MAN, ENVIRONMENT AND SOCIETY
Vol. 6, No. 2, 2025, pp. 183-208, ISSN: 2582-7669

URL : www.arfjournals.com/mes
https://DOI:10.47509/MES.2025.v06i2.06

Between Epic Memory and Material Culture: Archaeological Perspectives on the Mahabharata Tradition

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Received : 16 September 2025 • **Revised :** 17 October 2025;
Accepted : 20 October 2025 • **Published :** 08 November 2025

Abstract: The Mahabharata occupies a unique position within the intellectual and cultural history of South Asia, blending epic memory with layers of historical experience. This paper investigates how archaeological evidence can illuminate the socio-cultural world reflected in the epic tradition. Rather than attempting to verify specific events, the study correlates material culture with the broader landscapes, technologies, and settlement systems described in the text. Archaeological horizons such as the Ochre Coloured Pottery (OCP) culture, Copper Hoard assemblages, Painted Grey Ware (PGW) settlements, and the Early Iron Age form the core analytical framework, as these cultural phases coincide chronologically and geographically with regions central to the Mahabharata narrative.

By examining key sites including Hastinapur, Ahichchhatra, Kurukshetra, Atranjikhera, Mathura region, and associated Ganga–Yamuna doab settlements—the paper synthesizes data on ceramics, metallurgy, subsistence patterns, and shifting settlement hierarchies. These datasets help reconstruct changing socio-economic formations, technological transitions, and regional interactions during the late second and early first millennium BCE. The paper also integrates environmental studies and spatial analyses to contextualize epic landscapes within archaeological realities. Ultimately, this study demonstrates that material culture provides a valuable lens for understanding how epic memory emerged from, interacted with, and was sustained by the lived historical processes of ancient northern India.

Keywords: Mahabharata, Archaeology, Material Culture, Painted Grey Ware (PGW), Ochre Coloured Pottery (OCP), Early Iron Age, Epic Tradition.

TO CITE THIS ARTICLE

Ritu, Vineet Kumar, & Rajpal (2025). Between Epic Memory and Material Culture: Archaeological Perspectives on the Mahabharata Tradition, *Man, Environment and Society,* 6(2), pp. 183-208. *DOI:10.47509/MES.2025.v06i2.06*

INTRODUCTION

The Mahabharata stands as one of the most expansive and enduring Itihasa traditions of South Asia, weaving together layers of collective memory, ethical debate and geometric motifs, including simple lines, concentric circles and ladder patterns. The ceramic corpus—bowls, dishes, vases and storage jars—occurs alongside evidence of early iron artefacts, mud-brick structures, hearths and storage pits. Excavations at Atranjikhera, Ahichchhatra, Jakhera, Bhagwanpura and Hastinapur demonstrate a well-established settlement hierarchy, with fortified sites, organised habitation layouts and traces of specialised craft production (Joshi et al., 1994; Lal, 1984). These archaeological patterns reinforce the interpretation that PGW communities possessed social and political structures capable of supporting the complex interactions reflected in the Mahabharata.

In Haryana, the site of Bhagwanpura provides particularly important evidence. Here, Late Harappan levels overlap with PGW deposits, showing cultural continuity from the late second millennium BCE into the early first millennium BCE. This transition demonstrates that PGW did not replace earlier cultures abruptly but evolved within a landscape already shaped by Harappan and OCP culture traditions. This continuity supports the idea that the Mahabharata draws from a layered cultural memory rather than a single archaeological horizon.

Yet, despite its importance, PGW alone cannot fully account for the martial world portrayed in the epic. PGW levels yield relatively limited weapon assemblages: small quantities of iron arrowheads, spearheads and tools, but little evidence for the large swords, harpoons, or ritual weaponry that dominate the epic's martial imagery. This limitation has become more apparent with the discovery of extensive weapon assemblages from the earlier Copper Hoard and OCP horizons. Since warfare depends on weapon systems rather than on ceramic styles, PGW provides a social and political framework but not a fully developed martial substratum.

Therefore, contemporary archaeological interpretation views PGW as forming one layer of the Mahabharata's cultural background—especially in terms of socio-political insight. Far from being a static tale, it presents history as a cycle of tension and renewal, captured in the celebrated line "यदा यदा हि धम() *ानिभ(वित भारत…", which implies that societies repeatedly encounter moments of imbalance that demand reordering. When viewed archaeologically, such moments resonate with long-term historical processes shifts in settlement organisation, transformations in technology, changes in political authority and evolving patterns of regional interaction that are well documented across

early northern India (Chakrabarti, 2006). This perspective situates the Mahabharata not as an isolated narrative, but as a literary expression shaped by real and measurable cultural changes.

Figure 1: Painted Grey Ware (PGW) bowl sherds from Daulatpur exhibiting concentric circle motifs and tri-linear strokes, Courtesy: Museum of Ancient Indian History, Culture & Archaeology Department, Kurukshetra University.

Equally significant is the verse "यिदहा01 तद23, य4हो01 न तत् 7चित्" (Adi Parva 56.34). As the epic itself declares, whatever exists here may be found elsewhere, and what is absent here is absent everywhere. This statement highlights the epic's vast thematic range and its role as a reservoir of cultural memory rather than a record of discrete historical events. Archaeology supports this breadth, as several aspects of social organisation, ritual practice, political behaviour and technological tradition reflected in the text find parallels in material evidence from OCP settlements, Copper Hoard weapon assemblages and PGW villages (Trikha, 2002; Agrawal, 1971; Joshi et al., 1994). This correspondence indicates that the epic preserves a broad cultural memory shaped by centuries of lived experience.

The classical archaeological framework on the Mahabharata emerged from B. B. Lal's excavations at Hastinapur, Barnawa, Kurukshetra and surrounding regions. Lal linked the Painted Grey Ware (PGW) horizon with an early Iron Age setting characterised by nucleated settlements, emerging hierarchies and expanding inter-regional connections (Lal, 1954; 1984). This PGW concept dominated scholarly discussion for several decades and remains a valuable anchor for understanding early Iron Age developments.

