

INFORMATION COLLECTION AND CLASSIFICATION OF ANCIENT BACTRIAN CAMEL-SHAPED CULTURAL RELICS

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ABSTRACT

Bactrian camels have played a significant role in the history of the Eurasian Steppe and its surrounding regions and their cultural relics embody rich historical and cultural information. This study aims to do comprehensive and systematic research on camel-shaped relics. Through multiple channels – including archaeological excavation reports, museum collections, historical literature and ancient texts, art market and private collections, research articles and scholarly publications, international collaborations and field investigations – we have extensively gathered visual and contextual information on camel-shaped cultural relics to establish a primary database. The relics were classified based on geographical and chronological distribution, material, content and function. The research reveals that these relics are distributed across multiple countries and span from roughly the Paleolithic to the mid-Medieval period. Their materials are diverse, reflecting a wide range of functional purposes, such as transportation, symbols of wealth and power, religious and spiritual significance, artistic subjects and everyday use. This indicates the close relationship between ancient human societies and Bactrian camels, as well as their value across various domains. However, limitations remain in information retrieval and classification still faces several challenges. This research offers a significant reference for the in-depth exploration of the cultural, artistic, economic and religious aspects of Bactrian camels in relics and also points to directions for future research.

Key words: Bactrian camel-shaped relics, eurasian steppe, functional classification, relics classification, relics collection

The Bactrian camel has played a vital role in the historical and cultural landscape of the Eurasian Steppe and its surrounding regions. It is primarily distributed across the cold steppes and deserts of Asia (Faye, 2014) and is believed to have been domesticated approximately 5,000 to 6,000 years ago (Burger *et al*, 2019). Renowned for its adaptability to both extreme cold and heat, the Bactrian camel is capable of withstanding thirst and hunger for extended periods. It prefers to feed on bitter, thorny and saline plants and has been observed to possess a remarkable sensitivity to impending sandstorms (Galindar and Chagan, 2012; Chen, 1982; Wu *et al*, 2014). Bactrian camel-shaped relics are dispersed throughout the Eurasian Steppe and adjacent areas, spanning over tens of thousands of years. As physical evidence of specific historical periods, these relics carry rich cultural, artistic and functional information. A systematic collection and classification of such relics is of both academic and practical significance. At present, the research on Bactrian camel shaped cultural relics primarily introduces and interprets

one or several cultural relics (Pittman, 1984; Esther and Viktor, 2020; Emma, 2002; Mukhareva, 2007) and there is no comprehensive systematic sorting and classification of Bactrian camel-shaped cultural relics. The purpose of this paper is to fill this gap.

Collection of Relics

Archaeological Excavation Reports

Archaeological excavations constitute a primary source of first-hand information on ancient Bactrian camel relics. Numerous camel-shaped relics have been unearthed at archaeological sites, such as the Astana Tombs in Turpan (Li, 1973), Sui dynasty tombs in the vicinity of Xi'an (Wang *et al*, 2018), Tang dynasty tombs (Wang *et al*, 2018) and the Guanlin Tomb in Luoyang (Tang and Shang, 2008). These sites have yielded a wide variety of camel-shaped relics, including textiles, wooden carvings and pottery figurines. Excavation reports typically provide detailed documentation on the geographic location, stratigraphy, associated grave goods and

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preservation status of the unearthed items. Instance, a camel figurine unearthed from Tomb M21 in Maopo Village bears a saddlebag imprinted with exotic human figures, as shown in Fig1(a). The further study offers a comprehensive description not only of the figurine's form and colouration but also of the decorative imagery on the saddlebag (Li and Tian, 2018). These visual motifs provide valuable material for subsequent research on Sino-foreign cultural exchange.

Museum Collections

Museums around the world serve as repositories of an extensive range of relics and represent invaluable resources for the study of ancient Bactrian camel-shaped relics. Between 2019 and 2025, we conducted field visits to a wide array of museums, including, the Inner Mongolia Museum, Ordos Museum, Ordos Bronze Ware Museum, Alxa Camel Museum, National Museum of China, the Palace Museum (Forbidden City), Beijing Stone Art Museum, Taiyuan Museum, Datong Museum, Xi'an Museum of Archaeology, Shaanxi History Museum, Xinjiang Museum, Zanabazar Fine Arts Museum (Mongolia), National Museum of Mongolia (Mongolia), Gansu Museum, Qinghai Museum and Yunnan Museum, among others. During these visits, a substantial number of photographs and related documentation of Bactrian camel relics were collected, covering diverse materials, chronological periods and artistic styles. In addition to on-site investigation and access to internal museum archives, data were also retrieved from digital databases and online museum repositories. These resources enabled the acquisition of detailed information regarding object dimensions, manufacturing techniques and provenance. Digital libraries and virtual museum platforms further enriched the collection of images and metadata associated with camel-shaped relics. For example, Fig1(b) presents a reconstructed image of a Han Dynasty woolen skirt featuring camel motifs, excavated from the Shanpula Cemetery and housed in the Xinjiang Museum.

