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# YINAN AND MYLASA: SINO-HELLENIC EXCHANGES IN TOMB ARCHITECTURE

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# ABSTRACT

This paper compares the lantern ceilings of Han and Wei-Jin period tombs in China with similar contemporaneous and earlier examples found in Korea and Anatolia. Highlighting 13 tombs with illustrations, I question whether or not such visual and technological connections imply the transmission of architectural knowledge across long distances during or prior to the opening of the Silk Road. By tracing specific roofing techniques to burials in the 4th – 2nd century BCE near the Black Sea and Northeast Asia, I suggest that the corbel vault – from where the lantern ceiling emerged – had been widely distributed across Eurasia probably via the nomadic "steppe highway," setting the stage for later flourishing of the square-and-diamond lantern structure before Buddhism entered the global stage.

**KEYWORDS**: Lantern ceilings, corbel vaults, Han tombs, Hellenistic architecture, Goguryeo, Kofun, kurgans, Scythians, Galatia, architectural transmission, Silk Road, steppe highway, celestial symbolism

#### 1. INTRODUCTION

A comparison between the stone-chamber tombs of Han China (202 BCE - 220 CE) and the Hellenistic world affords a fresh perspective on the global history of architecture but also poses many problems. While archaeological remains of megaliths and dolmens suggest the mobility of architectural forms across Eurasia since Neolithic times, a cross-continental transmission of particular building practices in the ancient world remains speculative, as it lacks adequate historical evidence to verify such a process. More problematic, perhaps, is the pitfalls a discourse on architectural diffusion tends to run into: scholars who compare Asian and Western architecture, while obviously enticed to connect the two cultural spheres in certain respects, have accentuated individuality over congruence and ubiquity to eschew an overt Eurocentric approach to the subject (Steinhardt 2014).

This study draws attention to a distinctive type of ceiling, the so-called "lantern ceiling" or "lantern roof," that prevailed in the tombs of ancient Eurasia from the Korean Peninsula to the western coast of Asia Minor. A lantern ceiling is formed by placing diagonal members at the four corners of a square base; it grows upward into a smaller and smaller opening to the sky, alternating between diamond-shaped and square (and sometimes octagonal) layers, and is a highly distinctive attribute of the sacred architecture in Asia (Kozicz 2011; Soper 1947). Notwithstanding

# 2. LANTERN CEILINGS IN HAN AND WEI-JIN TOMBS

Han tombs constituted a remarkable watershed in the general history of Chinese architecture because the vaulted chamber tombs built of stone and bricks differed fundamentally from earlier vertical-pit burials made of wooden logs (Wu 2010; Steinhardt 2014). Such a change was heralded by the emergence of vaulted chambers in elite tombs in the Warring States period (5th - 3rd century BCE) when China entered an unprecedented stage of cultural hybridization instigated by constant interactions, through warfare and intermarriage, with the "barbarians" and "peripheral" peoples from the Mongolian steppe in the north and Central Asia via the Hexi Corridor in the west (Lewis 1990; Di Cosmo 2002). The Han, succeeding the short-lived Qin (221 - 206 BCE) and extending its trade and diplomatic network further west beyond the Taklamakan Desert, synthesized the diverse cultural heritage and set the examples of tomb architecture for aspiring future generations to emulate.



Map 1. Locations of the 13 tombs illustrated in this essay, numbers corresponding with figure numbers: 1. Yinan Tomb; 2. Wu family cemetery; 3. Cangshan Tomb; 4. Changli Reservoir Tomb 1; 5. Dagaolimuzi M31; 6. Changchuan Tomb 1; 7. Ssangyeongchong; 8. Idera Tomb; 9. Mylasa Monument; 10. Kurtkale Tomb; 11. Karalar Tomb C; 12. Gordion Tomb; 13. Royal Kurgan. Map by Di Luo using Esri ArcGIS (https://arcg.is/m8WrK0).

