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*Journal of Planning History* published online 2 November 2011

DOI: 10.1177/1538513211420367

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# Jamshedpur: Planning an Ideal Steel City in India

Amita Sinha<sup>1</sup> and Jatinder Singh<sup>2</sup>

Journal of Planning History

000(00) 1-19

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DOI: 10.1177/1538513211420367

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## Abstract

The steel city of Jamshedpur originated in a small company town in the backwaters of eastern India as a new experiment in urbanism in 1907. The article critically examines its evolution to trace the influence of the most significant twentieth century town planning ideas—the garden city and the neighborhood unit—on the industrial township. A reevaluation of the planning reports of 1911, 1920, 1936, and 1944–45 reveals the reworking and adaptation of twentieth century modern urban planning and the limited success it achieved in India. The planning ideals included open green spaces of the garden city as an antidote to industrialization, urban infrastructure adapted to local site conditions, neighborhood units self-sufficient in civic amenities, and street hierarchy as a means of traffic segregation. Regionalization of global planning ideals as well as the tension between planned development and organic growth is evident in the narrative of Jamshedpur evolving from a company town to industrial city to the present day urban agglomeration

## Keywords

garden city, neighborhood unit, industrial town, urban core and periphery, South Asian urbanism

The steel city of Jamshedpur celebrated its 100 years of existence in 2008, having won the UN Global Compact City Award two years ago. It is considered to be a remarkable success story in the face of the decline of company towns elsewhere in the world. Its establishment predated the great experiments—New Delhi, Islamabad and Chandigarh—of the twentieth century in city planning in the Indian subcontinent. When New Delhi was being planned in 1911 as a grand imperial capital, an industrial town was taking shape in the backwaters of eastern India as a new experiment in urbanism. It employed modern town planning principles, ushering in modernity through new modes of spatiality and lifestyles associated with industrialization. Unlike New Delhi, an exercise in legitimating the empire in the eye of its colonial subject, Jamshedpur was an indigenous industrial development, initiated, financed and built by Indians, using local resources and labor albeit aided by foreign expertise.

South Asian urban historiography has so far been largely confined to metropolitan areas with the dominant discourse revolving around differences between colonial and indigenous settlements and

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creation of hybrid urban forms.<sup>1</sup> In its preoccupation with large cities, it has overlooked urban innovations occurring in smaller towns. Jamshedpur was not a colonial capital, a hill station, or an expanded cantonment or civil lines. It was for the Indian subcontinent a new kind of settlement built around the steel factory that was the primary source of employment for its residents and governed all aspects of their lives. Daily life was structured around the industry and its demands for efficient production. Paternalistic welfare policies managed the live-work space of the town. Jamshedpur could thus lay claim to ushering in modernity whose source lay in the West but was shaped by indigenous entrepreneurship, capital and labor. Unlike colonial urban forms, it did not represent jarring juxtapositions of traditional and modern or their amalgamation, rather it attempted to create from scratch a new kind of spatial order. This becomes all the more noteworthy because the company town had no precedents in India.

While New Delhi and Chandigarh were designed by star architects and conceived in totality, Jamshedpur was incrementally planned not by well known designers but by engineers and an architect over a period of 34 years.<sup>2</sup> Each plan had to respond to the one before it and to the new requirements created by the rapidly expanding industry and burgeoning work force. The Kennedy Plan (1911) was a small company town that became a full fledged industrial township in the Temple Planning Report within a decade.<sup>3</sup> The close attention given by F.C. Temple (1920) to landscape in planning the urban infrastructure went far beyond the conservancy approach practiced by civic improvement trusts of nineteenth century colonial India. Stokes Plan (1936) appears to be a mere extension of Temple's innovative ideas and a response to the looming housing crisis following the astonishing expansion of the town.<sup>4</sup> Koenigsberger's Plan (1944-45) reflected the current vogue of the garden city and the neighborhood unit in planning circles, although Jamshedpur with its core of steel works could never conform to Ebenezer Howard's prototype.<sup>5</sup> The disciplinary background of Jamshedpur's planners—sanitary engineering, and architecture—and planning paradigms of the early 20th century, played a formative role in how the plans were conceived and their impact on the city's eventual built form.

Jamshedpur has received surprising little attention from urban planners and historians and its omission from planning literature is a gap in urban history of South Asia. No comprehensive evaluation of planning reports as such exists.<sup>6</sup> The reports comprise the primary text for our analysis of their formative role in shaping the city and its quality of life. In addition F.C. Temple and Otto Koenigsberger's writings are a window into the underlying philosophy and the myriad stream of influences that influenced the planners' approaches.<sup>7</sup> Plans prepared by the Town Planning Division of Tata Steel (reorganized as Jamshedpur Utilities & Services Company Limited or JUSCO) in 1998 and Jharkhand State (2008) are consulted to evaluate the impact of initial planning on current development. As Jamshedpur plans its future growth through re-densification and envisages remedial landscapes for its heavily polluted segments, an examination of successes and failures of early planning efforts from contemporary standpoint will be both necessary and useful.

## Beginnings

Jamshedpur's origins are well documented in books and other commemorative publications.<sup>8</sup> Jamshedji Tata's extraordinary efforts to build an industrial plant to produce iron and steel at the turn of the last century when India was totally depended upon foreign imports have been chronicled in his biographies and those of Tata Steel Company.<sup>9</sup> A visionary and a pioneer, his perseverance in the face of tremendous obstacles was truly exemplary. His travels to North American industrial cities in 1902 in search of technical expertise for building the steel plant set in motion the long and arduous process of finding sites rich in iron ore and coal deposits. Even though he did not live to see the plant built, his vision propelled the painstaking efforts that culminated in the discovery of iron ore at Gurmahisini Hill in Mayurbhanj state in Eastern India and the decision to locate a steel plant in the tribal village of Sakchi (Sankchi) at a distance of 45 miles from the Hill.



**Figure 1.** View of Dalma Hills and confluence of Swarnarekha and Kharkhai Rivers (Source: Amita Sinha)

The most important of the site's many advantages was the quick means of transportation to Calcutta port afforded by Kalimati railway station on the Calcutta-Bombay railway link, only 3 miles away. The genius loci of the site was the enigmatic Domuhani goddess of the 3,280 ft high Dalma hill range towering over the confluence of the river Subarnarekha and its tributary Kharkhai (figure 1). This archetypal landscape configuration, underlying a majority of sacred sites of pilgrimage in India, happened to be extraordinarily well suited to utilitarian purposes as well. The Dalma range formed by volcanic lava flows overlooked an undulating plain of phyllite and mica-schist, broken by dolerite and quartzite ridges and well drained by natural stream beds. The central ridge extending from north-west to south-east provided level surface for building the steelworks. A natural dolerite dyke in the golden streaked Subarnarekha River aided in constructing a weir so that water could be pumped into reservoirs inside the factory for cooling the plants and waste disposal. The natural landscape played a formative role in the development of township, especially in guiding the street network and open space system in the Temple Plan.

