

A Comprehensive Archaeological and Experimental Study of the Tea Preparation Artifacts in the Jin Dynasty Tomb of Zhao Li

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Abstract

This comprehensive study undertakes a rigorous typological, iconographic, and spatial analysis of the "Tea Preparation" mural discovered in the Jin dynasty (1115–1234) tomb of Zhao Li, located in the Shijingshan District of Beijing. By integrating traditional tomb archaeology, ceramic typological analysis, and art historical iconography, the research elucidates the material culture and domestic rituals of the early Jin elite, highlighting a profound period of cultural assimilation and the diffusion of the sophisticated Song dynasty Diancha (tea whisking) method among the Jurchen-ruled populace. Furthermore, this study transcends passive antiquarian observation by deploying a dual-methodological framework anchored in experimental archaeology and public archaeology. Through the meticulous physical reconstruction of the two-dimensional artifacts depicted in the mural—including the zhihu ewer, the tuozhan cup stand, and the Dulan tea box—this project generates embodied "maker's knowledge," validating historical functional hypotheses. Concurrently, the activation of these cultural relics through Augmented Reality (AR) systems and performative community engagements effectively democratizes archaeological knowledge.

Keywords

Zhao Li's tomb, Tea preparation diagram, Archaeological research on Song, Liao and Jin Dynasties.

1. Introduction to the Archaeological Context

The study of material culture during periods of dynastic transition offers profound insights into the mechanics of cultural assimilation, identity negotiation, and the diffusion of domestic rituals. The Jin dynasty, established by the semi-nomadic Jurchen people, represents a critical epoch in the history of northern China. This era was characterized by the intense interplay between indigenous northern traditions and the deeply entrenched agrarian, bureaucratic, and literati cultures of the conquered Liao (916–1125) and Song (960–1279) states[1]. Among the most sophisticated cultural practices absorbed by the Jin elites was the intricate art of tea preparation, specifically the Diancha method, which had reached a level of unprecedented aesthetic and procedural codification during the preceding Northern Song period[7].

The archaeological record of Beijing—a metropolis that has historically served as a critical nexus for cultural exchange and which currently positions itself through the national "Four Centers" initiative as the cultural and international exchange capital of China—is uniquely positioned to illuminate these historical syntheses[11]. The present analysis provides an exhaustive investigation into the "Tea Preparation" mural and its associated ceramic and wooden artifacts discovered in the Jin dynasty tomb of Zhao Li, located in Bajiao Village, Shijingshan District, Beijing. Excavated systematically in 2002, the tomb yielded well-preserved murals and a highly informative epitaph, providing an unusually clear chronological and sociocultural context for the material remains.

Historically, the evolution of tea drinking in China underwent three distinct paradigms that correspond broadly to dynastic shifts: the boiling of pulverized tea cakes (*jiancha*) popular in the Tang dynasty, the highly refined whisking of powdered tea (*diancha*) dominant in the Song, and the steeping of loose leaves characteristic of the Ming and Qing dynasties[7]. During the early Jin dynasty, the Jurchen people initially possessed no indigenous tea-drinking customs in their daily lives. However, as they expanded southward, conquering vast swathes of Han-populated territory and eventually establishing their central capital (Zhongdu) in present-day Beijing, the adoption of Han cultural practices became a potent marker of elite status, social refinement, and administrative legitimacy. By the Taihe reign of Emperor Zhangzong (1205), tea consumption in the Beijing region had permeated all strata of society, transitioning from a purely aristocratic pursuit to a ubiquitous daily practice characterized by bustling tea houses and widespread popular engagement.

The Zhao Li tomb, dating to the early Jin period, captures this exact transitional moment. It immortalizes the *Diancha* ritual in the subterranean architecture of death, providing a permanent visual record of the material culture utilized by the bureaucratic elite. By analyzing this specific archaeological site, researchers can trace the trajectory of cultural artifacts from their origins in the Song literati class to their adoption by the Jin administration, and finally, to their modern revitalization through applied public archaeology.

2. The Sociopolitical Landscape and the Epitaph of Zhao Li

To fully comprehend the iconographic program and the material significance of the tomb, it is strictly necessary to establish the sociopolitical context of the tomb occupant. The excavation of the Zhao Li tomb yielded a highly informative stone epitaph (*muzhiming*) that chronicles the turbulent life of the deceased Figure 1. This biographical artifact effectively acts as a microcosm for the broader geopolitical shifts of the twelfth century, providing a human narrative to the abstract concepts of dynastic succession and cultural transfer.

