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| A red circle with a white letterDescription automatically generated | Supplementary material for Monteith, F., Z. Tang, L. Chen, L. Tang, L. Liu, K. He & C. Yu. 2025. **Building on written texts****: anthropological and archaeometric approaches to post-Qin archaeology in China.** *Antiquity* 99.Author for correspondence ✉ 9768612@qq.com |

# Section 1: Bibliometric analysis of articles and conferences

China has a substantial body of archaeological research, but language barriers restrict global access. Wei *et al*. (2023) report that over 40,000 archaeology papers were published in Chinese Core Journals (CCJs) in the past 30 years, compared to only about 1200 in World Core Journals (WCJs), making just 1% of Chinese research accessible to non-Chinese-speaking scholars. Wei *et al*. (2022) also find that only 16% of CCJ articles involve interdisciplinary research, compared to 84% in WCJs. Additionally, 72% of WCJ papers focus on the pre-Qin period, while only 48% of CCJ articles cover the post-Qin era. However, no direct comparison was made between these two categories.

**Table S1. Number of Papers published in CCJs 2004–2023**

|  |  |  |
| --- | --- | --- |
| Journal | 期刊 | Number of papers published 2004–2023 |
| *Kaogu (Archaeology)* | 考古 | 2067 |
| *Wenwu (Cultural Relics)* | 文物 | 2087 |
| *Kaogu Xuebao (Acta Archaeologica Sinica)* | 考古学报 | 367 |
| *Huaxia Kaogu (Chinese Archaeology)* | 华夏考古 | 1312 |
| *Renleixue Xuebao (Acta Anthropologica Sinica)* | 人类学学报 | 710 |
| *Nongye Kaogu (Agricultural Archaeology)* | 农业考古 | 355 |
| *Disiji Yanjiu (Quaternary Studies)* | 第四纪研究 | 306 |

In order to investigate the perception that there is limited archaeometric research being undertaken in post-Qin archaeology in China the papers published in 7 CCJ (Table S1) were analysed. These journals were selected on the basis of their perceived significance within China. Kaogu and Kaogu Xuebao are both published by CASS (Chinese Academy of Social Sciences), while Wenwu is published by the National Cultural Heritage Administration. Renlei Xuebao and Disiji Yanjiu published by CAS (Chinese Academy of Science). Nongye Kaogu was selected as an example of a specialised, in this case archaeobotanical journal in Chinese which has been publishing for over 20 years. The papers published in each of these journals were categorised according to the focus (pre-Qin, post-Qin, methodology/theory and non-Chinese) and article type (traditional research papers (i.e. those focusing on the typological or iconographic study of artefacts, excavation reports, reviews) and archaeometric). Although the number of pre- and post-Qin papers published in these journals (52% to 41%), significantly more papers use traditional methods (84%) than archaeometric methods (16%). Since these statistics align with the findings presented by Wei *et al* (2022, 2023). we take this to mean that our sample size is sufficient. In comparing these two categories we find that 95% of the post-Qin papers use traditional methods, in contrast to 77% of pre-Qin papers, although this varies between journals. Both the number of articles and the type of article published in each of these journals varies (Figure S1).

**Figure S1. Pie charts showing the number of articles published in each journal divided by time period and research methods.**

In examining articles published in CCJs over the course of the 20 years from 2003 –2023, the number of articles based on archaeometric analyses has gradually increased (Figure S2a). However, when this is divided by the time period on which the articles are focused it can be seen that this increase in archaeometric analyses is focused on pre-Qin period research (Figure S2b). This holds true across all six of the journals analysed (Figure S3).



