



Materiality and Divine Construction of Liangzhu Jade Artifacts—An Aesthetic Path from Mineralogy to Sensory Anthropology

Qi Chen^{1,a}, Ping Li^{2,*}

¹School of Humanities, Tongji University, Shanghai 200092, China

²School of Gemmology and Materials Science, Hebei GEO University, Shijiazhuang 052161, China

^a2380277@tongji.edu.cn, *liping3010@163.com

*Corresponding author

Abstract. The jade ritual object system of the Liangzhu Culture, with tremolite jade (nephrite) as its core material, is the prehistoric source of the Chinese civilization's aesthetic tradition of “using jade to convey the Dao”. This article uses the theory of material agency and sensory anthropology as the methodological framework, combined with mineralogical evidence and archaeological studies, to systematically analyze how the physical properties of Liangzhu jade, such as structure, luster, hardness, hardness, acoustic qualities, and durability, are transformed through the multi-sensory perception of the ancient people into divine symbols such as the power of the sun god, eternity, divine communication, and the immortal soul. It reveals the two-way construction mechanism of “materiality - divinity”, that is, the material properties of jade support sacred concepts, and sacred concepts, in turn, regulate the selection of materials, craftsmanship, and ritual practices. Through cross-civilizational comparison with the selection logic of sacred objects in ancient Egypt, Sumer, and the Indus Valley Civilization, this study clarifies the uniqueness of the aesthetic paradigm of Liangzhu jade artifacts. This paradigm is characterized by starting from warm and restrained material perception, taking the use of objects to communicate with the divine as its core, and aiming at ritual order and social harmony. Thus, it forms an Eastern jade civilization path that is distinct from the Western “precious metal + gemstone” sacred system. This research provides an empirical path for early Chinese aesthetics from “material perception” to “divine construction”, promotes the expansion of “material aesthetics” in prehistoric art research, and offers a new perspective for understanding the origin of the aesthetic genes of Chinese civilization.

Keywords: Liangzhu jade artifacts; Materiality; Divine construction; Tremolite; Sensory anthropology; Material aesthetics; Cross-civilizational comparison

1 Introduction

Liangzhu Culture (c. 5300–4300 BP) is a highly developed early state civilization in the lower Yangtze River region around Lake Tai. With its large-scale ancient city, complex water conservancy system and the pinnacle of jade ritual artifacts, it provides evidence of China's five thousand years of civilization. Jade artifacts are not just simple handicrafts, but the core medium for maintaining divine power, royal power, and social hierarchy, which are the material condensation of the spiritual world of Liangzhu. The academic community has studied Liangzhu jade artifacts in a wide range of dimensions, including archaeological typology, archaeological science, decorative iconography and social function, yielding substantial achievements. Archaeological science reveals the provenance of jade materials and jade-making techniques^[1], iconography interprets the religious connotation of the god-human-animal face pattern^[2–4], and social archaeology clarifies the hierarchical marking function of jade ritual artifacts^[5].

Most existing studies treat jade artifacts as passive symbolic carriers of power and belief, neglecting their active material agency in constructing the sensory world, emotional order and spiritual identity. This article intends to start from the core question of how the physical properties of jade are transformed into divine symbols, and to explore the aesthetic implications of “material property → divinity” transformation mechanism means in aesthetics. Based on mineralogical researches on tremolite jade and the Alfred Gell's theory of material agency and sensory anthropology^[6], we try to reconstruct the Liangzhu people's embodied perception of jade from the dimensions of vision, touch, hearing and cross-sensory synesthesia. In addition, a symbolic transformation logic of luster, hardness, toughness, acoustic qualities, and durability is widely discussed. Combining typical ritual objects such as cong, bi, yue, and trident-shaped objects, we analyze how the craftsmanship transforms material property into sacred form. Through cross-civilization comparison, we locate the global value of Liangzhu jade artifact aesthetic paradigm and construct a complete analytical chain of “material basis → sensory perception → divine symbolism → aesthetic paradigm → social order”.

