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From Prehistory to Early History: Tracing the Cultural Evolution of the Mid-Ganga Plain

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Abstract: *The cultural evolution of the mid-Ganga plain reflects a remarkable continuity that bridges prehistory with early history. This paper explores the unbroken cultural sequence extending from the Mesolithic through the Neolithic and Chalcolithic periods, which subsequently persisted into the historical era, culminating in the time of the Buddha and continuing into the early medieval period. Archaeological findings, material culture, settlement patterns, and subsistence strategies illustrate the gradual yet consistent transformation of societies in this region. The evidence highlights the resilience of cultural practices, the adaptation to changing environmental and socio-political contexts, and the dynamic interplay between tradition and innovation. By examining this continuum, the study demonstrates how the mid-Ganga plain served as a cradle of long-standing cultural development and historical identity, thereby offering significant insights into the processes of cultural persistence and transformation in ancient India.*

Keywords: *Cultural continuity, Mesolithic, Neolithic, Chalcolithic, Mid-Ganga plain, Buddha, Early medieval India, Settlement patterns, Material culture, Cultural transformation*

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Introduction

The cultural history of the Indian subcontinent reveals a unique continuity that sets it apart from many other ancient civilizations. Among its diverse regions, the mid-Ganga plain stands out as a cradle of uninterrupted cultural development, where human communities evolved in a seamless sequence from the Mesolithic age through the Neolithic and Chalcolithic stages, and further into the

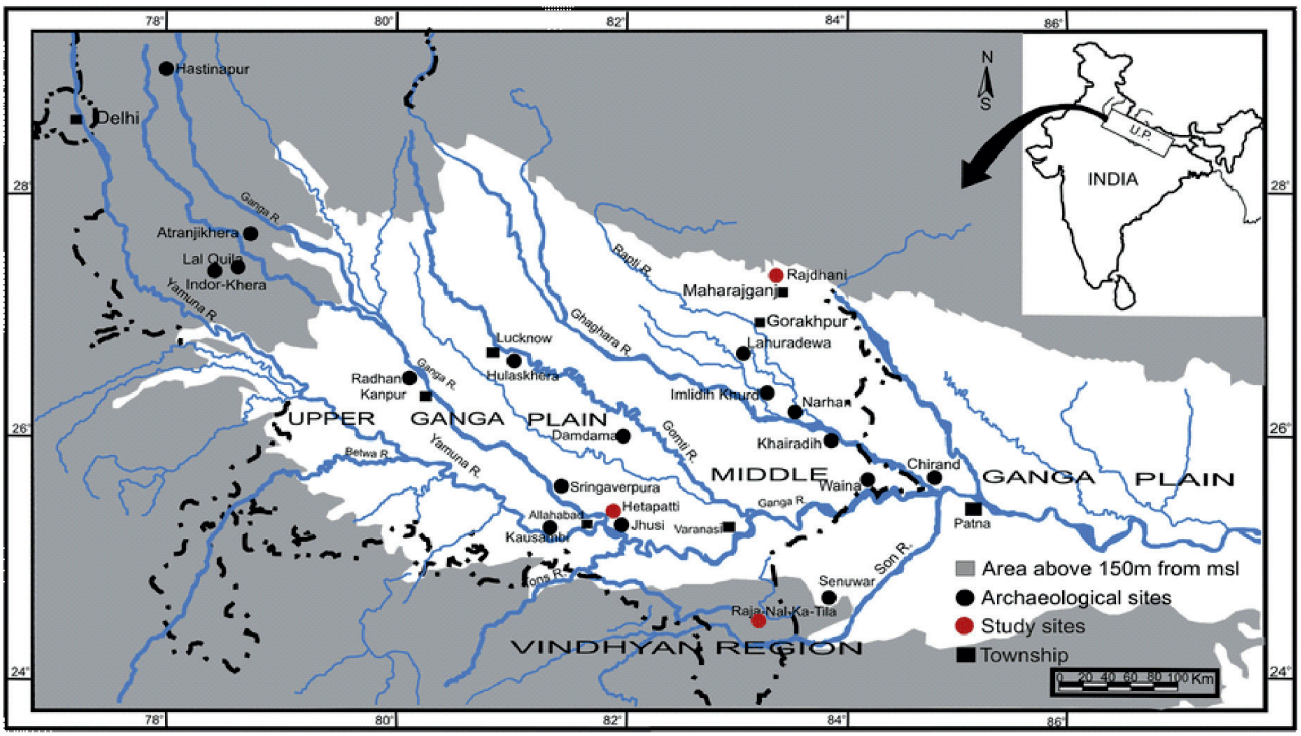
historical and early medieval periods. Unlike many world cultures that display abrupt cultural breaks or collapses, the mid-Ganga region exhibits a remarkable persistence of traditions, practices, and settlement patterns, which gradually adapted to new socio-economic, religious, and political contexts without losing their essential continuity. Archaeological excavations at sites such as **Koldihwa, Mahagara, Lahuradewa, Chirand, Chechar, Taradih, and Senuwar** provide crucial evidence for this continuity. The Mesolithic occupation layers, identified through microlithic tools at sites like Sarai Nahar Rai and Mahadaha, demonstrate early subsistence strategies. Neolithic sites such as Koldihwa and Mahagara have yielded evidence of domesticated rice cultivation, one of the earliest examples in the world. Chalcolithic levels at Chirand and Senuwar reveal advanced pottery, copper tools, and permanent settlements, showing clear cultural development. This sequence continued into the early historic period, as seen at sites like Rajghat, Vaisali, and Kaushambi, which highlight the transition into urbanization, trade networks, and religious transformations during the time of the Buddha. The persistence of cultural practices—from Mesolithic hunting-gathering communities to early medieval agrarian societies—illustrates the resilience and adaptability of the inhabitants of the Ganga plain. This long cultural continuum not only shaped the socio-economic and political landscape of the region but also contributed significantly to the broader cultural identity of ancient India. This study seeks to explore and analyze the archaeological and historical evidence that establishes the cultural continuity of the mid-Ganga plain. By examining material culture, settlement distribution, subsistence strategies, and socio-religious transitions, the research aims to provide a comprehensive understanding of how cultural traditions were preserved and transformed over millennia. In doing so, it underscores the significance of this region in South Asian archaeology and contributes to broader discussions on the nature of cultural persistence and transformation in human history.

Review of Literature

The mid-Ganga plain has long been recognized as one of the most significant cultural zones of the Indian subcontinent, preserving a continuous cultural sequence from the Mesolithic through the Neolithic and Chalcolithic into the historical and early medieval periods. Archaeologists have extensively studied this region, emphasizing its role in shaping the cultural and historical development of northern India.

The Mesolithic phase has been well-documented at **Sarai Nahar Rai, Mahadaha, and Damdama** in Pratapgarh district, excavated during the 1970s–1980s by the **Department of Ancient History, Culture and Archaeology, University of Allahabad, under the supervision of Prof. G.R. Sharma**. These sites yielded microlithic tools, faunal remains, and numerous burials with associated grave goods. Sharma (1980) emphasized that the burials reflect "a symbolic and ritualistic worldview," while the faunal assemblages reveal a hunting-fishing economy with early signs of domestication. These findings suggest that Mesolithic groups in the Ganga valley were not merely nomadic foragers but were experimenting with more settled lifeways, forming the basis for later cultural continuity.

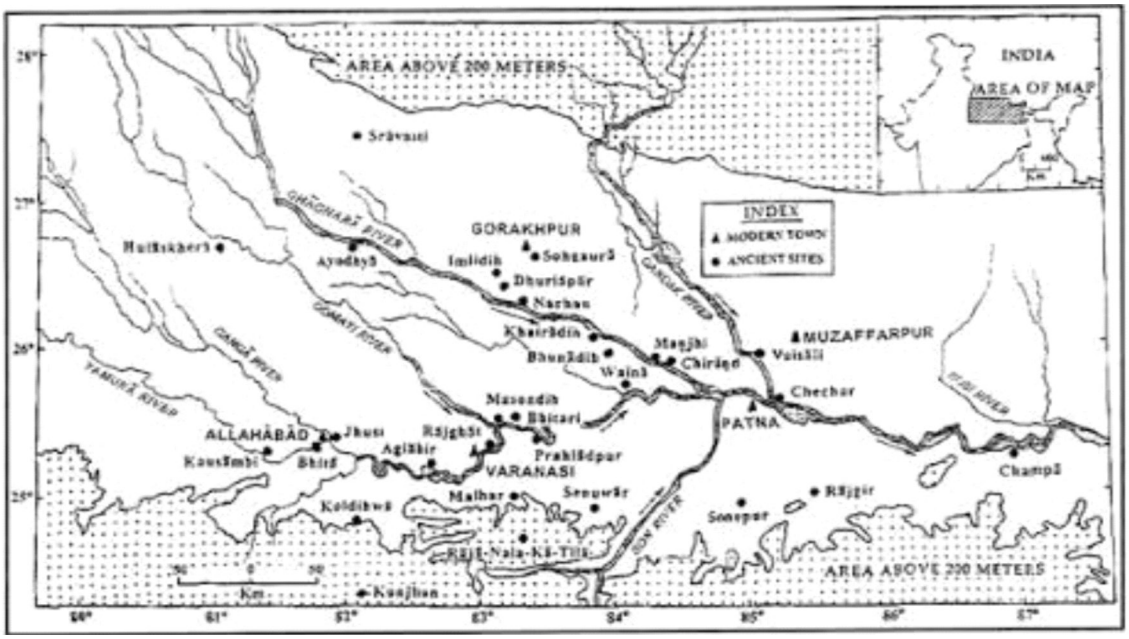
The **Neolithic culture** of the region is most prominently represented by **Koldihwa and Mahagara** in the Belan valley near Prayagraj, excavated by **V.D. Misra in the 1970s**. Excavations revealed circular huts with post-holes, microliths, polished stone axes, cord-impressed pottery, and charred rice



Map 1: Middle Ganga Plain

remains. Misra (1985) argued that the discoveries "mark one of the earliest phases of rice exploitation in the Ganga valley," though debates remain on whether the earliest specimens were fully domesticated. The associated faunal remains and settlement evidence point toward a semi-sedentary agrarian society emerging in the region. Another landmark discovery came from **Lahuradewa (Sant Kabir Nagar, U.P.)**, excavated by **Rakesh Tewari between 2001–2006**. The site yielded stratified deposits with cord-impressed pottery, microliths, and charred rice grains with radiocarbon dates as early as the 7th millennium BCE. Tewari (2005) concluded that "Lahuradewa firmly establishes the middle Ganga plain as one of the earliest centers of rice agriculture in the world." This claim has repositioned the mid-Ganga plain in global discussions on the origins of agriculture.

Archaeological excavations at Chirand, in Bihar, India, have uncovered stratified deposits showing a long sequence of human cultures, specifically from the Mesolithic period through the Chalcolithic (Copper Age) and beyond. This chronological layering provides clear evidence of distinct cultural phases, with early human activities transitioning from hunting and gathering to settled farming and early metal use. The findings at Chirand complement other sites in the region and illustrate a continuous development of technological and social complexity over millennia (Sankalia, 1974). The **Chalcolithic horizon** is represented at sites such as **Senuwar (Rohtas district, Bihar), Chechar, and Taradih**, excavated in the 1980s–1990s. At Senuwar, **R.C. Singh** documented copper tools, Black-and-Red Ware, and Painted Grey Ware pottery along with evidence of long-term farming settlements. Singh (1982) observed that "the Chalcolithic cultures of the Ganga plain were not intrusive but evolved directly out of Neolithic traditions with added metallurgical innovations." Similar conclusions were drawn from Chirand, where stratified deposits revealed successive cultural phases from Mesolithic through Chalcolithic.

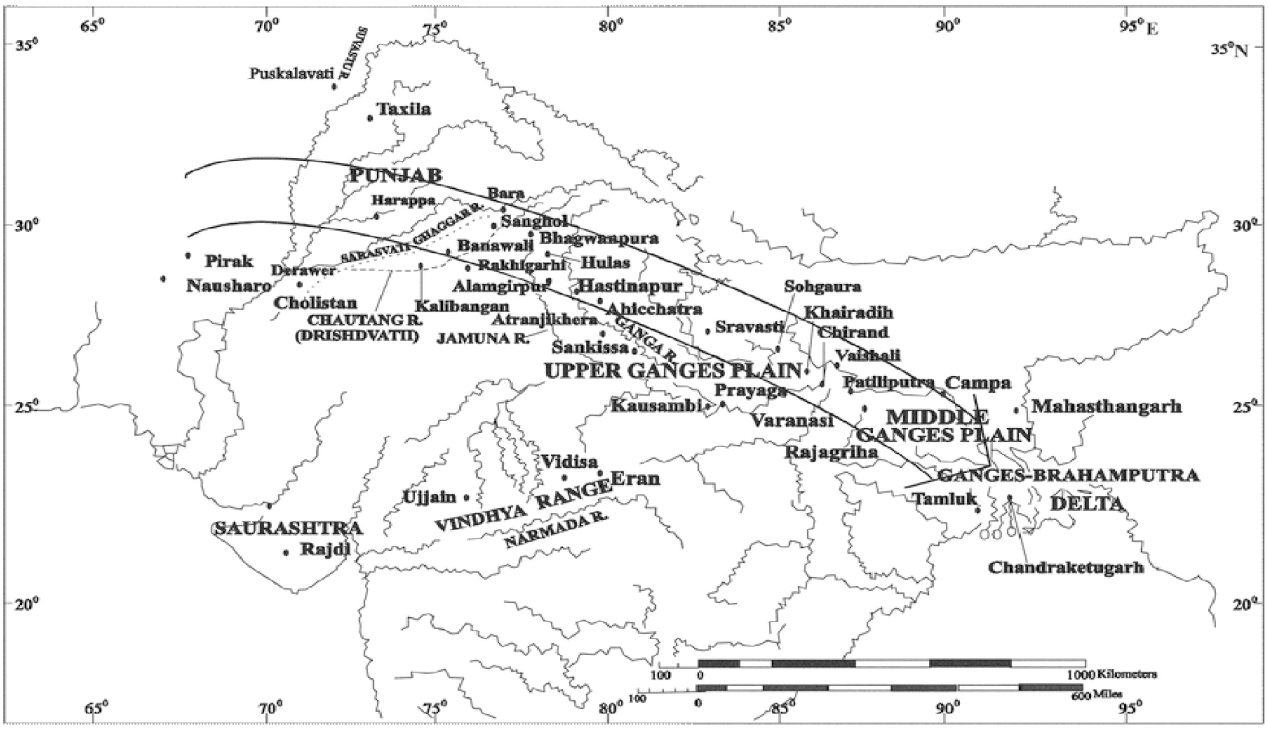


Map 2: Urbanisation of the Middle Ganga Plain- An Archaeological Perspective - Singh, S.K., Rishi Publication, Delhi 2010

Recent scholarship continues to emphasize cultural resilience. **Tewari et al. (2008)** noted that "the mid-Ganga plain demonstrates resilience rather than collapse, continuity rather than rupture." Similarly, **Sharma (2013)** highlighted that continuity here was "a dynamic process of adaptation to ecological and social challenges rather than static survival of traditions." The transition into **India's Early Historic period** is evidenced by urban centers like **Rajghat (Varanasi), Kaushambi, and Vaishali**, which show an increase in concentrated settlements, complex trade networks, and the significant spread of Buddhism. Excavations at these sites reveal advancements in crafts and technology, indicating a shift from earlier periods marked by simpler social structures and trade practices. **Allchin and Erdosy (1995)** emphasized that "the urbanization of the Ganga plain was not a rupture but the culmination of a long agrarian tradition rooted in Neolithic and Chalcolithic cultures," highlighting continuity alongside innovation.

