

The Laternendecke Ceiling: Transmissions Across Afro-Eurasia?

Susan WHITFIELD

In my article for the previous edition of this journal, I discussed the transmission of the squinch-supported dome across Asia and its early appearance at Miran in the Tarim Basin in order to explore the issue of mapping cultural influences and differentiating them from independent development. Here I turn my attention to the laternendecke-style ceiling to explore further these issues. The laternendecke is found in above- and below-ground architecture across Eurasia, both structural and non-structural, including painted representations. Several recent articles have discussed it in more detail but most concentrate on only some of the geographical subsets. Here I consider these subsets chronologically, covering Afro-Eurasia and concentrating on the period up to the end of the first millennium CE. I suggest revisions to some earlier misleading chronologies and also discuss the problems of identifying, naming, and clearly distinguishing between architectural features.

Keywords: architecture, ceiling, laternendecke, corbel, caisson

The laternendecke ceiling is a distinctive form of ceiling often considered a type or variant of a corbeled roof. It is found in stone and wood and consists of a square or rectangular opening in the ceiling with layers placed above which leave successive square or rectangular frames decreasing in size and each placed obliquely to the one below.¹ The frames might be made of rectangular or triangular units but in both cases need to rest in part on the layer below (see fig. 1).² The topmost frame leaves a hole in the roof which could be covered by a capstone or, in above-ground architecture, is sometimes left open to provide light—hence lantern ceiling (Ger: *decke*)—and, especially in domestic architecture, it allows smoke to escape from a fireplace below (fig. 2).³ The number of layers varies: including the original square or rectangular hole flush with the ceiling, they range from two to seven.⁴ Whether the number of layers had any significance in these early buildings is not known but the four layers in modern Pamir domestic architecture are now given a Zoroastrian interpretation.⁵ It has also been suggested that the number of layers in tombs in China might reflect the social ranking of the occupant.⁶ In an influential article, Alexander Soper (1904–1993) argued for a cosmological significance.⁷ Although there have been many recent papers on this form, most concentrate on particular geographical clusters and offer varying chronologies. In order to present a more comprehensive picture and explore whether there are possible corridors of influence and/or independent development, here I review published examples across Afro-

¹ Most are square and quadrilateral frames, but triangular, octagonal, and hexagonal frames and blocks are also used. However, there is sometimes confusion in the description as with overlapping square frames the openings are octagonal.

² I have not had the space here to discuss the differences in structure—i.e., frames made from lengths of wood or from triangular blocks—but it might be significant, possibly denoting a difference in the original building materials: wood and stone. Alev Erarslan's discussion of the different wooden forms found in Anatolian houses is a model for further research on this: "A Traditional Wooden Corbelled Dome Construction Technique from Anatolia: The Eastern Anatolian Tandoor House with Its Wooden 'Swallow-Dome' Type of Roof," *Journal of Asian Architecture and Building Engineering* 21, no. 4 (2021): 1275–1303, <https://doi.org/10.1080/13467581.2021.1929243>.

³ This form was noted by early-twentieth-century travelers to Central Asia such as Albert von Le Coq and Aurel Stein, the former coining the term in 1925: Le Coq, Albert von, *Bilderatlas zur Kunst und Kulturgeschichte Mittel-Asiens*, (Akadem. Druck- u. Verlagsanst; Unveränd. Nachdr, [1925] 1977). Erarslan discusses how the corbeled roof in Anatolian houses traps the heat from the stove and provides a thermal layer in winter ("A Traditional Wooden Corbelled Dome Construction Technique").

⁴ Including the original opening/frame usually flush with the ceiling.

⁵ "The skylight in the main room is built with four concentric square box-type layers representing earth, water, air and fire, the latter being the highest, is first touched by the sun's rays." K. E. Eduljee, "Pamirs Badakhshan: Inside Pamiri Houses," *Zoroastrian Heritage*, 2005–2023, <http://www.heritageinstitute.com/zoroastrianism/tajikistan/page4.htm>.

⁶ J. Feng, "Bracketing Likened to Flowers, Branches, and Foliage: Architectural Metaphors and Conceptualization in Tenth to Twelfth-Century China as Reflected in the *Yingzao Fashi*," *T'oung Pao* 93, 4 (2007): 369–432, <http://www.jstor.org/stable/40376330>. Thanks to Di Luo for this reference.

⁷ "The 'Dome of Heaven' in Asia," *The Art Bulletin* 29, no. 4 (1947): 225–48, <https://doi.org/10.2307/3047142>. His paper was a response to that of Karl Lehmann's "The Dome of Heaven" (*The Art Bulletin* 27, no. 1 (1945): 1–27, <https://doi.org/10.1080/00043079.1945.11407667>), which looked at the dome as a representation of the sky in Christian art. Soper's argument, that the ceiling form moved from west to east, is now not generally accepted but his survey of sites remains useful.

Eurasia. Previous papers have generally looked at geographical clusters based on arguments of possible transmissions/influences between them. This article instead presents all the known examples chronologically to provide data in a form which, it is hoped, might better enable a more comprehensive review and critique of the various arguments for transmission between regions/cultures. The examples are mapped with illustrations (fig. 3).⁸ While noting some later examples, I concentrate on the period to the end of the first millennium CE as there remains more uncertainty about possible influences and transmissions in this period.⁹ I have not been able to verify all of them owing to the difficulty of obtaining some of the sources, but I provide bibliographical links.

Terminology

The arguments offered by several scholars cited below are reduced in clarity and force by imprecise terminology and it is therefore worth clarifying my understanding and use of terms. A structural element, the laternendecke pierces the ceiling and is often found at the apex of a pyramidal roof or on a flat ceiling, the corners often supported by columns. It is a large, major feature, often appearing alone, although sometimes there might be a row of large laternendecke in a columned hall. I use the term skeuomorphic laternendecke, following Di Luo, to refer to the laternendecke design in 3D in rock-cut or below-ground architecture placed where there could have been a structural laternendecke in above-ground architecture but where the structural function is unnecessary.

⁸ Di Luo has a more detailed map of the Thracian and Chinese/Korean tombs: <https://www.arcgis.com/home/item.html?id=536c2b3640ad45f0aa38cfa4d6332f35#>. I also have an excel file in preparation, which will give information of the type of laternendecke and number of layers: this will be published later on my website: silkroaddivagressions.com.

⁹ I have previously considered its use in rock-cut temples of the Tarim Basin: see my “Buddhist Architecture in the Tarim Basin,” in *Buddhist Architecture: Studies in Asian Art and Culture*, ed. David Eford (Bonn University Press, forthcoming). Here I broaden the discussion and take into account recent publications. Four of these stand out for their detail and comprehensiveness and I would like to thank the authors for their work, which has significantly progressed scholarship: Alev Erarslan (“A Traditional Wooden Corbelled Dome”) considers the use of the roof in domestic architecture in Eastern Anatolia while providing an excellent historical summary and clear context; Nikola Theodossiev discusses possible links between the examples found in Thrace and Anatolia from the sixth to first centuries BCE and provides illustrations of most (“The Lantern-Roofed Tombs in Thrace and Anatolia: Some Evidence About Cultural Relations and Interaction in the East Mediterranean,” *Thrace in the Graeco-Roman World: Proceedings of the 10th International Congress of Thracology, Komotini-Alexandroupolis, 18-23 October 2005*, ed. Athena Iakovidou (National Hellenic Research Foundation, 2007), 602–13; Di Luo considers the later tombs in China and Korea, linking back to some of the earlier examples to consider possible influences (“Dome of Heaven: From the Lantern Ceiling to the Chinese Wooden Dome,” in *Silk Roads: From Local Realities to Global Narratives*, eds. Jeffrey Lerner and Yaohua Shi (Oxbow, 2020), 131–59; and QiangQiang Pei et al. have discussed the Dunhuang laternendecke in a broad context with excellent illustrations (QiangQiang Pei, Xinyu Shen, and Qi Zhang, “The Building System and Modeling Evolution Characteristics from the Stacked Patios to the Pingqi of the Grotto,” *Journal of Asian Architecture and Building Engineering*, September (2024): 1–25, <https://doi.org/10.1080/13467581.2024.2397118>. Several other authors have also published important work: I cite them where relevant below. In the course of researching this article, I have found this form to be much more common and widespread than I had previously realized.

The laternendecke is not a form of coffering or *zaojing* 藻井. Coffers are geometric recesses—square, triangular, octagonal, etc.—within a solid ceiling: decorative but also sometimes used to reduce the weight. They can be found used on various types of ceilings, including flat ceilings and domes. They are often adorned with carvings, paintings, or both. Caisson is a term now also used to refer to ceiling coffers. Sometimes these coffers are carved or painted with the laternendecke design but this does not make them laternendecke. The laternendecke structure is used to distribute weight down and reduce the roof opening. There is no opening in a coffered ceiling: it is an internal decoration. Where a laternendecke design is used in a place in which a structural laternendecke would not have been possible, including as decoration in a coffered roof, I call this a decorative laternendecke.

