

TOWN PLANNING IN POSTCOLONIAL INDIA, 1947–1965: CHANDIGARH RE-EXAMINED¹

*Annapurna Shaw*²

**Indian Institute of Management Calcutta
Kolkata, India**

Abstract: The objective of this article is to reassess the new town building movement in India from 1947 to 1965 through a re-examination of the making of Chandigarh, to show how nationalism, modernism, and local regional influences affected the design and building of new towns. Chandigarh emerged as part of the post-Partition need for a new capital for the Punjab, and involved the efforts of several people and levels of government. The context of newly achieved nationhood became important in the way it shaped the ideals of both national and local political leaders, who wanted architects to transfer these into built form. How successful the architects were in this enterprise was shaped by their professional ideologies and understanding (or lack of it) of the local. Much scholarship exists on issues such as early decisions about Chandigarh's establishment, the Mayer and Le Corbusier plans for the city, and the buildings comprising the Capitol complex that were designed by Le Corbusier. Much less attention has been given to the residential areas of Chandigarh and all that lay beyond the Capitol complex and constitutes the actual town. How did the ideas of modernism, the requirements of the nationalist state, and concern for the local shape the built environment? Was a Western urban design simply replicated here or were there modifications to suit locality and culture?

Decolonization, throughout much of Africa and Asia, has been a complex process requiring many years after official independence for a colonized people to redefine themselves and reassert the distinctive qualities of their culture.³ In Asia, the process of decolonization generally began with the rise of nationalist or anti-colonial movements (Chandra, 1977). Such movements furthered the cause of self-determination of subjugated native populations and affected many areas outside of politics.⁴ In the post-independence years, nationalism expressed as the striving for economic and intellectual

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²Correspondence concerning this article should be addressed to Annapurna Shaw, Professor, Public Policy and Management Group, Indian Institute of Management Calcutta, Joka, Diamond Harbour Road, Kolkata, India 700 104; telephone: 91-33-2467 8300; fax: 91-33-2467 8307; e-mail: ashaw@iimcal.ac.in

³Politically, decolonization involves the action of changing from colonial to independent status. It is the process by which a colony gains independence from a colonial power, a process opposite to colonization. Decolonization may involve peaceful negotiation and/or violent revolt by the native population. However, some social thinkers assert that until a colonized people, by developing a consciousness based on the remnants of the traditional culture, redefine themselves as peoples and reassert the distinct qualities that historically guided their existence, decolonization is incomplete.

⁴Partha Chatterjee (1994) asserts that, in fact, the fight for self-determination begins in the cultural or inner domain, a point often missed in previous work on nationalism that focused on the political.

independence continued to be instrumental to decolonization. How did the process of decolonization affect the city and its inhabitants? One of the ways to understand the decolonization of the city is to consider the changes in the way the city was being conceived and built in the aftermath of independence, the focus of this study with respect to India.

We still know very little about Indian urban policy and the nature of town planning in the early years after independence in 1947. The years 1947–1965 are very important because it was during this time that many new towns were built and key institutions supporting urban growth for the next several decades established (Shaw, 1996). These years have been regarded by many scholars as forming a distinct period in the post-independence history of India, both politically and economically (Bardhan, 1984; Rudolph and Rudolph, 1987). Politically, it was characterized by the leadership of Jawaharlal Nehru, India's first Prime Minister until his death in 1964; thus the period coincides with the "Nehru era." Secondly, it was a time marked by a very strong centralized state and a broad consensus among leading political parties and interest groups concerning the goals of development (Guha, 2007). This enabled developmental policy implementation by the central government far more efficiently, than in the periods to follow.⁵

An important debate in decolonization studies is that of continuity versus discontinuity between the period immediately before independence and that following independence. In this, there has been the "nationalist" perspective, put forward by some indigenous political leaders and scholars, that has stressed the disjuncture between the two periods surrounding independence and the rise of new nationally oriented policies and institutions (Le Sueur, 2003; Duara, 2004). This perspective is based on the premise that the post-independence state is an independent entity. Its obverse, grounded in the same theoretical premise and put forward by scholars from the colonial power, has stressed discontinuities as well—contrasting good administration and management with the chaos following independence and self-rule (Le Sueur, 2003).

In recent years, through the perspective of postcolonial studies as well as the gradual opening up of historical records for the 1940s and 1950s, a more nuanced view has emerged that has emphasized continuities rather than discontinuities. One of the principal arguments here is that the postcolonial state is not an independent entity, owes much to its colonial legacies, and in fact has been reconstituted in a unique way by its experience of colonialism (Radcliffe, 2005). The legacies occur particularly in the so-called "material domain," the domain of the "outside" comprising the economy, statecraft, science, and technology, wherein the colonial power had proved superior (Chatterjee, 1994, p. 6). This is contrasted with the "the spiritual," an "inner" domain bearing the "essential" marks of cultural identity, where colonial intervention had been less invasive. In the material domain there are strong continuities in technology, skills, and human resources as well as in ideas or epistemologies such that some postcolonial scholars talk of a "colonial modernity" (Khilnani, 1997). India, in particular, retained not only major parts of the legal

⁵The mid-1960s mark the beginning of an era different from the Nehru years, one characterized by new agricultural strategies (the Green Revolution), the deceleration of economic growth, and the rise of contentious interest group politics that was to become a major factor in slowing down the implementation of developmental goals and the rate of economic growth for India between 1965 and 1980.

structure but the broader range of political and administrative institutions including the civil service, police, prisons, and judiciary (Williams Verma, 2006). Nevertheless, the postcolonial state cannot be viewed as an unreconstructed extension of the colonial state with continuities occurring in a linear pattern, for there have been discontinuities as well, especially in its pursuit of development (its “developmentalist mission”).

Town planning in India presents an interesting case for the study of decolonization for a number of reasons. It falls clearly into the so-called “material domain,” but its conceptual trajectory from independence until about the mid-1960s was a movement away from the colonial to the modern, with active support from the nationalist state during the Nehru era. The mainstream Indian nationalist movement for freedom had been characterized by its focus on modern ideals, and its goal was to achieve a democratic, civil-libertarian India based on a self-reliant, egalitarian social order and an independent foreign policy (Guha, 2007). Although some of the efforts of the movement focused on the maintenance of traditions, it was generally modern in spirit because it sought change. Modernism in architecture and town planning thus matched the nationalist aspirations of the newly formed state, particularly those of the central government with Nehru as prime minister looking toward India’s future rather than its past.