2 Theoretical Basis

2.1 The Theory of Matter Mobility: From “Passive Carrier” to “Active Subject”

Traditional aesthetics and archaeology often treat artifacts as passive projections of human ideas, following a unidirectional path of “idea → form → matter”. In *Art and Agency*, Gale proposed material agency, which overturned this understanding: matter is not a container that passively carries meaning, but actively participates in the generation of meaning, the construction of social relations and the shaping of the spiritual world through its own physical properties and interaction with human practice^[6]. The luster, hardness, toughness, acoustic qualities, and other material properties of jade are not additional attributes, but the intrinsic basis for its ability to “communicate with the

divine”. It is these qualities that transcend ordinary stone that elevate jade from “beautiful stone” to “sacred object”.

Liangzhu jades perfectly exemplify this theory: the fibrous interlocking textures of tremolite jade determine its warm luster and tough texture, and this material property led the ancient people to associate it with divinity and eternity. Conversely, the concept of divine communication promotes Liangzhu ancients to rigorously select tremolite jade from many rocks and invest extreme labor in carving, forming a positive feedback loop among materiality, concept, and practice. Therefore, jade artifacts thus become an active aesthetic subject, shaping the sensory experience and belief system of Liangzhu society.

2.2 Sensory Anthropology: Returning to the Embodied Aesthetics of Prehistoric Times

Sensory anthropology emphasizes multi-sensory integration and embodied perception, and opposes the simplification of aesthetics into the modern paradigm of visual centrism^[7]. Thus, the aesthetics of prehistoric people should not be an abstract speculation, but rather based on the direct interaction between the body and matter: touching the warm and delicate texture of nephrite, listening to the clear and melodious sound of nephrite, gazing at the restrained luster of nephrite, and feeling the immortality of nephrite. This multi-sensory experience is a starting point for the construction of divinity: divinity is not a priori existence, but is gradually generated from the body’s intuitive perception of material properties.

The aesthetics of Liangzhu jade artifacts perfectly align with the logic of sensory anthropology: jade ritual objects are not artworks intended merely for distant viewing, but rather embodied media that can be touched, struck, worn, and burned in sacrifices, funerals, and ceremonies. Through multi-sensory interactions between body and jade, the Liangzhu ancients completed a communication chain from “human → jade → god”, achieving an embodied experience of divinity.

2.3 Material Aesthetics: An Empirical Path for Early Chinese Aesthetics

The classical Chinese aesthetics centers on some concepts, such as Dao, Qi, artistic conception (Yijing), and moral analogy (Bide), emphasizing experience, life, and ethics^[8-10]. However, research on early aesthetics has often been constrained by insufficient textual evidence, resulting in metaphysical deductions based on later canonical categories. Material aesthetics, starting from material properties, ground aesthetic inquiry in an empirical process of “material perception → formal creation → conceptual sublimation,” thereby providing an operable framework for a study of prehistoric aesthetics.

Liangzhu jade artifacts, as a history of aesthetic practice without written language, are an excellent example of material aesthetics: their aesthetic value does not rely on written interpretation, but directly stems from the beauty of the jade’s material, craftsmanship, form, and ritual. Therefore, using material aesthetics as a thread to connect

mineralogy, technology, aesthetics, and anthropology is conducive to revealing the pre-historic origins of China's early aesthetic tradition of "combining beauty and goodness, and embodying the unity of Dao and object".

