frontiers | Frontiers in Earth Science

EDITORIAL
published: 26 May 2022
doi: 10.3389/feart.2022.935558

Editorial: Human-Animal Interactions in Prehistoric China

Shuangquan Zhang[1,2]*, *Manuel Domínguez-Rodrigo*[3], *Dongju Zhang*[4] and *Yue Zhang*[1,2]

[1]Key Laboratory of Vertebrate Evolution and Human Origins, Institute of Vertebrate Paleontology and Paleoanthropology, Chinese Academy of Sciences, Beijing, China, [2]College of Earth and Planetary Sciences, University of Chinese Academy of Sciences, Beijing, China, [3]Department of History and Philosophy, University of Alcalá de Henares, Alcalá de Henares, Spain, [4]Key Laboratory of Western China's Environmental Systems (Ministry of Education), College of Earth and Environmental Sciences, Lanzhou University, Lanzhou, China

Keywords: human-animal relations, prehistoric China, animal bones, social zooarchaeology, taphonomy

Editorial on the Research Topic

Human-Animal Interactions in Prehistoric China

The study of human-animal relations is one of the most dynamic and intriguing topics in archaeology and anthropology (Serjeantson, 2000; Russell, 2012). Over the past decades, our understanding of the deep past societies and the evolutionary trajectory of prehistoric human behaviors has advanced tremendously, fueled partially by the important finds of animal remains from around the world, and also by the prompt application of a plethora of innovative analytical methodologies to key questions, and at key sites (Espigares et al., 2019; Mannermaa and Kirkinen, 2020; d'Errico, 2021; Domínguez-Rodrigo et al., 2021; Domínguez-Rodrigo et al., 2022). Nevertheless, it seems equally clear that on the one hand, the overwhelming majority of achievements in this regard have been obtained from sites in Africa, Europe and near Eastern Asia, with sites from East Asia generally under-investigated; and, on the other, most researchers in China are basically prone to interpret the bones from the archaeological sites as either reflecting environmental issues or resources situated within the landscapes, irrespective of the diverse and complex nature of the interactions between prehistoric humans and their contemporary animals. The research topic for this special issue aims, thus, to compensate such an imbalance in this sub-field of archaeology, and further augment our understanding of the deep-time societies, by bringing together a set of research papers which may potentially highlight a full spectrum of human–animal relationships in China, the key region in East Asia archaeology. Works published in the current research topic provide a variety of perspectives on this shared theme.

As a burgeoning sub-discipline in prehistoric archaeology, stable isotope analyses of faunal remains has been widely used to study environments, ecologies, and animal husbandry and management practices in prehistoric societies of China (Barton et al., 2009; Barton et al., 2020). Three articles from this collection address human-animal relations from such a perspective. In their analysis of stable isotope ratios of the fossil teeth at Madigou (ca. 1.2 Ma), a newly excavated early Pleistocene site in the Nihewan Basin, Xu et al. argue that the mammal species accumulated at the site occupied a relatively broad niche, ranging from open grassland to closed forest; isotopic evidence also indicates that hominins might have had experienced substantial regional dry/cold and warm/wet fluctuations and seasonal variations, which probably would have exerted some detectable impacts on the stone tool technological variabilities previously recorded at the site (Pei et al., 2019). With an aim to explore the nature of human–animal interactions during the Eastern Zhou Dynasty (770–221 BCE), Cui et al. performed a somewhat in-depth analysis of the isotopic composition of carbon and nitrogen, extracted from both human and animal remains at the Chongpingyuan site, Shaanxi Province of China. The result demonstrates that the inhabitants at the site survived mainly on an

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Edited and reviewed by:
Robert R. Reisz,
University of Toronto Mississauga, Canada

***Correspondence:**
Shuangquan Zhang
zhangshuangquan@ivpp.ac.cn

Specialty section:
This article was submitted to Paleontology, a section of the journal Frontiers in Earth Science

Received: *04 May 2022*
Accepted: *11 May 2022*
Published: *26 May 2022*

Citation:
Zhang S, Domínguez-Rodrigo M, Zhang D and Zhang Y (2022) Editorial: Human-Animal Interactions in Prehistoric China. Front. Earth Sci. 10:935558. doi: 10.3389/feart.2022.935558

agro-pastoral economy, with millet agriculture as their economic mainstay. In addition, it seems somewhat clear that people buried with abundant material objects probably have consumed more animal protein, an observation reminiscent of defined social hierarchy in ancient societies (Grant, 2002). The third analysis, performed by Lyu et al. on the faunal bones from the Bronze Age (c. 2000–256 BC) to the Liaojin Dynasties (907–1234 AD) of northeastern China, indicates that domesticated pigs at the site were managed in a free-ranging manner, which is strikingly different from the husbandry strategy adopted by people at the contemporaneous sites in the nearby West Liao River Basin region (Dong et al., 2016).