However, new archaeological findings have broadened and refined this picture. Excavations in western Uttar Pradesh, Haryana and Rajasthan etc. have produced substantial evidence of copper weapons, ritual objects and elite funerary practices from the earlier OCP and Copper Hoard horizons—material that has a far closer relationship with martial traditions than PGW pottery (Agrawal, 1971; Chakrabarti, 1995; Sharma, 2020). Because warfare is shaped by weaponry rather than ceramics, these horizons offer a more direct insight into the martial ethos preserved in the epic.

The discoveries at Sinauli have been especially transformative. The site's copper-plated coffins, swords, shields and cart-like vehicles (Manjul & Pandey, 2019; Parpola, 2020) reveal the presence of elite warrior groups and ritualised martial behaviour in the late second millennium BCE. These findings, combined with Copper Hoard sword and harpoon typologies and OCP settlement patterns, point to a deep cultural substratum that is earlier than, and partially overlaps with, the PGW horizon, yet resonates strongly with the hierarchical, alliance-based and martial world described in the Mahabharata.

Developments at Mathura, identified in early texts as Madhuvana or Madhupuri, further strengthen this landscape. Regional surveys and excavations demonstrate long-term occupational continuity from the PGW phase onwards, confirming Mathura's importance as a ritual and political centre (Gupta, 2014; Hartel, 1993).

Taken together, OCP settlements, Copper Hoard metallurgy, PGW village archaeology and early urban developments at Mathura reveal a multilayered archaeological landscape. The combined evidence elite warriors, ritualised funerary practices, chariot symbolism, advanced metallurgical skills and interconnected settlement systems—provides a richer and more nuanced context for understanding the cultural world evoked in the Mahabharata.

This study therefore adopts an archaeological approach not to authenticate the epic narrative, but to situate it within the material, technological and social environments of early northern India. By synthesising data from OCP ceramics, Copper Hoard weaponry, PGW settlements, the Sinauli warrior burials and the regional significance of Mathura, the paper reconstructs the broader cultural foundations that shaped the Mahabharata tradition. Such an approach allows the epic to be viewed not simply as literature, but as a narrative grounded in the long-term historical realities of the region.

CHRONOLOGICAL PERSPECTIVES ON THE MAHABHARATA

The chronology of the Mahabharata has been examined through multiple lines of inquiry, including astronomical calculations, genealogical traditions, classical textual references, and archaeological evidence. Traditional Indian astronomical traditions place the war at the beginning of the Kali Yuga around 3101 BCE, a date later echoed in sources such as the Aihole inscription of Pulakesin II. Genealogical reconstructions attributed to scholars such as Kalhana and Varahamihira suggest a date around 2448 BCE, while N. Aiyangar's astronomical interpretations point to 1194 BCE. Precessional calculations based on descriptions of solar positions in the epic have been interpreted to suggest dates in the range of 1412–1432 BCE. External testimony has also been drawn into the debate: the Greek writer Megasthenes, whose account was later interpreted through the identification of Krishna with Herakles, and who counted 138 generations before Chandragupta Maurya, has been used to propose an approximate date of 3032 BCE. Taken together, these estimates illustrate the wide chronological range generated by textual, genealogical, and astronomical models (Trikha, 2002).

Archaeology, however, offers a different type of chronological order —one based on cultural horizons rather than event dates. Excavations directed by B. B. Lal at Hastinapur, Barnawa, Kurukshetra and other northern Indian sites revealed settlement levels dominated by Painted Grey Ware (PGW), broadly dated to 1200–800 BCE (Lal, 1954; 1984). This PGW horizon became the classical archaeological marker for the Mahabharata age, corresponding with an early Iron Age society characterised by

fortified settlements, political clustering and emerging elite lineages (Chakrabarti, 2006).

New discoveries, however, broaden the chronological framework. Weapons and ritual objects from Copper Hoard assemblages and OCP settlements, dated to the late second millennium BCE, indicate an earlier martial substratum predating the PGW horizon (Agrawal, 1971; Sharma, 2020). The richly furnished Sinauli burials, featuring copper-plated coffins, swords, shields and cart-like vehicles, also belong to this period and reveal elite warrior groups active before the early Iron Age (Manjul & Pandey, 2019; Parpola, 2020). These finds do not "date" the Mahabharata but demonstrate that the martial traditions, social institutions and symbolic behaviours reflected in the epic had developed over several centuries.

Thus, while literary and astronomical calculations propose dates ranging broadly from 3100 to 1200 BCE, archaeological evidence provides a more stable interpretive framework. It suggests that the cultural milieu remembered in the Mahabharata aligns most closely with the transition from the late second millennium BCE (OCP–Copper Hoard–Sinauli) into the early first millennium BCE (PGW). This perspective shifts the focus away from identifying a single event date and toward understanding the epic as a synthesis of long-term cultural processes that archaeology can trace with greater clarity

REVIEW OF LITERATURE

Scholarly attempts to correlate the Mahabharata tradition with historical and cultural developments began in the early twentieth century with the works of F.E. Pargiter (1913), C.V. Vaidya (1905–1925), and H.C. Raychaudhuri (1923). These scholars approached the epic through textual analysis, genealogical reconstruction, and ancient political geography, laying the groundwork for later academic inquiry. Although their research did not involve archaeology, their interpretations helped conceptualize the Mahabharata as a repository of cultural memories rooted in early Indo-Gangetic traditions.

A decisive shift toward archaeological approaches emerged in the mid-twentieth century. B.B. Lal became the first archaeologist to undertake systematic excavations at a site explicitly associated with the epic Hastinapur in the 1950s (Lal, 1955). His identification of the Painted Grey Ware (PGW) horizon at Hastinapur, Ahichchhatra, Atranjikhera, and related sites as reflective of the early socio-political world of the Kuru–Panchala region had a profound impact on subsequent scholarship (Lal, 1984).

