting in an unprecedented deterioration in the urban environment.

The deplorable residential and working conditions in the industrial city evoked a reaction from certain enlightened individuals in the 19th century. For example, Robert Owen and Fourier, who outlined plans for ideal cities (11). At the same time, certain industrial philanthropists like Titus Salt, George Cadbury and the Lever brothers established model industrial townships – Saltaire in 1852, Bourneville in 1879, and Port Sunlight in 1886 respectively. These towns were based on three principles, moving factories to the countryside, providing decent housing for the workers, and separating residential quarters and work areas (12). Such efforts were, however, exceptions to the slum-like conditions in most towns, and legislation, such as the Municipal Reform Act of 1835 and the Public Health Acts of 1845 and 1875, proved largely ineffective.

Perhaps the most important planning effort came towards the turn of the century in the form of the Garden City Concept (13). This concept was to tremendously influence all future town planning efforts, including Patrick Geddes' Regional Plans and Abercrombie's Greater London Plan, ultimately resulting in the New Towns Programme. The Garden City was proposed as a self-contained, low density settlement, having a population of nearly 32,000 persons. It was to be characterized by a balance of social, economic and professional population groups, large proportions of open space and green belts, and religious, social and educational institutions. The Garden City, thus, sought to
combine the best features of town and country life. These concepts were applied in Letchworth (1903 A.D.) and Welwyn (1919 A.D.), the two Garden Cities of England (14). Following the translation of Howard's work, Garden cities were built in many parts of Europe also, for example, Floreal in Belgium (1925 A.D.) and Schmittener (1913 A.D.) in Germany. Among other noteworthy concepts can be mentioned the Linear City concept proposed by Soria y Mata in 1882. This was based on the principle of town extension along the main lines of transport, and was echoed in Tony Garnier's Cite Industrielle in 1904. An Austrian, Camillo Sitte, emphasized the aesthetic features of towns in line with the visual quality of Roman, Medieval and Renaissance towns. His ideas were utilized in the plans of Salzburg and Vienna (15).

During the present century the Neighbourhood Unit, Zoning, Suburban Development, the International Style, the New Towns Programme and Post Modernism have dominated town planning thought and practice. Among these, the Neighbourhood Concept, promoted by Clarence Perry, has exercised a profound influence on the design of residential areas (16). It defines a neighbourhood as an integrated planned urban area, related to the larger community of which it is a part, and consisting of residential districts, schools, shopping facilities, religious buildings, open spaces and some service industry (17). The six basic principles governing the design of the neighbourhood unit are (a) the size of the unit would be a population whose numbers can support one elementary school; (b) local shops would be located on the edge of the unit, at traffic junctions, and adjacent to shops in other units; (c) ample open space would comprise small parks and recreation space; (d) its boundaries would be defined by arterial roads; (e) institutional facilities like schools would be grouped around a central point, and (f) the internal roads would be such as to discourage through traffic and would be proportion 1 to their anticipated load (18). The neighbourhood unit was first used in Radburn, a town developed by Clarence Stein in New Jersey. Since then, the neighbourhood unit, in its original and modified form, has been widely used, particularly in suburban development, and as the basic planning unit in the New Towns.

Zoning or the segregation of land uses by function is yet another concept that has come to dominate current urban planning. Its origin lies in the chaotic growth of cities during the 19th century. Zoning has been seen as an important tool for restoring
order to the urban pattern. The first comprehensive zoning ordinance was enacted in 1916 in New York (19). The objective of zoning is to provide appropriate locations for all essential land uses and buildings. Zoning is a major component of both the New Towns Programme and the International style.

Suburban development is a centuries-old concept. Whenever safety was assured, the affluent tended to move outwards, the wealthy Greek and Roman, the medieval aristocrat and count, all had villas in the countryside and by the sea (20). At present, the availability of cheap and rapid means of transport is the primary factor encouraging suburban development throughout the world. Suburban settlements are not self-contained and form an integral part of a larger urban settlement with which they are functionally associated.

