




Project Gallery

New discoveries at the Sanxingdui Bronze Age site in south-west China

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The authors report on new discoveries from Sanxingdui in south-west China. The multidisciplinary approach used at Sanxingdui has enriched the theory and methodology of field archaeology and sets a precedent for future scientific excavations.

Keywords: South-west China, Sanxingdui, Bronze Age, sacrificial pits, golden mask

Introduction

Sanxingdui is a Bronze Age site located in western Guanghan County, 40km north-east of Chengdu city (Figure 1). It covers an area of approximately 12km² and dates to c. 2700–1000 BC. Discovered in 1928, the first excavation at Sanxingdui was carried out in 1934 by the curator of the West China Union College Museum, David C. Graham. In 1986, two sacrificial pits (Pits 1 and 2) were found, containing over 900 bronze, gold, jade and ivory artefacts (Sichuan Provincial Institute of Cultural Relics and Archaeology 1999). Excavation at Sanxingdui has also provided important evidence for a multi-centred development of metallurgy, urbanism and culture in China during the second millennium BC (Ge & Linduff 1990).

Since 1986, continuous archaeological research has investigated important areas around Sanxingdui, including various parts of the urban site, the Yueliangwan and Cangbaobao walls, the Qingguanshan site and the Renshengcun cemetery, through which the distribution and structural layout of Sanxingdui has become clearer (Sichuan Provincial Institute of Cultural Relics and Archaeology 1998; Chen & Lei 2004; Ran & Lei 2020). In recent years, the collation of previous archaeological work has demonstrated that Sanxingdui was a centralised urban area and has produced evidence for the use of ritual performances involving public sacrifice of valuable objects as a method of community integration (Flad 2018).

In April 2019, the Propaganda Department of Sichuan Province implemented the *Ancient Shu Civilization Protection and Inheritance Project* to focus on archaeological work at Sanxingdui. In March 2020, the Sichuan Provincial Institute of Cultural Relics and Archaeology, together with various universities and research institutes, re-launched excavation of the sacrificial area. This excavation is a major project of the State Administration of Cultural Heritage of China and employs sophisticated and advanced analytical techniques, through which increasingly detailed information has been revealed. So far, six new pits have been discovered and a large number of new artefacts have been recovered, compared with Pits 1 and 2.