Lal's arguments regarding the "burnt level" at Hastinapur and its correlation with the epic's flood episode sparked extensive debate, but his broader framework linking PGW culture to early Iron Age transformations remains foundational.

Further excavations expanded the PGW dataset across the Ganga–Yamuna doab, Haryana, and western Uttar Pradesh. Gaur's (1983) excavations at Atranjikhera provided a well-stratified sequence from OCP to PGW to NBPW, offering valuable insight into long-term cultural continuity. Research at Ahichchhatra, Bhagwanpura, Bargaon, and other sites demonstrated the emergence of nucleated settlements, iron metallurgy, and craft specialization—features associated with early state formation and social differentiation (Sharma, 2001; Chakrabarti, 2006). These studies reinforced the view that PGW culture represents a significant archaeological horizon corresponding broadly to the cultural milieu of the Mahabharata period.

Parallel advancements have been made in the study of the Ochre Coloured Pottery (OCP) and Copper Hoard cultures, which are generally regarded as belonging to cultural phases earlier than the PGW horizon and form an important substratum of settlement and metallurgy in the region. Works by Sharma (2001) and Chakrabarti (2006) describe OCP communities as semi- sedentary agricultural groups with a well-developed copper-working tradition. The relationship between OCP settlements and Copper Hoard assemblages has been widely discussed in scholarship, particularly in relation to early martial practices and ritual traditions of northern India.

A major breakthrough in this regard came from the Sinauli excavations (Manjul & Pandey, 2019), where archaeologists uncovered elaborate cart burials, copper-plated coffins, antennae swords, shields, helmets, and ritual artefacts associated with late second millennium BCE mortuary practices. While Sinauli is generally dated to a period earlier than the PGW horizon and the phase often associated with the Mahabharata, its evidence for elite warrior groups, complex funerary rituals, and advanced copper weaponry has significantly contributed to discussions on the cultural background against which early Indo-Aryan and epic traditions evolved (Manjul, 2019; Witzel, 1995).

Mathura, another region referenced in the Mahabharata narrative, has yielded a deep archaeological sequence. Excavations at Mathura and Sonkh (Hartel, 1985; Sharma, 1973) have uncovered layers spanning PGW, NBPW, and early historic periods, demonstrating Mathura's early urban growth, craft production, and strategic location in north India. The continuity of occupation from the early Iron Age onward indicates that Mathura played a central role in cultural and political developments contemporaneous with the expanding Kuru– Panchala sphere (Ray, 2017).

Landscape and environmental studies have further enriched the discourse by contextualizing settlement patterns, riverine systems, and ecological change. Valdiya (2017) examined the shifting courses of the Ghaggar–Drishadvati and Yamuna rivers, providing insights into dynamic landscapes that shaped habitation in the Kurukshetra and doab regions. Ray (2017) explored ritual landscapes and mobility networks, emphasizing that epic geography reflects not only isolated political events, but broader cultural processes linked to settlement evolution, pilgrimage routes, and regional interconnectivity.

Modern scholarship, particularly the works of Thapar (2000) and Witzel (1995), stresses that the Mahabharata is best understood as a layered tradition that preserves memories of socio- political transformations rather than literal historical accounts. Archaeology, therefore, becomes a tool for reconstructing the cultural world within which these traditions crystallized—not for verifying individual events. Collectively, the literature demonstrates a consistent scholarly trajectory: from early textual historicism to B.B. Lal's transformative archaeological interventions, to contemporary landscape archaeology and interdisciplinary environmental studies.

Together, these contributions provide a robust framework for situating the Mahabharata within a plausible archaeological, environmental, and cultural context. The cumulative body of research indicates that while archaeology cannot "prove" the epic, it effectively reconstructs the socio-cultural foundations from which the Mahabharata tradition emerged.

METHODOLOGY

This study adopts a contextual archaeological methodology to examine the cultural background of the Mahabharata. Archaeological data were gathered from major excavation reports, state survey publications, and the Indian Archaeology—A Review (IAR), with particular attention to well-documented sites associated with the OCP, PGW, and early Iron Age horizons, including Hastinapur, Ahichchhatra, Atranjikhera, Bhagwanpura, Mathura, Bargaon, and Sinauli (Lal, 1955; Gaur, 1983; Manjul & Pandey, 2019). The analysis focuses on key categories of material culture—ceramics, copper and iron artefacts, architectural remains, burial practices, and subsistence indicators—to reconstruct technological and socio-economic patterns characteristic of these cultural phases.

A comparative chronological framework is used to trace cultural transitions from OCP to PGW and early Iron Age contexts, supported by typological studies of pottery,

metal objects, and settlement features (Chakrabarti, 2006; Sharma, 2001). Spatial and environmental assessments incorporate paleo-river research and landscape studies to situate settlement patterns within the evolving ecological settings of the Kurukshetra and Ganga–Yamuna doab regions (Valdiya, 2017).

Textual references from the *Mahabharata* are treated as cultural indicators rather than as direct historical evidence. Themes such as political organisation, warfare, ritual geography, and kinship structures are examined through a contextual and interpretative framework, and are compared with archaeological patterns without assuming direct correspondence or event- level historicity (Witzel, 1995; Thapar, 2000; Ray, 2017). This approach allows for a critical engagement between text and material culture while avoiding attempts to verify specific events described in the epic.

PAINTED GREY WARE (PGW) CULTURAL HORIZON

The Painted Grey Ware (PGW) cultural horizon has long held a central place in archaeological discussions about the Mahabharata. Following B. B. Lal's influential excavations at Hastinapur, Barnawa, Kurukshetra and other sites in the Kuru–Panchala region, PGW was identified as the primary material culture associated with the early Iron Age society described in the epic (Lal, 1954; 1984). Dated broadly to 1200–800 BCE, PGW represents a period marked by nucleated settlements, structured habitation patterns, and an emerging political landscape characterised by several lineage-based groups and regional centres, offering a plausible background to the social world reflected in the epic (Chakrabarti, 2006).

