Spatial Evolution of Jamshedpur city and its Agglomeration Effects

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Abstract: Jamshedpur is known as Steel city of India. Jamshedpur Urban Agglomeration (JUA) includes 13 urban centres including Mango and Jamshedpur Notified Area Committee. The agglomeration has experienced extensive spatial expansion, however this urban sprawl is not uniform across the city region. The city is diverse in nature in terms of governance and infrastructure. Jamshedpur Urban Services Company, a subsidiary of TATA manages notified has made the urban landscape neat, clean and beautiful with many recreation centres like parks, sports ground, education and health infrastructure. On other hand Jugsalai Municipality seems to be week ULB which is do not have full time chief functionary. Adiyapur Nagar Panchayat has reported significant high rise building and allowing the city expansion towards west. Mango emerged as another centre of attraction towards north. The condition of the rural areas and census towns is satisfactory which is poorly managed and faces maximum social vulnerability and infrastructure deficiency. Interestingly, the growth of JUA after economic liberalization is not impressive indicating special attention from policy perspective to make the city sustainable.

Keywords: Iron and Steel Industry, Urban Agglomeration, Jamshedpur.

1. Introduction

Nature of governing institutions plays vital role in any developmental planning. Urban areas distinctively differentiate itself from rural mainly in terms of socio-economic and cultural landscape where it is considered that quality of would be better than its hinterland. Urbanization and industrialisation is considered as catalyst for change in the development process. In spite of the fact that Jamshedpur city has more than 100 years history of urbanization and industrialization, the hinterland of this city has still remained as one of the hot spots of poverty in India. Theories of regional development like growth pole theory and cumulative causation theory needs further investigation with respect to increasing regional imbalances of the country with respect to Jamshedpur as Growth pole.

Location theory was developed as an early response to the ignorance of space in traditional economic analyses. Originally developed by Alfred Weber (1929) and later extended by Edgar Hoover (1937), Melvin Greenhut (1956), and Walter Isard (1956), location theory has focused primarily on developing formal mathematical models of the optimal location of industry given the costs of transporting raw materials and final products Walter Isard eventually drew on concepts from location theory to develop the field now known as regional science, a branch of the social sciences that examines the impact of space on economic decision making.

The main objective of the study is to understand the process of urbanization and industrial growth in the Jamshedpur urban agglomeration. The first part paper peers into the spatial history of Jamshedpur town whereas second part will look into its agglomeration effect. Since this paper is a part of research project which is at preliminary stage, the author is not able to explain agglomeration effect. It has five section which starts from introduction. Second section deals with site and situation of the city. In the third section spatial expansion has been dealt. Forth section explains present scenario of the Jamshedpur urban agglomeration. Conclusion is in the last. The paper is empirical in nature and based on historical maps and records. It is mainly based on Survey of India topographical maps, Census of India data and other secondary data. Though, the author recently has recently visited the Jamshedpur Urban Agglomeration, however, the research observation is limited due to time constraints.

2. Site and Situation

Many important factors involved in the location of a particular industries are of relative significance, e.g., availability of raw materials, power resources, water, labour, markets and the transport facilities.
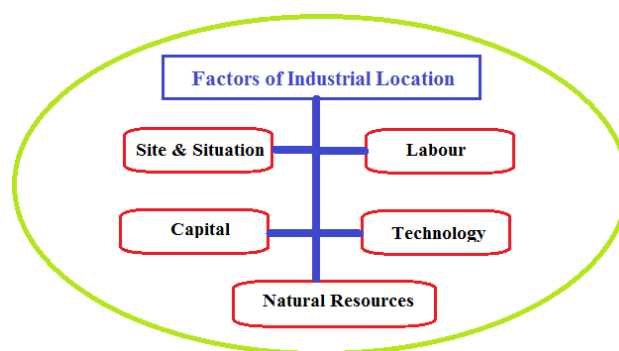

Figure 1

Site and Situation was favouring Sakchi which located at the confluence of the river Subernrekha and Kharkai. The river Kharkai makes western boundary of Jamshedpur city on the east a cluster of villages were there. Subernrekha River demarcates the city from north. It is bounded by South Eastern Railway line. TATAs were aware that India's main coal field lies in the Damodar valley which was situated nearby form their proposed site of iron and steel factory. Public capital was raised in the Bombay and technology was there from abroad. Bengal, Madras and Mumbai provided skilled labour at middle level whereas unskilled labour were abundant locally. Technology was not the issue as Jamshedpur has exposure to modern iron and steel industries of Germany, United Kingdom and USA.