The International Style influenced urban planning and architecture from the mid-1920s to the 1960s. Its strongest and most famous proponents were Le Corbusier, Walter Gropius and Mies Van der Rohe. They rejected the then growing tendency to solve the problems of urban areas by a return to the countryside, as advocated by the Garden City Movement. Instead, they proposed radical solutions based on technology and mechanization. The International Style plans were characterized by vertical development, zoning, open spaces, and the use of concrete, steel and glass. The best representative design of the International Style was Corbusier's apartment block in Marseille called the Unite d'Habitation, constructed between 1946 and 1952. It comprised eighteen floors housing 1800 residents, with shops and a school inside the building, and gardens and an open air theatre on the roof. A large number of public housing projects in Europe and America in the post Second World War reconstruction period used these bold new concepts. The International Style promoted two influential forums for architects and planners, the MARS (Modern Architects Research Society) and the CIAM (International Congress of Modern Architects).

The New Towns Programme came about during the latter half of this century, following large-scale urban reconstruction and development in the wake of the Second World War. It began in Britain with the New Towns Act of 1946, which gave the programme a legal sanctity. As many as 21 New Towns were developed in Britain between 1946 and 1968. Under this programme, towns / settlements were established as
relatively independent units located beyond the existing city limits. They were conceived as complete, self-contained communities, having work and residential areas, infrastructure for urban amenities and services, and green belts. The New Towns were specifically planned for motor traffic. Further, local employment opportunities within the New Towns sought to reduce traffic congestion and journey to work. Zoning and neighbourhood units were the two governing principles in the layout of these towns. The concept of New Towns was extensively applied in USA, France, Netherlands, Sweden, Finland, Hungary, Poland, Israel and the erstwhile USSR. Variations of the New Towns, in terms of their economic independence or self-containment, include new communities, planned urban developments, company towns, regional growth centres, satellite towns etc. (21).

The concept of New Cities is an important variation of the New Towns concept. The difference between the two is of scale and role in the regional economy. New cities, most prominently include capital cities, established to meet national requirements (22).

Much of current thinking in urban planning and architecture is guided by Post Modernism, which developed as a reaction to the Modern or International Movement. Two features characterize post-modern planning and architecture, contextualism, which recognizes the individual building as a part of the larger whole, and allusionism, which uses history, culture, engineering and behavioural sciences to render buildings more familiar and meaningful to the users (23). While the International Style advocated universal solutions, Post Modernism seeks local solutions to particular problems. It thus, emphasizes the human scale, which is also reflected in such elements as mixed landuse instead of zoning. Further, contemporary urban planning focuses on urban renewal and rehabilitation rather than the establishment of New Towns per se.

TOWN PLANNING IN INDIA

Throughout the centuries that have passed between Harappa and Chandigarh, there has been an almost continuous evolution of town planning thought in India. The earliest examples of city planning are provided by the ruins of Harappa, Mohenjodaro, Kalibangan, Lothal and other such cities of the Indus Valley Civilization. The later Aryans adopted the concept of town planning as a socio-economic activity. This
coincided with a change in economy, from an agrarian one to a mixed one, as evidenced in the emergence and growth of port towns (pattanas), market towns (nigamas), fort towns (durgas) and suburban towns (saktra nagarakas). Precepts governing town planning (Vastu Shastra) were detailed in such treatises as Kautilya's Artha Shastra, Mansara's Shilpa Shastra and Vedic, Jain and Buddhist canonical texts. These texts gave details of the factors involved in the siting of towns and buildings, different types of town plans and roads suitable for various purposes (24). Town planning practices in ancient India were guided by two aspects, cosmic and mechanical. Both social, economic and religious hierarchies as well as functional requirements determined the location of various classes of people and functions in a town. Thus, the urban spatial organization was a corollary of the ritual – purity – pollution and functional interdependence requirements.

