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ORIGINAL PAPER

# Liangzhu culture and its challenges to traditional narratives of civilization emergence in China

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**Abstract**
Since its discovery, the Liangzhu Culture amazed the public with its unprecedentedly levels of development rivaling most of its contemporaneous and postdating Late Neolithic and Early Bronze Age cultures in the world. Yet, this culture has also puzzled scholars as its achievements were notably made in absence of two primary traditional presumptions of civilization emergence: writing and metallurgy. Through a review of existing archeological scholarship, this paper begins with exploring alternative pathways that the Liangzhu Culture might have pursued in its emergence and early state formation process, primarily the strategy of religious or ideological manipulation. Then, the paper proposes a novel idea that Liangzhu expansions into northern China was accompanied by an exportation of the Liangzhu model of early state formation, leading to the emergence of proto-states pertinent to the Longshan Culture. Finally, this paper analyses how the Liangzhu model of civilization emergence and its exportation northwards challenges traditional narratives of civilization emergence in China.

**Keywords** Liangzhu culture · Religious manipulation · Ideological manipulation · Longshan culture · Civilization emergence · Early state formation

## 1 Introduction

When UNESCO officially incorporated the Archeological Ruins of Liangzhu City into its World Heritage List on July 6th, 2019, news outlets all over China celebrated the decision with articles and videos titled as *Liangzhu: the Proof/Origin/Pride of China's 5000-Year Civilization*. Indeed, as archeologists continued unearthing artifacts and sites in the Yangtze River Delta and beyond, they gradually discovered that the Liangzhu Culture (良渚文化, ca. 3400BC—2200BC) displayed an unprecedentedly high level of technological and socio-political development, much earlier and far more advanced than most other Late Neolithic and Early Bronze Age societies in China and the world. Since the beginning of massive field surveys in the 1980s, the Liangzhu Culture has shocked the public with its impressive monumental architecture and mass labor projects, sophisticated jades and other artifacts, and intriguing artistic styles. These developments are all exceptionally advanced compared to many contemporaneous and postdating civilizations, but, interestingly, seem to have been achieved without traces of many of the presumed conditions for the emergence of a complex society, like writing and metallurgy. In addition, evidences also show that the postdating Longshan Cultures (龙山文化, ca. 2600BC—1900BC) in Northern China, traditionally regarded as the cultural source of Bronze Age Chinese Civilization, demonstrate varying presence of Liangzhu material culture, as well as varying degrees of Liangzhu influences in their material culture and urbanization processes, which are signs of a northward cultural diffusion that may have contributed to the emergence of complex society in the Longshan cultural sphere. These discoveries, among others, not only defy existing models of emergence of ancient civilizations, but also directly refute the traditional historical narrative that Chinese civilization first emerged in the "Central Plains" (Northern China) and expanded radiating to all directions.

This paper explores the sociopolitical development of the Liangzhu Culture and how it contributed to the emergence of civilization in Late Neolithic and Early Bronze Age China. The first section will review archeological surveys at various Liangzhu sites and discussions about the nature of the Liangzhu polity and society. The second part will cover the

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Liangzhu influence in the emergence of the Longshan Cultures and possible models of Liangzhu-Longshan interaction and transition. Finally, the paper will discuss how the Liangzhu phenomenon challenges early assumptions about the emergence of ancient civilizations, especially in China.

### 1.1 Brief discussion about archeology of Late Neolithic civilizations in China

The present research is based on existing scholarship on the Liangzhu Culture, the Longshan Cultures (plural),[1] and their spheres of influence in Late Neolithic China, in both Chinese and English. Research on cultural interactions in Late Neolithic and Early Bronze Age China have extensively covered the internal developments of the Liangzhu Culture within the context of the Jiangnan region (Yangtze River Delta), and separately, the evolution and exchange networks among various Longshan Cultures within the frameworks of Northern China. There is also a sizeable amount of research on the transition and direct succession from Longshan Culture to Bronze Age Chinese Civilization, observable through the continued usage of Longshan artifacts, artistic styles, and their embodied sociopolitical meanings well into early Chinese dynasties. However, direct scholarship on the heritage of the Liangzhu Civilization in the emergence of complex society in Northern China is extremely limited in quantity and content; many are constrained in straightforward discussions of the diffusion of artistic styles, but lack analysis on the diffusion and/or exchanges of the sociopolitical ideologies that the artifacts embody. Chen Shengbo (陈声波), Liu Bin (刘斌), Luan Fengshi (栾丰实), and Yan Wenming (严文明) are among the very few authors that provide evidence to explain this northward diffusion of civilization. Since the time period covered in this paper lacks written historical records, all proposed archeological models of sociopolitical development are largely hypothetical. Therefore, this work will also be a hypothetical reconstruction of history to explore the Liangzhu heritage in the broader context of the explosion of civilization in China during Late Neolithic and Early Bronze Age, based on existing literature.

## 2 Part I. the Liangzhu society

### 2.1 Situation of the Liangzhu culture in late neolithic

The Liangzhu Culture represents the peak of Late Neolithic social and political development in China and, arguably, the earliest civilization on Chinese soil. The main distribution zone of the Liangzhu Culture covers approximately the entirety of the Jiangnan region, extending from the Yangtze River in the north to the Qiantang River in the south, from the sea shore of Shanghai to the east to the outskirts of Nanjing to the west. This area encompasses approximately 1000 archeological sites attributed to the Liangzhu Culture. By its later phases, the Liangzhu influence sphere extended far beyond the Jiangnan homeland, reaching Shandong Province to the north, Guangdong Province to the south, and Gansu Province to the west.[2] Settlements in the Liangzhu homeland display clear variations in scale and concentration, among which the Liangzhu City Site located in Hangzhou is by far the largest and most complex, located in a C-shaped valley containing 135 suburban sites forming a "capital circle". The Liangzhu Culture was a predominantly rice-farming culture but was able to sustain a highly diversified society that included a lavish elite class, specialized craftsmen producing jades, pottery, and other artifacts, and a labor army periodically mobilized for massive projects. Liangzhu jade artifacts are particularly iconic in Chinese history and archeology; many of its most representative shapes like the cong tubes (琮), bi disks (璧), and yue axes (钺) continued to be used as symbols of ritual and power during the early dynasties of Chinese history.

The Liangzhu Culture was first discovered in 1936 by archeologist Shi Xingeng (施昕更), who initially mistook it as a local variant of the Longshan Culture due to the abundance of the iconic Longshan black pottery in its most recent layers. It was not until 1959 that the archeologist Xia Nai (夏鼐) identified that Liangzhu belonged to a different tradition that dated much earlier than the Longshan, as more distinct artifacts were found in its older layers.[3] The decade of the 1980s marked the period with most excavations of Liangzhu elite tombs and sacrificial altars, including the sites of Fanshan (反山) and Yaoshan (瑶山) in Hangzhou, Caoxieshan (草鞋山) in Suzhou, Fuquanshan (福泉山) in Shanghai, and Sidun (寺墩) in Changzhou. Most research on Liangzhu jade and other artifacts were conducted during these surveys. The Liangzhu City Site was first discovered in 1992, when archeologists excavated the Mojiaoshan Platform (莫角山) currently identified as the "royal palace" site of the Liangzhu proto-state. Then, in 2007, concentric city walls were also discovered surrounding the Mojiaoshan Platform, which, to the astonishment of the public, enclosed the largest prehistoric city of China.[4] Finally, in 2014, archeologists discovered the

[1] Longshan is more accurately a superculture with multiple regional variants covering most of Northern China. Therefore I will refer it in plural form to take its internal diversity into consideration.