But what is also interesting is that for Nehru, modernism did not mean a complete break with what was Indian. In April 1952, when work on Chandigarh had already begun, Nehru in a public rally observed, “Our effort was to make a city in the Punjab in which we should benefit from the experience of architects and planners from other countries in the world and yet retain the character of an Indian city. Our attempt was that it should be Indian in spirit and yet it should have the best which other countries have developed” (*The Tribune* [Ambala], April 4, 1952, p. 1).⁶ This heterodoxy or plurality where “our culture” can draw on “their culture” as well as “their culture” drawing on “ours” was a feature that the 1947–1965 period drew on from its pre-colonial past. The fact that “Indian culture, as it has evolved, has always been prepared to absorb material and ideas from elsewhere” is generally lost in the critiques of modernity in developing countries as having come from the West via colonialism (Sen, 2005, pp. 129–131).

The Nehru era was clearly dominated by the Modernist movement in architecture and town planning whereby Modernism represented something revolutionary: a break with the colonial past. For most young architects in the 1940s and 1950s, “there was little question of carrying on as acolytes of the Raj” (Bhatt and Scriver, 1990, p. 14). While rejecting colonial designs and styles, they also did not see much hope in turning back to India’s own architectural past for inspiration as the Revivalists of the 1930s had done. The work of the Revivalists was not challenging enough to young emerging architects, who rejected it as a “contrived rendition of heritage” (*ibid.*) and turned instead to the newest architectural ideas coming from the West.

⁶During Nehru’s time, the characteristics of an Indian city included a well-planned and ordered enclave of colonial civic and military uses, separated sharply from the rest of the “traditional” pre-colonial city dominated by its mixed land uses in the city center with shops and trading activities on the ground floor and owners’ residences above; no segregation of residential from other land uses; narrow lanes and congestion in the city center (for more details see, Brush, 1962). In the traditional parts of the city, buildings and houses would show “Indian” vernacular architecture that included features such small domes, courtyards, large doors, latticed brickwork, friezes, and the use of local materials such as terracotta, brick, and mud.

However, more detailed evidence seems to indicate that, for the new towns built immediately after independence, Modernism in architecture was often combined with issues of identity and nationalism, and even localism. The last was more evident at the regional level in India's federal structure, where the chief ministers of state governments often had different ideas and several favored Revivalist or more traditional styles, particularly for their capitals. The building of Bhubaneswar, the capital city of Orissa State, for instance, was supported by the reassertion of Oriya identity, not just vis-à-vis the British but also the neighboring states of Bengal, Bihar, and Tamil Nadu (Kalia, 1994, p. 187). Bhubaneswar was one of the first of the new capitals in independent India, with Nehru laying its foundation on 13 April 1948. Otto Koenigsberger was involved in the urban design concept and came up with a master plan for the township in 1954. Oriya identity is reflected in the attempt by its architect Vaz to "incorporate many Buddhist elements" in the building style of Bhubaneswar (Lang et al., 1997, p. 203).⁷

Evidence also suggests that town planning in the early decades after independence was not as architect-centered as was the case in the past, but was also an outcome of the visions of several parties that included the state government via the local bureaucracy, the national government, and the architects and town planners involved in the project. Thus there were competing and contested visions about what constituted "modernity" and "Indianness."⁸ Prekash (2002), for instance, drew a distinction between the modernity of Nehru and the modernity of Le Corbusier—on some issues their idea of modernity coincided, but on others they differed. Likewise, the modernity of the bureaucrats was different from that envisaged by Le Corbusier or Nehru. Moreover, there is evidence of debates and conflicting viewpoints regarding architecture and town planning methods in the late pre-independence period, which reflected the changing views of practitioners although outcomes continued to be dominated by colonial establishment thinking. Patrick Geddes' alternate plan for the improvement of Burra Bazar in Calcutta and its rejection by the city's municipal corporation is an example (Beattie, 2004).

The project of building new towns in the aftermath of independence was therefore invested with debate and controversy so that what often prevailed in built form was different from that conceived by some of the decision-makers. Even though the adoption of Modernist architecture to fulfill nationalist ideals marked a break with the past, there were continuities with the colonial era in the way that bureaucrats of the civil service contributed to the envisioning and implementation of these towns and their social ordering. There is detailed scholarship on issues such as early decisions about Chandigarh's establishment, the Mayer and Le Corbusier plans for the city, and the buildings that comprise the Capitol complex designed by Le Corbusier. Much less attention has been given to the residential areas of Chandigarh and all that lay beyond the Capitol complex

⁷Orissa is the location of the ancient kingdom of Kalinga, ruled in the third century B.C. by Emperor Aśoka, considered one of India's greatest rulers. He was a Buddhist and a pacifist. His reign is noted for having united large parts of the subcontinent and also for the spreading of Buddhism via royal edicts carved on stone pillars called *stupas*.

⁸The meanings of "modernity" and "Indianness" in the context of town planning are debatable. But generally "modernity" has been associated with Western esthetic and engineering concepts, and professional training in formal institutes. In the early post-independence period, it was a movement away from traditional/vernacular forms of building and esthetic expression.

and which constitutes the actual town. How were ideas of Modernism, nationalism, and the local to influence the built environment here? Was a Western urban design simply replicated here or were there modifications to suit locality and culture? The following section provides the historical context through a discussion of town planning in the post-independence period, and is based on secondary sources such as published books and journal articles. The section after that reviews the history of the building of Chandigarh to provide background on the planning of the city's residential sectors; here the secondary sources include published statements of the architects, the findings of other scholars, and newspapers of that time. The planning of the residential sectors of Chandigarh is analyzed next, and is followed by a discussion of the legacy of the period on contemporary town planning together with some concluding observations and suggestions for future research.

TOWN PLANNING IN THE EARLY POST-INDEPENDENCE YEARS: 1947–1965

The immediate aftermath of Indian independence on 15 August 1947 saw millions of refugees enter India from the newly created, two-part country of Pakistan. Along India's western border, they entered the Punjab and along the eastern side, West Bengal State. About one-fourth of them headed for urban areas, and so there was an immediate need to create large-scale urban housing to accommodate the newcomers. The role of the state in urban expansion for refugee rehabilitation was critical in the post-Partition years, with the Ministry of Rehabilitation assuming direct control of the refugee town of Faridabad in 1953 (Pieris, 1962). An inherent class bias favored migrants of higher social status, and these newly built colonies, for instance in Delhi, often lacked uniform standards of civic amenities, the poorest lacking basic services (Kaur, 2005). Gender biases also prevailed, both in the way that violence associated with Partition was perceived and in the rehabilitation of women separated from their families (Butalia, 1998).