Typologically, PGW is characterised by a fine, wheel-made grey pottery with black-painted settlement organisation, early Iron Age political patterns and regional networks—but recognises that the deeper martial and technological foundations of the epic lie in earlier cultural complexes such as OCP, Copper Hoards and the elite warrior burials at Sinauli. PGW remains crucial, but it is part of a broader and more complex sequence of cultural developments that shaped the world remembered in the Mahabharata.

OCHRE COLOURED POTTERY (OCP) CULTURAL HORIZON

The Ochre Coloured Pottery (OCP) horizon forms one of the earliest archaeological cultures of the late second millennium BCE in northern India and provides a crucial cultural substratum for understanding the processes that preceded the early Iron Age. Distributed primarily across the Upper Ganga–Yamuna doab, OCP represents

a transitional phase that follows the dispersal of Late Harappan rural settlements and anticipates the emergence of more nucleated PGW societies (Chakrabarti, 2006; Sharma, 2001). Its relevance to the Mahabharata lies not in direct narrative correlations but in the broader socio-economic and martial milieu reflected in the epic tradition.

Archaeologically, OCP is most strongly represented in western Uttar Pradesh, where a dense cluster of sites marks sustained habitation during c. 2000–1500 BCE. Key OCP sites include Bahariya (Shahjahanpur), Bisauli (Budaun), Pariyar (Farrukhabad), Saifai–Lichchwai (Etawah), Khera Manpura and Kiratpur (Bulandshahr), Madarpur/ Thakurdwara (Moradabad), Rajpur Parsu (Bijnor), Ganeshpur (Mainpuri), Sitapur (multiple locations), and Sheorajpur (Kanpur Dehat). Additional OCP sherd-bearing locations, such as Nasirpur, Bhamori, Bahsuma, Dadupur, Jhinjhana, and Alamgirpur, build out this broader horizon (Sharma, 2020). These settlements form a coherent cultural zone extending across the central Ganga plain—an area corresponding closely to the political and cultural territories that feature prominently in early Indo-Aryan and epic traditions.

Within the Kurukshetra district, archaeological surveys have identified only one confirmed OCP site, Devidaspur (Kumar, 1978). Although limited in number, this occurrence is significant as it establishes a late second-millennium BCE presence within the core area of the later epic landscape. Its isolated nature highlights a broader regional pattern: OCP remains are not concentrated in Kurukshetra itself but occur more densely in the surrounding regions, which interacted with and gradually contributed to the socio-political developments of the early Iron Age.

The ceramic assemblage of the OCP horizon consists primarily of ochre-washed bowls, dishes, vases and handi-type vessels, produced by hand or slow wheel. Yet the distinguishing feature of this cultural horizon is its close and repeated association with Copper Hoard objects, including antennae-hilted swords, hooked swords, harpoons, shouldered celts, bar celts, flat axes and spearheads (Yule, 1985; Agrawal, 2007). Sites such as Saifai–Lichchwai, Bisauli, Pariyar, Madarpur, Rajpur Parsu, Ganeshpur, and Sheorajpur have yielded particularly weapon- rich assemblages, indicating the presence of specialised metallurgical traditions and emerging warrior identities well before the advent of iron. This association makes OCP highly relevant to understanding the deeper martial substratum that later informs the Mahabharata's warrior ethos.

Subsistence indicators from OCP sites suggest a mixed agro-pastoral economy, with cultivation of wheat, barley and lentils alongside cattle, sheep–goat and pig rearing. Settlement patterns—often situated along palaeo-channels of the Yamuna and upper Ganga—reflect strategic use of riverine resources and evolving agricultural systems

(Valdiya, 2017). Though architectural remains are modest, comprising hearths, pits and wattle-and-daub structures, they collectively point to stable, small-scale communities rather than transient encampments.

Chronologically, OCP predates the PGW horizon and belongs to the late second millennium BCE, placing it within a period of far-reaching social and technological change in the northern plains (Dikshit, 1979). While PGW marks the consolidation of early Kuru–Panchala polities— often connected to the Mahabharata's socio-political world—OCP reflects the earlier cultural foundations upon which these Iron Age structures developed. The large-scale manufacture of copper weapons during the OCP phase provides important context for understanding the long- standing martial traditions that later crystallize in the epic.

In this sense, the OCP horizon serves as a critical prelude to the cultural milieu of the Mahabharata. Although it cannot be directly equated with epic events, its settlement distribution, weapon technology and evolving socio-economic systems illuminate a world in transition—one where agricultural communities, emerging martial elites and shifting ecological landscapes collectively shaped the remembered past encoded in the epic tradition.

COPPER HOARD CULTURAL HORIZON

The Copper Hoard culture represents one of the most striking archaeological signatures of the late second millennium BCE in northern India, distinguished by its extensive assemblages of copper weapons and ceremonial objects. Concentrated primarily across western and central Uttar Pradesh—at sites such as Saifai–Lichchwai (Etawah), Pariyar (Farrukhabad), Bisauli (Budaun), Bahariya (Shahjahanpur), Madarpur/Thakurdwara (Moradabad), Rajpur Parsu (Bijnor), Ganeshpur (Mainpuri) and Sheorajpur (Kanpur Dehat)—these hoards frequently occur in association with OCP levels, indicating that the Copper Hoard horizon constitutes the technological and ideological apex of the broader OCP cultural system (Agrawal, 1971; Yule, 1985; Sharma, 2020). The typological repertoire of Copper Hoard objects is exceptionally diverse, including antennae-hilted swords, hooked swords, long harpoons, shouldered and bar celts, flat axes, lance heads, spearheads, and anthropomorphic figures. Such assemblages demonstrate a degree of metallurgical sophistication not paralleled in either Late Harappan or early PGW contexts. Their standardised dimensions, specialised casting techniques, alloy selection and repeated deposition in substantial quantities reflect the presence of organised metalworkers and formalised warrior groups with elite patronage (Agrawal, 2007).

