Glimpses of Ancient Indian Town Planning for Building Modern Heritage Cities

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Abstract

Ancient Indians had a good architectural knowledge that is evident from the various temples, palaces, forts and other monuments seen spread all around the country. With vast urban population and pilgrim centers, the knowledge of town planning was to be very effective and the ancient Indians enunciated the rules of town planning in their ancient architectural treatises. Glimpses of these features are also to be found in earlier archaeological finds, texts belonging to the Vedic, Epic and Purānic periods. The features of various cities and town planning aspects dealt in these texts are first briefly described that serve as a model for developing Modern Heritage cities. Since hundred Indian cities are soon going to be developed as 'Smart-Cities', it would be apt and imperative to discuss the concept of Heritage-Cities as well. Just as the Smart-Cities would be the torchbearers of future growth; Heritage-Cities connect us to our glorious past. Thus, in this paper, humble efforts are made to identify and recognize the valuable factors that contribute to enhance the charm of Heritage-Cities giving a brief overview of earlier Town planning features from ancient Indian texts. Ancient Indians had a well planned system of building villages, towns, intricate drainage, water supply systems, markets, palaces, households and public spaces that are evident from archeological and literary sources. The features mentioned in Vedic, epic and post-Vedic literature could serve as a model for modern town planning, for harmonious living with nature.

Key words: Ancient India, Town planning, Heritage Cities and Vedic Period.

The ancient Indian skills in architecture have been tremendous to the extent that one needs to marvel and applaud their deep insights into planning and design of human settlements. People used various means of transportation in ancient times such as horses, elephants, chariots, palanquins, bullock carts etc. that required excellent system of roads and pathways that connected villages, towns and cities passing through forests and mountains. In the present age of rapid urbanization, it would be interesting to look at our past from a view of learning something for the future. With this background, this present paper discusses the ancient system of town planning as gleaned from ancient Indian texts.

Towns in Vedic, Epic and Puranic Texts

Even from the times of Rig-Veda, there are references to houses and small cities[1]. The term "pura" is referred to a city in Rig-Veda (7/5/3). The Atharva Veda Samhitā hints upon the propitiation of Vāstudevatā (presiding deity of the architectural site) when building a house or city after selection of site[2]. Well-built and very well planned cities have also been found in the archeological excavations of the pre-vedic period especially in the Indus valley civilization. The cities of Harappa, Mohenjo-Daro, Dholavira, Rakhigarhi, Ganweriwala, Mehrangarh are all evidences of this aspect. Harappa was a city spanning over 25 hectares having well-built private baths, toilets, wells, reservoirs. There was no fortification in Mohenjo-Daro. However, it had houses with two rooms, as well as mansions,

underground sewage, drainage systems, public water tanks, granaries and great bath. The streets were in perfect grid patterns in Harappa and Mohenjo-Daro (Danino, 2008).

Sage Vālmiki's Rāmāyana has extensive details on the cities like Kosala, Ayodhyā, and so on[3]. It states that highways passed from Ayodhyā to Rājagriha, the capital of Kekayas[4]. Excellent roads were constructed for the army to pass. The city had beautiful gardens, trees obstructing roads were felled[5]. Old roads were repaired. Ayodhyā is said to be built by Manu himself[6]. It is compared to Indra's celestial city Amarāvatī and extending 12 *yojanās* in length and 3 *yojanās* in width[7]. The city was on the '*Asthapada*' design having royal palace with highways on four sides and open space in the centre[8]. It was surrounded on all sides by deep and wide ditches and water filled moats[9]. The gates had strong doors and bolts as well as lamp posts for lightening the roads during night. Ayodhyā was like Amarāvathi, the capital of Indra[10]. At certain intervals, there were *chatushpatha* (place where roads meet) and terraces for people to gather. Temples were located inside places as well as sacrificial sites. Marketing centers were there in Ayodhyā for selling articles. The Rāmāyana mentions three types of houses in Ayodhyā i.e. *Prāsāda* – places of kings, queens and other royal members; *Harmya* – stately mansions and *Vimāna*– seven storied buildings[11].