Approximately 7.3 million refugees were registered in 1951. But even though towns such as Jullunder, Ludhiana, and Ambala in the Punjab, and cities such as Calcutta, Bombay, and Delhi were enlarged through the development of new colonies or suburbs to accommodate them, it was clearly not enough. In all, about 14 entirely new towns had to be built between 1947 and 1951 (Ramachandran, 1989, p. 70) and they were concentrated in five major states. By 1951, they accommodated nearly 500,000 refugees. At the same time, the forces of urbanization and industrialization also heightened the need for housing in general. Between 1941 and 1951, the population of India's cities grew by 41% and the war together with the famine of 1942 hastened the migration of people to cities. Between 1951 and 1961, there was a 26% increase in the urban population, with 18% of India's total population residing in cities at the end of that decade (Brush, 1977). Moreover, the process of the reorganization of India's states, particularly after 1956, led to the creation of several new states that required new capitals and administrative centers. Thus demographic, economic, and administrative forces (Brown, 1984) all played a role in accelerating the rate of urbanization and the need for building new towns, which became a major feature of urban development during this period.

What is important to bear in mind is that prior to 1947, town planning did not exist as a well-defined field but was closely associated with the work of engineers of the government's public works departments or of private engineering firms (and after the 1930s of

trained architects). In the early post-independence years, these engineers and architects were primarily foreigners or Indians trained by foreigners. They built individual buildings, developed housing schemes, and even acted as city planners, undertaking the planning of new towns (Le Corbusier in Chandigarh is an example). Although the first all-India professional organization for indigenous architects was formed by 1930, and professional courses for architects were starting to appear, it was not until after the 1960s that a generation of Indian-trained architects began to emerge. Similarly, it was only after independence, in 1951, that The Institute of Town Planners, India was formed, and only the late 1950s were town planning departments established alongside departments of architecture in schools such as the School of Planning, Delhi and the Centre for Environment Planning and Technology, Ahmedabad.

The lack of an indigenous professional base and reliance on foreign architects to build the new towns and capital cities, together with the desire to “modernize,” ensured the widespread acceptance of Modernism, which still remains deeply ingrained in India’s architecture and town planning professions. Although Modernism as an architectural movement arrived in India in the 1930s and influenced a generation of architects in the late colonial period and early independence years, it was largely confined to individual buildings and its impact was concentrated in small portions of the CBDs in the largest cities. It did not impact the overall urban design of cities; this occurred later, in the 1950s, after the coming of Le Corbusier and the building of Chandigarh.

Le Corbusier’s arrival in India changed pre-existing ways of thinking and building. Moreover, the need to resettle thousands of refugees and embark on the ambitious industrialization program of the First and Second Plans required the hiring of many foreign town planners and architects who had been trained in the Modernist way. Bhatt and Scriver (1990, p. 13) noted “the intimate initiation in the high Modernist tradition from which many contemporary Indian architects benefited in their early years,” and thus “whether or not a given architect had direct contact with prominent Western architects who were active on the Indian scene until the 1970s, the forms and images of his architecture derive, almost inevitably, from a Modernist conditioning.” Likewise, Lang et al. (1997, p. 213) pointed out that in the 1950s “the influence of the International Style began to be widely evident in houses, whether *mistri* or architect designed.”⁹

However, the work of some of the foreign architects working in India during the late 1940s and 1950s, such as Otto Koenigsberger, addressed a more specifically Indian context. Koenigsberger had been the Chief Architect and Planner for Mysore State between 1939 and 1941, and after independence from 1948 to 1951 was the Director of Housing for its Ministry of Health. He felt that “traditional ways of living must be given consideration

⁹International Style in architecture refers to the phase of the Modern movement that emerged in Europe and in the U.S. during the 1920s and 1930s. Its common characteristics were a radical simplification of form; a rejection of ornament; adoption of glass, steel, and concrete as preferred materials; the transparency of buildings; and the acceptance of industrialized mass-production techniques and the machine esthetic. One of the strengths of the International Style was that its design solutions were indifferent to location, site, and climate. This was one of the reasons it was called “international”—the style made no reference to local history or the national vernacular. They were the same buildings around the world. Later, this was identified as one of the style’s primary weaknesses. The *mistri* generally refers to a locally or informally trained skilled worker in the case of the mechanical, electrical, and repair industries. In construction work, *mistri* would refer to a master craftsman, trained through experience on the job and without any technical degrees.

and the setting of minimum standards requires a different approach” (Summary, 1952). His designs for towns such as Faridabad (1949) in Punjab, Gandhidham (1950) in Gujarat, and Bhubaneswar (1954) in Orissa reflected these concerns (Lang et al., 1997).

By 1971, 112 new towns had been built, a large number of them during the 1950s and early 1960s, coinciding with the period of India’s early and rapid industrialisation (Sivaramakrishnan, 1976–1977). Apart from state capitals such as Chandigarh and Bhubaneswar, the development of many of the new towns was linked to the location of heavy industries and power projects, for instance, the steel towns of Bhailainagar-Drug, Bhadravati, Durgapur, and Rourkela (Manickam et. al., 1962). A few such as Kalayni in the Calcutta Metropolitan Area were created to take care of population growth in the core city.

The building of the new towns served several needs: jobs and residences for refugees, absorbing excess population from the older urban areas, generators for economic development in the local region—but also to symbolize the new, modern India that was taking shape. The new town that best expressed these multiple functions was Chandigarh, in Punjab, whose rise dates back to the immediate aftermath of Partition in 1947. The building of Chandigarh came to symbolize not just the recovery of the Punjab after Partition, but also the regeneration of the whole country as expressed in the following remark by Nehru in 1950: “Let this new town be symbolic of the freedom of India, unfettered by the traditions of the past.... an expression of a nation’s faith in the future.” The making of Chandigarh can therefore be regarded as an important means to propel the process of decolonization.