## **Welfare Ethos and Town Planning**

The oft-repeated quote by Jamsetji Tata exhorting his son Dorabji in 1902 to 'lay wide streets planted with shady trees, every other of quick variety', to provide 'plenty of space for lawns and gardens', to 'reserve large areas for football, hockey and parks' and ' earmark areas for Hindu temples, Mohammedan mosques and Christian churches' shows a quintessentially modern sensibility. It encompassed a secular outlook, valued open space and greenery as an antidote to social ills and as

settings for play and recreation. This sensibility was shaped by his life experiences as an industrial entrepreneur. His cotton mills in Ahmedabad, Nagpur and Kurla were successful not only because of modern technology but also investment in welfare programs in worker education and health. His involvement in civic improvement and reclamation schemes in Bombay demonstrated a profound interest in making life better for those in living in squalid conditions in the old Fort and creating a productive landscape from swamps.<sup>10</sup>

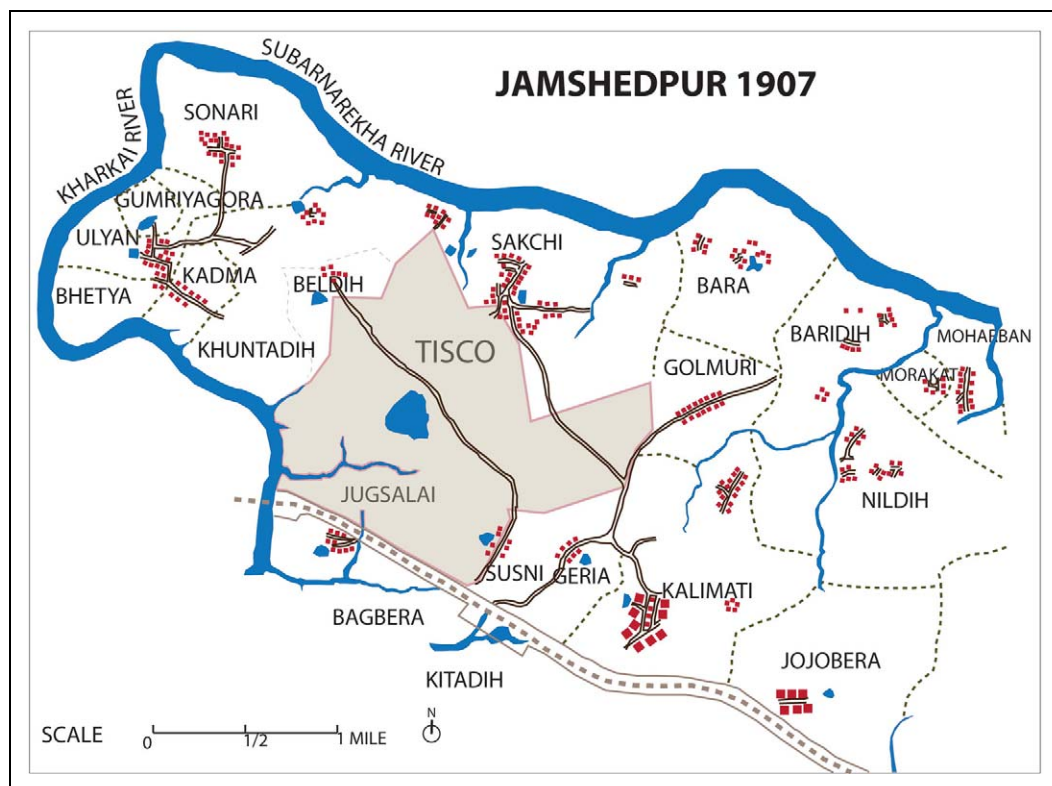
The development of the company town should be understood in the context of Tata Steel's efforts to stem workers' discontent with inadequate housing and well as ideas popular at the turn of the century that physical environs would improve productivity. Sound business management policy and philanthropic motives combined with a desire to make the industrial township a model that would be envied and emulated throughout India. Welfare programs for workers such as the 8 hour working day (instituted as early as 1912), bonus and provident funds, sick leave, free medical aid and programs for workers' safety, and technical skill training programs were developed. They were administered by the Personnel Department created in 1943 and Joint Council of management and workers established a decade later.<sup>11</sup> Designed to improve worker morale and productivity, they succeeded in improving the working conditions and prevented the lightening strikes of 1920s from recurring again.<sup>12</sup>

Enlightened welfare policies extended to improving the living conditions of the worker and guided town planning initiatives.<sup>13</sup> As R.D. Tata said to shareholders in October 1923—"We are not putting up a row of workmen's huts in Jamshedpur—we are building a city".<sup>14</sup> While the first Plan responded to the need to provide bungalows for 'covenanted' officers and quarters for skilled workers as the steel plant was being built, the next three were driven by ever increasing requirement for worker housing created by extension and modernization programs. Urban infrastructure, open green spaces for recreation, public health programs, medical and educational facilities, were part of the city building exercise. Their aim was to create living conditions for promoting health and well-being of employees in turn leading to enhanced productivity.

Not only did the Tatas build, they also controlled and managed the urban landscape through Town Planning Division and Health Department. Public hygiene was an important aspect of landscape management with many innovative programs for disease control, water borne sanitation and urban greenery as an antidote to atmospheric pollution introduced over time. Unlike a Municipality that levies taxes, a Notified Area Committee consisting of Tata management governs the city through the Town Planning Division (now reconfigured as JUSCO—Jamshedpur Utilities and Services Company) with company funds. In addition to housing, Tata Steel provides the employees with water, sanitation, electricity, schools, medical and recreational facilities. These amenities provided free of charge to Jamshedpur residents annually cost the Company Rs. 15 million with a current deficit of Rs. 500 million incurred by Town Planning. Exceeding the average municipal functions its regulatory powers may be perceived coercive but are nonetheless effective. This kind of governance and day to day management has ensured the long term success of town planning in Jamshedpur.

## Company Town to Industrial Township

The origins of the steel city lay in a small company town built from a camp in the tiny tribal village of Sakchi. P.C. Tallents in the 1921 census report describes the spectacular growth of this company town into an industrial township as 'a romance of the twentieth century' and that the 'story of its birth in the wilderness in 1907 and its amazing development during the next 14 years reads like a fairy tale'.<sup>15</sup> Contrary to the popular belief the setting was not wilderness. Although the site was thickly forested, there were a few hamlets subsisting on rice cultivation on terraced ridge slopes and on forest produce. They were strung along cart tracks or *nalas* (natural swales) where water tanks were constructed by digging or embanking a stream (figure 2).<sup>16</sup> Tata Steel acquired 3, 564 acres



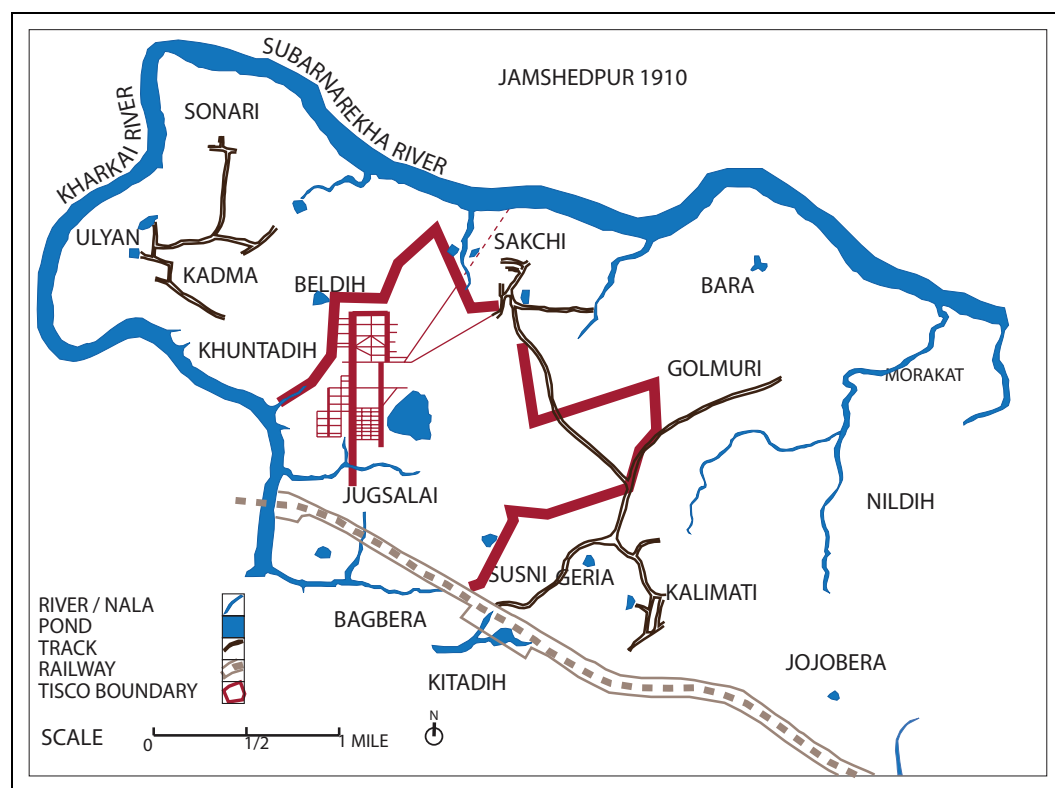
**Figure 2.** Tribal settlements (Source: Viswakarma, 1991, redrawn by Sonal Modi)