The Medieval Period in India (1000 to 1800 A.D.) was characterized by the dominating influence of Islam, the religion of the ruling class. The layout and structure of towns during this period was governed by such parameters as privacy, segregation by gender and Islamic laws governing property rights and individual behaviour, for example, shafa, mdaf-al-awlad (25). The medieval city developed as a characteristic assemblage of narrow, winding streets, blind alleys, and autonomous residential neighbourhoods (mohallas, paras, katras etc.), with a hierarchical differentiation of private and public space, houses with internal courtyards and an intensive use of land. So far as the establishment of new towns is concerned, a number of sites in and around Delhi were developed to function as capital towns during the Delhi Sultanate period (1206 to 1526 A.D.), for example, Siri, Tughlaqabad and Firozabad (26). In comparison, the main contribution of the Mughals (1526 to 1806 A.D.) towards town building was in the form of forts, public buildings and elaborate gardens built in the Indo-Sarcenic style. In addition, the capital cities of Fatehpur Sikri and Shahjahanabad were established by Akbar and Shah Jahan in 1571 and 1639 A.D. respectively. A number of towns also came up in different provinces. However, much importance does not appear to have been given to town planning, except the construction of individual features. An important city established during this period, and not related to Mughal-administered territories, was
Jaipur established by Swai Jai Singh in 1727 A.D. It was developed on the prastara layout pattern (27).

Town planning during the Colonial Period (1806 to 1947 A.D.) was geared to the specific requirements of the colonial community and influenced by three factors, technology, for example railways and road construction, the cultural requirements of residence, recreation and religion, and colonialism, as a form of political – economic organization (28). The development of the Civil Lines, Cantonments and Hill Stations during this period contained, among other things, the spatial manifestations of the norms of social and physical segregation of the colonial and the native communities. The Civil Lines was developed adjacent to all but the smallest urban centres for administrative purposes, Cantonments were constructed near major towns or on new sites for defence requirements, and nearly eighty Hill Stations were established on completely new sites to meet the cultural and social requirements of the colonial community. The most important town planning effort of this period relates to the construction and development of the new imperial capital at New Delhi (1911 A.D.). The three metropolises and Presidency towns of Madras (1639 A.D.), Bombay (1668 A.D.) and Calcutta (1690 A.D.) also came up during this period. Equally, if not more important, was the introduction of legislation and administrative structures, for example, the appointment of Sanitary Commissions for the three Presidencies of Madras, Bengal and Bombay in 1864 in line with the creation of the Royal Sanitary Commission by the British Parliament in 1859. The main task of the Sanitary Commissions was the improvement of sanitary conditions in the native towns.

In the early part of this century, Municipal Administration was introduced in most towns. Town planning was considered a municipal function, and remained, by and large, limited to such matters as sanitation, drinking water facilities and health measures during epidemics, plagues and other such endemic diseases. Improvement Trusts were later created as separate bodies to strengthen town improvement and expansion, and the provision of urban infrastructure. The Improvement Trusts were also empowered to raise funds for their programmes through special measures. The first such Trust to be constituted was in Bombay in 1898, to be soon followed by other presidencies and towns, for example, former Mysore state in 1903, Calcutta in 1911, former United Provinces in 1919, Punjab in 1922 and Delhi in 1937. The Improvement Trusts undertook road
construction, town improvement and housing schemes. Later, owing to administrative difficulties, the Trusts were either merged with Municipalities as in Bombay, or their scope was widened and Development Bodies were created, as in Delhi and Kanpur. The Town Planning Departments and legislation established in India were based on the British Housing and Town Planning Act of 1909, for example, the Madras Town Planning Act (1920), and the Travancore Planning Regulations of 1932 (29).

The early decades of this century also saw the arrival of a number of European and American town planners, foremost among whom was Patrick Geddes. Geddes emphasized the use of traditional Indian methods to solve the problems peculiar to Indian cities. While in India, he used his expertise to survey and plan nearly 50 cities. These included towns in the Madras Presidency between 1914 and 1915, Lucknow and Nagpur in 1917, Indore in 1918, Calcutta in 1919 and Patiala in 1922 (30).

The Town Planning process during the Post-Independence Period was influenced by the refugee crisis following the partition of the country, the Reorganization of States, industrial development under the Five Year Plans, and the rapid pace of urbanization. A large number of residential and industrial estates were planned within the existing towns, and nearly 118 new towns were planned on completely new sites. These new towns included:

(a) towns developed for the rehabilitation of displaced persons, for example, Faridabad (Haryana), Gandhidham (Gujarat) and Rajpura (Punjab),

(b) administrative capitals, for example, Bhubaneswar (Orissa), Chandigarh (Punjab) and Gandhinagar (Gujarat),

(c) steel towns, for example, Bokaro (Bihar), Bhillai (Madhya Pradesh) and Raurkela (Orissa),

(d) industrial townships, for example, Chittaranjan (West Bengal) and Nangal (Punjab),

(e) refinery towns, for example, Barauni (Bihar) and Haldia (West Bengal),

(f) company towns, for example, Neyveli (Tamil Nadu), and

(g) port towns, for example, Kandla (Gujarat) and Paradip (Orissa).