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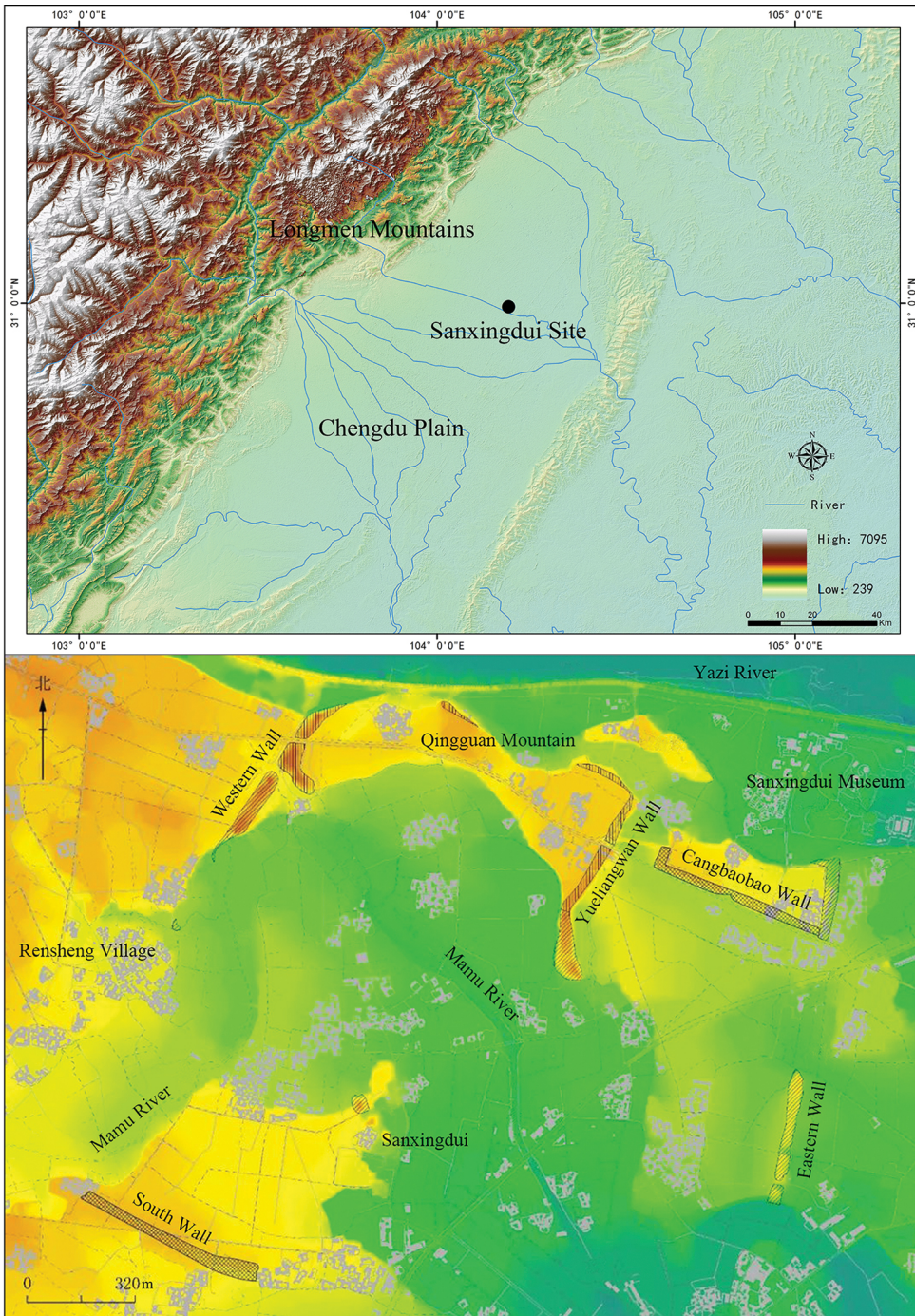


Figure 1. Maps showing the location of Sanxingdui (top source: National Platform for Common Geospatial Information Services; bottom source: China 2022).

The newly discovered pits

Pits 3–8 are located adjacent to Pits 1 and 2 and are all rectangular in shape, measuring between 3.5 and 20m² (Figure 2). Four cabins were built over them to maintain consistent temperature and humidity for the excavation (Figure 3). In addition, an on-site laboratory