3 Mineralogical Basis of Liangzhu Jade

3.1 The Absolute Dominance of Tremolite Jade

Material analysis shows that jade artifacts unearthed from typical sites, such as Yuhang, Sidun, Gaochengdun, Fuquanshan and Zhanglingshan site, mainly include tremolite jade (true jade), with some serpentine jade. The proportion of nephrite is even higher in high-level tombs, reflecting the precise selection and monopolistic use of high-quality nephrite by Liangzhu ancients^[11-13]. Based on the investigations of Liangzhu jade artifacts preserved in the Palace Museum, jade material can be classified into two categories. The first type consists of flawless fine-grained jade, mostly greenish-yellow in hue, with localized water-bean structures and rust-colored inclusions, similar to the characteristics of nephrite jade from Xiuyan, Liaoning Province. It is inferred that this material was traded from the Liaodong-Shandong Peninsula to the Taihu Lake Basin and primarily allocated to high-ranking nobles during the early and middle Liangzhu periods. The second type refers to blemished jade with a relatively coarse texture, ranging from green to dark green and containing diverse phenocrysts. Its provenance is likely adjacent to the core area of Liangzhu Culture^[1]. This type was used from the early middle period onward and became dominant in the late period after the first type of jade material sharply declined. Currently, Xiaomeiling nephrite deposit in Jiangsu Province is considered the most likely source area for the jade raw materials^[13]. This model of diverse sourcing and rigorous selection relies not only on geographical resource advantages but also on a precise understanding of the properties of jade materials.

3.2 The Core Root of Material Properties

Nephrite, an almost monomineralic rock, is mainly composed of tremolite-actinolite series (the calcium-magnesium silicate mineral group). Its major mineral exhibits a microfibrillar interwoven texture (also known as a felt-like texture), where micron-sized mineral fiber crystals intertwine and entwine to form a dense three-dimensional network. This rock texture is the physical basis for the various sensory characteristics of tremolite jade.

Visual: Interwoven mineral microcrystals in nephrite produce various effects, such as refraction, scattering and diffuse reflection of incident light, forming a greasy luster and presenting a warm and restrained visual effect, which contrasts sharply with the strong reflection of single-crystal gemstones and the dull luster of ordinary stones.

Tactile sensation: The tight interweaving of micron-sized mineral fibers not only gives jade high toughness and high compressive strength, but also brings a delicate touch. In addition, the low thermal conductivity of tremolite makes it feel gentle to the touch.

Hearing: The dense and uniform texture allows sound waves to propagate with low loss. When struck, it produces a high-frequency, clear, and lingering sound, which is what the *Shuowen Jiezi* (a dictionary of Chinese characters) refers to as “its sound is melodious and can be heard from afar”.

Durability: The silicon-oxygen double chain structure of tremolite-actinolite series has high bond energy, so nephrite is resistant to acid and alkali corrosion, weathering, and maintains high temperature stability below 900°C^[14-15].

In summary, the crystal structure and fibrous interlocking texture of nephrite endow it with a unique integration of warmth, hardness, toughness, pleasing sound, and imperishability. These properties distinguish nephrite from ordinary stone and make it an ideal medium for communicating with the divine.

3.3 Four-dimensional Presentation of Sensory Qualities

(1) Warm and lustrous: a material projection of the sun god's power

The primary colors of Liangzhu jade artifacts are mostly white and bluish-white. After burial, they develop secondary colors, such as chicken-bone white and yellow. However, their warm and restrained greasy luster is the core criterion for selection. This luster is not strong and direct, but rather a diffuse reflection of “inner light”, which coincides with the sun worship of the rice-growing civilization. The luster is associated with the condensation of the sun god's power, and jade becomes a “divine object that stores sunlight”. The holder can obtain divine power through jade and protect agricultural harvests. The semi-transparent texture creates a visual effect of “the interplay of reality and illusion”, which is in accord with the ancient people's cosmological imagination of “the connection between heaven and earth”, providing a visual basis for the cong shape of being round inside and square outside.