of waste land in Sakchi and a few neighboring villages on the undulating central ridge, a watershed between the two rivers. The site was graded in 1907-9 for building the steel plant at the highest point on the western spur; reservoirs were built for waterworks inside the plant; railway tracks were laid from main line at Kalimati and factory units constructed along them.

The Pittsburgh firm of Julian Kennedy and Axel Sahlin, awarded the contract for the designing and engineering works, built the original colony between 1909-12 for housing managers and skilled workers.<sup>17</sup> The plan shows little influence of the garden city/suburb ideal of the 'new' American company towns that were being designed in the US by professional architects and landscape architects around the same time. Site exigencies dictated the stratified pattern of housing on high ground on the ridge spurs on the north-west and western fringes of the steel plant to ensure protection from the factory dust carried by the prevailing western winds. The colony was laid out in the grid-iron North American settlement pattern, with alphabetically named 'roads' running east-west and numbered 'avenues' running north-south. There is no evidence of a planned town center or public park system (figure 3).

Hierarchically divided into Northern and Southern Towns consisting of bungalows and quarters for 'covenanted' officers and skilled workers (Southern Town was itself divided into G town meant for middle-income group and R.N. for workers) respectively, the plan ignored the acute need for housing laborers with the result that clusters of mud huts sprang up around the towns and close to the factory gates. Lovat Fraser describes Northern Town in 1911 as 'street after street of commodious one-story brick houses, all well ventilated, all supplied with running water and lit by electric light'. He mentions a 'spacious recreation ground in the center of the town', and a 'bazaar containing





**Figure 3.** Sahlin and Kennedy Plan, 1912 (Source: Temple, 1928, redrawn by Sonal Modi)

both European and Indian shops'.<sup>18</sup> Over time the *maidan* (open space) at the entry to the Steel Plant became a 'town square' of sorts edged by principal buildings including the Director's and General Manager's bungalows and General office building.

The company town designed for 10,000 residents with few public spaces and streets became the nucleus for later growth of Jamshedpur into the industrial city. Tata Steel profits from sales of steel plates and rivets in World War I spurred increased steel production. It therefore began the Great Extensions Program in 1917 by building more blast furnaces, coke ovens, machine shops and foundries.<sup>19</sup> The number of workers had increased to 18,675 and the company acquired an additional 12,215 acres for accommodating the growth.<sup>20</sup> Frederick Charles Temple, sanitary engineer for Orissa and Bihar states was appointed as the Chief Engineer of Jamshedpur to plan the growing township. The Temple Plan was innovative, an exercise in ecological urbanism and sensitive to the lie of the land and the culture of indigenous communities. Undoubtedly influenced by the garden city planning principles and perhaps also by Patrick Geddes' work in India on civic improvement (although Temple never acknowledges either in his publication and report) it was ahead of its time in its approach to environmental and community planning.<sup>21</sup>

Like the garden city of Letchworth and the model industrial village of New Earswick designed by Barry Parker and Raymond Unwin in UK, Temple's Plan was adapted to the contours of the site but unlike them it had to contend with the fact that township already existed around the steel plant. Industry at the center, not at the periphery, flanked by housing interspersed with squatter settlements (*bustees*) was the prevailing spatial pattern that could not be effaced. Temple's close and insightful reading of how the earlier tribal settlements had utilized the topography in building their huts and





**Figure 4.** Temple Plan (Source: Tata Steel Archives)

cart-tracks influenced his proposal for extending the street system. Using the cart-tracks on the ridge line as the basis, he designed an inner circle that connected the already developed core to areas on the north, east and west through 'loops'. To protect the riverfront from industrial pollution and town waste and to preserve its scenic quality, he designed a low level outer circle road with an intercepting sewer, connected to the inner circle road by 'links'. The street and drainage systems, along the ridges and gullies, resulted in an open space system of parks and parkways distributed throughout the town (figure 4). Dry weather flow was carried in the surface drains along the contours while the overflow storm water irrigated the parkways in swales. Water-borne sewerage system was introduced and sewage, instead of emptying into the rivers, was collected from underground gravity sewers and pumped into the purification plant with the manure used as fertilizer in a sewage farm.

In accordance with the prevalent garden city ideals of low density, Temple proposed a housing density of 12 units per acre, balancing the generous 1-1½ acres of bungalows with ¼ acre plots of

new quarters. He designed the quarters in three blocks with the fourth block kept as open space. He recognized that the intractable problem of housing shortage could be solved by improving the drainage and sanitation of squatter settlements and preservation of old tribal villages. Innovative for the times was Temple's insightful understanding of tribal ways of life and its translation in hexagonal settlement pattern inspired by Rudolf Miller's work in Vienna. This pattern allowed small clusters of 12 huts surrounding a central open space, all enclosed by hexagonal roads 500' apart. He believed that the *adivasis* (tribal communities) should have the freedom to build their huts in any manner they liked, with the water tank and bathing platforms in the center similar to indigenous settlements.<sup>22</sup>

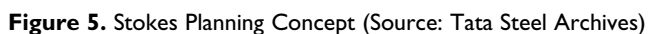
Temple's plan was largely implemented. It expanded the town considerably by constructing 62 miles of roads, 2,315 dwellings, improving markets in Bistupur, Dhatkidih and Sakchi, along with a functioning water works and sewer system. Two villages for *adivasis* were laid out in Sonari and Kasidih.<sup>23</sup> Other industries associated with TISCO (Tinplate, Indian Cable Company, Indian Steel Wires Products Ltd.) were given land and the street system was extended eastward on ridges parallel to the central ridge, with bungalows built on the crest and workers' quarters on the slopes. Temple's planning principles such as the gravitational sewerage system, street system adapted to the contours, and the parkway system in natural drains, were sound and have withstood the passage of time, lending the older parts of Jamshedpur a spacious feel.

## Planning the Industrial City

The 1930s saw yet another phase of expansion of the steel plant. Now it was the largest producer of steel in the British Empire meeting three quarter's of India's demand. Meanwhile the population had increased to 83, 738 calling for rapid construction of housing.<sup>24</sup> Major P.G.W. Stokes, a military engineer who was responsible for reconstructing Quetta after the 1934 earthquake, was entrusted with the task. His 1937 planning report reveals the influence of recently formulated sociological and city planning theories in the US. Stokes' plan was an attempt to understand the logic of growth of an expanding industrial city and impose a spatial pattern on it drawn from the North American metropolis.