The villages around Jamshedpur and Chota Nagpur had a large number of blacksmith and they had a certain amount of

indigenous knowledge of local mineral resources. The smelting of copper and iron ore was known in Singhbhum district from ancient times. (Bahl, 1976). Figure 1 illustrates general factors of industrial location. Geographical proximity of the raw materials in the Chotanagpur plateau attracted Tata to conduct a survey for the search of suitable site for the iron and steel industry. Unlike cotton industry, iron and steel industry, more capital and technology dependent.
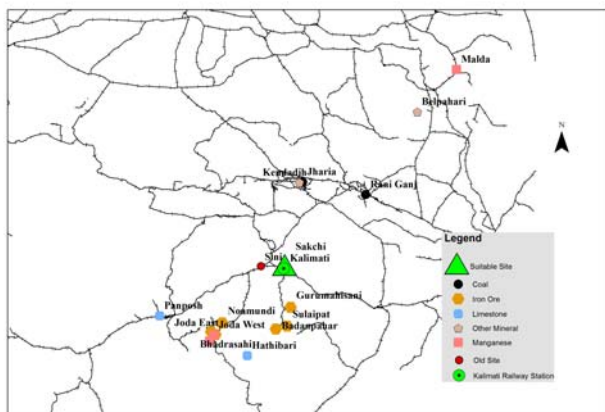
Map 1: Location of Jamshedpur and Mineral sites

Sakchi became ideal location for the establishment of Iron and Steel industry whereas Sini lost its location advantage of being situated on Bengal Nagpur Railways line. Rich mineral resources of the region provided cheap raw material for the production of iron steel. No own can imagine an industry without availability of cheap power. Chotanagpur plateau has huge potential for coal and hydral power. Jharia and Raniganj provided coal to steel plant whereas iron ore came from the mines of Gurumahisani and other southern nearby mines. Manganese and limestone was not very far the plant. Thus from Map 1 it becomes clear that Jamshedpur had locational advantage for the mineral based heavy industry.

3.   Spatial Expansion

The small village named Sakchi of Singhbhum district of Bengal suddenly became in the limelight in the year 1907 when it was selected as the suitable site for the establishment of the iron and steel factory by Tata and Sons. Later, it acquired the name Jamshedpur and its nearby railway station Kalimati was renamed as Tatanagar. The steel city of Jamshedpur celebrated its 100 years of existence in 2008, having won the UN Global Compact City Award. It employed modern town planning principles, ushering in modernity through new modes of spatiality and lifestyles associated with industrialization (Sinha and Singh, 2011). The city has registered more that twelve thousand times growth from Census 1911 to Census 2011. With more than 0.67 million population, Jamshedpur city constitutes more than half of the population of Jamshedpur Urban Agglomeration (JUA). It is clear form figure 2 that history of JUA has five important phases when new settlements joined the agglomeration. Jugsalai was the first nearby settlement which became the part of JUA in 1920 when it was declared as municipality. After that the agglomeration did not report any

new urban center till 1971 when two new settlement namely Bagbeba and Adiytpur were declared as town. During 1981, three settlements Mango, Ghadra and Chota Govindpur further led to expansion of JUA whereas Haludbani, Sarjamda and Ghorabandha was declared as urban areas in 1991. Last Census further added three new Census towns i.e. Purihara, Kandra and Chota Gamharia.

Table 1: Constituent Towns of Jamshedpur UA and its growth

Town	Pop 2011	Year	Pop	% inc
Jamshedpur (NAC + OG)	677350	1911	5,672	11842.0
Jugsalai (M)	49660	1931	8,721	469.4
Bagbera (CT)	78356	1971	28,053	179.3
Adityapur (Nagar Parishad)	174355	1971	28,226	517.7
Mango (NAC)	223805	1981	67,284	232.6
Gadhra (CT)	18801	1981	10,474	79.5
Chhota Gobindpur (CT)	31843	1981	14,985	112.5
Haludbani (CT)	25360	1991	14,830	71.0
Sarjamda (CT)	23788	1991	10,338	130.1
Ghorabandha (CT)	20718	1991	9,533	117.3
Purihasa (CT)	7897	2011	7897	0.0
Kandra (CT)	8157	2011	8157	0.0
Chota Gamahria (CT)	7505	2011	7505	0.0