Historical Literature and Ancient Texts

Mythological tales, heroic epics, classical texts, local gazetteers and travelogues frequently contain references to Bactrian camels, including descriptive passages and occasionally visual depictions. While oral traditions and literary sources may not directly pertain to specific relics, they provide critical contextual background for interpreting material remains. A famous Mongolian myth says that the deer

originally had no horns. After borrowing the strong antlers of the Bactrian camel, the deer was admired and praised by other animals, so it fled into the forest and took the camel's horns for itself and since then the camel has no horns (Jambaladorj, 1991; Ebolitu, 1983). In the epic of Jangar (Wu, 2012), a heroic figure named Mingyan engages in a fierce battle against a fearsome white wild camel spirit that breathes twelve streams of fire, ultimately defeating it in a dramatic clash. The Classic of Mountains and Seas (Yuan, 1993) offers brief mentions of camels, primarily in relation to their geographic distribution. These early literary works reflect ancient people's perceptions and imaginations of wild camels, often imbued with mystical and sacred connotations, underscoring humanity's reverence for the natural world. In Shiji-Xionggnu Biography (Sima, 2014), camels are referred to as "extraordinary livestock", highlighting their distinctive status among domesticated animals. The Book of Han Shu-Western Regions (Ban, 1962) records that various Western Regions offered Bactrian camels as tribute to the Han Dynasty, indicating the animal's important role in diplomatic and commercial relations. In The Great Tang Records on the Western Regions (Xuan and Bian, 2023), Master Xuanzang describes Bactrian camels encountered during his journey, providing textual evidence on their habitat and domestication status during the Tang dynasty. This in turn offers valuable references for evaluating the stylistic realism or idealisation present in Tang camel-themed artworks. In the Kanjur (LaxiSeleng, 2001), the steed of the winter goddess is a fierce two-humped camel, as shown in Fig12(c). Furthermore, On Ancient Central Asian Tracks (Aurel and Fang, 2020; Aurel *et al*, 2020) include numerous photographs of Bactrian camel relics, making them an important visual archive for iconographic analysis.

Art Market and Private Collections

In recent years, ancient Bactrian camel-shaped relics have occasionally appeared in the art market. Some private collectors are also known to possess such rare items. However, due to the confidential and opaque nature of art transactions, this type of information is relatively fragmented and difficult to access. Moreover, the authenticity and reliability of such objects must be rigorously assessed and verified to avoid misinterpretation or the inclusion of forgeries in scholarly research.

Research Articles and Scholarly Publications

A significant portion of the materials used in this study was derived from published academic

