

Water Management and Mismanagement in Early China

INTRODUCTION

There are those who claim that History is shaped by people who conquer and control people. But in the 1950's there was a group of researchers led by Karl Wittfogel who argued that History is shaped by people who conquer and control Water. They claimed that Water was THE primary vehicle for evolution of Social control.

In the case of China, they may very well have been correct. Early China had lots of water. And lots of people. And lots of wealth. This was the perfect combination for lots of water crises.

EARLY CHINA

Every Chinese school child is familiar with the stories of Yu the Great, how he changed the courses of China's nine great rivers and saved China from the Great Flood.

Perhaps it is not so much What Yu the Great did. But How he did it.

As the 19th century Scottish missionary James Legge put it in a footnote to his translations of the Great Classics:

This assignment of lands was like the action of a conquerer who dispossesses the original possessors of the kingdom which he has subdued, and portions it out among his followers. And there was probably an element of this nature in the action of Yu.

They set up major centers, secondary centers, and villages with central domination. The settlement pattern was very strategically placed to control river trade: salt, lead, copper, fish, and food.

The Chinese viewed the mandate as not a conquest but a fundamental reconfiguring of the earth for civilized life.

Hydrology was the tool of choice. And the weapon of choice.

A successful ruler went into new territory and created an intensive agricultural/irrigation production center. This was always a temporary fix. The population quickly surpassed the production capacity point of the area and the group was compelled to expand further.

Any operation reliant on constant expansion works. Until it doesn't.

In the case of China it worked pretty well for a long time. Unless, of course, you were one of the groups the Chinese decided to call Barbarian. If you were, you would be pushed out, murdered, enslaved, or something unpleasant.

RESEARCH

One frequent cause for confusion on Early China is the frequent statement that, based on the idea that the population was quite small, there could have been no irrigation or intensive agriculture in early China.

This information is contradicted by the facts on the ground, archaeological research, and historical records.

Archaeologists point to walled cities which held populations of only a few thousand at most.

Yet these cities are surrounded by walls that are huge.

Made of pounded earth, which required that a thin layer of dirt was laid out, then pounded by wooden poles until well compacted, the dimensions of these walls are incredible. The soil from a moat around the city was used to build walls 25 meters thick to protect that city against flood attacks.

These walls did not build themselves. Conservative estimates on manpower required to build the walls point to 20,000 men for ten years.

What did they eat? For ten years?

Without modern transportation almost all food would need to be within one day's travel.

There would need to be a reliable and consistent source of transportable nutrition. And there was.

Millet and rice.

Foxtail millet (*Setaria italica*) was found in large quantities in several neolithic sites in north China. Millet is productive, but very early accounts of millet production describe vast quantities unobtainable without intensive agriculture.

Rice (*Oryza sativa*) was to be found in the South. Rice is very sensitive to water level and temperature. That is why rice paddies are small, in order to make it practical to control the water level. Without irrigation, intensive production of rice is impractical.

So why are there no records of intensive agriculture or irrigation?

There are. And always have been.

The soil of this province was whitish and mellow. Its contribution of revenue was the first of the highest class, with some proportion of the second. Its fields were the average of the middle class.

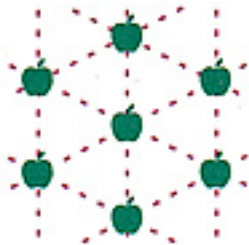
The Tribute of Yu has several reports like this, many in much greater detail. This is no vague speculation about local production capabilities. This is a description any agricultural administrator would recognize and be comfortable with.

But what about field diagrams and maps?