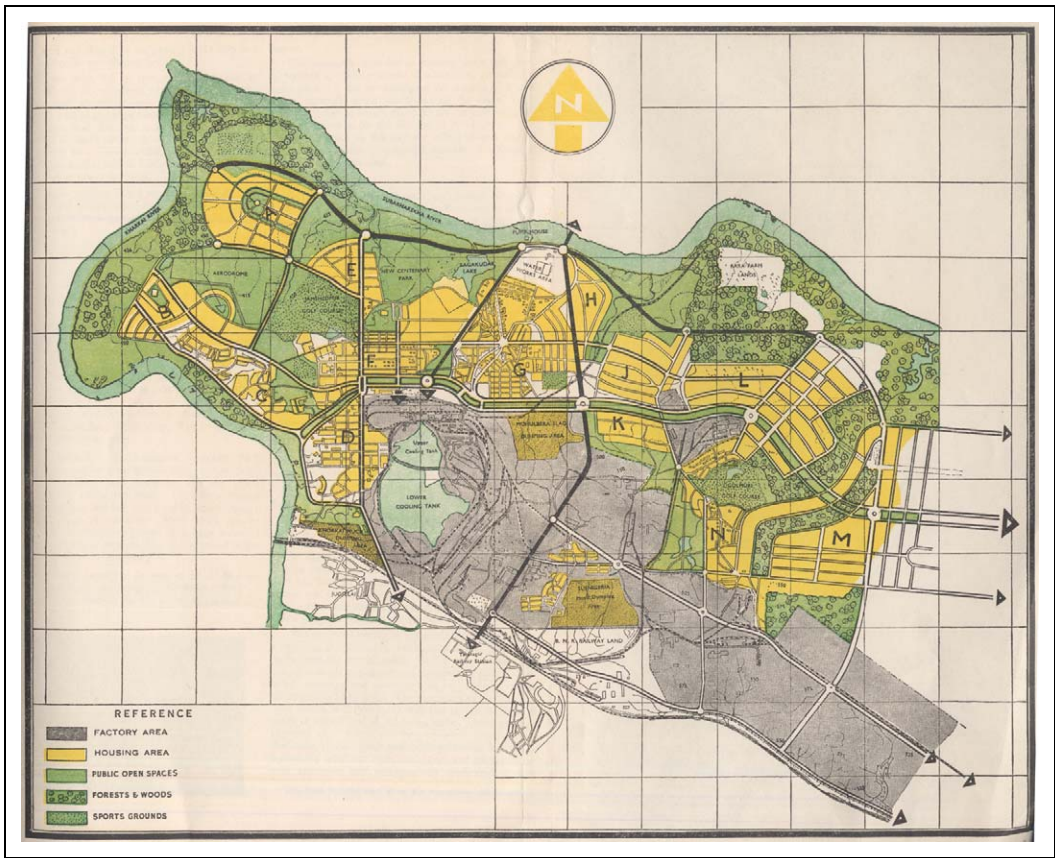
Constrained by existing development, he expressed frustration in his inability to come up with an ideal scheme of housing wherein the lower class dwellings would be situated closest to the factory. Presumably this close proximity was to facilitate pedestrian access on the part of those who could ill-afford the cost of transportation. Stokes' Plan reflected the concentric ring model of Ernest Burgess (1925) who proposed that cities expanded outward from the central business and manufacturing district with working class housing nearest the core.<sup>25</sup> However Jamshedpur's housing pattern, though stratified was mixed and could not be forced into a neat gradient of concentric rings. Stokes therefore had to take recourse to Homer Hoyt's wedge shaped urban model that stipulates segmented growth of housing along transportation arteries with those of similar incomes located in proximity to each other.<sup>26</sup>

While Stokes had little to suggest beyond Temple's layout of street and open space system, he did reiterate the efficacy of parkways in valleys with adjoining roads, advocated the separation of sewer and storm water drainage systems, and emphasized that *bustees* pose a health hazard and should not be regarded as a real or permanent solution to Jamshedpur's housing problem. He recommended that Tata Steel acquire land within 2-3 miles radius of the Factory to control speculation and develop the area for housing (figure 5). Although workers' housing was built in Burma Mines within one mile south east of the steel plant as per his recommendation, it exposed the residents to the air pollution created by the factory smoke and coal dust. In accordance with Stokes' Plan, bungalows were built in Northern Town and along the main E-W Straight Mile Road, and workers' quarters were built in the north in Sakchi and towards the west in Kadma. Jamshedpur's housing stock was increasing yet it fell far short of the actual requirement.



J.R.D. Tata, Chairman of Tata Company, expressed confidence in his foreword to Koenigsberger's Master Plan that it will 'ensure the harmonious development of Jamshedpur in a manner which will satisfy the manifold needs, functional and aesthetic of this beautiful Garden City'. A close look at the Development Plan reveals Koenigsberger's effort to use the garden city precepts and the neighborhood unit was only partially successful thwarted by the fact that the city had grown substantially around the steel plant with interstitial pockets and peripheral existence of tribal villages transformed into *bustees*. Planning in the Jamshedpur Notified Area had ensured plentiful greenery and low density but contrary to popular belief neither core nor periphery suggested the idealized layout of a garden city. The prototype however was firmly entrenched as the optimal solution to problems of congestion and ill-health in settlements. Koenigsberger was loathe to give it up and endeavored wherever space permitted to plan areas in accordance with the garden city precepts. Only later in his writings did the ideas on tropical planning crystallize as unique responses to local climate and social and economic conditions.<sup>29</sup>





**Figure 6.** Koenigsberger Plan (Source: Tata Steel Archives)

Koenigsberger designated the industrial and residential areas of the city as two primary zones of development in accordance with his 'band town' planning concept (figure 6). His contention was that linear growth along transportation arteries was the best solution to the problems posed by the concentric growth around the place of employment.<sup>30</sup> The 'band' form was suited to the desirable segregation of housing and industry in two separate but parallel zones minimizing distances to the open country.<sup>31</sup> Linear bands of city and countryside ensured access to greenery and fresh air within reasonable walking distance of the place of residence. In Jamshedpur this meant that residential areas to the north and west could grow indefinitely towards the east and have access to his proposed green belt along the two riverfronts. But disrupting this zone was the presence of worker's quarters built as per Stokes' Plan, and worker's quarters and housing surrounding the new and subsidiary industrial development in the east.