Two articles express a specific concern with the human-animal relations clearly arising from another perspective—animals for tools, which is one of the most promising areas in the prehistory of China, but rarely touched on seriously in the literature (Zhang et al., 2016; Doyon et al., 2018; Doyon et al., 2021). Ma and Doyon provide an up-to-date synthesis of the finds of Pleistocene osseous tools across mainland China and further argue that the cultural trajectories documented in the evolution of bone technologies in China are grossly comparable to those identified in other regions of the world. Xie et al. provide a case study analysis of the scapular shovels of the early Hemudu Culture (7000–6000 BP) in the southern Yangzi Delta and reveal an interesting binary system from the site, in which a loose quality control was mixed with a marked raw material, and stylish preference in manufacturing of the community's iconic implements; this fact, to a certain extent, argues for a knowledge and skill transmission for osseous implement production in prehistoric society of China.

Among the remaining articles, Huang et al. report the result of an XRD analysis of 23 fossil bones, retrieved from the new excavations at Zhoukoudian Locality 1, the type section of Asia *Homo erectus* fossils. Being consistent with macroscopic observations, the analysis indicates that at least 15 bones were heated above 600°C. This re-fuels the hot debate on the issue of hominin use and maintenance of fire in the cave (Weiner et al., 1998; Gao et al., 2017). The strength of Song et al.'s article lies in the symbolic dimensions of the human-animal relations. By focusing specifically on the diachronic changes of use and production of the OES beads and pendants from Shizitan, an Upper Paleolithic site complex in northern China, Song et al. provide fresh insights into potential roles that OES ornaments may have had played in behavioral adaptations of hunter–gatherers in coping with challenges posed by climatic fluctuation and environmental deterioration from LGM through the Terminal Pleistocene in northern China. Klementiev et al. present a paleontological article based mainly on the latest regional finds of extinct Pleistocene *Camelus knoblochi* from the Tsagaan Agui cave, Mongolia, but with a somewhat intriguing discussion of human-camel interactions in the Paleolithic period of both Mongolia and China. Zhang et al. provide a zooarchaeological analysis of a sika deer (*Cervus nippon*) assemblage from Tianluoshan, a Neolithic site in the lower Yangtze River region of southern China and document an exemplary case of sustainable hunting strategy adopted by prehistoric humans. The last article contributed by Zhang et al., reveals a mixed pastoral system and millet cultivation at around 4,000–3,700 cal yr BP at the Zhukaigou site, which may have had enhanced the adaptability of local population and thus prompted their occupation of the relatively arid environment of the monsoon marginal area of northern China.

To sum-up, the articles presented here have expanded our understanding of some important areas related to human-animal interactions in prehistoric China. Nonetheless, there still exist some remarkable imperfections with this themed collection. For instance, as zooarchaeologists, we are compelled to be concerned with site formation processes, as they are at the core of and the prerequisite for a better understanding of the faunal remains from the archaeological sites, especially those of the Paleolithic period (Lyman, 1994; Domínguez-Rodrigo et al., 2007; Fernández-Jalvo and Andrews, 2016); the sheer deficiency of taphonomic contributions to this research topic is, thus, a surprise. More importantly, in light of the newly emerging of copious discourses on epistemological and ontological issues surrounding animals' status in relation to human societies (Overton and Hamilakis, 2013; Boyd, 2017; Oma and Goldhahn, 2020), the analytical framework adopted by most articles in this collection is fundamentally anthropocentric. As argued by Overton and Hamilakis (2013), the adoption of a new non-anthropocentric framework in the explorations of the interaction between human and animals does not denote a rejection of either the 'environmental', 'economic' or the 'subsistence' perspective in conventional zooarchaeological paradigms, but will instead increase the richness of our interpretative insights into the analysis of the animal bones from the archaeological sites across the world. This transformed social zooarchaeology has triggered some groundbreaking achievements in recent years, and is thus one of the alternative avenues which we Chinese researchers engaged on the subject of human-animal relations in prehistoric period, specifically in its latest part should pursue in future studies.

AUTHOR CONTRIBUTIONS

All authors listed have made a substantial, direct, and intellectual contribution to the work and approved it for publication.

FUNDING

DZ acknowledges funding from the National Natural Science Foundation of China (42130502). SZ acknowledges the supports from the Strategic Priority Research Program of Chinese Academy of Sciences (Grant No. XDB26000000) and the National Natural Science Foundation of China (41672023).

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