Concerning the earliest lantern ceiling in China, architectural historians often highlight tombs in the Henan and Sichuan provinces dated between the 1st – 3rd centuries CE. These ceilings, either carved or painted, did not involve authentic vaulting but were skeuomorphic constructions mimicking the lantern structure. Well-documented examples include the Jingguyuan Tomb (9 – 23 CE, Xin Mang period) and Dahuting Tombs (c. 3rd century CE), both in Luoyang; and the Qijiang cliff tombs (c. 2nd – 3rd century CE) in Sichuan (Steinhardt 2014). Authentic lanterns, perhaps surprisingly, are concentrated along China's northeast and east coasts in Jilin, Shandong, Jiangsu, and Zhejiang provinces, while such ceilings are completely missing in the Hexi Corridor which is usually taken as the principal route connecting China with its Western neighbors (Map 1).



Figure 1. Cross section of Yinan Tomb, showing, from left to right: antechamber, main chamber, and rear (burial) chamber. Yinan, Shandong Province, China. c. 3rd cent. or later, Eastern Han dynasty. The antechambers feature authentically built lanterns while the rest of the tomb has corbel vaults with a carved lantern in the capstone. Drawing by Gerald Kozicz.

Among the lantern-ceiling tombs on China's coasts, the Yinan Tomb in Shandong is the most wellknown to Chinese and Western scholars (Zeng, Jiang, & Li 1956; Shih 1959). The double antechamber and their side rooms are each covered by a lantern made of three courses of limestone slabs (Fig. 1). The rest of the tomb ceilings culminates in rectangular capstones carved with the square-and-diamond pattern alluding to a lantern form. The appearance of the lotus flower in the lantern, sometimes paired with representations of a lattice window, suggests watery imagery and perhaps celestial light to be associated with Chinese ceilings in general. This is an association that high officials of the Han court had already made in their lengthy, poetic essays (fu, or rhapsodies) glorifying the magnificence of palace halls and pavilions at the time (Xiao & Knechtges 1982). While Chinese philologists of the 4th century attributed the association to water's protective power of the wooden structures from fire, the trace of Buddhist influence is not hard to detect in singling out the lotus as the quintessential symbol of water, divine protection, and probably purification as well. The lotus provides an important clue to the dating of the tomb, which some have argued to fall in the Wei-Jin period (220 - 420 CE) instead of the late Eastern Han as had been originally postulated (An 1955).

The lantern structure, on the other hand, raises questions that are largely neglected by scholars of Chinese tombs. The Wu Family Shrines in Shandong, for instance, are best known for the vivid carvings of historical figures and celestial signs on the stone reliefs since the "rediscovery" and introduction of the site to international academia in the early 20th century (Fairbank 1941). But the tomb chambers, lacking decorations, have never aroused enough academic interest save for a brief report by the excavators (Wei 2019). Chen Li's photographs of the tombs show a pair of four-tiered lanterns now partially exposed to the surface of the ground, covering what might have been the double antechamber of the tomb (Li 2018). This is so far the only example of four-tiered lanterns in Chinese tombs (Fig. 2). The number of tiers used, similar to the tiers of bracket sets in wooden structures, might indicate the social ranking of the tomb occupants (Feng 2007).

Again in Shandong, a tomb from Cangshan is roofed by a three-tiered lantern in the antechamber (Fig. 3). It is modest in size compared to the Yinan and Wu family tombs but adheres to the basic spatial formula: twin entrances, a spacious antechamber, and east and west double rear chambers (for placement of the coffins). The circular form carved in the middle of the ceiling capstone is reminiscent of the ritual jade bidisk, a "gate of heaven" permitting the ascension of the soul of the deceased (Wu 2010, 2015; Coomaraswamy 1997). An inscription found in the tomb suggests a date of either 151 (Eastern Han) or 424 CE (Southern Dynasty), causing much debate among scholars (Zhang 1975; Fang & Zhang 1980). Such debates surrounding the dates of the lantern-ceiling tombs, while reflecting an impressive uniformity of tomb structure and decoration from the late 2nd to early 5th century in Shandong, also expose the ambiguous timeline and trajectory of the Buddhist elements in early Chinese art.



Figure 2. Left: Sketch of a remaining ceiling structure found at the Wu family cemetery. Right: Reconstruction plan and elevation of the ceiling, showing a pair of 4tiered lantern structures. Jiaxiang, Shandong Province, China. c. 3rd cent. CE, late Eastern Han dynasty. Drawings by Di Luo based on Li 2018.