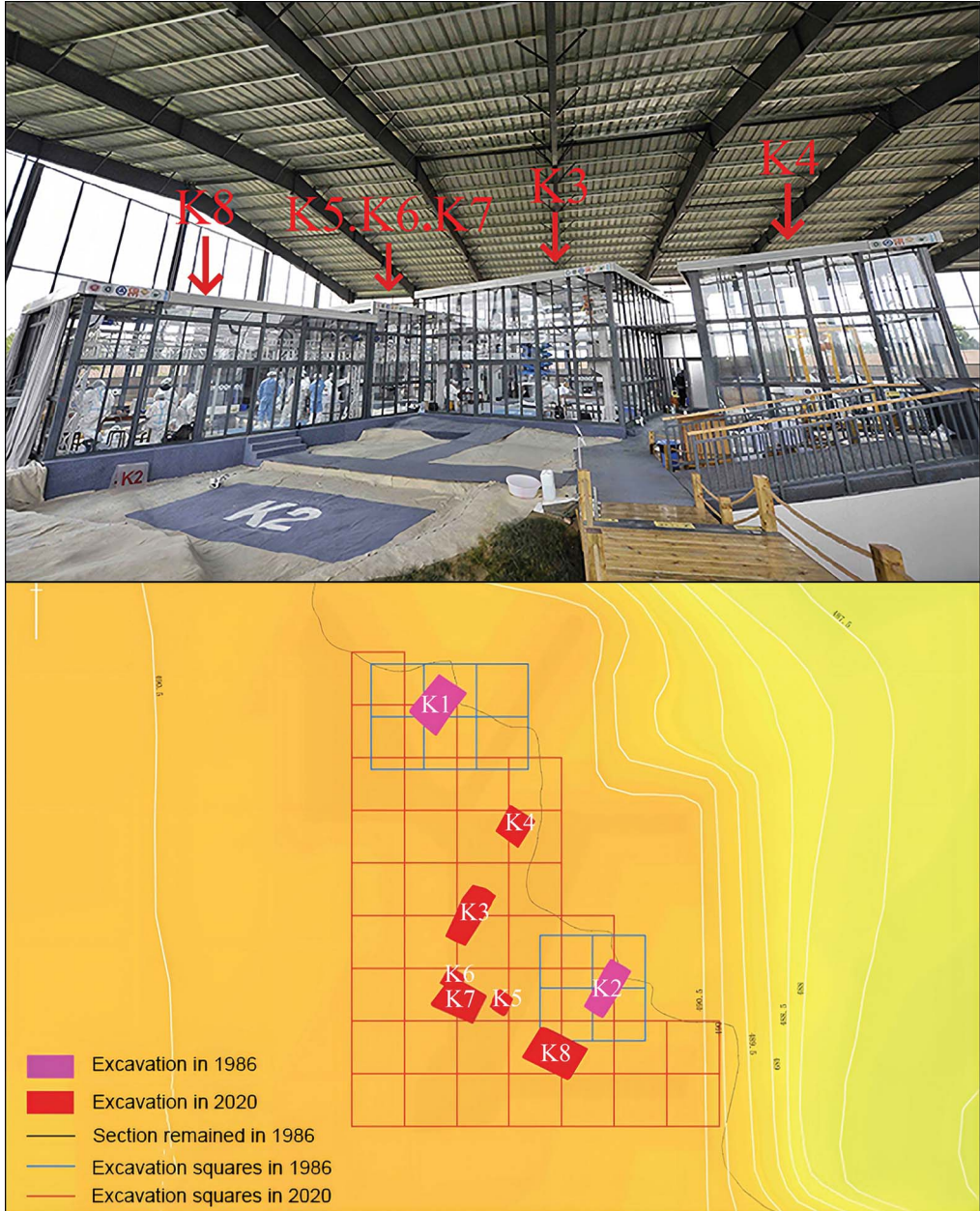


Figure 2. Top) the excavation cabins (source: Xinhua News Agency 2021a); bottom) plan of the excavation showing the locations of Pits 3–8 in relation to Pits 1 and 2 (source: Sanxingdui Museum 2022).



Figure 3. Photographs of the excavation: A) excavation of Pit 3 (source: Xinhua News Agency 2021b); B) total station mapping and recording (source: Xinhua News Agency 2021b); C) hyper-spectral analysis (source: Sanxingdui Museum 2022); D) ivory artefact being excavated with the help of polymer bandages (source: Xiao et al. 2022: 110).

was established to ensure that artefacts were protected immediately upon excavation. Excavation was spit based and carried out using $300 \times 300\text{mm}$ and $0.5 \times 0.5\text{m}$ grids, dependent on each pit's size, with each excavated spit measuring 50–100mm in depth. All excavated soil was collected and recorded. In addition, each spit was 3D scanned once completed and a 3D model was created using Agisoft Metashape Pro v1.5.0. Polymer bandages were used to extract fragile organic evidence, such as ivory, which was removed to the laboratory for further cleaning (Xiao *et al.* 2022) (Figure 3D).