Zaojing is a Chinese term used to describe a type of wooden roof developed in China. The Dunhuang Academy uses this term to refer to the laternendecke at the apex of the pyramid roof in the Buddhist rock-cut temples at Mogao 莫高, such as Cave 285. This follows Liu Zhiping (劉致平, 1909–1995), who argued that the *zaojing* had existed since the Han dynasty (202 BCE–220 CE); that it is depicted both in the Yinan 沂南 tombs (168–189), discussed below; and that the painted laternendecke at Dunhuang shows its continuing use. Hannah Simon accepts this argument, stating that: “While a laternendecke can be a type of *zaojing* [sic], not all *zaojing* are laternendecke.”¹⁰ I would argue that it is misleading to refer to any laternendecke as *zaojing*, which is by Ye and Fivet’s definition:

“A Chinese construction system for dome-shaped ceilings that combines small wooden pieces with interlocking connections.”¹¹

The ceilings that most resemble a laternendecke, such as seen at Niuwang Temple (牛王廟, built 1283, rebuilt 1321) and Dongyang Temple (东羊后土庙, 1345), both in Shanxi, China, are termed “the Northern type” by Ye and Fivet. Yet these differ from the others they show, in that they are open, structural, and not domes and so this type does not conform to their own definition. I would therefore suggest it is more accurate to treat them as a form separate from *zaojing*, although, given their complex structure, undoubtedly influenced by wooden architectural techniques of loadbearing developed in China and used in *zaojing*. Given that they are structural and open, I would include them as a form of laternendecke.¹²

Alev Ersalen shows how experimentation with the laternendecke form using octagonal rather than quadrilateral openings can lead to a form closer to the dome. This is seen in Islamic architecture, such as the dome in front of the mihrab at the Great Mosque of Erzurum

¹⁰ Hannah Simon, “Hybridity, Appropriation, and Transmission: The ‘Laternendecke’ in Buddhist Cave Temples at Mogao,” *ResearchGate*, December 2017, 4, no. 2, <https://doi.org/10.13140/RG.2.2.15194.80323>.

¹¹ J. Ye and C. Fivet, “The Zaojing: Review of a Unique Wooden Construction Typology,” *International Journal of the Construction History Society* 35, no. 1 (2020): 23–49, <https://doi.org/10.5281/zenodo.3941502>.

¹² See Ye and Fivet, “The Zaojing,” fig. 5 for Niuwang, and fig. 6, bottom for Dongyang Temple. For clear details of the construction of that found in Zhihua Temple, dated 1444, originally in Beijing but now in the Nelson-Atkins Museum of Art, see Wei-cheng Lin, “Digital Reconstruction of Wanfoge,” *Dispersed Chinese Art Digitization Project, Center for the Art of East Asia, University of Chicago*, 2019–2020, esp. fig. 9, <https://caea.lib.uchicago.edu/dcadv/en/zhihuasi/digital/>. This is called a coffered ceiling by the author and by the Museum: <https://art.nelson-atkins.org/objects/12120/coffered-vault-with-carved-dragons-china-beijing-zhihua-t>.

(1179/574), but with renovations.¹³ Ersalan's article is invaluable in showing the ongoing use and development of the laternendecke form in contemporary domestic architecture in Anatolia.

Another term used in the Chinese context is *pingqi* 平棋, referring to a flat coffered ceiling and used by QiangQiang Pei et al. in their article to refer to the painted laternendecke in the rock-cut Buddhist temples at Mogao, Dunhuang.¹⁴ They also use the rather confusing term "stacked patio." Although I would argue that they confound the skeuomorphic laternendecke and the decorative laternendecke in a coffered ceiling, they provide a useful summary of the history of the study and terminology of the laternendecke and an excellent selection of images.¹⁵ In other cases, it is not clear whether the feature is entirely decorative or skeuomorphic, for example, on the ceiling of the cliff tomb M1 in Bailinpo, Santai County (白林坡, 三臺縣), China (fig. 3), where the laternendecke designs are on the flat part of a gabled roof. Here, it could be imitating a caisson ceiling or a laternendecke.

There are also many cases where a skeuomorphic laternendecke is depicted without an understanding of—or possibly a disregard for—the structure: for example, in several of the Bamiyan caves, such as cave 18.¹⁶ In these cases, the square frames of the laternendecke are hardly or not at all overlapping: the corners of each square are entirely or almost entirely visible. If the square hole was formed from larger triangular or rectangular blocks, as clearly seen in the Wu family tomb in Shandong, China, and in the tomb at Gemlik (fig. 1), then this would be feasible structurally but, in this case, there would be no recess between each layer.¹⁷ If there is a recess, then rectangular frames are used rather than blocks. As depicted, the frames are not at all or hardly resting on the square frame below and would simply fall through if they were structural and weight was applied above. In most cases, I would still argue that these are skeuomorphic rather than entirely decorative, but that the architects do not have direct familiarity with—or regard for—the structural aspects of the laternendecke structure.

Early Examples of the Corbel Roof

Building a roof by layers of overlapping blocks is the key feature of a corbeled ceiling

¹³ https://www.archnet.org/sites/1951?media_content_id=12812, fig. 20. She refers to the discussion by G. Akin, "Tüteklikli Örtü Geleneği: Anadolu Cami Ve Tarikat Yapılarında Tüteklikli Örtü," *Vakıflar Journal* 22 (1991): 323–54.

¹⁴ Pei et al., "The Building System." Following the China National Committee for Terminology in Science and Technology, *Architectural Terminology: 2014*, Science Press.

¹⁵ Because the number of images is restricted in this paper, I refer the reader to those in Pei et al., "The Building System," freely viewable online, indicated in footnotes as "Pei, fig. x," and to Theodossiev, "The Lantern-Roofed Tombs in Thrace," indicated in footnotes as "Theodossiev, fig. x."

¹⁶ Other caves in Bamiyan, however, have a structurally accurate depiction, such as cave 15, see fig. 3.

¹⁷ See Pei et al., "The Building System," fig. 12 and for a diagram see A. M. Mansel, "Gemlik tümülü mezari," *Belleken* 38, no. 150 (1974): 181–89, reproduced in Theodossiev, fig. 14.

or roof, and the laternendecke can justifiably be seen as a specific development of this. The corbel, as mentioned above, can also developed into a dome.¹⁸ The corbeled roof is made by overlapping layers of stone blocks, bricks, or wooden planks so that the weight is transferred down to the block below while the opening above is gradually reduced and topped with a capstone. It is used in vaults and domes in rock-cut, above- and below-ground architecture and found in sites dating from the Neolithic and in regions across Afro-Eurasia, both structural and skeuomorphic. Erarslan provides a concise summary of early domestic architecture with corbeled and possible lantern ceilings in her article on such roofs found in domestic houses in eastern Anatolia. She notes that the lantern form of the corbeled roof is held by some scholars to date back to as early as 3000 BCE, as found in the Kura-Arax culture of Transcaucasia.¹⁹ She also suggests that the specific laternendecke form is described in historical sources, notably by the Roman architect Vitruvius in the first century BCE.²⁰ Nevertheless, the earliest identified extant examples of the laternendecke identified to date are in West Asia and Eastern Europe.

Stone Tombs in Thrace and Phrygia

The earliest currently known example of the laternendecke is probably that in the tumulus tomb at Belevi in Anatolia, dated by some to the sixth century BCE (fig. 3).²¹ It is made of stone and has two layers with one square opening placed obliquely above the ceiling opening. Tombs frequently copy above-ground architecture, but no contemporary structures survive from this time to confirm whether the laternendecke was used. If so, it is possible that such structures were wooden, as seen in the houses discussed by Erarslan.²² It should be noted that much of Anatolia was forested at this time and wood was, presumably, quite readily available: this is relevant when considering the often cited argument given by Gerald Kocicz on the development of the laternendecke in Central Asia: “The fact that only low roof pitches are possible and the resulting irregular layers are best leveled and sealed with clay clearly indicates that it was developed in an arid climate zone poor in high-quality timber, such as that found

¹⁸ Sometimes called a false or cribbed dome as it does not rely on the true arch structure.

¹⁹ Erarslan, “A Traditional Wooden Corbelled Dome,” citing, among others, A. Sagona, *The Archaeology of the Caucasus: From Earliest Settlements to the Iron Age* (Cambridge University Press, 2018).

²⁰ Erarslan, “A Traditional Wooden Corbelled Dome,” 1276; Vitruvius, *Ten Books on Architecture*, trans. Morris Hicky Morgan (Harvard University Press, 2014).