Source: Census of India

Map 2: Jamshedpur 1919
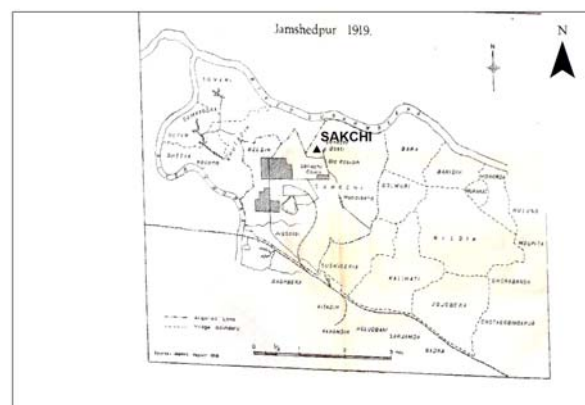
Source: Maya Dutta, 1977

With increasing population, the city felt need of urban planning. The visit of Vice Roy in the year observed many changes in the cultural landscape. Map 2 depicts spread of the city in the year 1919. It has two section, one where one can see spread of Tata Steel building in the Sakchi and Bistupur. Administrative boundaries of the surrounding villages has also be found. Existing BN Railways connects the city with Nagpur and Calcutta. Sonari, Kadma, Gola Pahari, Kalimati and Jigsalai were the important villages which become famous places of the city.

Glimpse of city planning can be seen from the map 3 also. Planned structure starts from Sonari and moves towards south east. The city spread was limited between the rivers. The built density was highest in the Sakchi and Bistupur locality. Jugsalai also acquired the status of Municipality with emergence of new buildings. Southern part of the city was mainly outskirt in which Bagbera and Haludwani villages were significant.

Map 4 gives better understanding of the city. By the year 1929,

northern and western areas across the river did not experienced any trickle down of the very high growth of the city. The city was concentrated between railway line and Subarnarekha River. The impact of city planning can be in the map of 1929. Sonari, town, Northern Town, New Town, Southern Town, Old Town, Tinplate, Tatanagar RS, Golmuri emerged as major city centres besides the campuses of Tata Iron and Steel Company Works, Indian Steel and Wire Product Company, Peninsular Locomotive Company. In fact, the Jamshedpur town registered very high population growth in the first twenty year in spite of influx of epidemics. The labour strike of 1928 and industrial slowdown was important historical phenomena which has impact on city growth. The further investigation is required how these events to understand the impact on its spatial expansion and agglomeration impact.

Map 3: Jamshedpur 1927

Source: Survey of India

Map 4: Jamshedpur 1929

Source: Survey of India

Map 5 and 6 have of larger scale. Though these maps are not clear like Survey of India maps but it can be said the Jamshedpur was growing and becoming famous for attracting industries and migrants. Now one can see that the town has airways connectivity. Rural – urban fringe of the town have increasing density of settlement Because of railway line and rivers, the city region has more concentration of built up area like a triangle. Bengal Nagpur Railway (BNR) Calcutta Extension was the life line of the connected it Calcutta and
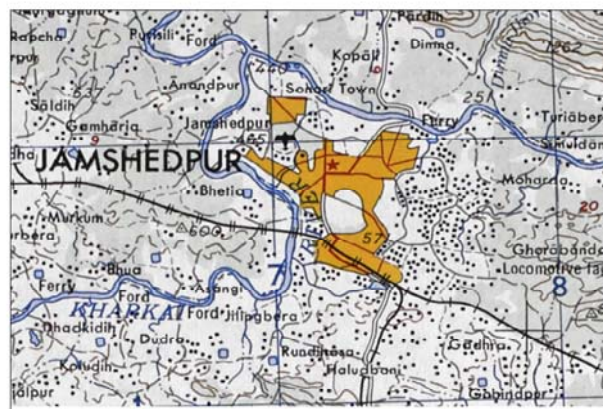
nearby mineral resource sites. BNR Tatanagar Gurumahisani Extension Haludpukhar is the next railways station after Tatanagar towards South.
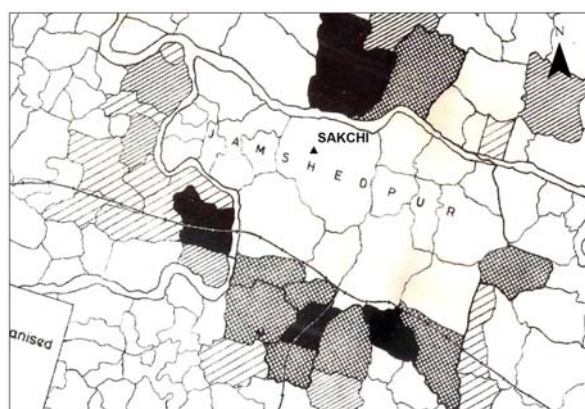
Map 5: Jamshedpur 1932

Source: Survey of India 1932,

Map 6: Jamshedpur 1955

Source: Army Map Service, US

Map 7: Jamshedpur 1961: Non-farm Activities

Source: Maya Dutta, 1977

In her book Jamshedpur: The growth of the city and its regions, Maya Dutta has made various maps which helps to understand the condition of the city in 1970s. Map 7 shows the nature of economic activities in the villages in the vicinity of the Jamshedpur town. Black colour shows

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dominance of non-farm activities.

