

Archaeological Visualization for Yangtze River Civilization in China

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ABSTRACT

The origin of the rice cultivation is rising over 14000 years ago around the Yangtze River in China. The origin of the City is also rising over 6000 years ago like Western Civilization. These city villages have high clay walls and surrounded ditches or pools, there have large scale diameter is over 300m. Therefore, we developed radio-controlled model helicopter to take air pictures and quick time digital Photogrammetry.

These fortress sites are almost destroyed by the native farmers, and are needed to reconstruct to original landscape and to reconstruct about buildings (for example palace or temple) from the excavation or archaeological data. After reconstructing of landscape and buildings, we must consider about the fauna in that time. Pollen Analysis will be supported this problem, we can reconstruct about the fauna texture.

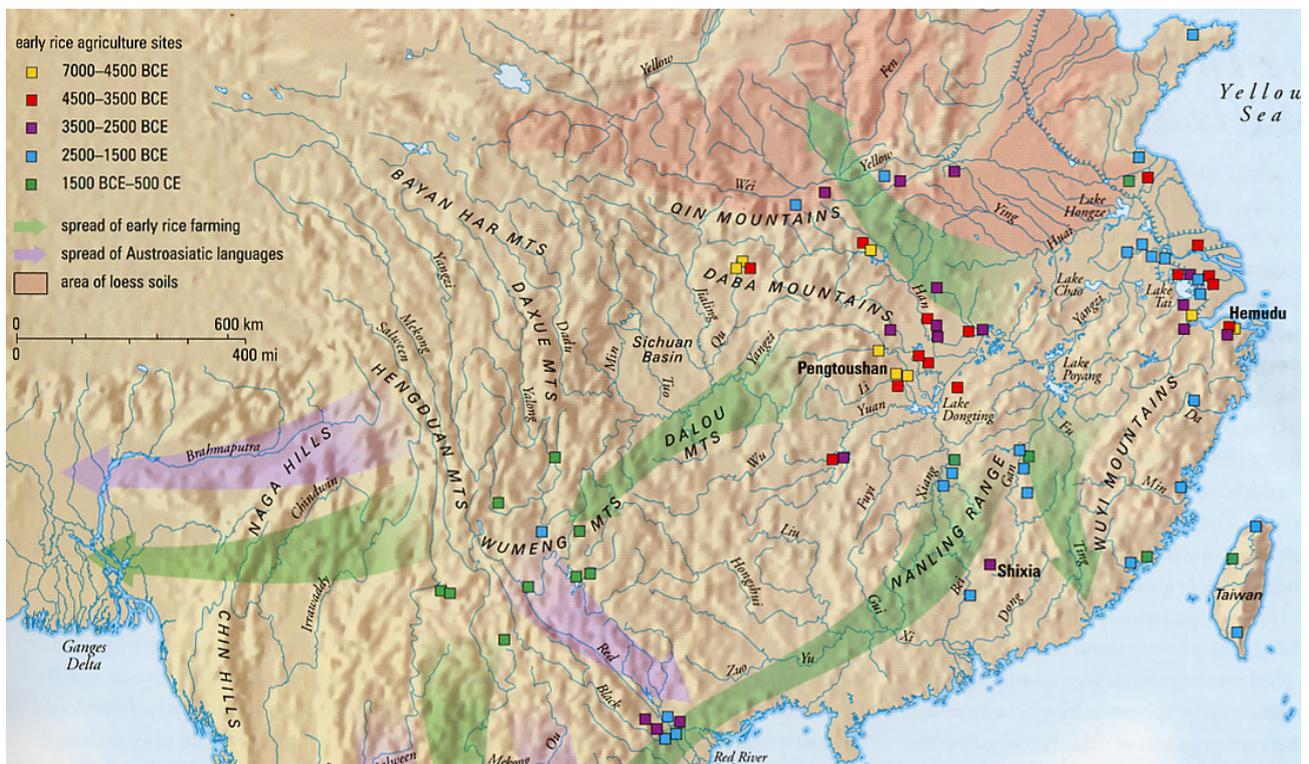


Fig.-1 The origin of rice cultivation

1, Purpose and Method of the study

The visualization of big fortress sites is the very difficult for the archaeologists, especially, in China, we cannot flight the airplane to take air pictures. So, we used radio-controlled model helicopter with 6x6 format camera and digital still camera. Total Station or GPS, to

make ortho images on sites, measures control points. We checked major points in archaeological site on site. First step, we made topographical map about the fortress sites (Fig-2), and then, picked up the digital contour data for 3D modeling (Fig-3, -4) and textured model (Fig.-6)