His division of the residential zone into 12 neighborhood units likewise was an attempt to impose a framework on the existing urban tissue based upon the increasingly popular Anglo-American planning ideal. Jamshedpur's topographically based street system built according to the Temple Plan lent itself to planning self-contained neighborhoods bordered by arterial roads that in turn connected with by-passes. The socio-economic stratification of housing originating from the bungalow-quarter division of the Kennedy Plan was inevitably perpetuated in Koenigsberger's plan.<sup>32</sup> His insights into the habits of indoor-outdoor living in the tropics and the social structure of the Indian family and community appear to be only partially translated into physical layouts of the neighborhoods housing

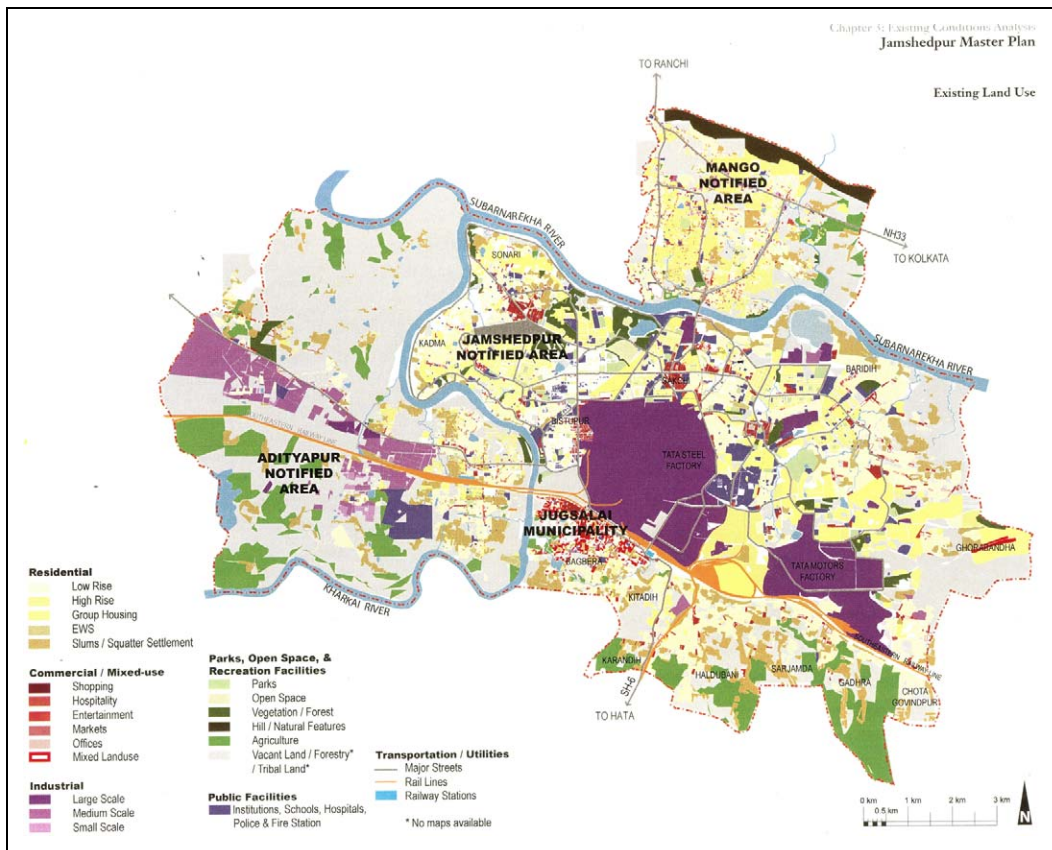
10,000–18,000 people, a much higher density than in the West. Koenigsberger recognized that in the absence of community management large open spaces between and inside neighborhoods in India tend to deteriorate. His plans for the five types of quarters categorized by income levels show a grasp of Indian customs in their provision of verandahs and courtyard like open spaces although they were strictly modernist in their design idiom. Koenigsberger recommended prefabrication of the Tata house for mass production of 12,000 units annually in a bid to solve Jamshedpur's housing shortage. With a structural framework of light steel sections, walls of pre-cast blocks and barrel-vault roofing made from steel tie-rods, it would have been an appropriate symbol for the Steel City, had it been built.

Like his predecessor Koenigsberger considered *bustees* to be blighted urban housing and recommended their replacement. Recognizing perhaps that massive urban surgery was untenable, he detailed proposal for a garden suburb on the forested slopes of Dalma Hills where Mirzadi Dam had been constructed. This was for 200 medium income families who could do the daily commute 7 miles to the Steel Plant. Designed in a picturesque style where bungalows and cottages disappeared behind tree foliage and gardens, the only public building besides the club/rest house would be the Inspection Bungalow overlooking the Dam on one side and terraced hill-garden with a bandstand on the other. Intended as a withdrawal into a leafy suburb at a suitable distance from industrial pollution and haphazard urban growth, this unbuilt proposal represented what Tata Steel desired all of Jamshedpur to be.

## Beyond the Industrial City: Jamshedpur Urban Agglomeration

Although Tata Steel remained the largest employer and the physical core of Jamshedpur, new industries and their settlements were built first towards the east and later after independence in 1947 across the river Kharkai on the west. The earlier eastern suburbs were built around the factories and consisted of officer bungalows and worker quarters, similar to the pattern at the core. A multi-nucleated pattern emerged with industries as the nuclei of settlement growth that minimized the distance between residence and workplace. Some of these industries were established by the Tatas, others were acquired and became subsidiaries, sharing the supply of power and raw materials delivered on railway tracks extending from the main branch. Industrial growth began in the 1920s with the establishment of Tinplate, Cable, Steel and Wire Industries who built their housing in a grid iron pattern on a ridge parallel to the main NW-SE ridge. The tribal villages that had deteriorated into *bustees* were now transformed into planned housing colonies. The Tata Engineering and Locomotive Company (TELCO) built housing for its employees in the village Jojobera, Golmuri was developed by Tinplate Company, Sidhgora by Indian Oxygen and Tata Steel, and Baridih by Tube Company. These are mini company towns, their land leased from Tata Steel and municipal functions self-managed.<sup>33</sup> The satellite township of Adityapur came up in the 1960's across the river Kharkhai as a result of state government (then Bihar now Jharkhand) initiative in planning an industrial complex. The township incorporated 83 villages and is spread over 53 square miles with much of the development concentrated along the main artery—Tata- Kandra Road.<sup>34</sup> About 700 industries provide goods and services to Tata Steel although serviced by poorly planned residential and commercial development.

The city's growth over the last century has shown a centrifugal pattern with low-income settlements dominating the periphery. Once the rivers were bridged there was no barrier to urban extension in the 1960s to Mango on the north and Adityapur on the west. Much of this growth has been unplanned resulting in an uncontrolled urban-rural fringe with its attendant problems of congestion, lack of public sanitation, and poor housing stock.<sup>35</sup> This urban agglomeration (JUA) has seen a 36.4% growth in population from 0.8 million to 1.1 million between 1991–2001, 25–30% of whom do not have access to basic services of water supply and sewerage. In 2008 the Jamshedpur



**Figure 7.** Master Plan of Jamshedpur Urban Agglomeration

Urban Agglomeration (JUA) 2027 Master Plan was drawn up by Superior Global Infrastructure of New Delhi in collaboration with the Philadelphia based landscape planning firm of Wallace Roberts & Todd at the behest of Jharkhand state (figure 7).<sup>36</sup> The scope of planning covered the core of Jamshedpur, Adityapur, Mango, Jugsalai and seven villages, altogether covering an area of 149.23 sq. kms.

The Master Plan aims to reduce the disparity in infrastructure provision, civic amenities, and quality of housing stock between the core of Jamshedpur and its urban periphery. Anticipating that the population of the industrial hub will grow to be 3 million by 2027 requiring an additional 383, 446 dwelling units, its planning approach is mixed-use development in multiple nodes within JUA. The transit oriented development nodes will distribute services and amenities, presently concentrated at the core, throughout the area. To accommodate growth and avoid sprawl, optimal utilization of vacant land within JUA and contiguous urban development are suggested. The plan is implicitly based upon new urbanism ideal of concentrated, high density urban centers adjusted to the Indian urban condition consisting of glaring disparities between spacious, well planned areas and congested, haphazard development. Proposals on traffic management, stormwater and sewerage system, and solid waste management are detailed for implementation under the auspices of JNNURM scheme of the Indian Government.<sup>37</sup>

Tata Steel plans to increase its production to 10 million tonnes by 2012 through its current modernization program. This expansion however does not entail land extension or an increase in

workforce. The reduced demand for employee housing due to increased operational efficiency in the production process implies a rethinking of housing policy in areas leased by the Company and in sub-leased holdings where development controls rest with the Company. The present residential density of 140 persons per hectare (pph) is slated for an increase to 200 pph. New housing patterns are being designed for higher density and old housing stock is being demolished to make way for recreational open spaces. The free hold areas, outside the purview of Tata Steel and largely at the periphery where uncontrolled organic growth occurs, are problematic sites and where public private partnerships between the state and local bodies in planning and implementation is anticipated to have a positive impact.