Zhao Li's biographical narrative is indelibly marked by the collapse of the Khitan-led Liao dynasty and the subsequent devastating conflicts between the Jurchen Jin and the Han Chinese Song. According to the excavated epitaph, Zhao Li attained the prestigious degree of *Jinshi* (Presented Scholar) during the Dexing reign of the Liao dynasty. Following this academic achievement, he was granted the titular office of "Gentleman for Service" (*zhengshi lang*), a recognized court designation that denoted administrative capability and cemented his status within the educated elite[8].

However, the political stability required for a conventional bureaucratic career was entirely absent. In the very year of his graduation and appointment, Song forces, initially allied with the rising Jin state, advanced upon Liao territory. Faced with the imminent collapse of the Liao state, Zhao Li migrated south to defect to the Northern Song dynasty, a common survival strategy for Han Chinese officials serving under northern regimes. Upon his defection, his title of Gentleman for Service was officially re-authorized and recognized by the Song court. Tragically, the epitaph records that Zhao Li died en route to the Song capital of Bianjing (modern Kaifeng) before he could formally assume his new duties.

The geopolitical situation continued to deteriorate rapidly. Following the catastrophic Jingkang incident in 1127, during which Jin forces decisively betrayed their Song allies, captured Bianjing, abducted the Song emperors, and effectively ended the Northern Song dynasty, Zhao Li's surviving relatives were forced to navigate a drastically altered political landscape. They relocated to the newly established Jin capital of Yanjing (Beijing). It was here, in the third year of the Huangtong reign (1143), that Zhao Li was formally laid to rest in a secondary burial orchestrated by his descendants.

This eighteen-year gap between the fall of the Liao (1125) and the final burial of Zhao Li (1143) is critical for interpreting the tomb's architecture and artistic program. The regional culture of Yanjing during this brief window remained heavily saturated with preexisting Liao customs, which themselves had already synthesized substantial Han Chinese elements over the preceding centuries. The murals within the tomb, therefore, reflect an entrenched Liao visual paradigm that was actively being adapted and utilized by subjects of the new Jin administration. Zhao Li's identity—a scholar caught in the crossfire of three competing empires—underscores the extreme fluidity of cultural allegiance during this era. Consequently, the high-status depiction of tea preparation in his tomb serves as a poignant, localized assertion of enduring literati identity and cultural continuity amidst the chaos of military conquest and dynastic upheaval.