Sage Vyāsa's Mahābhārata also has good description of cities like Hastināpura, Indraprastha and so on. The construction of Indraprastha by Māyāsura with all the wonderful crystal pillars, floors inlaid by gems golden walls and surrounded by enchanting gardens is wonderful to admire. (Sabhaparva-3/27-34). The Bhāgavata Purāna (10/69/1-12) gives a description of cities like Mathura and Dvārakā. The Brahmanada Purāṇa states that Desha-Mārga was to be of 30 dhanus (1 dhanu=108 angulas; approximately 1.94 metres), Grāma-Mārga 20 dhanuṣ and royal paths (Rāja-Patha) to be wide. It also gives measurement of paths used by elephants, traders and branch routes.

Towns in Post-Vedic Texts

A town (Nagara) is one wherein the sacred and secular meet in the sense that people from all cultures live harmoniously irrespective of their differences in religions, thoughts. Several post-vedic texts like Kautilya Arthaśāstra (1/159-161 and 2/4) mentions that towns were to be surrounded by walls that were six daṇḍas high and 12 daṇḍas wide. It had to have three moats for defense, three roads in east, west as well as north-south direction; one well for each group of ten houses. It deals extensively on different types of roads such as those for royal purposes – *rājamārga*; chariots – *rathamārga*; cattle – *paśumārga*; for asses and camels – *kharoṣṭrapatha*; trades – *vanikapatha*; leading to villages, forests, embankments', temples and so on. Various fines were prescribed for blocking roads or putting garbage or digging the roads. A typical town that needs to be built had to be well planned consisting of water management (*prapā*), free rest houses (*mandapa*), markets, town halls, government offices (*rājavaśālaya*), security, gardens (*upavana*), religious places (*devālaya*), waste disposal grounds and so on. Each of these required excellent skill into various *vidyās* that allowed architects to select the site, design, lay the foundation, build the town places.

The architectural texts also offer us rich aspects about town planning. Arthaśāstra (1/159-161) mentions about wide roads. The tenth chapter of Mayāmata states that city may have at least 2, 4, 6, 8, 10, 12 roads running east to west or from north to south. Bhoja's Samarangana Sūtradhārā states that a model town had to have 34 roads, gardens, trading routes, drains and sewage systems sloping towards east or north. Sukraniti (1/167) states that there must be houses on both sides of the roads in cities. The roads should be metal led and there should be arrangement of rest houses.

The Vishvakarma Vāstu Shāstra states that the site of city is to be divided into 25 parts; each associated with particular deity; giving the propitiation of these deities. It describes several cities that are tabulated as in Table (1).

Table (1):

Name of the City	Brief Description
Padma Nagara	Square, situated on river banks, length 2000 rājadaṇḍas. It has four gates.
Sarvato Bhadra	Surrounded by moat, Extent same as Padmanagara, streets are parallel and 500 in number. It has palace or temple at centre.
Viśveśa Bhadra	Square or rectangular, has Śiva temple with streets, walls and towers.
Kārmuka Nagara	Shape of bow, fortified, on banks of river, 1000 bandas long, has storied houses, bazaar streets.
Prastāra Nagara	Strong fort, Gates, 500 daṇḍas in length, palace in center.
Swastika	Circular in shape, on banks of river, fortified with moat.
Chaturmukha Nagara	Size is half or one fourth of SarvatoBhadra, 4 openings to city, śiva temple in centre.
Śrīpratiṣṭhita Nagara	Sri or other Devi deities at central temple. Circular or square in shape. 500 rājadaṇḍas long; 32 streets.
Pura	Well guarded city amidst forest, hill; 1000 daṇḍas in length, palace at centre.
Deva Nagara	Situated on river banks, forests, hills. Installed deities are from ancient past.
Giri Nagara	On top of hill, inaccessible by enemies, protected well.
Jala Nagara	Amidst a river, fortified.
Nandyāvarta	Square, 1000 daṇḍas, has moats, 4 gates.
Rājadhāni	Capital city of an emperor. 3000 daṇḍas long, situated on sea coast, river banks. Has various pleasure gardens and temples.
Aṣṭamukha	Circular in shape amidst forest, hill. Eight gateways.