CHANDIGARH RE-EXAMINED: NATIONALISM AND MODERNISM

Although Chandigarh has been much studied, both in India and abroad, much of the previous research is dominated by discussions of Le Corbusier, the icon of European architectural Modernism and his role creating the city (Nilsson, 1977; Hall, 1988). Undoubtedly, this attention is well deserved because Le Corbusier’s plan for Chandigarh and the buildings of its Capital Complex that he personally designed had a staggering impact. The coming of Le Corbusier to India “shattered the existing ways of thinking of many architects” (Lang et al., p. 188) and thrust a new generation of architects and planners into experimenting with ideas and models drawn from Western countries other than Great Britain. He arrived in the Punjab in 1950 and the first phase of the new capital city was completed by 1965. It was to leave an indelible mark on architecture and town planning in India, influencing a generation of young practitioners who became important contributors to the profession. Chandigarh’s design came to represent the architecture of the Nehru years and served as a model for independent India for at least the next 20 years.

The focus on Le Corbusier, however, had resulted in less attention to the socio-political context, that is, the making of Chandigarh in the aftermath of Partition and its subsequent influence on the way the city was envisioned. It also diverted attention from other agents who played an important role in shaping the vision of the city and who influenced important practical issues, such as the choice of a site, the size of the proposed city, the selection of architects, and the implementation of their plans. More recent primary research, for example, by Kalia (2002) and Prakash (2002), has revealed the critical role of state bureaucrats in the Punjab government, personal interventions by Nehru that resuscitated the project from time to time, the role of local politicians, the contribution of

the American architect Albert Mayer and his team (who developed the original master plan for the city), and also that of the other members of the Le Corbusier team—namely, Jane Drew, Edwin Maxwell Fry, and Pierre Jeanneret—who designed the residential neighborhoods of Chandigarh. In this section, I highlight some of these activities to provide a brief history of the building of Chandigarh. Its objective is to show how Chandigarh emerged to fulfill the need for a post-Partition Punjab capital, which involved the efforts of several people and levels of government and was not just the outcome of the work of one man. The context of newly achieved nationhood becomes important in the way it shaped the ideals of both national and local political leaders, who in turn wanted architects to transfer these into built form.

Early Decisions to Create Chandigarh

Following Partition, the state of Punjab was faced with a huge refugee problem, primarily Sikhs and Hindus, fleeing newly created West Pakistan. India's western border with Pakistan cut through the old Punjab state, dividing it in two. The Indian Punjab (or East Punjab) also lost its capital, Lahore, which was given to Pakistan by the Radcliff Award. The state government expressed the need to find an "instant" alternative capital, both to serve the administrative needs of the state and to handle the refugee problem (Kalia, 2002, p. 2). None of the existing large cities in the area were capable of meeting the requirements, forcing a new city to be built from scratch. Early visions of that city were influenced by two senior bureaucrats, A.L. Fletcher and P. L. Verma, who disagreed on the size of the city and whether it should consist of a single unit or three units. Ultimately, Verma's vision of developing Chandigarh as a single unit prevailed, as did his suggestion of a city size of 500,000 (Prakash, 2002, p. 39). Together with P. N. Thapar, a member of the Indian Civil Service and administrative head of the Capital Project in 1949, he guided the early development of the city and the hiring of Le Corbusier.

The decision on where to build the new capital proved to be quite contentious, with lobbying from different groups for different parts of the state, and this led to delays in site selection.¹⁰ After much dithering and admonishment by Nehru for the delay, the government of Punjab made its site selection in March 1948 (Kalia, 2002, p. 8). Better drainage, reasonable land acquisition costs, and its safe distance from Pakistan made Chandigarh's site the most favorable. It consisted of 8,500 acres of fertile land that was bounded on east and west by rivers and rose gently northward toward the Shivalik Hills of the Lower Himalayas, which form an impressive backdrop. The site selection was enthusiastically supported by Nehru (Kalia, 2002, p. 12), who commented on his first visit to Chandigarh that "the site chosen is free from the existing encumbrances of old towns and old traditions. Let it be the first large expression of our creative genius flowering on our newly earned freedom."

¹⁰Among these were the persistent attempts by Amritsar-based interests to make that city Punjab's capital in order to revive its declining economic condition following Partition. The President of the Amritsar Municipality, Sardar Dharam Singh, had moved a unanimous resolution in October 7, 1947 that the city should be made the capital. He was supported by local political leaders representing both Sikhs and Hindus (Talbot, 2007). A year later, appeals were still being heard, but security reasons ruled out a location close to the Pakistan border, and Amritsar was never considered suitable.

In the choice of an architect to create the master plan for Chandigarh, the Prime Minister once again played an important role in urging the Punjab government to choose someone based in India rather than going abroad to find a suitable person (Kalia, 2002). In this Nehru displayed an interesting duality, for while pushing for modernization, he at the same time felt the need to maintain essential Indian culture. The romantic side of him wanted continuity with the past, whereas the rational side of him was impressed by anything modern and “scientific.” Thus he preferred a foreign architect already knowledgeable about India to someone from the West without any experience in Indian culture and conditions. Nehru’s personal choice was either Otto Koenigsberger or the American, Albert Mayer, both of whom were known to him. Ultimately, after negotiations with both these town planners via P. N. Thapar, the administrator in charge of the Capital Project, Albert Mayer, was appointed in December 1949. Mayer was delighted with his commission, calling it an “architectural dream” and promised a master plan within six months.

Well aware of the huge responsibility thrust on him by Nehru and the Punjab government, Mayer aimed to create “a city in the Indian idiom fused with our own simplicity and functional honesty” and turned to “an exceptionally gifted and sensitive team” to assist him in this task (Mayer, 1950, pp. 172–173). Among them was the architect Mathew Nowicki. The Mayer plan was submitted to the Punjab government in late 1950 with a detailed layout of one of the neighborhood blocks designed by Nowicki. The town was to rise between the two rivers, with the government buildings placed in the north, a large business district in the center, and a small industrial district to the south-east. The plan, fan-shaped in outline, contained a curving network of main streets to suit the existing terrain, and these connected the residential superblocks.

This plan, however, was never implemented. A series of events—the death of Nowicki in a plane crash in August 1950; the shortage of American dollars in the coffers of the Punjab government; and Mayer’s unwillingness to be in India for an extended period to supervise the project—made it difficult from the Indian side to continue with Mayer as the chief architect (Kalia, 2002, p. 71). By the end of January 1951, his appointment was terminated, and Le Corbusier with his team took over.¹¹ Although appointed essentially to implement the Mayer plan, Corbusier added his own touches and changed the plan from one based on Garden City principles (as applied in the U.S. to Radburn, New Jersey and the Greenbelt towns of the 1930s) to one based on CIAM (Congrès Internationaux d’Architecture Moderne) principles (Lang et al., 1997; Scott, 1998; Kalia, 2002; Perera, 2006).¹²

¹¹In the end, this proved to be a far better arrangement for the Punjab government, for not only did Le Corbusier charge a nominal amount, payable in easier-to-obtain currencies, but he remained devoted to Chandigarh for the remaining 14 years of his life, returning to it even after the project was completed. Likewise, Fry, Drew, and Jeanneret, the architects who made up Corbusier’s team, committed themselves to staying in India for at least three years to see the project through to completion (Kalia, 2002). Jeanneret stayed the longest taking up work with the government of Punjab for several years after his original contract had ended.