Urbanization in the Ganga plain up to the **Early Medieval period** represents the process of the "Second Urbanization," driven by agricultural surplus, expanding trade networks, and the emergence of political entities such as the **Mahajanapadas** beginning in the 6th century BCE. Key developments included the growth of major urban centers like **Rajgir** and **Pataliputra** during the Mauryan period, supported by iron technology, administrative innovations, and complex political structures. Archaeological and historical evidence indicates that these cities became hubs of economic, religious, and cultural activity. However, during the Early Medieval period, a phase of urban decline and partial "ruralization" is observed, likely due to reduced trade, changing political stability, and environmental factors, although significant regional variations persisted across the Ganga plain (Allchin & Erdosy, 1995; Thapar, 2002).

Taken together, the literature underscores that the **mid-Ganga plain** represents one of the most remarkable and well-documented cultural continuums in South Asia. From **Mesolithic burials** and microlithic tools to **Neolithic rice cultivation**, **Chalcolithic metallurgy**, and the **urbanization of**



Map 3:Urbanization in the Ganga plain

the Early Historic period, the region exhibits an unbroken trajectory of cultural development. This continuity not only reflects the adaptive resilience of its human populations over millennia but also significantly shaped the social, economic, and political identity of ancient India, laying the foundations for the urban and political transformations observed up to the Early Medieval period. The research on early historic urbanism can be divided into three basic groups. The first is composed mostly of normative or narrative writings. C. P. V. Ayyar's monographs Town Planning in Ancient Deccan (1916) and Town Planning in Ancient India (1925), as well as those by Brajadulal Chattopadhyaya (2003) and Shonaleeka Kaul, lay the ground work for the present wave of research on this issue about a century ago (2010). Archaeologists (such as Ghosh (1973), historians (such as Chakrabarti (1995), and others (such as All chin (1989), who have all written substantially on the subject of early historic urbanisation and urbanisation), and historians (such as Jha (1998)) are further resources. (Thakur,1981; Prasad, 1984; Basant, 2012) Thakur Archaeological study focusing on early historic urbanisation and urbanism uses field surveys and excavations. Despite the lack of systematic surveys on urbanisation or urbanism on the subcontinent, this delay had little effect on excavations of Early Historic cities. They have a long history in the Indian subcontinent, with excavations dating back to the 19th century at Bhita near Allahabad (Marshall, 1915) and Sirkap (from 1913 to 1934) in Pakistan's Taxila Valley (Marshall, 1951), as well as more recent work at Sisupalgarh in Orissa (Mohanty and Smith, 2008) and Indor Khera near Anupshahar in the Upper Ganga Plains (Menon and Nath, 2016).

Early Historic Cities in Texts:- Studies of early Indian cities(Chattopadhyaya, 2003; Kaul, 2010, 2016). Chattopadhyaya highlighted some key points, which Kaul then elaborated on. According to Chattopadhyaya, texts describe cities in both literary and normative ways. Despite this, Chattopadhyaya (2003: 128) warns that "literature cannot be expected to provide cartographic

precision in description." He also reminds us that "perspectives from literature cannot substitute for research on processes of urbanisation, urban morphology and demography, urban material culture and other aspects of the city which literature is not really concerned with" Even other written materials, such as inscriptions, are unable to portray a city's 'citi-ness' as well as literature.' Texts, on the other hand, assist us in comprehending how cities were perceived and even conceptualised during the Early Historic period. He also points out that, while different socioeconomic classes would have had quite different perspectives on the city, the writings predominantly project the normative perspective. There are two views that are stressed in particular: a normative perspective and a narrative perspective. The Arthsastra, for example, is normative, whereas the Silappadikram is narrative. However, it is also uncommon for people to regard cities as hierarchical structures centred on the king. The opposing viewpoint regarded the city as a location where individuals from various social and occupational groups could meet and participate in a variety of activities, providing them a wide range of choices. Kaul's (2010) study focuses on the Sanskrit kavyas, which span more than a thousand years of the first millennium CE. In broader contexts, unspecific representations of the city can be found. Because of the study's historical scope, which includes both periods, it's difficult to say whether urbanism was seen differently in the Early Historic and Early Medieval periods.

Kaul (2016) expands on some of Chattopadhyaya's observations, arguing that not only normative and narrative writings created from different perspectives, but that there are also variances within each of these two categories of texts. The Dharmasutra, the Arthasastra, and the Kamasutra are three normative scriptures that depict several urbanisms. Cities are depicted in many ways in narrative writings such as the Ramayana and the Padataditaka. In their concepts of cities, the Dharmasutras and other Brahmanical Sanskrit works, such as Kaul's (ibid.), diverge from Buddhist Pali texts. The Brahmanical Dharmasutras regarded cities with distrust, believing that they were places where Vedic sacrifices could not be conducted. On the other hand, urbanism was a key issue in Buddhist Pali literature.Texts can teach us about a variety of urban notions, but archaeology is the only way to discover the tangible ruins of past cities.

Understanding Early Historic Urbanisation: - D.D. Kosambi's writings which have been seminal to the study of early Indian history: the relationship between tribe and caste, the link between Buddhism and trade, and the nature of feudalism in India. Many of the methods of Kosambi's analyses are substantially valid even 50 years later. Some need reconsideration either because of new evidence or because of new theories of explanation or because the overall perspectives of the past are today differently nuanced.

Frank Raymond Allchin (1989, 1990, 1995) contended that urbanisation and urbanism are not synonymous in the subcontinent. While attempting to delineate regional patterns of city formation in Early Historic South Asia, the Ganges basin, the northwest (which included modern-day Pakistan and Afghanistan), central India, the Deccan, the western and eastern coastal strips of the peninsula, and Sri Lanka were all identified as distinct regions with different trajectories. Based on their population sizes, he divided cities into six categories. His thesis was expanded to argue that the major cities were in the central Gangetic Valley, with lesser cities in the northwest, central India, the Deccan, and eastern India, as he described it. The Ganga-Yamuna delta and the northwest were the earliest areas to have settlements. To understand the reasons for the emergence of cities in various sections of the

subcontinent,archaeological digs are required. Similarly, he made an urgent plea for systematic and problem-oriented archaeological research on South Asia's Early Historic towns, which has largely gone unheeded.

Dilip K. Chakrabarti's 1995 monograph provides a catalogue of ancient Indian cities. He compiles his conclusions fromHarappan and Early Historic city excavation reports. They detail the Harappan and Early Historic urban centres that he has discovered during his investigation. Even though there is limited examination of urbanisation, some of these elements may have led to the formation of cities in these two unique periods of time. According to him, irrigation and craft specialisation drove urbanisation in the Harappan period. He believes that the formation of regional kingdoms around 500BCE was a crucial role in the Early Historic period's reemergence of cities.

Jha (1998) cautioned against treating the advent of urbanisation in the Gangetic valley as a uniform process; instead, he warned of the likelihood of both regional and temporal variance. However, archaeological data is missing in order to comprehend these many paths, both in terms of the formation and unique characteristics of distinct cities and towns within the Gangetic valley.

P. K. Basant (2012) has studied urbanisation in Malwa, central India, on several occasions. In his investigation, he studied archaeological and visual material, as well as written writings. A lot of historians have linked the emergence of a state to the expansion of urban areas. The latter is seen as a gathering place for people of varied social and religious backgrounds. According to him, the city cannot be viewed in isolation and must instead be considered as part of a greater environment. This means that in order to comprehend urbanization processes, we must examine the links between the city and its surroundings. Only archaeological evidence can shed light on early historic Malwa's urbanisation and the city's local and regional network of urban communities,especially since literary and epigraphic sources may lack comprehensive details about such physical and economic structures.

As a result, most studies on early historic urbanisation and urbanism are limited in their analysis due to a paucity of archaeological data. We can only solve this challenge as archaeologists by supporting greater archaeological field work in Early Historic towns and cities across the subcontinent.

Archaeological surveys conducted in India during the Early Historic period to explore urbanisation or urban centres. George Erdosy (1988) in Allahabad district, Uttar Pradesh, conducted the first such attempt with his survey of the doab tehsils of Manjhapur and Sirathu. According to his research, field surveys are essential for understanding the challenge of urbanisation in Early Historic North India.

Surveys And Excavations of Early Historic Urban Centres was carried out by Erdosy to better understand the emergence and development of urbanisation in the middle Ganga valley between approximately 1000 BCE and 300 CE. Erdosy undertook his study in the doab tehsils of Chail, Manjhapur and Sirathu in Allahabad district, Uttar Pradesh. The area selected for survey was nearly 2000 square kilometres, making it impossible to carry out a full coverage strategy. Erdosy therefore decided to use the conventional village to village survey method. In the next stage several large villages were selected for a more intensive survey or field walking within a radius of 10 to 12 kilometres around them.

Monica Smith (2001) carried out a comprehensive field surveyin Kaundinyapura, a Central Indian Early Historic town. In order to better comprehend the site's link to its immediate hinterland, a ten-

kilometer radius around Kaundinyapura was also examined. In this outlying survey region, Dhamantri, a lesser mound about four kilometres from Kaundinyapura, was also surveyed. Her research reveals that local and regional networks were more important than long-distance contacts in Early Historic social and economic networks. Following Kaundinyapura, Smith (2002:121) performed a thorough field investigation of Sisupalgarh, an Early Historic city in Orissa. Her research discovered signs of human settlement throughout the fortified region, rather than a "empty ceremonial or administrative centre." While surveys do have the potential to identify urban centres and also provide some clues about the reasons for their locations, ultimately it is only through excavations that one can obtain much more detailed information about cities and towns. In the case of Early Historic cities and towns of northwest and north India, a very large number have been excavated in the last 100 years. This list includes Bhir Mound, Sirkap and Sirsukh in the Taxila valley, and Charsadda, near Peshawar in the northwest; Bairat, Sonkh, Mathura, Hastinapura, Ahicchatra, Atranjikhera, Indor Khera, Kanauj, Ayodhya, Kausambi, Sringverpur, Sravasti, Tilaurakot, Ganwaria, Kasia, Rajghat, Buxar, Prahladpur, Vaisali, Rajgir, Pataliputra, and Campa in the north; Bangarh, Mahasthangarh and Chandraketugarh in the east. Of these the most informative are the excavations carried out at Bhita near Allahabad (Marshall, 1915), Sirkap in the Taxila valley in Pakistan (Marshall, 1951), Sonkh near Mathura (Härtel, 1993) and Mahasthangarh in Bangladesh (Alam and Salles, 2001).

There has been a considerable debate concerning the factors responsible for the emergence **of Early Historic Urban Centres**, cities and towns in north India around 500 BCE. Among the most cited reasons are iron technology, social changes, emergence of artisans, traders and craft guilds, internal and long distance trade facilitated by the opening of trade routes in the northwest, political developments, and the rise of Buddhism and Jainism. The most controversial has been the role of iron tools in the clearance of forests and the use of iron ploughs for cultivation, particularly in the middle Ganga valley. It was Ram Sharan Sharma (2006), perhaps taking his cue initially from Damodar Dharmananda Kosambi (2006), who made a causal link between plough agriculture, an increase in settlements, surplus production and the beginning of towns and cities. He also argued that iron tools facilitated transport and other aspects of trade as well as crafts. The traders and artisans who were the primary residents of these newly emerging urban centres were also drawn to the new religions, Buddhism and Jainism, which arose around the same time.

Historians Ram Sharan Sharma and D. D. Kosambi established a theory linking early urban development to agricultural advancements, especially the plough, which led to increased food production, larger populations in settlements, and the beginnings of towns and cities. Sharma's 2006 work, potentially building on Kosambi's earlier ideas, details how iron tools, the plough in particular, boosted productivity and allowed for the clearing of forests for cultivation, which in turn facilitated the growth of urban centers. Not everyone, however, agrees about the seminal role of iron technology. In particular it is the archaeologists who have expressed their reservation about the importance of iron tools. For example, Niharranjan Ray (2006) based on his quantitative analysis of the iron tools from several archaeological sites, pointed out that these were not numerically adequate for producing the necessary surplus. He added that at the time the reliance was still on the hoe and the wooden plough, however ineffective these may have been. Further, as the archaeological evidence showed a far greater number of weapons, he speculated about their possible role in the formation of states.

Dilip K.Chakrabarti (2006) too played down the role of iron as a contributing factor to the creation of the agricultural base, which he felt was in existence in the preceding neolithic- chalcolithic periods. Nor did the beginning of the use of iron from about 1000 BCE or even slightly earlier usher in any dramatic change. He in fact attributed political power to be the causative factor. Another archaeologist, Shereen Ratnagar (2006), has also critiqued the causal link that has been made between the expansion in cultivation and the use of iron plough in Magadha in the mid first millennium BCE. She raises several very important questions, including the efficacy of iron ploughs as against the more commonly used wooden plough, and an over emphasis on rice cultivation as a critical factor in the increased agricultural production. However it must be added that she sees the significance of iron elsewhere, for instance, the role it played in the construction of stone buildings, cart axles and wheel spokes, ship anchors and glass production. Further, based on a survey of settlements, dated between 1500 BCE and 300 CE in Kanpur district, Makkhan Lal (2006) has shown that there was no relationship between the extensive use of iron tools and large scale forest clearance.

Regarding **Debates on Early Historic Urbancentres**: There are two aspects of the Early Historic urban centres about which there is little controversy. The first is that many of them were either centres of political power or were directly linked to them and the second is that very often they were located along trade routes. What is also important to note is that long distance trade, whether with the Roman world, Central Asia or within the subcontinent, contributed to urban growth, particularly in the period between 200 BCE and 300 CE. While a fair amount of attention has been paid to the trading networks with the Roman world or Central Asia, not enough archaeological research has been done to bring out the details of trade within different parts of the subcontinent. It has been rightly pointed out by BrajadulalChattopadhyaya (1994a: 179) that it was this wide exchange network within the subcontinent that accounts for a remarkable uniformity in material culture across Early Historic sites. However it is only when artefacts and ceramics across sites are closely examined will we have a better idea about the linkages that existed locally, within a region or across different regions. It has also been pointed by Chattopadhyaya that the initial phase (600-300 BCE) of Early Historical urbanism had the middle and upper Ganga valley as a distinct epicenter. Further it was in the subsequent phases (300-100 BCE and 100 BCE-300 CE) that urbanism in stages spread to other parts of the subcontinent. It may be added that apart from the upper and middle Ganga valley, another region where urban centres emerged between 600-300 BCE was the northwestern part of the subcontinent.