²¹ Theodossiev, “The Lantern-Roofed Tombs in Thrace,” 603, citing Sandor Kasper, (including “Der Tumulus von Belevi (Grabungsbericht),” in *The Proceedings of the Xth International Congress of Classical Archaeology, Ankara-Izmir 23–30/IX/1973* (Türk Tarih Kurumu, 1978): 387–98) and H. Vettters. “Ephesos: Vorläufiger Grabungsbericht 1978,” *AnzWien* 116 (1979): 123–44, in support of this.

²² See R. Ginouvès and A.M. Guimier-Sorbets, “Voûte ‘galate’ et charpente macédonienne,” *Revue Archéologique* (1994): 311–21, <https://www.jstor.org/stable/41737741>, who give modern examples from east Turkey through to central Asia and Erarslan, “A Traditional Wooden Corbelled Dome,” for more detailed discussion of examples in Eastern Anatolia.

from the Aral Sea to the Punjab.”²³

Ersalen’s and Akin’s descriptions of the laternendecke in Anatolia, where wood is plentiful and the climate ranges from semi-arid continental to Mediterranean, provide a counter to this argument. This is not to say that the laternendecke was not a solution to the paucity of materials available in Central Asia, but rather that the paucity of materials was not a necessary condition for its development. However, the question still remains as to whether there was any connection between these two areas—between West and Central Asia—that is, whether one influenced development in the other. I argue that there is not sufficient evidence to do more than speculate, but that the chronology of the currently known evidence would only support a movement from West Asia to Central Asia, not the other way around as suggested by some scholars: apart from Nisa, most Central Asian examples are considerably later.²⁴ They could, of course, be independent developments.

The laternendecke is then found in later tomb architecture in both Anatolia and Thrace from the fourth up to the first century BCE, with between three and seven layers.²⁵ Some of these have a circle at their apex, such as at the Ostrusha tumulus near Shipka (present-day Bulgaria), dated to ca. 330–320 BCE.²⁶ Ostrusha has a coffered ceiling comprised of square stone coffers with painted decoration. The central part of the ceiling is, however, a clear skeuomorphic laternendecke of two layers with a recessed circle in the center (fig. 3). It was originally painted but only fragments survive, so the motif within the circle cannot be identified: the square coffers around it contain portraits. This juxtaposition of the laternendecke and coffers suggests that both these forms were in use in above-ground architecture. It is also seen in many contexts after this where we find the laternendecke.

The above-ground Gümüşkesen or Mylasa Roman tomb in southwest Turkey dates from the first century BCE. It has a five-layered stone laternendecke. The first layer is supported by twelve pillars, and the triangular spaces between it and the layer above are left open. The spaces between the layers above are decorated with coffers, also with a two-layered

²³ Gerald Kozicz, “Die Laternendecke: Von den Höhentempeln Bamiyans zu den Stupas von Alchi” [The lantern ceiling: From the hilltop temples of Bamiyan to the stupas of Alchi], in *Wakhan. Talschaft zwischen Pamir und Hindukusch*, ed. Robert Kostka (Verlag d. Technischen Universität Graz, 2011). He observes that the laternendecke in these temples was often “comprised of beams made up of many twigs and small branches, usually with mud employed as a binding material” (52).

²⁴ For example, Xuan Chen writes: “The lantern ceilings of the stone tombs on the coasts of the Mediterranean Sea were ... modeled after prototypes in wooden architecture in Central Asia” (“Constructing Heaven: Ceilings of the Stone Tombs in Northeast Asia (first to seventh century CE.)” *Religions* 14, no. 12 (2023): 14–55, <https://doi.org/10.3390/rel14121455>). She notes that no examples survive from early Central Asia but argues that “the general continuity of the local architectural tradition ensured that the lantern ceiling structure exerted its influence on both ceilings in the Mediterranean and the Eastern Han.” This seems to be a circular argument: how can the continuity of the architectural tradition be asserted if there is no evidence to support it?

²⁵ See Ginouvès and Guimier-Sorbets, “Voûte ‘galate’ et charpente macédonienne,” fig. 1a–k, and Katherine Elise Rice, “A Tomb with a View: Constructing Place and Identity in the Funerary Monuments of Hellenistic Anatolia” (PhD diss., University of North Carolina, Chapel Hill, 2016), for useful summary descriptions of the tombs, images, and bibliography.

²⁶ The innermost layer of Mushacoaskby is a triangle. See Ginouvès and Guimier-Sorbets, “Voûte ‘galate’ et charpente macédonienne,” fig. 1j.

laternendecke design.²⁷ Although examples of laternendecke have not been identified further west to date, Nikola Theodossiev argues that it was possibly used in Macedonia, as suggested by a depiction in a late-fourth century BCE mosaic of a seven-layered laternendecke in room A of “The House of Dionysos” in Pella.²⁸ He also refers to several Etruscan tombs with similar roofs, such as those at Chuisi dating to the fifth century BCE. However, these are different in terms of their structure with each smaller layer placed in the same orientation as the layer below, a regular/geometrical form of corbeling. As he concludes “one may only speculate about possible relations and interaction reflected in the resemblance of the tomb designs.”²⁹ And this uncertainly extends, of course, to the possible use of the laternendecke in contemporary above-ground architecture in this region.

Skeuomorphic laternendecke are found in the region in later above-ground stone monumental architecture, such as the Miletus Gate. This dates to the reign of the Roman emperor Hadrian (r. 117–138) and has caisson or coffered ceilings, with those on the first story showing a carved laternendecke design. The columnar porches flanking the central gate also have carved designs of a two-layered laternendecke with a circle in the center.

Both Xuan Chen and Di Luo cite the tombs as comparators when considering the laternendecke in tombs in China and Korea. Also, QiangQiang Pei et al. consider the Roman examples when discussing the juxtaposition of laternendecke and coffers at Dunhuang. These arguments are discussed below.

Old Nisa, Parthia

In chronological terms, the next example of the laternendecke overlapping with these was suggested by Soviet archaeologists as forming the apex of the ceiling between the columns of the Square Hall at Old Nisa, the capital of Arsacid Parthia (250 BCE–226 CE) and dated to the third–second centuries BCE.³⁰ The ceilings of these ruins no longer survive and the laternendecke is postulated based on the feasibility of such a roof given the remaining

²⁷ James Fergusson notes the similarity of this structure with Jaina temples in India. He writes (although dating the tomb later than now generally accepted): “After the Christian Era the first example is found in a singular tomb at Mylassa ... where the dome exhibits all the peculiarities of construction found in the Jaina temples of India. After this we almost lose the thread of its history till the form reappears in porches like those of the 11th century on Mount Abu, where it is a perfectly established architectural feature, that must have been practised long before it could be used as we find it in that building. Whether we shall ever be able to recover the lost links in this chain is more than doubtful, but it would be deeply interesting to the history of art if it could be done” (*History of Indian And Eastern Architecture* (Cambridge University Press, 2013), vol. 1, 349).

²⁸ Theodossiev, “The Lantern-Roofed Tombs in Thrace,” 606.

²⁹ Theodossiev, “The Lantern-Roofed Tombs in Thrace,” 606.

³⁰ G. A. Pugachenkova, *Puti razvitiia arkhitektury iuzhnogo Turkménistana pory rabovladieniia i feodalizma* (Izdatel'stvo Akademii Nauk SSSR (Trudy IUTAKE VI), 1958), 90–91 with reconstruction on p. 95. Pilipko, V. N. *Staraya Nisa. Zdanie s kvadratnym zalom*. Vostochnaja literatura RAN, 1996. Thanks to Paul Wordsworth for help with Russian sources. The Square Hall is not to be confused with the Square House, which has an open courtyard at its center.

architectural evidence and on known later examples in the region. In the reconstruction, it is supported by four pillars in the center of the room (fig. 3).

More recent archaeology by teams led from Ashgabat and Turin have challenged some of the reconstructions postulated by early scholars, such as Galina Pugachenkova's (1915–2007) suggestion that the roof of the Round Hall was covered with a dome on a cylindrical drum, following a Hellenistic architectural model.³¹ Antonio Invernizzi (1941–2021) argued that this “does not stand up to a detailed study of the residual brick structures. These do not have a vertical wall, but show a curvature towards the inside, which enables us to reconstruct a vault with a continual elliptical outline starting from the floor.”³² However, Pugachenkova's hypothesis that there was a laternendecke in the Square Hall has been supported by the further work of Invernizzi and colleagues: “The four central supports were replaced during a second phase by massive quadrilobate pilasters made of baked brick, which could support a lantern roof similar to those still used today in the traditional architecture of the region.”³³

Use by the Arsacid Parthians of this form would be interesting, not least because of their expansion to eastern Anatolia and later control of Armenia (12–428) and the attested earlier examples there. But, although the Nisa example is often cited and there are also postulated examples of the laternendecke in later Sogdian monumental architecture—discussed below—this early example and its influence has to remain somewhat speculative: it is not the only form of roof that could have been used between the pillars and there are other examples in Central Asia. As Invernizzi observes: “The importance of the local architectural tradition, in fact, was acutely evaluated by G. A. Pugachenkova in her reconstruction of the roof of the hall.”³⁴ The use of this form of roof is only firmly established as a local architectural tradition some centuries later, as seen in the Bamiyan rock-cut temples and Sogdian halls discussed below.³⁵

³¹ Pugachenkova, *Puti razvitiia arkhitektury*, 104.