[2] Wang Ningyuan.《何以良渚》, (Hangzhou: Zhejiang Daxue Chubanshe, 2019): 4–5.

[3] Wang Ningyuan.《何以良渚》, 3.

[4] Zhu Yefei. 《良渚遗址考古八十年》. (Hangzhou: Zhejiang Daxue Chubanshe, 2019b): 94–111.

Liangzhu Hydraulic System, the largest in the prehistorical world, in the suburbs of the ancient Liangzhu City.

The Liangzhu Culture dates approximately from ca. 3400 BC to 2000 BC, preceded by the Kuahuqiao (跨湖桥, ca. 6000BC—5000BC), Hemudu (河姆渡, ca. 5000BC—3000BC), Majiabang (马家浜, also ca. 5000BC—3000BC), and Songze (崧泽, ca. 3900BC—3400BC) cultures, and succeeded by the Guangfulin (广富林, a Longshan variant ca. 2500BC—1900BC) and Maqiao (马桥, ca. 1900BC—1200BC) cultures. The exact origin of the Liangzhu civilization is still not clear, as the material culture of the three preceding cultures in the Jiangnan region are significantly distinct from the Liangzhu. Nevertheless, the jade production techniques of the Lingjiatan Culture (凌家滩文化, ca. 3800BC—3300BC) in the nearby Anhui Province bear considerable resemblance to early phase Liangzhu techniques. The two succeeding local cultures in the Jiangnan region also display limited Liangzhu heritage, but the incipient Longshan Cultures in Northern China, which eventually evolved into the Bronze Age Chinese Civilization, show substantial Liangzhu influence in various aspects. The active period of the Liangzhu Civilization was also parallel to the Sumerian, Egyptian (Old Kingdom), Indus, and Caral civilizations. Therefore, Liangzhu indeed represents the earliest candidate from China, but much older than the "orthodox China" we know today, in this era of social complexification occurring at all major cradles of civilization around the globe.

### 2.2 What makes Liangzhu a civilization?

The concept "civilization" has a huge variety of definitions, but conventional and especially the Marxist frameworks widely used in China, such as the criteria of archeologist V. Gordon Childe, still outlined preconditions including but not limited to urbanization, labor specialization, overt displays of social stratification, economic surplus and taxation, expressed forms of knowledge like arts and predictive sciences, and most importantly, state formation.[5] Writing and metallurgy are especially labeled by traditional civilization models as directly correlated to administrative capability and productivity, which are requisites for a state. While this definition matches the development of Fertile Crescent civilizations like Mesopotamia and Ancient Egypt, it cannot completely explain the emergence of civilization in China, especially not the emergence of the Liangzhu proto-state, which, in absence of writing and metallurgy, achieved outstanding development in every other conventional criterion of civilization. By 3000BC, the Liangzhu Culture has already evolved into a urbanized agrarian civilization with clear social stratification and labor diversification, supported by a highly productive rice-farming economy and, very likely, equipped with a highly effective central authority capable of coordinating monumental architecture and large scale engineering projects. Such level of organization persisted throughout the entirety of the culture's active period. These aspects are especially well reflected in the very monumental architecture and mass labor projects not only in the Liangzhu capital circle, but also in its provincial centers.

Among the archeological sites in the capital circle, the Liangzhu City Site is the most distinctive representation of how the Liangzhu Culture outperformed other contemporaneous societies in China and beyond, in terms of urban development and social stratification. The ruins of the Liangzhu City covers an area of approximately 300 ha, making it the second largest city of the world of its time, only behind the Sumerian city of Uruk (600 ha). If we include the middle and late phase suburban settlements, the total area of Liangzhu City reaches 800 ha, even larger than Uruk. The layout of the city is described by archeologist Liu Bin and others as tri-circular, comprising a palace district, a royal city, and an outer city.[6] The palace district corresponds to the Mojiaoshan platform, an elevated rammed earth platform of approximately 9–15 m thick and occupying an area of 30 hectares, is identified as the earliest and the largest palatial compound in Late Neolithic China, larger than any Pre-Qin palatial compound in China.[7] The inner city corresponds to the area enclosed by stone-based earthen city walls, which encircles many artificial mounds used as foundations for residential, ceremonial, and elite burial structures. The mound of Fanshan, regarded as the ritual and burial center of Liangzhu "kings", forms part of the inner city.[8] Finally, the outer city refers to the strips of suburban settlements surrounding the city walls, most of which are of exclusively residential function. Data from excavations show the construction process of the Mojiaoshan Platform, the inner city, and the city walls show clear signs of central planning, while their construction involved systematic transformation of landscape, the outer suburbs were settled without overly altering the natural environment.[9] In addition to spatial organization, the internal governance of the Liangzhu City also endorse this social differentiation. An archeological survey on the Zhongjiagang Canal (钟家港), the main waterway in the city, reflect that while Liangzhu

[5] Synthesized from the 10 scales of civilization outlined by V. Gordon Childe: urbanization, state formation, stratified society, representational art, diversification and specialization of labor, knowledge of science and engineering, monumental architecture, long-distance exchanges, economic surplus, and writing.

[6] Liu Bin et al. "The Liangzhu City: New Discoveries and Research". in *Liangzhu Culture: Society, Belief, and Art in Neolithic China* (eds. Liu Bin et al.). (Abingdon/New York: Routledge, 2020): 22–39.

[7] Li Min. *Social Memory and State Formation in Early China*. (Cambridge: Cambridge University Press, 2018): 46.

[8] Liu Bin et al. "The Liangzhu City", 23.

[9] Liu Bin et al. "The Liangzhu City", 29.

urbanites have the custom of dumping household waste into the waterway, causing blockages and eventual abandonment of various canal sections. However, the section immediately outside of the Mojiaoshan Platform shows significantly fewer vestiges of household waste, which clearly indicates the existence of stricter dumping and traffic control, in service of the Liangzhu elite's transportation needs.[10] This differentiated urban arrangement is repeated in most later dynastic capitals in China[11], and the existence of such pattern is an indication of a high degree of social stratification to the point that physical segregation and differentiated regulations was applied in accordance to social hierarchies and separating an unchallenged elite class ruling from seat of power in the capital city.