There is some debate among historians about the extent of decline of urbanism in the period between 300 CE and 1000 CE. While R. S. Sharma (1987) held that all the urban centres in north India had declined, Chattopadhyaya (1994b: 151) has argued instead that not only did some of the earlier urban centres survive but that new urban centres, like Ahar (near Anupshahar) and Sankara in Aligarh district, also emerged in this period. As most of the Early Historic urban centres were closely linked with the successive political powers, be it the mahajanapadas, Mauryans, Shakas, Kushans or Guptas, their fortunes were inextricably connected too. The interconnectedness of political power, internal trade and urban centres is perhaps indicated by the remarkable parallels between Indor Khera and Sonkh (separated by a distance of a little over 100 kilometres), not only in terms of material culture but also in their histories. For instance at both these sites the earliest occupation began in the Iron Age (often identified by the Painted Grey Ware) and towns emerged around the second century BCE. From

about the fourth century CE, there was little evidence of regular remains of houses at both Sonkh and IndorKhera; instead several unconnected walls were recovered in the levels until the tenth century CE. Thereafter, once again houses were exposed but from then on, both at Sonkh and IndorKhera, their alignments were diagonal to the cardinal directions. Carlleyle (1879), while quoting from the historical memoir of Kuar Lachman Singh of Bulandshahar, mentions that DôrRajputs from Rajasthan are believed to have settled in this area around the end of the tenth century CE.

In contrast, houses at both these sites in the period between the second century BCE and the third century CE were always built in the cardinal directions and through successive building phases. In the upper levels of the mound, at least on the northernedge, there is evidence of a medieval fort, which is held to have been renovated during Jahangir's time by a local chief Ani Rai, of Anupshahar. Härtel (1993) has suggested that Sonkh emerged as a town from about the end of the second century BCE and continued as an urban centre till the third century CE. Thereafter there is evidence of destruction and decay, leaving nothing but fragments of mostly unconnected walls from about the fourth till the tenth centuries CE. There may have been a short period of abandonment, which was then followed by the construction of a caravanserai and slightly later by residential areas in the period between the tenth and sixteenth centuries CE. However from then on the older alignment of cardinal directions was no longer followed; instead the houses were built diagonally to the cardinal directions. Still later, a fortress of baked bricks was built either during the time of Sher Shah or the Mughals. Finally in the seventeenth century the brick fortification was converted into a mud fort and a moat was added. Further, within specific micro regions, as one urban centre declined, another may have emerged in close vicinity. For example, in the middle Ganga-Kalinadi doab area, Indor Khera existed as a small urban centre between 200 BCE and 300 CE. In the early medieval period, it appears that a new urban centre arose at Ahar, about 25 kilometres to the northeast of IndorKhera along the bank of the Ganges river. Ten inscriptions have been found from this centre, Ahar, that have been dated between 867 and 904 CE, which suggests it may have been part of the Gurjara-Pratihara empire. These inscriptions name this settlement as Tattānandapura (Chattopadhyaya, 1994b). While we know that Ahar was a qasba in the Mughal period, we do not as yet have any information about its history in the intervening period. It also seems that a qasba came up at Debai, about 7 kilometres to the south-east of Indor Khera, in the first half of the fourteenth century CE. All this suggests that even within a micro-region, the loci of urban centres may shift periodically depending on the larger political and economic requirements and dynamics. Instead of visualising distinct phases of urbanisation(early historic) and deurbanisation/ urban decay (early medieval), we need to look at the lateral shifts in the location of urban centres that were taking place. While in the early historic period, Indor Khera was the urban centre for this micro-region, in the early medieval period, it was Ahar. Chattopadhyaya (1994b) in response to the issue of urban decay has noted the emergence of several urban centres in early medieval north India, such as Parthudaka (Pehoa) in Karnal district, Siyadoni in Jhansi district and Gopagiri (Gwalior). However, what have so far not been worked out are the lateral shifts taking place at the micro level, over a period of time. Apart from location, the nature of urban centres would have also varied. For example, what little we already know, from the archaeological and inscriptional evidence, suggests that IndorKhera and Ahar were very different kinds of urban centres. The urban experience too at these urban centres would have been distinct. It is only when archaeological studies involving intensive and extensive

surveys as well as focussed excavations in a micro-region are undertaken will we move towards a better understanding of early urban histories.

Methodology

The present study on the **cultural continuity in the mid-Ganga plain** adopts a multi-pronged methodological approach, integrating archaeological, historical, and comparative analyses to trace the sequence from the Mesolithic through the Early Medieval period. The methodology includes the following components:

1. Data Collection

Data for this study were collected from a combination of **primary and secondary sources**:

- **Primary data** include archaeological site reports and excavation records from Mesolithic sites (Sarai Nahar Rai, Mahadaha, Damdama), Neolithic sites (Koldihwa, Mahagara, Lahuradewa), Chalcolithic sites (Senuwar, Chechar, Taradih, Chirand), and Early Historic urban centers (Rajghat, Pataliputra,Rajgir, Hastinapur, Kaushambi, Vaishali etc.). These sources provide information on settlement structures, material culture, faunal and botanical remains, and radiocarbon dates.
- **Secondary data** were obtained from scholarly publications, monographs, journal articles, and historical texts that analyze technological, socio-economic, and cultural developments in the region.

2. Archaeological Analysis

- **Stratigraphic and Chronological Analysis:** The study reviews stratified deposits from multiple sites to understand the sequence of cultural phases, transitions between Mesolithic, Neolithic, and Chalcolithic periods, and continuity into Early Historic urbanization.
- **Material Culture Analysis:** Tools, pottery, metal objects, and other artifacts are analyzed to identify technological innovations, craft specialization, and socio-cultural practices.
- **Settlement Pattern Analysis:** Spatial distribution of sites, including temporary Mesolithic camps and permanent Chalcolithic and Early Historic settlements, was examined to assess patterns of habitation, agriculture, and trade.

3. Comparative and Contextual Study

- **Cross-site Comparison:** Findings from multiple sites were compared to identify continuities and variations in cultural practices over time.
- **Integration with Historical and Literary Sources:** Archaeological evidence was contextualized with historical records, including the accounts of early travelers and inscriptions, to trace socio-political developments and urbanization patterns.
- **Environmental and Subsistence Reconstruction:** Botanical remains, faunal analysis, and lithic evidence were used to reconstruct subsistence strategies, agricultural practices, and ecological adaptations over millennia.

4. *Data Presentation*

- A **table** was prepared summarizing the chronological phases, key sites, cultural attributes, and main findings.
- A **flow chart** illustrates the unbroken cultural sequence from the Mesolithic through the Early Medieval period.
- Graphical representation of the frequency of artifact types and settlement patterns was also employed to visually depict continuity and change.

5. *Analytical Framework*

- The study follows a **diachronic approach**, focusing on long-term cultural processes rather than isolated events.
- **Continuity and transformation** serve as the main analytical lenses, allowing the identification of persistent traditions alongside innovations in material culture, agriculture, and urban development.
- **Comparative chronology** across multiple sites provides a robust framework for understanding the gradual evolution of societies in the mid-Ganga plain.

Cultural continuity of the mid-Ganga plain from Mesolithic to Early Medieval periods

Table 1: Chronological Sequence and Key Archaeological Sites of the Mid-Ganga Plain

Period	*Approx. Date (BCE)*	*Key Sites*	*Cultural/ Technological Features*	*Main Findings*
Mesolithic	10,000–4,000 BCE	Sarai Nahar Rai, Mahadaha, Damdama	Microlithic tools, hunting-gathering, temporary camps	Burials with grave goods, faunal remains, early signs of sedentism
Neolithic	6,000–2,500 BCE	Koldihwa, Mahagara, Lahuradewa	Polished stone tools, circular huts, cord-impressed pottery, early rice cultivation	Semi-sedentary agrarian settlements, domestication of rice and cattle
Chalcolithic	2,500–500 BCE	Chirand, Senuwar, Chechar, Taradih	Copper tools, Black-and-Red Ware, Painted Grey Ware, permanent settlements	Advanced agriculture, metallurgy, craft specialization
Early Historic	600 BCE–300 CE	Rajghat, Kaushambi, Vaishali	Urbanization, trade networks, Buddhism, craft and technology advancements	Nucleated settlements, complex socio-political structures, flourishing trade
Early Medieval	300–1000 CE	Pataliputra, Rajgir, regional centers	Political fragmentation, decline in urbanization in some areas	Evidence of partial "ruralization," regional variations in settlement and trade

Flow Chart: Cultural Continuity in the Mid-Ganga Plain
Mesolithic (10,000–4,000 BCE)
↓
Hunter-gatherer lifestyle, microlithic tools, burials
↓
Neolithic (6,000–2,500 BCE)
↓
Settled agriculture, rice cultivation, polished stone tools, circular huts
Z ↓
Chalcolithic (2,500–500 BCE)
↓
Copper tools, advanced pottery, permanent settlements, craft specialization
↓
Early Historic (600 BCE–300 CE)
↓
Urban centers, trade networks, Buddhism, political structures
↓
Early Medieval (300–1000 CE)
↓
Urban decline/ruralization in some areas, regional variation, continuation of cultural practices

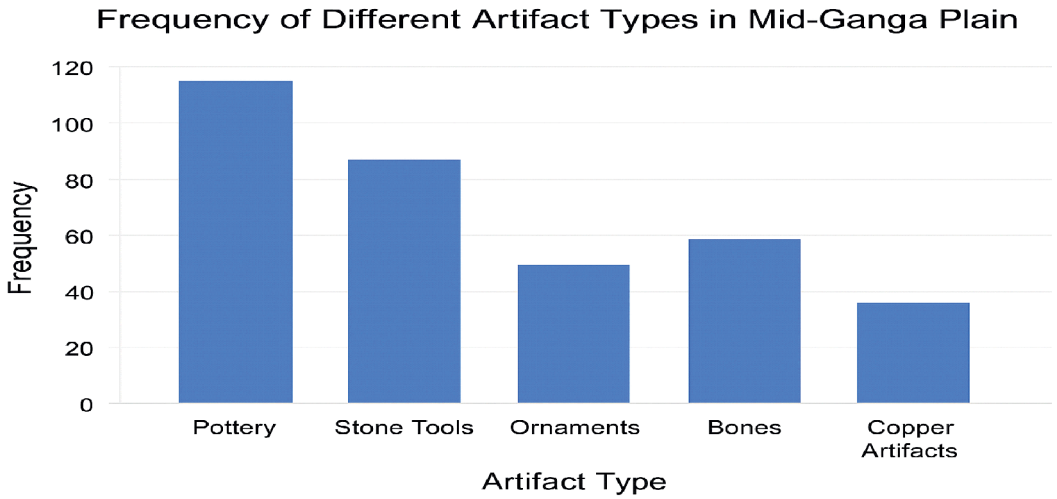
Artifact Types – Frequency Chart represents the frequency of different artifact types (e.g., pottery, tools, ornaments, bones) using a **bar chart**. Dataset of artifact types and their frequencies based on typical patterns from Mesolithic to Early Historic sites:

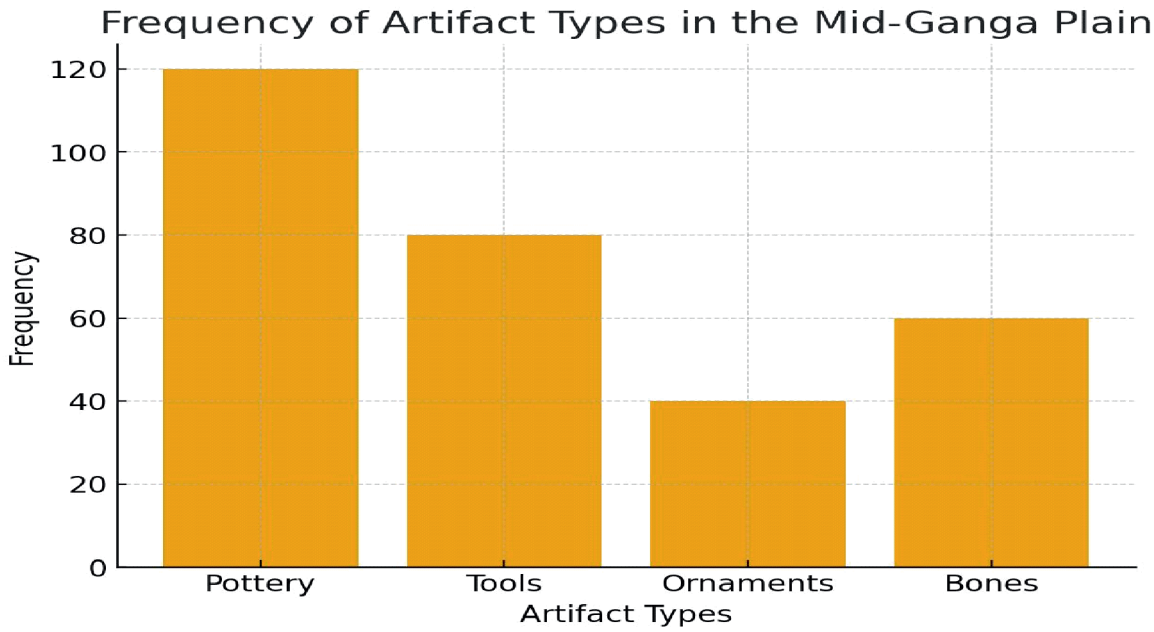
Example: Bar Chart – Frequency of Artifact Types

Artefact Type	**Frequency**
Pottery	120
Stone Tools	80
Metal Objects	30
Ornaments	40
Bone Tools	60

Approximate Data for Middle Ganga Plain

Artifact Type	**Relative Frequency***
Pottery	~ 40-50%
Stone Tools	~ 25-35%
Metal Objects	~ 5-15%
Ornaments (beads, etc.)	~ 5-10%
Bone Tools / Implements	~ 2-7%

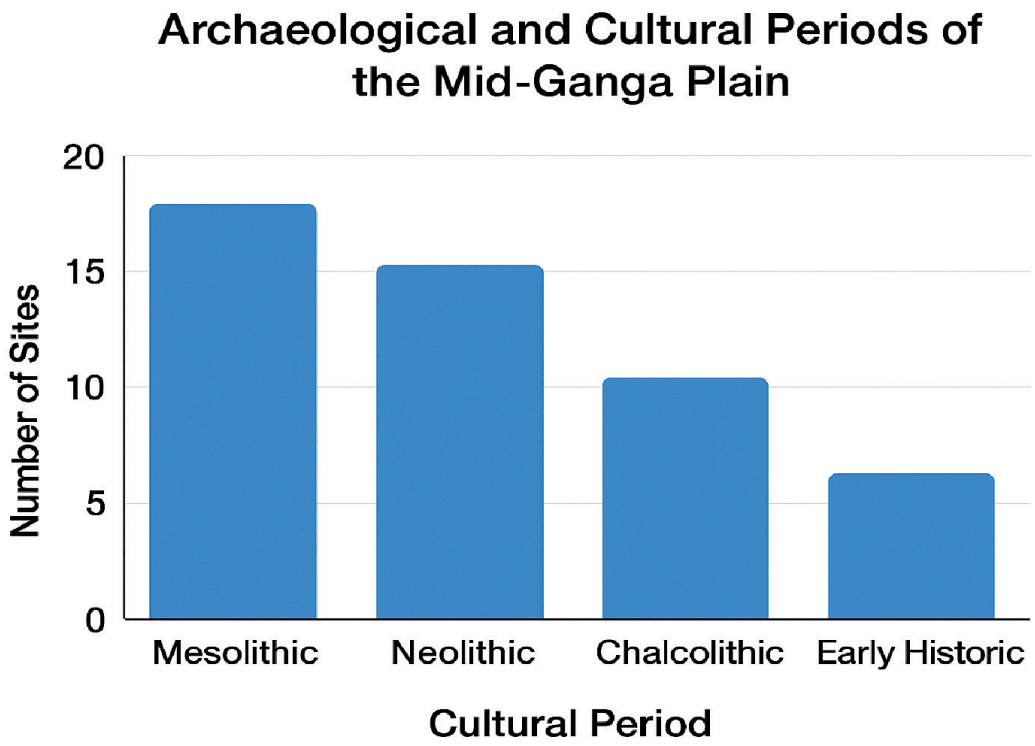




Mesolithic sites, Neolithic settlements, Chalcolithic artifacts, and Early Historic urban sites— table showing the distribution of archaeological and cultural data in the Mid-Ganga Plain.