Map 8 narrates the evolution history of different localities how city had experienced its growth between 1909 and 1964. Sakchi, Bistupur, Jugsalai and Golmuri first experienced urban phenomena. The expansion of city occurred more fastly after 1940 when town expanded beyond rivers and railways line rapidly.

· Map 8: Jamshedpur 1961
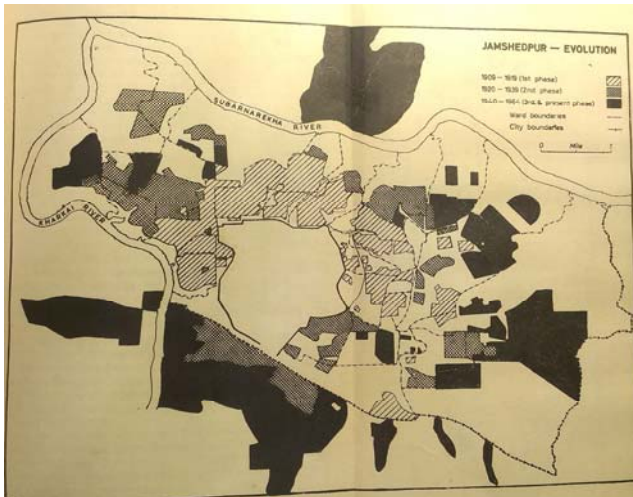
Source: Maya Dutta, 1977

· Map 9: Jamshedpur 1975
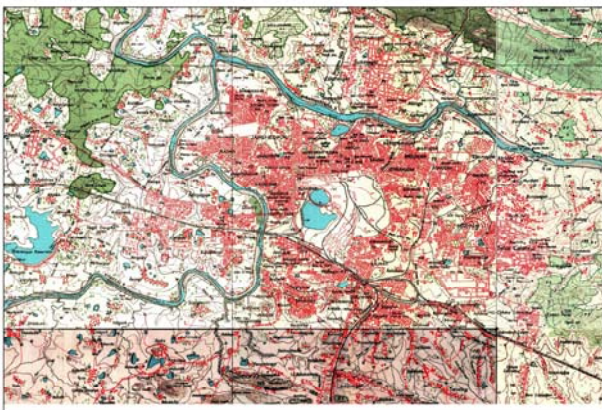
Source: Survey of India

Urban landscape of the Jamshedpur town became more clear with increasing number of industries and built up area by 1975. The old names of acquires new township Ramnagar, Kagalnagar, Shastrinagar, Rajendernagar, Bapunagar, Indranagar, TELCO colony emerged on the scene.

4. Present Scenario

Presently, Jamshedpur Urban Agglomeration (JUA) is spread over two districts i.e. East Singhbhum and Sairaikea-Karakasan. It has two Notified Area Committee namely Jamshedpur and Mango. It also consists of two urban local body (ULB) i.e. Jugsalai and Aditiyanagar. Besides it also have 9 Census towns Spread of JUA can be categoried in three instutional categories accoding to nature of governance (Map 10). Around 16 percent population of the JUA were under rural devleopment department