Another example of the sophistication of the Liangzhu civilization is its Hydraulic System, located in the northwest of the city, which is a clear demonstration of the culture's engineering capability. This hydraulic system comprises a series of dams and dammed exit canals built at different times, but nevertheless mostly between ca. 3200BC—2800BC for high dams and between ca. 3000BC—2800BC for low dams and related structures. Both dates lay within the early phase of Liangzhu.[12] This time frame can be further corroborated by excavations at the Laohuling (老虎岭) high dam, where the findings of mid-late phase vestiges of modification works can set an earlier time for the dam's original construction date.[13] Together, this series of dams enclose two reservoirs occupying a total area of 1240 ha and having a capacity of 60 million cubic meters,[14] making it by far the largest hydraulic system of the ancient world, exceeding the scale any of its peers in Mesopotamia and Egypt.[15] Archeologist Wang Ningyuan (王宁远) estimated that the Liangzhu Hydraulic System functioned simultaneously for flood prevention, transportation, water storage, and irrigation. He mentions that the dams enclosing the reservoir could resist the maximum monsoon precipitation of the Tianmu Mountains, and flexibly release the accumulated water during dry seasons to maintain transportation and irrigation waterways operational for the flow of resources and supplies into the Liangzhu City.[16] This multi-functionality can be reflected in the very mentioned mid-late-phase ditch at the Laohuling dam likely used for regulating water flows between the high and low reservoir,[17] as well as deposits of semi-finished quarry stones used to built the Liangzhu city walls along the canal routes.[18] The success of the Liangzhu people in building and maintaining multifunctional water-managing projects of such scale, and at a very early phase, proves that this culture had already mastered early engineering and management knowledge that exceed the complexity of similar projects in other contemporaneous civilizations of conventional definitions.

The construction of both the Liangzhu City and the Hydraulic System further demonstrates that the Liangzhu elite has developed an extraordinary administrative capability reaching a level comparable to incipient states in the Fertile Crescent, which in turn had to be supported by a highly productive agrarian populace. Liu Bin and others estimate that "the amount of earth and rubble used to construct the entire urban structure and the hydraulic system is 10,050,000 cubic meters."[19] Under the realistic considerations that the labor army comprised primarily of rice farmers could only work during non-agricultural and non-monsoon seasons, it would still "take 10,000 people 27.5 years to complete all the earthen constructions."[20] To make this theory realizable, the rice farming-based Liangzhu economy must have generated enough surplus to sustain the labor army, a specialized elite and engineer class, and more than 60,000 non-agricultural urbanites[21] maintaining the city functional. This requisite was proven to be fulfilled by the theory that uninterrupted rice supplies from provincial centers arrived to the capital circle, as no traces of rice fields has been found in the immediate surroundings of the Liangzhu City, but several large scale carbonized rice deposits, proposed as silos, were found immediately south of the Mojiaoshan Platform.[22] This theory in turn also suggests that the elite in the Liangzhu capital may have collected provincial surpluses to support operations in the capital. It is important to mention that Liangzhu City is not the only urban center in the Liangzhu cultural zone; more than 600 Liangzhu settlement sites were found in the Jiangnan region, among which many "provincial

[10] Wang Yonglei et al. "杭州市余杭区良渚古城钟家港中段发掘简报." *Archeology* vol.6 (2021): 615–634.

[11] Liu Bin et al. "The Liangzhu City", 22.

[12] Liu Bin, et al. "Earliest hydraulic enterprise in China, 5,100 years ago." *Proceedings of the National Academy of Sciences* no.114.52 (2017a): 13,639.

[13] Lang Qingfeng et al. "杭州市余杭区良渚古城外围水利系统老虎岭水坝考古勘探与发掘". *Archeology* vol.6 (2021): 603–614.

[14] Liu Bin et al. "良渚: 神王之国". *China Cultural Heritage* no.3 (2017b): 12.

[15] Colin Renfrew & Liu Bin. "The emergence of complex society in China: the case of Liangzhu". *Antiquity* no. 92364 (2018): 981.

[16] Liu Bin et al. "The Liangzhu City", 33–34.

[17] Liu Bin, et al. "Earliest hydraulic enterprise in China, 5,100 years ago", 13,639.

[18] Wang, Ningyuan, et al. "Letting the stones speak: An interdisciplinary survey of stone collection and construction at Liangzhu City, prehistoric Lower Yangtze River." *Geoarchaeology* no.35.5 (2020): 635.

[19] Liu Bin et al. "The Liangzhu City", 40.

[20] Liu Bin et al. "The Liangzhu City", 40.

[21] The estimated population of the Liangzhu City plus its suburbs exceeds by far the 60,000 maximum of Uruk, the largest city (in size of city proper) of the time. Liu Bin et al. "The Liangzhu City", 44–45.

[22] Zhu Xuefei.《神王之国》. (Hangzhou: Zhejiang Daxue Chubanshe, 2019a): 85–91.

capitals" were identified. Sites like Sidun in Changzhou, Fuquanshan in Shanghai, Caoxieshan in Suzhou, among others also contain an iconic earthen platform, though smaller in size compared to the Mojiaoshan Platform, surrounded by clusters of suburbs. These provincial cities engaged in lower levels of rural surplus collection in a similar fashion the Liangzhu capital collected surplus from the provinces.[23] These developments provide further evidence that Liangzhu elite enjoyed a political supremacy stable and durable enough to effectively commanded massive and specialized labor armies, regulated the distribution of resources, and established political hierarchies across long distances.

Labor specialization in the Liangzhu society goes far beyond the mass labor public projects to encompass a number of handcraft industries, including jade, silk, lacquer, and pottery. Among all industries, the production of jade in the Liangzhu cultural zone appears to be strictly controlled by the elite (in both the capital circle and provincial centers) and show consistency to identified social hierarchies. Archeologist Qin Ling (秦岭) noted that jade objects only showed up in elite burial sites, and their number and quality also varied proportionally with the hierarchical position of the specific sites. The Fanshan cemetery within the inner walls of the Liangzhu City, identifies as the "royal cemetery", contained the jade objects that represent the highest quality of production. Jade objects found at various tombs in the Fanshan cemetery includes three-pronged objects (三叉形器, proposed to be a hair accessory), *cong* tubes (玉琮), *bi* disks (玉璧), *yue* axes (玉钺), among other jade forms.[24] The exact same forms of jade were also found at provincial elite burials, but their numbers are greatly reduced and their shapes and decorations are less pronounced than those found in Fanshan and Yaoshan, another capital elite altar.[25] At much local sites, jade production can even become more specialized to narrowly consist of a single type of product, such as the Zhongchuming (中初名) workshop site, where the primary production consists of serpent-pattern jades, while other varieties of jade only make up a marginal quantity.[26] The repeated usage of the same jade forms in sacrifices and funerals, with corresponding variations of frequency and quality, further endorses a cohesive hierarchical relationship between the Liangzhu capital and its provincial subordinates displayed through representational arts.