Structured dataset example:

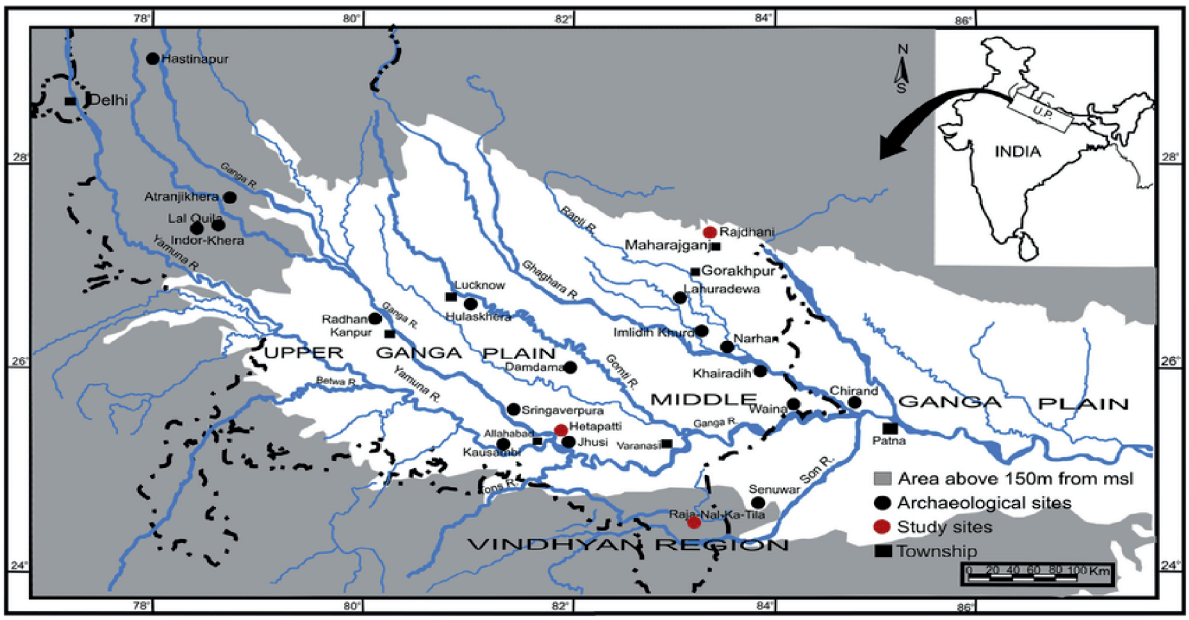
Cultural Period	*Number of Sites*	*Key Artifacts / Features*
Mesolithic (c. 10,000–4,000 BCE)	18	Microliths, hunting tools, seasonal camps
Neolithic (c. 4,000–2,000 BCE)	14	Pottery, rice cultivation, permanent settlements
Chalcolithic (c. 2,000–1,000 BCE)	10	Copper tools, ornaments, terracotta objects
Early Historic (c. 500 BCE–300 CE)	7	Urban centers, coins, brick structures, trade evidence



Settlement Patterns – Distribution

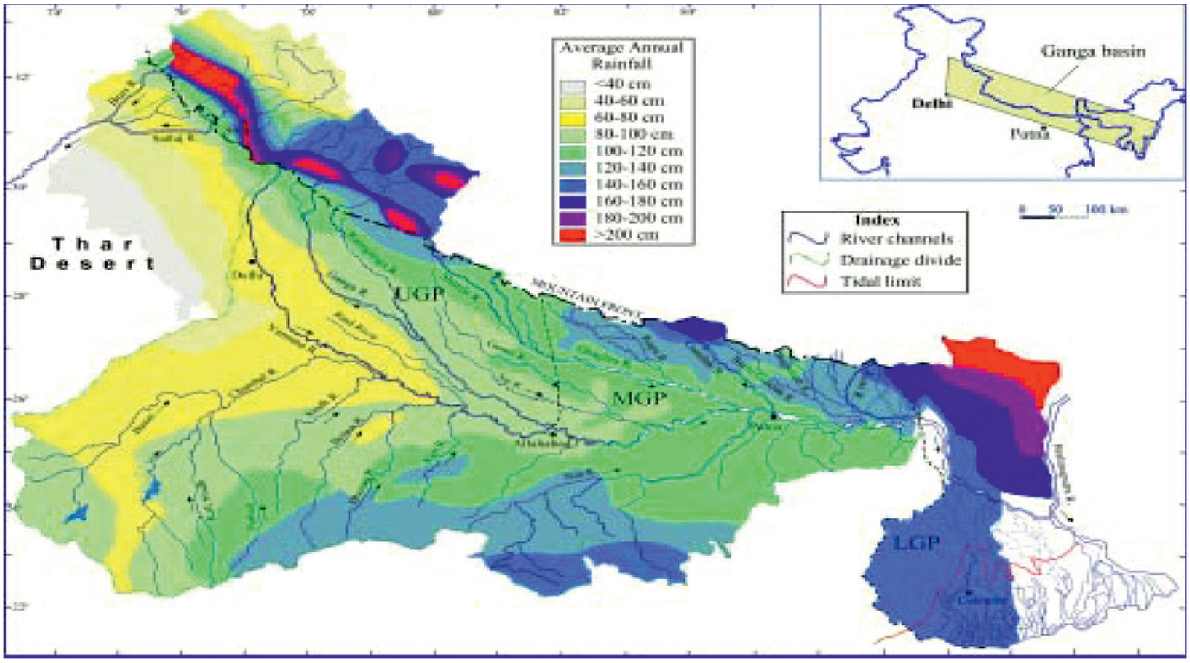
Settlement Patterns

Period	*Settlement Type*	*Distribution / Key Sites*	*Characteristics*
Mesolithic (c. 9000–4000 BCE)	Temporary hunter-gatherer camps	Koldihwa, Mahagara, Chopani-Mando	Small, mobile groups; riverine or near water sources; reliance on hunting, fishing, and wild plants
Neolithic (c. 4000–2000 BCE)	Permanent agrarian villages	Koldihwa, Mahagara	Domestication of plants and animals; mud-brick houses; early rice cultivation
Chalcolithic (c. 2000–1000 BCE)	Small villages and proto-urban centers	Son River valley, Senuwar, Malhar	Copper tools, pottery (red-ware, black-and-red ware), trade networks emerging
Early Historic (c. 600 BCE–300 CE)	Urban settlements, fortified towns	Kausambi, Varanasi, Sravasti, Rajghat	Urban planning, trade centers, fortified structures; influenced by Mauryan and later kingdoms



Archaeological Sites in the Middle Ganga Plain

Source: Deepika Tripathi et al., "Neolithic−Early Historic (2500–200 BC) Plant Use: The Archaeobotany of Ganga Plain, India," 2016.



Settlement Patterns – Mid-Ganga Plain

Mesolithic Sites (c. 9000–4000 BCE)

The Microlithic/Mesolithic culture of the Ganga Plain can be categorised into two types: open air and rock shelters sites (Sharma, 1973;Sharma et al., 1980; Pal, 2007). The stone industries found in the Ganga Plain exhibits an advanced form of Microlithic tool technology (Pandey,1990; Sharma, 1973; Sharma et al., 1980; Pal, 2007;Chatterjee,2019).ThePratapgarh district situated in the Ganga Plain has reported a signicant number of Mesolithic sites along oxbow lakes and northern boundaries of

the Vindhyan Hills (Pandey, 1990; Chatterjee, 2019).Detailed studies of Mesolithic sites along the northern bank of the Ganga river include Sarai Nahar Rai, Mahdaha, and Damdama (Pal, 1986,1994, 2007; Pandey, 1990; Sharma, 1973; Sharma et al., 1980). Addi- tionally, various sites can be found in the Vindhyan region, such as rock shelters at Morhana Pahar, Baghaikhor, and Lekhahia, as well as an open-air site at Chopani Mando (Sharma et al., 1980; Misra, 1997; Jha et al., 2020, 2021). These sites have been excavated over several seasons by multiple team of archaeologists (Chattopadhyaya, 1996; Pal, 1986,1994, 2007; Pandey, 1990; Sharma, 1973; Sharma et al., 1980; Varma,1983, 1989; Varma et al., 1985), which provided an extensive data on Mesolithic culture of Ganga Plain.

Characteristics

Mesolithic sites in the Ganga Plain have revealed several archaeological remains, including burned plaster oors, post holes, graves, hearths, charred seeds, animal bones, and a variety of artefacts such as microliths, bone and antler tools, querns, mullers, ring stones,sling stones, hammer stones and anvils (Pal, 1986, 2007; Misra, 1997; Sharma et al., 1980). The Microlithic tools found consist of retouched blades, points, awls, lunates, triangles and trapezes from the Ganga Plain (Pal, 1986). It is noteworthy that the Ganga River channel lacks suitable rock formations (Pal, 2007), and the closest available sources of materials like chert, and chalcedony as raw materials are available in the Vindhyan Hills for the utilisation to make Microlithic tools (Pal, 1980, 2007). Another distinguishing feature of the Microlithic assemblages in the Ganga Plain is the size difference between the tools found near Oxbow lakes and those found in the Vindhyan region and suggests technological variations between those groups. It was also observed that the prepared cores found near the Oxbow lakes in the Ganga Plain have been used extensively and perhaps due to scarcity of raw materials (Pal, 1980, 2007; Chatterjee, 2019). There are evidences of Mesolithic inhabitants utilising bone materials for crafting tools and ornaments (Pandey, 1990; Varma et al., 1985; Sharma, 1973; Sharma et al., 1980;Chattopadhyaya, 1996). It is important to mention that bone tools and decorations have been discovered exclusively at the excavated sites such as Sarai Nahar Rai, Mahadaha, and Damdama in the Ganga Plain (Pandey, 1990; Varma et al., 1985; Sharma, 1980; Chattopadhyaya, 1996; Pal, 2007). The assortment of bone tools includes arrowheads, points, blades, knives,scrapers, chisels, and saws (Pandey, 1990; Pal, 2007). Arrowheads and points were the most common types of bone tools used in the Ganga Plain (Pandey, 1990). The Mesolithic people living in the Ganga Plain displayed a clear fondness for adorning themselves with various ornaments, including earrings, necklaces and pendants (Pandey, 1990; Pal,2007). These ornaments were skillfully crafted using materials like bone, antler and ivory, showcasing the artistic and creative abilities of the Mesolithic community (Pandey, 1990; Pal, 2007). It is plausible to interpret these ornaments as markers of identity, symbolising both social distinctions and individual differences within the community (Pandey,1990; Pal, 2007, 2016). Several bone arrowheads indicate the use of bow and arrow technology, showcasing the technological advancement of the Mesolithic culture in the Ganga region (Pal, 2016).

Excavations at Chopani Mando, a Mesolithic site in the Belan valley have provided evidence of human habitation, including huts, Microlithic tools and grains (Misra, 1997; Sharma et al., 1980; Pal, 2007; Jha et al., 2020, 2021; Jha, 2021). The remains of the huts, in the form of post holes, suggest that Mesolithic people lived in small circular huts made of wattle and daub, with shallow pits

and post holes (Misra, 1997; Sharma et al., 1980; Pal, 2007). The artefacts found at the site include querns,mullers, anvils, hammer stones and Microlithic tools (Misra, 1997;Sharma et al., 1980; Pal, 2007). During the Mesolithic phase, querns and mullers were primarily used for grinding wild grains, such as wheat,barley and millet, into our or meal, which was crucial for food production (Misra, 1997; Sharma et al., 1980; Pal, 2007). Additionally,these tools were occasionally employed for grinding pigments and dyes,enabling the creation of paints, inks and colorants for artistic and decorative purposes (Misra, 1997; Sharma et al., 1980; Pal, 2007).Moreover, querns and mullers were utilised for grinding a wide range of materials, including nuts, seeds, roots and other substances, based on local needs and available resources (Sharma et al., 1980). The evidence of wild rice "Oryza rupogon" was found at Chopani-Mando preserved in the burned clay lumps of pottery (Pal, 1980, 2007; Sharma et al., 1980;Sharma et al., 2004a). The Mesolithic sites of the Ganga Plain have yielded several pottery sherds from sites such as Morhana Pahar, Baghaikhor, Lekhahia, andChopani Mando, with majority being deep shallow rimless bowl(Chatterjee, 2019; Misra, 1997, 1999; Pal, 1980, 2007). These pottery pieces were likely used for storing food items such as grains and seeds. The occurrence of charred animal bones found in hearths from Damdama, Mahadaha and Sarai Nahar Rai suggests that animals were a signicant source of food for the Mesolithic people living in the Ganga Plain (Pal, 2007). The burials are commonly discovered in the habitation area and are typically located in close proximity to the hearths (Sharma, 1973; Pal, 1985, 1988, 1992, 1994; Pandey, 1990; Sharma et al., 2004a,b). The burial practices revealed signicant evidence of the social organization within the Mesolithic culture (Sharma, 1973; Pal, 1985, 1988, 1992,1994; Pandey, 1990; Sharma et al., 2004a,b). The signicant discovery of Mesolithic culture in the Ganga Plain appears to have a strong association with the deceased, as revealed by the presence of ninety individual burials in eighty graves discovered at the Sarai Nahar Rai lake lake, Mahadaha lake, and Damdama lake (Pal, 1985; Chattopadhyaya, 1996). Among these burials, there were seven instances of double burials, one triple burial, and one quadruple burial (Chattopadhyaya, 1996). Bone ornaments were found in three burials from Mahadaha and one from Damdama (Pal, 2002). In most cases, the buried individuals were oriented in a west-east direction, which suggests socio-cultural practice in the group of inhabitants of the Mesolithic phase in the Ganga Plain.

