CHAPTER 1
INTRODUCTION

The seeds of urbanization were perhaps deeply rooted in the earliest settlements (e.g. Kile–Gul Mohammed Mehgarh – Neolithic c.8000-5000 b.c.) situated to the west of the Indus system on the border of the Iranian plateau¹. The Neolithic settlements of Baluchistan yielded evidences of a developed mud brick architecture, agriculture, domestication of animals, ceramics, crafts and trade links with the Arabian sea coast. Thus, the hills and sub–mountainous regions of Baluchistan emerges as the nuclear zone which gave birth to a very long succession of culture starting from Neolithic to the beginning of the Indus-Saraswati civilization (8000 B.C.), in the mid 4th millennium B.C.

The most ancient phase of Indian culture has been given nomenclature: Indus-Saraswati civilization² because the new archaeological ground realities demand it. Rafique Mughal an eminent Pakistani archaeologist has now discovered 363 sites of this civilization in that part of the Saraswati basin which is located in Bahawalpur region of the Bikaner desert³. Similarly several Indian scholars discovered over 250 site in the basin of the Saraswati and Drishadvati as well as their tributaries in north eastern Rajasthan, Haryana and Western U.P.⁴. More than 650 sites on the Saraswati river and its tributaries and not even 100 sites on the Indus and its tributaries justifies the nomenclature given to this oldest civilization of our country. The Indus–Saraswati civilization is so far found extending for more than 1600 km, from North to South and equally so from East to West covering an area of about 2.5 million sq.km. The Indus–Saraswati
TOWNS AND CITIES OF FIRST URBANIZATION: HARAPPA CULTURE [c. 3000 B.C.-1500 B.C.]

FIG. 1
The Indo–Mesopotamian trade contacts of the 3rd millennium B.C. was interpreted variously by various scholars. One view represented by Wheeler according to whom the idea of city as a way of life came to India from Mesopotamia. The other view is that the Indus-Saraswati civilization including its cities as a way of life was indigenous.

The Indus-Saraswati sites nearly 1500 so far known, are generally found located on rivers sub-mountainous regions (e.g. Mehrgarh and Nausharo on the Bolan pass) and several on sea coast. Clearly the Indus-Saraswati people developed a highly adoptive civilization. The vast variety of landscape the people of this civilization encountered in their settlements on the shores of the Indian Ocean in the desert of Rajasthan and in the plains of river valleys in Afghanistan and India is simply arranging and prove beyond doubt the existence of high-level urban technologies and the system of their management (C,4000-1400 B.C.) Mohenjo Daro, Harapan and Kalibangan (Fig.1).

**Mohenjodaro Harappa and Kalibangan**

The sites located on large rivers like Mohenjodaro on the Indus were always threatened by floods. For this, the city authorities had to erect high mud and mud-brick platform to rebuild the houses on top of these for safety purposes. Harappa on the Ravi appears to have been lucky in this regard. The platform on which the township facing the river was built sufficiently
high to face the disastrous floods since soon after the initial settlement the people realized the danger and erected high mud brick platform inside the fortification. Kalibangan located on a high terrace had erected the sound the 'citadel' as well as the 'township' thick fortification walls of mud bricks sometimes 45"-0" wide at the base.

Thus, the Indus-Saraswati people kept on learning and improving their skill in the field of town planning and house building. It also shows that no two cities of Indus-Saraswati civilization are identical in plan although they are conceptually similar to each other. Most of them are protected similarly and share common formal elements such as the division of the settlement in at least two unequal parts, the smaller one representing the so-called 'Citadel' and the larger one the 'township'. Where there are more than two fortified units as at Harappa, it is difficult to work out the political or administrative system at the present state of our knowledge.

Of about 1500 odd Indus -Saraswati sites known so far Mohenjodaro is by far the largest. At one time it found spreading over 100 hectres of land but it is now found covering around two to four times more area than guessed earlier. The city includes the recently found fragmentary brick structures including platforms located by UNESCO teams engaged in saving the site from rising water table at several points on the right bank of Indus. Mohenjo Daro was indeed the largest city of the old world. Perhaps it held population of about 40000 people during the maximum growth of the city in C.23rd –22nd centuries B.C. The general plan of the city of Mohenjo Daro7 is very significant because all other Indus-Saraswati cities are found planned roughly on the same basic principle though in details each one is found vastly different from the other. It proves on the one hand that there was no
FIG: 2