(a)



(b)

**Figure S2. a) Graph showing the research methods (traditional versus archaeometric) used in articles published in CCJs from** **2003 –2023; b) Graph showing the research methods used in articles published in CCJs from 2004–2023 divided by time period, region and research type.**



**Figure S3. Pie charts showing articles published in CCJ from 2004–2023 divided by research type, time period and journal.**

# Section 2: History of research

Chinese archaeology has its own clear characteristics and methodologies based on a clear historiographic orientation (von Falkenhausen 1993). The first scientific excavation of a site in China was the excavation of the Yinxu site in Anyang, Henan Province, in the 1920s and 1930s. The site was located by tracing oracle bones, which had attracted the attention of antiquarians for their inscriptions, back to the site from which they were being dug and sold as medicinal dragon bones (Liu & Chen 2012). These excavations are generally regarded as the beginning of archaeometrical archaeology and saw the preliminary metallurgical analyses of a portion of the bronzes excavated (Carpenter 1933; Liu 1933), along with studies on the minerals required for metal production and the development of smelting techniques (Liu 1933). Nascent zooarchaeological research was also undertaken, including the examination of turtle shells and mammals excavated from the site (Bing 1931; De & Yang 1949), although significantly more attention was paid to their inscriptions.

Metallurgical research continued with analyses of Central Plains (Hanqing 1954) and Shizhaishan Culture bronzes from Yunnan Province (Yang 1958), in addition to studies of metalworking technologies (Zhou 1956; Hua *et al.* 1960; Shu 1973). In parallel, archaeologists began to raise some important questions concerning animal domestication and migration and introduced new concepts such as taphonomy (Yang 1956), with pig domestication examined using age profiles at the Neolithic site of Banpo, in Xi’an (Li & Han 1959), and Zhou (1963) undertaking some of the first pollen spore analyses on the cultural layers therein.

The opening of China during the 1980s saw the introduction of new theoretical and methodological models, including Processual Archaeology, which encouraged a more conscious appreciation of the significance of archaeometrical evidence for understanding ancient societies (Chang 1986). Osteoarchaeology, centred in the craniofacial morphological characteristics and measurement data of ancient peoples, began to be used to discuss the ethnicity and biological distances of different populations (Han & Pan 1987), while an increasing number of archaeobotanical studies were devoted to phytolith examination (Huang 1982, 1986) as well as plant pollen analysis (Chen 1984). It was also in the 1980s that lead isotope analysis started to be systematically applied to the provenancing of Chinese bronzes (Jin 2004).

From the early 1990s archaeobotanical analysis made inroads into archaeological practice in China. While focusing on rice phytoliths (Gu 1994; Jin *et al*. 1999; Zheng and Fujiwara. 1999), this period also saw the first starch grain analysis on pottery unearthed from the Wubao cemetery in Hami, Xinjiang (Yu 1993). In the meantime, the first generation of zooarchaeologists who were trained in the scientific analysis of animal bones, such as Jing Yuan and Ma Xiaolin, started to promote systematic zooarchaeological methodologies to record finds, such as the use of the Minimum Number of Individuals (MNI).

From the 2000s the increasing number of salvage excavations associated with national developmental projects (e.g., *The Great Development of the Western Regions*), has allowed the investigation of a variety of sites, prompting the emergence of new research questions and analytical methods. Zooarchaeology has become an increasingly prominent component of archaeological studies in China. It is strongly rooted in prehistory with the main focuses of interest being domestication (Ma 2007; Yuan 2010; You *et al*. 2016), regional trajectories (Flad *et al*. 2007; Yuan *et al*. 2007), secondary products (Li *et al*. 2014; Brunson *et al*., 2016; Yu 2020), craftsmanship (Campbell *et al*. 2011; Hou *et al*. 2018) and, more recently, the relationship between animal resources exploitation strategies and evolving socio-economic complexity (Hou *et al*. 2019; Li *et al*. 2020; Festa *et al*. 2023). Innovative analytical methods – such as ancient DNA, isotopes and teeth thin section analysis – have been gradually introduced, allowing the investigation of different aspects of human-animals interaction, such as ancient diets and mobility (Zhao *et al*. 2015; Cheng *et al*. 2017; Qu 2019). The early 2000s saw a marked increase in archaeobotanical research in China, with flotation starting to be used systematically (Zhao 2004). Greater collection of data has allowed to trace the domestication and spread of different crops across China, including millets, barley and wheat (see e.g., Jin 2007; Liu & Chen 2012: 92). In the same period, there was an increase in research focusing on lead isotopes (Zheng 2008) and trace elements (Qin *et al*. 2005) provenance methods were introduced into archaeometallugurical research in China.