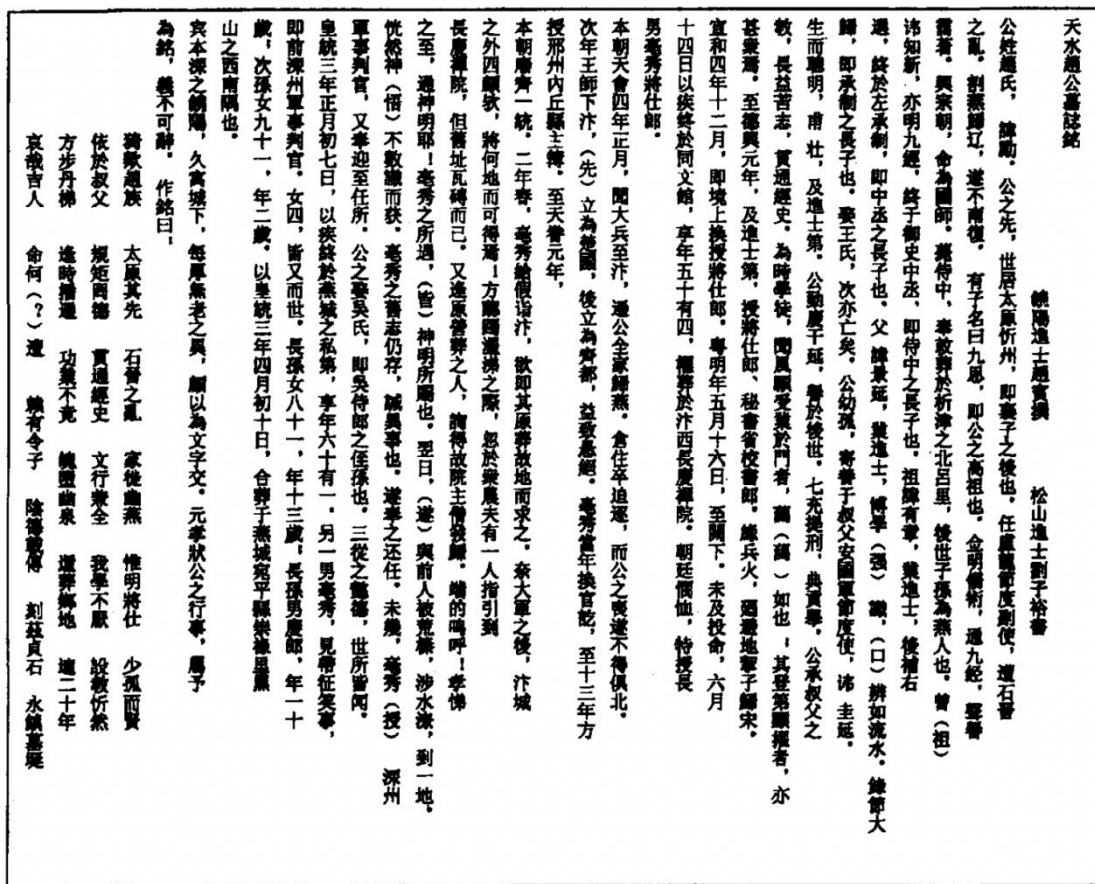


Figure 1 Content of the Epitaph of the Zhao Li Tomb.

3. Architectural Space and the Iconographic Program of the Tomb

The spatial organization of a tomb is never arbitrary; it reflects a carefully constructed cosmological and domestic ideal intended to sustain the deceased for eternity. The Zhao Li tomb is structured as a classic early Jin circular brick-chamber tomb, featuring a standardized architectural sequence consisting of a sloping tomb passage, a defensive screen wall (yingfeng qiang), a sealed tomb gate, and the primary burial chamber. The spatial organization of the painted murals within the circular chamber is highly deliberate, utilizing architectural trompe l'œil to create a continuous, immersive domestic environment.

Six brick-built pillars, protruding inward from the walls, partition the circular chamber into six distinct vertical sectors. Excluding the southern sector, which is functionally occupied by the sealed brick entrance, the remaining five panels are heavily painted with scenes of daily life Figure 2. The sequential arrangement of these panels operates as a cyclical narrative of elite domesticity, designed to cater to every conceivable need of the tomb occupant:

The Northern Central Panel: This sector features the "Resting" or "Attendant Sleeping" scene, positioned directly behind the primary resting place of the coffin, symbolizing the private inner quarters.

The Northeastern Panel: This sector features the primary subject of this investigation, the "Tea Preparation" scene. It depicts male servants diligently processing and arranging a complex suite of tea utensils for the deceased.

The Southeastern Panel: This sector depicts the "Banqueting" scene, indicating the provision of substantial food and wine.

The Southwestern Panel: This sector illustrates the "Music" or "Scattered Music" scene, providing eternal entertainment.

The Northwestern Panel: This sector shows the "Washing" scene, completing the cycle of daily personal care.



Figure 2 Murals of the Zhao Li Tomb

This highly structured programmatic layout is not unique to the Zhao Li tomb; rather, it adheres to a well-established funerary paradigm formulated during the late Liao dynasty. Extensive typological and thematic parallels can be drawn between the Zhao Li tomb and the celebrated Liao dynasty tombs excavated in the Xuanhua district of Hebei province. For instance, the M1 tomb of Zhang Shiqing Figure 3 and the M5 tomb of Zhang Shigu Figure 4 both feature virtually identical thematic distributions, including explicit, highly detailed depictions of tea preparation, banqueting, and musical performances[3].



1



2



3

Figure 3(1) Scattered Music in Zhang Shiqing Tomb M1; (2) Tea Preparation in Zhang Shiqing Tomb M1; (3) Banqueting in Zhang Shiqing Tomb M1.



1



2

Figure 4(1) Banqueting in Zhang Shigu Tomb M5; (2) Tea Preparation in Zhang Shigu Tomb M5.

The transmission of this specific iconographic template from the Xuanhua Liao tombs to the Shijingshan Jin tomb illustrates a continuous regional tradition of visually provisioning the deceased with the highest markers of cultural sophistication. Chief among these markers, as evidenced by its prominent placement, is the apparatus for *Diancha*.