(2) Resilient and delicate: The body perception of eternal authority

The hardness and toughness of nephrite create a unique tactile experience. Its hardness and durability symbolize inviolable authority. Its resilience and unbreakability symbolize eternal life. Its polished smoothness brings a warm, lustrous touch, distinct from cold stone and rough pottery. This tactile perception easily translates into divine symbolism: the hardness of nephrite corresponds to the “strength of heaven”, while the warmth corresponds to the “benevolence of earth”. The unity of hardness and smoothness symbolizes the majesty and inclusiveness of divine authority, becoming the physical basis for the legitimacy of royal power. Therefore, jade artifacts in tombs are often placed on key areas such as the head and chest of the deceased, using the jade's resilience to protect the immortality of the soul.

(3) Clear and melodious sounds : the auditory medium for communicating with the divine

When struck, nephrite emits a high-frequency, clear, resonant, penetrating sound with a long, lingering resonance, which is considered a celestial sound. In the sacrificial rituals, jade artifacts are suspended and struck, and the sound, transcending the hustle and bustle of the world, becomes an auditory bridge connecting the human realm and the divine realm. The bird-shaped patterns echoing the sound of the jade may signify the ritual logic of “divine birds conveying messages, communication between heaven

and man”, further elevating the sacred nature of the sound to the status of jade as a medium for communicating with the divine.

(4) Stability: Fire-resistant and corrosion-resistant - a timeless symbol of an immortal soul

Jade artifacts, excavated from the Yaoshan and Fanshan sites, demonstrate its immortal properties. In the acidic and humid soils surrounding Tai Lake, Liangzhu jade artifacts have been proven to remain intact for millennia, unlike easily perishable organic materials such as wood and silk. Our ancestors regarded this property of transcending time and destruction as a divine symbol of the immortality and eternal life of the soul. The jade becomes a material carrier for resisting death and prolonging life, and funerary jade thus becomes a core element of their beliefs.

4 The Mechanism of Transformation from Materiality to Divinity

4.1 The Logic of Transformation: A Four-Tier Path from Sensory Experience to Divine Concepts

The Liangzhu ancients followed four progressive levels, including embodied perception, symbolic association, conceptual solidification, and ritual practice. They transformed the material properties of jade into its divine nature, and ultimately constructed a stable system of sacred concepts (Table 1).

Embodied perception: The Liangzhu ancients can gain intuitive sensory experiences by visually observing the jade’s luster, tactilely feeling its firmness and smoothness, auditorily hearing its sound, and observing its fire resistance and corrosion resistance in rituals.

Symbolic associations: Based on nature worship, the sensory qualities of jade were associated with images such as the sun, eternity, celestial music, and the soul.

Concept solidification: Through continuous ritual activities and intergenerational cultural inheritance, the above associations were elevated to sacred concepts, including divine communication, immortality, and authority.

Ritual Practices: The sacred concept is solidified through the system of jade ritual objects, forming a complete practical system of material selection, jade making, jade use, and jade burial.

Table 1. Core transformation dimension: The correspondence between materiality and divinity

Material properties	Sensory perception	Symbolic association	Divine connotation	Etiquette function
The luster is warm and soft.	Visual Introverted and gentle	The inner radiance of the sun and moon	Sun God Power Through light and through the heavens	sacrificial vessels Divine Emblem Carrier
High hardness and good toughness	Touch Hard and warm	The strength of heaven God's authority	Eternal monarchy Inviolable	Jade Axe and Scepter Level label

The sound is clear and high-frequency.	Hearing Long-lasting penetrating power	Heavenly sound The divine bird transmits its voice	Communication between Heaven and Man Oracle carrier	Sacrificial Jade Ring Ring medium
Fire-resistant, corrosion-resistant, and durable	Cross-sensory Cross-time perception	Beyond Destruction The soul lives on	The soul is immortal Faith in Immortality	Funeral Jade Eternal Guardian

Throughout this process, material agency is ever-present: the material properties of jade constitute the material premise upon which sacred concepts arise, while sacred concepts represent the sublimation of the meaning of jade properties. The two are interdependent, presenting a two-way constructive relationship.