Further, extended human burials have been reported in Baghaikhor and Lekhahia rock shelters of the Vindhyan region (Misra, 2002). The majority of these burials were oriented with the head towards the west,except for two burials with a south-north orientation (Misra, 2002). The human skeletons found in these sites are often individual burials or joint and multiple burials, associated with ritual materials like offered meat (Misra, 2002). Evidence of providing meat to the deceased as a ritual has been reported from Lekhahia (Lukacs and Misra, 1996; Lukacs and Pal, 2003). A female skeleton from Baghaikhor, studied by Kennedy (1990), exhibited signs of porotic hyperostosis disease on the frontal and parietal bones. Lukacs (2007) provides evidence suggesting that the hunter-gatherer communities residing in the Ganga Plain were generally in good health and successfully adapted to their environment. This is supported by the low occurrence of dental decay, the absence of signs indicating nutritional and infectious ailments, and infrequent indications of physical injuries and occupational strain (Petraglia and Allchin, 2007). Several dates from various sites suggest that the Mesolithic occupation in the Ganga Plain occurred during the early to mid-Holocene (Misra, 2007;

Pandey, 2005; 2016; Islam, 2016). The collective evidence strongly indicates that the emergence of Mesolithic culture in the Ganga Plain took place between 10 ka and 8 ka BP (Misra, 2007; Pandey, 2005; Pal, 2016; Islam, 2016). For instance, the Mesolithic human activity at Sarai Nahar Rai lake was dated to 8395 ±110 BCE by radiocarbon (14 C) method, while thermo-luminescence (TL) and AMS dates obtained from the Damdama lake suggest a range from 7000 BCE to 9000 BCE (Misra, 2007; Pal, 1986, 1988, 2007). Similarly, researchers have proposed a broader time span for the Mesolithic cultures of Belan and Son valleys, suggesting a chronological framework from the the 10,000 to 8000 BCE. (Pal, 1986, 1988; Pandey, 2005; Tewari et al., 2002;Neudorf et al., 2014; Clarkson et al., 2020; Chauhan, 2020).

Neolithic Sites (c. 4000–2000 BCE)

Neolithic culture

The earliest collection of Neolithic tools in the Ganga Plain was discovered in the Banda district around ~1800 BCE (Cockburn, 1879).Further excavations at major tributaries of the Ganga, such as Belan and Son, also revealed several Neolithic sites (Williams and Clarke, 1984;Williams et al., 2006; Sharma et al., 1980; Jha et al., 2020, 2021;Pokharia et al., 2017; Pokharia, 2008). These sites demonstrated a shift from hunter-gatherer lifestyles to settled agricultural communities due to the fertile floodplains suitable for agriculture (Sharma et al., 1980; Misra, 1997; Jha et al., 2020, 2021; Jha, 2021; Quamar and Kar, 2022).The cultural sequences unearthed from excavations in the Ganga Plain and Vindhyan region displayed a stratified development from the Neolithic to the early historical phase (Tripathi et al., 2021; Tewari et al., 2002, 2006; Pokharia, 2011; Pokharia et al., 2017; Misra et al.,1996).

Characteristics

The most important excavated Neolithic sites in the Ganga Plain are Jhusi, Hetapatti, Bhunadih, Waina, Sahgora, Imalidih, Chechar Kutubpur, Taradih, Senuwar and Maner (Misra et al., 1996; Misra, 1997,2002). The excavation at site Chirand by Archaeological Survey of India (ASI) suggested presence of full-edged Neolithic settlement characterised by the presence of domesticated animals, plants, pottery and smoothed stone tools in the Ganga Plain (IAR, 1973; Sinha, 1979).An extensive array of bone tools recovered from the Chirand excavation suggests that the Neolithic community relied heavily on animal bones as a raw material for crafting these implements, possibly due to a scarcity of suitable stone resources in the region (Sinha, 1979). Alongside the bone tools, a significant number of Microlithic tools have also been discovered at Chirand (Sinha, 1979). These Microlithic tools were crafted from siliceous stones readily available in the riverbed (Sinha, 1979). The abundance of such tools indicates a sophisticated knowledge of stone knapping techniques and further highlights the resourcefulness of the Neolithic inhabitants in utilising available materials for tool production (Sinha, 1979). Moreover, the discovery of bone ornaments like bangles, combs, and pendants at Chirand (IAR, 1973) demonstrate that the Neolithic people have developed a sense of beauty and an appreciation for the arts. Notably, the presence of unfinished beads in the archaeological findings of Chirand indicates the existence of a local bead-making industry within the region. This industry likely played a role in producing intricate and aesthetically pleasing beads, which could have held cultural and economic significance within the Neolithic community.

Further excavation in the Vindhyan range at site Koldihawa, Mahagara, Kunjhun, Panchoh, Indaari, Tokwa, Mahagara, revealed Neolithic cultural materials along with evidence of hutments, cattle pens and post holes (Sharma et al., 1980; Misra, 1997; Jha et al., 2020, 2021; Jha, 2021). Evidence of plant domestication is also reported from this region (Misra, 1997). The Neolithic deposits yielded various stone tools, including celts, mullers, ring stones, and querns, often associated with pottery (Sharma et al., 1980; Misra, 1997; Jha et al., 2020). Additionally, the introduction of round varieties of stone celts in the Belan valley indicated technological advancements (Pal, 1990; Misra et al., 2001).The raw material source to craft heavy-duty tools was basalt, sandstone, granite, and quartzite, which support the socio-cultural behaviour of Neolithic settlers in the region (Islam, 2016). The pottery culture was introduced in the Neolithic phase in the Ganga Plain (Sharma et al., 1980). Among the pottery types discovered in Neolithic deposits across several sites are cord impressed pottery,rusticated pottery, burnished redware, and burnished black (Pal,1987; Hazarika, 2012). The process of pottery production involved a combination of various materials, including rice and millet husk, chopped straw, and leaves. The pottery was meticulously handcrafted and poorly red, leading to distinctive palm and finger impressions on the surfaces. The practice of cord-impressed pottery continued into the Chalcolithic phase, representing a continuation of this pottery making technique beyond the Neolithic culture (Pal, 1987; Hazarika, 2012). Early Neolithic pottery from the Ganga Plain was primarily characterised by bowls and cooking vessels, suggesting their practical use in daily life (Pal, 1987; Hazarika, 2012). Excavation at Chirand also yielded a rich ceramic industry consisting of spout vessels, bowls, spoons and knobbed vessels. The occurrence of diverse ceramic traditions demonstrates the evolving pottery-making techniques of the Neolithic communities (Sinha, 1979). Additionally, terracotta art was also introduced into the Neolithic culture of Chirand (Sinha, 1979). The terracotta art form involved crafting figurines made of red clay depicted female gures, bulls, snakes, birds, and various coiled and uncoiled symbolic artefacts (Sinha, 1979). The diversity and complexity of the pottery found in Chirand demonstrate the technological advancements and artistic expressions of the Neolithic communities exploiting the local environment of the Ganga Plain. The Neolithic culture of the Ganga Plain holds immense importance as a significant cultural stage in India. During this phase, agricultural activities were practiced by the communities, marking a fundamental shift from a nomadic, hunter-gatherer lifestyle to settled farming practices. The Neolithic culture in the Ganga Plain is characterised by the development of an advanced agricultural society (Sharma et al., 1980; Tewari et al., 2006; Quamar and Kar, 2022). The Chopani Mando site from Belan valley holds particular significance as it is considered a probable indicator of the early stages of rice cultivation (Sharma et al., 1980). Evidence suggests that the initial cultivation of rice involved the exploitation of wild rice, which gradually evolved into a more organised agricultural practice at nearby Neolithic sites like Koldihwa and Mahagara (Sharma et al., 1980; Kumar and Pant, 2000; Kumar, 2001; Harvey, 2006). The cultivation of rice and domestication of cattle were major characteristics of this Neolithic culture. Carbonised domestic rice dating back to the 7000 BCE has been found at Lahuradewa, providing concrete evidence of rice production (Tewari et al., 2006). The agricultural development in the Ganga Plain was facilitated by the high rate of natural fertilization from the periodic flooding of the soil during the region's monsoon season (Quamar and Kar, 2022). Alongside agriculture, animal husbandry was another essential aspect of the Neolithic society in the Ganga Plain. Excavations at Mahagara site unearthed a long cattle pen enclosed by 28

post holes, suggesting the domestication and management of livestock (Pal, 1990; Saraswat, 1991; Misra et al., 2001; Vikrama and Chattopadhyaya, 2002;Harvey and Fuller, 2005; Kingwell-Banham and Fuller, 2012; Korisettar, 2020; Jha et al., 2020, 2021; Jha, 2021). The Neolithic communities in the Ganga Plain also demonstrated an understanding of the diverse plant resources available in their environment. Surprisingly, evidence of burial practices is entirely absent from the Ganga Neolithic culture which needs to be explored further in future excavation. The Neolithic culture of the Ganga Plain Vindhyan region emerged around the 8000 BCE based on 14C dating of various sites, including Lahuradeva, Jhusi,Koldihawa, Tokwa and Mahagara.

Chalcolithic Age in India (c. 2000 BCE- 700 BCE)

The end of the Neolithic period saw the beginninof the use of metals. By this period several cultures were based on the use of copper and stone implements.Such a culture is called Chalcolithic and as the name indicates, during the Chalcolithic (Chalco=Copper and Lithic = Stone) period both metal and stone were utilised for the manufacture of the equipment in day-to-day life.In India, the Chalcolithic period spanned around 2000 BC to 700 BC. The culture was mainly seen in the Pre-Harappan phase but extended to the Post-Harappan phase in many places.

Characteristics of Chalcolithic Culture

Domestication of Animals: Farmers raised domestic animals such as sheep-goats, cattle, and pigs, supplemented by hunting and fishing. Milk and milk by-products were important, as were fruit trees such as fig and olive.

Agriculture: The major crops cultivated were barley, wheat, lentil, bajra, jowar , ragi millets, green pea, green and black gram. Traces of rice cultivation are also found, showing that their food included fish and rice. Eastern India produced rice and Western India produced barley.

Houses and Burial Styles: Houses built by Chalcolithic farmers were constructed of stone or mudbrick. One characteristic pattern is a chain building, a row of rectangular houses connected to one another by walls on the short ends. Burials varied widely from group to group, from single interments to jar burials to small box-shaped above-ground ossuary and even rock-cut tombs.

Tools and Weapons: Metals such as copper and its alloys were used to make knives, axes, fishing hooks, chisels, pins, and rods.

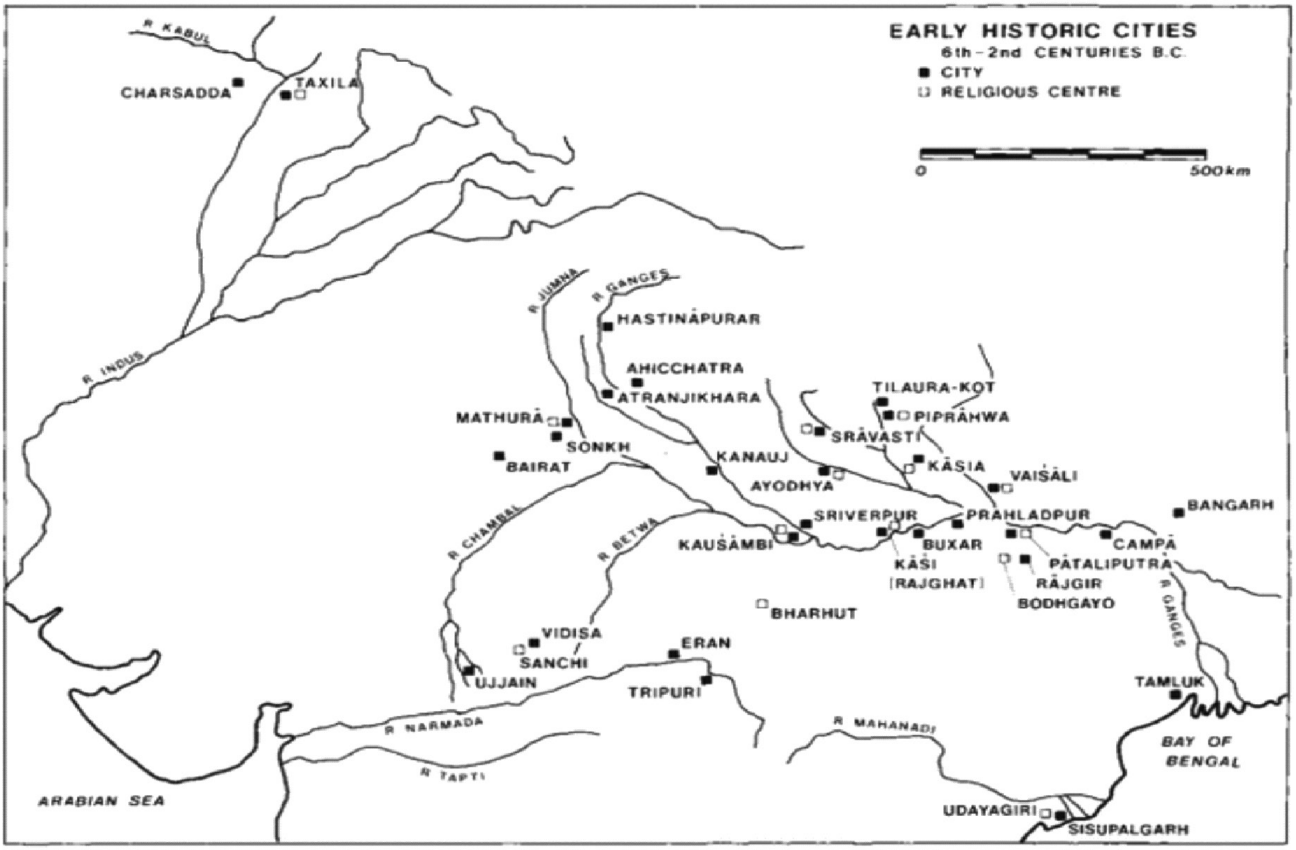
Art and Craft: The people of Chalcolithic Age were expert coppersmiths, ivory carvers, lime makers, and terracotta artisans. Ornaments were made from semiprecious stones and beads such as agate, jasper, chalcedony and carnelian. People had knowledge of spinning and weaving, and flax, cotton, and silk thread were found at sites in Maharashtra.

Ochre Coloured Pottery Culture: Named after a ceramic type which is extremely rolled and fragile with a wash of red ochre which is easily washed off. Led a sedentary existence, similar to many early farming communities of this period. Domesticated animals like cattle and evidence of cultivated crops like rice and barley provide information on their subsistence practices. Found in Rajasthan, Punjab, Haryana, and western Uttar Pradesh. Chronological span ranges from 2600 to 900 BC. Assigned to pre-Harappans, Harappans, or Late Harappans, Aryans, or tribal association. **Painted Grey W(PGW):** PGW is a fine, smooth, even-colored grey pottery with a thin fabric. It was

made out of well-worked, high-quality clay, and was a deluxe ware, forming a small percentage of the total pottery assemblage. PGW culture dates from 1100-500/400 BCE, with a wide geographical distribution. Apart from the plains, it has been found in hilly regions such as Kumaon and Garhwal. Structural remains at PGW levels consist mainly of wattle-and-daub and mud huts. Unbaked and baked bricks were found at Hastinapura, while Jakhera represents a fairly-evolved proto-urban stage of this culture. The PGW sites indicate a subsistence base that included cultivation of rice, wheat, and barley, with animal husbandry also practiced. Thus, in the Chalcolithic period, copper predominated in metalworking technology. Hence it was the period before it was discovered that by adding tin to copper one could create bronze, a metal alloy harder and stronger than either component. In relevance to India, to sum up, the scenario in north, west and central India in the period spanning from beginning of the 3rd millennium– 800 BCE speaks of a great deal of diversity. Overall, the survey of Chalcolithic sites in India, also highlights the regional diversity. The discovery of the Chalcolithic culture at Jorwe in 1950 opened a new phase in the prehistory of the Deccan. Since then a large number of Chalcolithic habitation sites have been discovered as a result of systematic exploration not only in the Deccan but also in other parts of the country bringing to light several regional cultures. Large scale excavations have been conducted at Ahar and Navadatoli, both are Chalcolithic sites. Most of these cultures are post Harappa, a few like Kayatha are contemporaneous Harappa. An important feature is their painted pottery, usually black-on-red. The people subsisted on farming, stock-raising, hunting and fishing. They used copper on restricted scale as the metal was scarce. They were all rural culture. It is enigmatic that most of these settlements were deserted by the end 2nd millennium B.C. The Chalcolithic cultures such as Ahar, Kayatha, Malwa, and Jorwe emphasize on regional diversity.