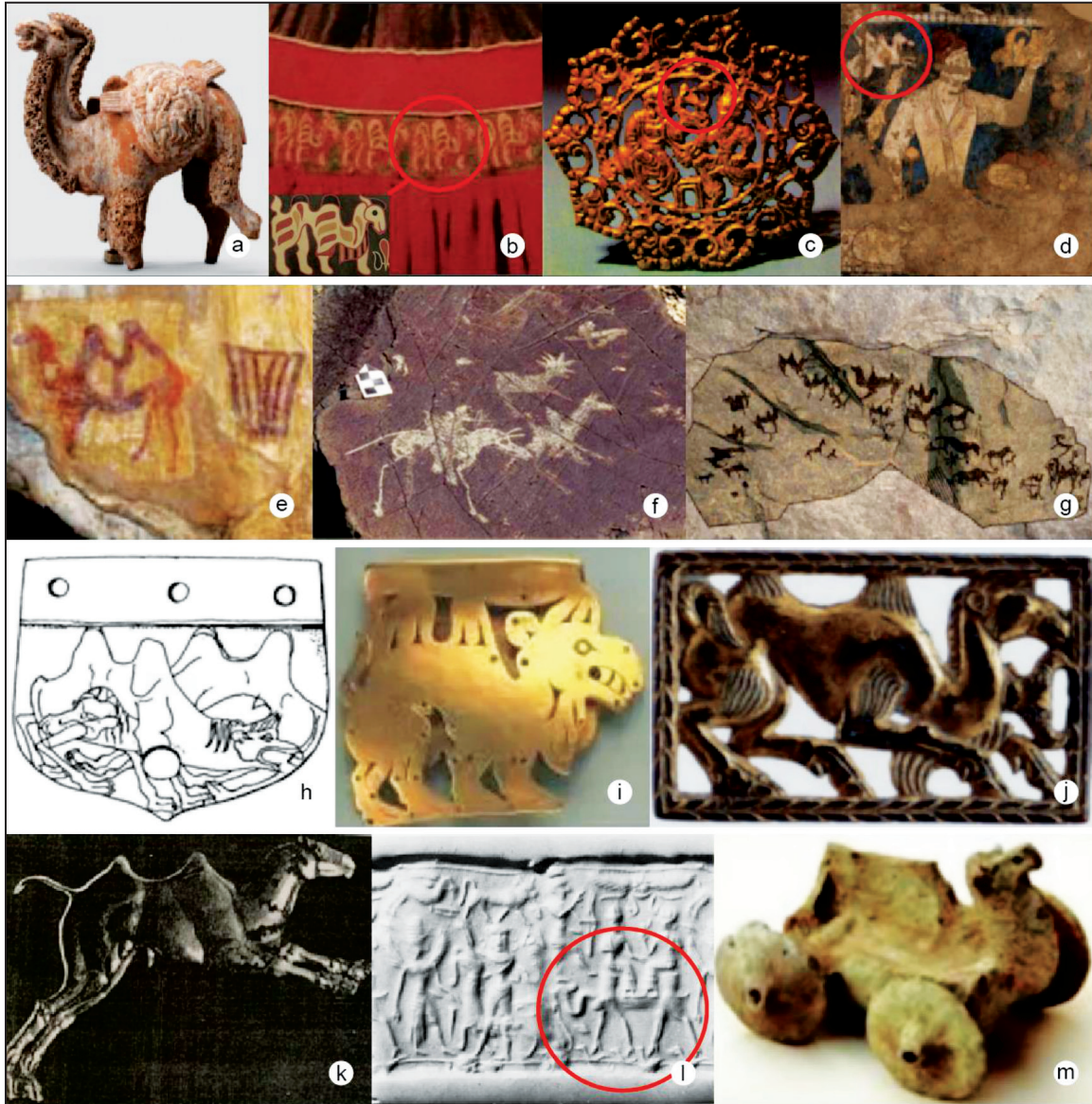


Fig 1. Some images of Bactrian camel-shaped relics collected from various sources. (a) Pottery figures of Bactrian camel from Tomb M21, Maopo Village, Sui Dynasty. (after Wang 2018; fig 26); (b) Camel-patterned woolen skirt from Shanpula Cemetery (Reconstructed), Han Dynasty. Xinjiang Museum. Photo: H. Wurihan, Summer, 2024; (c) Bronze figurine of a deity-couple from Ak - Beshim, 8th century CE. (after Marshak, 2016; colour picture3); (d) Winged camel Wall painting from Panjikent, 8th century CE. (after Jiang, 2004; fig 7-7); (e) Ochre petroglyph of a Bactrian camel, from the Shulgán-Tash (Kapova) Cave, Ural region of Russia, 19,000–16,300 BP . (after Yury, 2018; fig 2); (f) Bactrian camel petroglyphs from Mongolia, Bronze-Early Iron Age. (after Esther, 2007; fig 7); (g) Bactrian camel petroglyphs from Kazakhstan, 3BCE-2BCE. (after Esther and Viktor, 2020; p. 102, fig 3.); (h) Bactrian camel figurine from Orlat Cemetery Tashkent, 2nd century BCE or later. (after Elena, 2000; fig 2-3); (i) Gold Camel unearthed at Filippovka, southern Russia, 4th century BCE. (after Elena, 2000; fig 4); (j) Bronze camel figure from the Ordos region northern China, Bronze Age. (after Emma, 2002; fig 112) ; (k) Gold Bactrian camel from Iran Hamadan, 404BCE–359 BCE. (after Richard, 1990; fig 73); (l) Cylinder seal with camel from Syria, 1800BCE–1600BCE. (after Edith, 1977; fig 1); (m) A Pottery model wagon pulled by camel, unearthed in Turkmenistan, 2000BCE - 1600BCE. (after Richard, 1990; fig 68).

resources, including journal articles, research reports, scholarly monographs and graduate theses. Notable sources including, Rock Art of Yinshan Mountains (Gai, 1986; Wang and Zhang, 2012); Mongolian Rock Art (Lakhusuren, 2022); Rock Art Chronicles of the Golden Steppe (Esther and Viktor, 2020); Fantastic

Beasts of the Eurasian Steppes (Petya, 2018); Nomadic Art of the Eastern Eurasian Steppes (Emma, 2002); Camel imagery in Animal style art (Elena, 2000); Camel Scenes in the Rock Art of the Minusinsk Basin (Mukhareva, 2007); Illustrated History of Central Asian Art and Culture (Albert, 2005); Encyclopedia

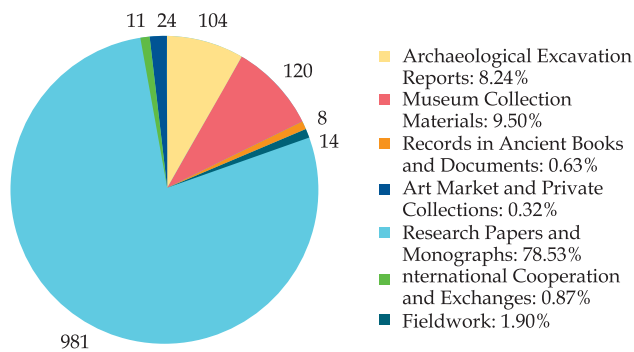


Fig 2. Statistics of Bactrian camel-shaped relics collected by multiple channels.

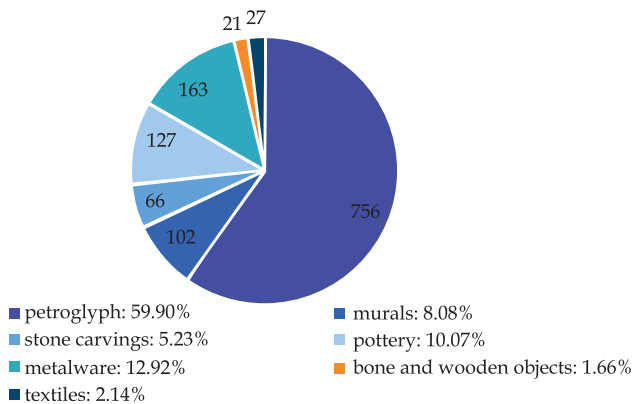


Fig 4. Statistics of Bactrian camel-shaped relics by material category.

of Chinese Bronzes (Zheng and Song, 2005); The Turks, the Sogdians and Goddess Nana (Marshak, 2016); Hotan Oasis (Aurel and Fang, 2020); A Study on Tang Dynasty Gold and Silver Ware (Qi, 1999); From the Lapis Lazuli Road to the Silk Road (Shen, 2007); Studies on the Archaeological Cultures of the Northern Grasslands (Wuen, 2007); Northern Ethnic Archaeology (Wei, 2016); Archaeology of Mongolia (Tseveenjav, 2007); Melodies of the Pastoral Age (Ke, 2015; Sun and Hu, 2015; Zhang, 2015); A Study on the Scythian Buckle (Kim, 2006); Art of the Bronze Age (Pittman, 1984); The Hunter, the Stag and the Mother of Animals (Esther, 2015); The Camel and the Wheel (Richard, 1990); From Archaeological Materials to the Spread of Early Camels in the Western Regions (Chen, 2017) and so on. We have yielded an abundance of valuable visual and textual data concerning Bactrian camel-shaped relics from these scholarly works. Some of such relics from different countries and regions are illustrated in Fig 1 (c-m).

International Cooperation and Exchanges

In addition to domestic efforts, researchers from Mongolia, the United States, Japan and Tajikistan were commissioned to collect photographs and metadata on Bactrian camel relics within their



Fig 3. Geographical distribution of Bactrian camel-shaped relics.