Table 1: Typological Comparison of Key Mural Themes in Representative Liao and Early Jin Elite Tombs

Archaeological Site	Chronological Period	Key Mural Themes Present	Significance to Regional Typology
M1 Zhang Shiqing Tomb (Xuanhua)	Liao Dynasty	Tea Preparation, Banqueting, Music	Establishes the foundational visual paradigm for Northern elite tombs.
M5 Zhang Shigu Tomb (Xuanhua)	Liao Dynasty	Tea Preparation, Banqueting	Demonstrates the standardization of specific domestic iconography in funerary art.
M10 Zhang Kuangzheng Tomb (Xuanhua)	Liao Dynasty	Tea Preparation (featuring short-spout ewer)	Provides direct typological precursors for the ceramic artifacts seen in later Jin tombs.
Zhao Li Tomb (Shijingshan, Beijing)	Early Jin Dynasty (1143)	Resting, Tea Preparation, Banqueting, Music, Washing	Evidences the direct adoption and uninterrupted continuation of Liao-Song literati culture by early Jin subjects.

4. Typological and Iconographic Analysis of the Tea Preparation Artifacts

The "Tea Preparation" mural located in the northeastern sector of the Zhao Li tomb acts as an invaluable visual inventory of twelfth-century material culture. While the artistic execution of the mural features rapid, somewhat abbreviated brushwork and subdued coloration—typical of artisanal tomb painters working in dimly lit subterranean environments—a meticulous iconographic analysis, corroborated by excavated physical artifacts from contemporaneous sites, allows for a high-fidelity reconstruction of the utensils depicted. The artifacts within the composition can be methodologically categorized into those with explicitly identifiable typologies and those whose rapid rendering requires broader contextual deduction based on regional stratigraphic evidence.

The central action of the mural is anchored by the figure of the second male servant from the left. He bows slightly in a posture of deference while holding a handled ewer (*zhihu* or tea bottle) in his left hand, preparing to pour boiling water into a tea cup resting securely in his right hand Figure 5. The visual characteristics of this ewer are distinct and can be broken down into specific morphological components: it features a fitted lid with a central knob, a long straight neck, sharply angular folded shoulders, a cylindrical body that tapers slightly toward the base, a remarkably long straight spout, and an arched handle.



Figure 5 Tea Preparation in Zhao Li Tomb.

Ewers of this general cylindrical morphology are a staple in Liao and Jin mural tombs, representing a standard utilitarian vessel of the period. However, a critical divergence occurs in the depiction of the spout. The ewer in the Zhao Li tomb is painted with a distinctly long, *straight* spout. In stark contrast, similar murals from the Xuanhua Liao tombs depict varying spout morphologies; the ewer in the M10 Zhang Kuangzheng tomb features a short, straight spout Figure 6, while the M1 Zhang Shiqing tomb depicts a long, elegantly curved spout Figure 7.

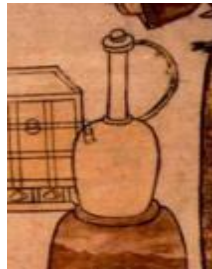


Figure 6 Xuanhua Liao Tomb M10.



Figure 7 Xuanhua Liao Tomb M1.

From the perspective of fluid dynamics—which is absolutely essential to the successful execution of the *Diancha* process—a long, straight spout presents significant functional challenges. The aggressive tipping required to pour a forceful stream of water could easily cause the lid to dislodge or result in water spilling uncontrollably from the main opening, completely ruining the delicate tea preparation process[9]. It is therefore highly probable that the painter of the Zhao Li mural utilized an abbreviated or generalized aesthetic choice (artistic shorthand), and the actual physical artifact modeled in life would have possessed a long, curved spout. A curved spout allows for the precise, controlled, and forceful stream of boiling water necessary for whipping the ultrafine tea powder into a rich, suspended froth.

Archaeological excavations of Jin dynasty contexts strongly substantiate this functional hypothesis regarding the spout. Cylindrical ewers recovered from this period typically lack lids or feature swelling, melon-lobed bodies. The most direct physical corollary to the mural's ewer was excavated from the M2 tomb of Chen Qing (dated 1157) in the southern suburbs of Datong Figure 8. This exquisite white porcelain ewer measures exactly 17.4 cm in height and features a small flat lid with a retention hole, a long curved spout, and a flattened curved handle adorned with incised line decorations. The pure white glaze and hard fabric indicate high-quality kiln production, and its discovery alongside a matching six-lobed floral cup strongly suggests they functioned as an integrated, high-status water-pouring set specifically designed for tea preparation[4].



