

# New Story of “Out of Africa”: Human Occupation on Chinese Loess Plateau Dated to ~2.12 Ma

Reported by SONG Jianlan

**H**ow our ancestors evolved and emigrated have long been heatedly disputed and pursued, and scientists from around the world have been working hard to reconstruct the emigration history of early humans by identifying and dating ancient sites of human habitation.

Approximately dated to about 1.77–1.85 million years ago (Ma), a site in Dmanisi, Georgia, was widely agreed to be the earliest skeletal and artefactual evidence for human occupation outside Africa. It is closely followed by several sites in Asia, including a site in Yuanmou, Yunnan, China. Two incisors from this site, believed to be from *Homo*



The landscape and loess–paleosol section of the Shangchen Paleolithic locality recently found by the joint team. The discovery here indicates that human beings might have emigrated out of Africa earlier than formerly believed. (Credit: GIG & IVPP)

*erectus*, are dated to about 1.7 Ma. In the summer of 2018, Dmanisi lost its title to a site on the Loess Plateau in China, however, as the result of a new dating jointly made by scientists from CAS and the University of Exeter, UK.

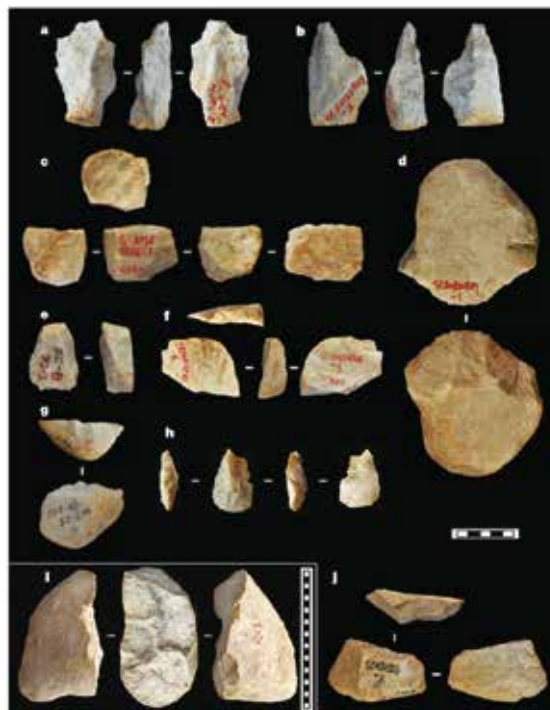
Led by Prof. ZHU Zhaoyu from the CAS Guangzhou Institute of Geochemistry (GIG), Prof. HUANG Weiwu from the CAS Institute of Vertebrate Paleontology and Paleoanthropology (IVPP) in Beijing, and Prof. Robin Dennell from the University of Exeter, UK, the joint team discovered a new human habitation site in the Paleolithic strata of the Shangchen locality in Lantian County on the southern Loess Plateau, China. They examined samples and artefacts from a largely continuous paleosol/loess sequence containing 17 artefact layers, and dated the lowest artefact-yielding layer to about 2.12 Ma. They analyzed 96 artefacts unearthed from the strata, and determined that their ages ranged from about 1.26 Ma to about 2.12 Ma.

This new age makes Lantian overrun all other human habitation sites to become the oldest outside Africa.

Lantian caught the eye of paleoanthropologists quite early. It came to light in the 1960s, when a *Homo erectus* cranium was unearthed from the Gongwangling locality in Lantian County by IVPP scientists. The discovery excited the whole paleoanthropological world. The cranium was later named “Lantian man.” Its age has been kept in clouds, because the complicated geological environment there makes it very hard to accurately decide the age of the strata. It was once dated to about 1.15 Ma, and this remained unchanged until 2015, when Profs. ZHU and HUANG’s team updated the age to about 1.63 Ma.

This age has now been further updated by the new results from the Shangchen locality, which is near to Gongwangling. This surprisingly old age suggests that we might need to re-examine the origin and emigration of early humans.

Highlighted in this research is its interdisciplinary background, particularly the integration of stratigraphic,



Selected artefacts found *in situ* in layers S27–L28 (2.09–2.12 Ma), L27 (1.95–2.09 Ma), L25 (1.73–1.80 Ma) and S23 (1.59–1.65 Ma) from the Shangchen Paleolithic locality. (Credit: GIG & IVPP)

paleoanthropological, paleo-geomagnetic and paleo-climatic methods, and the key role played by the loess sequence previously established by outstanding geologists represented by the late Prof. LIU Dongsheng (LIU Tungsheng), a CAS Member.

As commented by Prof. Andrew P. Roberts from Australian National University, this impressive work established the age as well as the paleo-climate and environment background of the earliest human habitation site outside Africa, and it has important implications for the understanding of human evolution.

#### References

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