By this point, Liangzhu has clearly met the majority of the conventional characteristics of an advanced civilization, in particular proving the existence of a central authority capable of performing simultaneous fine management of diverse large scale projects and production activities across vast provincial territories and long time spans. In various aspects of development, such as urbanization, engineering, and political power projection, Liangzhu even outperformed incipient states in the Fertile Crescent. Yet, all these achievements were made without writing and metallurgy. Thus, the rise of the Liangzhu proto-state proves the existence of alternate models for the emergence of civilization.

### 2.3 The Liangzhu Way to political authority

It is natural for early societies to develop institutions of power to efficiently manage increasing populations and resources. While conventional models based on the experiences of the Fertile Crescent propose writing (or similar explicit forms of notation) and metallurgy (used for production and warfare) as key tools of exercising authority, the Liangzhu Civilization lacked both. Nevertheless, archeological research on postdating Late Neolithic and Early Bronze Age societies in China, particularly the works of Kuang-chih Chang and Li Min (李旻), propose the theory that the political power of elitesduring the Longshan and early dynastic periods was achieved through monopoly of religious ideology,[27] but disagree on the origin of this model of obtention of political authority. Li Min has proposed two main sources for the religious way of power obtention in Northern China, one being an indigenous development culminating in the Liangzhu Culture, another being an introduction from Eurasian Steppe traditions, though both models are not mutually exclusive and likely ended up fusing in Longshan culture areas of Northern China. In this matter, artifacts unearthed from Liangzhu cultural sites, especially ritual sites, indeed provide evidence that the Liangzhu Civilization has developed a mature and highly unified belief system, which was likely used by the elite, in combination with military power, to effectuate political authority strong enough to control the distribution of resources over a relatively large territory and command massive labor projects.

As discussed previously, the vast majority of jade and other objects across the Liangzhu cultural zone share highly unified shapes, with only slight variations of number and quality in accordance with geographical hierarchies. The prevalence of the same ritual objects, such as the *bi* disks, *cong* tubes, and *yue* axes, in all elite altar-burials reinforces the theory that a unified ritual order existed across the entirety of Liangzhu

[23] Liu Bin et al.《良渚: 神王之国》, 18.

[25] Qin Ling. "权利与信仰", 27–28.

[24] Qin Ling. "权利与信仰: 解读良渚玉器与社会". in《权利与信仰: 良渚遗址群考古特展》(eds. Qin Ling et al.). (Beijing: Wenwu Chubanshe, 2015): 13–23.

[26] Zhu Yefei, et al. "浙江德清县中初鸣良渚文化制玉作坊遗址群的发掘." *Archeology* vol.6 (2021): 656–678.

[27] Chang, Kwang-chih. *Art, myth, and ritual*. (Cambridge, MA: Harvard University Press, 1983).

dominions. While the *Rites of Zhou* composed nearly two millennia after the fall of Liangzhu indicates that *bi* disks and *cong* tubes were used for sacrifices directed respectively to heaven and earth,[28] there is not yet a consensus on original ritual values of these two jade forms in the Liangzhu Culture. Available theories suggest that the *bi* disk could have been used as merely a symbol of wealth or a mainstream burial device, based on its presence in both elite and commoner burials with variations of quality and quantity, and that all these *bi* disks were made without the Liangzhu Insignia.[29,30] The *cong* tube was also proposed as representations of ancestral generations (as later productions have clearly more "floors"), totem columns, male genitals, among other theories.[31] The value of *yue* axes is clearer. Qin Ling highlighted that one jade axe is buried in every Liangzhu male elite tomb, and the axe as a male symbol of high social status traces back to the preceding Majiabang, Lingjiatan and other Neolithic cultures in coastal China.[32] These cultures are already known as highly militarized societies continuously engaged in warfare in which *yue* axes used to be the most commonly used weapon[33]. Therefore, the presence of *yue* axes as the highest symbol of power also leads to a hypothesis that the Liangzhu elite may have used military power to back up their authority. Despite the inconclusive debate on the original ritual values of Liangzhu jade forms, it is nevertheless very likely that the Liangzhu society shared an unchallenged elite ritual culture marked by common burial customs and military ethos.

This cultural unity at the ruling level is further corroborated by the fact that the vast majority of Liangzhu jades also share the same iconic decoration motif commonly referred as the Liangzhu Insignia. Archeologists Zhao Hui (赵辉) and Wang Ningyuan noted that the Liangzhu Insignia can be subdivided into two components: a "beast" substratum and a "human" introduced element. Both authors suggest that beast totem was inherited from preceding indigenous Jiangnan Neolithic cultures, primarily the Songze Culture, and likely represented a nature-oriented belief system. But by the time the Liangzhu City and the royal tombs of Fanshan and Yaoshan were constructed, the human component "suddenly became dominant", alongside with the most peculiar ritual objects like *cong* tubes.[34] Wang Ningyuan argues that the human component was introduced from the Lingjiatan Culture, which likely also introduced a human-centered military culture into Jiangnan, and that this contact inflicted in a drastic change of belief or ideology. Moreover, by observing the evolution of jade and other artifact production in the Liangzhu cultural zone, he noted that the indigenous beast-only insignia on jades and other artifacts across all Jiangnan "updated" nearly synchronously into the new human-plus-beast version, which hybridizes both the indigenous and the introduced elements[35]. This phenomenon presents a possibility that the Liangzhu ruling class, who probably come or received influence from Lingjiatan, used a hybrid religious ideology embodied in the human-beast insignia to spiritually unify all dominions of the Liangzhu proto-state, replacing the previous local nature-based belief system embodied in the beast-only motifs of the preceding Songze culture[36].

Also synchronous with the rapid diffusion of the Liangzhu Insignia was the diffusion of the iconic quadrilateral earthen platforms of Liangzhu sites all over the Jiangnan region during the transition from Songze Culture to Liangzhu Culture. Studies on the preceding Songze Culture corroborate that, while earthen platforms did not form part of the Songze tradition during much of the culture's active period, towards the final stage of Songze Culture, this peculiar form of monumental architecture suddenly began being built in most of the major late phase Songze sites, such as Nanhebang (南河浜), Xiantanmiao (仙坛庙), and Xiaodouli (小兜里) in Jiaxing, Qiuchengdun (邱承墩) in Wuxi, and Fuquanshan in Shanghai, among other locations.[37] Many of these sites continued their activity as Liangzhu provincial centers for much of the civilization's duration. Based on surveys focused on both the Songze and Liangzhu periods, it is widely accepted that these quadrilateral earthen platforms has their main function as sacrificial altars, which is reflected in the presence of the previously mentioned times of ritual jades, ritual pottery, vestiges of burned earth, and accompanied by elite burials,[38,39] as well as the alignment of

[28] 《周礼·春官宗伯》: "以玉作六器, 以礼天地四方: 以苍璧礼天, 以黄琮礼地, 以青圭礼东方, 以赤璋礼南方, 以白琥礼西方, 以玄璜礼北方。皆有牲币, 各放其器之色。".

[29] Wang Mingda. "良诸文化玉璧功能考述". *Zhongguo Qianbi* (1998): 33–35.