³² Antonio Invernizzi, “Nisa,” *Encyclopedia Iranica*, January 1, 2000, <https://iranicaonline.org/articles/nisa>. He credits his colleague Nicolo Masturzo, but without giving any reference.

³³ Invernizzi, “Nisa.”

³⁴ Antonio Invernizzi, “Parthian Nisa: New Lines of Research,” *Iran & the Caucasus* 1 (1997): 112, <http://www.jstor.org/stable/4030744>.

³⁵ Here I offer a clarification to the often quoted chronology given by Takayasu Higuchi and Gina Barnes in their discussion of the examples at Bamiyan (“Bamiyan: Buddhist Cave Temples in Afghanistan,” *World Archaeology* 27, no. 2 (1995): 282–302, <http://www.jstor.org/stable/125086>) in which they say that the laternendecke: “occurs across Eurasia in both true architectural constructions—such as at the palace at Nisa, capital of the Parthian kingdom (250 BC–AD 226); Ashkhabad, Turkmenistan (third century BC); in the rock chamber tombs of the Thracian period of Bulgaria (second century BC); and in the Koguryō mural tombs of northern Korea (sixth century AD).” This seems slightly confused, but as Tim Williams pointed out, it seems a semi-colon has been inserted in place of a comma and it should read “...such as at the palace at Nisa, capital of the Parthian kingdom (250 BC–AD 226), Ashkhabad, Turkmenistan (third century BC),” and, as already mentioned, the use of the laternendecke in Anatolia is now thought to pre-date this. In addition, the Han and Koguryō tombs date from the first century onwards.

Han and Koguryō Stone Tombs

The next cluster, chronologically, is tombs and much further east, in China and the Korean peninsula. They date from the first to seventh centuries CE, with the earliest known example, a painted two-layer depiction found in the Jingguyuan Xinmang 京固园新莽墓 Tomb (fig. 3) near the Yellow River city and sometime capital, Luoyang, dating to the Wang Meng interregnum (9–25).³⁶ Most, however, are found in the northeast of the territory of the Eastern Han Empire (25–220) and succeeding kingdoms, and in the Korean Koguryō Kingdom (高句麗, 37 BCE–668 CE), dated to the fourth to seventh centuries and comprised of both stone and painted examples.³⁷ These have been discussed quite extensively and several scholars have argued that there seems to be a clear transmission from the Han to the Koguryō: a cluster of the Han and the earliest Koguryō tombs are geographically and chronologically contiguous. Xuan Chen terms this “the Northeast Asian cultural sphere” while Di Luo notes: “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.”³⁸

This is a strong argument, but leaves open the question as to a possible original influence for the use of this form here. Apart from their laternendecke roofs, there is another feature of these tombs that might suggest an outside influence: they are all built in stone. Earlier tombs found across the cultural areas brought under the control of various regimes of China were almost all wood, with brick starting to be used in the Warring States and then rock-cut tombs in the Western Han.³⁹ The reasons for the emergence of stone in Han China, both in tombs and for sculpture, have been discussed by several scholars. Victor Segalen, for example, who documented the tomb of the Western Han general, Huo Qubing (霍去, 140–ca. 117 BCE) and its accompanying stone horses, argued that rulers of the Western Han who first built

³⁶ It has a painting of a black crow inside the sun at its center. See Nancy Shatzman Steinhardt, *Chinese Architecture in an Age of Turmoil, 200–600*, (University of Hawai‘i Press, 2014), 139–82, fig. 2.50, <https://doi.org/10.1515/9780824838232-009>. The Santai tombs have a similar motif, see fig. 2.49.

³⁷ Nancy Shatzman Steinhardt, “Changchuan Tomb No. 1 and Its North Asian Context,” *Journal of East Asian Archaeology* 4 (2002): 225–92 and *Chinese Architecture*, 139–82; Chen Li, “From Han to Koguryō: The Spread of Chamber Tombs in Northeast Asia,” in *The Transcendence of the Arts in China and Beyond: Historical Perspectives*, ed. Rui Lopes (CIEBA, 2014), 72–96; Luo, “Dome of Heaven”; Chen, “Constructing Heaven”; Jang Yeal Choi, Ho Tae Jeon, and Yong Cheol Kim, *Koguryō Tomb Murals: Replicas in the National Museum of Korea* (National Museum of Korea, 2007). The tomb of King Zhao Mo (r. 137–122 BC), at this time to the south of Han China although later incorporated into the empire, was also rockcut. Chen Li notes other earlier and partial use of stone pre-Han in *Han Dynasty (206BC–AD220) Stone Carved Tombs in Central and Eastern China* (Archaeopress, 2018).

³⁸ Chen, “Constructing Heaven”; Luo, “Dome of Heaven”.

³⁹ As noted by several scholars, the earlier wooden tombs were simply boxes, whereas the stone tombs were replicating above ground architecture. This change is the focus of Chen Li’s thesis: she uses “overlaid diamond” and caisson for laternendecke (*Han Dynasty (206BC–AD220) Stone Carved Tombs*, 57). The emergence of large stone statuary in the Han has also been the subject of discussion, with some scholars linking it to the influence of Buddhism and the use of stone in Gandhara.

rock-cut tombs were influenced by royal tombs from West Asia or even North Africa.⁴⁰ This, in turn, he argued, led to the greater use of stone, as seen in these stone horse sculptures and later life-sized human and animal figures lining the routes to imperial tombs. Others have postulated the influence of Gandharan stone statuary coming into China with Buddhism.⁴¹ It is possible, of course, that some above-ground Buddhist structures, such as stupa, were originally built of stone in central China and were an influence on the use of stone in below-ground architecture.⁴² The location of many of these tombs near the coast might also open the possibility of influence coming in through the sea routes, but without evidence, this remains entirely speculative. The tombs also show a variety and mixture of ceiling forms, structural and painted.⁴³ This suggests experimentation with stone and reflects the Han elites' awareness and openness to architectural forms from outside their cultural sphere.

It should be noted that, aside from the main clusters in the northeast, there are some geographical outliers. The laternendecke motif is found, for example, in rock-cut cliff tombs in Sichuan in what is now southwest China, such as at Qijiang 郫江 (fig. 3).⁴⁴ Buddhist imagery is also found at Qijiang both on the cliff face and inside the tombs, and includes depictions of the lotus and stupa.⁴⁵ This might suggest an early transmission of the form and imagery of the rock-cut Buddhist temple from India: these tombs are near ancient routes southwest across Tibet.⁴⁶ We know of the use of these routes by merchants from South Asia in the

⁴⁰ Victor Segalen, "Premier Exposé des Résultats Archéologiques Obtenus dans la Chine Occidentale par la Mission Gilbert de Voisins Jean Latirgue et Victor Segalen II" [Preliminary report on archaeological findings from Western China: The Gilbert de Voisins Jean Latirgue and Victor Segalen expedition II], *Journal Asiatique* 6 (1915): 281–306, ref. p. 306. Wu Hung has suggested the possible influence of India architecture (*Monumentality in Early Chinese Art and Architecture* (Stanford University Press, 1995), 126–42).

⁴¹ See Ann Paludan, *Chinese Sculpture: A Great Tradition* (Serindia Publications, 2006), and Lukas Nickel, "The First Emperor and Sculpture in China," *Bulletin of the School of Oriental and African Studies* 76, no. 3 (2013): 413–47, <https://doi.org/10.1017/S0041977X13000487>. As Paludan points out, stone carving was a skill practiced in China before this, with jade, although these were not usually monumental.

⁴² See Steinhardt, *Chinese Architecture*, 102–05, although I think Steinhardt and other scholars may underestimate the probability of stone stupas in Central China in this early period.

⁴³ Chen Li summarizes the various forms: "Han domed vaults were all constructed from small bricks; barrel vaults could be constructed from either stone or bricks; while flat roofs, truncated pyramid roofs, caisson roofs, and stepped roofs were all constructed from stone only" (*Han Dynasty (206BC–AD220) Stone Carved Tombs*, 57). She subsumes laternendecke under the term "caisson." Also see See Li Zhongyi, "Changli shuiku Hanmuqun fajue jianbao," *Wenwu cankao ziliao* 12 (1957): 29–44, and Steinhardt, *Chinese Architecture*, 270 for images and further references.