Figure 8 White Porcelain Ewer and Associated White Porcelain Floral Cup Excavated from Chen Qing Tomb M2 in the Southern Suburbs of Datong.

The mural prominently features three complete sets of cups and stands (*tuozhan*). Two servants are depicted actively holding these sets, indicating immediate use, while a third set rests neatly upon a square table in the foreground, suggesting readiness for the master Figure 9. The sets are distinctly bichromatic: the stands are rendered in a deep black or dark red pigment, while the cups are painted with a light-colored glaze. The stands feature a circular primary dish elevated by an outward-flaring ring foot, with a raised central receptacle explicitly designed to cradle and secure the base of the cup. The cups themselves exhibit a wide, open mouth and slanted walls, indicative of the classic "conical" or "bamboo-hat" profile that was highly favored during the Song, Liao, and Jin periods.



Figure 9 Mural of Zhao Li Tomb.

The stark chromatic contrast between the dark stand and the light cup is a recurring motif in Northern archaeological contexts, seen vividly in the Xuanhua M10 Figure 10 and M5 tombs Figure 11, as well as the Datong M1 tomb of Chen Qing's wife. Based on rigorous textual analysis, such as the *Cha Ju Tu Zan* (Pictorial Eulogy of Tea Utensils) which refers to tea stands as *Qidiao Mige* (carved lacquer secret pavilions), early tea stands of this specific dark coloration were predominantly crafted from lacquered wood. Lacquer provided essential thermal insulation, preventing the intense heat of the boiling tea from burning the servant's or the master's hands. Due to the rapid degradation of organic materials in damp subterranean environments, such lacquer stands are rarely recovered intact, making their visual preservation in the Zhao Li mural a critical data point for understanding the complete domestic assemblage.



Figure 10 Xuanhua Liao Tomb M10.



Figure 11 Xuanhua Tomb M5

Simultaneously, ceramic imitations of these functional lacquer stands were highly prevalent. A pristine set featuring a black-glazed ceramic stand paired with a white-glazed cup was recovered from the Northern Song M14 tomb of Lu Dashou (reburied in 1074) in Lantian, Shaanxi Figure 12[5]. Likewise, Xuanhua Zhang family tombs also yielded similar yellow-glazed stands Figure 13 By the Jin dynasty, this specific form had evolved slightly; an excavation of the Zhao Chu tomb (1143) in Linxian, Henan, yielded a celadon stand where the central raised receptacle had become notably lower Figure 14, perhaps reflecting a shift in cup base morphology. Such conical cups were popular across the Song, Liao, and Jin periods, as seen in the Qin Dechang tomb in Jianping Figure 15 and the tomb of Chen Qing's wife in Datong Figure 16. The white or light-glazed cups depicted in the Zhao Li mural likely represent products of the famous Ding kilns or the local Longquanwu kilns in Beijing. They were designed specifically to contrast visually with both the dark stand below and the vivid green froth of the whisked tea within, highlighting the intense color-consciousness of Song-Jin aesthetics[7].



Figure 12 Cup and Stand Assembly Excavated from Lu Family Cemetery M14 in Lantian.



Figure 13 Excavated from Xuanhua Tomb M1.



Figure 14 Excavated from Zhao Chu Tomb in Linxian, Henan.

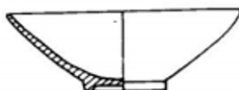


Figure 15 Excavated from Qin Dechang Tomb in Jianping.



Figure 16 Excavated from the Tomb of Chen Qing's Wife in Datong.