[30] Zhang Minghua. "良渚玉璧研究". *Palace Museum Journal* no. 8 (1995): 71–81.

[31] Xu Zihan. "良渚玉琮的发现过程及研究历程". Jilin University (2018): 36–49.

[32] Qin Ling. "Power and Belief: Reading the Liangzhu Jade and Society", in *Liangzhu Culture: Society, Belief, and Art in Neolithic China* (eds. Liu Bin et al.). (Abingdon/New York: Routledge, 2020): 64.

[33] Li Min. *Social Memory and State Formation in Early China*, 50.

[34] Zhao Hui. "From the'Songze Style' to the 'Liangzhu Mode'", in *Liangzhu Culture: Society, Belief, and Art in Neolithic China* (eds. Liu Bin et al.). (Abingdon/New York: Routledge, 2020): 178.

[35] Wang Ningyuan.《何以良渚》, 187–192.

[36] Zhao Hui. "From the'Songze Style' to the 'Liangzhu Mode'".

[37] Zhang Min. "崧泽文化三题". *Dongnan Wenhua* no.1 (2015a ): 52–53.

[38] Zhang Xiaofan. "崧泽—良渚转型期的礼制遗存刍议: 以小兜里、仙坛庙、邱承墩遗址为例". *Nanfang Wenwu* no.4 (2015b): 146–151.

[39] Chen Jie & Zhou Yun. "上海福泉山遗址吴家场墓地 2010 年发掘简报." *Archeology* vol.10 (2015).

the altars' angles and median points with specific equinoxes and solstices.[40,41] The nearly synchronous appearance of earthen platforms with clear religious functions -in parallel with the Liangzhu Insignia- over the vast expanse of Jiangnan can also endorse the idea of a highly unified religion or ideology, centered in the elite who managed these altars for religious communication and used the same ritual activities to project their spiritual influence on the populace.

More recent studies on the Liangzhu hydraulic system also propose a connection between Liangzhu political power with hydraulic management, which also brought scholars including Li Min, Liu Bin, among others to reevaluate Wittfogel's theory of hydraulic empires. Considering that the transition into the Liangzhu Civilization coincide with a period of worsening climate marked by increasing unpredictability of rainfalls and droughts, coping measures combining stabilization of water and concentration of power might also be at the core of early Liangzhu elite ideology to maintain the social order under threat.[42] It is still debated whether the Liangzhu proto-state emerged as a result of the elite's concentration of power through the construction of hydraulic projects (following the Wittfogel model), as many iconic traits of Liangzhu elite culture already started taking shape since the Songze-Liangzhu transition period. Nevertheless, the water management project very likely "represented an opportunity to consolidate political power" for the Liangzhu elite, as it "enabled an unprecedented scale of rice farming and support of thousands of people within the city's sphere of influence"[43] (thus an increase or stabilization of life quality) and forged a collective identity for the Liangzhu populace based on their participation in the monumental projects.[44] It is also worthy noting that the construction of most urban structures at the Liangzhu City Site are estimated to have started slightly later than the hydraulic system,[45] which opens the possibility that the central planning associated with the construction of the hydraulic system might have as well emerged as a choice of the elite to "create stable environmental conditions" for the construction of their "capital city", rather than a necessity of an established settlement.[46] This further gives us a timeline in which ideological transformation likely caused by climatic menaces (reflected in the simultaneous appearance of the Liangzhu Insignia and the platform altars all over Jiangnan) at the elite level occurred first, followed by the construction of the hydraulic project that clearly involved mass participation and likely also involved mass acceptance of the Liangzhu elite ideology, and finally the statebuilding project that formalized/ritualized these hierarchies.

Combining these points, it is possible to hypothesize that the Liangzhu Culture presents a model of early state formation in which an elite class obtained stable, durable, and unchallenged political power by first "converting" the population into a highly unified religion or ideology. Then, the "converted" population was deployed to build the hydraulic project that further consolidated the elite's power and ideological control, to be eventually used for establishing an agro-urban proto-state. It is not clear whether the Liangzhu religion itself involved climatic concerns, nor if the ideological "unification" and labor participation involved state-sponsored violence (by the time of Liangzhu Culture, the *yue* axe has already evolved into a more ritual symbol). Still, the political authority of the Liangzhu elite clearly succeeded in commanding a colossal infrastructure that addressed the main climatic concern of its time, and remained very effective through the next centuries in securing a positive feedback loop between maintenance of social order and the operation of the hydraulic system, until the final collapse associated with the 4.2 Kiloyear Event. Even though the Liangzhu elite did not have writing and metallurgy to explicitly exercise power and facilitate production, it successfully used religion to run the affairs and command its population to build one of the most advanced and most productive civilizations of its time. This form of religious manipulation left remarkable traces in the emergence of the subsequent Longshan Civilization and early dynastic China as well.

## 2.4 Part II. Liangzhu factors in the emergence of early Chinese civilization

### 2.4.1 Emergence of civilization in the Longshan era

The Longshan Cultures are a collective of Late Neolithic and Chalcolithic cultures in the middle and lower Yellow River valley in Northern China, with its main variants cover the modern provinces of Shandong, Henan, Shanxi,

[40] Liu Bin et al.《良渚: 神王之国》, 13.
[41] Liu Bin et al. "The Liangzhu City", 36.
[42] Zhen Qin. "Exploring The Early Anthropocene: Implications From The Long-term Human-climate Interactions In Early China." *Mediterranean Archaeology & Archaeometry* vol.21, no.1 (2021): 133–148.
[43] Liu Bin, et al. "Earliest hydraulic enterprise in China, 5,100 years ago", 13,641.
[44] Li Min et al. "Water Management at the Liangzhu Prehistoric Mound Center, China", in *Irrigation in Early States: New Directions* (ed. Stephanie Rost). (Chicago: The University of Chicago, 2022): 356.
[45] Liu Bin, et al. "Earliest hydraulic enterprise in China, 5,100 years ago", 13,639.
[46] Li Min et al. "Water Management at the Liangzhu Prehistoric Mound Center, China", in *Irrigation in Early States: New Directions* (ed. Stephanie Rost). (Chicago: The University of Chicago, 2022): 362.

and Shaanxi. The active period of the Longshan Cultures ranges from ca. 2600BC to 1900BC. This superculture first emerged in Shandong province around 2600BC, succeeding the Dawenkou Culture (大汶口, ca. 4100BC—2600BC), and expanded upstream the Yellow River succeeding the the Miaodigou II Phase Culture in Henan and Shaanxi (庙底沟二期, ca. 2800BC—2300BC). The early phase the Longshan Culture shortly overlapped with the late phase of Liangzhu Culture. By 1900BC, the various Longshan Cultures successively collapsed, likely due to climatic change, warfare, among other causes. Nevertheless, significant Longshan cultural elements were absorbed by the succeeding Erlitou Culture (二里头, ca. 1900BC—1500BC) centered in Luoyang, identified by many as the mid-late phase of the Xia Dynasty. Thus, from both early dynastic social memory and present day perspectives, Longshan is regarded as the direct predecessor of the "orthodox Central Plains" Chinese Civilization.