¹²The origins of the Garden City concept lie in social theorist Ebenezer Howard’s 1898 book, *Tomorrow: A Peaceful Path to Real Reform*. Garden City principles refer to his vision of a “town–country” balance in urban planning in which a settlement would embody the best of the urban and the rural by being small in size, with low-rise structures of low density, surrounded by a greenbelt and yet providing all the amenities associated with urban living. His book contained a model of the ideal garden city, characterized by a large round central park, surrounding concentric rings of houses and gardens, a main thoroughfare, and (footnote continues)



Fig. 1. View of the Vidhan Sabha (Assembly portico), one of the government buildings designed by Le Corbusier. Photograph ©Andrew Tucker, reproduced with permission.

The Mayer Plan and the Le Corbusier Plan

Detailed studies of both these plans for Chandigarh have been carried out by Evenson (1966), Nilsson (1978), and more recently by Kalia (2002), Prakash (2002), and (Perera, 2006). They reveal the very different approaches of Mayer and Le Corbusier, for instance toward the inhabitants of the future city. The centerpiece of Mayer's plan was the neighborhood and all else was built upward from it. His aim was to create a "city of satisfactory interrelationships and satisfactory individual lives and moments" and a "city as simple as possible" (Mayer, 1950, p. 174). For Le Corbusier, the centerpiece was the group of government buildings of monumental scale that he had designed, and which occupied the northern end or the "*tête*" of the city (Nilsson, 1978, p. 97; Fig. 1). However, in fairness

¹² (*continued*) secondary streets; all the factories were located in the outermost rings and were connected by railway. Beyond those rings lay a permanent belt of farmland. The CIAM (International Congress of Modern Architecture) was formed in June 1928 by a group of 28 European architects to advance avant-garde architecture. Le Corbusier was one of the founders and leaders of this organization. The CIAM sought to formalize the various roots of Modernism into a coherent set of rules. CIAM principles called for a clear separation between the spaces needed for living, working, recreation, and transportation. This was key to their concept of the "functional city." The CIAM also favored the distribution of population into high-rise blocks at widely spaced intervals. The organization was disbanded in 1959 following disagreements among members, some of whom found its principles too rigid and rational.

to Le Corbusier, he himself observed that an “essential function” of his plan was “the creation of the ‘sectors’” (Marg, 1961, p. 6). A Sector was defined as “the container of family life (the 24 solar hours’ cycle which must be fulfilled in perfect harmony)” (ibid.). The dimensions of Le Corbusier’s sectors, their layout, and the 7V Rule for the movement of traffic, however, were applied from his building experience in Latin America. That is one of the reasons why, regarding their approach to the local culture, Mayer has always been favorably seen as the more Indianized and willing to absorb Indian culture in his plan. His sensitivity to local culture is seen in this observation about his plan: “We hope we have insight enough to estimate and sense how far we can and should encourage changes in habits to create better city living and how far certain traditions and habits should be respected and fostered and sublimated” (Mayer, 1950, p. 175). Accordingly, he emphasized on a “looseness and tolerance in the plan to allow for a future that can never be entirely imagined from the past or the future.” Through the work of Nowicki, who created detailed studies of the capital district, the business district, and especially the residential superblock, modern architectural solutions were blended into Indian life. In contrast, Le Corbusier has generally been seen to be uncaring of local culture and imposing his own preconceived views from above.¹³

However, much of the Mayer Plan was followed by Le Corbusier, with some of the Swiss architect’s touches in place, such as the gridiron replacing the curved street network and larger residential superblocks. Bhatt and Scriver (1990, p. 15) observed that “the master plan owes much to the preliminary studies of the American architects, Albert Mayer and Mathew Nowicki.” Le Corbusier’s work was made much simpler with the existence of the Mayer Plan, and he came up with the modified plan in just four days. His acknowledgement of Mayer’s work is noted in the following comment (1961, p. 9): “Sympathetically to Albert Mayer, who made the first plan of Chandigarh with *sectors*, I inscribed on *our* plan, two ‘Mayer Sectors’ (Sector 8 and Sector 21).” Other than this, Mayer’s name today is rarely associated with Chandigarh.

THE RESIDENTIAL SECTORS OF CHANDIGARH

As shown, there is considerable scholarship on the early decisions shaping Chandigarh’s establishment, the Mayer and Le Corbusier plans for the city, and Le Corbusier’s buildings that comprise the Capitol complex. Much less attention has been paid to the residential areas of Chandigarh beyond the Capitol Complex. I turn now to an examination of

¹³Access to Le Corbusier’s personal letters now permits a more nuanced reading, as noted by Kalia (2002, p. 88) in the following paragraph, with Le Corbusier’s own words indicated in italics: “What Le Corbusier wanted to produce was an architecture that would be *neither English, nor French, nor American, but Indian* of the second half of the twentieth century. The sentiment is quite similar to that of Mayer, but with a difference. Whereas Mayer looked to India’s past—bustling bazaars and close-knit village communities—Le Corbusier looked to India’s future, an India with all the paraphernalia of industrialization. This was intrinsically more appealing to Nehru and to the Punjabi officials. To this end, he hoped to give *some basic principles concerning habitation, which will be as clear as the basic principles of...the plan of Chandigarh.*” But how sincerely Le Corbusier believed in the possibility of a modern “Indian” style is placed in doubt by some of his side comments on other occasions. For instance, in a conversation with the writer Mulk Raj Anand, he remarked “What is the significance of Indian style in the world today if you accept machines, trousers and democracy” (Kalia, 2002).

how ideas of Modernism, the requirements of the nationalist state, and concern for the local affected the city's built environment. Was a Western urban design simply replicated here or were there modifications to suit locality and culture?