of the state where remainig portion was looked under urban governance. Notified area comiitee is managed by a subsidiary company of TATA and SONS named Jamshedpur Urban Services Company Ltd (JUSCO). Jugsalai Municapality came is still class III town after 90 years of evolution and less than 5 Km away from the vicinity of Tata Iron and Steel Company. New high rise buliding are coming in the Adiyapur town on the north of the Jamshedpur. Construction of new bridges on the river Subana Rekha River gives ample opportunities of urban expansion.
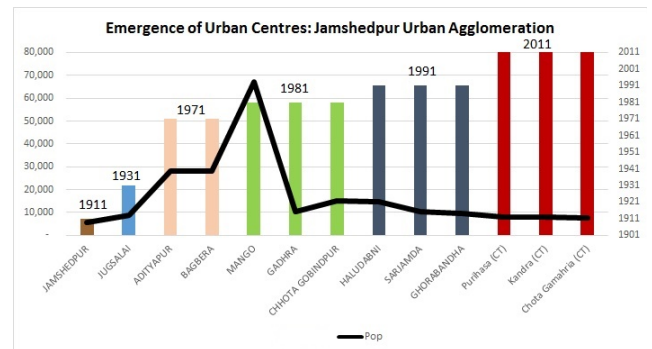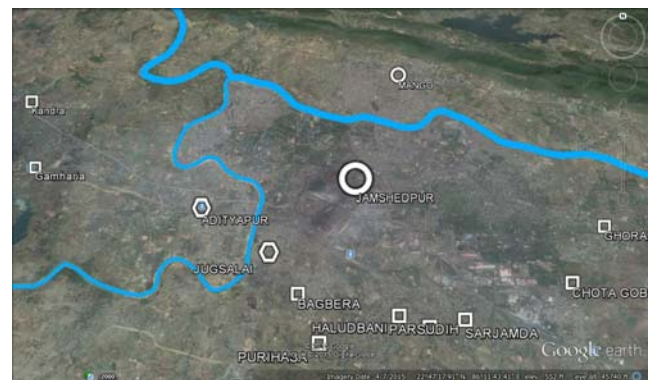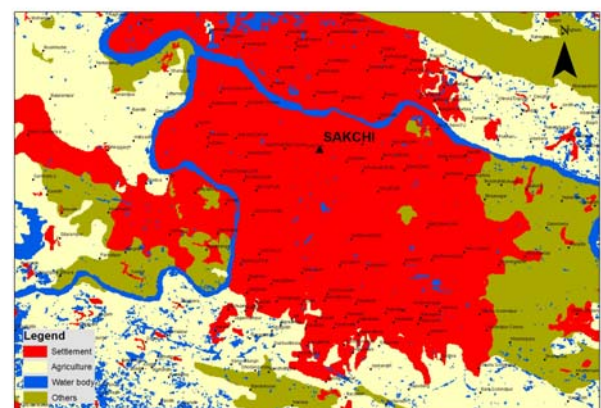

Figure 2

· Map 10: Jamshedpur 2014

Source: Google Earth 2014
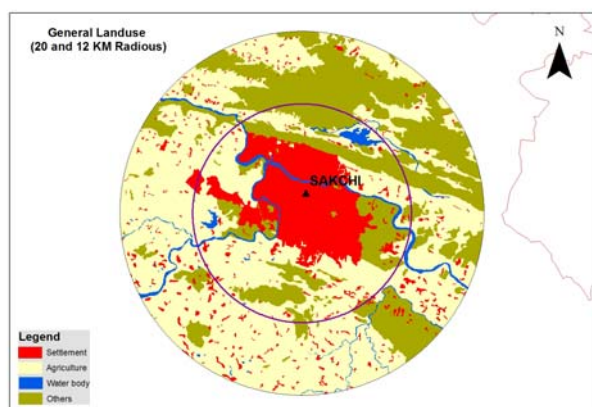
· Map 11: Jamshedpur Land-use 2014

Source: LANDSAT images.

Interestingly, expansion of built up area has gone beyond the historical frame. All the hamlet of India Place finder

(Tokyo University) can also be seen as point of refrence in the spatial evolution of the JUA (Map 11).

Map 12: Jamshedpur City Region Landuse: 20 Km from Sakchi

Source: LANDSAT images.

An attempt has been done to delineate a buffer of 120 and 20 km by considering Sakchi as place of gravity of the JUA. Map 12 depicts dominance of the built up area around the center of Sakchi. Physical set up of the city limits its scope of further northward expansion. Existing land use land cover scheme in the surrounding of JUA, suggests that there is enormous scope of urban development towards where rain-fed agriculture is practicing.

5. Conclusion and Policy Implications

Role of state varies with political economy of the region. The city evolved as process of public partnership model during early twentieth century which iron and steel industry was under the control of state. Today when the cities are becoming SMART and Sustainable. Deep investigation is required to though revisiting economic history. With help of GIS, cities can be managed better. With rich historical and cultural heritage Jamshedpur provides beautiful urban landscape, however the same is not true for Jamshedpur urban agglomeration. The condition of the nearby rural areas and census towns is critical which is poorly managed and faces maximum social vulnerability and infrastructure deficiency. Interestingly, the growth of JUA after economic liberalization is not impressive indicating special attention from policy perspective to make the city sustainable and smart

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