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Punch-Marked Coins: A Historical and Numismatic Study of Early Indian Currency

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Abstract

Punch-marked coins represent the earliest standardized currency in the Indian subcontinent, circulating from approximately the 6th century BCE to the 2nd century CE. Predominantly made of silver, with occasional copper and rare gold examples, these coins were issued initially by Janapadas and later on by imperial authorities such as the Magadhan, Nanda, and Mauryan dynasties. Ancient literary sources, including the Arthashastra, Panini's Ashtadhyayi, and Buddhist texts, provide references to various denominations such as karshapana, pana, ardha-pana, masaka, and kakini, reflecting a sophisticated and diversified monetary system. Punch-marked coins are characterized by distinctive symbols stamped on the obverse, including animals, trees, geometric designs, and solar motifs, while inscriptions are largely absent. The production of punch-marked coins involved multiple techniques, including punching, die-striking, repoussé, droplet casting, and laminated or silver-plated planchets, demonstrating advanced metallurgical knowledge and minting practices. Silver sources were both local and imported, highlighting extensive trade networks across the subcontinent and beyond. Archaeological evidence, including over two hundred hoards, reveals wide geographical distribution spanning present-day India, Pakistan, Afghanistan, Sri Lanka, and Bangladesh. Chronologically associated with Northern Black Polished Ware, these coins not only facilitated trade and economic integration but also offer insights into the political, cultural, and technological developments of early historic India.

Keywords: Punch-marked coins, Karshapana, Janapadas, Arthashastra, Panini, Early Indian numismatics.

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1. Introduction

The earliest monetary instruments of the Indian subcontinent are commonly referred to punch-marked coins. These coins played a vital role in the transformation of barter based exchange systems into monetized economies during the early historic India. These were issued around the sixth century BCE, punch-marked coins coincided with the rise of urban centers, the expansion of trade networks, and the consolidation of political authority across northern and central India. Their circulation extended across a vast geographical region encompassing present day India, Pakistan, Afghanistan, Sri Lanka, and Bangladesh. Unlike later coinages, punch-marked coins generally lack inscriptions to identifying issuing authorities. Instead, they bear a variety of symbols impressed individually using punches. The original name by which these coins were known remains uncertain; however, ancient literary texts frequently mention denominations that correspond closely to their weight standards and metallic composition. References to such coins appear in Brahmanical, Buddhist, and Jain sources, indicating their widespread acceptance and daily use in economic transactions (Das 2019 & Cribb 2010:1-2).

This article presents a comprehensive overview of punch-marked coins, examining their historical background, typology, manufacturing techniques, metallurgical composition, distribution, and chronology. Drawing upon literary evidence and archaeological discoveries, it aims to highlight the significance of punch-marked coinage in understanding the economic, political, and technological foundations of early historic India.

2. Literary and Historical Background

Ancient Indian texts provide important insights into the early monetary system. The *Arthashastra* of Kautilya offers the most systematic description of coinage, listing various silver and copper denominations and describing about the administrative machinery responsible for minting and regulation. Silver coins such as *pana*, *ardha-pana*, *pada*, and *ashtabhaga* are mentioned alongside copper units like *masaka*, *kakini*, and their multiple fractions. Buddhist canonical texts including the *Vinaya Pitaka*, *Jataka* stories, *Anguttara Nikaya*, and *Majjhima Nikaya* frequently refer to *kahapanas* as standard currency used in donations, wages, and commercial exchanges. Panini's *Ashtadhyayi* (5th century BCE) further clarifies the weight based structure of these coins, describing the *karshapana* as a unit weighing thirty-two *rattis* and its various units. Epigraphic evidence also supports the circulation of punch-marked coins. The Nasik Cave inscription of Queen *Dakshamitra* (2nd BCE) records a donation of three thousand *karshapanas* to Buddhist monks, confirming the continued use of these coins in institutional and religious contexts. Collectively, these sources demonstrate that punch-marked coins formed the backbone of early Indian monetary practice (Hardaker 2022:1, Das 2019:1 & Cunningham 1891: 21).

3. Political Context and the Role of *Janapadas*

Prior to the emergence of the *Magadhan* Empire, the Indian subcontinent was divided into numerous *Janapadas* and *Mahajanapadas*. These regional polities exercised political autonomy and issued their own currency to facilitate trade and taxation. Literary sources tell about various numbers of *Janapadas*, with sixteen *Mahajanapadas* gaining particular prominence during the time of the Buddha. Numismatic research indicates that several *Janapadas* including Gandhara, *Kuru, Kosala, Magadha, Avanti, Vatsa, Kashi, Panchala, and Saurashtra* issued punch-marked coins. These early issues typically display fewer

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symbols and exhibit considerable variation in weight and fabric, reflecting localized production (Hardaker 2022:2).