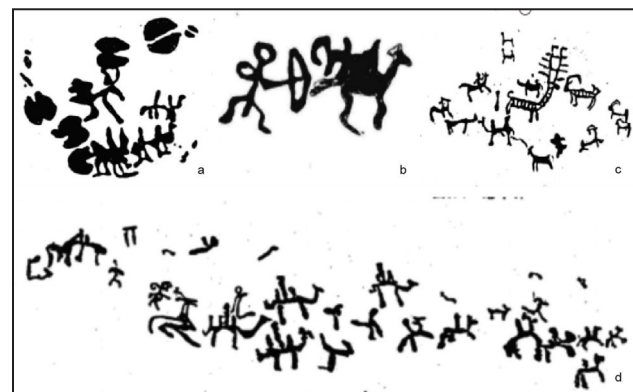


Fig 5. Petroglyphs of Bactrian Camels in the Yinshan Region. (a) Camel Herds and Hoofprints. (after Gai, 1986; fig 1304); (b) Camel Hunting Scenes. (after Wang and Zhang, 2012; fig921); (c) Camel Herding Activities. (after Gai, 1986; fig 342); (d) Camel Caravans Expedition. (after Gai, 1986; fig 975).

respective institutions and field research initiatives. This international collaboration significantly broadened the geographic and cultural scope of the data collected.

Field Investigations

In 2019 and 2022, we conducted field investigations at the Mandala Mountains, Yabulai Mountains and Langshan Mountains, yielded firsthand information on petroglyphs depicting Bactrian camels and enriched the empirical foundation of this study.

A total of 1,262 images and corresponding metadata of Bactrian camel-shaped cultural relics were collected through the aforementioned multiple channels, forming a relatively comprehensive source database. Their distribution is shown in Fig 2.

Classification Based on Geography and Chronology

The collected relics can be categorised into two primary types: immovable cultural relics such

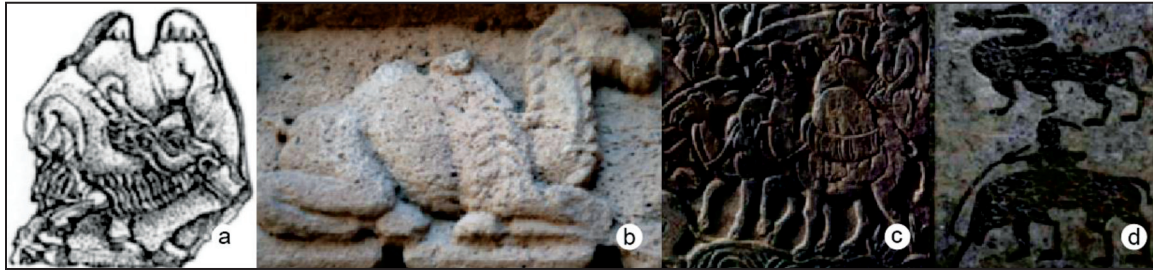


Fig 6. Camel-shaped relics carved in stone. (a) Stone amulet from the Margiana, 2nd millennium BCE. (after Elena, 2000; p. 200, fig 3-1); (b) Two-humped camels of the Temple of Allat, Hatra, 2nd century CE. (after Stefania and Rowaed, 2022; fig 5); (c) Stone carving from the Tomb of Shi Jun, 579CE. (after Ge, 2015; fig 9); (d) Stone relief from Xiaoxian County, Han dynasty. (after Zhu, 2012; p 258, fig 5-9)

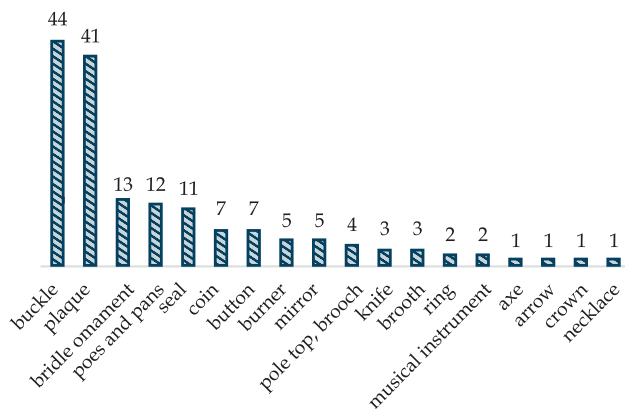


Fig 7. Statistics of Cultural Relics of Bactrian Camels Made of Metal Materials.

as petroglyphs and murals and movable relics including portable objects such as bronze ware and pottery figurines. Chronologically, the relics span from roughly the Paleolithic era to the mid-medieval period. Geographically, their distribution extends from the Greater Khingan Range in the east to the Danube River Basin in Europe in the west and from the northern edge of the Iranian Plateau in the south to the southern boundary of the Siberian taiga in the north, covering a wide range of territories including Mongolia, China, Kazakhstan, Russia, Iran, Uzbekistan, Kyrgyzstan, Tajikistan and Turkmenistan, as shown in Fig 3. It is important to note that due to the portable nature of small Bactrian

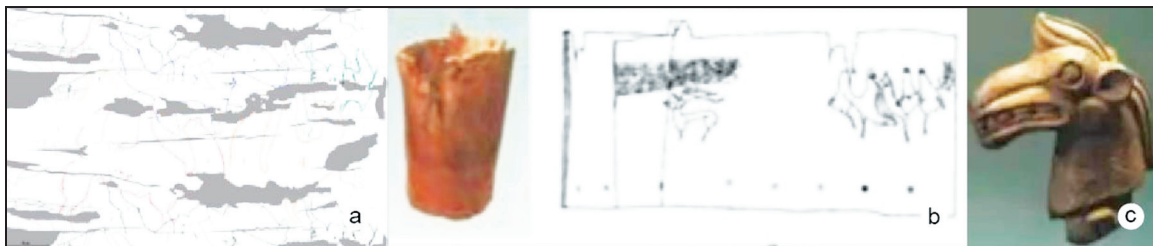


Fig 8. Camel-shaped relics Made of Bone and Wood. (a) Mammoth ivory engraved with camel motifs from Siberia, 13,100-13,005 (BP). (after Yury, 2020; fig 4); (b) Wooden barrel from Zagunluk, the Spring and Autumn and the Warring States Period. (after Chen, 2017; fig 10); (c) Wooden bridle ornament from the Altai region, 6th century BCE. (after Elena, 2000; p. 201, fig 4-1).