It was not until the Longshan period that Northern China began experiencing a rapid transition into civilization, marked by widespread urbanization with hierarchical characteristics, normalization of social stratification and diversification, political experimentation with state building, and the introduction of bronze metallurgy. Archeologist Zhang Xuehai (张学海) noted that since early Longshan phase, urban settlement clusters in Shandong Province began displaying overt hierarchical differentiation. The early-phase city of Chengziya (城子崖) and surrounding sites display "a clear three-level 'capital-provincial-village'[47] [organization] structure"[48]. This pattern of settlement was later replicated in subsequent Longshan settlements further west, observable in the cities-plus-entourage settlements of Taosi (陶寺) in Shanxi Province, Wangchenggang (王城岗) in Henan Province, Shimao (石峁) in Shaanxi Province, among other site clusters, each cluster developing its own variant form of material culture pertinent to climatic and crop (thereby culinary) differences. Such kind of multi-level spatial organization and unequal interaction between settlements suggest that, throughout the Longshan period, a number of the most prominent cities evolved into proto-states, likely ruled by regional clan chieftains[49].

The emergence of these early chieftains or proto-states were also observably achieved through a combination of religious/ideological monopoly with systematic violence between geographic communities (proto-states), both of which are likely to be results of ecological pressure, given that the Longshan Era coincided to be the period with the worst climatic conditions in early China[50]. This fusion of religion power with violence is more notable in Highland Longshan cities like Taosi and Shimao, which coincide to be the most affected by climatic instability. Li Min highlights that both city sites contained large quantities of artifacts and remains attributed to ritual and shamanistic activities, including early musical devices like chime stones, drums, and bronze bells unearthed at Taosi, and *yazhang* jade tablets (牙璋) and taotie (饕餮) style reliefs at Shimao. In both city sites, the sacrificial altar is by far the most prominent architectural feature; the Astronomical Observatory of Taosi, proposed to be used for calendar-making and geomancy, measures 10 ha, even larger than the palatial complex (7 ha) of the city. At the terraced city of Shimao, the majority of religious/ritual/astronomical artifacts were concentrated at the top terrace as well. This space arrangement suggests that religious activities were placed with utmost priority in the Highland Longshan society, and that it is highly possible that the elite of these polities exercised their governance either through the religious/ideological institutions, or they were themselves part of the ruling religious institution. Such prioritization also reflects the importance of weather predictability for the Highland Longshan elites, which translates into agricultural stability, thereby social order. The polity of Shimao especially used a combination of ritual/ideology with violence in asserting its political power, which is reflected in both the large scale human sacrifice conducted at the East Gate of the Shimao City, and in the systematic desecration of the observatory and elite tombs at Taosi by intruding highland populations of clear Shimao cultural influence (maybe even sponsored by the Shimao polity)[51,52]. This development overlapped in time with dramatic aridification and temperature falls that hit northwestern China the hardest, which may have caused severe reduction of food output, thus triggering violent competition for resources.[53]

Lowland Longshan urban polities in the downstream Yellow River basin also show vibrant religious activities, exemplified with scapulimancy and geomancy[54], and abundant signs of warfare reflected in mass production of weaponry, large quantities of mass burials of corpses that experienced abnormal death, and emergence of likely primitive military garrisons at the frontiers between different Longshan proto-states.[55] Wu Wenxiang (吴文祥) and Ge Quansheng (葛全

[47] 都—邑—聚.
[48] Luan Fengshi. "海岱龙山文化的考古新发现和研究新进展", in《龙山文化与早期文明》(eds. Luan Fengshi et al.). (Beijing: Wenwu Chubanshe, 2017): 10.
[49] Luan Fengshi. "海岱龙山文化", 10–11.
[50] Li Min, *Social Memory and State Formation in Early China*, 169.
[51] Li Min. *Social Memory and State Formation in Early China*, 116–120; 124–126; 132–144.
[52] Li Min. "龙山时代的社会转折: 政治实验与互动网络的拓宽". in《龙山文化与早期文明》(eds. Luan Fengshi et al.). (Beijing: Wenwu Chubanshe, 2017): 20–24.
[53] Zhen Qin. "Exploring The Early Anthropocene: Implications From The Long-term Human-climate Interactions In Early China.".
[54] Li Min. *Social Memory and State Formation in Early China*, 154–157.
[55] Wu, Wenxiang & Ge Quansheng. "4.5~4.0 ka BP 气候变化, 人口增长, 条件限制与黄河中下游地区龙山酋邦社会产生." *Quaternary Sciences* vol.34, no.1 (2014): 255–256.

胜) listed several archeological surveys at various Lowland Longshan sites, such as Wangwan (王湾) and Cuoli (矬李) at Luoyang, Xiaopangou (小潘沟) at Mengjin, Jiangou (涧沟) at Handan, and Yinjiacheng (尹家城) at Jining, were burials containing mutilated and/or decapitated corpses in struggling body positions were discovered. At the Jiangou site, there is even evidence that decapitated skulls were peeled to make drinking cups[56]. This kind of phenomena was proposed by the authors to be signs of war in which captives were systematically executed in ritualistic manner, and that the conflicts could have been triggered by a human-resource disequilibrium caused by climatic deterioration.[57,58] Evidences of dramatic climate change in the Lowland is further reflected in spatial shifting of population from riversides to slightly elevated loess highlands, accompanied by crop shifting from rice to millet across vast areas of the Yellow and Huai river valleys due to rapid shrinking of surface waters and floods.[59] All these developments also occurred in parallel with emergence of large ritual centers, such as Yuhui (禹会) in Bengbu, that notably intend to exalt a "hope" for climatic predictability towards the mid-late phases of Lowland Longshan society when climatic instability reached its peak. The Yuhui site contains deliberate geomantic landscape transformations that are "possibly aimed at harnessing the powers associated with the natural spectacle," which would ideologically aid chiefdoms to cope through climate-derived mass social disruptions.[60] Combining all these traits, it is possible to observe that Lowland Longshan societies, as much as their Highland peers, also developed their own ritual ideologies that intertwined the environmental and social orders. Guided by such ideology, sponsored violence was likely both a result of environmental disruption (maybe perceived as a "divine punishment", as done by people in later history) and a device for chiefdoms to restore the environmental order through religious measures.

Despite regional variations of traditions, the general path to political authority in the Longshan Era still appear to be primarily ideological manipulation aided by politically-sponsored violence. In this process, the elites of diverse Longshan proto-states used their own religious/ritual ideologies (including ritual violence) to exercise hierarchical control over their respective populations, project power on neighboring communities to obtain resources, and to pursue environmental stability for the continuity of their respective chiefdoms. Yet, we still need to explore the origin of this model of power obtention in the Longshan society.