⁴⁴ For more detail and location maps, see Xuan Chen, *Eastern Han (AD25–220) Tombs in Sichuan* (Archaeopress Publishing Ltd., 2015), and Susan Erickson, "Eastern Han Dynasty Cliff Tombs of Santai Xian, Sichuan Province," *Journal of East Asian Archaeology* 5, no. 1 (2003): 401–69, <https://doi.org/10.1163/156852303776173042>. The former, however, although showing decorative laternendecke, e.g., Santai tomb M3, does not use the term. The latter uses *zaojing* to refer to laternendecke: see the skeuomorphic laternendecke in tomb 1 at Dongzipai, Santai (fig. 22).

⁴⁵ Other imagery is also found, for example, with a circle inside the lanternndecke, some painted to represent the red sun with a black crow inside, a motif that dates back to Neolithic cultures in China.

⁴⁶ Routes now often referred to as the "Southwest Silk Road." For a summary, see H. Elias, "The Southwest Silk Road: Artistic Exchange and Transmission in Early China," *Bulletin of the School of Oriental and African Studies*, 87 no. 2 (2024): 319–44, <https://doi.org/10.1017/S0041977X24000120>. Wu Hung suggests a link between the

Western Han, as they were noted by contemporary travelers.⁴⁷ Routes from here also go north to join Dunhuang and the routes westwards through the Tarim Basin to Central and South Asia. And, as discussed below, we know of examples of the laternendecke from the rock-cut Buddhist temples in Dunhuang, Kucha, and then other sites in Central Asia, although these are later.

Others currently known from the same region, such as the Dahuting 打虎亭 Tombs, are dated to the third century, where the laternendecke design is found alongside other paintings on the apex of a barrel ceiling. We might expect to find more examples bridging these two dates. The use of stepped ceilings and layered quadrilateral stone openings decreasing in size, mentioned above in the Chiusi tombs in Italy, are also found in Han tombs in China, such as in the main chamber of Baiji 白集 Tomb near Xuzhou, Jiangsu Province, dated to the late-second century.⁴⁸ Rather than transmission from outside, this could be explained as another stage of regional experimentation with corbeling that led to the laternendecke. Moving east, there is a tantalizing piece of evidence for an above-ground laternendecke made of wood in the Western Han in Shandong, namely in a palace originally built by Liu Yu 劉餘, son of Emperor Jing (漢景帝, r. 156–141 BCE). It was probably renovated in the Eastern Han and became the subject of a poem by Wang Yanshou (王延壽, c. 124–c. 148) quoted by Xuan Chen, part of which describes the ceiling:

Suspended purlins tied to the sloping roof,
 Sky windows with figured filigree:
 In a round pool on the square well,
 Invertly planted are lotus
 Bursting with floescence, erupting in bloom,
 Their green pods and purple fruits,
 Bulging and bloated like dangling pearls.⁴⁹

According to Xuan Chen's interpretation, this describes a "wooden lantern ceiling ... carved

stone tombs in China and Buddhist temples in South Asia (*Monumentality in Early Chinese Art and Architecture*). The use of a central pillar in some of these tombs has also been linked to the central pillar in Buddhist rock-cut temples on the Tarim Basin. Steinhardt suggests Han tombs influenced Buddhist temples (*Chinese Architecture*, 76) while Rhie sees the prototype in the Buddhist rock-cut temples at Kara-tepe (Marylin Martin Rhie, *Early Buddhist Art of China and Central Asia*, vol. 1 (Brill, 1999), 229).

⁴⁷ Notably by Zhang Qian, who was a Han imperial envoy dispatched by Emperor Wu to the Western Regions (Xiyu 西域). See Sima Qian, *Shiji*, Zhonghua, 1959, *juan* 116 and 123.

⁴⁸ This is described by Chen Li as a stepped caisson roof: "A caisson roof consists of layers of overlaid right-angled triangles with a square at the top as the capstone" (*Han Dynasty (206BC–AD220) Stone Carved Tombs*, 44) and only once mentioned corbel, using the term "stepped." This only emphasizes the need for accurate terminology. "The lower part of the ceiling is a two-layered stepped corbel, and its upper part is formed by five layers of octagons of decreasing size, covered by an octagonal slab" (167). In fact, this is a laternendecke with the layers representing squares, not octagons, but their corner sections are hidden by the smaller square below.

⁴⁹ Translation by David Knechtges, *Wen xuan or Selections of Refined Literature*, vol. 1, *Rhapsodies on Metropolises and Capitals* (Princeton University Press, 1982).

to imitate a round pool with a square frame and ... planted with lotuses.”⁵⁰ It is certainly possible, although entirely speculative without further evidence, that the prototypes for the below-ground architecture of the tombs were, by this time, above-ground wooden buildings that had, in turn, been influenced by architecture from elsewhere. The use of a lotus is also relevant here. As mentioned above, it is found in the earlier rock-cut tombs in Sichuan and is generally associated with Buddhism. But Xuan Chen and others also mention imagery identified with Xiwangmu 西王母, usually translated as “The Queen Mother of the West,” and other symbols from mythology found among earlier cultures in China.⁵¹ The juxtaposition of old and new gods is seen across the Silk Roads: native gods brought into the pantheon of a new religion. Xuan Chen goes further, however, and follows Soper in seeing a movement of the celestial sphere eastwards and links this with the use of stone:

The Buddha and the Queen Mother of the West were both gods originating from the West, which was a distant land of immortality in the understanding of the Han dynasty people. To become a resident of this immortal land after death, it was necessary to use the building material and techniques introduced from this immortal land to construct a tomb. Gandhara, the birthplace of Buddha in Hellenized Central Asia, provided the newly born religion with a well-developed stone architectural tradition. The Hellenistic world in Anatolia, a primary source of the images of the Goddess from the West, the Queen Mother of the West, was also an area in which stone chamber tombs with monumental ceilings were prevalent. Consequently, stone became a building material that symbolized immortality, and the stone ceilings became the material presence of heaven.⁵²

This is very neat but probably, I suggest, too neat. Most obviously, “the West” in this usage probably refers only to the lands west of the North China plains, the heartland of Chinese culture. As Ricardo Fracasso has shown, there were several distinguishable traditions relating to the “Queen Mother of the West” in pre-Han China, one of which was around Sichuan and might have been related to Tibetan traditions.⁵³ This was “West” but a long way from Anatolia. And while the association between stone and immortality might well have been a factor in its use in elite tombs, there were many possible sources for this: including both a

⁵⁰ Chen, “Constructing Heaven,” 5.

⁵¹ “There are also cases in which two lantern ceilings carved with the sun and the moon are built side by side to form a traditional depiction of a rectangular heaven in which the Queen Mother of the West resides; for example, the two lantern ceilings of the rear chambers of the tomb at the Reservoir of Changli 昌梨 in northern Jiangsu are carved with the sun held by the God Fuxi 伏羲 and the moon held by the Goddess Nüwa 女媧.” Chen, “Constructing Heaven,” 14.

⁵² Chen, “Constructing Heaven,” 14. Chen who also looks for support to the work of Homer Dubs (“An Ancient Chinese Mystery Cult,” *Harvard Theological Review* 35 (1942): 221–40) and his interpretation of the Queen Mother of the West as a shaman, comparing the practices of her cult to the orgies of that of Dionysos in the Hellenistic world.

⁵³ Riccardo Fracasso, “Holy Mothers of Ancient China: A New Approach to the Hsi-Wang-Mu 西王母 Problem,” *T'oung Pao* 74, no. 1/3 (1988): 1–46, <http://www.jstor.org/stable/4528402>.

local awareness or, as mentioned above, the rock-cut tombs of the Achaemenid emperors.⁵⁴

Both structural and skeuomorphic laternendecke are then found in stone tombs along the northeast coast of China, especially the Shandong peninsula, and into the Korean peninsula, north and south. These have been discussed by several scholars, and I will only make a few observations here. As Di Luo notes, the Wu family tombs at Jiexiang 嘉祥武氏墓 have the only four-layered laternendecke found to date in this region.⁵⁵ The construction is clear: the square holes are formed by four triangular stones forming an outer square at right angles to the hole frame (fig. 1). This is different both from the wooden laternendecke, where the square hole is in line with the outer, and from skeuomorphic laternendecke in stone, such as at Bamiyan, clearly imitating a square made by four planks of wood.