Le Corbusier's Team and the Duality of Chandigarh

Le Corbusier was assisted by three dedicated and talented architects who along with eight Indian architects designed most of residential areas and services of Chandigarh. There was a clear division of labor that was not anticipated by Le Corbusier, and ultimately his own contribution amounted to touching up the Mayer Plan, introducing the principle of the "Sectors" and the V7 rules, and designing the four buildings of the Capital Complex—the High Court, Secretariat, Assembly, and Museum of Knowledge including the surrounding park. He also designed such other monuments as the famous "Martyr's Memorial" and "Open Hand," which were placed at key points in the Capital Complex.¹⁴ The rest of the design and implementation, involving all the housing and services, was executed by his cousin Pierre Jeanneret and the husband-wife team of English architects, Edwin Maxwell Fry and Jane Drew.¹⁵ Le Corbusier (1961, p. 6) pointed out that "all the 'housing'—homes of the Ministers up to the houses for the peons—the schools, the hospitals, etc.... were built without my participation, by the above mentioned permanent architects and under their entire responsibility."

This division of labor occurred because of the resistance of the three architects to Le Corbusier's "dwelling unity" or models of integrated vertical living (Prakash, 2002, p. 65). In his preference for high-rise buildings, following certain predetermined principles of proportion (the modular) applicable to any situation, he was alone, and the other architects of the team, although they too were members of CIAM and Modernist in their professional ideology, bypassed him. The Indian bureaucrats Thapar and Verma sided with the Le Corbusier team rather than with him personally, and Chandigarh was created as a low-density horizontal city, retaining some of its Garden City character as envisaged by A. L. Fletcher in 1948 (Fig. 2). According to Prakash, the rejection of Le Corbusier's high-rise designs for the residential areas was to leave him bitter and disappointed, and he disassociated himself from any residential construction in Chandigarh. In fact, he even tried to sever the relationship between Chandigarh's Capitol Complex and the residential sectors by establishing artificial hills between them, thereby "decapitating the 'head' from the 'body'" (Prakash, 2002, p. 69). As a result, there are in effect two Chandigarhs: Le Corbusier's Chandigarh made up of the monuments of the Capitol Complex and the actual town of Chandigarh to its south. Joshi (1999, p. 30) observed that "these two segments of Chandigarh varied widely in their scale, groupings of buildings, use of material and architectural style—the separate identity of each being reinforced by the 'Boulevard of Waters' (Uttar Marg—the North Avenue) between them."

Although it was the monuments created by Le Corbusier that brought worldwide attention to Chandigarh, for the town planning profession in India it was the residential

¹⁴The Open Hand was built and installed several years after Le Corbusier's death.

¹⁵They were assisted by the Indian architects M.N. Sharma, Mrs. U. E. Chowdhury, Jeet Malhotra, B. P. Mathur, and Aditya Prakash (Marg, 1961).



Fig. 2. Chandigarh, Sector 10. Aerial view of a cluster of four orthogonal Type 13-J single-story houses for government employees, separated from privately built housing by bands of green space. Photograph © Uttam Chand, from the collection of Kiran Joshi; reproduced with permission.

town of Chandigarh that was to influence post-independence town planning projects for the next two decades. As Nangia (2004) has remarked:

Occupying vast tracts of land all over the First Phase of Chandigarh, it is these lesser-known constructions that were to define the constructed volume and architectural vocabulary of the city and, in general, direct the course of Modernism in India.

With an average height of two and a half stories, these lesser known structures lacked the monumentality of the Capital Complex but played an important role in the decolonization process. They were a part of the social agenda of the new country, the rebuilding of India according to more egalitarian principles and providing all citizens with a better quality of life. Thus the housing, marketplaces, schools, hospitals, and other facilities designed by these architects deserve equal attention.

Influence of the Local in Chandigarh's Town Planning

One of the first observations to be made regarding the work of the Le Corbusier team is how much their designs were influenced by the local climate, available materials, and the budget fixed by the government for each type of housing and service building, with no flexibility regarding the latter. As noted by Edwin Fry (1961, p. 21), "In general the housing in Chandigarh offered character derived directly from the new urban way of life in India, from the climate, and from the economics of the particular situation." Within the constraints of climate and budget, the team built a remarkable array of housing that, for

the first time in independent India, attempted to bring modern utilities and conveniences to the homes of lowest-level government workers. Local brick, the cheapest material, was extensively used in the 14 House Types created by the team. These corresponded to the different categories of government workers ranging from the lowest, Type 14 (for government sweepers) to the highest, Type 1 (the Chief Minister of State). The 14 House Types had subtypes, so that about 50 styles of housing were created overall. For the various schools, health centers, and other service buildings, local brick and stone were mainly used, and vernacular designs of walls through the use of *jallis* (perforated brick screens) was quite common. Although each of the three architects had their own individualistic style, Joshi (1999, p. 31) noted in her meticulous inventory of their Chandigarh structures that “the disciplines of cost, material, technology and climate created a common repertoire of box-like structures, walls of brick and stone, small windows protected by brise-soleil, jallis and other such innovations.” These were to form the basis of what has come to be known as the ‘Chandigarh style.’

Although some have not been impressed by Chandigarh’s residential areas, and described the areas outside the Capital Complex as displaying “a democratic, self-effacing banality” (Bhatt and Scriver, 1990, p. 15), in many ways the living environment of the city set new standards for urban living in the country. A detailed examination of one of the Sectors of the residential area was provided by Jane Drew (1952; 1961, p. 22), who along with Le Corbusier participated in their overall design. This is Sector 22, which was built for poorer, lowest-level government workers such as peons and sweepers. Like all other sectors, it is fairly self-contained and crossed north-south by a band of greenery and east-west by a bazaar or commercial street lined with shops. The green area contains the educational and recreational features of daily life and lies within walking distance of the houses. The houses look inward toward the green and away from the perimeter road that carries faster-moving traffic. The sector is fed by a figure-eight slow road that connects all the housing areas. Some of the groups of houses possess their own internal green space. The cheapest housing provided two rooms, a verandah, kitchen, courtyard, and water-supplied sanitation and washing facilities. Many devices were used to provide modern innovations, maximize space and still provide protection from the hot sun.

After his first visit to Chandigarh in April 1952, Nehru was satisfied with what he saw, observing:

As usual, I was greatly interested in the quarters being built for staff of all grades. On the whole they appeared to be good and not too expensive.... in the past we have paid little attention to architecture or to aesthetics in this respect. This does not necessarily mean greater expense. What is more important, however, is that our housing schemes should be thought out anew, specially houses of a cheaper variety. Nothing is more dreadful than the type of Peon’s or Servants’ quarters which became standard pattern in British times. (*The Tribune* [Ambala], April 4, 1952).