4.2 The Practical Manifestation of Material Agency: The Dual Driving Force of Material Selection, Craftsmanship, and Etiquette

(1) Material selection: Material monopoly dominated by divine concepts

The Liangzhu people did not use jade arbitrarily, but selected jades rigorously according to their natural attributes. The high-ranking ritual objects must be made of high-quality nephrite, rejecting ordinary beautiful stones with many impurities and poor luster. The purity, luster, and toughness of the jade material directly corresponded to the ritual rank. For example, the King of Cong and the King of Yue were made of the finest, flawless, and warm-toned nephrite whenever possible. This correspondence between material rank, divine and social rank is a direct manifestation of the transformation of jade properties into divinity.

(2) Craftsmanship: the technological intermediary for transforming material properties into sacred forms

The craftsmanship of Liangzhu jade, centered on accentuating jade’s physical traits and conveying sacred connotations, developed a unique technical system, specifically manifested in following aspects:

Polishing: Through the multi-layer fine polishing, the warm luster of jade surface is enhanced, amplifying the visual symbolic meaning of “the power of sunlight”.

Shallow relief carving: This unique technique creates rich layers of light and shadow, making the deity and animal face patterns appear realistic and illusory under light, enhancing the sacredness and mystery of jade artifacts.

Micro-carving intaglio: Five to six fine lines are engraved within a range of 1mm, a precision far exceeding the capabilities of ordinary human hands. This “beyond human reach” technique reinforces the concept of divinely bestowed skills and elevates the sacredness of jade artifacts.

Inner circle and outer square shape: The square and round structure of cong, with its regularity and stability, symbolizes a cosmic order of “round heaven and square earth”, realizing the materialization of the cosmology.

The craftsmanship is not merely technology itself, but also a medium through which materiality is transformed into sacred forms. A reciprocal interactive relationship exists between technology and aesthetics. The aesthetic pursuits give rise to craft innovation,

and craft innovation, in turn, expands the boundaries of aesthetics. Both serve the construction of divinity.

(3) Ritual: The sensory field of divine practice

The use of jade ritual objects creates a sacred space that integrates multiple senses:

The sacrificial ceremony may involve participants gazing at the divine emblem on cong, touching the warm and smooth texture of bi, striking the jade to listen to its sound, and observing the immortality of the jade during the burning ceremony, thus completing the process of communicating with the divine through a multi-sensory experience.

Funeral rituals: Jade artifacts are placed around the deceased, their hardness and smoothness protecting the soul, and their immortality symbolizing eternal life, helping the deceased transcend life and death.

Hierarchical etiquette: The material, craftsmanship, and combination of jade ritual objects become markers of status, solidifying social hierarchy through differences in visual and tactile senses.

Ritual practices transform the sacredness of material from a conceptual level into concrete behavior, thereby establishing the spiritual norms for the daily operation of Liangzhu society.

5 Aesthetic Paradigm of Divine Construction

5.1 Visual Symbol Paradigm: The Dialectical Unity of Minimalist Form and Extremely Complex Ornamentation

The aesthetics of Liangzhu jade artifacts are centered on the idea that “artifacts can communicate with the divine”, forming a dialectical paradigm that unifies extremely simple forms with extremely complex patterns.

The forms are extremely simple: the cong (inner circle and outer square), bi (perfect circle with a hole), yue (axe-shaped), and trident-shaped objects (mountain-shaped) are all highly abstract geometric shapes, corresponding to the cosmic order and the essence of power, without any superfluous decoration.

The patterns are extremely intricate: the human-animal face pattern is carved with micro-carved incised lines, the composition is symmetrical and dense, the layers are rich, the details are complex but orderly, creating a sacred and imposing sense.

The minimalist form embodies the worldview and order, while the extremely complex patterns embody divinity and faith. The combination of the two achieves the aesthetic realm of “form is concept, and object is divinity”, which can be regarded as the prehistoric source of the Chinese idea of “the unity of Dao and object”.