There are major transportation issues in Jamshedpur created by out-bound traffic carrying finished goods from industries in Jamshedpur and Adityapur Industrial area on the west as well as traffic from south cutting through the city to National Expressway on the north. JUSCO plans to channelize this outbound traffic in dedicated transportation corridors and rerouting through traffic by upgrading regional linkages to by pass the city. Lack of public transportation and high automobile ownership (0.3 million vehicles) has led to increased traffic within the city, the problem exacerbated by on-street parking. A Bus Rapid Transport System (BRTS) is envisaged as are street widening schemes for slow moving vehicles and pedestrians in the street system.

Steel making in the past had generated large amounts of slag disposed through dumping in *nalas* and other sites. Although improved manufacturing processes have led to zero-dumping, the existing sites of slag mounds and ash ponds need to be remediated. In particular industrial waste on the riverfronts needs to be treated through landscape design so that the degraded sites can be transformed into a linear park system. Untreated sewage discharge into the rivers, ground water extraction and random disposal of municipal solid waste need provision of regulated services by the Company in the fringe areas in order to reduce the disparity in environmental conditions between the Company managed and free hold areas.

## Legacies

A critical re-evaluation of the planning reports reveals the reworking and adaptation of modern town planning ideas to the unique set of circumstances posed by the evolving industrial township. Assessing their legacy is useful for a number of reasons, not the least of which are lessons afforded to planners today as they grapple with issues of sustainable land management posed by urban sprawl. Jamshedpur's origins as a labor camp for a steel plant continued to cast a long shadow on its later development even as civic amenities increased and welfare programs proliferated. The bungalows in Northern Town of Kennedy's Plan became the core of elite neighborhoods occupied by managerial class in proximity to recreational parks and sports grounds while middle- and lower-income housing extended from workers' quarters in Southern Town.

Temple's sensitivity to topography in developing the street and sewerage system and open space network ensured generous parkways, good public sanitation, and cohesive circulation. His community design for tribal workers although low-cost and using local resources and skills did not live up to its promise of sustainability. Neither could the concentric and sector models that inspired Stokes' planning efforts fully guide the ground realities of the burgeoning industrial city. Koenigsberger's report had a lasting impact on thinking of Jamshedpur's planners even though not all of it was implemented. He introduced the concept of road hierarchy thereby insulating pedestrian oriented neighborhoods from heavy vehicular traffic of goods and linking the city circulation to regional transportation system. Jamshedpur 2020 Plan drawn up by JUSCO and the JUA 2027 Master Plan follow Koenigsberger's lead in planning traffic interchanges between the regional and local road network, elevated truck corridors for industrial goods and road widening schemes.<sup>38</sup> Similarly his proposal for prefabricating housing units was realized much later in the three Steel Houses built



in collaboration with the Canadian firm Minaean Ventures in 2004 and 650 prefabricated housing units built in 1990s with Larson & Toubro Company.

The major issue in urban management has been urban encroachment caused by unauthorized construction particularly in the 1970s and 1980s. Strip commercial development dominated by temporary shops selling perishable goods and auto repair sheds outside of Jamshedpur Notified Area has been the norm. There are 22,113 substandard houses built on encroached lands out of a total housing stock of 236,096 in JUA. This is due largely to the failure of industries to provide housing for all their employees and encouraging them to build on subleased land since the 1960s.<sup>39</sup> The last decade of the twentieth century saw a reduction in maintenance as a result of reduced manpower in the Town Planning Department. Since 2002 the revival of the steel industry has resuscitated town planning—old housing stock near the steel plant is being dismantled and new housing built elsewhere. The tension between planned development and organic growth that has saddled Jamshedpur from its very beginning has never been fully resolved. To successfully incorporate *bustees* into their schemes or to control their proliferation in the interstices of planned development (for example in the *nalas* carrying waste water from the factory known as Garabassa) or at its periphery has remained an unachievable goal so far—86 *bustees* were taken out of the lease and handed back to the state government.<sup>40</sup>

Jamshedpur appears to have reproduced the duality—order vs disorder, stability vs flux—of third world urbanism. This is particularly galling in face of the fact that tribal communities, indigenous to the area and from nearby regions who had provided their labor (and still do) in building the steel plant, live an impoverished life in the *bustees* since housing is only provided to those who are permanently employed in the Company for a period of time.<sup>41</sup> Does this represent a failure of planning derived from an imported model of modernity or an inevitable byproduct of a development process that simply cannot muster adequate resources to meet the needs of a large segment of the subaltern population attracted by the opportunities industrialization offers? The fault lies neither in the planning process per se nor its implementation by Tata Management but perhaps in the socio-economic disparities between Jamshedpur and its undeveloped hinterland.

If one were to abide by the maxim that lessons from the past contain seeds of the future, Jamshedpur's chronicle tells us that planning in South Asia works best when coupled with a regulatory framework and sound management practices of the kind that Tata Steel was able to provide through its Town Planning Department. Failures of company towns such as Pullman in the US have been explained in terms of restrictive policies of management but the success of Tata Steel in Jamshedpur shows it to be not a general rule.<sup>42</sup> Widely acclaimed as a 'modern' city, an early urban experiment in South Asia and a precedent for later new town development, Jamshedpur was and is a showpiece for the Tatas, a symbol of the triumph of private enterprise over the state socialism policies of the post-independence era. It provided a model for steel towns—Bhilai, Bokaro, Durgapur and Rourkela—built by the Indian government under the five year plans in the decades following independence.<sup>43</sup> Plagued by poor physical planning, inadequate municipal services, and labor unrest, the steel towns failed to live up to Jamshedpur's standard. Public sanitation issues continue to plague Indian urbanism today as much as they had done in the early 20th century. The woefully inadequate and ill-designed urban infrastructure of most Indian cities throws into sharp relief success of plans such as those of F.C. Temple in creating a well functioning landscape based infrastructure adapted to local site conditions.

The perception 'that city and industry remain—and will, for the foreseeable future, continue to remain—inextricably linked' is firmly entrenched.<sup>44</sup> As a company town that grew into an industrial city, Jamshedpur represented a new spatial and social order for the region. A socio-economic survey in 1959 revealed that more than half of the migrants attracted to job opportunities in Jamshedpur were from outside the state.<sup>45</sup> This social mix coupled with the educated background of the highly skilled work force brought a degree of cosmopolitanism in social life as well as belief in

meritocracy. The planning of Jamshedpur with the neighborhood as the basic social unit created housing patterns very different from the dense and organically evolved caste- and kinship oriented neighborhoods of pre-industrial cities.<sup>46</sup> The idea of garden city is closely linked with salubrious effects of greenery that is not a private luxury as in older settlements but a public good.