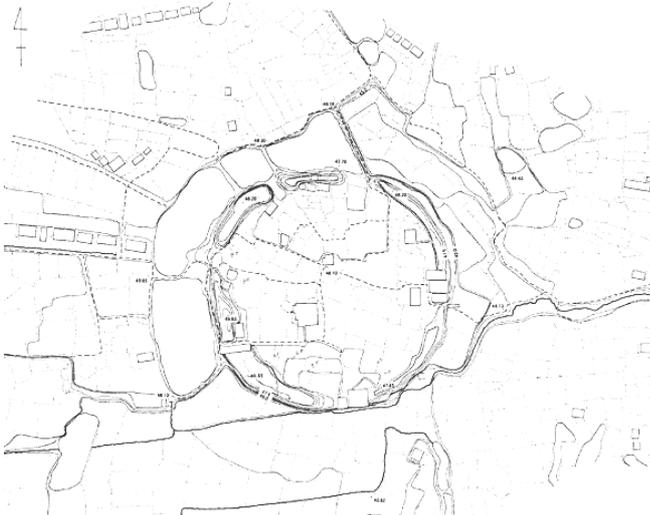


Fig.-2 Map (present)

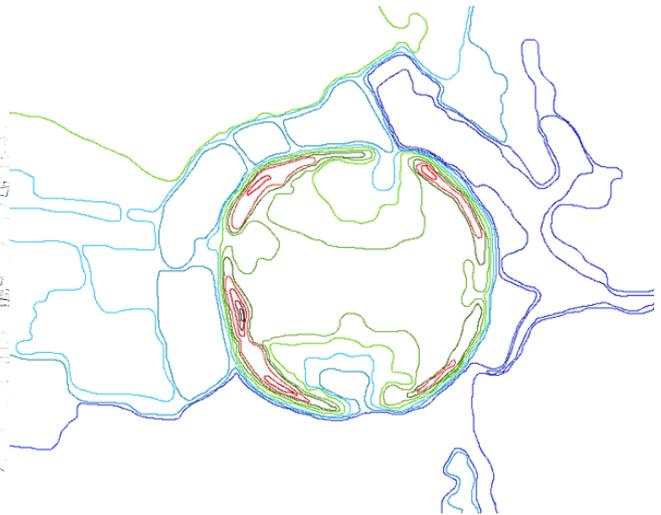


Fig.-3 Select contour (Daxi culture)

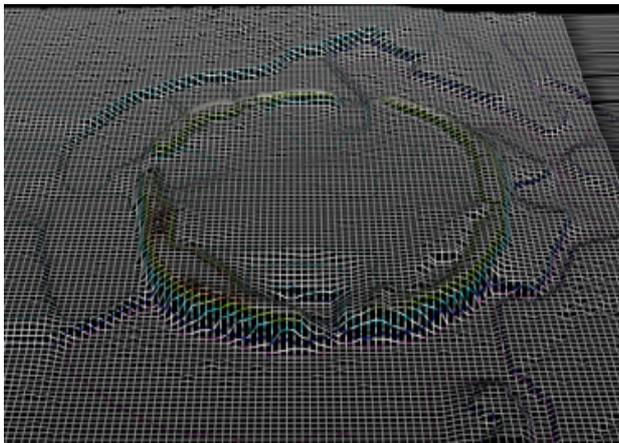


Fig.-4 3D Modeling (mesh)

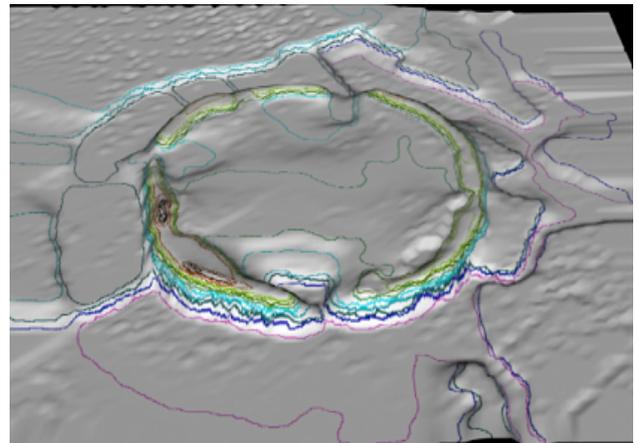


Fig.-5 3D Modeling (shading model)