All the government housing built by the Le Corbusier team was modern in form, dispensing with several colonial solutions to problems of tropical housing. For instance, the verandah encircling the house as a protective blanket for cooling was replaced by sun breakers, sun canopies, and shallow walls (Chowdhury, 1961). The low-cost housing built in Chandigarh provided less direct exposure to the sun by using narrow frontage but



Fig. 3. Typical three-story terrace housing in Sector 22. Photograph ©Andrew Tucker, reproduced with permission.

greater depth, and was oriented so as to maximize natural cross-ventilation. Their layout also minimized the length of services like roads, electricity, water supply, drainage, and boundary walls (Malhotra, 1961). These methods of keeping costs down and yet providing airy and healthy living spaces with modern amenities, were to greatly influence the building of low-cost government housing in the decades to follow (Fig. 3).

Esthetics was also an important consideration in the construction of low-cost housing, which constituted 80% of the city's total housing. Pierre Jeanneret is particularly remembered for his "pioneering interplay of decorative brickwork and plain plaster in his housing for peons to make it look grand" (Lang et al., 1997, p. 217). Drew and Fry also tried Indian building methods and "produced the most interesting solutions" (Nilsson, 1978, p. 127). Although strongly critical of Chandigarh, Nilsson (*ibid.*) praised the housing built by Drew and Fry, observing that "their larger villas were done in the light airy International style of architecture, while the smaller houses demonstrated lessons taught by the local peasants' massive constructions."

In sum, all three architects "endeavored in their own way to blend utility, durability, beauty with added emphasis on economy in the designs of the low-cost houses" (Malhotra, 1961, p. 36). The pioneering nature of the work was immediately recognized within India (Chowdhury, 1961, p. 28), although there was foreign criticism that the housing was culturally inappropriate because the styles were international (Brolin, 1976;

Rapoport, 1977). Some of the criticism was quite severe: for example, Hall (1988, p. 214) remarked that “there is a total failure to produce built forms that could aid social organization or social integration; the sections fail to function as neighbourhoods.” Sixty years after the making of Chandigarh, such criticism needs to be reassessed because of the growth of Chandigarh and its transformation from the ghost town of the 1950s and 1960s to the dynamic city of today, and also because of its continuing influence on Indian town planning. As noted by Lang et al. (1997, p. 236):

The International Style became a major influence on social housing as a result of Chandigarh, and vast areas have been laid out according to its principles. The quality of housing provided in Chandigarh by Maxwell Fry and Jane Drew and by Pierre Jeanneret has seldom been exceeded in architectural terms.

The Social Context of Chandigarh Housing

The housing created by the Le Corbusier team laid the groundwork for a modern town, but was this modernity reflected in its spatial structure? Decolonization has been associated with changes in social structure and a shift from segregation based on race and ethnicity to segregation by class (see Colombijn, 2009 in this issue). In the case of India, residential segregation based on caste groups has a long history; in most situations the British allowed these to persist, and built their separate settlements away from the indigenous core of the town (Kumar, 2005). In the colonial period, caste and race as well as religion, language, and occupations formed the major axes of differentiation in urban spatial structure, with these attributes often appearing in combinations.

In 1963, a detailed study of the social structure of Chandigarh was undertaken by Victor D’Souza of the Department of Sociology of Punjab University, and the findings of his two-year study (D’Souza, 1968) provide a valuable source of information about the early evolution of Chandigarh’s social environment. Covering 2091 households and spread across all of the 30 sectors of the First Phase, it revealed that the social structure of Chandigarh had already begun to show certain changes. The decline in the importance of kinship as the basis of social organization, the reduced influence of caste, and the overwhelming importance of socio-economic status were highlighted.

Of the 29 sectors into which the town was divided, all but 5 were primarily residential sectors. D’Souza (1968, p. 10) noted that “the distribution of plots of various sizes is not evenly balanced in the different sectors. While some sectors have a proportionately larger number of plots of smaller size, bigger plots preponderate [sic] in others. Besides, there are certain sectors which contain exclusively large size plots.” In general, land allotments by the government had followed a pattern whereby large plots were assigned to the sectors closest to the Capital Complex (Sector 1); the farther one moved south of the Capital Complex, the smaller the plot size.

The plots reserved for government housing exhibited a hierarchical order, with the largest plot/house size being occupied by the highest official functionary, the Chief Minister, and the smallest plot size occupied by the office peon. Because of the way plot sizes were distributed, there was a strong clustering in the sectors according to occupation, education, and income. D’Souza noted (1968, p. 43) that “while there is a high

degree of correlation between the educational, occupational and income hierarchies, these are not significantly correlated with the operational caste hierarchy.” In fact:

the influence of the traditional bases of social organization has diminished considerably in the spatial distribution of population because of certain initial steps taken in the allotment of plots to private owners which was on a lottery system and the assignment of Government houses which was according to salary grade and priority of application. The social status of persons has tended to be more achievement oriented rather than ascription based. (D’Souza, 1968, p. 277)

However, these observations were more typical of the upper and middle castes, and there still remained substantial inequality when it came to the lowest castes that also occupied the lowest position in the composite socio-economic index compiled by D’Souza. Thus while the median family income of the upper Khatri caste, a trading caste, was 228 rupees, that of a scheduled (lowest) caste was 88 rupees. The allotment of government housing by salary meant that there was a clustering of low-caste employees in certain sectors, which were inevitably the most densely settled. The pattern of different densities for different income groups was essentially no different than the hierarchical arrangement of housing by occupational group (which also coincided with race) that Lutyen created for New Delhi between 1911 and 1931 (King, 1976; Legg, 2006). The continuity of Chandigarh’s town plan with colonial-style planning has been noted by several critics, academics as well as practicing architects (Nilsson, 1978; Hall, 1988; Khilani, 1997; Correa; 2004). The plan, in this respect, clearly failed to embody the commitment to egalitarian principles that were constitutionally given prominence by the new republic.

Who actually planned the sectors this way and why was that allowed to happen given the grand vision and values of Modernism that underlay the project? Prakash attributed this to the bureaucrats who were more comfortable with old ways of doing things and their unease with many of Le Corbusier’s avant-garde ideas. Thus Modernism in the way Corbusier conceptualized it was never implemented in the residential sectors of Chandigarh, and what we have instead is merely a diluted version of it.