Excavated artefacts

The deposition of the artefacts within the newly discovered pits displays clear differences. Artefacts were buried in obvious layers in Pits 3, 4, 7 and 8, with mainly ivory in the upper layers and bronze artefacts in the lower layers. Pit 5 contained predominantly small gold objects and ivory products, while Pit 6 contained a 'wooden chest' featuring red paint produced with cinnabar (Figure 4A & B).

Bronze objects

The excavated bronze objects are predominantly vessels and figurines. Many new object types have been discovered compared with sacrificial Pits 1 and 2, such as the kneeling figurine with

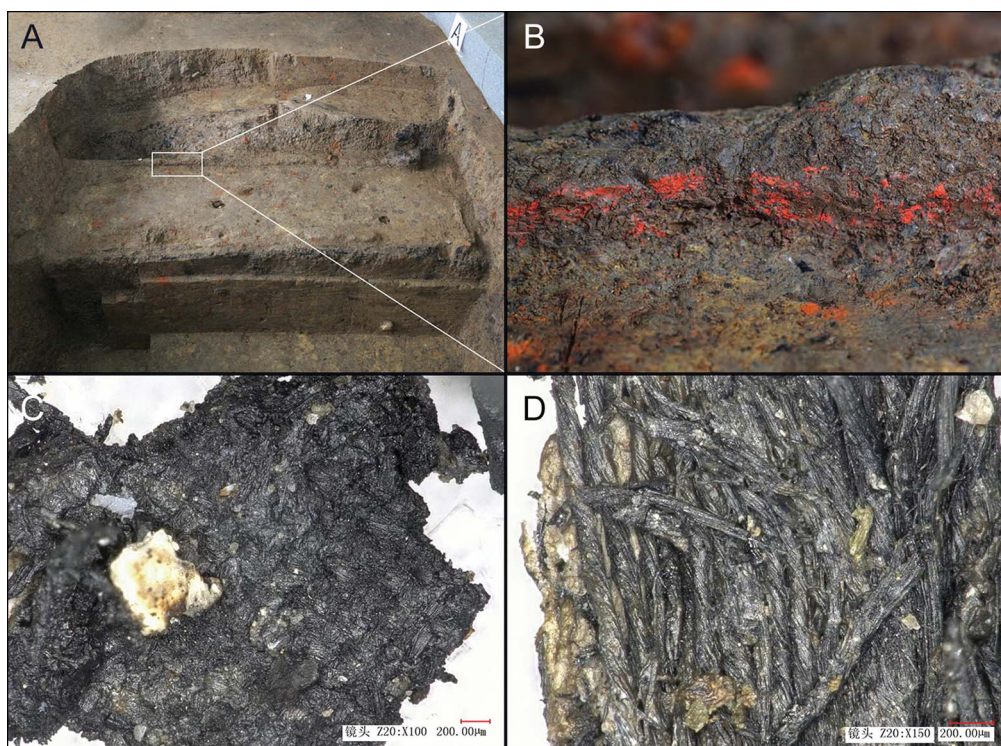


Figure 4. A) The 'wooden chest' from Pit 6 (source: Wu & Wu 2021); B) close-up of cinnabar pigment (source: Ran et al. 2022: 26); C–D) remains of plant-based textiles from Pit 4 (source: National Cultural Heritage Administration 2021).

a *Zun* (bronze ritual vessel) on its head from Pit 3 (Figure 5: left). The upper part is a wide, flared-mouth *Zun* with a unique dragon-shaped decoration on its shoulder, while its ring foot is truncated. The *Zun* stands on a square plate, below which is a kneeling figurine with its hands clasped in front; obvious welding marks can be seen between both elements. The body, arms and legs of the kneeling figurine were also cast separately and welded together (Xu et al. 2021b). In Pit 4, a kneeling statue with twisted head was found cast as a whole. Its body featured swallow tail patterns, which are commonly found on contemporaneous bronze wares in the middle and downstream areas of the Yangzi River (Xu et al. 2021a) (Figure 5: right).