In the Indian context, the term ‘New Towns’ refers only to those urban settlements which have been built after Independence, are entirely new and planned.
urban communities, clearly detached from the commuter zone of existing cities, and expected to provide employment for their resident population (31). These towns differ from the western New Towns, which were planned as part of a deliberate urban settlement policy, and from towns developed during the Colonial Period, which were established to perform functions specific to the colonial cultural and political administrative system.

Planning legislation in post-Independent India had its origin in the Town Planning and Improvement Trust Acts enacted during the British period in various states. The recommendations of the Bhore Committee (1946) set the agenda for regional and urban planning at the national level. A model law for Town and Country Planning was prepared by the Institute of Town Planners of India in 1957. It was revised by the Town and Country Planning Organization in 1961 and approved in 1962. The Model Act provided, among other things, for the preparation of master plans. This Act was later supplemented by legislations providing firstly, for land acquisition for development and planning, and secondly, for the creation of development authorities to undertake large scale development of cities and provision of amenities and services.

Urban planning and development in India has been a priority area under the various Five Year Plans, particularly since the Third Plan (1961-66), which specifically emphasized the importance of the preparation of master plans for capital cities and fast growing cities, and regional plans for selected resource regions. Under subsequent plans, various agencies and schemes related to urban planning were formulated, for example, the Housing and Urban Development Corporation (HUDCO) in 1970, the City and Industrial Development Corporation (CIDCO) in 1970, the Environment Improvement of Urban Slums (EIUS) in 1977, the Integrated Development of Small and Medium Towns (IDSMT) in 1977, the National Capital Region Act (NCR) in 1985 and the Urban Basic Services Programme (UBS) in 1985. The National Commission on Urbanization which submitted its report in August 1988, covered a wide range of issues related to urban growth, planning and development, and the future implications of the trends of urbanization. Among its major recommendations were the identification of priority cities that were termed GEMS or Generators of Economic Momentum, the setting up of a National Urbanization Council, amendments in the Land Ceiling Act of 1976 and the
establishment of a three-tier management system for urban transport (32). The Nagarpalika Bill (1991) was yet another effort aimed at strengthening urban local bodies.

Under the Indian Constitution, Town and Country Planning is a state subject and the central government exercises a supervisory role. Town planning administration is organized at three levels, central, state and local level. At the central level, the Town and Country Planning Organization, established in 1955, is the apex body. It formulates policies and programmes for the national development plans, and assists state departments, government and non-government agencies on matters concerning urban and regional planning and development. Every state has a town planning department, and divisional town planning units in every district. Further, every town/city now, by definition, is required to have a municipal body to oversee such matters as health, sanitation, road construction etc. Most of the large cities and urban agglomerations also have development authorities.

THE STUDY TOWN

Chandigarh was conceived in 1951 and inaugurated in 1953 to function as the administrative capital of the Punjab state. The city is located at 30°5' N latitude and 75°48' E longitude, 266 kms north of New Delhi (Fig.1). The city has attracted worldwide attention mainly due to two factors, firstly, the symbolic significance of the city for a state which was rendered without a seat of administration in the wake of India’s Independence and Punjab’s Partition, and which aimed to provide a home to the displaced persons from Pakistan, and secondly, the association of the renowned architect and planner Le Corbusier with the planning of the city. In addition, Chandigarh represents a case in the planning of which a number of modern town planning concepts have been applied at a scale, perhaps, not attempted earlier, at least in India. The city was planned for a total population of five lakh persons, and was intended to be an example for the planning of other Indian cities in terms of provisions, amenities and services.