### 2.4.2 Liangzhu expansion and possible cultural diffusion to Longshan societies

The active periods of the Liangzhu and Longshan civilizations had a few centuries of overlap during the late 3rd Millenium BC, and this overlap period was marked by simultaneous cultural expansions of both cultures. Yet, the expansion processes of the Liangzhu and Longshan cultures were contrasting in nature. Archeologist Chen Shengbo (陈声波) argues that Liangzhu expansion during its most developed phases was largely a unilateral exportation of its elite culture with limited intakes of outside influence, while the Longshan expansion involved continuous absorption and fusion of traditions from various origins, including Liangzhu, Dawenkou, Miaodigou, even farther Eurasian Steppe traditions like the Afanasievo (ca. 3300BC—2500BC) and Seima-Turbino (ca. 2300BC—1700BC).[61] Under this context, a northward diffusion of culture from the Jiangnan region, which was at the time much more developed than the Yellow River valley, is objectively possible.

While many research works propose that the diffusion of Liangzhu and Liangzhu-inspired artifacts in much of Late Neolithic and Bronze Age China may have been resulted from a dispersal of the Liangzhu population after the decline of their polity, archeologists Chen Shengbo, Luan Fengshi (栾丰实), and Yan Wenming (严文明) separately point out that Liangzhu cultural expansion had already started since a very early stage of the civilization[62,63]. Liangzhu expansion prior to its final dispersal was mainly projected towards two directions: 1) Dawenkou Culture areas in northern Jiangsu and Shandong, and 2) Shixia Culture (石峡, ca. 3000BC—2000BC) areas in Guangdong. While on the southern route Liangzhu influence remained uniformly limited to the elite material culture, the northern route saw different degrees of cultural replacement (centered in the elite) proportional to the distance of specific sites to the Liangzhu capital.[64]

The first station on the northern expansion route corresponds to the site cluster of Qingdun, Kaizhuang, and Jiangzhuang (青墩、开庄、蒋庄) near Taizhou (泰州), where

[56] Wu, Wenxiang & Ge Quansheng. "4.5~4.0 ka BP 气候变化, 人口增长, 条件限制与黄河中下游地区龙山酋邦社会产生", 255.
[57] Wu, Wenxiang & Ge Quansheng. "4.5~4.0 ka BP 气候变化, 人口增长, 条件限制与黄河中下游地区龙山酋邦社会产生", 261–262.
[58] Underhill, Anne. "Warfare and the Development of States in China", in *The archaeology of warfare: Prehistories of raiding and conquest* (Gainesville, FL: University Press of Florida, 2006): 253–285.
[59] Li Kaifeng et al. "Spatial Variability of Human Subsistence Strategies During the Longshan Period (~4.6-~3.9 Ka Bp) and Its Possible Physical Environmental Contexts in the Yellow-huai River Area, East China." *Scientific Culture* vol.7, no.3 (2021): 105–117.
[60] Li Min. *Social Memory and State Formation in Early China*, 157.
[61] Chen Shengbo.《良渚文化与华夏文明》. (Nanjing: Jiangsu Renmin Chubanshe, 2019): 182.
[62] Chen Shengbo.《良渚文化与华夏文明》, 182–185.
[63] Luan Fengshi. "良渚文化的北渐". *Zhongyuan Wenwu* no.3 (1996): 57.
[64] Chen Shengbo.《良渚文化与华夏文明》, 189.

the previous local Dawenkou cultural heritage was reduced to minimal. The elite burials completely followed metropolitan Liangzhu customs, with abundant jade forms of similar style and quality as other Liangzhu provincial sites, and the commoner burial pottery also display significant stylistic Liangzhu-ization, drastically reducing the share of Dawenkou style potteries with the progress of time.[65] Through an archeo-genetics study, Zhu Xiaoting (朱晓汀) found out that the Liangzhu expansion into Jiangzhuang and nearby areas not only consisted in a diffusion of material (and its associated spiritual) culture, but also involved genetic exchanges between a group from the Liangzhu homeland with the local group.[66] This leads to a possibility that the mentioned cultural diffusion was a result of either migration or conquest, resulting in the replacement of the previous local population-culture group by an offshoot of Liangzhu settlers.[67] A similar phenomenon is also observed at the site cluster of Dongyuan and Luzhuang (东园、陆庄) near Yancheng, slightly to the north of the Jiangzhuang cluster. At these two sites, burial goods consisting of classical early phase Liangzhu jades and pottery also occupied the majority of elite and commoner tombs. Nevertheless, the local culture at the Dongyuan site area survived in a slightly better state than their southern neighbor of the Jiangzhuang site cluster; instead of outright replacement, commoner pottery display certain degree of fusion between the Liangzhu and the local styles.[68,69] It is not clear either whether Liangzhu settlement at the Luzhuang-Dongyuan cluster constituted a migration or a conquest (or both), but clearer evidence of violent confrontation can be observed farther north, at the frontier of the Liangzhu and Dawenkou influence spheres.

The site of Huating (花厅) near Xuzhou has attracted attention of scholars because it constitutes a bi-cultural site, in which two parallel archeological cultures -Liangzhu and Dawenkou- coexist in strength. In other words, despite Huating's location within the immediacy of Dawenkou core areas, the site is also co-inhabited by a powerful foreign group with intimate connections to the Liangzhu political core.[70] This phenomenon is primarily reflected in the burial arrangements, in which burial goods in the early phase cemeteries and late phase commoner cemeteries comprised nearly exclusively of Dawenkou artifacts, while late phase elite cemeteries display a concentration of the highest class of Liangzhu elite ritual goods, many carrying the Liangzhu Insignia.[71] Yan Wenming believes that the Huating site was a strategic outpost of the Liangzhu state, interpreted as the headquarters of "a Liangzhu expedition army… that defeated the indigenous Dawenkou population and occupied [their territory]."[72] This is reflected in the late phase burial artifacts at Huating site comprising "the most representative Liangzhu homeland artifacts, …war spoils attributed to the Dawenkou Culture, … and sacrificed captive women, children, and lifestock…"[73], noting that human sacrifice is neither a Dawenkou nor a metropolitan Liangzhu tradition.[74] Alternative theories also suggest that Liangzhu jades arrived at Huating via elite intermarriage or state alliance.[75] Regardless which version reflects history better, the introduction of the Liangzhu elite culture into the Huating area also resulted in a cultural superposition to the advantage of the Liangzhu side, in which a foreign or foreign-influenced elite consolidated its power in a Dawenkou-majority settlement. From Huating, Liangzhu artistic influence could further reach deep inside the Dawenkou homeland in Shandong province; numerous Dawenkou sites in Shandong reported discoveries of Liangzhu style pottery; the Chipingshangzhuang (茌平尚庄) site near Liaocheng and the Dawenkou site itself near Tai'an even found jades forms imitating *cong* tubes.[76,77] The Liangzhu cultural diffusion at Huating and beyond can suggest that Liangzhu not only expanded its political reach into Shandong, but also likely exported its religion to its dependencies well inside the core Dawenkou areas there, transforming certain customs of the locals.