COURTESY: A.S.J.
over centralized authorities to impose absolute uniformity in town planning all over the Indus-Saraswati culture area and on the other that each group of people designed its settlement according to the needs of the group conditioned by the geomorphological features peculiar to the region. The basic plan includes two major sections of the city: one the smaller section is generally located on a high ground towards the west often called the citadel the second, the larger section generally located on a slightly lower ground is called the township or else respectively upper town and lower town. It means the upper town or the 'citadel' part of the city contains large buildings including those public building such as granary, pillared hall and the great bath, while the "lower town" contains large and small residential houses and shops of arts and crafts for the common men. Moreover the extent of the drainage system and quality of the domestic bathing structures and drains are remarkable and together suggest some sort of highly effective municipal authority (Fig:2).

The second and northern city is Harappa (Fig:3) on the left bank of a now dry course of the Ravi in Punjab. It was excavated by Archaeological Survey of India between 1920 and 1934 under the direction of Vats and later by Wheeler in 1946. Kalibangan lies on the left bank of the river "Ghaggar" (Ancient Saraswati) in the northern part of Rajasthan. It comprises two mounds, the smaller one to the west and the larger one to the east recalling identical disposition at Mohenjo Daro. The excavation brought to light a gridiron layout of a Harappan metropolis (Fig:4). The pre-Harappan settlement designed like a parallelogram was surrounded by a fortification made of mud bricks. During the Harappan period there were two distinct parts; the citadel on the west and the lower town in the east.
KALIBANGAN: HARAPPAN SETTLEMENT.

CONTOURS IN METRES

ENTRANCE LOWER CITY (KLB-1)

CITADEL (KLB-1)

UNEXCAVATED PROBABLY HARAPPAN

Cemetery (KLB-1)

RITUAL (1) STRUCTURE (KLB-2)

STAIRWAY

75 100 METRES

COURTESY:

Fig: 4
The ancient site at Banawali\textsuperscript{10} (District Hissar Haryana) is located on the right bank of the lost of Saraswati. The dichotomous layout a Harappan feature was introduced; an acropolis or citadel on the higher level and a lower town, all enclosed by general fortification with an elaborate gate complex. As usual in any Indus town, streets were laid out in a rather radial or semi-radial system. Based on size physical structure and centre Kenoyer\textsuperscript{11}; identifies four levels of settlements. In the first level are the largest settlements of Mohenjo-Daro (+200ha), Harappa (+150ha), Dholavira (+100ha), Ganweriwala and has Rakhiadhi (+80ha). Recent researches have indicated that the cities were not created in a short time by visionary rulers or architects but rather grew out of the villages that had existed in the same locality. The second level of settlements are a few towns and a small cities (10 to 50ha) such as Judeirjo-Daro and Kalibangan. The third level of settlements is still smaller towns or big villages (1 to 10ha) such as Lothal Chanu-Daro etc.

New research\textsuperscript{12} shows that the Indus civilisation (Indus-Sarawati Culture) saw a process of de-urbanization and localisation rather than extinction. The localization era is a period after the integration of the Indus tradition and before the II\textsuperscript{nd} urbanization and early urban states beginning around 700 to 600 B.C. Although the localization era covers the decline of Indus cities, it is also a time of regional development landing up to the rise of new cities in the larger geographical area encompassed by the Indo-Gangetic tradition. In each major region of Indus Valley, small city, states or chiefdoms was began to recognize we society and consolidate regional power. These regional powers destroyed the integration achieved by the Harappan phase cities and established new peripheral politics in Afghanistan.
and Central Asia and to the east in the Ganga–Yamuna doab. In these regions the rise of new polities is clearly seen as an indigenous process and not the result of outside invasion.

The development and decline of 1st urbanization in the area located between Sindhu-Saraswati and its tributaries is still a subject of debate disputes and further investigations. However in Archaeological terms initially declined of urban centres, (1500 B.C.) a period of desertification Indus Valley possibly linked to the river changed and capture, may have provided a powerful pressure towards the eastern shifts of population and settlements. The availability and the use of iron tools opened up the possibility of forest clearance on the rich alluvial plains of the eastern Punjab, Haryana and U.P. This is in turn promoted, the production of subsistence crops, and particularly of rice (Green Revolution) and created the conditions needed for a rapid growth of population. This period (CC 2000-1000 B.C.) witnessed the development of multi-ethnic society in which Indo-Aryans played a very vital role. These tribes are described in the Vedic literature as Bharatas, Anus Druhyus, Kuru-Pancalas and several others spread further east and south. Politically, the age saw the rise of kingdoms rendered rulers who assumed much more enhanced powers with definite territories to rule over. Economically there was a greater diversity of occupations leading to specializations and rise of merchants. The stage for the rise of cities, second urbanization in the early historical period was thus set.