Gold objects

These mainly include gold foil ornaments in shapes including stripes, circles and birds. A golden mask, weighing around 280g, was excavated from Pit 5 (Figure 6). It was produced using gold-silver alloys, with a gold content of about 85 per cent. To date, this mask is believed to be the largest and heaviest dated to the Shang and Zhou Dynasties (seventeenth to third centuries BC) (Li et al. 2022).

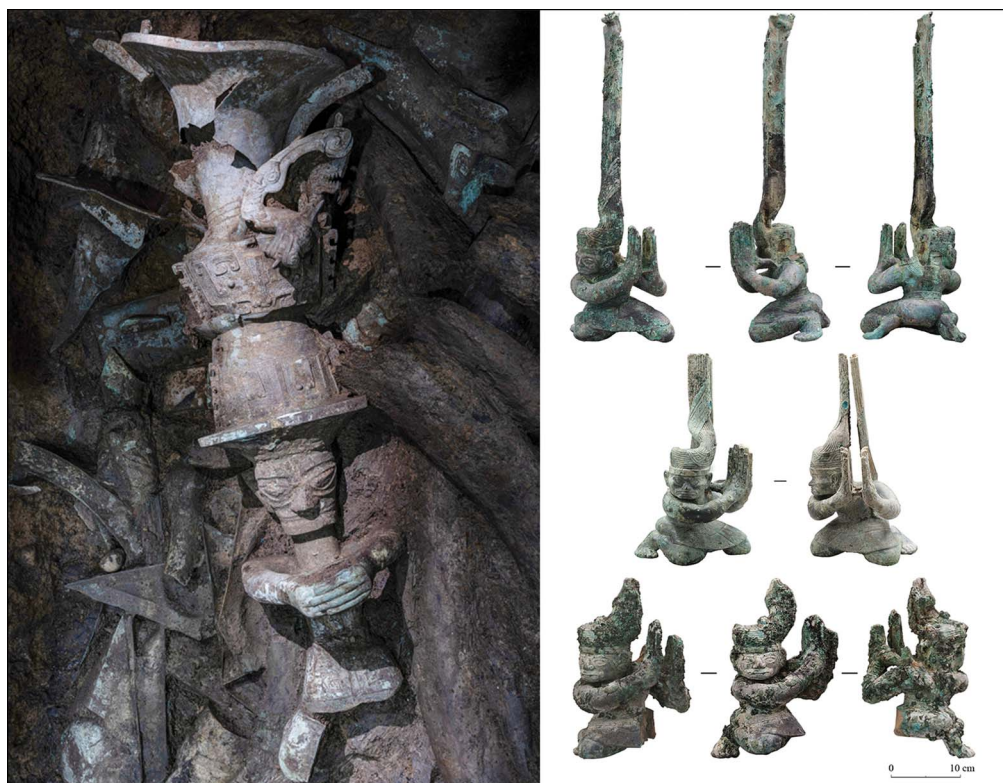


Figure 5. Bronze objects: left) kneeling bronze figure with Zun from Pit 3 (source: Xu et al. 2021b: back cover); right) bronze figure with swallow tail pattern from Pit 4 (source: Xu et al. 2021a: 107).

Organic remains

The advanced techniques used have also helped to discover increasing organic evidence. Phytolith analysis, for example, has shown that plant textile remains contained within an ash layer in Pit 4 predominantly comprise bamboo (*Bambusoideae*) (Figure 4C & D).

Dating Pit 4

Over 100 samples, mostly comprising carbon, have been collected for radiocarbon dating. Six dates, all from Pit 4, have been produced so far, which suggest that this feature dates to 1260–924 cal BC (Wu et al. 2021).