Table 2: Typological and Functional Analysis of Tea Preparation Artifacts Depicted in the Zhao Li Tomb Mural

Artifact Typology	Visual Characteristics in Mural	Closest Excavated Correlate	Functionality in the Diancha Process
Ewer (Zhihu)	Cylindrical body, long straight spout, arched handle.	White porcelain ewer from Datong M2 (curved spout).	Holding and precisely pouring boiling water to whip the tea powder.
Cup Stand (Tuo)	Dark colored (black/red), raised central receptacle, flared base.	Lacquerware (hypothesized); Black ceramic stand from Lantian M14.	Thermal insulation; preventing the hot cup from burning hands.
Tea Cup (Zhan)	Light colored, wide mouth, slanted walls (conical shape).	White Ding-ware or Longquanwu kilns; Datong M1 finds.	Receptacle for whisking tea; wide mouth allows for vigorous mechanical whisking.
Tea Box (Chahe)	Foursquare flat-top (Lüding), Kunmen (arch) pedestal base.	Song tricolor glazed reliquary (Xinmi); Tang silver boxes.	A Dulan for the safe storage and transport of the delicate, multi-piece tea set.
Fire Tongs (Huoqian)	Elongated metal pincers.	Bronze tongs from Yongcheng site.	Managing charcoal to achieve exact water boiling temperatures.

Positioned prominently in the mural is a large, square box featuring a truncated pyramid top, referred to in traditional Chinese architectural and material history as a *Lüding* roof. The box rests upon an elevated base characterized by four projecting sides carved with intricate *Kunmen* (arched) openings. During the Song and Jin dynasties, boxes designed with *Lüding* lids were frequently utilized for high-status storage. To ensure durability and structural integrity, the fragile edges of such wooden boxes were often reinforced with decorative copper or iron brackets, a detail sometimes captured in finer paintings.. In the Xuanhua Liao Tomb M6, a similar *Lüding* style box is also depicted in the tea preparation mural on the east wall, which can be identified as a tea box based on the context Figure 17.

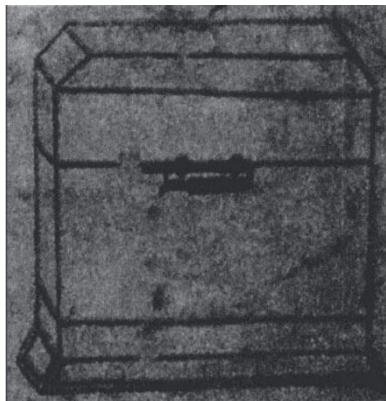


Figure 17 Tea Box in the Tea Preparation Mural on the East Wall of Xuanhua Liao Tomb M6. The presence of this massive box in a scene dedicated entirely to tea preparation strongly suggests its function as a *Dulan* —a comprehensive storage basket or chest utilized to house the entire suite of delicate tea utensils. The collection, curation, and display of matching, highly

refined tea wares were central to the social identity of the literati class. A *Dulan* allowed these fragile ceramics, lacquerwares, bamboo whisks, and precious tea cakes to be securely stored domestically and easily transported for outdoor literary gatherings, a highly formalized practice popularized by Song intellectuals and enthusiastically adopted by Jin officials. To reconstruct the specific morphology of the box's *Kunmen* base, researchers drew upon the structural logic of the Tang dynasty plain silver reliquary with Lüding roof Figure 18, a Song dynasty tricolor glazed reliquary excavated in Xinmi, Henan Figure 19, and the Tang dynasty silver reliquary with Kunmen base and Lüding roof made by Zhihuilun Figure 20. This comparison indicates a profound continuity in high-status container design across several centuries.



Figure 18 Tang Dynasty Plain Silver Reliquary with Lüding Roof.



Figure 19 Song Dynasty Tricolor Glazed Reliquary.



Figure 20 Tang Dynasty Silver Reliquary with Kunmen Base and Lüding Roof Made by Zhihuilun.

To the side of the main action, the mural depicts a set of metal fire tongs (*huoqian*) resting near a brazier Figure 21. As the *Diancha* process required precisely boiled water—often described

in contemporary texts as reaching the state of "crab eyes" or "fish eyes" depending on the size of the boiling bubbles —the management of the charcoal fire was an essential micro-skill of the tea servant. The tongs, likely forged from iron or bronze, represent the utilitarian, mundane foundation upon which the refined aesthetics of the tea ceremony relied. Archaeological evidence, such as the bronze hand tongs excavated from the Warring States period site of Yongcheng in Shaanxi Figure 22, demonstrates the deep antiquity and highly standardized functional design of this tool.



Figure 21 Mural of Zhao Li Tomb.



Figure 22 Bronze Hand Tongs Excavated from Yongcheng Site in Fengxiang, Shaanxi.