During early historic period (C.600 B.C.-300 B.C.), the first great cities came into being frequently marked by massive fortification walls and controlling a hinterland of smaller agricultural settlements. These cities in
conjunction with their peripherals settlements constituted the newly emerging city states or Janapadas. This is a period of sixteen great states or Sodasahjanapadas which are referred to the Brahmanical, Jain as well as Buddhist textual sources as aggressive and expansive urbanism. Kautilya's Arthasastra\(^\text{14}\) (Fig:5) is one of the most authentic sources of this period which is assigned to early Mauryan period. It describes fortified settlement which includes the fortified city, both as capital and as regional administrative center, as well as forts as parts of military and defensive network. Moreover this early literature (also Panini's Grammer) describes the breaking down of tribal societies throughout North India which were absorbed into wider urban and sub-urban societies\(^\text{15}\).

The aggressive and expensive character of the early urbanism with the sixteen major states progressively reduced to four to two and finally to one:- which became famous as “Magadhan Empire” Pataliputra became what Thapar calls the metropolis of this empire.

The Vedic literature, (Taittiriya Aranyaka, Apastamba & Baudhayana dharmasutras) Jatakas, Astadhyayi of Panini and Kautilya’s Arthasastra provide ample references about Grama, Kheta Pura, Durga, Dehi, Mahapura Prakara etc.\(^\text{16}\) Particularly Jatakas refer the cities being fortified with walls and ramparts with buttresses, watch towers and massive gates.

The beginning of historical period witnessed rise of sixteen Mahajanapadas (c 600-300 B.C.) all having well fortified cities. Excavations of some of these sites viz. Ahichhatra, Kausambi, Rajghat, Rajgir, Sravasti, Vaisali, Ujjain, Chandraketugarh, Kaveripattna Nagarjuna Konda have revealed fortification\(^\text{17}\) which in initial stages are same if all the sites i.e., a
mud rampart with moat around it. In the later stages brick walls were added to the rampart. The distinctive ceramic of the period is Northern Black polished ware (c. 600 B.C.-100 B.C.) which continued in use till about c.100 B.C. The period witnessed material changes of far-reaching consequences; written script, introduction of coinage, use of baked bricks and adoption of sanitary arrangements such as soakage jars and ring-wells indicated an urbanization process. The process of iron-based urbanization\(^{18}\) was carried further under the Kushanas (AD100-300 AD) as reflected in coins, art and architecture including brick-size etc. In the Deccan and South, the early centuries of Christian era witnessed contacts with the much-studied Mediterranean world exemplified by the occurrence of securely dated Roman coins, pottery (red-glazed Arretine and Amphora) terracotta lamps and glassware at various sites.

No generalization on the pattern of the distribution of early historic cities in North India is possible. On one hand, we have two cities Taxila and Charsada (ancient Pushkalavati) in the North-Western corner of the subcontinent. The former situated on an insignificant ‘Nullah’ and the latter on a more respectable stream of the Swat-Kabui; on the other hand we have a considerable number of them on the banks of the great rivers of the Ganga-Yamuna system and other tributaries. Moreover, a few port-cities on the mouth of the rivers of the coastal areas in the Deccan and South eg. Brugu-kachchha, Surparaka (Sopara near Bombay) Arikamedu, Kaveripattanam etc. are noteworthy trade centers.

Urbanization associated with the historical period has often been styled as a ‘revolution’\(^{19}\). The whole process of the growth of urbanism as
pointed out by A. Ghosh was rather slow and covered relatively, a long span of time.

The role of iron technology in ushering the historical urbanization in northern and southern parts of India was considerable. The first phase of urbanization corresponding with B.C. 600-400 B.C. began along a geographical belt from Champa and Rajagrih to Ujjaini through Kausambi. The next phase covered (B.C. 300-200 B.C.) included Punjab plains, Sindh, Rajasthan, Gujarat and Maharashtra. While the final phase of urban growth seems to have developed during Kushan-Gupta period.