The Shilparatna of Srikumara (5/12) mentions about towns such as khetaka or kheta that is situated near rivers or forests by the hills. It has no protective walls. The towns such as *Kharvata* and others have walls that are high and are situated in country side. Arthaśāstra states that it is at the centre of 200 villages. The Viśvakarma VāstuShāstra also deals with other types of towns such as *droṇaka* (has king's palace with battlements, four gates, Śiva Temple), *kubja* (fortified towns with king's palace mainly inhabited by merchants), *paṭṭaṇa* (sea port towns), *vāhinīmukha* (located at river mouth, fortified having single gateway with bridge to be crossed) (Shastri & Gadre, 1990, p.117-183).

Similarly, such rules and descriptions of town planning may be found in various other treatises such Rājavallabha VastuShāstra, Manasara, Kāhyapa Shilpaśāstra etc. There is a huge scope to explore more such aspects of town planning in these texts. The medieval period also has a rich contribution towards city planning as evident from the architecture seen in Fatehpur Sikri, Buland Darwaza, Agra, Murshidabad, Jaipur, Banaras, Varanasi and the southern cities such as Hampi, Mysore, Madurai and so on during the reign of various empires.

Contemporary Relevance

The foregoing details are mere glimpses of our rich past. Our ancestors have planned meticulously with the vision of social welfare. The beauty of their planning is the comprehensive outlook and eco-friendly approach. As stated earlier, mere protection of age-old buildings, sculpture, architectural monuments will not complete the concept of Heritage Cities. The concept of Heritage-Cities comprises of two aspects viz. the external aspect and the internal aspect. The monuments, structures, dams, palace and so on are part of the former. But the internal aspect consists of the lifestyle of previous generation. Their way of life that can be experienced through music, food, language, costumes, literature, philosophy, ideology, outlook, thought process and so on. Without these intrinsic aspects, and only with external facet, the city cannot be called a Heritage-City; but may only be termed as a "Museum-City". Given this background, the paper tries to throw light on these aspects. The spirit of a Heritage City is hidden in the fact of protecting and promoting all the ancient practices which are available today. For instance, craftsman, potter, weaver, construction of buildings through ancient methods and so on. When the whole world is fast-progressing along the time, it becomes the duty and essence of a Heritage City to encourage and support the ancient practices. Heritage Cities should give the travelers a nostalgic vibe. They should make the traveler experience and feel like s/he is travelling back in time. This is an effort to preserve and protect the traditional practices in their originality to the extent possible. A great vision is needed in order to plan and build the Heritage City to preserve the ancient culture. Though old practices become outdated and obsolete in the course of time, it would be essential for mankind to have an alternative option which is time-tested.

In addition to that, a few significant points can be learnt for building future cities. The foregoing details establish the fact that though the cities were built, authorities in the helm of affairs took care to retain people in villages. The concept of decentralization may be considered in building new heritage cities. Another important factor is that ancient Indians had great knowledge and skill in planning and developing new cities. In spite of that knowledge, they relied upon village-centric lifestyle which happens to be the most sustainable method of development. This concept may be termed as *decentralized-development* which would help us in maintaining the present and building the future. Hence, while taking new measures and preparing policies, it would be worthy to seek guidance from our rich past.