Figure 3. Cross section of Cangshan tomb, viewing from main chamber into the two burial chambers at the back. Cangshan, Shandong Province, China. Dated either 151 (Eastern Han) or 424 (Southern Dynasty) according to inscription. Main chamber topped by a 3-tiered lantern ending with a simulated "gate of heaven" in the apex. Drawing by Di Luo based on Zhang 1975.



Figure 4. Longitudinal section of Changli Reservoir Tomb 1, showing antechambers on the left and rear chambers on the right, the former topped by a 3-tiered lantern and the latter by a 3-tiered lantern plus a carved lantern at the back. Nanjing, Jiangsu Province, China. c. 105 – 200 CE, late Eastern Han dynasty. Drawing by Di Luo based on Li 1957.

The Changli Reservoir Tomb 1 in Nanjing, Jiangsu Province, is based on essentially the same layout as the Cangshan Tomb (Li 1957). Though largely omitted from major publications on Chinese tombs, this is a rare specimen where the twin lanterns in the antechamber are each occupied by a dragon coiling around an eight-petal flower—likely a lotus—in the apex (Fig. 4). The rear chambers are each equipped with a pair of lanterns, one built and one carved, the former containing a winged, crowned figure with a serpentine lower body holding a circular object in the center, explained by the excavators as the creator god and goddess, Fuxi and Nuwa, holding the sun and the moon.

Preliminary surveys of the lantern-ceiling tombs indicate a distribution concentrated in Shandong, Jiangsu, and Liaoning Provinces (see Map 1) (Liu 2004). Such a distribution, when compared with Goguryeo lantern-ceiling tombs, hints at exchanges along the coastlines of the Bohai and Yellow Seas (Kr. Hwanghae), particularly between the Shandong, Liaodong, and Korean Peninsulas. The tri-peninsula "delta" region seems to have formed some cultural bond and continuum: following the downfall of the Han, this delta region had enjoyed some relatively stable, undisrupted political unity even when China was divided between multiple short-lived, co-existing dynastic rules during the early 4th to the mid-5th century. Archaeological evidence of tomb architecture in the region further confirms this tie and expands the geographical scope of the lantern ceiling outside the immediate Chinese cultural sphere.

## 3. LANTERN CEILINGS AND CORBEL VAULTS IN GOGURYEO TOMBS

Goguryeo tombs are known for the richly illustrated tomb chambers and ceilings where paintings of celestial motifs and scenes of hunting and dancing bear influences of Han pictorial art, but the distinctive tomb structure is worthy of more than the sporadic examination it has received from scholars so far (Jeon 2006; Perrin 2016; Steinhardt 2002; Li 2014). Lantern ceilings were less common in Han tombs, while they prevailed in Ji'an (in modern-day Jilin Province), the capital of the Goguryeo Kingdom before the relocation of the capital to Pyongyang in 427 CE. During an archaeological excavation in 1976, 51 out of the 96 tombs of the Donggou (Tonggou) Cemetery in Ji'an were built with lantern ceilings (Liu & Zhang 1984).



Figure 5. Cross section of Dagaolimuzi M31, looking into the twin burial chambers. Ji'an, Jilin Province, China. c. 4th – 8th century, Goguryeo period. Drawing by Di Luo based on Cao & Zhu 1962.

Some of the earliest tombs in the area, notably the Dagaolimuzi M31, display a "primitive" type of lantern ceiling. Four stone slabs, roughly hewn into a triangular shape, were placed at the corners of the quadrilateral burial chamber in support of the capstone above (Fig. 5). Such irregularity in the lantern form and the use of undressed stone indicate an "archaic" practice involving some experimentation and improvisation. The wall of M31 was constructed using irregular-shaped stone blocks buttressed and sealed off with gravel, unlike later examples where rammed earth was more frequently applied, which also suggests a much earlier date or archaic treatment. The predilection for stone burials in Ji'an had existed since no later than the 2nd century BCE and might have derived from the megalithic era when peoples in the region erected dolmens and stone altars that dot the hilly landscape till this day (Wang 1994; Wei 1987).