Chalcolithic cultures represent a cultural continuum across the regions of southeast Rajasthan or Mewar, Central India or Malwa, and the Deccan. The archaeological sites are found along the river valleys, and some of the typological sites include Ahar, Balathal, and Gilund in Mewar; Kayatha, Eran, Navdatoli in Malwa; and Savalda, Inamgaon, and Daimabad in the Deccan region. The Central Indian and Deccan Chalcolithic cultures form a cultural community defined by the Black-on-Red Ware (B-on-RW) and the Black-and-Red Ware (B&RW) ceramic types, along with their associated pottery types that have helped frame the chronology and cultural sequence of origin, development, and decline. Also referred to as the early farming communities, they are defined by a sedentary lifestyle with permanent and semi-permanent structures, an agropastoral economy with the production of goods for exchange and commerce, along with variations in religious practices that include fire worship, bull worship, and distinctive burial customs, among others as identified by the excavators. Based on stratigraphic sequence, stylistic similarities, and material culture, five distinct cultural phases have been identified in Central India and the Deccan—namely, the Ahar, Kayatha, and Savalda followed by the Malwa and Jorwe. The origin of these cultures, while not distinctively clear, has been attributed to various native and foreign elements including the Mesolithic and Neolithic cultures of the region, contemporary Pre-Early-Mature-and-Late Harappan cultures, and West Asian influence, among others. The Chalcolithic period in the history of the Indian subcontinent provides a bridge between Prehistory and Early History while raising several relevant questions with regard to its identity in terms of origin and influence, and its placement within the general frame of existing archaeological chronology between the Mesolithic, Neolithic, and Iron Age. Interaction and exchange networks within cultures such as the Southern

Neolithic and Harappans—including Early, Mature, and Late periods of Haryana, Gujarat, and north Rajasthan, which contribute to the Chalcolithic period's rich material assemblage—need to be seen from a fresh perspective. In addition, it is important to reexamine the excavated material from these sites, and possibly undertake fresh excavations in light of new information from sites in southeast Rajasthan, to establish the cultural continuum that these Chalcolithic cultures represent within the chronology of cultural development of the subcontinent.



Early Historic Sites (c. 600 BCE–300 CE)

The emergence of early historic cities in ancient India represents one of the most fascinating chapters in the subcontinent's urban development story. These cities, which flourished roughly between 600 BCE and 300 CE, marked a significant departure from the earlier Harappan urban centers, introducing new architectural styles, governance systems, and social structures that would influence Indian civilization for centuries to come. Understanding these ancient urban centers requires us to piece together evidence from ancient texts, archaeological excavations, and regional studies to create a comprehensive picture of how our ancestors lived, worked, and organized their communities.

Ancient texts reveal the blueprint of early historic cities

When we turn to ancient Indian literature, we discover a treasure trove of information about how early historic cities were conceived, planned, and governed. The *Arthaśāstra*, attributed to Kautilya (also known as Chanakya), serves as perhaps our most detailed manual for ancient urban planning. This

remarkable text doesn't just discuss politics and economics; it provides specific guidelines for city layout, including the ideal dimensions of streets, the placement of different quarters for various social groups, and even regulations for waste management. The *Silappadikāram*, a Tamil epic, provides us with vivid descriptions of Puhar (ancient Kaveripattinam), painting a picture of a bustling port city with well-organized markets, beautiful gardens, and diverse neighborhoods. The text describes how the city was divided into different quarters – one for merchants, another for artisans, and separate areas for different communities. This literary evidence shows us that early historic cities were not random settlements but carefully planned urban spaces with distinct zones for different activities.

Archaeological Excavations offer concrete evidence of how these urban centers actually functioned

While textual sources provide us with idealized visions of ancient cities, archaeological excavations offer concrete evidence of how these urban centers actually functioned. The systematic study of sites like Sisupalgarh, Sirkap, and Bhita has revolutionized our understanding of early historic urbanism in India.

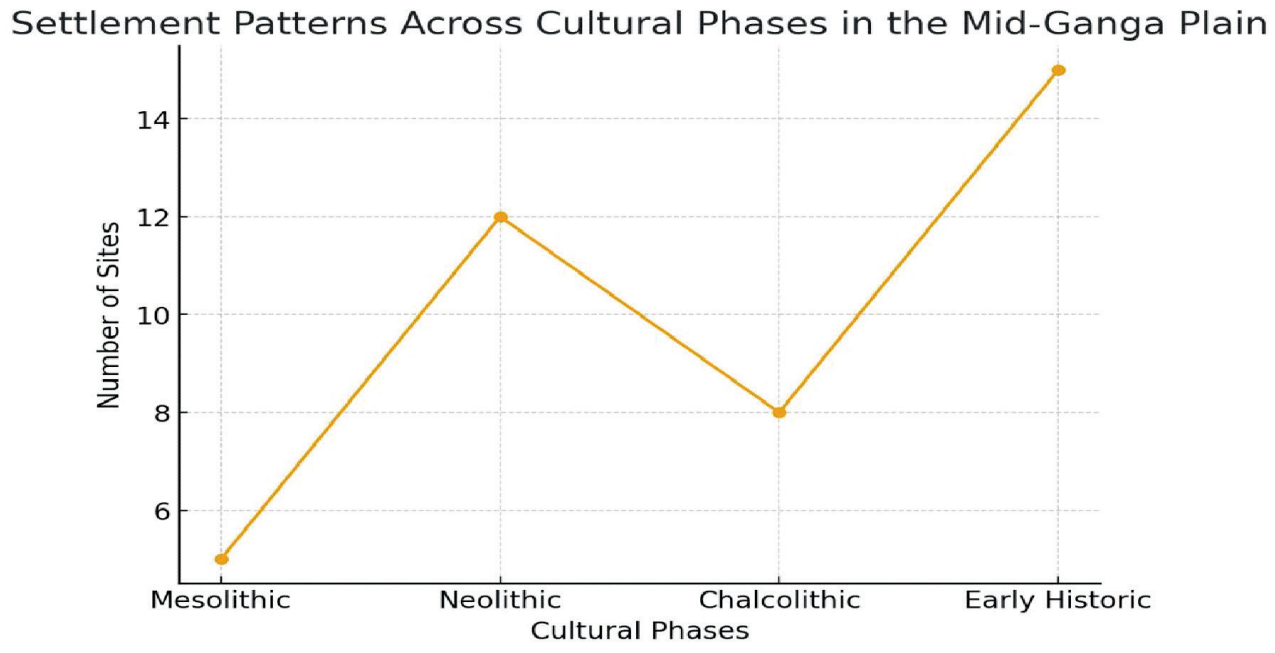
Sisupalgarh: A Window Into Ancient Urban Planning -Located in Odisha, Sisupalgarh stands as one of the best-preserved examples of early historic city planning in India. Excavations have revealed a rectangular city surrounded by massive stone walls with elaborate gateways. The city's layout follows a grid pattern,defensive architecture with streets intersecting at right angles – a planning concept that shows remarkable sophistication for its time.

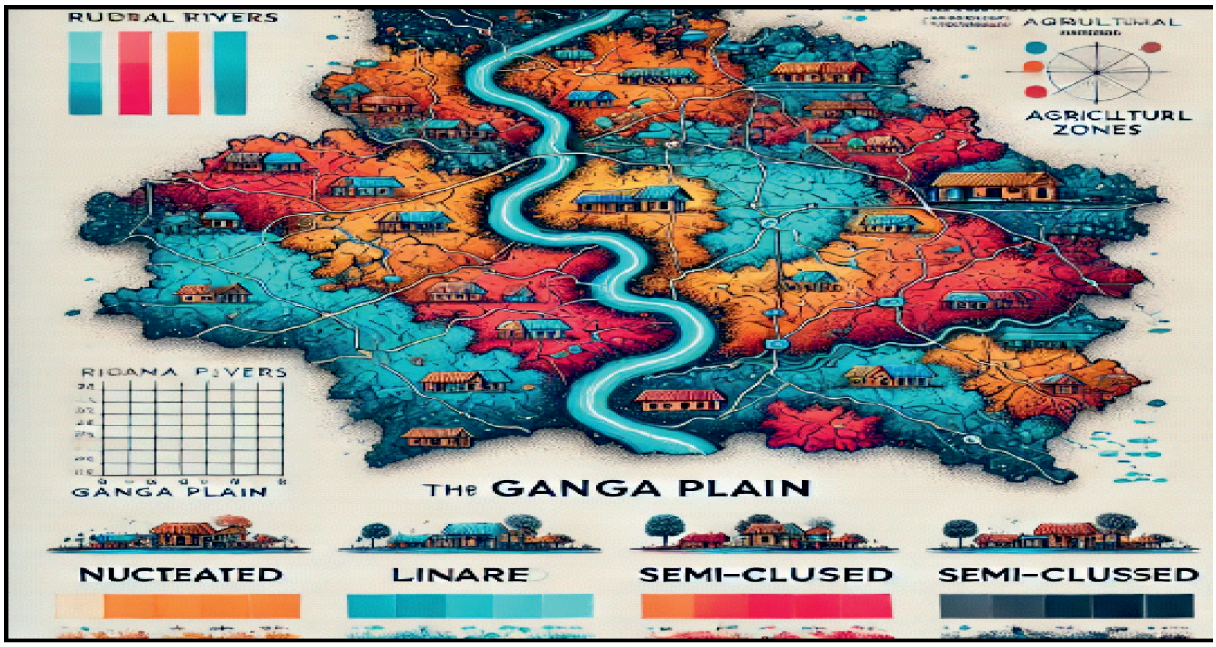
The excavations at Sirkap, located in present-day Pakistan, have revealed a city that beautifully illustrates the cultural synthesis that characterized early historic India. Built by the Indo-Greek rulers and later occupied by various dynasties, Sirkap shows influences from Greek, Persian, and Indian architectural traditions.

Bhita, located in Uttar Pradesh, provides valuable insights into the daily life of ordinary citizens in early historic cities. Unlike some other sites that primarily reveal royal or religious structures, Bhita's excavations have uncovered extensive residential areas, showing us how regular people lived, worked, and organized their communities.The site reveals a well-planned city with straight streets, proper drainage systems, and standardized building techniques.

The Gangetic plains witnessed some of the most significant urban developments during the early historic period. Cities like Pataliputra (modern Patna) and Kaushambi emerged as major political and commercial centers. These cities were characterized by their strategic locations along river systems, elaborate fortifications, and planned layouts that accommodated both royal complexes and residential areas. What made Gangetic cities unique was their integration of traditional Indian urban planning concepts with new administrative requirements. The presence of extensive fortifications, royal palaces, and administrative buildings reflected the needs of emerging imperial states, while the continuation of traditional craft quarters and market areas showed cultural continuity with earlier periods. Despite decades of archaeological research, much about early historic cities remains to be discovered. Allchin's work highlighted the need for more systematic archaeological investigations across different regions of the subcontinent. Many sites remain either unexplored or only partially

excavated, leaving significant gaps in our understanding of regional urban development patterns. Moreover, understanding the regional variations in early historic urban development helps us appreciate the diversity of Indian urban traditions. Rather than following a single model, ancient Indian cities developed multiple approaches to urban living, each adapted to local conditions and cultural preferences. This diversity suggests that successful urban development requires sensitivity to local contexts rather than the application of universal principles. The integration of defensive, administrative, commercial, and residential functions in early historic cities also demonstrates the importance of mixed-use development – a concept that modern urban planners are rediscovering. These ancient cities show us that sustainable urban development requires careful attention to the relationships between different urban functions and the communities that inhabit them. Thus Urbanization is an important element of ancient history. The city life indicates the growth and development of a particular civilization. Indus valley civilization is the first ever civilization which has promoted city culture. Aryans are the villagers and they have carried on their village life by accepting agriculture and cattle breeding as their own professions. The Mauryans have constructed four kinds of cities which are descriped by Kautilya in his Arthasastra. The city Patliputra was described by Greek writer Magesthanese, Fa-hin, Huang Tsang. The Chinese travelers have also expressed their high opinions on Patliputra city. Several cities like Sravasthi, Vaishali, Karnavathi, Pataliputra, Taxil, Kunthalavanam,Rajagriha and other cities have been founded by ancient rulers. All these cities have been developed as trading centers from where the Indian traders have supplied goods to foreign countries. The Capital cities of Ancient India have been served as religious, political and social centers. Most of the cities have witnessed beautiful temples during the period of Guptas. The city construction is coupled with temple construction in South India. All the ancient dynasties right from Mauryans to Harsha and from Satavahanas to Cholas in South have found great cities and provided all civic facilities with great care.





Detailed map illustrating the distribution of archaeological sites across the **Middle Ganga Plain**, encompassing parts of eastern Uttar Pradesh and western Bihar. This map highlights key prehistoric and early historic sites that shed light on settlement patterns in the region.

Results and Discussion

1. Continuity of Cultural Development

The archaeological record of the mid-Ganga plain demonstrates an exceptional continuity of human occupation from the Mesolithic period to the Early Medieval era. Excavations at sites such as **Mahadaha, Sarai Nahar Rai, and Damdama**(Mesolithic), **Koldihwa, Lahuradeva, and Mahagara** (Neolithic), and **Chirand, Senuwar, and Narhan** (Chalcolithic) collectively reveal that the region was not only a center of early habitation but also a locus of gradual transformation in cultural practices. Unlike many other regions where cultural traditions appear fragmented, the mid-Ganga plain presents an **unbroken cultural sequence**, suggesting a strong sense of continuity and adaptation.

Continuity of Cultural Development in the Mid-Ganga Plain

The mid-Ganga plain stands out in the history of South Asia as a region that reflects a unique trajectory of cultural evolution. Archaeological evidence from the Mesolithic to the Early Medieval period illustrates that human societies in this region experienced **no abrupt cultural discontinuities**; instead, they demonstrated an **unbroken chain of development**, marked by gradual innovations, adaptive strategies, and social complexity. This continuity distinguishes the mid-Ganga plain from other regions, such as the Indus Valley, where cultural phases ended with sudden collapse or abandonment.

A. Mesolithic Foundations (c. 9000–6000 BCE)

The Mesolithic phase provided the foundation for continuous cultural development in the mid-Ganga plain. Sites such as **Mahadaha, Sarai Nahar Rai, and Damdama** in the Pratapgarh district yield

microlithic tools, faunal remains, and burials, pointing to a semi-sedentary lifestyle. Subsistence strategies revolved around **hunting, fishing, and gathering**, which enabled communities to exploit the ecological richness of riverine and wetland environments. Symbolic burials indicate early ideological practices, suggesting social cohesion and belief systems that would evolve further in subsequent periods. These small yet organized settlements created the **base for later permanent occupation**.