THE LEGACY OF THE 1947–1965 PERIOD

A major legacy of the 1947–1965 period on town planning in India has been the building of the new city, the impact of which occurred in several ways. First, it was adopted by practicing professionals who imitated or reproduced its style, which came to be known as “Chandigarh architecture.” Second, it inspired more Indianized work that tried to learn from its flaws and drawbacks and use the International Style to respond more directly to Indian needs; by the end of the 1960s, this work was beginning to emerge and marked the start of true decolonization, or the finding of one’s own cultural identity. And third, this style was used by the government for public buildings, infrastructure, and the planning of other new towns.

There were also additional impacts, some of which had been planned by Nehru and the Punjab government, namely the training of Indians during the making of Chandigarh. Through the building of Chandigarh, several buildings in Ahmedabad, and the training Le Corbusier directly provided to several Indian architects, his legacy was vast. It transformed

the status of the architectural profession as well as “the aesthetic content of the formal training of architects in the newly emerging schools of architecture” (Lang et al., 1997, p. 214). The building of Chandigarh brought much favorable publicity to the professions of architecture and town planning. Le Corbusier’s esthetic ideology was an inspiration to Indian professionals who were struggling to develop a new identity. Between 1960 and 1980, Le Corbusier’s influence was so strong (Lang et al., 1997) that it can be seen widely in the urban design of that time. Some prominent examples are the campus of Punjab University (1955), the Indian Institute of Technology (IIT) campus in New Delhi (1961–1984), and the Jawaharlal Nehru University campus (post-1973) in New Delhi.

The International Style was also adopted by the government for many public office buildings as well as residential blocks built by the public sector. Charles Correa (2004), India’s best-known architect, notes that “much of the Chandigarh vocabulary has become standard vernacular for public works departments all over this subcontinent,” but this has also reduced it to mass production and poor quality. Burte (1997, p. 38), for instance, has observed that in Mumbai government architecture since the 1950s has been limited to “certain clichés” rather than the application of a concept in its entirety; this has produced a mix of styles of “bleak” quality:

Among the clichés related to planning is the symmetrical, “winged” plan of colonial origin. To this, in most government buildings is applied a Modern “look”—fins, louvers and such acceptable Modern devices, as in the Mantralaya. The government architect turns to Modernism for its most peripheral effects—the Modern look or façade—while working with the restrictive planning strategies of uncertain pedigree that determine the most crucial form and functionality of a building. In one stroke Modernism—that great conceptual revolution in architecture—is reduced to another variation on the style theme, while elevating what was comparatively only a half baked style of design—colonial architecture—to the level of an unquestioned authority on design methodology.

The above observation is important to note because one of the major producers of architectural and infrastructural work in the nationalist period was the government. The design of many new towns after Chandigarh tended to be bureaucratically produced without taking into consideration their specific contexts.

On the positive side, as mentioned above, the end of the 1960s saw the emergence of a new dynamic in architecture and town planning as a new generation of practitioners began to experiment with the ideas of the masters (namely, Le Corbusier and Louis Kahn, who came to India in 1962) and produce work of originality. By 1969, the Indian architectural profession had considerably matured and “Indian architects began to look more confidently into their own milieu, conscious of their mandate to take up a more responsible role in the development of their country” (Bhatt and Scriver, 1990, p. 20). There was a conscious return to traditional order, form, and craft as valid sources of imagery. An early leader in this “neo-vernacular” architecture was the English-born architect Laurie Baker, who spent his lifetime in India creating low-cost housing that used local materials and designs. Also included is the work of architects such as Charles Correa and Bal Krishna Doshi, who learned from the masters but have produced work over the past four decades that is a fine blend of the indigenous and international. Charles Correa has been

involved in town planning as well, such as the making of Navi Mumbai, where his contribution has been very important (Shaw, 2004).

CONCLUSION

The period 1947–1965 was a critical time for the newly formed republic of India while the process of decolonization was still ongoing. The internal and external security of the state and the settling of millions of refugees was its first concern. The building of new towns became an urgent necessity to deal with the refugee problem and the losses of Partition, both material and psychological. Many of the new towns came to symbolize much more than their functional role because the Indian state, similar to many other developing countries that had gained independence from colonial powers, attempted to fashion a new society and economy to reflect its new-found freedom from colonial rule. The building of new towns was one of the means by which nationalist ideals were to be implemented via the creation of a new urban environment that could be planned on egalitarian principles and provide a better quality of life to its citizens. The kind of new towns that were designed and built was influenced by the architects hired for the job and their professional ideologies. The latter, in turn, shaped their sense of esthetics and affected their understanding (or lack of it) of the local. Modernism in architecture neatly matched the needs of the emerging nation to express itself in ways different from the past. This was perhaps best seen in the case of the building of Chandigarh, where “the aims of the Indian authorities coincide remarkably well with the framework created by Le Corbusier” (Nilsson, 1978, p. 134).

However, getting away from the past was not so easy, and in the construction of new towns some of the old colonial legacies persisted, such as in the class segregation of government housing in Chandigarh. Nevertheless, Le Corbusier’s work in India and the making of Chandigarh provided valuable lessons for the Indian town planning profession. After emulating his style for almost two decades, by the end of the 1970s, a new and more mature engagement with the International Style had evolved.

In fact, even a decade earlier there had already been a realization of the limitations of the purely International Style, and this led to introspection and a rethinking with respect to both the past as well as the local vernacular. As a result, Indian architecture and town planning now more widely embraced both as sources of ideas. This was also reflected at the official level, including the country’s Seventh (1985–1990) and Eighth (1991–1996) five-year plans, where planning solutions favoring the preservation of local diversity, decentralized administrative structures, bottom-up planning, flexibility in design and execution, and a movement away from mass-produced construction were articulated (Shaw, 1996). But their actual implementation has remained tardy because of the ingrained values of the planning bureaucracy and increasingly as well as by the growing impact of globalization. Indeed, the demand for global-style offices and residential areas to serve the emerging “new economy” has today reversed the inward orientation that characterized the process of nationalism and decolonization (Shaw and Satish, 2007).

However, looking back at the chaos that followed independence and Partition, the achievements of the 1947–1965 period in town building have not been insignificant. For a poor country with limited resources, these towns were built fairly rapidly and were able to absorb some of the burden of the refugee crisis and the mushrooming urban population

following independence. A rich legacy of new towns and urban developmental institutions has been left behind, but more research is needed regarding their origins as well as early growth and development.

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