The presence of ring-wells (e.g., Varcha-Kupa meaning refuge well) indicate a stage of emerging township but the process of urbanization which was primarily and economic mechanism connected with trading pattern involving monetary exchange replacing porter seems to have preceded it. In fact, city with its specific traits developed during Mauryan, post-Mauryan period. The idea of town with streets containing regular shops on the sides also appears to have been incorporated in Indian city, possibly not before 1st century B.C. Thus the determinant factor for ‘urbanized centre’ was perhaps existence of monetary exchange besides various other factors such as fortified settlement writing monumental buildings non-agricultural population. Although these were cities in early historic India (B.C. 600-300 B.C.) good quality coins-currency was introduced only after Persian/Macedonian invasion. Thus the foreign invasions and occupation were certainly effective with regard to the introduction of urbanization e.g. Guilds of mercenary soldiers (ayudh-jivins) and Terracotta ring-wells conspicuous feature of urban settlements.
Several, early historic city-sites have been excavated and studied. Yet due to the lack of horizontally exposed early historic town-cities (e.g., large scale of horizontal excavation), it does not reveal the complete picture of its town-planning.

It is interesting to note that there also existed ancient-scriptures on this highly technical discipline of architecture and town-planning. The Arthasastra\textsuperscript{24} recommends three concentric moats around fortification of the city. It further describes internal lay out of the city. There are to be three major roads running at right angles to each other leading to the gateways. The royal palace and its component parts should be located on the north side of the central square. Other sectors of the city are allotted to different castes and activities. There are separate provisions for animals, stores, tenaments for craft guilds and foreign merchants. The Arthasastra prescribes certain urban components (e.g., religious settlements, low caste groups like candals gardens, groves cremation ground etc.) to be located outside the city walls.

Pataliputra, the Mauryan Metropolis\textsuperscript{25} was visited by a Greek envoy, Megasthenes, who left a detailed written description of this capital-city. He informs us that by the time of Chandragupta Maurya the city was long and narrow, (7 miles long x 1.5 miles broad). It was surrounded on all sides by a broad moat for defensive and sewerage purposes. It had a timber palisade, interspersed with 570 towers and 64 gates. Also there was a pillared hall consisting of polished Chunnar sandstone and a substructure of timber (Fig:6).

Different types of urban settlements are described in the ancient scriptures as Pur, Puri Nagri, Pattana etc. Ideally, the city was laid out in
squares four or six but this is believed by excavations at most sites. Streets were of various widths and were probably categorised on that basis. In cities palace, court, offices, markets etc. were most significant buildings. But the extent, size etc. details of the city are highly idealistic. However the survey of early historic cities of India show that except Sisupalgarh and Sirkap (Taksa-sila = Taxila) all the fortified settlements were unplanned.26

The university of Taksasila is a notable example of oldest university town in India. It was a capital of Gandhar and an important place on the trade route from India to Western Asia. The study of its growth (Bhir and Sirkap mounds excavated by Marshall) showed that it followed the typical chess board pattern expounded in the traditional scriptures. Ghosh rightly calls it a fully planned city with a spinal streets running from the north gate throughout the length of the city, with smaller streets and lanes meeting it at right angles and with well-defined houses. Thus, Taxila (Sircap C.100B.C.-200A.D.) is characterized by full and compact grid-planning27(Fig:7).

Sisupalgarh28 in Orissa is the only other well-planned city in early historic India. The city of Tosali is identified with Sisupalgarh (near Bhubaneshwar) and its environs. It was the principal city and capital of Kalinga. The excavations at this site by the Archaeological survey of India in 1948 throws a flood of light on the metropolis. The Garh (fort) surrounded by a natural moat was square on plan measuring three quarters of a mile provided with corner towers and eight large gateways, two on each side and a series of smaller-openings. The town was well-planned with fortification walls and streets inside running east-west and south-north directions connecting the main gates. The careful planning of the habitation area
Sisupalgarh, aerial photograph of the city (courtesy Archaeological Survey of India.)
KARTIKEYA II
Feet
Metres of
200 0 200 600
Jc/tEE
Sc/tLE
OF
NAG ARJUNAKONDA 1957
THE CITADEL & SURROUNDINGS
Scale of 200 0 200 400 800 1000 FEET
COURTESY, A. S. I.
FIG: 9
(C.300 B.C. to 400 A.D.) reveals that the city was laid in a grid-pattern (Fig:8).