0 0.5M 1.0 1.5

Figure 6. Longitudinal section of Changchuan Tomb 1, showing antechamber, left, and rear chamber, right, each topped by a corbel vault. Ji'an, Jilin Province, China. c. 400 – 427 CE, Goguryeo period. Drawing by Di Luo based on Wen 2001.

More regular ceilings flourished in the tombs of the 4th to 6th centuries. The famous Changchuan Tomb 1 of Ji'an is covered by a 6-tiered corbel vault in the rear chamber and a ceiling made of parallel and diagonal courses of stone slabs in the antechamber (Fig. 6). The antechamber ceiling, highly evocative of the lantern form found in Shandong, is "unorthodox" in construction. Its coexistence with the corbel vault in the same tomb suggests a preference for variety over

standardization, perhaps harking back to a "gestational phase" when the hallmark square-and-diamond composition had not yet fully taken shape. Later Goguryeo lanterns, such as the pair found in the famous Ssangyeongchong (Twin Pillar Tomb) in Nampo, near Pyongyang, displayed a synthesis between the corbel vault and the more standardized lantern form (Fig. 7).



Figure 7. Longitudinal section of Ssangyeongchong, showing antechamber, right, and rear chamber, left, each topped by a 3-tiered corbel vault turned into a 3-tiered lantern. Nampo, North Korea. c. 450 – 500 CE, Goguryeo period, Drawing by Di Luo based on Kim 2004.

In contrast, such technological experimentation and development in stone vaulting demonstrated by variety in form and structure had not been found in Chinese tomb architecture. Instead, pre-Han burials in China's Central Plains and east coast were predominantly earthen, vertical-pit casket graves furnished with wooden coffins and compartments. The appearance of the lantern ceiling in Yinan was more likely due to the influence of the Ji'an region and catalysed by the close communication in the Northeast in and before the 3rd century. It is important to understand that Chinese lantern ceilings were not born a "native" form that radiated from the centre of the culture to the "periphery," as has been previously believed, but the structure was derived from a non-Han, probably nomadic or seminomadic, source.

The earliest lantern-ceiling tombs in Ji'an lacked conspicuous architectural decorations, indicating a time when Han cosmology and Buddhist iconography had not yet made their entrance into the region. Later Goguryeo tomb chambers represented an animated universe in a stepped ceiling where Buddhas, bodhisattvas, and apsaras comingled with Fuxi and Nuwa and the Four Directional Animals, inhabiting a celestial realm filled with lotus flowers, flames, swirling clouds, constellations of stars, and the sun and the moon (Kim 2004; Jeon 2006; Perrin 2016). Interestingly, at Yinan and other tombs in China, the Buddhist counterpart of the pictorial program was apparently suppressed or subdued. It was replaced by the permeating Confucian didactics, which offered lessons on filial piety and insights into a history of moral behaviors, and Daoist understandings of the human soul and its journey to the land of immortality.

## 4. CORBEL VAULTS IN KOFUN JAPAN

Japanese tombs of the protohistoric Kofun period (c. 300 – 700 CE) displayed a highly distinctive layout and structure comparable to the Goguryeo precedents that originated from the Yalu River (Kidder 1964). Wang Xia, for instance, has noted the similarity between the latter and a stone vaulted tomb in Noto, Ishikawa, in Japan, though his comparison remains a largely isolated instance (2004). While the principle of chamfering the square ceiling by placing corner members was generally observed, it has to be noted that the highly standardized diamond-in-the-square lantern structure has never been found in any of the excavated Japanese tombs. On the contrary, and to a large extent, Kofun tumuli bear particular spatial and structural characteristics that are not traceable to Han or Goguryeo. Most prominent is the use of single boulders, ranging from 3 to more than 7 feet in width, as the rear and sometimes the front wall blocking the entrance to the burial chamber. Also impressive is the horizontal boulder propped over the sarcophagus, forming a shelf (ishidana) that divides the chamber into a lower and an upper level (Kurafuji 2002). The predilection for a megalithic burial is reminiscent of the dolmens in pre-dynastic Northeast Asia and, intriguingly, of the type of corbel vaults in Newgrange, Ireland.