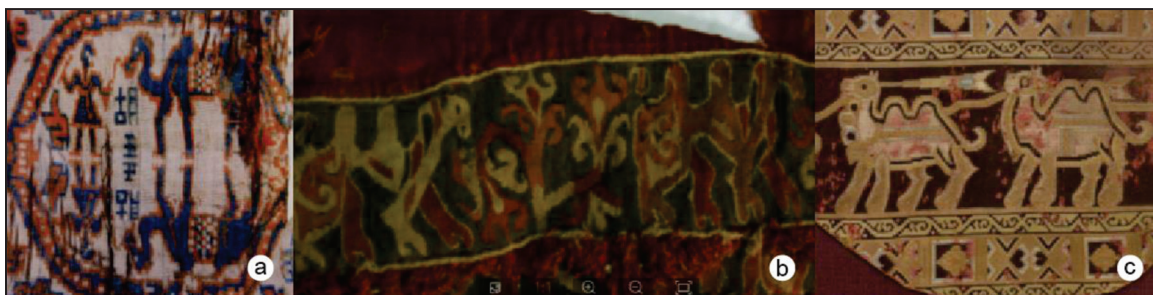


Fig 9. Textile relics depicting Bactrian camel motifs. (a) "Hu Wang" and camel from the Astana Tombs in Turpan, 420 CE-589 CE. (after Bai, 2011; p. 039, figure); (b) Camels and stylised tree patterns from Sampul Tomb No. 6, 202 BCE - 220 CE. (after Petya, 2018; p. 206, fig 3.31); (c) Textile relic from the ancient Abbey of Saint Josse, before 961 CE. (after Petya, 2018; p. 207, fig 3.33).

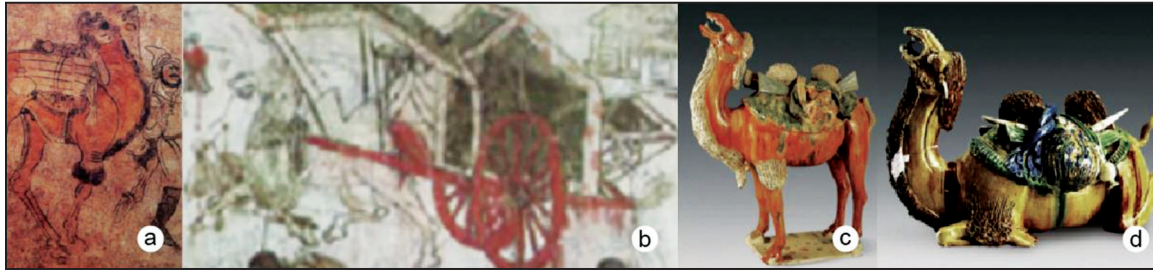


Fig 10. Bactrian camel relics representing transportation and mobility. (a) Mural from the Anguo King Tomb from Luoyang, Tang Dynasty. (after Wei, 2014; p. 37, fig 22); (b) Camel-drawn cart from M4 tomb of Guanshan, Liao Dynasty. (after Wei, 2014; p. 43, fig 29); (c) and (d) Pottery camel figurine from Shanxi Province, Tang Dynasty. (after Sha, 2021; fig 1 and fig 3).

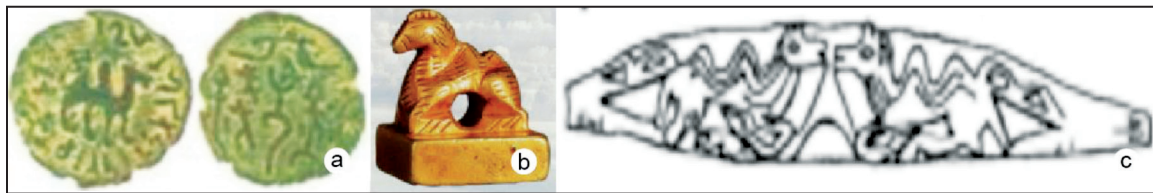


Fig 11. Bactrian camel-shaped cultural relics representing symbols of wealth and political power. (a) Han-Fa bilingual coin from Xinjiang Akspir Ancient City, Han Dynasty. (after Sun, 2016; p. 23, fig 32-33); (b) Golden Camel Seal from Inner Mongolia Museum, 266 CE-316 CE. (after Zhang and Hu, 2015; p. 79, fig); (c) Wooden diadem from Ulandryk I burial Altai mountains, 6 BCE-2 BCE century. (after Elena, 2000; p. 201, fig 6-4).