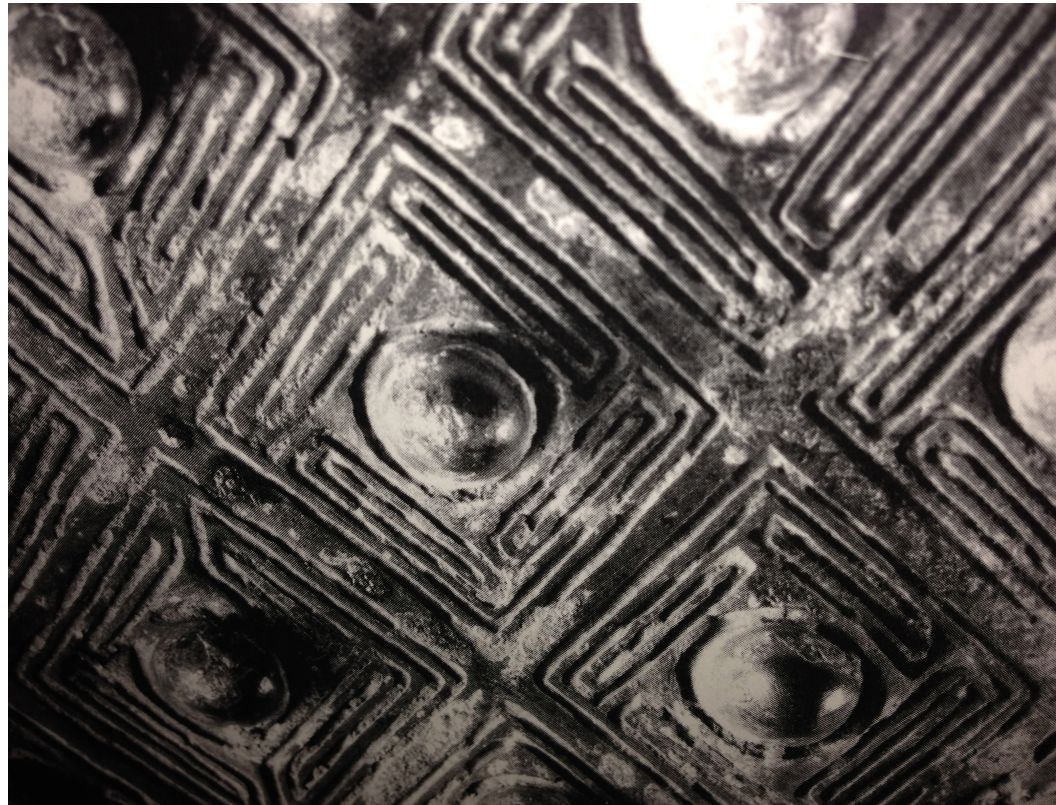
We also have these.

When irrigation became paramount, bronzes became THE instrument of social control. How?

The simplest way to demonstrate is to examine this bronze YU.



Triangle



Distance between rows and between trees is approximately the same.
Distance between trees in a row is much closer than in any other pattern.
Interplanting a tree in the center of four trees in a square planting.
(DIAMOND) All trees are the same distance from each other.

The decoration is described as “diamond and boss”. But the pattern clearly depicts an orchard. Trees in an orchard are not planted in rows because their canopies would compete. They require reliable irrigation which we can see and even measure on this bronze. Because trees take years to produce, intercropping, also depicted on this bronze, is used for production and fixing minerals and nutrients for the trees.

Orchards were extremely profitable. Any award of an orchard as depicted on this bronze would confer to its owner a staggering wealth.

ANALYSIS

Our knowledge of early water management in China is limited for several reasons.

First, there are thousands of years of overlay, damage, destruction, and change. Frequent floods act like a giant archaeological erasure. This is THE primary reason that our estimates on early Chinese populations are so confused.

Second, even an undisturbed site is difficult to recognize.

Third, these sites are very large. It would be expensive to explore. And for a large effort the amount of knowledge gained would be limited and often contradictory.

Fourth, most people find irrigation boring. It is not an easy sell.

Fortunately, today we have satellite imagery. Clever use of satellite imagery is useful and becoming more so.

And we have the Classics. And the Bronzes.

Chinese history is packed with flood attacks, hydrological disasters, and colossal water successes on a scale that only the Chinese seem able to experience.

Dujiangyan and the Three Gorges dam are only examples of a vast world of hydrological experience the Chinese offer.

The latest early Chinese history research is evolving towards the following conclusions:

1. Yu the Great used flood attacks to destroy any population that did not fit his New World Order. The cultural horizon between Longshan and Erlitou, when the number of settlements dramatically decreased, and their size became very large.
2. Early Chinese populations were large. Recent archaeology has confirmed this. The large number of floods over the millenia distorted the ability to confirm this.
3. Intensive agriculture and irrigation in China both go back to the Neolithic.
4. Land allocations were often documented on bronzes.

CONCLUSION

The driver of earliest Chinese expansion into barbarian territories was overpopulation brought about by irrigation driven agricultural surpluses. But when a region no longer had anywhere to expand, the excess population had to take land from someone else.

When this happened in early China five massive killing machines competed for limited territory in what was to become known as the Warring States Period.

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