5.2 Sensory Aesthetic Paradigm: The Gentle and Restrained Aesthetic Characteristics of the East

The sensory aesthetics of Liangzhu jade artifacts differ from the outward-looking sacred expression of Western civilization, forming an introverted, gentle, and harmonious Eastern paradigm.

Visually: Rejecting the dazzling luster, pursuing a warm and restrained aesthetic, embodying the “moderate and peaceful” aesthetic orientation.

Touch: Rejecting sharpness and coldness, pursuing warmth and resilience, embodying the ethical aesthetic of “beauty and goodness in harmony”.

Hearing: Rejecting loud and harsh sounds, pursuing clear and melodious sounds, and embodying the auditory aesthetic of “harmony between man and nature”.

Multi-sensory experiences are unified under the goal of “communicating with the divine”, forming a prehistoric aesthetic paradigm that combines embodiment, wholeness, and sacredness. The system of personality symbolism, embodied in the notion that “a gentleman likens his virtue to jade”, has become the aesthetic gene that has sustained Chinese civilization for five thousand years.

5.3 Social Aesthetic Paradigm: The Aesthetic Order of Etiquette and Harmony

The divine construction of Liangzhu jade artifacts ultimately points to the aestheticization of social order. The hierarchical system of jade ritual objects (differences in the combination of cong, bi, yue, trident-shaped objects, etc.) transforms divine hierarchy into social hierarchy.

The symmetrical, regular, and orderly formal aesthetics correspond to the harmonious social order, unifying aesthetic order, social order, and cosmic order. The universal appreciation of jade strengthens cultural identity and maintains the stable operation of early states. Jade artifacts become a medium of aesthetic power, using beauty to convey ritual and ritual to order society, initiating the long-standing Chinese tradition of “embodying ritual in jade”.

6 Cross-Civilizational Comparison: The Global Uniqueness of the Liangzhu Jade Aesthetic Paradigm

6.1 Civilizational Differences in Relic Selection

Early civilizations around the world all chose special substances as objects for communicating with the divine, but the logic behind their selection and the underlying material properties were drastically different (Table 2).

Table 2. Relic selection in different civilizations: the relationship between material and divinity

Civilization	Core Relic	Core physical properties	Divine symbol	Aesthetic Paradigm
Liangzhu	Nephrite	Gentle, resilient, melodious, immortal	Sun God Power, Immortal Soul, Unity of Heaven and Man	Introverted and gentle, the unity of Dao and form
Ancient Egypt	Gold, Lapis Lazuli	Dazzling luster, vibrant colors	Sun God's skin, Sky Divinity	Outwardly dazzling, divinely flamboyant
Sumer	Lapis lazuli, gold	Rare, richly colored	The dwelling place of God, a symbol of power	Ornate and elaborate, ostentatious materialism

Indus River	Carnelian, Lapis Lazuli	Vibrant colors, hard and wear-resistant	Divine power of life, authority of trade	Color-driven, practical and sacred
Cyclades	White marble	White and durable	Ascension of the soul, ancestor worship	Minimalist and abstract, solemn and dignified

Differences in material properties: Liangzhu Culture takes the warm and restrained temperament of nephrite as its aesthetic core, while Western civilization takes the dazzling luster and scarcity of precious metals and gemstones as its aesthetic pursuit.

Differences in the logic of divinity: Liangzhu Culture follows the embodied transformation path of “materiality → senses → divinity”, while Western civilization is reflected in the power projection logic of “scarcity → authority → divinity”.

Differences in aesthetic preferences: Liangzhu Culture pursues harmonious, restrained, and eternal beauty, while Western civilization admires dazzling, flamboyant, and rare beauty.

Differences in the inheritance of civilizations: The divinity of Liangzhu jade artifacts is transformed into moral aesthetics in later generations, forming the cultural tradition of “gentlemen comparing their virtues to jade”, while the divinity of Western sacred objects is mostly transformed into religious symbols, manifested in religious gemstones and gold sacred objects.