The lack of lantern ceilings in Kofun tombs is worthy of some further contemplation. This does not indicate the lack of communication between the continents and the archipelago when the tombs were built. In fact, burial goods have demonstrated a continuous influx of luxury items and ritual artifacts that entered Japan from across the seas. The bronze mirrors, gold crowns, and jades from Kofun tombs evidenced the arrival of not only new metallurgy and craftsmanship but the aristocratic arts and rituals of the continents to Kyushu, from where they would spread to the northern half of the archipelago in the next several centuries. It is a curious case, then, that the vaulting technique-the lantern form which had been established as a symbol of status associated with political and religious ideals by the 3rd century in Northeast Asiadid not get absorbed into Japanese architecture. This suggests either unfamiliarity or a deliberate choice not to adopt the new type of vaulting. Funerary architecture and burial goods seem to have followed separate routes and different means of transmission: while trade and the exchange of gifts largely apply to the latter, exactly how architectural knowledge became disseminated and adapted in various localities remains obscure. The movement of craftspeople-in this case masons, as well as the migration of clans as conquerors or refugees of war, might have played a key role in this scenario.



Figure 8. Interior view of Idera Tomb, showing a single burial chamber constructed using a corbel vault. Kumamoto Prefecture, Japan. c. 6th cent. CE, late Kofun period. The stone blocks are approximate in size and shape and do not provide precise documentation of the actual tomb structure. Drawing by Di Luo based on Kidder 1964, Kurafuji 2002.

The capstone of a Kofun vault is sometimes made of two halves arched on the underside as if to simulate a cupola. In the Idera Tomb, one half of the capstone is painted red and the other half white, probably after the Han model of the yin and yang duality of the cosmos, the ultimate representation of which was the red sun and the white moon, a pair of symbols that emerged in both Goguryeo and Kofun tombs on the wall paintings (Fig. 8) (Kidder 1964). The majority of the Kofun murals, however, shunned figurative representations but emphasized abstract patterns and shapes such as concentric circles, triangles, horns, fans, boats, and quivers. The most unique and enigmatic is the so-called chokkomon (straight and curved pattern), which permeated both tomb architecture (including sarcophagi) and burial goods. One hypothesis relates the chokkomon to the representation of the "dome of heaven" (Kidder 1964). While the rugged, mortarless, often rudimentary-looking stone blocks of Kofun vaults do evoke the irregular curves and line segments of chokkomon, the latter remains unique to the archipelago and might have derived from non-architectural sources as well (Barnes 2003).

Buddhist iconography also penetrated Japanese tombs, but except for a few conspicuous cases including a rock-cut tomb and a ceramic sarcophagus, Buddhist elements were far less prevalent than they were in Goguryeo examples. The decorative program largely adhered to what appeared to be a pre-Buddhist local practice or "cult," which J. Edward Kidder attributed to the Japanese mythology about the three realms of the world, expounding on the defilement of death and the ultimate importance of the ritual of purification (1964). While these set the foundation for later Shinto practices, the geometric, floral, and zoomorphic designs found in the Japanese burial environment also revealed certain Shamanistic traits relatable to the Pazyryk-Scythian culture of the Eastern Altai region. The shared visual language and the underlying ritual/religious semantics lend support to the hypothesis that Japanese, Korean, Mongolian, Tungus, and Turkic stemmed from the "transeurasian language" as the common linguistic root (Robbeets 2017).

# 5. THE "GALATIAN CORBELED ROOF" OF THE HELLENIC WORLD

Looking to the West, the ceiling of the Mylasa Monument, a mausoleum standing on the southwest coast of modern-day Turkey, appears strikingly similar to the lantern ceilings in Han and Goguryeo tombs (Fig. 9). The twelve columns, all bearing the vegetal motif similar to the acanthus of the Corinthian capital, bespeak a strong Hellenic input, while the peristyle pavilion is evocative of a classical Greek temple. The roof, however, is built of five courses of stone slabs forming a "stepped pyramid" on the square opening and differs from the typical Greek gable roof. The diamond-shaped coffer in the centre is echoed by the twelve carved diamonds around it, demonstrating familiarity with the lantern technique and its ornamental applications.