From an archaeological perspective, the Copper Hoard horizon provides the earliest unambiguous evidence for a complex martial tradition in the northern plains. Unlike PGW levels—where martial artefacts typically comprise small iron points or arrowheads—the Copper Hoards preserve large, elaborate weapons that indicate the existence of warrior elites and a social order deeply invested in martial symbolism. This martial dimension resonates strongly with the cultural milieu portrayed in the Mahabharata.

While Copper Hoards cannot be directly linked to any historical conflict described in the epic, their distribution across regions associated with early Indo-Aryan polities—including Panchala, Matsya, Shaurasena and Ahichchhatra—demonstrates that the political landscape of the doab was already structured by warrior lineages and inter-polity competition during the late second millennium BCE (Chakrabarti, 2006). Chronologically, the Copper Hoard complex dates to c. 2000–1500 BCE, a period compatible with several modern chronological reconstructions that place the socio-cultural background of the Mahabharata within this broader temporal horizon.

Figure 2:(a) Polished Stone Tools, Copper Objects and a Double Shouldered Celt were collected by S. C. Roy from so-called "Asura Graveyard" in Ranchi District. The Double Shouldered Celt which we noticed in the assemblages of Asura, now stored in Patna Museum(b) Copper Plain and Shouldered Celts, collected by S. C. Roy somewhere in Jharkhand and a few years ago were donated by his son P. C. Roy to the Ranchi State Museum along with a Tibetan Vajrasatta image.

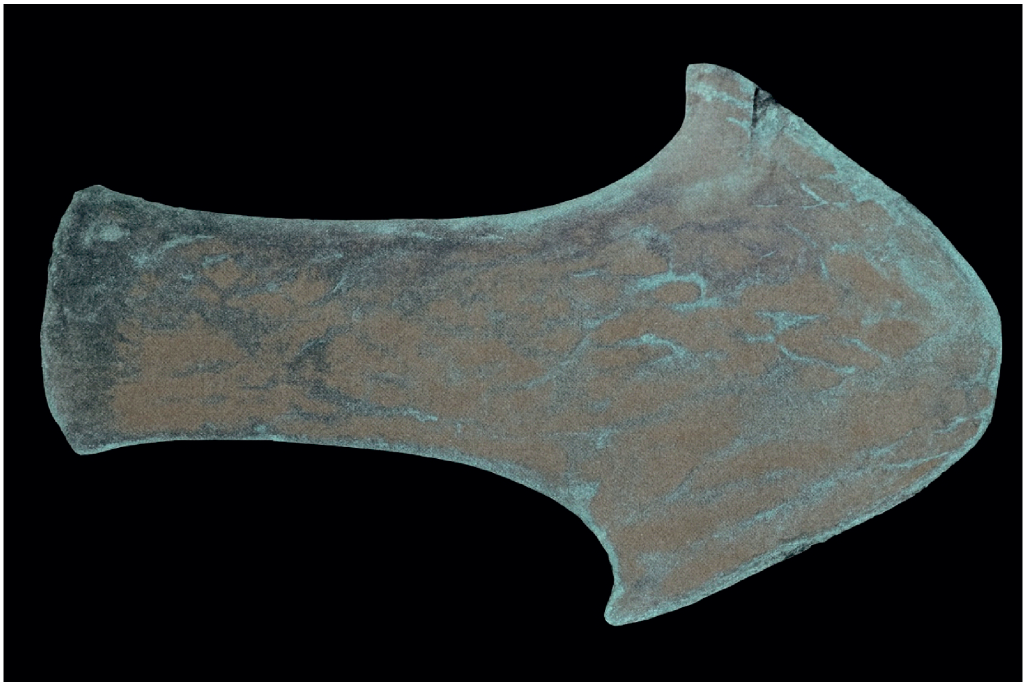

Figure 3: Shouldered axe from Hastinapur

Figure 4: Harpoon from Ahichhatra

Figure 5: A copper Spearhead and heap of nails from Sinauli

The cultural relevance of the Copper Hoard tradition becomes clearer when placed in the context of emerging evidence from sites such as Sinauli, where copper-plated coffins, shields, swords and cart-like vehicles point to an elite warrior group with funerary practices echoing the symbolic and technological grammar of Copper Hoard weaponry (Manjul & Pandey, 2019; Parpola, 2020). Sinauli demonstrates a transition between the late Bronze Age martial world of the Copper Hoards and the early Iron Age PGW polities associated with the Kuru–Panchala sphere. The alliances, rivalries

and warrior identities reflected in the Mahabharata may thus draw upon multiple cultural layers: the Bronze Age martial foundations revealed by the Copper Hoards, the transitional elite culture of sites like Sinauli, and the later political consolidation reflected in PGW settlements.

Viewed in this light, the Copper Hoard horizon offers a crucial archaeological framework for understanding the deeper material foundations of the Mahabharata tradition. It shifts the discussion from correlating the epic with ceramic typologies to examining the actual material signatures of warfare, authority and elite identity in the late second millennium BCE. Although the Copper Hoards cannot confirm the historicity of the epic, they illuminate a real historical world shaped by martial specialists, regional polities and evolving technological capacities— conditions that form the broader cultural environment from which the Mahabharata's remembered narratives may have emerged.

SINAULI: ELITE WARRIOR BURIALS AND THEIR PLACE IN THE EPIC LANDSCAPE

The discoveries at Sinauli in the Baghpat district of western Uttar Pradesh represent one of the most significant contributions to understanding the late second–early first millennium BCE cultural landscape of northern India. First excavated in 2005 and later re-examined between 2018 and 2019 by the Archaeological Survey of India under the direction of S. K. Manjul and Arvin Manjul, the site revealed a unique necropolis comprising 116 burials, extensive pottery, copper artefacts and sophisticated funerary installations. The recent excavations brought to light an extraordinary set of "royal" burials—including copper-plated coffins, copper- decorated shields, antennae swords, copper daggers, ritual combs and, most remarkably, three cart-like vehicles interpreted as chariots (Manjul & Manjul 2018–19; Ahluwalia 2018). These finds challenge long-standing assumptions about the cultural and technological profile of Chalcolithic communities in the Ganga–Yamuna doab.