Furthermore, the mural contains a depiction of a tray holding five small, somewhat indistinct receptacles Figure 23. The rapid brushwork of the muralist obscures their exact nature, but they appear to be straight-mouthed or slightly incurving small bowls. While rare in standard tomb murals, similar small white porcelain bowls with incurving mouths have been excavated in massive quantities from Jin dynasty strata at the Haifengzhen site in Hebei Figure 24 and along Yingzhou Road in Chaoyang, Liaoning Figure 25. Stratigraphic dating places the peak popularity of these small bowls in the mid-to-late Jin dynasty, suggesting that while the Zhao Li tomb mural adheres to a legacy Liao visual template, it accurately and dynamically incorporates contemporary, localized Jin material trends.



Figure 23 Mural of Zhao Li Tomb.



Figure 24 Straight and Incurving Mouth White Porcelain Small Bowls Excavated from Haifengzhen.



Figure 25 Excavated from Yingzhou Road, Chaoyang, Liaoning.

5. The Epistemology, Aesthetics, and Mechanics of Diancha

Wo fully grasp the necessity of the complex artifact assemblage depicted in the Zhao Li tomb, one must examine the specific mechanics, historical evolution, and underlying philosophy of the Diancha method. Rooted in the Tang dynasty practices codified by Lu Yu in his seminal *Classic of Tea* (where tea was formed into bricks, pulverized, and boiled to form a froth or *mòbō*), tea culture underwent a dramatic aesthetic elevation during the Song dynasty [7]. This elevation was largely driven by the imperial court's heavy patronage of the Beiyuan tribute tea estates in Fujian, which produced highly compressed, extremely valuable "dragon and phoenix" tea cakes [9].

In the Diancha tradition, tea was distinctly not steeped as it is today. Instead, the compressed tea cakes (*tuancha*) were meticulously roasted over charcoal, pulverized in a localized mill, and ground into an ultrafine powder [9]. This fine powder was placed directly into the pre-warmed conical cups (the *tuozhan* seen in the mural). The servant holding the ewer would then execute a series of precise pours (the "tipping" of the water), alternating with vigorous, rapid stirring using a specialized bamboo whisk. The ultimate goal of this kinetic process was the creation of a dense, pristine white foam that adhered stubbornly to the walls of the cup, a phenomenon highly prized in competitive tea-tasting contests (*doucha*).

Emperor Huizong of the Song dynasty, a supreme connoisseur whose aesthetic dictates heavily influenced the subsequent Jin court, codified these exacting standards in his *Daguan Chalun* (*Daguan Era Treatise on Tea*). He decreed that the water must be drawn from specific sources, boiled to exact temperatures, and poured with absolute precision. The visual supremacy of the bright white foam catalyzed the popularity of dark-glazed ceramics, particularly the "hare's fur" and "tortoiseshell" wares from the Jian and Jizhou kilns, as the dark background allowed the white froth to stand out vividly.

While the Zhao Li mural depicts light-colored cups—likely reflecting regional availability in the north or the persistence of an earlier aesthetic preference for white Ding wares—the rigorous multi-step preparation depicted is undeniably the Diancha method. The adoption of this hyper-refined, labor-intensive ritual by the Jurchen Jin elite serves as a profound indicator of cultural integration. It demonstrates that assimilation was not merely political, linguistic, or administrative, but extended into the most intimate, sensory domains of daily life and dietary aesthetics. The "Way of Tea" involved discipline and the cultivation of the mind (*xiushen yangxing*), elevating it from a simple beverage to a profound cultural construct.

6. Experimental Archaeology: Translating Two-Dimensional Murals into Maker's Knowledge

While traditional art historical analysis relies on the passive observation of visual data, this study breaks new theoretical ground by employing experimental archaeology to translate the two-dimensional depictions of the Zhao Li tomb into three-dimensional, functional realities [10]. The theoretical framework of experimental archaeology moves beyond propositional knowledge (knowing *that* a historical event occurred) to generate "maker's knowledge" and

embodied epistemology (knowing *how* an object was constructed and utilized through direct, physical engagement).

Understanding an ancient craft—whether flintknapping, pottery making, or tea whisking—requires positioning the researcher to acquire embodied skills, checking the crafted product against physical constraints and historical examples. To achieve this epistemic positioning, the research team undertook the arduous task of physically reconstructing the entire suite of artifacts depicted in the "Tea Preparation" mural. This rigorous process involved several distinct phases:

First, in the realm of ceramic reconstruction, the team collaborated with modern master ceramicists to recreate the exact proportions of the Datong M2 ewer and the Lantian M14 cup and stand Figure 26[5]. The creation of these physical analogs allowed researchers to test the thermal conductivity of the glazes and the ergonomic viability of the handles.