Janos Fedak has categorized the Mylasa Monument as a "temple tomb," which features a tall podium for a maximized impression of monumentality, tracing back to certain antecedents in the antique period of heroization when heroons, or memorial structures of heroes, were erected as public structures (1990). The temple tombs had been a prevalent type of funerary architecture for people of status and prestige across the Hellenistic World, with famous edifices, notably the Mausoleum at Halikarnassos, the Lion Tomb at Knidos, and the Belevi Mausoleum, established in Asia Minor's east coastlines, all built on imposing pedestals and with prominent pyramidal roofs. These free-standing monuments differ fundamentally from Han and Goguryeo burials in terms of visibility, but the public visibility had likely led to greater public awareness and receptivity of such building forms in a wider geographical range, spurring the transmission of the lantern technique in the process.

Though some have claimed that they sensed "Oriental" influences from Mylasa's roof – and by "Oriental," they insinuate something related to Asia Minor, West Asia, or Persia – it becomes a puzzling question why the roof displays such an inexplicable similarity with the Yinan lantern. While many have suggested that the East and the West each developed their building traditions quite independently, largely dismissing any likelihood of long-distance exchanges in this regard, it is the very intention of this essay to interrogate if it is at all possible that such architectural transmissions had taken place before the first millennium, prior to the "official" opening of the Silk Road. As the material evidence presented so far has demonstrated, such a possibility cannot be completely excluded.



#### Figure 10. Longitudinal section of Kurtkale Tomb, showing antechamber, left, with a 5-tiered lantern and a conical corbel vault over a rear chamber, right. Near Mezek, Bulgaria. c. 4th – 3rd cent. BCE. Drawing by Di Luo based on Filov 1937, Fedak 1990.

The origin of the lantern ceiling being shrouded in mystery, the earliest archaeological evidence of this specific vaulting technique so far comes from Thracian tombs of the 4th century BCE (Fedak 1990; Theodossiev 2007). The Kurtkale Tomb near Mezek, Bulgaria, has a square antechamber and a circular "beehive" burial chamber at the rear, both sealed inside an artificial mound (Fig. 10). The square chamber is covered by a five-course lantern ceiling made of stone slabs like the Mylasa Monument, while the "beehive," highly reminiscent of the Tomb of Atreus, bespeaks of Mycenaean cultural influences (Filov 1937). The myriad threads of cultural roots and traits of this particular ceiling structure, going deeper and deeper into history and prehistory, show but a fraction of the highly convoluted and dynamic, multi-lateral exchanges, absorptions, and inheritance among neighbouring societies of the early human world. They evidence how the ancient Mediterranean World was like a tightly woven fabric of multiple participants each contributing their own threads and special features to the shared built environment and architectural heritage. But how far did the "fabric" extend and where were its limits?



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Present studies suggest the lantern-roofed antechamber to be a distinctive trait of Thracian tombs and Galatian burials from central Anatolia. With the twin-chamber layout, it became a recognizable pattern predominating some of the most significant tombs in the regions into the 1st century, and reemerged, perhaps not coincidentally, in Han and Goguryeo. A Galatian tumulus of interest here is the Karalar Tomb C, believed to be a royal tomb based on an inscription associated with King Deitotares II (c. 40 BCE). The twin chambers are covered by what appears to be largely irregular, almost carelessly arranged stone slabs piled up into a rudimentary lantern roof (Fig. 11). The more sophisticated example, also from Galatia, is the roughly contemporaneous Gordion Tomb which shares the twin-chamber composition but enjoys obviously more regularly cut stones which form a seven-course lantern ceiling in both chambers (Fig. 12) (Young 1956).

The prevalence of the lantern ceiling in Galatian tumuli has led Machteld Mellink to loosely term this roof the "Galatian corbeled roof," which registered a phenomenon much wider in geographical scope (1967). Hidden under the visible archaeological evidence might have been a once flourishing wooden lantern-roofing technique adopted in Galatia, Thrace, Macedonia, and as far as modern-day Italy, for spanning spacious halls with minimal columns and accommodating a large audience (Ginouves & Guimier-Sorbets 1994). The same name also proposes the theory that it might be the Galatians who brought the lantern ceiling from Thrace to Anatolia during their eastward migration posterior to the 4th century BCE (Fedak 1990). While recent scholars have argued how labeling the ceiling "Galatian" is erroneous because it conflicts with new archaeological evidence (Theodossiev 2007; Vassileva 2012), such a theory – regardless of its validity – exposes a correlation between architectural transmission and human migration.