After the rise of Magadha in the 6th century BCE, a process of political centralization began. Under rulers such as Bimbisara, Ajatashatru, the Nandas, and later the Mauryas, regional coinages were gradually replaced by more standardized imperial issues. The Mauryan state, in particular, introduced uniform coinage known *karshapanas* bearing five official symbols, reflecting centralized control over minting and monetary regulation (Das, 2015:96-98 & Cunningham, 1891:42).

4. Physical Characteristics and Symbolism

Punch-marked coins are typically irregular in shape, often square or rectangular, and diverse in thickness and weight. Majority of them are struck in silver, though copper specimens and rare gold coins are also known. Inscriptions are largely absent, making symbols the primary source of identification (Smith 1906: 131). The obverse of standard imperial *karshapanas* usually bears five different symbols, while *Janapada* coins may show one to four. The reverse often carries small, secondary marks or remains blank. Scholars have identified hundreds of individual symbols and over a thousand combinations, suggesting both official control and regional marks or designs. Common motifs include the sun, six-armed wheel (*sadaracakra*), arched hills, trees fenced within railings, animals such as elephants, bulls, lions, deer, and birds, as well as geometric and ritual symbols. These designs may have served administrative, religious, or cultural functions, possibly indicating issuing authorities, quality control, or symbolic protection (Nawaz 2024:43 &Das 2019:267).

5. Weight Standards and Denominations

The weight system of punch-marked coins was based on the *ratti*, derived from the seed of *Abrus precatorius* (*krishnala*). One *ratti* was later standardized at approximately 0.121 grams. The most common silver coin, the *karshapana*, weighed thirty-two *rattis*, though actual specimens show variation due to wear, clipping, and inconsistencies in seed weight (Singh 2017: 8–9 &Das 2019: 265). In addition to the standard *karshapana*, multiple denominations existed, including double units (64 rattis*),* fractional coins such as *adhyardha* (48 *rattis*), *ardha* (16 *rattis*), *pada* (8 *rattis*)., *tripada* (24 *rattis*), and smaller units like *masaka* (2 *rattis*), *kakini* (½ *ratti*s), and *ardha kakini* (¼ *rattis*). A series of 100-*ratti* silver coins, known as bent-bar or wheel-marked coins, has been found at Taxila, the second capital and the ancient trade centre of Gandhara *Janapada* (Das 2019: 268–269; Wasiullah 2021: 2). Cunningham (1891) determined that one *rakhtika (ratti)* weighed 1.83 grains, making a 32-*rattis* coin approximately 58.56 grains the commonly cited standard for punch-marked coins. Other scholars, however, have proposed lower averages: Elliot (47.10 grains), Thamos (47.69 grains), and Walsh (1937: 295–296) 47.82 grains. Thus the regional requirements influenced the circulation of specific denominations, reflecting localized economic needs.

6. Manufacturing Techniques

The production of punch-marked coins involved advanced metallurgical understanding in early historic India which influenced by several factors such as manufacture efficiency, weight standards, time constraints, cost, and ease of circulation. States employed mint masters who used different methods depending on their requirements. Generally, coin production involved two main steps: preparing planchets and striking coins, with each step incorporating specific procedures for punch-marked coins. Ancient Indian literature provides limited details on these techniques, so scholars largely rely on surviving coins.

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The *Arthashastra* remains the primary source describing the tools and materials used in manufacturing coins, including metals (*loha*), alkali (*kshara*), charcoal (*angara*), bellows (*bhastra*), clappers (*sandasa*), hammers (*mushtika*), anvils (*adhikarwa*), crucibles (*musha*), and design dies (*bimba tanka*) (Naskar 1996:32). According to Thapalayal and Srivastava (1998) punch-marked coins were mainly produced using two techniques: punching and die casting. In the punching method, metal sheets of suitable thickness were hammered, cut into strips, and divided into squares or rectangles of the required weight. These blanks were then shaped using punches matching the desired size, weight, and design, with final adjustments made by chiseling, and symbols were struck primarily on the obverse, leaving the reverse blank or minimally marked (Thapalayal & Srivastava 1998:34–35; Khan 2008:305). In die casting, molten metal was poured into terracotta or wooden molds containing the intended designs. After cooling and hardening, the coins were removed carefully to avoid breakage this technique allowed uniformity in design and shape across large quantities, though the quality and durability of coins depended on precise mold craftsmanship and controlled cooling to ensure hardness without structural defects (Nawaz 2024:65-66 &Walsh 1999:2–3). Planchets were prepared through various methods, including droplet casting, cutting from metal sheets, and casting in molds. Techniques such as lamination, silver-plating of copper cores, and trimming to achieve correct weight demonstrate careful quality control. Striking methods included single-die and multi-punch techniques, with symbols applied sequentially using individual punches. Specialized techniques such as bent-bar (*shalaka*) coinage in Gandhara and *repoussé* work further illustrate regional experimentation. Over-striking and re-minting were also practiced, reflecting economic pragmatism and metal scarcity (Nawaz 2024:66,67,68,69,70,71 & Das 2019:269,270,271, Khan 2008:306 & Mitchiner 1978: 500).