The coffin burials at Sinauli are particularly striking. Constructed of wood and covered with copper sheets, many coffins exhibit intricate decoration, including a notable example featuring eight anthropomorphic copper motifs arranged symmetrically on the lid. Excavation images clearly show the careful arrangement of vessels, bowls, combs, beads and copper channels around the coffin interiors (Manjul & Manjul, Plates 4–6). One coffin burial, identified as Burial Pit 6, contained the remains of a high-status individual accompanied by two vehicles, a copper-plated shield, tortoise-base chalice,

dagger, whip and helmet—an assemblage unparalleled in the known archaeological record of South Asia. Another burial revealed the remains of a female individual placed with a miniature copper dagger, suggesting that elite warrior roles at Sinauli may have included women (Ahluwalia 2018). Equally revealing are the vehicles, each featuring solid wheel structures with copper-wrapped spokes and hubs.

Figure 6: Copper antennae sword with hilt from Sinauli.

Figure 7: Burial pit no. 3 with wooden coffin, shield, "chariot" pole, torch, antenna sword, helmet, and other burial goods. After Manjul & Manjul 2018: pl. 6.

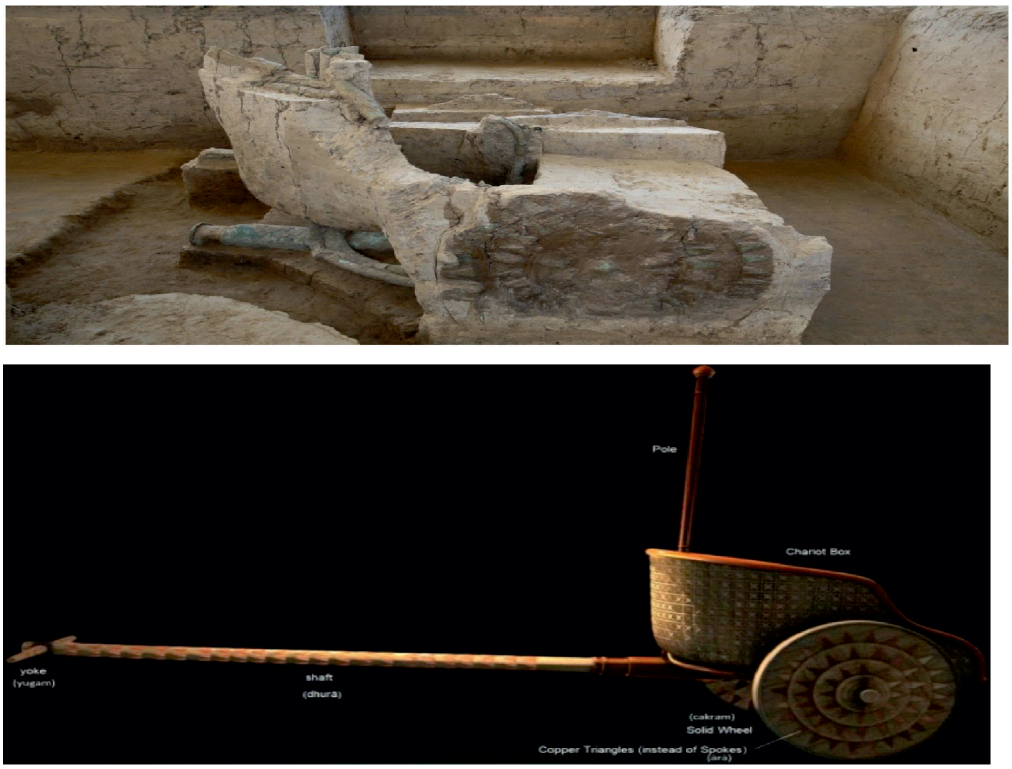

Figure 8: The Sinauli Chariot (2100 BCE to 1900 BCE): Artist's Reconstruction

Figure 9: Copper decorated legged coffin and pottery- ASI

Figure 10. Eight Anthropomorphic figures on legged coffin, copper pot and copper channel beneath the coffin- ASI

These vehicles were placed beside the coffins and were likely covered by canopies or platforms, as suggested by recovered fittings (Manjul & Manjul, Plates 7–12). Their typology, including copper sheathing, design motifs and construction technique, shows continuity with the Copper Hoard tradition—particularly in the use of heavy copper plating and symbolic weaponry—while also indicating technological features comparable to those seen in early Iron Age contexts (Parpola 2020). While debate continues regarding whether these were horse- drawn or ox-drawn, their craftsmanship challenges the long-held assumption that Late Harappan and OCP/Copper Hoard populations lacked chariot traditions.

The ceramic assemblage at Sinauli further clarifies its cultural identity. Although earlier excavations suggested Late Harappan affiliation, the more recent 2018–19 work demonstrated that Sinauli's pottery and burial practices differ substantially from Harappan norms. The presence of OCP sherds, Copper Hoard-type weapons and non-Harappan burial architecture indicates that Sinauli represents a distinct local culture positioned at the intersection of Late Harappan decline and emergent Chalcolithic societies in the doab (Ahluwalia 2018; Manjul & Manjul 2018–19) . The excavators emphasise that Sinauli was likely a unique necropolis of an OCP/Copper Hoard-related population, technologically sophisticated and socially stratified, with a clearly identifiable warrior class.