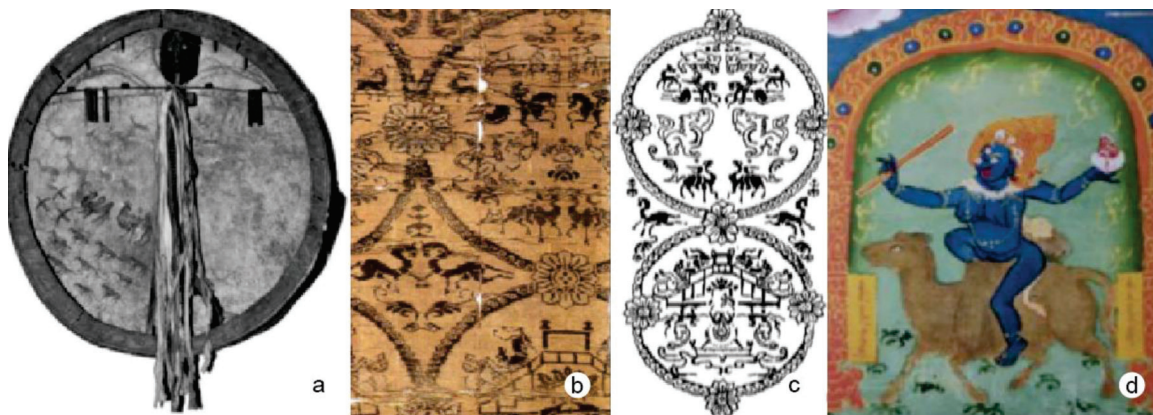


Fig 12. Bactrian camel-shaped relics reflecting religious beliefs. (a) Altaic shamanic drum from the Biysk Local History Museum (after Andrzej, 2012; p. 192, fig14-1); (b) and (c) Tapestry of the Sun God from the Astana Tombs, Northern Dynasties. (after Zhao and Qi, 2011; p. 91, fig4); (d) Winter Goddess Riding a Bactrian Camel from the Kanjur, 1765 CE. (after Laxiseleng, 2001; p. 9, fig 003-5).

camel-shaped relics, the current location or excavation site of a relic does not necessarily represent its place of origin. This presents a challenge that is difficult to verify. Scholars often rely on stylistic analysis and cultural contextualisation to hypothesise and delimit the origin of such probable relics. In this study, the geographical and chronological classification of Bactrian camel-shaped relics is primarily based on documented sources and museum-provided provenance data.

Classification Based on Material and Content

The collected relics are categorised based on their materials into seven types: petroglyphs, stone

carvings, murals (including painted bricks), pottery, metalware (encompassing bronze, gold, silver and so on), bone and wooden relics and textiles, their quantity and proportion are shown in Fig 4. Each category of Bactrian camel-shaped relics conveys distinct types of cultural, technological, or symbolic information.

Petroglyphs

Petroglyph is an important evidence for early humans to express themselves and their views on the world. As a primary material source for understanding the intellectual and cognitive development of pre-literate societies, petroglyphs have experienced the passage of millennia, bearing invaluable historical



Fig 13. Artistic representations of Bactrian camels in various cultural relics. (a) Scythian golden dagger from Azov Kurgan, Russia, 1st century CE. (after Elena, 2000; p. 198, fig 2 and p. 203, fig 6-1); (b) Sogdian silver ewer with winged Bactrian camel from The Hermitage Museum, 7th century CE. (after Shen, 2007; p. 513, fig 20-32); (c) Pottery figurine of camel-mounted musicians from Shanxi, Tang Dynasty; (after Zhang, 2015; p. 259, picture) (d) Wood engraving from Dandan - Uiliq, 6th century CE-8th century CE. (after Shen, 2007; p. 555, fig21-44).



Fig 14. Bactrian camel-shaped cultural relics reflecting Daily Life utensils. (a) Bronze mirror from Volga River region, Russia, 8th-7th century BCE. (after Emma, 2002; fig 167); (b) Silver lamp from Tulushevo village, 7th century BCE. (after Marshak, 2019; colour picture 4; (c) and (d) Pottery pot unearthed at the No. 1 cemetery in Chawuhu, Xinjiang, 1000 BCE-500 BCE. (after Chen, 2017; fig 7).

significance (Anati, 2019). Regarded as the oldest and most enduring artistic medium, petroglyphs remain critical to the study of ancient art history despite the considerable challenges in chronological dating (Chen, 2002). This study has collected a total of 756 Bactrian camel petroglyph images, primarily distributed in the regions northern China (about 448), with dense concentrations in the Yinshan Mountains (Gai, 1986; Wang and Zhang, 2012) and the Badain Jaran region (Gai, 1997; Fan and Fan, 2014). Other significant distributions include Kazakhstan (200) (Esther and Viktor, 2020; Tashbayeva *et al*, 2001), Mongolia (77) (Chuluun and Tseveendoy, 2016; Esther, 2007; Tsevernjav, 2007; Lakhsuren, 2022) and Siberia (9) (Yury, 2018; Yury *et al*, 2020; Zabyako *et al*, 2022), some of them as shown in Fig 1 (e-g). Chronologically, these petroglyphs span from the Paleolithic era to approximately 1200CE. Technically, they can be categorised into two major methods: pigment-based painting and stone engraving. The earliest known camel-shaped artifact is the ochre

petroglyph discovered in the Shulgan-Tash (Kapova) Cave in the southern Urals of Russia, radiocarbon-dated to approximately 19,000-16,300 BP (Alexander, 2018; Yury, 2018; Ekaterina *et al*, 2018). This petroglyph realistically depicts a standing Bactrian camel accompanied by enigmatic symbols, as seen in Fig 1(e). While, Fig 5 shows Bactrian camel petroglyphs from the early Stone Age to the late Bronze Age of Yinshan (Gai, 1986; Wang and Zhang, 2012), which clearly reflect the great changes in the relationship between ancient inhabitants and camels in this area and the development of local socio-economic structures.

In general, Bactrian camel petroglyphs reflect the ability of ancient humans to observe and use Bactrian camels and began to record Bactrian camels in life with paintings, which is the bud of Bactrian camel plastic art.

Stone Carvings

Another category of camel-shaped relics made from stone is the stone carving, which includes both

three-dimensional sculptures and two-dimensional stone reliefs or engravings. A total of 66 such relics were collected in this study, with the majority unearthed in China (53) and Iran (9), some of them as shown in Fig 6. Among them, the stone amulet of fighting camels (Elena, 2000) unearthed at the site of Margiana should be the earliest cultural relic to reflect the camel as a protective God, as shown in Fig 6(a). These stone carvings reflect both the development of sculptural techniques from rudimentary forms to highly refined representations and the evolving aesthetic sensibilities of ancient civilisations.