7. Metals and Sources

Silver punch-marked coins formed the major currency of ancient India and circulated widely across the subcontinent. However, silver was not abundantly available locally. Very limited quantity of silver was extracted from *argentiferous galena*, a lead ore containing traces of silver. Classical historian such as Pliny refers to silver mining in Mons Capitali (Mount Abu in the *Aravalli* range, Rajasthan) and Setai (the Kullu region of Himachal Pradesh). Other famous ancient sources of *galena* include Metri in the Bellary region and Zawar in the Udaipur district of Rajasthan. Smaller amounts of silver may also have been obtained from deposits in Odisha and from Beheraki and Lakshmipur in the Santhal Parganas of Bihar. In eastern India, *Gaudika* is identified in the *Arthashastra* as a known source of silver. Although these mines were likely exploited from the early historic period, their output alone would not have sufficed to meet the large demand for silver coinage. Consequently, it is widely believed that substantial quantities of silver were imported from regions such as the Hindukush and Herat in Afghanistan, Bawdwin in Myanmar, Yunnan in China, and possibly Persia, facilitated by long distance trade networks (Nawaz 2024 & Das 2019:268).

8. Distribution and Chronology

Silver punch-marked coins have been discovered across almost the entire Indian subcontinent, including present day India, Pakistan, Sri Lanka, and Afghanistan, and to date more than two hundred hoards and numerous individual find spots have been recorded. Among the most significant early discoveries are the Chaman Hazuri hoard from Kabul, the Bhir Mound at Taxila in Punjab (Pakistan), and the Sahet–Mahet hoard in the

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Bahraich district of Uttar Pradesh, which are particularly important for understanding the earliest series such as the *Satamana* or "bent-bar" coins. The Ramnagar hoard from Jaunpur district is notable for its cup shaped punch-marked coins, while the Paila hoard is especially significant for Janapada issues associated with the Kosala kingdom. Other important hoards of imperial punch-marked coins include Gorakhpur in Bihar, Narhan in eastern Uttar Pradesh, Amravati in Andhra Pradesh, Karimnagar, and Gulbarga in Karnataka, Coimbatore in Tamil Nadu, Barwani in Madhya Pradesh, Tilora, and Chandraketugarh in West Bengal. The chronology of punch-marked coins remains a subject of scholarly debate, with proposed origins ranging from as early as 1000 BCE to the fourth century BCE; Cunningham (1891) argued for an origin around 1000 BCE, whereas Allan (1936) suggested that their main period of circulation lay in the third and second centuries BCE, possibly beginning in the fourth century BCE, while Gupta and Hardaker (1985) proposed a broader span from the sixth century BCE or earlier until the second century BCE. Archaeologically, punch-marked coins are frequently associated with Northern Black Polished Ware (NBPW) levels dated approximately between 500 BCE and 50 BCE, leading scholars such as S. R. Goyal to argue that their emergence did not significantly predate 500 BCE; although their production largely ceased by the second century BCE following the decline of the Mauryan dynasty, these coins continued to circulate for several centuries thereafter (Das 2019: 273).

9. Conclusion

Punch-marked coins were the earliest form of standardized currency in the Indian subcontinent, originating around the 6th century BCE and circulating for several centuries, even after the decline of the Mauryan dynasty. Initially issued by individual Janapadas and later by imperial authorities like the Magadha and Mauryan empires, these coins facilitated trade, urbanization, and economic integration across a vast region that included present-day India, Pakistan, Afghanistan, and Sri Lanka. Primarily made of silver, with occasional copper and rare gold examples, punch-marked coins display a wide variety of symbols such as the sun, animals, trees, hills, and geometric motifs, reflecting regional styles, artistic expression, and cultural influences. The diversity of designs, weights, and denominations highlights the sophistication of early Indian monetary systems and the adaptability of minting techniques to local needs. Technologically, these coins demonstrate significant innovation, including methods like punching, die-striking, bent-bar, and repoussé techniques, which evolved to ensure accuracy, durability, and ease of circulation. Their widespread discovery in over two hundred hoards and numerous find spots underscores their importance in trade and daily life across the subcontinent. The coins' association with Northern Black Polished Ware (NBPW) layers provides a chronological framework, linking them to broader socio-political developments of the time. Overall, punch-marked coins not only served as a medium of exchange but also provide valuable insights into the economic, political, and cultural landscape of early historic India, making them a key source for understanding the subcontinent's ancient civilization.

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