The well-studied Yinan 沂南 tomb in Shandong is usually dated to the late second century and has a variety of architectural forms, including stone columns with carved brackets emulating wooden examples and a ceiling formed of stacked rectangles decreasing in size, a form of corbeling reminiscent of Chiusi.⁵⁶ The back chamber with a stepped ceiling has three recessed carved squares in the flat apex that is a caisson (fig. 3). The middle one is a lotus while the outer two are carved with a laternendecke design. Di Luo, among others, suggests that this was possibly being used as a Buddhist image and that it offers support for a later date of the Wei-Jin period (220–420): this is when Buddhism is generally accepted to have become established in northern China.⁵⁷ But, as noted above, Buddhist imagery had reached China before this.

Stepped ceilings are found in other Eastern Han tombs, including all six chambers of the Maocun 茅村 Tomb, dated by inscription to 175, as well as the Dongjiazhuang 董家庄 Tomb. Several scholars argue that the origin of the stepped/corbel roof is the Hellenistic Eastern Mediterranean.⁵⁸ Di Luo also suggests a route, namely initial transmission to the steppe with “the contact between the Scythians and Thracians across the Black Sea in the fourth century BCE” and then the further transmission of the laternendecke through this steppe route, with the corbel roof as the common factor. She argues the laternendecke is a development of the corbel as seen in Thrace. She highlights the fourth-century-BCE Royal Kurgan near Kerch in present-day Ukraine as a step in this process. This has a conical vault with four layers of square, stone openings decreasing in size which transitions into twelve conical layers. She observes: “While it continued the more commonplace corbeling technique, the use of curved stone blocks at the corners is also evocative of the lantern method.”⁵⁹ This use of curved

⁵⁴ A link with these tombs is also suggested by Segalen (*Premier Exposé des Résultats*, 306) to explain the porticos of the cliff tombs in Sichuan.

⁵⁵ Luo, “Dome of Heaven,” 37, dating to the mid-second century.

⁵⁶ An Zhimin, “Lun Yinan huaxiang shimu de niandai wenti,” *Kaogu tongxun* 2 (1955): 16–20.

⁵⁷ Luo, “Dome of Heaven.”

⁵⁸ “Originating from the east of the Mediterranean world, stone stepped ceilings were received and reinvented in Shandong in East China.” (Chen, “Constructing Heaven,” 12); “concept of coffering was able to be transmitted from the Roman world to China by the medieval period” (Simon, “Hybridity, Appropriation,” 13; Luo, “Dome of Heaven”).

⁵⁹ Luo, “Dome of Heaven,” 45. For a discussion of earlier influences, see Hokyu Yeo, “Origins of Early Koguryō

stone blocks is found elsewhere, such as in the Koguryō tomb, Dagaolimuizi 大高力墓子, M3.

Koguryō tombs also show a range of tomb ceilings, which include pyramidal and stepped ceilings, some forming domes and some capped by laternendecke.⁶⁰ They are found dating from the fourth to seventh centuries around Ji'an in present-day China—the Koguryō capital Kungnae 國內 between 3–417—and into North Korea: the capital moved to P'yōngyang 平壤 in 417. Stepped ceilings and laternendecke are common.⁶¹ A laternendecke at the apex of a stepped ceiling resting on pillars is used, for example, in all five chambers of Anak (安岳) tomb 3 in North Korea dated to 357.⁶² It is then commonly seen in tombs near P'yōngyang dating from the early fifth to seventh centuries. Many of these tombs have carved and painted structures, such as columns, rafters, and brackets, which emulate wooden structures. The majority of the laternendecke are three-layered and atop stepped ceilings, but there is considerable variety. The later fifth-century Ch'ōnwangjisinch'ong 天王地神冢 has a laternendecke at the apex of a dome: “a unique ceiling structure of octagonal and quadrilate corbels that interlock each other representing wooden architecture through structure and murals.”⁶³

As seen from the summary above, this is a large and complex group of tombs and routes of influence from India through the southwest or northwest of China, from the seas, and from West Asia through the steppe that have all been proposed to account for the emergence both of the use of stone and the laternendecke designs. We might also reasonably assume that they were, at least in part, emulating above-ground architecture, but there is too little surviving to support or refute this. Scholars have also sought to explain their use of imagery, both of local mythological figures and from Buddhism, through various routes of transmission. I would suggest that, if anything, what these tombs show is that there were already links and transmissions across Central and East Asia and that it is perhaps misleading to concentrate on a single transmission: ideas probably came into the region through several transmissions over a period of time.

Stone-Piled Tombs and the Formation of a Proto-Koguryō Society,” *Journal of Korean Art and Archaeology* 9 (2015): 48–63, <https://www.ijkaa.org/v.9/0/48/134?view=pubreader>.

⁶⁰ Xuan Chen identifies five types, including stepped ceilings (“Constructing Heaven,” 7, fig. 5). See Lena Kim, *Koguryō Tomb Murals: World Culture Heritage* (UNESCO, 2004), <https://unesdoc.unesco.org/ark:/48223/pf0000138833>, for an introduction to twenty-three tombs across the region with maps, plans, and photographs.

⁶¹ Luo, “Dome of Heaven,” 39 citing the excavation report (Liu Lan 柳嵐 and Zhang Xueyan 张雪岩, “1976年集安洞沟高句丽墓清理” [Clearing of the Koguryeo tombs at Donggou in Ji'an, 1976], *Kaogu* 1 (1984): 69–76). The location of many of these tombs in what is now North Korea, the fact that many of them were excavated during the Japanese Empire's occupation, and the scholarly focus on the rich tomb paintings, has meant that, unfortunately, there has been fewer studies on their architecture. While there are photographs from the Japanese excavation of the exterior of these tombs, there are fewer of the interiors. The catalogue of replica paintings from twelve tombs in the National Museum of Korea also has useful diagrams of the tombs. Choi et al., *Koguryō Tomb Murals*.

⁶² For images of these and other tombs, see: <http://www.art-and-archaeology.com/korea/korea.html#tombmurals>.

⁶³ Choi et al., *Koguryō Tomb Murals*, 143.

Sogdian Cities

We move to Central Asia to find the next examples, overlapping chronologically with the stone tombs. These are laternendecke in above-ground architecture in Sogdian cities and fortresses, constructed in wood at the apex of pyramidal roofs or on flat ceilings between columns in large halls. Although the remaining examples belong to the fourth century onwards, these are often placed earlier. This is because they are postulated to form a continuous tradition of architecture based on the earlier—also postulated—example from the third–second century BCE Nisa, discussed above. Further support for their use is found in the building remains and the feasible architectural solutions, examples from Bamiyan, and more recent local architectural examples.

Some supportive physical evidence is found in hollows for the beams and burned beams as at Chil'khudzhra, Urta-kurgan, and Penjikent, but none of the ceilings survive wholly intact.⁶⁴ They were used, according to these reconstructions, in Dzar-tepa II (fourth–fifth c.), Chil'khudzhra Castle and Urta-kurgan (sixth–seventh c.), Afrasiab (seventh c.), Penjikent (ca. 740), and the Red and Blue Halls at Varakhsha (late-seventh–early-eighth c., fig. 3).⁶⁵ As mentioned above, Kocizc has argued that this was a local solution to the lack of long timbers, although a link with the early use of this form in West Asia, as suggested by the Thracian tombs and their possible above-ground exemplars—although entirely speculative without further evidence—cannot be dismissed.

⁶⁴ “Les châteaux les plus sophistiqués et les mieux conservés, un peu plus tardifs (VIe–VIIe siècles), sont en Ustrushana: Chil'khudzhra (fig. 4), Urta-kurgan où les poutres brûlées permettent de restituer un plafond «à lanterne» très semblable à ceux des grandes maisons de Pendjikent et des imitations en pierre dans les grottes de Bamiyan.” (The most sophisticated and best-preserved castles, a little later (sixth–seventh centuries), are in Ustrushana: Chil'khudzhra (fig. 4), Urta-kurgan where the burnt beams suggest a reconstruction of a “lantern” ceiling very similar to those of the large houses of Pendjikent and the stone imitations in the caves of Bamiyan.) Frantz Grenet, “Histoire et cultures de l'Asie centrale préislamique,” *Annuaire du Collège de France* (2016–2017): 311.