6.2 The Value of Liangzhu from a Comparative Perspective

Research on Liangzhu jade artifacts reveals that the sacred aesthetics of early civilizations are not limited to a single “precious metal-gemstone” model. Constructing divinity based on the perception of the physical properties of nephrite and transforming sensory experience into sacred concepts are a unique creation of Eastern civilization. This approach emphasizes the harmonious coexistence of humanity and nature, as well as the unity of matter and spirit, providing a non-Western-centric prehistoric aesthetic sample for global aesthetic research and highlighting the early wisdom of “harmony between humanity and nature” in Chinese civilization.

7 Conclusion and Outlook

This study yielded the following four core conclusions.

- (1) The fibrous interwoven texture of nephrite constitutes the material basis for the physical and divine properties of Liangzhu jade artifacts. Its warm luster, hard texture, clear sound, fire resistance, and corrosion resistance, through multi-sensory perception, are transformed into divine symbols such as the power of the sun god, eternal authority, divine communication with the gods, and the immortality of the soul.
- (2) There is a two-way construction mechanism between materiality and divinity. The materiality of jade supports the formation of sacred concepts, while sacred concepts in turn regulate the selection of materials, craftsmanship and ritual practices. Material agency runs through this process.

(3) Liangzhu jade artifacts form an aesthetic paradigm of “the artifact communicates with the divine”, “the unity of the Dao and the artifact”, “warm and restrained”, and “the harmony of ritual order”, which can be regarded as the prehistoric source of China’s “material aesthetics”.

(4) The cross-civilizational comparison shows that the aesthetic paradigm of Liangzhu jade artifacts is different from the sacred system of the Western civilization, which is centered on precious metals and gemstones. The Liangzhu jade artifact is a unique aesthetic creation of Eastern civilization, highlighting the early genes of “harmony between man and nature” in Chinese civilization.

The future research can be pursued along the following directions. First, by integrating sensory experiments and archaeological simulations, we can reconstruct the distinctive multi-sensory experiences of Liangzhu ancestors in engaging with jade. Second, we should further explore the sensory interaction mechanisms of jade ritual artifacts in ceremonial activities, to clarify the inherent logic of multi-sensory integration within sacred contexts. Third, comparative studies between the Liangzhu Culture and other prehistoric jade cultures, including the Hongshan and Lingjiatan Culture, should be expanded to establish a complete evolutionary trajectory of China’s prehistoric jade aesthetic system, offering more robust evidence for interpreting the origin and inheritance of aesthetic genes in Chinese civilization.

References

1. Xu, L.: Discussion on Liangzhu amphibole jade materials and their provenance. *Palace Museum Journal* (10), 117-126, 142-143 (2022). <https://doi.org/10.16319/j.cnki.0452-7402.2022.10.008>.
2. Jin, X. P., Chen, Q., Liao, G. L., Liao, Z. T.: Investigation of jade material sources of artifacts unearthed from the Songze and Liangzhu cultures. *Journal of Tongji University (Natural Science Edition)* 53(8), 1300-1307 (2025). DOI: 10.11908/j.issn.0253-374x.24072.
3. Wu, H. Y. The symbolic system of Liangzhu jade cong from the Zhenglu Sidun site. *Cultural Relics Identification and Appreciation* 318(3), 166-169 (2026). <https://doi.org/10.20005/j.cnki.issn.1674-8697.2026.03.040>.
4. Wang, X. W.: Evolution of the deity-animal mask motif on Liangzhu jade cong. *Art and Design (Theory)* 2(3), 123-125 (2017). <https://doi.org/10.16824/j.cnki.issn10082832.2017.03.058>.
5. Liang, L. J., Fang, X. M.: King’s burial rite: Restoration of the crown from M12 at Fanshan royal cemetery, Liangzhu culture. *New Arts* (3), 73 (2018). <https://kns.cnki.net/reader/flowpdf?in-voice=TBec4dBL5udYp0bleHWDh%2FVvwXmJ98OO3UL1a9yYnr5jQ%2BkqG%2FAc xGp%2BbvGiTJHL%2FZamwtMwrDhoCaW-pUApfOna4mLmmC3c0QS480i9G1BT1EW3Xw0J1xjE4U2gJxb2ULgvpuf6ygJWThi374tEI%2FbJuAAy0IcMe1%2BMy1FvIGoc%3D&platform=NZKPT&sourcetype=nxgp&product=CJFQ&filename=XMSH201803013&tablename=cjfd-last2018&type=JOURNAL&scope=trial&cflag=overlay&dflag=pdf&pages=&language=CHS&trial=&nonce=E3E9C293967F4341BEFA669C0E8FA20D>.