 Domestication and the spread of animals and plants have remained major research focuses in both zooarchaeology and archaeobotany, therefore most research has centred in the Neolithic and Bronze Age. Similarly, the analysis of pre-Qin and prehistoric bronzes and copper-alloys has dominated the archaeometallurgy discipline. The Beijing University of Science and Technology, the largest metallurgical archaeological institution in China, for instance, published a total of 25 articles and 19 masters and doctoral theses during the period 1985 to 2010 (Sun *et al.* 2010), yet of these only three articles and two masters theses focus on the post-Qin period.

In contrast, the study of human remains, is relatively more accepted and understood in post-Qin era sites although again with caveats, in that the majority of studies focus on those bones recovered from elite contexts. In the pre-Qin period the craniofacial morphological characteristics are still largely used to categorize regional population according to physical types (Zhu 1998, 2002a, 2002b, 2006). Relatively less work done in the post-Qin period has been aimed at presenting evidence of the presence or absence of ‘non-Han’ individuals in the archaeological record. This focus has led to multiple studies on human bones in Datong, originally the capital of the Northern Wei Dynasty (386CE-354CE) Pingcheng (平城), since the dynasty is a ‘known’ conquest dynasty with the Northern Touba people coming in from the north west to rule the central plains (Cui 2019; Li J. 2021; Li P. 2021). This emphasis also spurred detailed analyses of remains from the Ming and Qing Dynasties (Li *et al.* 2022). Analyses have also been undertaken on human remains excavated from Chang'an, the capital of the Western Han Dynasty (206 BCE–25 CE) and subsequently the eponymous capital of the Tang Dynasty. Analyses of human remains recovered during rescue archaeology projects have shown evidence of populations from a variety of backgrounds living in Xi’an during both the Han and Tang Dynasties (Chen 2008), however these studies have almost exclusively focused on the morphology, age and gender of the tomb occupants. Similar research undertaken on human remains recovered from Han, Tang, and Song dynasty contexts in Zhengzhou, Henan province found that the ancient population of northern China was ethnically diverse, with the significant presence of Han people only beginning to emerge during the Song Dynasty (Sun 2013). Studies relating to the development, evolution, lifestyle and nutritional health of the historical population remain scarce. Similarly, research is generally focused on the areas surrounding the historical capitals.

Landscape archaeology has only recently been applied to Chinese archaeology, with most studies focusing on the pre-Qin period, particularly settlement patterns and resource exploitation (Qin *et al*. 2010; Zhang 2010; Peterson & Shelach 2012; Festa & Monteith 2022). The Yiluo project, launched in 1997 in the Central Plains, is a notable exception. It sought to trace socio-political developments from the Neolithic to the Zhou period, using full-coverage surveys, geoarchaeology, palaeobotany, and object analysis to explore changes in population, environment, land use, agriculture, and craft production (Chen *et al*. 2003; Liu & Chen 2007). However, in the post-Qin period, landscape archaeology is often seen as a secondary discipline to 'historical geography' (lishi dili 历史地理), with its application largely limited to regions with fewer historical texts (Feng 2018; Luo 2021).

An underlying issue is that archaeometrical analyses are generally not included in the initial excavation research plans. However, in recent years there has been a significant push from Central Government to increase the analysis of previously excavated sites. This has led to an increase in publication of analyses from well and less well-known sites. For instance, there has been a flurry of publications associated with the terracotta warriors (Yang *et al.* 2019, 2020; Huang *et al.* 2022); these are following on from the third stage of excavation of pit one at the site from 2009-2012. Similarly, the Mawangdui site which was excavated from 1972-1974 has also had a number of archaeometric papers published in recent years (Li 2022; Shen 2022; Liu *et al*. 2024). (See also the Astana Graveyard (Gao *et al* 2021; Liu *et al.* 2022); the tomb of the Tang Princess Yongtai (Yan *et al.* 2016; Fu *et al.* 2022) and Hejia Cun (Lu *et al*. 2017).)

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