At present, Chandigarh is a triple administrative unit and is itself a Union Territory. In 1991, the Union Territory of Chandigarh had a population of 642,015 persons, while the city housed 510,565 persons.
In addition to a detailed study of Chandigarh, brief comparative references have also been made to two other modern planned state capitals, Bhubaneswar, the capital of Orissa, and Gandhinagar, the capital of Gujarat. In 1948, the capital of Orissa was shifted from Cuttack to Bhubaneswar. The city is located at 29° 14' N latitude and 85° 51' E longitude, adjacent to the ancient temple town of the same name, and 29 kms south of Cuttack. The first master plan of Bhubaneswar was prepared by Otto Koenigsberger in 1948. At present, Bhubaneswar is a tehsil headquarters in Khordha district of Orissa. In 1991, it had a population of 411,542 persons.

The state of Gujarat came into being in 1960 following the bifurcation of Bombay state. A new capital city was immediately planned and named after Mahatma Gandhi, hence the name Gandhinagar. The city is located at 23° 11' N latitude and 72° 36' E longitude, 24 kms north of Ahmadabad. In addition to being the state capital, it is the headquarters of a district of the same name. The city was planned for a population of three lakh persons. In 1991, Gandhinagar city had a population of 121,746 persons.

REVIEW OF LITERATURE

Town Planning has emerged as a major field of interest for professionals as well as academicians during the present century, owing to the rapid pace of urbanization, the large-scale destruction brought about by the Second World War, the independence of a large number of Developing Countries, and an overwhelming concern with the quality of urban living.

The most pervasive influence on modern town planning has been Ebenezer Howard's Garden City Movement, which had its origin in England at the turn of this century (33). An equally important influence was the ideas of Patrick Geddes (34). Geddes emphasized the need to plan wholistically and pioneered several surveys, which, in a modified form have become a standard procedure in the preparation of town plans (35). The need to plan for the future, keeping in view changing technologies, industrialization and the rapid growth of towns and cities has been a continuously recurring concern (36). Needless to say, the means to the same end have been rather different (37).
Since the mid-1960s, a number of basic yet comprehensive books on town planning, focusing on its methodology and concepts in a modern context, have been published (38). In addition, many studies, while highlighting similar issues, have traced the history and growth of the city in order to direct attention to the characteristics of the modern city (39).

Town planning received a sharp focus with the New Towns Movement in the Post World War II Period, which resulted in a number of studies elucidating the theory and principles of the Movement (40). The New Towns Movement soon spread from Britain to other countries and regions (41). The growth and impact of the New Towns formed important themes of research (42). The New Towns were based on such concepts as zoning and the neighbourhood unit, which although conceptualized earlier, were implemented on a large scale under this programme (43). Various aspects of New Towns, particularly those related to social provisions, have attracted the attention of scholars (44). In addition, economic aspects, transport, size, open spaces, central areas and housing have also formed areas of research (45). At the same time, a number of studies have been devoted to a critical evaluation of the New Towns Programme and an assessment of its principles (46).

A major landmark in the process of town planning in the Modern Period has been the establishment of new capital cities in Developed as well as Developing Countries (47). At present, the emphasis in town planning is focused broadly on two aspects, (a) the renewal and rehabilitation of existing areas in towns and cities (48), and (b) area and culture-specific planning rather than universally applicable planning norms (49).

In India, a major interest in the practice, profession and study of town and urban planning has emerged only in the Post Independence Period. In addition to the mandatory manuals and guidelines, some of the important publications in town planning include works by Modak and Ambedkar (1971), Ramagowda (1972) and Gandhi (1973) (50). The establishment of New Towns for the resettlement of displaced persons and the performance of administrative and industrial functions, contemporaneously with the New Towns Programme elsewhere in the world, have formed an important area of research (51). In addition, master plans for the improvement of existing cities and proposals for
better infrastructural facilities have also been prepared and published (52). The present trend in town planning in India is oriented towards the formulation of effective urban planning programmes and policies (53).

The planning of Chandigarh, probably India’s most famous Post Independence project, has generated a lot of interest. Various aspects of the Chandigarh plan, including its principles, plan provisions, infrastructure, and the planners involved with the establishment of the city, have been the focus of a number of books and research publications. The earliest studies on Chandigarh focused on the architects involved, the details of the selection of the site of the city, and placed Chandigarh in the context of India’s new-found freedom (54). The studies devoted to an analysis of the master plan recognized that the Chandigarh plan would establish a new precedent for town planning in India (55). In this regard, Evenson’s seminal work is one of the most comprehensive studies on the city, focusing in great detail on the master plan and the initial years of the development of the city (56).