⁶⁵ See G. A. Pugachenkova, *Les trésors de Dalverzin-tepe* (Leningrad, 1978); Amruddin Berdimuradov and Masud Samibaev, “Une nouvelle peinture murale sogdienne dans le temple de Dzar-tepa II” [A new Sogdian mural painting in the Dzar-tepa II Temple], *Studia Iranica* 30 (2001): 45–66. For another bibliography, see Grenet above. There seems to be some confusion among scholars when citing these examples as to their dates, as they are often given as earlier: for example, on Varakhsha, Simon writes: “no dates are associated with it. However, the Sogdian control of modern-day Tajikistan and Uzbekistan began in the 6th century BCE” (“Hybridity, Appropriation,” 7, fn.7). This is misleading. As Marshak notes, the audience halls found in Sogdian architecture were much later than this, he suggests from the fifth century CE, which, with growing prosperity, “resulted in the emergence of a new type of dwellings for aristocrats in the seventh and the eighth centuries. These dwellings were divided into three parts: living quarters, quarters for the domestic economy, and ceremonial public rooms. Houses of the elite in Samarkand and Panjikent were similar to the palaces of the Sogdian rulers at Varakhsha and Panjikent.” It is these public rooms that have the laternendecke ceilings (Boris I. Marshak, “The Ceilings of the Varakhsha Palace,” *Parthica* 2 (2000): 153–67). For a clear summary of the evidence relating to Varakhsha, see Aleksandr Naymark, “Returning to Varakhsha,” *The Silk Road* 1, no. 2 (2003): 9–22. Pei et al., “The Building System,” note these dates but suggest that the original building, which they date to first century BCE, also had laternendecke. I have not been able to find the basis for this assertion.

Buddhist Rock-Cut Temples

Also overlapping chronologically with the above are the skeuomorphic and decorative laternendecke found in Buddhist rock-cut temples. The evidence suggests that, like the rock-cut tombs in China, rock-cut temples, whether Buddhist, Christian, or other religions, were emulating above-ground architecture: they were intended to look like above-ground temples, not like caves. But, without the need for the same structural components, needed, for example, to support the roof of a free-standing building, the designers could show some experimentation with form. The dates of these rock-cut temples are often uncertain. Although such temples are found in South Asia from the fourth century BCE, the earliest ones known with such ceilings are in Bamiyan and Kucha and have been dated variously from the fourth–seventh centuries CE.⁶⁶ Like the Chinese rock-cut tombs, both the Bamiyan and Kucha temples show a variety of ceiling forms: barrel, dome, and pyramid with laternendecke. They use wood, rock/plaster, and paint to depict the laternendecke in 3D form. This supports the argument that they are emulating a known form used in free-standing architecture.

Laternendecke are found in over fifty rock-cut temples at Bamiyan and neighboring Folaiddi, with the square layers either made of wood or carved rock (fig. 3). These have been discussed quite extensively and so here I only note a few examples and make some observations about possible routes of influence and transmission. Takayasu Higuchi identified four cave shapes with different ceilings, including laternendecke.⁶⁷ For example, cave 702 has a pyramidal roof shown with vertical wooden beams topped by a skeuomorphic 3D four-layered wooden laternendecke.⁶⁸ There is also experimentation with the form, combining a dome and a laternendecke.⁶⁹ Cave 140 has a two-layered stone laternendecke with a recessed semi-globe at its center, part of a distinct arrangement of similar coffers within a single square.⁷⁰ At the Frady Valley cave 4, the laternendecke is doubled, perhaps emulating the ones

⁶⁶ Among the scholars proposing quite widely different dates are Akira Miyaji who found dates from the fifth to ninth centuries on radiocarbon dating (“パーミヤーン石窟壁画と年代について,” In 名古屋大学加速器質量分析計業績報告書 XVI 2004年度, Nagoya University. 2005: 13–33). <https://cir.nii.ac.jp/crid/139057217442126707>), Zmaryalai Tarzi who originally suggested sixth–seventh c. (*L'architecture et le décor rupestre des grottes de Bamiyan*. Maisonneuve, 1977), and Deborah Klimburg-Salter who suggests seventh–ninth c. (*The Kingdom of Bamiyan: The Buddhist Art and Culture of the Hindu Kush* (Istituto Universitario Orientale & IsMEO, 1989) 12–17). More recent work by Tarzi, however, has dated the beginning of monastic life there to the second century with a second great period from the sixth century (Zemarylai Tarzi, “Bamiyan 2006: The Fifth Excavation Campaign of Prof. Tarzi's Mission,” *Silk Road* 2, no. 2 (2007): 11–26, see esp. 20–23).

⁶⁷ Higuchi and Barnes, “Bamiyan,” 293, table 2.

⁶⁸ The caves have been subject to different numbering system: there is a partial concordance in Higuchi and Barnes, “Bamiyan,” table 1, although it does not include this cave number. For image see the Huntington archive: https://dsal.uchicago.edu/cgi-bin/huntington/show_detail.py?ObjectID=12181.

⁶⁹ Higuchi Takayasu, *Bamiyaan no sekkutsu*, Dohosha, 1980, fig. 36. See: https://dsal.uchicago.edu/cgi-bin/huntington/show_detail.py?ObjectID=30014123.

⁷⁰ “The ceiling of the main (rear) room is an amazingly elaborate and complex trapezoidal shape scored with a deep cruciform depression. The center crossing, twice deeper than the sides of the cross, has a recessed laternendecke design. The four trapezoidal corner projections resulting from the cruciform depression each have a small recessed dome within a square (Fig. 3.65 a, b). Vestiges of this ceiling design used in conjunction

found in audience halls such as Afraisiab.⁷¹

The laternendecke form is then seen in rock-cut temples along the northern Tarim Basin, notably at the various rock-cut temple sites around Kucha (Kizil, Simsin, and Kumtura) and, further east, those around Turfan (Bezeklik and Toyuk). As with Bamiyan, there are conflicting opinions about the dating of these caves, for example, the earliest caves at Kizil have been dated by some scholars to around 300 and others to the fifth century.⁷² They continued to be constructed into the eighth century. As at Bamiyan, wood was used at Kizil for certain features of the rock-cut temples although not, as far as I have been able to ascertain, for the laternendecke.⁷³ The ceilings of Kizil caves 165 and 227 are particularly elaborate.⁷⁴ They are carved from the rock and then painted. The former has six layers while the latter shows a variation with three stepped, square layers before the first of three layers of oblique squares. At Bezeklik and Toyuk, the decorative laternendecke are painted along a barrel ceiling in the passage of caves 18 and 12 respectively.

While the dating of these examples remains uncertain, further east on the border of China, the laternendecke motif is commonly seen in several rock-cut temples near Dunhuang and further east into the Hexi Corridor and on the route southwest to Sichuan, such as at Binglingsi 炳灵寺.⁷⁵ The beginnings of these are firmly dated to the fifth century. However, here the laternendecke is almost always a flat-painted motif and rarely seen in 3D. These motifs have been the subject of several recent papers by Chinese scholars, notably by Pei et al. and, again, I restrict discussion here to some observations.

Firstly, we see the motif used over a long period. At the Mogao site, it is found in cave 254, dated to the Northern Wei (386–534), cave 272 from the Northern Liang (421–439), caves 285 and 290 from the Northern Zhou (537–581), and cave 420 from the Sui (581–618). It is used at the apex of truncated pyramid caves, such as 285, on flat ceilings around the pillar or stupa at the rear of the main chamber, such as 254, and in meditation caves, such as 268. The laternendecke on the truncated pyramid caves could be considered skeuomorphic while those around central pillars seem to be emulating coffered ceilings and therefore purely

with other configurations appear in caves 159, 160, and 167, but none are as singular nor as complicated as the one in this cave, which may have played the role of prototype.” Rhie, *Early Buddhist Art of China and Central Asia*, 225; See: https://dsal.uchicago.edu/cgi-bin/huntington/show_detail.py?ObjectID=12217.

⁷¹ Pei et al., fig. 20.

⁷² For a recent review of dating, see Monika Zin, “Caves with Ancient Paintings in Kizil’s Periphery,” in *Guruparamparā, Studies on Buddhism, India, Tibet, and More in Honour of Professor Marek Mejor*, eds. Katarzyna Marciniak, Stanisław Jan Kania, Malgorzata Wielińska-Soltwedel, and Agata Bareja-Starzyńska (University of Warsaw Press, 2022), 519–38.

⁷³ Guiseppe Vignato, “The Wooden Architecture of the Kizil Caves,” *Journal of Inner Asian Art and Archaeology* 1 (2006): 11–27, <https://doi.org/10.1484/JJIAAA.2.301917>.

⁷⁴ For 167, see: <https://recherche.smb.museum/detail/1856291> and Steinhardt, *Chinese Architecture*, fig. 5.60. The painting is copied at <https://creazilla.com/media/traditional-art/6976017/kizil-corbelled-ceiling-of-corbelled-cave-3-cave-167>. For 227, see Pelliot, Paul, *Trois ans dans la haute Asie, conférence de M. Paul Pelliot au grand amphithéâtre de la Sorbonne, le 10 décembre 1909*, Comité de l’Asie française, 1910: 8, online at <https://dsr.nii.ac.jp/toyobunko/VIII-5-B2-12/V-1/page/0014.html.en>, and photograph reproduced at [https://commons.wikimedia.org/wiki/Category:Preta_Cave_\(Cave_227\)#/media/File:Preta_Cave_by_Charles_Nouette.jpg](https://commons.wikimedia.org/wiki/Category:Preta_Cave_(Cave_227)#/media/File:Preta_Cave_by_Charles_Nouette.jpg).