Hosagrahar has highlighted hybrid spaces and spatial practices in colonial Delhi articulating the concept of “indigenous modernities” although a more appropriate term would be “indigenized modernities” given that social and environmental changes in this period (1857-1947) were attributable to imported, not indigenous, concepts and mechanisms.<sup>47</sup> Changes in habits of perception and spatial behavior in response to new forms of domestic and urban spaces were facilitated by life in Company built housing (with few desirable options for living elsewhere), particularly among those from small towns and rural areas. Hybrid spaces created through modification of existing designed structures were not allowed. The new knowledge systems and technologies in public hygiene and institutions practicing them were seldom contested as they did not infringe on proprietary rights of residents, the Company being the largest (quasi) land-owner. Although the lack of home-ownership contributed to the feeling of ‘home’ being elsewhere and nostalgia for the place of origin, a gradual change to individualistic self from one rooted in collective subjectivity was inevitable.

## Conclusion

Planning of Jamshedpur has always reflected current thinking of the time on how best to achieve a quality of life that would improve worker productivity. The grid pattern of early labor camp/colony imposed a rational order upon an undulating and sparsely inhabited landscape. Garden city ideals of ample green open space, separation of housing from commerce and industry, co-operative societies, and local civic amenities within walking distance informed later planning projects in the 1920s, 30s, and 40s. In the twenty first century regional planning and new urbanism principles of re-densification and transit oriented development are guiding efforts to cope with industrial growth, burgeoning population and escalating traffic. Planning ideals however always have had to adjust to the reality at hand. The city appears to have followed its own logic of growth driven by exigencies of local topography, rural-urban migration, floating population, existing development and the need for housing-workplace proximity. A multi-nucleated model has emerged over time in which industry is the core of the settlement.

Does Jamshedpur represent a regional variation of the universal garden city prototype? The garden city image is resonant with many aspects of Jamshedpur—its low density, plentiful greenery, and well designed bungalows—although the city is the inverse of the prototype with industry instead of a garden at the center and there is no trace of a green belt circumscribing its growth. The flexibility of the original idea allowed its application in widely different cultural, institutional and economic contexts including one of a company town that grew to be the first industrial city in South Asia.<sup>48</sup> The many garden city attributes attests to the original company town influence on present day town management in Jamshedpur—an interesting example of the survival of the concept given its demise in North America.<sup>49</sup>

Upon completing 100 years of its existence, it is time for Jamshedpur to take stock of its planning heritage. The new avatar of the garden city is the green city characterized by greenbelts and preserved open space accessible from population centers.<sup>50</sup> Jamshedpur can build upon the symbolic capital bequeathed by the international garden city movement taking root in the remote eastern corner of colonial India in early twentieth century by refurbishing its image as a green city of the twenty first century. The dark side of industrial heritage is of course environmental pollution and Jamshedpur has been no exception in spite of efforts to protect the rivers. Slag dumping in *nalas* within the steel plant and on the riverbanks has resulted in high degree of ground pollution and visual blight. Innovative thinking is necessary to guide environmental remediation efforts on a large scale so that

they are part of physical planning adding to the city's greenery and usable open space system, especially on the riverfronts. Investment in green technologies, innovative environmental remediation programs, and greenways will build its reputation as the green city and a model for new development in South Asia.<sup>51</sup>

The preserved core of Jamshedpur should be a living example of industrial heritage of India, not the shell of a dead company town. Steps should therefore be taken to draw up a policy for preserving sections of the city as heritage precincts as in the elegantly designed Kaiser bungalows in Kadma and old bungalows in Northern Town and Circuit House area. Historic open spaces such as Jubilee Park, Beldih Lake, and parkways also need to be listed as protected sites. The spacious and green planned areas of Jamshedpur present a contrast to the poorly serviced and crowded areas of the *bustees*. Jamshetji Tata's vision can be best preserved if the marked differences in environmental conditions between Jamshedpur's core and periphery are reduced through improvement in landscape and urban infrastructure.

### Acknowledgment

The author(s) thank Tata Steel Archives at the Russi Mody Center for Excellence, Jamshedpur for historic photographs and planning reports.

### Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship and/or publication of this article: The first author was a Senior Fulbright Researcher in 2009 when she visited Jamshedpur to study the archives.

### Notes

1. Recent publications include Jyoti Hosagrahar *Indigenous Modernities: Negotiating Architecture and Urbanism* (New York: Routledge, 2005); William Glover *Making Lahore Modern: Constructing and Imagining a Colonial City* (Minneapolis: University of Minnesota Press, 2007); Swati Chattopadhyay *Representing Calcutta: Modernity, Nationalism, and the Colonial Uncanny* (New York: Routledge, 2005).
2. Vikramaditya Prakash *Chandigarh's Le Corbusier: The Struggle for Modernity in Post-colonial India* (Seattle: University of Washington Press, 2002); Andreas Wolwarsen *Imperial Delhi: The British Capitol of an Indian Empire* (London: Prestel, 2002); Ravi Kalia *Gandhinagar: Building National Identity in Post-colonial India* (Columbia, South Carolina: University of South Carolina, 2004).
3. Temple, F. C. *Report on Town Planning*. Jamshedpur Social Welfare Series, November 1919.
4. Stokes, P. G. W. *Jamshedpur Town Planning Scheme*. Unpublished report, 1937.
5. Koenigsberger, Otto *Jamshedpur Development Plan*. Prepared for the Tata Iron & Steel Co. Etd., With a Foreword by J.R.D. Tata, 1945; Ebenezer Howard *Garden Cities of Tomorrow* (London: Swan Sonnenschein, 1898).
6. They are briefly discussed by the geographer Maya Dutt in her comprehensive book *Jamshedpur: The Growth of the City and Its Regions* (Calcutta: The Asiatic Society, 1977). The geographer Y. B. Vishwakarma summarizes them in a short chapter in his book *Industrialization and Tribal Ecology: Jamshedpur and Its Environs* (Jaipur, India: Rawat Publications, 1991). The economic historian Nandita Basak, in her book *Dynamics of Growth, Regional Perspective: Experience of Five Industrial Towns, 1961-1991* (Calcutta: Firma KLM Pvt. Ltd, 2000) describes the impact of industrial towns on regional economic growth and migration patterns, with Jamshedpur as the first steel town and precedent for later towns in eastern India such as Durgapur, Bokaro and Rourkela but her focus is not on its physical form. Allen Noble and Ashok Dutt