Almost two decades after the publication of Evenson’s work, Kalia (1987) traced the historic circumstances surrounding the creation of the city, and also highlighted the identity crisis facing the city since the Reorganization of Punjab state in 1966 (57). Several studies raised the issue of Chandigarh’s status following the political events of 1966, and the possible impact of these changes on the city’s planning and development (58).

Important aspects in the preparation of the Chandigarh plan such as zoning, functional areas and neighbourhood unit formed the theme of studies in the 1960s (59). In addition, the plan provisions, particularly those related to housing, received special attention, in view of the high standards established in the city plan (60). Some other studies have focused on the provisions for commercial areas, education and open spaces in the city (61). The city’s architecture has also evoked considerable interest. This was particularly true of the designing of the Capitol Complex, which represented the culmination of Corbusier’s work and vision (62).

An important development since the late 1960s has been a concern for the spatial implications of the plan provisions within a social framework. D'Souza’s pioneering study in 1968 sought to identify the emerging social structure of the city vis a
vis the housing provisions and the urban services (63). Research has also focused on the social areas that have emerged in the city as a result of the plan provisions and future projections of population and class structure (64). A number of studies have highlighted the interface between the social and physical aspects of housing provisions, manifested in such phenomena as overcrowding and congestion (65). An assessment of the various aspects of the plan provisions, for example, circulation, parking, shopping centres and work areas have revealed lacunae in what were supposed to be qualitatively high standards (66). The regional relations and demarcation of the city region of Chandigarh has been another important theme of research (67). Prakash enunciated the city plan and its provisions in an unusual manner, through open verse (68). The lack of any provisions for the informal sector in the city plans was recognized in the mid-1970s, and a number of studies have dealt with this issue and the administrative attempts at resettlement and rehabilitation of the poor in the city (69). A recent and comprehensive publication has been the thematic mapping of the diverse dimensions of the city in terms of its evolution, planning, physical infrastructure and socio-spatial structure (70).

A few studies have also compared Chandigarh with other planned national capitals, particularly Islamabad in Pakistan and Canberra in Australia (71). Some studies have focused on the Corbusian philosophy embodied in the plan (72).

In comparison to the literature on Chandigarh, the studies on Bhubaneswar and Gandhinagar are limited in number as well as coverage of themes. Most of the studies pertain to the circumstances under which these towns were established and the details of their master plans (73). Some studies have also attempted to assess the plan provisions and other aspects of these towns (74).

The available published literature on Chandigarh relates to either a holistic treatment of the city without reference to the intra-city patterns, or to studies which focus on some specific aspect at a particular point in time. As such, no study seems to have been undertaken with the objective of understanding the intra-city patterns of the growth of the city since its inception, and the manner in which these patterns have aggregated to create the spatial structure of the city. The present study focuses on this aspect of Chandigarh.
RESEARCH OBJECTIVES

Town planning in India, as in other parts of the world, focuses on such objectives as (a) solving the problems associated with rapid urban growth, (b) regulating the processes of urban growth, and (c) promoting and strengthening the regional linkages of towns by providing infrastructure in urban places. The attainment of these objectives depends largely on how a town has been planned to perform its functions, and the success of the planned towns in terms of their structure, infrastructure and demography.

The modern planned state capitals in India were not meant to be 'any' towns: they epitomized the spirit of a newly independent nation, were blueprinted by famed planners, and were expected to serve as examples in urban living for future planning ventures.

The main objective of the present study is to describe and understand the growth of a modern planned state capital, Chandigarh, in a spatial and temporal perspective. Specifically, the study focuses on
(i) the context in which the planning of the city was undertaken, and the concepts applied in the preparation of the plan and planning provisions;
(ii) the spatial patterns of growth of population in the city since its inception;
(iii) the growth of socio-economic characteristics and morphological attributes of the city, and
(iv) the status of the plan proposals and objectives in the light of the factors of growth and development.