Discussion

The application of advanced scientific methods throughout the excavation of the newly discovered pits allows the sacrificial custom of the Sanxingdui Culture to be understood in greater detail. The newly discovered artefacts provide a wealth of material evidence, allowing us to explore exchange between the Chengdu Plain and Central Plains, and the middle and

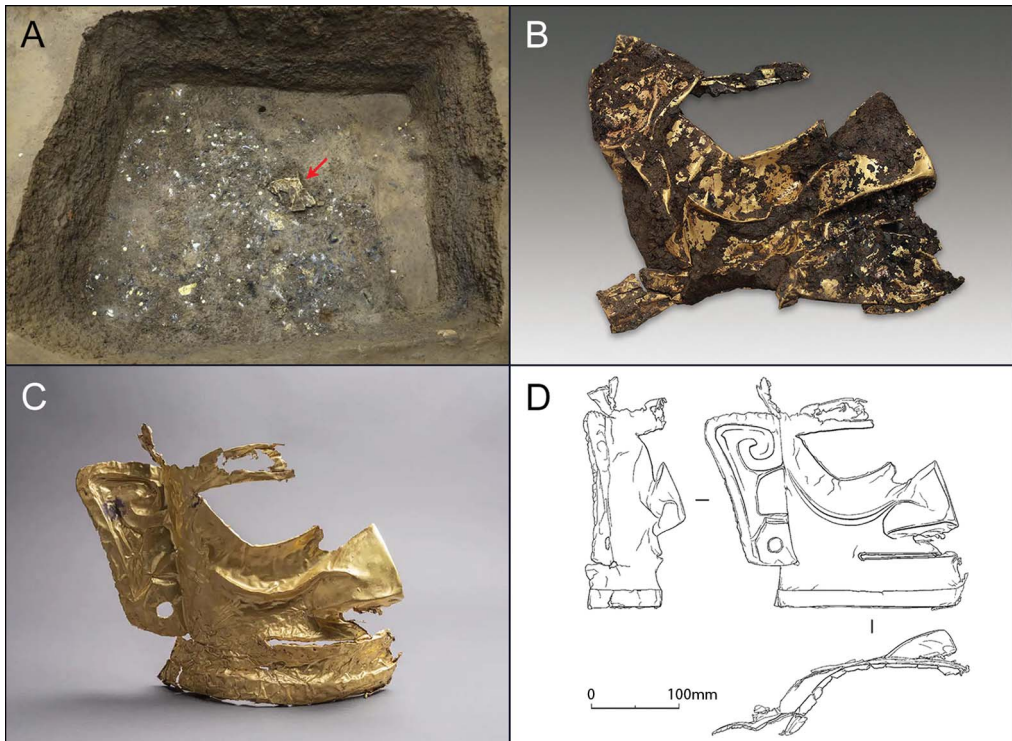


Figure 6. The golden mask from Pit 5 (source: Li et al. 2022: 109–10, 113 & back cover): A) location within the pit; B) prior to conservation; C) following conservation; D) illustration viewed from sides and below.

downstream areas of the Yangzi River. The radiocarbon dates for Pit 4 complement the chronology for the sacrificial pits, which has been long debated. According to the artefacts and their pattern of burial, Pits 1–4, 7 and 8 roughly date to Yinxu Phase IV (c. 1200–1000 BC), while Pits 5 and 6 are probably early Western Zhou (c. 1046–950 BC) (Ran *et al.* 2022).

Conclusion

The current excavations at Sanxingdui are unprecedented in terms of their methodology and popular interest. In June 2021, Sichuan University organised an international online symposium focusing on the new discoveries, and the invited scholars provided insightful discussion regarding multiple aspects of the site. As the excavations proceed, the systematic differences between the various pits, as well as their precise chronology, will become clearer, allowing us to provide an increasingly detailed understanding of the dynamics of the Sanxingdui Culture and how it compares with other contemporaneous Bronze Age urban centres in early China.

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