#### Figure 12. Longitudinal section of Gordion Tomb, showing 7-tiered lanterns over both ante- and rear chambers. Gordion, Turkey. c. 2nd – 1st cent. BCE, Galatian period. Drawing by Di Luo based on Young 1956.

The term, on a technological level, correctly identifies the lantern as a subcategory of the corbel vault. The "gestational" or "experimental" phase showing the lantern structure evolving from the simpler corbeled ceiling to a standardized formula has so far been archaeologically documented only in two regions—Galatia and Goguryeo—where a variety of proto- and para-lanterns inform of a process in which different ceiling compositions were tested without a hard and fast rule for a duration of time. The highly decorative and stylized specimens seen at Mylasa and Yinan, on the other hand, are likely crystallizations of the earlier practice that had rooted in distinctive topographies and societies and later bestowed with new religious and political connotations.

## 6. CORBEL VAULTS IN SCYTHIAN KUR-GANS

The discussion on the Galatian and Thracian lantern ceilings and their "migration" affords us to consider the contribution of a third participant, the Scythians, in this diffusion. A special case of interest is the Royal Kurgan in Panticapaeum (near Kerch, modernday Ukraine) on the northern strait of the Black Sea (Fig. 13).



0 0,5M 1.0 1.5



The imposing structure is dated to the second half of the 4th century BCE and was probably the resting place of a ruler of the ancient Greco-Scythian kingdom of Cimmerian Bosporus. The main chamber is built of four courses of stone at the bottom, which transitions from a square over five intermediate courses into a twelve-course conical dome, its apex measuring about 17 meters above the ground (Fedak 1990). The corner treatment appears to be a singular design in ancient burial architecture: while it continued the more commonplace corbeling technique, the use of curved stone blocks at the corners is also evocative of the lantern method. The same solution foreshadowed the birth of Byzantine squinch arches and pendentives (Fedak 1990).

South Russian kurgans had been predominantly timber graves since 1800 BCE. The sudden change in building material and architectural form—from wooden coffins underneath earthen tumuli to circular tomb chambers made of limestone—might have resulted from the contact between the Scythians and Thracians across the Black Sea in the 4th century BCE (Fedak 1990). East to the point of contact, in the Caucasus, wooden lanterns have been observed in traditional Armenian houses, though it is unclear yet how far back this built form can be traced due to the lack of excavated materials in the region.

It does seem that the distribution of the earliest lantern-ceiling tombs concentrated in the Black Sea cultural sphere and radiated from Thrace and Galatia toward Caria (where the Mylasa Monument is located) to the south and Crimea to the north (see Map 1). While early Eurasian powerhouses, from the Achaemenid Empire to Alexander the Great and his successors, had mobilized peoples and ideas between East and West on a grand scale, it is interesting to note that the lantern ceiling was never a mainstay of the architecture of either empire. Greek stonemasons were active in the Hellenistic city of Ai Khanoum, in modernday Afghanistan, perhaps the east-most foothold of Alexander the Great's expeditions, but the stone tombs there bear no traces of the lantern technique (Fedak 1990). While this might indicate a lack of exposure, it might have also been a question of choice. Alexander's masons, for instance, might have regarded the lantern ceiling as less appropriate for temple structures or tombs modeled after Greek temples. The same question further prompts us to wonder how and why, also in Afghanistan, in Bamiyan, the lantern technique enjoyed its first florescence in Central Asia under the Buddhist aegis in 400 CE, while the motif had been altogether non-existent in the pre-Buddhist era.

An alternative route of exchanges to be considered is the "steppe highway" (Honeychurch 2015). The high mobility of the nomadic societies – in this case the Scythians-who were aware of the lantern technique or more generally the corbel vault, makes one wonder whether or not they brought knowledge of architectural and engineering breakthroughs across the Eurasian steppe, or if the migrations of the elite groups and the builders they hired or captured catalyzed the "globalization" of certain structural solutions. While the trade between the Scythians and the Greeks (and the war/hostility between the former and the Persians) is well-documented, little is known about the interaction between Scythians and their Eastern neighbours, i.e. the multi-ethnic nomadic tribes who would later become united under the Xiongnu Confederation, posing the greatest threat to the Han Empire.