Questions regarding the validity and viability of the planned state capitals have been raised from time to time. India has a traditional urban fabric, comprising mainly of evolved towns, whose process of continuous organic growth covers a considerably long span of time. It was on such a traditional fabric that the planned state capitals, embodying modern concepts, were planted de novo. This, in itself, has raised a number of broad questions, for example, is it possible to reconcile the two aspects of adaptive and planned growth in India? Have these 'symbols of faith in India's future' already reached their twilight and are going the way of evolved towns? How has their rapid growth spatially manifested itself? Does the imposition of Occidental planning
concepts hold good in an Oriental setting? The present study will also attempt to address such questions.

SOURCES OF DATA AND METHODOLOGY

Both primary and secondary data have been used to analyse the spatial and temporal aspects of the growth of Chandigarh. The primary sources comprise frequent traverses through the study area and informal interviews with a cross section of residents and officials connected with the process of planning of the city. The secondary sources comprise town plans and other plan documents, census volumes and other published material on various aspects of the city. Reference to these has been made at appropriate places.

The information thus collected has been processed and represented using suitable statistical and cartographic techniques. The results obtained from the processed data form the basis of the discussion.

ORGANIZATION OF MATERIAL

The present study has been organized into the following seven chapters:

The first chapter offers an overview of town planning efforts in the world and India, introduces the study town, presents a brief review of literature on the study town, enumerates the objectives, the sources of data and methodology.

The second chapter gives a resumé of the circumstances under which the decision to establish Chandigarh was taken, the concepts involved in the planning of the city and the master plan proposals. A comparison of the contexts and concepts of the planning of Chandigarh with the two other modern planned state capitals, Bhubaneswar and Gandhinagar, has also been attempted in this chapter.

The next chapter focuses on the spatial and temporal patterns of growth of population in Chandigarh at three scales, at the state level, in a regional context, and at the intra-city level. For a comparative understanding, the growth of Bhubaneswar and Gandhinagar within their respective state urban systems has also been described.

The fourth chapter describes the intra-city distribution and patterns of growth of the socio-economic attributes of population in Chandigarh from 1961 to 1991. The attributes described are population density, sex ratio, literacy, workforce and Scheduled Castes population. The city level trends identified in the growth of these attributes in
Chandigarh have also been broadly compared with those of Bhubaneswar and Gandhinagar.

The fifth chapter deals with a functional description of the morphology and land use patterns as these have emerged with the growth of Chandigarh.

The sixth chapter identifies the emerging spatial structure of Chandigarh in terms of the dynamics of population distribution, its socio-economic characteristics, functional changes and land use attributes.

A summary of the findings and conclusions drawn from it, as well as issues emerging from the study have been presented in the seventh and final chapter.

The study, thus, comprises the following chapters:

1. Introduction
2. Contexts, Concepts and Plans: Chandigarh, Bhubaneswar and Gandhinagar
3. Patterns of Population Growth
4. Growth of Socio-Economic Attributes
5. Morphological Patterns
6. Spatial Patterns and Structure
7. Summary and Conclusions

References and Notes
5. Miletus was planned by Hippodamus. He divided the town into three parts, sacred, public and private, corresponding to the then existing three tier social hierarchy. Planned on the grid iron pattern, Hippotamus left some blocks vacant for future expansion. See, Vance, Jr., J.E. (1977), *This Scene of Man*, Harper and Row, New York, p.43 and 45.

8. The word 'Bastide' is derived from the French word *Batir*, which translates 'to build'. Burke, G. (1971) *op.cit.*, p.49. Two of the most prominent Bastide towns are Monpazier established in 1285 in France and Winchelsea established in 1288 in England.

9. *ibid.*, p.73.

10. For details, see, Vance, Jr. (1977), *op.cit.*, pp.201-269.


13. Howard elaborated upon this concept in his book *Tomorrow: A Peaceful Path to Real Reform* published in 1898. It was reprinted in 1965 as *Garden Cities of Tomorrow*, Faber and Faber, London.


22. For example, Canberra (Australia), planned by W.B. Griffin, construction commenced in 1913; Brasilia (Brazil), planned by Lucio Costa (1957); Islamabad
(Pakistan), planned by C. Doxiadis (1959), and Dacca (Bangladesh), planned by Louis Kahn (1962).