- mention Jamshedpur as a model industrial town in their urban typology of South Asia cities and briefly discuss the contributions of each plan to the eventual shape of the city in "Urban Development of South Asia", in *Challenges to Asian Urbanization in the 20th Century* (Netherlands: Springer, 2004: 255-275).
7. F. C. Temple "Jamshedpur: The Birth and First Twenty Years of an Industrial Town in India", *Journal of the Town Planning Institute*, XIV, no. 12 (October 1928): 265–86; Otto Koenigsberger "New Towns in India", *The Town Planning Review*, xxiii, no. 2 (July 1952): 97–131 and "Tropical Planning Problems", *A Report of the Proceedings of the Conference on Tropical Architecture Held at University College, London, March, 1953* (London: George Allen & Unwin Ltd., 1954:13–22).
  8. See Verrier Elwin *The Story of Tata Steel* (Bombay: Tata, 1958); Rudrangshu Mukherjee *A Century of Trust: The Story of Tata Steel* (New Delhi: Penguin Books, 2008); Aman Nath and Jay Vithalani with Tulsi Vatsal *Horizons: The Tata Century 1904-2004* (Mumbai: India Book House, 2005); Ashok K. Dutt "Evolution of Jamshedpur City: A Historical Approach to Urban Study", *The Indian Geographical Journal*, XL, no. 3&4, (July-September & October-December, 1965): 19–28.
  9. F. R. Harris *Jamsetji Nusserwanji Tata: A Chronicle of His Life*. With a Foreword by J.R.D. Tata (London: Blackie & Son Ltd, second edition, 1958)
  10. At Navsari in Gujarat where he was born, he turned part of his father's estate that he had inherited into a public park complete with an animal menagerie (Harris, 85–6).
  11. Elwin, 112
  12. See Sunil Sen *The House of Tata* (Calcutta: Progressive Publishers, 1975) for a comprehensive account of labor relations in Jamshedpur.
  13. In 1916 the Fabian Socialist and labor leader Sydney Webb prepared plans for welfare programs on public health and sanitation, education, and co-operative schemes covering housing, education, stores and credit. About 195 co-operative societies were registered in 1986 in Jamshedpur (Viswakarma, 85). A.V. Thakkar, the Indian social worker and his Servants of India Society worked for bringing primary education to children of workers. Education then became the responsibility of the Public Welfare Department. Harold Mann reviewed the progress of social welfare in Jamshedpur in his 1919 report. As a result the Town Planning Department was established to look after housing, water supply and sanitation (Mukherjee, 63–4). The Department of Medical and Health Services provides medical services in hospitals and dispensaries.
  14. Nath and Vithalani, 103
  15. Vishwakarma, 63
  16. Vishwakarma, 44
  17. "Americans to Build India Steel Plant", *The New York Times*, November 18, 1907.
  18. Harris, 196
  19. Nath and Vithalani, 87
  20. Mukherjee, 63
  21. Jacqueline Tyrwhitt *Geddes in India* (London: Lund Humphries, 1944).
  22. Temple, 1928, 274
  23. Temple's hexagonal clusters still exist in Sonari. The development is called Golai area, but these holdings (10' X 20') have been sub leased to individuals who have built single / double storied structures.
  24. Mukherjee, 64
  25. The model was based upon a close study of Chicago's growth patterns. Robert Park, Ernest W. Burgess and Roderick D. McKenzie *The City* (Chicago: University of Chicago Press, 1925).
  26. Homer Hoyt *The Structure and Growth of Residential Neighborhoods in American Cities* (Washington, DC: Federal Housing Administration, 1939).
  27. Rhodri Windsor Liscombe, "In-dependence: Otto Koenigsberger and Modernist Urban Resettlement in India", *Planning Perspectives*, 21, no. 2, (April 2006): 157–78.
  28. Vandana Baweja. *A Pre-history of Green Architecture: Otto Koenigsberger and Tropical Architecture from Princely Mysore to Post-Colonial London* Un published Ph.D. dissertation in Architecture, University of Michigan, 2008.

29. Koenigsberger (1953) recommended that multi-family households instead of single family units should be considered as a planning unit, incidental open spaces should be minimized and should be as large as can be cared for by the limited water resources of the community, and narrow arcaded streets should be part of modern planning schemes in tropical regions.
30. Koenigsberger's master plan for Bhubaneswar, the capital of Orissa drawn up in 1948, followed the band-town planning scheme with self-contained neighborhood units grouped along a major transportation artery so that residential areas are separated from the workplace by a short distance of two miles. The capitol complex on a ridge, overlooking the neighborhood units on its south and east is accessed by the connecting road and is linked with the business center by a broad avenue. The neighborhoods are oriented around open spaces containing schools so that children do not have to walk further than one quarter or one third of a mile. A hierarchical street system ranging from sidewalks to main transportation arteries is proposed to separate vehicular and pedestrian and non-motorized traffic. Although Koenigsberger's ideas about socio-economically mixed neighborhoods and the road system were not implemented, they influenced the sector planning and 7 Vs street pattern design by Albert Mayer and Le Corbusier in Chandigarh. See Ravi Kalia *Bhubaneswar: From a Temple Town to a Capitol City* (Carbondale, Illinois: Southern Illinois University Press, 1994).
31. Koenigsberger, 1952, 109
32. Ashok K. Dutt "The Neighbourhood Unit Plan and Its Impact on Jamshedpur City", *Journal of Social Research*, India, 5, no, 1 (March 1962): 109–13.
33. Dutta, 64
34. *Draft Master Plan 1966-1986 Jamshedpur Adityapur Industrial Complex*
35. Vishwakarma, 118–43
36. State of Jharkhand. *Jamshedpur Urban Agglomeration 2027 Master Plan*. Draft, October 2008.
37. Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched in 2005 by the Ministry of Urban Development, Government of India for expansion and development of urban infrastructure and provision of essential services and civic amenities to the poor in Indian cities.
38. Jatinder Singh and Kamal Ghosh. *Development Plan of Jamshedpur Township*. Unpublished Report, 1998.
39. *Jamshedpur Urban Agglomeration 2027 Master Plan*, 42
40. Dutta, 103
41. Dutta, 158. Tribal communities are concentrated in peripheral *bustees*—Mango on the north, Bhuiandih, Sitaramdera and Bhalubasa on the north-east, Ulyan, Bheitya and Sonari on west and north-west, Bagbera, Ghagidih, and Kitadih south of the steel city beyond the railway tracks. JUSCO plans to upgrade Bhuiandih, Ulyan, Bheitya, and Sonari.
42. Margaret Crawford in *Building the Workingman's Paradise: The Design of American Company Towns* (London: Verso, 1995), 37–45 describes the legacy of Pullman as acceptance of the idea in the US that environmental design and proper administration would benefit both labor and capital. Pullman's failure was due to the restrictive management style although the fundamental principles on which the model company town was built, were essentially correct.
43. Srirupa Roy *Beyond Belief: India and the Politics of Post-colonial Nationalism* (Durham, NC: Duke University Press), 133–56.
44. Nath and Vithalani, 227. The Governor General of India, Lord Chelmsford's renaming of the company town at Sakchi as Jamshedpur (after Jamshetji Tata) and the railway station at Kalimati as Tatanagar in 1919 ensured that the industry (and its founder) and the city will remained linked in perpetuity.
45. D. R. Misra. *Report on Socio-Economic Survey of Jamshedpur City* (Patna University Press, 1959).
46. See Sinha, Amita, "Participant Observation: A Study of State-aided Self-help Housing in Lucknow, India," in Graham Tipple & Kenneth Willis (eds.) *Housing the Poor in the Developing World — Methods of Analysis, Case Studies, and Policy* (New York: Routledge, 1991), 16–35. for the myriad ways in which space can serve as a catalyst for social changes—for example gender roles, familial relationships, and social networks are impacted by new housing typologies.

47. Hosagrahar, 190
48. Stephen Ward in “The Garden City Introduced” describes the new town as an ‘international variant built on the conceptual foundation of the garden city’. See *The Garden City: Past, Present and Future* edited by Stephen Ward (London: E & FN Spon, 1992), 24. New towns derived from the garden city were established in remote settings in different parts of the world to encourage new resource based industries.
49. Crawford attributes their disappearance by mid-twentieth century to growth in moderate cost private housing market and rise in automobile ownership making daily long distance commute from suburbs to workplace possible. See Crawford, 203.
50. Robert F. Young “Green Cities and the Urban Future” in Kermit C. Parsons and David Schuyler (eds.) *From Garden City to Green City: The Legacy of Ebenezer Howard* (Baltimore: The Johns Hopkins University Press, 2002), 213.
51. JUSCO plans to increase the green cover of Jamshedpur from 21% to 33% by 2025.

## Bios

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