The exportation of ideology sponsored by the Liangzhu state, which had absolute political-military superiority in China, may have left further repercussions in Shandong, such as inciting a change in the local people's ideology. As discussed in this paper, the Longshan Civilization first emerged in the Dawenkou homeland during the late phase of the Liangzhu Civilization. While the concentric-walled, "Venice" style internal plan of the Liangzhu City bears little similarity to the simpler plans of Longshan cities, their external hierarchy relations with their respective provincial centers and dependent villages clearly followed the same pattern. This development is unlikely to have been introduced from Central Asia, as the large scale urbanization of Longshan societies first began in

[65] Chen Shengbo.《良渚文化与华夏文明》, 190–191.
[66] Zhu Xiaoting. "江苏兴化蒋庄良渚文化墓葬人骨研究." Jilin University (2018).
[67] Chen Shengbo. 良渚文化与华夏文明》, 192.
[68] Zhu Guoping et al. "江苏阜宁县东园新石器时代遗址." *Archeology* vol.6 (2004): 7–21.
[69] Chen Shengbo.《良渚文化与华夏文明》, 193–194.
[70] Gao Guangren. "花厅墓地'文化两合现象'的分析.' *Dongnan Wenhua* vol.9 (2000): 25–30.
[71] Nanjing Museum.《花厅: 新石器时代目的发掘报告》, (Beijing: Wenwu Chubanshe, 2003): 191–194.
[72] Chen Shengbo.《良渚文化与华夏文明》, 197.
[73] Yan Wenming. "碰撞与征服: 花厅墓地埋葬情况的思考." Wenwu Tiandi vol.6 (1990): 19–21.
[74] Chen Shengbo.《良渚文化与华夏文明》, 197.
[75] Nanjing Museum.《花厅: 新石器时代目的发掘报告》, 195.
[76] Luan Fengshi. "良渚文化的北渐", 54.
[77] Wu Shichi & Wu Wenqi. "茌平尚庄新石器时代遗址." Kaogu Xuebao vol.4 (1985): 477.

Shandong, in proximity to Liangzhu outposts, while western China still lacked any settlement reaching the scale of a "city". The process of obtention of political power by Longshan polities, similar to the Liangzhu proto-state, was also primarily through ideological control, aided by coercion, and very likely in pursuit of environmental security in a period of climate deterioration. Although in this last matter, Liangzhu and Longshan resorted to different practices (landscape transformation vs landscape ritualization), to suit their respective geographical conditions (rice farming vs dry farming), both the Liangzhu and the Longshan model of early state formation show significant continuity. Moreover, Liangzhu ritual objects including *bi* disks, *cong* tubes (limited), and *yue* axes continued to be part of the Longshan and the early dynastic ritual inventory, respectively attributed to ceremonial and political (military) values. Though there is no explicit evidence that the Liangzhu outposts and hinterlands in Shandong directly transmitted this model of civilization emergence to the Longshan societies, there is still the possibility of an early case of secondary state formation resulted from indirect Liangzhu influence. More archeological research is needed to fill this gap.

There is the traditional notion that the cradle of Chinese Civilization is the Yellow River valley. While this statement is true up to the Longshan Era, the existence of a much older developed civilization in the Jiangnan region -Liangzhu- that possibly exported its model of state formation, or that provided inspirations for the people in Northern China to imitate its model, directly challenges this outdated perspective. Not to mention that the Longshan Civilization also absorbed substantial elements from societies far beyond the cultural core of China that contributed to its rise. In addition, the civilization enterprises of both Liangzhu and Longshan societies were achieved without intervention of writing and metallurgy, which were not introduced until late phase Longshan and did not substantially take part either in political management nor in production, but rather remained as materials to produce religious devices. This latter development also challenges the conventional perspective that writing and metallurgy are prerequisites for civilization emergence and state formation.

## 3 Part III. Discussions and conclusions

### 3.1 Liangzhu's challenges to traditional historical knowledge

Overall speaking, the Liangzhu Culture defies two deep-rooted assumptions about Early China, one is the conventional model of civilization emergence, and the other is the Central Plains narrative of Chinese civilization diffusion.

Marxist archeology theories exemplified by the 10 criteria of civilization proposed by V. Gordon Childe, often presume the Fertile Crescent model as the primary path for a complex civilization to emerge. In such model, writing is regarded as crucial for the management of populations and resources, a requisite for the operation of a state apparatus governing diversified communities across large distances. Metallurgy is viewed as key to increase productivity as well, which is a foundation for the generation of economic surplus enough to support the diversified urban population maintaining different state functions operational, including elites/priests specialized in bureaucracy, engineers in monumental and public projects, soldiers in defense and repression, and non-agricultural laborers in service of all of them. However, the Liangzhu Civilization achieved all the results of, and sometimes even outperformed, its Fertile Crescent peers without writing nor metallurgy, but very likely by manipulating ideology. By establishing and monopolizing a powerful religion, the Liangzhu elite very possibly controlled the thinking of its people, which further enabled the elite to mobilize them with maximal efficiency. The Liangzhu elite's religious manipulation of its populace may have originally emanated from a need to tackle an environmental concern for their settlement in the Hangzhou area, which led to the construction of the Hydraulic System. However, this governance model persisted after the works' completion, and continued to give the Liangzhu elite sufficient political authority to mobilize its populace either for domestic projects like the construction of the Liangzhu capital or for outbound engagements like expansion campaigns northwards. Therefore, the Liangzhu Culture directly proved the viability of an ideological path to early state building and obtention of political authority.

Already in the 1980s, the renown archeologist Su Bingqi (苏秉琦) proposed the multi-origin interactionist theory of civilization emergence in China commonly known as "Stars Filling the Sky" (满天星斗), through which he discredited the traditional narrative that civilization in China first emerged in the "Central Plains" and diffused to the "four directions". Yet, this single-origin assumption continues to prevail among both the Chinese and foreign general public. Here, the Liangzhu Culture again refuted the Central Plain narrative, not only by simply demonstrating that its time frame is a millennium older than the oldest civilization in the Yellow River cradle -Longshan-, but also providing signs that the Longshan Civilization itself might have emerged as a consequence of ideological transformation ultimately resulted from Liangzhu power projections into Shandong, the Longshan homeland. The ideological transformation in the Longshan societies also display constructions of identities through religious manipulation but using local ideologies and devices, and very likely also emanated from the need to address environmental pressure and its derived social disruptions. Such diffusion pattern can also be observed along the westward cultural expansion of the Longshan Horizon, in which Highland Longshan societies developed their own urban proto-states modeled after their Lowland Longshan predecessors, but integrating their

own belief systems with native and Eurasian characteristics. Available data from archeological surveys is far from sufficient to prove any direct transmission of statebuilding model from Liangzhu to Longshan. Thereby, more archeological research will be necessary in the future to reconstruct a coherent history of the emergence of civilization in China.

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