Pottery and clay relics

The production of pottery has a long and rich history, dating back more than ten thousand years (Xu, 2013). In the course of the development of human civilisation, pottery as an important living utensils, its emergence is closely related to the social life and technological progress at that time. The study collected 127 images pottery relics, of which 124 were pottery figurines, including 7 single camel figurines, 48 figurines depicting leading camels or riding camels and 69 figurines depicting camels carrying various goods, some of them as shown in Fig 1(a), Fig 10(c,d) and Fig 13(c). The other three pieces are two pottery pots (see Fig 14(c)) and a pottery cart (see Fig1(m)). This camel cart unearthed at the Margiana site in southern Turkmenistan, dating from 2000BCE to 1600BCE, is currently considered to be the earliest physical evidence of domestication of Bactrian camels (Chen, 2017; Richard, 1990). Due to weathering and degradation, clay sculptures are relatively rare, with only two camel-themed clay relics collected in this study. The exquisite workmanship of Bactrian camel pottery relics shows the precise control and firing process of pottery craft at that time and is used in specific cultural scenes, reflecting the development of social culture and religious beliefs.

Metal relics

The maturity of bronze-smelting techniques marks a pivotal point in the emergence of camel-shaped bronze relics. Between 3000 BCE and 2000 BCE, in the regions around the Amu Darya and Syr Darya rivers in Central Asia, the growth of pastoral economies led to increased dependence on Bactrian camels. It was during this period that the earliest decorative camel-shaped bronze ornaments began to appear. This study has collected 163 images of camel-shaped metal relics. These are mainly distributed across northern China beyond the Great Wall (76), Kazakhstan (11), Mongolia (22), Russia (22), Iran

(7), Tajikistan (3), Turkmenistan (4) and Syria (3), as shown in Fig1(i) to Fig 1 (l). Chronologically, the relics span from the Paleolithic period to around 1200 CE. These relics were often affixed to horse tack, clothing ornaments and other personal items, statistics of their types as shown in Fig 7. These relics are often minimalist, using lines to outline the basic outline of a Bactrian camel, or setting various gemstones to outline the Bactrian camel shape, reflecting the profound appreciation of the nomadic community for the practical value of camels and also marking a new development of unique artistic expression in the region. Bronze, gold and silver relics indicate a significant advancement in metallurgy and manufacturing techniques. These valuable items also illustrate increasing social stratification, the accumulation of wealth and the consolidation of political power.

Bone and Wooden relics

Bone carving and wood carving, as ancient forms of artistic expression, can be traced back to the Neolithic period (Xu, 2013). However, due to their susceptibility to environmental factors such as air exposure, light, temperature fluctuations, humidity, as well as damage from insects and microbial corrosion, such relics are difficult to preserve. Consequently, this study was able to collect only 14 images of bone and wooden relics, some of them as shown in Fig 8. One notable example is a carved fighting camel motif on a mammoth ivory from Western Siberia. Radiocarbon dating has determined the ivory's age to be between 13,100 BP and 13,005 BP. The surface of the ivory is engraved with two pairs of Bactrian camels engaged in combat (Yury *et al*, 2020). However, as the camels are depicted with arrows on their bodies, the author suggests that the carvings may have been added at a later time, as shown in Fig 8 (a). Bone and wooden relics of Bactrian camels demonstrate early human adaptability in utilising diverse materials for artistic expression. These carvings reflect a variety of sculptural techniques and may also indicate evolving societal needs and advancements in production technologies.

Textile relics

According to archaeological excavations, there were linen and wool fabrics in the western end of the Eurasian steppe around BC6000 (Xu, 2013). With the domestication of Bactrian camels, the close relationship between animal husbandry tribes and Bactrian camels and the prosperity of East-West trade after the opening of the Silk Road, the image of

Bactrian camels frequently appeared in textiles along the Silk Road. This paper collected 27 relics, some of them as shown in Fig 9 and Fig 1(b). Bactrian camel textile relics illustrate the continuous development of textile technology, including spinning, weaving and dyeing and the Bactrian camel patterns on textiles may also reflect trade and cultural transmission.

Camel-shaped Wall painting relics

With the progression of civilisation, especially from the Qin and Han dynasties onward, wall paintings in palaces and tombs flourished (Xu, 2013). It is during this period that Bactrian camels have also found their way into mural art. This study collected a total of 102 wall paintings featuring camel motifs, primarily excavated in northern China (94), with additional examples from Tajikistan (7) and Tunisia (1). The compositional content of these artworks can be categorised into three primary types: camels as transportation, including pack camels and camel carts (87); pastoral scenes, such as nursing camels and music-playing while riding (6); and deified camel imagery (9), some of them as shown in Fig10(a, b). Notable examples include murals unearthed from the ancient city of Pianzhikent, such as the divine couple holding a camel effigy and a winged camel mural associated with the goddess Nana (Marshak, 2016), as shown in Fig 1(d). These wall paintings exhibit more advanced artistic techniques and use of pigments and the camel scenes vividly reflect the social life, production activities and cultural exchanges of the time.

Functional Classification of Bactrian Camel relics

Since Bactrian camel relics are mostly unearthed in tombs except Petroglyphs, there are many speculations on their exact function. These relics may have served as practical items used in daily life, funerary goods intended for use in the afterlife, symbols of wealth to be carried into the neither world, or a combination of these functions. This ambiguity brings rich exploration dimension and mysterious connotation to the study of ancient Bactrian camel relics.