Archaeological excavations of burial goods in South Russia and Mongolia have yielded an impressive number of comparable gold belt plaques, bronze mirrors, lacquerware, and silk textiles, many adorned with typical "nomadic" designs of paired animals and hunting scenes, demonstrating large-scale, persistent exchanges of gifts or goods within pastoralist societies centuries before the opening of the Silk Road (Brosseder 2011; Rawson 1999). The exchange in architectural ideas and burial traditions, however, is a more obscure issue, perhaps even counterintuitive at first sight, since the term "nomadic" is by nature the opposite of a settlement and a sedentary life signaled by architecture. The misinterpretation lingers because nomadic structures have been taken automatically as insignificant (culturally or economically), ephemeral, and inferior to sedentary architecture which they are often thought to emulate. This is exacerbated by scholars' emphasis on sumptuous burial goods – artifacts of material wealth and socio-political statusover spatial and structural specifications of the burial environment and other constructions on the steppe. Ursula Brosseder's recent survey of the structure and contents of elite Xiongnu tombs show earthen pits, stone enclosures, and wooden graves comparable to Scythian kurgans (2009).

## 7. DISCUSSION AND CONCLUSION

Unlike Han China where sloped and barrelvaulted ceilings were preferred in tomb structures, the lantern ceiling seems to have dominated the burials in the densely forested Goguryeo. This preference, while probably reinforced by the introduction of Buddhism and Buddhist iconography to the Korean Peninsula, was well underway during the pre-Buddhist period when it was practiced outside the immediate Buddhist context. Tracing earlier instances of the lantern technique has led us from Northeast Asia to the stone-chamber tombs of Thrace and Galatia back in the 4th century BCE. While the similarity in Sino-Hellenic tomb architecture remains largely a conundrum, the participation of Scythian and other nomadic or semi-nomadic groups in the trans-Eurasian proliferation of the lantern prompts us to re-evaluate their roles in diffusing building forms and ideas.

Questions remain regarding how Central Asia and the Middle East—through which the Silk Road network transfused ideas, peoples, and goods between the East and the West—might be placed into this big picture as cultural agents alongside and probably interacting with the Scythians and Xiongnu. It is a known fact that nomadic kingdoms, such as the Kushans in Central Asia in the 2nd century CE, played active roles in disseminating religious thoughts and synthesizing artistic forms, but their impact on architectural transmission is less well studied. This difficulty stems from the general lack of archaeological records of the lantern ceiling in the geographical region, where all existing instances date from roughly after 400 CE (Bamiyan being the earliest), and these examples largely come from Buddhist sites but not a funerary or residential context.

Lantern ceilings in Indian temples expressed a strong tie with their northern borderland and neighbors, as ceilings of the 10th-century Baroli Temple (Rajasthan) and the contemporaneous Pandrethan Temple (Kashmir) demonstrate. The architecture in general displayed a certain affinity to much earlier Gandharan and Kushana structures in the vicinity which have unfortunately crumbled into oblivion save for some reverberations found in sites such as Bamiyan and Takht-i-Bahi.

Architects such as Alexander the Great's masons might have travelled with the troops and served as military engineers, bringing knowledge and practice to distant lands along the way. Though such travels were small in scale, the impact might be like that of a rippling effect, as the coming of novel architectural ideas must have generated some "disturbances" to the existing cultural fabric and stimulated change and assimilation.

Architectural transmission is a complex issue as the process was often multilateral and mutual with no absolute distinctions between originating and receiving cultures. An architectural form results from the layering of multiple cultural sediments each brought by the tide of a particular space and time. While Han and Hellenistic lanterns reinforce the impression that the square-and-diamond composition was by the 2nd century CE indeed a highly recognizable form of power and significance in Eurasian empires, the seeds and roots of the widespread form must have been planted during earlier times of human migration and long-distance interactions when "home" had been a less settled, more mobile concept.

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