From the perspective of the Mahabharata, Sinauli provides critical archaeological insights, not because it verifies any specific episode of the epic but because it reveals a social world in which elite warriorhood, martial symbolism and ritualised funerary display were central cultural institutions. The presence of long copper swords, shields, decorated coffins and chariots corresponds to a martial ideology far more elaborate than what is visible in PGW settlements alone. Sinauli demonstrates that the region's martial foundations—rooted in Copper Hoard metal traditions—predated the PGW horizon traditionally associated with the Kuru–Panchala polity. Its chronology, roughly 2000–1500 BCE based on stratigraphic and artefactual correlation, aligns with the broader period in which many scholars situate the precursors of the epic's remembered social structures (Ahluwalia 2018; Parpola 2020).

Thus, Sinauli occupies a pivotal position in the archaeological sequence: it bridges the late Bronze Age martial world of the OCP/Copper Hoard horizon and the early Iron Age PGW settlements linked to the Mahabharata's geopolitical landscape. The site's material repertoire— its warrior burials, copper-plated chariots, anthropomorphic motifs and specialised weaponry—collectively reflects a society organised around elite lineage identities, ritual performance and technological sophistication. These features offer a compelling archaeological framework for understanding the social and ideological substratum from which the Mahabharata's narratives of warfare, kinship and power may have emerged

MATHURA IN THE MAHABHARATA LANDSCAPE: ARCHAEOLOGICAL PERSPECTIVES ON EARLY URBANISM

Mathura occupies a central position in the archaeological and cultural landscape of northern India. Its importance is reflected not only in early Sanskrit and Puranic literature, where it appears as Madhuvana or Madhupurī, but also in a long and well-documented archaeological sequence that begins well before the Early Historic period. Early explorations by Alexander Cunningham (1871–72) at Chaubara Tila and Kankali Tila, followed by Vogel's excavations (1908–12), uncovered shrines dedicated to yakshas, nagas and early goddess cults, revealing Mathura as a thriving ritual centre during the early centuries BCE and CE. Later ASI excavations in the 1950s and 1970s at Katra Keshavadeva and its surroundings confirmed the presence of dense habitation layers, though full technical reports remain unpublished (Singh 2004: 380).

A deeper stratigraphic understanding emerged from Hartel's excavations at Sonkh (1966–74), which identified an eight-period cultural sequence, beginning with

early structural levels and culminating in the establishment of sophisticated shrine architecture and urban planning (Hartel 1993: 27–35). These excavations demonstrated that Mathura was not simply an Early Historic religious centre but an early urban node with continuous occupational activity.

Crucially, the protohistoric roots of the Mathura region are also archaeologically attested. Vinay Kumar Gupta (2012) notes the presence of Ochre Coloured Pottery (OCP) sherds at Gantholi, Gosna and Nohjhil, indicating that the region participated in the wider late second-millennium BCE cultural horizon of the upper Ganga–Yamuna doab (Gupta 2012: 37–39). Gupta also records a Copper Hoard celt discovered by Cunningham at Chaubara Tila, linking Mathura marginally with the broader Copper Hoard distribution in western Uttar Pradesh (Gupta 2012: 50–51). Although Mathura is not an OCP or Copper Hoard core zone, these finds demonstrate that the region was culturally active during the period that forms the archaeological background to the Mahabharata.

Between the second century BCE and second century CE, Mathura emerged as one of the most important artistic and religious centres of northern India. As Upinder Singh (2004) has shown, Mathura's sacred geography was marked by remarkable religious plurality: shrines and sculptures linked to yaksha worship, naga cults, goddess traditions, early Brahmanical deities such as Harihara, Ardhanarishvara, and most significantly, the Vrishni heroes—Vasudeva- Krishna, Balarama and Ekanamsha—whose worship is attested through inscriptions and sculptural evidence from Mora and other early shrines (Singh 2004: 383–389). These developments reveal Mathura as a dynamic ritual centre whose religious significance expanded in tandem with its urban growth.

In the context of the Mahabharata, archaeology does not claim Mathura as a literal stage of specific events. Instead, the city's long-term settlement continuity, early urban morphology, multi-layered cultic traditions and strategic location along the Yamuna provide a historically plausible social and political environment for the epic's narrative world. As Gupta argues, Mathura was already the capital of the Surasenas by the early first millennium BCE, a polity well integrated into northern Indian cultural networks and repeatedly referenced in Buddhist, Jain and Puranic sources (Gupta 2012: 15–31). The fortified centres, clan-based politics and regional interactions described in the Mahabharata correspond closely to the archaeological profile of the early Mathura–Sonkh–Mat region.

Thus, Mathura's significance in this study lies not in proving the historicity of the Mahabharata, but in demonstrating how the epic's geography, political imagination

and ritual landscape resonate with an archaeologically attested early urban centre. Its PGW-adjacent early horizons, protohistoric material traces, flourishing early historic cults and enduring urban traditions collectively anchor Mathura as a key node within the broader cultural matrix from which the Mahabharata's remembered world emerged.

RESULTS AND DISCUSSION: ARCHAEOLOGICAL SYNTHESIS OF THE MAHABHARATA CULTURAL LANDSCAPE

The archaeological record of the upper Ganga–Yamuna–Sarasvati region offers a coherent cultural framework within which the Mahabharata can be historically contextualised. Rather than approaching the epic as a product of mythic imagination alone, the cumulative archaeological evidence—from OCP settlements and Copper Hoard weapons to elite burials at Sinauli, fortified PGW centres and the long-term urban trajectory of Mathura—reveals a landscape undergoing significant socio-political, technological and ritual transformation between c. 2000 and 800 BCE. These transformations correspond closely to the structures, values and institutions embedded in the epic tradition.