CONCLUSION

A heritage city is an outstanding example of traditional human settlement, land use or sea-use representative of a culture or human interaction with environment, associated with events or living traditions, artistic and literary works of outstanding significance. The city should be having good drainage and sewage disposal systems that will stand the test of time. Such excellent features are found in the archeological discoveries in Indus Valley civilization. A study of descriptions of Ayodhyā, Lankā, Hastināpura, Indraprastha, Dvārakā, Kāśī, Banāras and so on in epics and purāṇas as presented above shows that these cities had all features that could be incorporated in building heritage cities today. These cities had wonderful moats defense systems or fortification, pleasure gardens, well-built public places, water and drainage systems that protected the citizens. They were designed and planned so that a harmonious living with nature was supported. Also these cities were designed in such a way so as to protect citizens from natural calamities such as earthquakes, heavy rainfall, droughts as well as from onslaught of enemies, demons and so on. The descriptions of attack on

Lankā and dvārakā by several hordes of demons, enemies and so on stand testimony to it.

Unlike them, modern-day cities that have been facing nature's wrath may be due to their designs that are not in harmony with Nature with real estate development that is greedily gulping the green landscape at a fast pace. These developments that are threatening mankind's survival are dangerous. Alarming pollution levels, no outflow of rain during heavy rainfall downpours, unchecked garbage dumping systems, pollution of water bodies, no ground water recharge, no protection from land or aerial attacks by enemies of mankind such as terrorists, destruction of ancient religious places and agricultural lands threatening even the habitable places of various animals and birds are some of the large scale problems that modern towns are facing and care should be taken to address all these issues based on holistic principles and ancient texts

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[1] अस्माकग्ने अध्वरं जुषस्व सहसः सूनो त्रिषधस्थ हव्यम्। वयं देवेषु सुकृतः स्याम शर्मणा नस्त्रिवरूथेन पाहि। (Rig veda, 5/4/8)

[2] वास्तोष्पत्यानि सूक्तम्। (Atharva veda, 3/12)

[3] कोसलो नाम मुदितः स्फीतो जनपदो महान्। निविष्टसरयूतीरे प्रभूतधनधान्यवान्।। (Vālmiki Rāmāyana, 1/5/5)

[4] अयोध्या नाम नगरी तत्र आसीत् लोकविश्रुता। (Vālmiki Rāmāyana,1/5/6)

[5] राजमार्गेण महता सुविभक्तेन शोभिता। मुक्ता पुष्पावकीर्णेन जलसिक्तेन नित्यशः। (Vālmiki Rāmāyana, 1/5/8)

[6] मनुना मानवेन्द्रेण या पुरी निर्मिता स्वयम्। (Vālmiki Rāmāyana,1/5/6)

[7] आयता दश च द्वे च योजनानि महापुरी। श्रीमती त्रीणि विस्तीर्णा सुविभक्ता महापथा। (Vālmiki Rāmāyana, 1/5/7)

[8] चित्रमष्टापदाकाराम् वरनारीगणैर्युताम्। सर्वरत्नसमाकीर्णा विमानगृहशोभिताम्। (Vālmiki Rāmāyana,1/15/16)

[9] कपाटतोरणवर्ती सुविभक्तान्तरापणाम्। सर्वयन्त्रायुधवतीम् उषितां सर्वशिल्पिभिः। (Vālmiki Rāmāyana, 1/5/10)

[10] प्रयादैः रत्नविकृतैः पर्वतैरिव शोभिताम्। कूटागारैश्च सम्पूर्णाम् इन्द्रसेवामरावतीम्। (Vālmiki Rāmāyana, 1/5/15)

[11] चित्रमष्टज्ञपदाकाराम् वरनारीगणैर्युताम्। सर्वरत्नसमाकीर्णा विमानगृहशोभिताम्। (Vālmiki Rāmāyana,1/5/16)

[11] विमानमिव सिद्धानां तपसाधिगतं दिवि। सुनिवेशितवेश्मान्तां नरोत्तमसमावृताम्। (Vālmiki Rāmāyana, 1/5/19)