Fig.-6 Textured Model

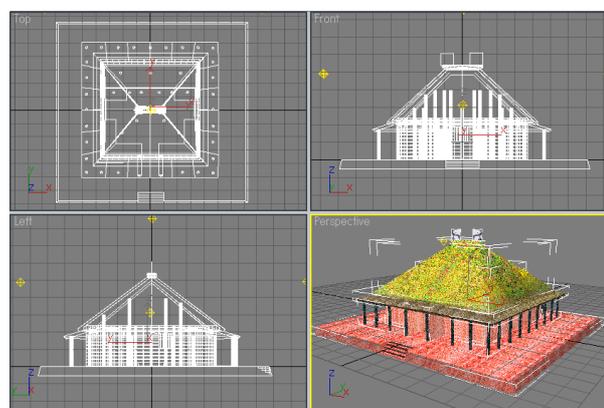


Fig.-7 Reconstruction of Palace building

2, Re-construction for Chengtoushan site and 3D Modeling

After checking the archaeological site and archaeological data, we must reconstruct for the archaeological site in the time B.C. 5300 (Daxi culture) and B.C. 5000 (culture). Archaeological data in Pengtoushan site said that there were temple remains in Daxi culture and there were the palace remains in culture. Temple remains are three 7m x 14m building were found, one more building are considerable eastern side. Palace remains are one 14m x 14m building, has wide platform and big postholes. From these Archaeological data, we must reconstruct the buildings to 3D models with CAD (Fig.-7)

3, Pollen Analysis and City Insects

One more important reconstruction is the reconstruction if that time's fauna. In the beginning of cultivation, the forest around Chengtoushan site was changed from Wide leaf forest to grassland and rice

field from the diagram of Pollen Analysis (Fig.-8). And also, city insects were increasing.

These changing factors need for the texture mapping for the visual landscape changing.

4, Visualization for Chengtoushan site

Chengtoushan site is said that “Mya-O” tribe people were lived in, “Han” people came south down from the northern China from the first millennium B.C., and they rushed ut miner tribes. Then, these miner tribes were moved to south and east, and moved beyond the sea, went to Japan etc.

Totem Pole with bird on the top is the real totem pole of “mya-O” tribe.