Figure 26 Reconstructed Tea Utensils.

Second, the team engaged in historical woodworking and lacquer application. Reconstructing the large *Lüding* tea box required utilizing traditional joinery and base carving techniques derived from the Xinmi reliquary. By building a physical model, the team proved the structural viability of the *Kunmen* base, demonstrating that it could indeed support the heavy weight of a complete ceramic tea set without collapsing, thereby confirming the hypothesized function of the *Dulan*.

Finally, the team conducted a performative recreation, utilizing the reconstructed artifacts to physically execute the complex *Diancha* process. This performative experiment was crucial for validating the earlier hypothesis regarding the ewer's spout. The researchers discovered through direct physical action that the long straight spout depicted in the mural was indeed functionally inferior for whisking tea; it resulted in erratic water flow that destroyed the tea froth. In contrast, utilizing the replica with the curved spout (based on the excavated archaeological record) allowed for the precise hydrodynamic control required for *Diancha*. This embodied experiment conclusively confirmed that the tomb muralist employed artistic shorthand, prioritizing visual representation over mechanical accuracy.

7. Public Archaeology and the Activation of Cultural Heritage

The culmination of this research lies in its direct application to public archaeology. Public archaeology is a specialized discipline dedicated to dismantling exclusive academic silos, resisting terminal historical narratives, and actively engaging local communities in the stewardship, interpretation, and utilization of their cultural heritage[11]. In strict alignment with the central government's mandate to "make cultural relics come alive", and to actively support Beijing's strategic positioning as the National Cultural Center, this project deployed an innovative, multi-platform heritage activation strategy.

Recognizing that the aesthetic appeal of the Song-Jin tea ceremony transcends academic boundaries, the research team designed an Augmented Reality (AR) interactive display system. This digital intervention allows museum visitors and the general public to point mobile devices at physical reproductions of the Zhao Li mural and watch as the static 2D servants animate Figure 27 Figure 28. The AR system physically demonstrates the complex sequence of grinding, pouring, and whisking actions required for the Diancha ceremony, providing an immediate, intuitive understanding of ancient domestic life [11].



Figure 27 AR Display Effect 1.



Figure 28 AR Display Effect 2.

Furthermore, the integration of Cultural Resource Management (CRM) principles and community archaeology manifested in a series of highly visible, immersive public outreach events. In April 2024, a "historical dress flash mob" was organized at the Xiaoyue River and Shichahai areas in Beijing. Performers, dressed in meticulously researched Song and Jin period attire, utilized the experimentally reconstructed tea utensils to perform live Diancha ceremonies for the public. This embodied presentation of history generated significant public engagement, effectively utilizing modern social media algorithms as a vector for heritage dissemination.

8. Conclusion

The Jin dynasty tomb of Zhao Li in Beijing is far more than a subterranean repository of human remains; it is a meticulously curated visual archive of twelfth-century material culture and sociopolitical identity. Through a rigorous, multidisciplinary analysis of the "Tea Preparation" mural, this investigation has elucidated the complex typologies of early Jin domestic artifacts, ranging from the specialized *zhihu* ewers to the architecturally inspired *Dulan* tea boxes. By systematically cross-referencing these iconographic depictions with excavated artifacts from Xuanhua, Datong, and Lantian, the research has clarified the functional realities of the *Diancha* tea ceremony. Furthermore, it highlights the eager adoption of this refined practice by the Jurchen elites, underscoring a profound era of ethnic integration and cultural synthesis in northern China.

Crucially, this study transcends traditional antiquarian analysis by embedding the theoretical frameworks of experimental and public archaeology at its core. By physically reconstructing the artifacts to generate embodied maker's knowledge, and by leveraging advanced digital media alongside live performative events, the research effectively bridges the chronological

divide. It translates esoteric archaeological data into highly accessible, engaging public knowledge. The methodology established herein—progressing seamlessly from textual and iconographic analysis to physical replication, and culminating in high-impact public and international engagement—provides a robust, scalable framework for the future of Cultural Resource Management and archaeological communication in the twenty-first century.

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