B. Neolithic Innovations (c. 6000–2000 BCE)

The transition from Mesolithic to Neolithic in the mid-Ganga plain was **evolutionary rather than disruptive**. At sites like **Koldihwa, Mahagara, and Lahuradeva**, evidence of domesticated rice, polished stone tools, and handmade pottery emerges. These findings indicate one of the **earliest centers of rice cultivation in the world**, marking a turning point in subsistence. Permanent settlements developed, supported by agriculture and animal domestication. Ritual spaces and fertility figurines suggest the beginnings of formalized belief systems. The Neolithic thus built directly upon Mesolithic foundations, with continuity evident in settlement location, tool use, and symbolic practices, even as technological innovations reshaped community life.

C. Chalcolithic Transformation (c. 2000–800 BCE)

The Chalcolithic period represents a phase of **intensification and diversification**, not rupture. Sites such as **Chirand, Senuwar, and Narhan** provide evidence of copper use, wheel-made pottery, and granaries for surplus storage. Settlement structures became more organized, suggesting social stratification and the beginnings of community-level planning. Agricultural systems expanded through mixed farming and animal husbandry, which supported larger populations. Long-distance exchange networks also appeared, linking the mid-Ganga plain with regions beyond. Despite these advances, many Neolithic traditions—such as terracotta figurine-making and subsistence practices—continued, reinforcing the **theme of cultural persistence with gradual innovation**.

D. Early Historic and Early Medieval Flourishing (c. 600 BCE–1200 CE)

The **Early Historic period** saw the crystallization of processes that had been underway since the Mesolithic. Iron technology revolutionized agriculture, enabling intensive plough-based cultivation. Urban centers such as **Rajgir, Vaishali, Kaushambi, and Sarnath** emerged, showcasing planned cities with fortifications, roads, craft specialization, and trade networks. The ideological landscape also transformed dramatically, as the mid-Ganga plain became the **heartland of Buddhism and Jainism**, traditions that reinterpreted earlier ritual and symbolic practices into organized philosophical systems. The Early Medieval period continued these traditions with the growth of temples, monasteries, and administrative centers, linking the region to broader pan-Indian cultural and political currents.

E. Cultural Continuity as Historical Identity

The cultural development of the mid-Ganga plain demonstrates **resilience, adaptability, and innovation without discontinuity**. Each phase—Mesolithic, Neolithic, Chalcolithic, and Early Historic—did not replace the previous one but rather built upon it, preserving traditions while integrating innovations. This continuity explains why the region became a **cradle of Second Urbanization** and the **spiritual homeland of Buddhism**. Unlike the collapse of the Indus Valley Civilization, the mid-Ganga plain

shows an **incremental transformation**, forming a continuous cultural sequence that shaped the historical identity of ancient India.

2. Material Culture and Technological Advancements

The results indicate a consistent trajectory of material culture, beginning with microlithic tools in the Mesolithic, progressing to polished stone axes and early ceramics in the Neolithic, and culminating in advanced metallurgy during the Chalcolithic period. By the Early Historic era, iron technology became prominent, supporting both agriculture and urban development. The persistence of ceramic traditions—ranging from cord-impressed Neolithic wares to Northern Black Polished Ware (NBPW) in the historical phase—demonstrates the interplay of innovation with continuity, where new techniques coexisted with long-standing traditions. The material culture of the mid-Ganga plain provides a comprehensive record of how human societies evolved from simple hunter-gatherer groups to complex urban communities. Archaeological discoveries reflect a **pattern of continuity combined with innovation**, where older traditions were not abandoned but adapted and integrated with new technologies. This makes the mid-Ganga plain a distinctive case of cultural evolution in South Asia.

A. Mesolithic Foundations (c. 9000–6000 BCE)

The Mesolithic communities of the mid-Ganga plain, as seen at **Mahadaha, Sarai Nahar Rai, and Damdama**, developed a material culture centered on survival in riverine and forested ecosystems.

- **Tools:** Microliths made from chert, quartz, and chalcedony dominate, used for hunting, fishing, and processing food. Bone points, harpoons, and fishing implements indicate adaptation to aquatic environments.
- **Burials:** Grave goods, including ornaments made of bone and antler, suggest symbolic and social practices beyond mere subsistence.
- **Technological Adaptation:** The precision of microlithic tool-making reflects specialized skills, forming the technological base for later agricultural and craft activities.

B. Neolithic Advancements (c. 6000–2000 BCE)

The Neolithic marked a turning point in material culture, introducing **domesticated crops, pottery, and polished stone tools**. Sites such as **Koldihwa, Lahuradeva, and Mahagara** exemplify this phase.

- **Stone Tools:** Ground and polished axes, celts, and adzes replaced microliths, suitable for clearing forests and tilling soil.
- **Pottery:** Handmade pottery—cord-impressed, painted, and plain—was used for cooking, storage, and rituals, showing both functional and symbolic roles.
- **Agriculture:** Archaeobotanical evidence from Lahuradeva reveals one of the earliest uses of **domesticated rice** in the world (Tewari et al., 2006).
- **Housing:** Rectangular and circular huts, storage pits, and hearths indicate permanent settlement structures. The Neolithic thus represents a **technological revolution**, enabling sedentary life while maintaining links with earlier Mesolithic traditions.

C. Chalcolithic Innovations (c. 2000–800 BCE)

The Chalcolithic period witnessed **metallurgical advancements** and the refinement of pottery traditions. Key sites include **Chirand, Senuwar, and Narhan**.

- **Metal Use:** Introduction of **copper tools and ornaments** marks a significant innovation, though stone tools continued in parallel, illustrating cultural continuity.
- **Pottery:** Wheel-made ceramics, painted and decorated wares, and large storage jars reflect both aesthetic refinement and economic planning.
- **Architecture:** Houses with mud walls, storage pits, and granaries point to organized community living.
- **Crafts:** Terracotta figurines, beads, and ornaments indicate specialized artisanship.
- **Trade Networks:** The distribution of copper and pottery styles suggests participation in wider exchange systems. The Chalcolithic thus bridges the Neolithic agricultural base with more complex socio-economic and technological systems.

D. Early Historic and Early Medieval Flourishing (c. 600 BCE–1200 CE)

This phase represents the **zenith of technological and cultural advancements** in the mid-Ganga plain.

- **Iron Technology:** Iron ploughshares, tools, and weapons revolutionized agriculture and warfare. This innovation enabled large-scale surplus production, supporting urbanization.
- **Pottery Traditions: Northern Black Polished Ware (NBPW)** became a hallmark of the Early Historic period, associated with elite consumption, trade, and urban centers.
- **Urban Craft Production:** Excavations at Rajgir, Vaishali, and Kaushambi show evidence of beads, ornaments, terracotta art, and coins, pointing to **specialized industries**.
- **Architecture:** Planned cities with fortifications, drainage, and administrative complexes represent advanced urban technology. The rise of monasteries, stupas, and temples indicates architectural achievements linked to religious developments.
- **Numismatics:** Punch-marked coins demonstrate a monetized economy, technological skill in metallurgy, and participation in long-distance trade.

E. Continuity with Innovation

Across all cultural phases, the material culture of the mid-Ganga plain shows that **traditions persisted while innovations were integrated**:

- Microliths persisted even in Neolithic contexts alongside polished tools.
- Stone tools continued to be used in the Chalcolithic despite the introduction of copper.
- Ceramic traditions evolved gradually, culminating in refined wares like NBPW. This pattern highlights that the region did not undergo abrupt cultural replacement, but rather a **layered accumulation of technological progress**, blending the old with the new.

3. Settlement Patterns and Social Organization

Settlement distribution reflects a gradual shift from small hunter-gatherer camps to larger agrarian villages and eventually to proto-urban and urban centers. Mesolithic sites like Mahadaha were small and seasonal, while Neolithic sites such as Koldihwa reveal permanent habitation linked with rice cultivation. Chalcolithic settlements show evidence of increasing social complexity, storage facilities, and long-distance exchange networks. By the Early Historic period, sites such as **Rajgir, Vaishali, and Kaushambi** illustrate urban planning, fortified enclosures, and trade linkages, reflecting a mature stage of social and political organization. Settlement archaeology of the mid-Ganga plain reflects a **gradual yet unbroken transformation** of human habitation, from small Mesolithic camps to Early Historic urban centers. The progression highlights not only technological and economic change but also the development of **social hierarchies, planning strategies, and political organization**.

A. Mesolithic Settlements (c. 9000–6000 BCE)

The earliest human settlements in the mid-Ganga plain were **small, temporary, and seasonal**, primarily adapted to riverine and lacustrine environments.

- **Examples:** Sites such as **Mahadaha, Sarai Nahar Rai, and Damdama**.
- **Settlement Nature:** Circular or oval huts made of perishable materials, often near water bodies. These settlements were small clusters, reflecting limited population density.
- **Social Organization:** Communities were primarily egalitarian, with social cohesion centered around kinship. Burials with grave goods (ornaments, tools) suggest **early symbolic differentiation** and a growing awareness of identity and status.
- **Mobility:** Seasonal mobility was common, as groups followed game, fish, and seasonal plants.

B. Neolithic Settlements (c. 6000–2000 BCE)

With the adoption of agriculture, settlement patterns shifted towards **permanent habitation and village life**.

- **Examples: Koldihwa, Mahagara, Lahuradeva**.
- **Settlement Nature:** Evidence of rectangular or circular houses with mud or wattle-and-daub walls. Permanent hearths, storage pits, and grinding stones reflect sedentary life.
- **Economic Base:** Domesticated rice cultivation and animal husbandry supported year-round occupation.
- **Social Organization:** Villages were relatively small but stable, suggesting a transition from kin-based groups to more complex community life. Ritual spaces and fertility figurines indicate the beginnings of **communal belief systems**.
- **Implication:** This phase represents the **foundation of agrarian society** in the Ganga plain.

C. Chalcolithic Settlements (c. 2000–800 BCE)

The Chalcolithic saw an expansion of **settlement size and social complexity**, with increasing evidence of economic planning and long-distance interactions.

- **Examples: Chirand, Senuwar, Narhan**.
- **Settlement Nature:** Larger villages with organized layouts, semi-permanent mud houses, storage facilities, and communal granaries. Some sites reveal evidence of proto-urban planning.
- **Economic Base:** Mixed farming and animal husbandry, surplus food production, and storage.
- **Social Organization:** Emergence of **social stratification** is indicated by differential housing sizes, specialized crafts, and long-distance trade in copper and pottery.
- **Exchange Networks:** Chalcolithic communities engaged in regional and inter-regional trade, bringing exotic items like copper, beads, and pottery from distant areas.
- **Implication:** Settlements became **centers of craft specialization and trade**, pointing towards increasingly hierarchical social structures.

D. Early Historic and Early Medieval Settlements (c. 600 BCE–1200 CE)

This period represents the **maturity of settlement development**, with the rise of urban centers and political states.

- **Examples: Rajgir, Vaishali, Kaushambi, Pataliputra, and Sarnath**.
- **Settlement Nature:** Planned urban centers with fortifications, wide roads, drainage systems, administrative complexes, and residential quarters.
- **Economic Base:** Surplus agricultural production (facilitated by iron ploughs), craft specialization, and monetized trade (punch-marked coins).
- **Social Organization:** Clearly stratified societies with rulers, administrators, merchants, artisans, and farmers. The emergence of **Mahajanapadas** (large territorial states) reflects complex political organization.
- **Religious Role:** Settlements also became centers of ideological transformation—e.g., **Vaishali** and **Rajgir**associated with Buddhism and Jainism. Monasteries and stupas became part of the settlement fabric, linking urban life with religious traditions.
- **Implication:** These urban centers were the **hallmark of Second Urbanization**, showing the culmination of gradual settlement development since the Mesolithic.

E. Continuity and Transformation in Settlement Evolution

Across these phases, settlement development in the mid-Ganga plain shows:

- A clear **progression from mobility to permanence**, and from small camps to urban centers.
- **Continuity of habitation**, with older sites evolving rather than being abandoned.
- Increasing **economic complexity and social stratification** over time.
- Settlements serving as both **economic hubs** and **ideological centers**.

This trajectory reveals how the mid-Ganga plain was not just a zone of habitation, but a **cradle of long-term socio-political and cultural evolution**, eventually shaping the early historical identity of ancient India. In essence, settlement distribution in the mid-Ganga plain is a mirror of its cultural

trajectory—beginning with egalitarian Mesolithic bands and culminating in politically organized, religiously vibrant, and economically interconnected Early Historic cities.

4. Subsistence Strategies and Environmental Adaptationin the Mid-Ganga Plain

The findings highlight adaptive strategies in response to ecological conditions of the Ganga plain. Mesolithic communities subsisted primarily on hunting, fishing, and gathering. Neolithic groups introduced domesticated rice (notably at Lahuradeva), indicating one of the earliest evidences of rice cultivation in South Asia. Chalcolithic communities expanded agricultural production with mixed farming and animal husbandry, while the Early Historic period saw surplus production, enabling trade and urban growth. The ability of communities to adapt subsistence strategies to changing environments underscores the resilience of the cultural continuum. The mid-Ganga plain presents an outstanding example of how human communities continuously adapted their **subsistence strategies** to the dynamic ecological settings of river valleys, wetlands, and fertile alluvial soils. From the Mesolithic to the Early Historic period, subsistence practices evolved from foraging to intensive agriculture and trade-based economies, while maintaining elements of continuity. This adaptability was a key factor in the resilience and long-term cultural development of the region.

A. Mesolithic Subsistence (c. 9000–6000 BCE)

The Mesolithic economy of the mid-Ganga plain was based primarily on **hunting, fishing, and gathering**, shaped by the rich riverine and wetland environments.

- **Sites:** Mahadaha, Sarai Nahar Rai, Damdama.
- **Dietary Evidence:** Faunal remains show reliance on wild animals such as deer, cattle, and boar, supplemented by freshwater fish and mollusks.
- **Technology:** Microliths and bone harpoons were used for hunting and fishing. Grinding stones suggest limited plant processing, probably of wild grains and tubers.
- **Adaptation:** Settlement near lakes and rivers shows ecological knowledge and strategic exploitation of aquatic resources.
- **Implication:** Subsistence was diverse and flexible, enabling small groups to survive seasonal changes, laying the groundwork for later domestication of plants.

B. Neolithic Subsistence (c. 6000–2000 BCE)

- The Neolithic period marks the **transition to agriculture**, particularly with the introduction of rice cultivation in the Ganga plain.
- **Sites:** Koldihwa, Mahagara, Lahuradeva.
- **Agricultural Evidence:** Archaeobotanical studies at Lahuradeva indicate the cultivation of **domesticated rice**, among the earliest in South Asia (Tewari et al., 2006).
- **Animal Husbandry:** Evidence of domesticated cattle, sheep, and goats, complementing agriculture.
- **Tools:** Polished stone axes facilitated forest clearance, while grinding stones reflect cereal processing.

- **Adaptation:** Communities shifted from seasonal foraging to permanent village life, relying on the fertility of alluvial soils and monsoon cycles.
- **Implication:** Agriculture created food surpluses, supporting sedentary life and gradual population growth.