The fortification wall (ramparts) at Nagarjunkonda on the Krishna (Dist: Guntur Andhra Pradesh) encloses a trapezoidal shaped area. Nagarjunkonda grew up as an important capital city (Ancient Vijaypuri) during the regime of the Ikshvaku dynasty (C. 3\textsuperscript{rd}, 4\textsuperscript{th} A.D.). It had a wall throughout plan within which civic needs and security received equal consideration. This fortified settlement followed a linear pattern and that they came up along broad intercepted by cross roads and by lane. The imposing public structure here is the open air theatre with tiered brick built gallery on all the sides. A novel feature of Ikshvaku town planning was the provision of about a dozen wayside rest houses\textsuperscript{30}(Fig:9).

The temple like the river formed an essential feature of ancient Indian cities and towns. The urban centers followed an orderly growth around temples. Thus the temple became nucleus of public activity during the course of time. A graphic example of such temple cities can be found in the cities of South India like Srirangam and Madurai indicating such growth around the temple\textsuperscript{31}. The famous university town of Nalanda of Magadha had Buddhist monastery as a nucleus which also functioned as a university (C.700A.D.-900A.D.)

The nature of growth of cities was always governed by the site conditions. The town which was not situated on the river bank had a large ritual tank in it as an essential feature. The towns which prospered on the banks of the rivers were generally oblong in size to take maximum

12
Madurai: Temple complex.
A. Shrine of Sunderesvara.
B. Shrine of Meenakshi.
C. Temple pond.
D. South Goparam.
E. Hall of the thousand pillars.

Plan of the temple city of Srirangam follows the concentric growth around the temple.

Courtesy: A.F.E.
advantage of the river. Thus, all the temple cities do not follow the concentric growth of Madurai or Srirangam (Fig:10).

The survey of ancient cities (eg. Pura, Nagar, Pattan etc.) show that these were fortified and situated on the banks of rivers on the confluence of the rivers and along sea shores to facilitate commerce with other countries. Further fort-planning formed an essential part of military engineering from ancient to the medieval period. Thus it developed as a branch of the science of town planning which is treated in greater details in ancient (Arthasastra, Mahabharata, etc.) and medieval (Visvakarma Vastusastra, Yukti-Kalptaru Mansar, Akasabhairar Kalpa etc.) scriptures. These forts were even decorated with ornate gates pratolis, images of deities, eg. Devgiri (Daulatabad) Chittor, Dabhoi, Zinzuwada etc. Invariably Durga the chief goddess and protector of the fortress (Durga) was regarded as the main object of worship during medieval period. A few forts which were constructed on the basis of above said Durgavidhan are briefly given below:

1. Mountain-Fort (Giri durga or Parvata) is situated in the mountain terrain. The fort of Chittor, Pavagadh and many more in western Maharstra are illustrative of this type.

2. Water-Fort (Jaladurga/Nadidurga); it is a fort with waters on all sides. It is flanked by rivers or built in the sea. It is insular town or a fort of which Sriranganan, Kaveripattanam may serve as good example.

3. Jaisalmer Fort in Rajasthan is a notable example of Desert-Fort.
4. The fort of Taragadh nearly square in plan can also be described as a Dvimukha-Durga or a fort with two gates.

5. Jinjee is one of the significant fort in South India. It was built by the powerful Cholas. Water management (three reservoir’s water streams, use of earthen water pipes) is an interesting feature of Jinjee Fort. It may be classified as mixed fort i.e. Mishra-Durga (Fig:11).

6. Gwalior-Fort is situated on 300 high flat topped sandstone hill. It is unique for defence, water management, architectural treasure (palaces, temples, rock cut sculptures etc.)

7. Deogiri (Daulatabad, Maharashtra) may well described as Kurma-Durga or a tortoise fort expounded in Visvakarma Vastusastra (Fig:12).

This brief survey of the medieval forts of India show that the all medieval fort and fortified cities have been built in conformity with planning principles expounded in the Hindu Shilpasatra. However, different Vastu texts give varied types of towns and cities. Aparajitapraccha, Visvakarma Vastusastra classifies towns into twenty different categories. All these towns possess various shapes and are meant for different types of terrains. Manasara, Mayamata enumerated twelve types of towns according to their characteristics. Further details regard to the ancient town planning has been discussed in detail in the next chapter.
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25. Allchin, F.R., Op. Cit. p.200-204, see Fig.10.3.