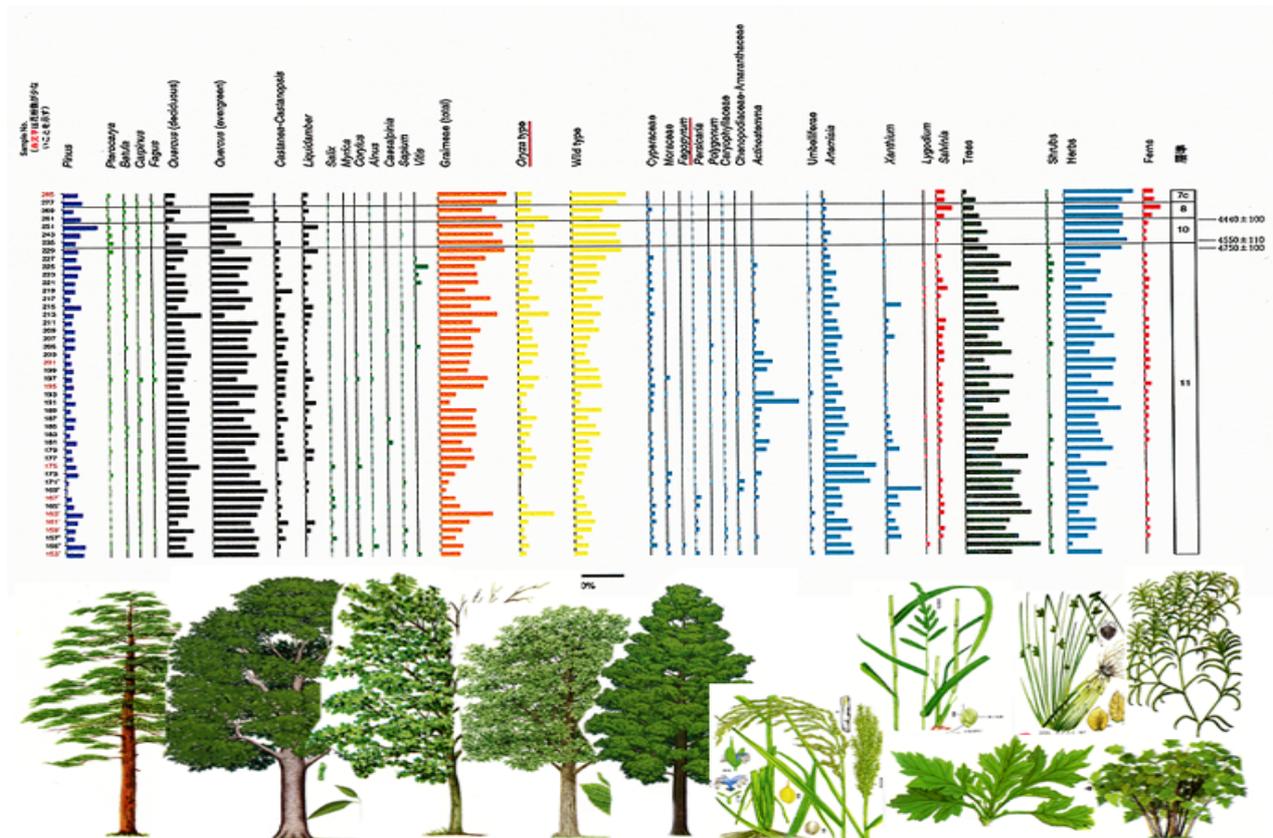


Fig.-8 Pollen Analysis in Chengtoushan site

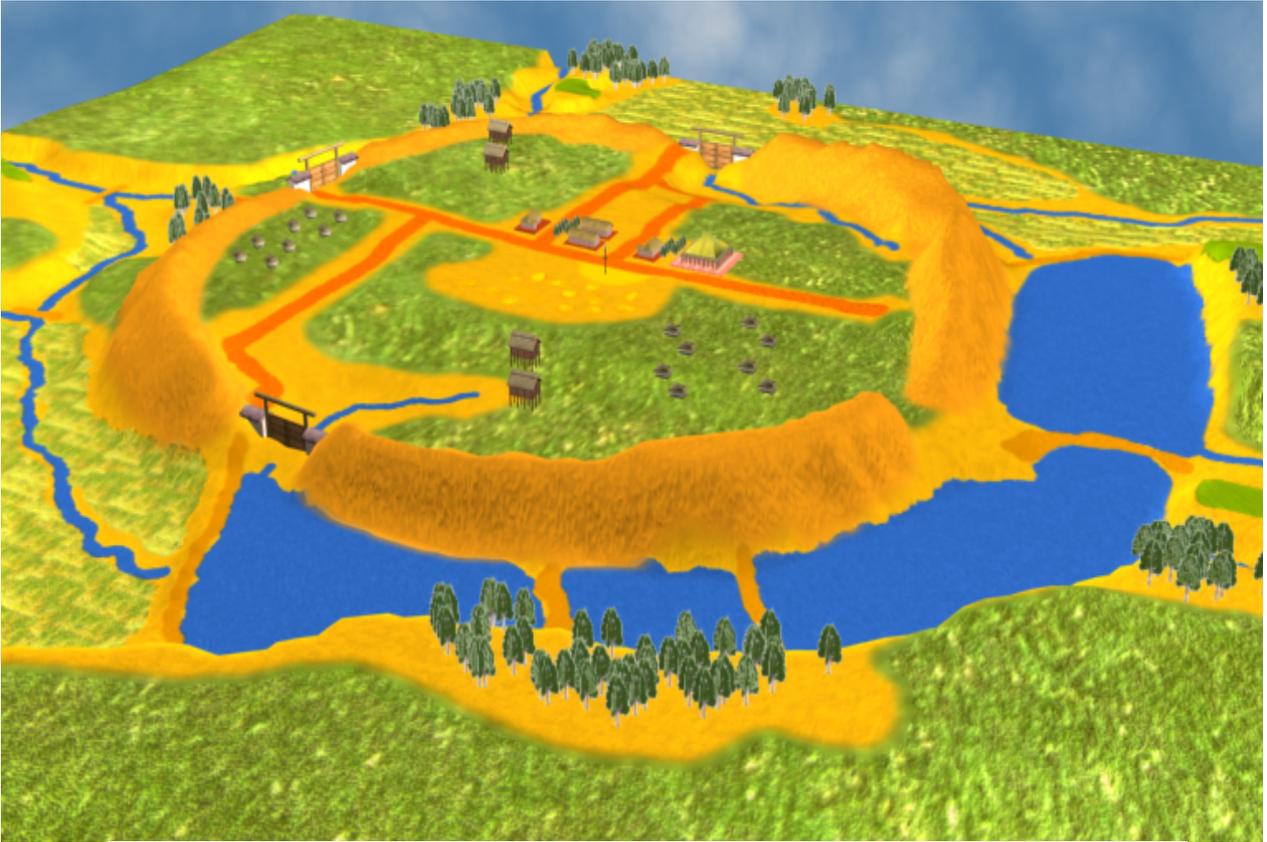


Fig.-9 Arial View (from North East) of Chengtoushan city in B.C. 5000



Fig.-10 Inside of the Chengtoushan city

Reference

“The Atlas of World Archaeology” Paul G. Bahn edited Checkmark Books, 2000.