6. Gell, A.: *Art and agency: An anthropological theory*. Clarendon Press; Oxford University Press. (1998). ISBN: 9780198280149
7. Sun, W. G.: A study of aesthetic anthropology in the context of postmodern culture. *Art Exploration* 31(3), 89-93 (2017). <https://doi.org/10.13574/j.cnki.artsexp.2017.03.010>.
8. Wang, Z. F.: The logical structure of the Chinese aesthetic category system. *Academic Monthly* 56(1), 141-154 (2024). <https://doi.org/10.19862/j.cnki.xsyk.000770>.
9. Zhou, J. P.: On the “bide” (moral analogy) paradigm of natural aesthetics. *Journal of Qilu Normal University* 40(4), 10-17 (2025). DOI:10.3969/j.issn.1008-2816.2025.04.002.
10. Gu, X. Z., Huang, X., Qiu, Z. L., Zhang, Y. F., Zheng, X. Y., Yi, C. Z.: Material characteristics and provenance of jades from Songze to Liangzhu periods excavated at the Fuquanshan site in Qingpu, Shanghai. *Sciences of Conservation and Archaeology* 34(5), 1-12 (2022). <https://doi.org/10.16334/j.cnki.cn31-1652/k.20220402513>.
11. Zheng, J.: Report on the identification of jade artifacts unearthed from the Zhangling Mountain East Hill site in Wuxian County. *Cultural Relics* (10), 39-41 (1986). <https://doi.org/10.13619/j.cnki.cn11-1532/k.1986.10.006>.
12. Gu, D. H., Gan, F. X., Cheng, H. S., Lu, J. F. Zuo, J, Li, Q, H.: Non-destructive analysis of Liangzhu culture jade artifacts excavated from the Gaochengdun site in Jiangyin. *Sciences of Conservation and Archaeology* 22(4), 42-52 (2010). <https://doi.org/10.16334/j.cnki.cn31-1652/k.2010.04.005>.
13. Li, P., Liao, Z., Zhou, Z.: The residual geological information in Liangzhu jades: Implications for their provenance. *Proceedings of the Geologists' Association* 133(3), 256-268 (2022). <https://doi.org/10.1016/j.pgeola.2022.04.003>.
14. Lu, B. Q., Xia, Y. B., Qi, L. J.: Infrared absorption spectra and thermal phase transition mechanism of cat's-eye nephrite. *Journal of the Chinese Ceramic Society* 33 (2), 186-190. (2005). <https://doi.org/10.14062/j.issn.0454-5648.2005.02.011>.
15. Natasha, M., JohnsonBruce, Fegley.: Tremolite decomposition on Venus II. Products, kinetics, and mechanism. *Icarus*. 164(2): 317-333 (2023). [https://doi.org/10.1016/S0019-1035\(03\)00102-7](https://doi.org/10.1016/S0019-1035(03)00102-7).

Open Access This chapter is licensed under the terms of the Creative Commons Attribution-NonCommercial 3.0 International License (<http://creativecommons.org/licenses/by-nc/3.0/>), which permits any noncommercial use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