In this context, the major outcomes of the present study can be articulated through the following key results:

1. The Mahabharata aligns with an archaeologically attested landscape rather than non- material mythology. Across the upper Ganga–Yamuna–Sarasvati region, settlement patterns, material culture and sociopolitical structures from 2000–800 BCE reflect a world of clan-based polities, fortified towns, warrior elites and ritual authority— elements central to the Mahabharata's narrative framework.
2. The OCP–Copper Hoard horizon preserves the earliest clear evidence of martial traditions in the region. The presence of large copper swords, celts, harpoons, shields and ritual blades demonstrates a formalised warrior identity long before the PGW horizon. These assemblages (Saifai–Lichchwai, Pariyar, Rajpur Parsu, Ganeshpur, Sheorajpur) mark the deep martial substratum that informs the epic's later warrior ethos.
3. Elite warrior burials at Sinauli form a transitional bridge between late Bronze Age martiality and early Iron Age political complexity. Copper-plated coffins, cart-like vehicles, shields and decorated swords from Sinauli reveal ritualised

elite warriorhood that is technologically linked to Copper Hoard traditions but ideologically anticipates PGW-era social organisation. This is the strongest archaeological evidence for early elite martial groups in the region.

4. Fortified settlements such as Hastinapur, Ahichchhatra, PGW sites in Kurukshetra district, and Atranjikhera demonstrate increasing centralization, territoriality and lineage-based authority during c. 1200–800 BCE, matching the socio-political world in which the epic's stories were framed.
5. Mathura illustrates long-term urban continuity and ritual pluralism, complementing epic geography. OCP traces, early Iron Age levels, early shrines, cultic centres and Vrishni hero worship show Mathura as a major regional power that parallels its literary prominence in the Mahabharata. Its role as Surasena capital fits well with early historic textual and archaeological evidence.
6. The cumulative evidence shows cultural continuities, not ruptures, from late 2nd millennium to early 1st millennium BCE. OCP → Copper Hoards → Sinauli → PGW
7. → Early Historic Mathura represent layered stages of social evolution across the doab. This continuity forms the archaeological backbone for the epic's remembered social world.
8. No single archaeological horizon "proves" the Mahabharata, but together they construct a historically plausible cultural matrix. Archaeology does not confirm a historic war, but reconstructs real settlements, real technologies, real lineages, real warrior traditions, and real ritual landscapes that are entirely consistent with the structural features of the epic.

The Mahabharata reflects a memory of long-term cultural processes, not a single historical moment. The epic captures the accumulated memory of: Bronze Age martial identities (Copper Hoards), transitional elite warrior traditions (Sinauli), emergent Iron Age chiefdoms (PGW), early urban religious centres (Mathura). This positions the Mahabharata as a cultural condensation of centuries of societal change.

Taken together, these results demonstrate that the Mahabharata's cultural world corresponds to a real, archaeologically attested historical environment. The transition from OCP martiality to Copper Hoard weapon repertoires, the emergence of elite warrior symbolism at Sinauli, the political consolidation of PGW chiefdoms and the urban–ritual development of Mathura reveal a long-term trajectory of social complexity

that is mirrored in the epic's narratives of kinship, territorial control, warfare and political negotiation.

Archaeology, therefore, does not authenticate the historicity of the Mahabharata as a single battle or event. Instead, it provides a long-term cultural framework for understanding how the epic acquired its structure, authority and historical significance. The Mahabharata may thus be approached as a literary expression shaped by the lived experiences of societies undergoing technological, political and ritual transformations over several centuries. This synthesis establishes a historically grounded context within which the epic's remembered world can be understood in archaeological terms.

CONCLUSION

The aim of this study has not been to verify a historical battle, but to reconstruct the cultural world within which the Mahabharata took shape. The combined archaeological horizons of the upper Ganga–Yamuna–Sarasvati region—Ochre Coloured Pottery settlements, Copper Hoard weaponry, the elite warrior burials of Sinauli, Painted Grey Ware fortified sites and the long- term urban evolution of Mathura—together outline a deep-time landscape that is materially consistent with the epic's socio-political imagination. These datasets reveal a long trajectory of regional development marked by shifting settlement patterns, ritual innovation, lineage-based authority, expanding warrior traditions and increasing political centralisation between c. 2000 and 800 BCE.

The earliest foundations of martial identity are visible in the OCP–Copper Hoard horizon, where large copper swords, ritual blades and heavy weapons signal the presence of warrior specialists and ranked elites. Sinauli strengthens this picture with its copper-plated coffins, symbolic shields and cart-like vehicles, providing rare evidence of elite martial symbolism during a phase of significant cultural transition. These traditions anticipate the more formalised political order of the PGW horizon, whose fortified settlements and regional networks align with the Kuru–Panchala sphere described in the Mahabharata. Mathura, with its continuous occupation, ritual plurality and strategic location, reflects the kind of urban centre deeply embedded in early historic cultural and political system.

Seen collectively, these horizons demonstrate cultural continuity rather than rupture. They form a coherent archaeological sequence in which Bronze Age martial practices, transitional elite expressions and early Iron Age political institutions combine to create the kind of world that the Mahabharata narrates. Archaeology does not confirm the historicity of any single episode, but it reconstructs the social environments—real

settlements, technologies, ritual landscapes and political structures—that made the epic possible, intelligible and enduring.

In this sense, the Mahabharata emerges as a literary synthesis of centuries of cultural experience, not an isolated historical event. Its narrative reflects the accumulated memory of lineage conflicts, territorial negotiations, martial honour and ritual authority shaped over generations. By situating the epic within this broader archaeological matrix, this study demonstrates that the Mahabharat is best understood not as a chronicle of one war, but as a cultural condensation of long-term processes that transformed northern India during the late second and early first millennium BCE. This conclusion underscores the value of archaeology as a tool for contextualising epic traditions, illuminating the deep historical landscapes from which they draw their force and meaning.

Acknowledgement

The authors gratefully acknowledges the foundational contributions of B. B. Lal to Mahabharata-related archaeology, particularly his work on the PGW horizon. Appreciation is extended to V. K. Gupta (2014) and H. Hartel for their valuable research on the early settlement history of Mathura and Sonkh, and to S. L. Trikha (2002) for insights into the chronological debates surrounding the epic tradition. The findings of S. Manjul and the Archaeological Survey of India on Sinauli have also significantly enriched this study. Their collective scholarship provides the essential framework upon which this paper is built.

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