C. Chalcolithic Subsistence (c. 2000–800 BCE)

- The Chalcolithic economy was marked by **diversification and surplus production**, reflecting growing social complexity.
- **Sites:** Chirand, Senuwar, Narhan.
- **Agricultural Practices:** Expansion of rice farming, supplemented by wheat, barley, pulses, and oilseeds.
- **Animal Husbandry:** Cattle, buffalo, sheep, and goats played an increasing role, with evidence of dairy and traction use.
- **Storage:** Granaries and storage pits suggest planned food management and protection against shortages.
- **Trade:** Surplus agricultural production supported long-distance exchange, especially in copper and pottery.
- **Adaptation:** Mixed farming strategies reduced ecological risk, ensuring food security in varying climatic conditions.
- **Implication:** This diversification created a **stable subsistence base**, essential for supporting larger, more complex communities.

D. Early Historic and Early Medieval Subsistence (c. 600 BCE–1200 CE)

- This phase represents the **maturity of agricultural systems**, linked to technological and social transformations.
- **Agricultural Advances:** Iron ploughshares allowed intensive cultivation of heavy alluvial soils, boosting productivity.
- **Surplus Production:** Large-scale agriculture enabled food surpluses, supporting urbanization and specialized crafts.
- **Economic Integration:** Punch-marked coins and archaeological evidence of markets indicate surplus circulation through trade.
- **Dietary Diversity:** Archaeobotanical finds point to rice, wheat, barley, millets, pulses, and fruits, forming a balanced subsistence system.
- **Adaptation:** The integration of surplus agriculture with trade networks created a **sustainable urban economy**.
- **Implication:** By this stage, the subsistence base not only supported population growth but also enabled the rise of states, urban centers, and religious institutions.

E. Continuity and Adaptive Resilience

- Across all periods, the subsistence strategies of the mid-Ganga plain reveal:
- **Continuity** in exploiting riverine resources and rice-based subsistence.
- **Adaptability** in shifting from foraging to farming, and from local economies to surplus-based urban economies.
- **Resilience** in responding to ecological challenges (floodplains, monsoon cycles) through diversified food sources.
- Thus, subsistence was not static—it evolved dynamically, ensuring the survival and prosperity of communities over thousands of years. In essence, the subsistence strategies of the mid-Ganga plain showcase how human societies balanced tradition with innovation, creating one of the most enduring cultural continuums in South Asia.

5. Religious and Ideological Developments in the Mid-Ganga Plain

The cultural sequence also parallels ideological transformations. From Mesolithic burial practices that reveal symbolic behavior, through Neolithic ritual spaces, to Chalcolithic terracotta figurines symbolizing fertility, the material record suggests evolving belief systems. By the 6th century BCE, the mid-Ganga plain became the heartland of **Buddhism and Jainism**, movements that emphasized ethical reform and social transformation. This ideological shift illustrates how deeply rooted traditions were reinterpreted in response to socio-political changes, without breaking the continuum of cultural development. Religion and ideology in the mid-Ganga plain developed in tandem with material culture, settlement expansion, and subsistence strategies. The archaeological record demonstrates that communities in this region gradually reinterpreted older traditions into new symbolic frameworks, maintaining continuity while also adapting to emerging social and political realities. From early symbolic burials to the rise of organized religions such as **Buddhism and Jainism**, the mid-Ganga plain illustrates a long, unbroken trajectory of religious and ideological transformation.

A. Mesolithic Symbolism and Mortuary Practices (c. 9000–6000 BCE)

- **Sites:** Mahadaha, Sarai Nahar Rai, Damdama.
- **Burial Evidence:** Extended burials, grave goods (microliths, bone tools, animal remains), and occasional ochre coloring indicate a belief in life after death or symbolic respect for the dead.
- **Symbolism:** Careful placement of bodies and use of ochre suggest ritual meaning, possibly connected to concepts of fertility, regeneration, and ancestral veneration.
- **Implication:** Even small foraging groups expressed a sense of spirituality, social cohesion, and continuity through funerary practices.

B. Neolithic Ritual Spaces and Fertility Cults (c. 6000–2000 BCE)

- **Sites:** Koldihwa, Mahagara, Lahuradeva.
- **Ritual Spaces:** Archaeological evidence of pits, hearths, and possibly designated ritual areas indicates communal ceremonial activities.

- **Fertility Figurines:** Small clay figurines, often female, symbolize fertility and agricultural abundance, reflecting the close relationship between subsistence and ideology.
- **Belief Systems:** The domestication of rice and cattle created new symbolic frameworks, linking human survival directly with nature and agricultural cycles.
- **Implication:** Neolithic ideology emphasized fertility, agricultural prosperity, and the sacredness of life cycles, marking the shift from forager cosmology to agrarian religiosity.

C. Chalcolithic Ritual Practices and Iconography (c. 2000–800 BCE)

- **Sites:** Chirand, Senuwar, Narhan.
- **Terracotta Figurines:** A wide range of male, female, and animal figurines suggests both fertility symbolism and emerging ritual diversity.
- **Religious Objects:** Pottery with incised symbols, beads, and ornaments indicate ritualized behavior and personal adornment linked to identity and status.
- **Communal Rituals:** Larger settlements allowed for collective rituals, possibly tied to agricultural surplus and seasonal cycles.
- **Implication:** Chalcolithic religion shows continuity with Neolithic fertility cults but also increasing complexity, paving the way for more formalized belief systems.

D. Early Historic Religious Transformation (c. 600 BCE–300 CE)

- **Sites/Centers:** Rajgir, Vaishali, Sarnath, Kaushambi.
- **Rise of Buddhism and Jainism:**
- The mid-Ganga plain became the **cradle of Buddhism**, with Gautama Buddha attaining enlightenment at Bodh Gaya and delivering his first sermon at Sarnath.
- Jainism, founded by Mahavira, also flourished in the same region, emphasizing non-violence (ahimsa) and renunciation.
- **Philosophical Shift:** Both religions rejected ritual sacrifice, focusing instead on ethical conduct, meditation, and spiritual liberation.
- **Material Evidence:** Stupas, monasteries (vihāras), and inscriptions provide tangible evidence of organized religious activity.
- **Implication:** These movements did not reject earlier traditions entirely; instead, they **reinterpreted pre-existing symbolic and ritual frameworks** into more universal and ethical systems, aligning with the social needs of expanding urban societies.

E. Early Medieval Continuity and Transformation (c. 300–1200 CE)

- **Institutionalized Religion:** Growth of Hindu temple architecture, expansion of Buddhist monasteries (Nalanda, Vikramashila), and Jain shrines.
- **Syncretism:** Continuity with older fertility and agrarian traditions persisted in folk practices, integrated into mainstream religions.

- **Royal Patronage:** Dynasties such as the Guptas and later rulers patronized temples and monasteries, intertwining religion with state ideology.
- **Philosophical Development:** The Bhakti movement, emphasizing personal devotion, began shaping religious practices in the later phase.
- **Implication:** Religion became a **social unifier and political tool**, but its roots remained in the symbolic and ritual traditions stretching back to the Mesolithic.

F. Continuity and Ideological Evolution

- The ideological history of the mid-Ganga plain demonstrates:
- **Continuity:** Core themes of fertility, life cycles, and symbolic respect for nature persisted across millennia.
- **Adaptation:** Religious practices evolved in response to changing social, political, and economic conditions.
- **Transformation:** From symbolic burials to organized philosophies like Buddhism, ideological systems reflected the cultural dynamism of the region.

Thus, the religious and ideological development of the mid-Ganga plain was not a story of rupture, but of reinterpretation and expansion, making the region a heartland of some of the most influential spiritual traditions in world history.

6. Discussion in Broader South Asian Context

The results from the mid-Ganga plain align with the concept of **"Second Urbanization"**, a period during which urban life re-emerged in India after the decline of the Indus Valley Civilization. Unlike the abrupt collapse seen in Harappan sites, the Ganga plain's trajectory is marked by gradual evolution. This makes the region unique in South Asian prehistory and history, as it showcases **incremental transformation rather than cultural discontinuity**. Moreover, its role as a corridor connecting eastern and northern India enabled exchange of ideas, technologies, and trade, further reinforcing its historical significance.

7. Key Findings

The mid-Ganga plain reveals an **unbroken cultural sequence** from Mesolithic to Early Medieval periods.Material culture evolved through **continuity with innovation**, particularly in ceramics, metallurgy, and agriculture. Settlement patterns shifted from small camps to permanent villages and eventually to urban centers, reflecting social complexity. Subsistence strategies demonstrate **adaptation to environment and surplus production**, supporting larger populations. Religious and ideological shifts illustrate the dynamic interplay of tradition and innovation, culminating in the rise of Buddhism.

A. Unbroken Cultural Sequence from Mesolithic to Early Medieval Periods

Archaeological evidence from the mid-Ganga plain demonstrates a remarkable continuity of human occupation, beginning with Mesolithic hunter-gatherer communities and extending into

the Early Medieval period. Sites such as **Sarai Nahar Rai, Mahadaha, and Damdama** in Uttar Pradesh provide well-preserved Mesolithic burials and microlithic tools (Sharma et al., 1980). These gradually gave way to Neolithic settlements at **Koldihwa, Lahuradeva, and Mahagara**, where domesticated rice cultivation and polished stone axes are evident (Tewari, 2000). Later, Chalcolithic sites such as **Chirand and Senuwar** present mixed farming, copper tools, and terracotta figurines (Singh, 2004). This trajectory continues seamlessly into the Early Historic period, marked by the emergence of urban centers like **Vaishali and Rajgir**, and culminates in Early Medieval state formations. This continuity underscores the **cultural resilience and adaptive capacity** of societies in the region.

B. Material Culture: Continuity with Innovation

The material record shows clear evidence of **technological progression coupled with cultural persistence**. Mesolithic stone blades evolved into Neolithic polished tools and ceramics. The Neolithic period is notable for early cord-impressed pottery and the domestication of rice at Lahuradeva, which is among the earliest in South Asia (Tewari et al., 2008). Chalcolithic assemblages demonstrate the integration of copper metallurgy alongside traditional stone tools and pottery styles (Singh, 2004). By the Early Historic period, the appearance of **Northern Black Polished Ware (NBPW)** represents both technological innovation and continuity of ceramic traditions (Sharma, 1999). This interplay of tradition and innovation in material culture reflects the dynamic evolution of the region.

C. Settlement Patterns and Social Complexity

Settlement evidence indicates a gradual transformation from **small, seasonal camps** to **permanent agrarian villages** and eventually to **urban centers**. Mesolithic groups, as seen at Mahadaha and Sarai Nahar Rai, were primarily organized around riverine resources. In the Neolithic phase, permanent villages such as Koldihwa and Mahagara reveal hut floors, storage pits, and signs of sedentism (Tewari, 2000). Chalcolithic sites like Chirand show more complex settlement organization, suggesting emerging hierarchies and specialized production. By the Early Historic period, settlements like **Kaushambi and Rajgir** display fortified structures, planned layouts, and evidence of trade networks (Thapar, 2002). This transition marks the **progressive social stratification and political centralization** of the mid-Ganga plain.

D. Subsistence Strategies and Environmental Adaptation

Subsistence patterns evolved in tandem with ecological and technological changes. Mesolithic populations relied on hunting, fishing, and wild plant gathering, as indicated by faunal remains and microlithic tools (Sharma et al., 1980). Neolithic communities introduced **rice cultivation** (Lahuradeva, Koldihwa), which became the dominant crop of the region (Tewari et al., 2008). Chalcolithic assemblages reveal a mixed economy of agriculture, animal husbandry, and craft production. By the Early Historic period, surplus agricultural production enabled trade and supported urbanization. These findings emphasize how **environmental adaptation and surplus generation** laid the foundation for long-term cultural development in the Ganga plain.

E. Religious and Ideological Transformations

The ideological dimension of cultural evolution is reflected in burial practices, ritual objects, and symbolic material culture. Mesolithic burials with grave goods suggest symbolic and spiritual beliefs (Kennedy, 1984). Neolithic and Chalcolithic figurines, often linked to fertility cults, highlight the growing ritual life of agrarian societies (Singh, 2004). With the rise of urban centers in the Early Historic period, the mid-Ganga plain became the cradle of **Buddhism and Jainism**, as evidenced by archaeological remains at **Sarnath, Vaishali, and Rajgir** (Thapar, 2002). These religious traditions illustrate the **dynamic interplay between continuity of ritual practice and transformative ideological change**, which shaped the cultural and political identity of the region. Overall, the results and discussion affirm that the mid-Ganga plain was not merely a passive recipient of cultural influences but an active cradle of cultural evolution**.** Its long-standing continuity, adaptability, and innovations shaped the historical identity of ancient India.

Comparative Table: Cultural Evolution of the Mid-Ganga Plain

Aspect	*Mesolithic (c. 9000–6000 BCE)*	*Neolithic (c. 6000–2000 BCE)*	*Chalcolithic (c. 2000–800 BCE)*	*Early Historic / Early Medieval (c. 600 BCE–1200 CE)*
Chronological Continuity	Microlithic tools; burials at Mahadaha, Sarai Nahar Rai, Damdama	Early rice farming at Koldihwa, Mahagara, Lahuradeva	Copper use at Chirand, Senuwar, Narhan	Urban centers at Rajgir, Vaishali, Kaushambi, Sarnath
Material Culture	Microliths, bone tools, fishing implements	Polished stone axes, handmade pottery, early ceramics	Copper tools, improved pottery, storage facilities	Iron tools, Northern Black Polished Ware (NBPW), craft specialization
Settlement Patterns	Small, seasonal camps near rivers and lakes	Permanent agrarian villages with rice cultivation	Larger settlements with storage pits, proto-urban planning	Fortified cities, urban centers, trade networks
Subsistence Strategies	Hunting, fishing, gathering	Earliest rice cultivation; domestication of plants & animals	Mixed farming, animal husbandry, food surplus	Iron-plough agriculture, surplus production, trade-based economy
Religious & Ideological Shifts	Symbolic burials suggesting belief in afterlife	Ritual spaces, fertility figurines, household cults	Terracotta figurines, ritual practices	Rise of Buddhism & Jainism, organized monastic institutions

Conclusion

The cultural evolution of the mid-Ganga plain reflects an extraordinary continuity that links prehistoric traditions with the emergence of complex historical societies. The unbroken sequence from the Mesolithic to the Neolithic and Chalcolithic phases, and subsequently into the Buddhist and early medieval periods, highlights the region's role as a dynamic center of cultural persistence and transformation. Archaeological data, including settlement distribution, material culture, and subsistence practices, not only demonstrate the gradual adaptation of human communities to environmental

and socio-political changes but also reveal the enduring strength of traditions that were creatively reinterpreted across generations. This cultural trajectory underscores the resilience and flexibility of societies inhabiting the mid-Ganga plain, where innovation did not erase the past but continuously engaged with it, resulting in a distinctive and evolving cultural identity. The persistence of symbolic practices, technological advances, and ideological developments attests to the deep historical roots of the region and its centrality in shaping broader civilizational patterns of the Indian subcontinent. By situating the mid-Ganga plain as both a repository of tradition and a cradle of innovation, this study reaffirms its significance in understanding the processes of cultural continuity, transformation, and historical identity formation in ancient India.

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