Transportation-Related relics

On the Silk Road, the Bactrian camel played an irreplaceable role as a primary transport animal. Numerous artifacts were created based on Bactrian camel. These camels are often shown laden with panniers, packsaddles, or pulling carts, with some cargo containers bearing intricate decorations. These details effectively recreate the realistic imagery of

fully loaded caravans traversing vast distances, offering a vivid portrayal of bustling trade along the Silk Road. From the depicted contents, it can be inferred that these camels were used to carry silk, spices, tea and various other commodities, providing direct evidence for the study of ancient trade routes and commercial scales. Additionally, small wooden or bronze camel relics may have functioned as ornamental components on ancient chariots or boats, symbolising the crucial role of Bactrian camels in ancient transportation systems. The imagery demonstrates during the Tang and Liao dynasties, camels were actively used for transporting goods and people, reflecting the period's logistical practices, economic exchanges and everyday life, as shown in Fig 10. These relics also reveal regional and ethnic variations in camel utilisation and illustrate both the technological and artistic sophistication of transportation modes at the time, providing valuable material evidence for studies in ancient transportation and social history.

Symbols of Wealth and Power

Bactrian camels frequently appeared on ancient coins, seals and aristocratic ornaments, serving as emblematic symbols, as shown in Fig11. These relics indicate that Bactrian camels were not merely utilitarian beasts of burden but also facilitators of economic prosperity, illuminating the exceptional symbolic role camels played in ancient political hierarchies, cultural systems and social stratification.

Religious and Spiritual Symbolism

In Buddhist cave murals or other religious architectural ornamentation, Bactrian camels are frequently imbued with sacred connotations, as shown in Fig 1 (a,b,c,h,i,l) and Fig 12. These relics underscore the camel's significant role in religious devotion and spiritual symbolism. Within shamanistic practices and related spiritual traditions, the Bactrian camel was endowed with specific sacred meaning—potentially as a mediator between the human and divine realms (Andrzej, 2012). These visual materials are a direct source for the study of ancient religious ideologies, belief systems and mythological narratives, which can more accurately reveal the contours of ancient spiritual life and the worship of supernatural forces.

Artistic themes and creative representation

In the field of painting, ancient artists depicted Bactrian camels through both meticulous and expressive styles, as shown in Fig 13. These visual

materials underscore the diversity and aesthetic value of the Bactrian camel as a subject of artistic creation. Relics of camels are found across various regions and media, highlighting their widespread presence in ancient artistic practices. They also illustrate the stylistic characteristics, aesthetic ideals and intercultural exchanges of distinct ethnic groups. As both works of art and cultural documents, these relics constitute significant evidence for the study of ancient art history and the transmission of artistic traditions, attesting to the cultural richness and creative vitality of past civilisations.

Daily life utensils

This category includes relics such as mirror, vessels, light that reflect the integration of the Bactrian camel into everyday life, some of them as shown in Fig 14. These relics illustrate how the image or shape of the Bactrian camel was incorporated into objects of daily use, suggesting the camel's familiarity and cultural significance in ancient life. Beyond fulfilling utilitarian functions, these objects also served decorative and symbolic purposes. They offer valuable insights into the lifestyles, technological advancements and artistic tastes of historical societies and serve as important references for the study of daily life and material culture in antiquity.

Analysis and Discussion

This study collected information on Bactrian camel-shaped relics through a wide range of channels, each offering complementary advantages. Archaeological excavation reports provide firsthand data on unearthed relics but are limited by excavation scope and the level of detail in documentation. Museum collections offer rich and accurate resources, yet access can be restricted due to exhibition schedules and institutional limitations. Ancient texts reflect historical perceptions of Bactrian camels but often present mystified or fragmented accounts. Academic publications and monographs constitute the primary source of data, accounting for 78.53% of the total, although discrepancies in scholarly interpretation remain. Data from the art market and private collections are difficult to access and often raise questions of authenticity. International collaboration and fieldwork have yielded meaningful findings, but these are limited in scope and sample size. Overall, information collection remains constrained by uneven geographic and chronological distribution.

Classification by region and chronological period helps construct the spatial-temporal framework of the relics; however, the provenance

of portable relics remains difficult to verify. Classification of materials reveals the distinct characteristics of different types of cultural relics. Unfortunately, the preservation conditions for some materials are extremely strict, so the proportion of existing Bactrian camel-shaped cultural relics cannot represent the true proportion of artworks that have existed in the history. Functional classification, while enriching interpretive perspectives, is largely based on inference and cannot always accurately determine the original purpose of the relics. Overlaps between categories are inevitable—for example, a religious artifact may also embody artistic value and serve as a symbol of wealth.

The wide range of relic types highlights the diverse roles of the Bactrian camel in ancient societies. Petroglyphs and murals illustrate early human observation, utilisation of camels and the development of visual expression. Metal relics demonstrate advancements in metallurgy and the emergence of social hierarchies. Textiles reflect technological progress in spinning, weaving and dyeing, as well as the dynamics of trade and cultural diffusion. As a means of transportation, camel imagery attests to ancient trade and mobility. As symbols of wealth and power, these relics reveal the socioeconomic and political hierarchies of their time. In religious and spiritual contexts, camel motifs served as vessels for religious expression and folk belief. When used as subjects of artistic creation, they reveal the stylistic and aesthetic tendencies of various periods and cultures.

Conclusion

This study represents the first comprehensive and systematic collection and classification of ancient Bactrian camel-shaped cultural relics from the Eurasian Steppe and its surrounding regions. By establishing a primary database comprising 1,262 images and associated information, the research lays a foundational framework for future in-depth investigations.

Through classification by region, chronology, material and function, the study reveals the distinctive characteristics and values of the relics from multiple perspectives. The findings underscore the close relationship between ancient human societies and the Bactrian camel and highlight its multifaceted significance across artistic, cultural, economic and religious domains.

While this research has achieved meaningful progress, there remain limitations regarding the

completeness of data collection and the precision of classification. Future studies may benefit from the application of advanced digital technologies to broaden data acquisition channels and promote interdisciplinary collaboration. These developments will facilitate deeper analysis of the cultural connotations of camel-shaped relics and further illuminate the Bactrian camel's role in ancient societies and its influence on transregional cultural transmission.

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