⁷⁵ For a three-layered laternendecke at Binglingsi cave 132, see Steinhardt, *Chinese Architecture*, fig 5.42.

decorative. But this distinction is not always clear.

Cave 285, for example, seems to depict a tented roof, complete with an inward curve to show the slight sagging of the fabric and tassels hanging from the hole at the apex. The apex is, however, depicted as a laternendecke (fig. 3).⁷⁶ The laternendecke is therefore part of a juxtaposition of two architectural styles: certainly tents of the steppe pastoralists contained holes for the smoke to escape but, as far as it is known, these were not of the unnecessarily complex and heavy laternendecke type. This suggests a lack of direct familiarity with this architectural form or perhaps just playfulness.⁷⁷ Likewise, almost all are painted onto a flat surface. Cave 268 is unusual in showing a series of laternendecke along a narrow flat roof, all three layered except for the one nearest to the Buddha statues, which is four layered. Single laternendecke ones alternated with paired ones across the width of the ceiling. The frames of the top layers are in relief, imitating wood. It is one of the earliest caves, recently dated to the early fifth century.⁷⁸

The lack of familiarity with—or disregard for—the structural form is also suggested by the appearance of multiple laternendecke as painted motifs on flat ceilings, emulating coffered ceilings. These are also seen from the earliest caves, such as in 254, 257, and 259 from the Northern Wei (386–534). All show the front of the main chamber with a gable roof and beams, the beams usually indicated by painting but modeled relief in some, such as cave 259. The large two-layered painted laternendecke designs with a central circle are around a central pillar.⁷⁹ Although, as mentioned above, multiple laternendecke are sometimes used in above-ground architecture, if only taking up part of an otherwise flat ceiling, they are prominent structures between columns, needed to bear the weight of the wooden beams.

The ceiling motifs in Dunhuang have been the focus of several papers, most placing them in the context of various types of wooden ceilings/roofs found in China, such as the *pingqi* and *zaojing*.⁸⁰ As discussed above, this terminology is often confusing. An alternative transmission theory is that they were influenced by Central Asian examples from further west: I find this more plausible, especially given the examples from Turfan, Kucha, and Bamiyan, all of which are on known and well-used routes of travel and transmission. There is also the possibility that Buddhist influence also reached Dunhuang through Sichuan, as seen in the tombs discussed above: transmissions do not always follow one route or one direction but can be complicated and messy.

⁷⁶ These are sometimes called truncated pyramid ceilings. See also cave 249.

⁷⁷ Or lack of interest in being structurally accurate. It should be noted that the cave has been renovated.

⁷⁸ Qinghua Guo provide “A new approach to the chronology of caves 268/272/275 in the Dunhuang Mogao Grottoes: combining radiocarbon dates and archaeological information within a Bayesian statistical framework.” (“Tomb Architecture of Dynastic China: Old and New Questions,” *Architectural History*, 47 (2004): 1–24, <https://doi.org/10.1017/S0066622X00001672>).

⁷⁹ And I use this term advisedly, noting Vignato’s reservations about terminology—conventions do not appear to exist in English for the naming of cave types and the parts composing the caves: “The naming of the cave types presents some problems in that the ‘square cave’ and the ‘central pillar cave’ are named after their architectural plan, the ‘colossal image cave’ after its main statue, and the ‘monastic cell’ after the function of the cave. Technically, this way of naming the caves is incorrect, but since these terms are in common use in China, they are used in this paper....” Vignato, “The Wooden Architecture of the Kizil Caves,” 19.

⁸⁰ For the *zaojing*, see Ye and Fivet, “The Zaojing.”

Temples in the Himalayan World and Beyond

After this, the laternendecke is seen in wood and stone in secular as well as Buddhist, Hindu, and Islamic buildings across a wider region, ranging from Kashmir into western Tibet and south into India and, later, China.⁸¹ For example, there is a five-layered painted wooden laternendecke at the apex of a pyramidal roof in Lakshana Devi Temple at Bharmaur, Himachal Pradesh, dating to ca. 700. The wooden elements are elaborately carved: a feature not seen in earlier temples. The tenth-century Meruvardhanaswami temple at Pandrethan in Kashmir has a two-layered stone laternendecke with a lotus at its center.⁸² An example in Islamic architecture is found in the late fourteenth-century Adina Masjid in West Bengal. This three-layered laternendecke is made from stone blocks in the form of wooden planks and has a lotus at its center.⁸³ And an open five-layered wooden laternendecke is found in what was probably an audience room on the second floor of the tenth–eleventh-century Altit Fort in the Hunza Valley.⁸⁴

By this time, the laternendecke form was fairly widespread across Central and East Asia and its use in new regions and contexts is not surprising. I therefore only mention this group for completeness. The use of this form could have reached these regions by several routes. Kozicz, for example, argues that the use of the laternendecke in Kashmir is due to an influence of Gandharan architecture on Kashmir under King Lalitaditya (r. ca. 724–760) and that this “also dominates the temples influenced by it, albeit much smaller, in the pilgrimage sites and principalities of the surrounding mountain regions of Chamba, Lahul and Kulu.”⁸⁵ It then spread to western Tibet and Ladakh, he argues, through Himalayan trade routes.⁸⁶

Axumite Churches

We now move to Northeast Africa to find examples of laternendecke found in both wood and stone yet rarely mentioned in surveys, namely those in churches of the Axumite kingdom (first c. BCE–960 CE) and later regimes in what is now Ethiopia and Eritrea.⁸⁷ An example

⁸¹ See James Fergusson for a clear explanation and illustrations of the stone laternendecke between four pillars seen in temple architecture in South Asia, with up to five layers (*History of Indian and Eastern Architecture*, 313–15). For China, the fifteenth-century Zhihua Temple in Beijing, has already been mentioned above.

⁸² Vinayak Razdan, “Ceiling of Pandrethan,” *SEARCHKASHMIR*, September 28, 2013, <https://searchkashmir.org/2013/09/ceiling-of-pandrethan.html>. This article focusses on the design in the corners of the squares: a detail which might also help identify influences. This one has pairs of naked figures in between the outmost layers, seemingly holding a scarf. The design on Kizil cave 167 is similarly striking, with paired birds, wings outstretched, holding snakes in their beaks.

⁸³ https://www.archnet.org/sites/3989?media_content_id=2926.

⁸⁴ Abdul Rehman, “Altit Fort,” *Naqosh-e-Javidan*, accessed June 13, 2025, <https://pakheritage.org/altit-fort-2/>.

⁸⁵ Kozicz, “Die Laternendecke,” 53.

⁸⁶ Kozicz, “Die Laternendecke,” 52.

⁸⁷ I was unaware of these previously and thanks to Pei at al., “The Building System,” for alerting me with their references to Georg Gerster (*Churches in Rock: Early Christian Art in Ethiopia* (Phaidon, 1970)), and S. A. Klyuev,

in wood is seen in the church in Debra Damo Monastery in Ethiopia, founded in the sixth century but with the current building possibly dating to the tenth or eleventh century.⁸⁸ Georg Gerster described the roof of the outer vestibule as having “three divisions; the arrangement of the timber-work in each division makes a pattern of squares set corner to side.”⁸⁹ His illustration shows a two-layered laternendecke with wooden planks covering the top opening (fig. 3).⁹⁰ He also notes that this vestibule is later “although not much.” He makes the link with the form used in Indian temples as described by James Fergusson: “At Debra Damo we find the same system used with timber, and the question arises whether there has been Indian influence there, or whether the solution was arrived at independently. The similarity also of Ethiopian bracket capitals with those in India, and the finding of Indian coins at Debra Damo reinforce the theory.”⁹¹

Buxton also noted the use of the skeuomorphic stone laternendecke in churches in Tigray, where “basilican churches abound. They are characterized by the enrichment of their ceilings with saucer-domes and, more than ever before, with designs based upon old roofing techniques. The most popular of these designs imitate the device whereby a square was progressively reduced to smaller and small squares by diagonal timbers placed across the corner.”⁹² He notes this used in Meskele Kristos near Sokota and observes: “The other, prominent as the central panel of the whole ceiling, exhibits a copy of the kind of ceiling used in the porch of Debra Damo, and so proves the antiquity (doubted by Krencker) of this roofing-technique in Ethiopia. A cross is inserted in its center.”⁹³ The laternendecke at Meskele Kristos is between four pillars, such as is seen in the use of the laternendecke in wooden architecture elsewhere. It is worth noting that early secular buildings such as the pre-Axumite temple at Yeha had rooms with four central pillars, dating to the fifth–fourth century BCE. It is argued that the influence for this architecture came from across the Red Sea in southern Arabia. The roofs do not survive but are usually assumed to have been flat and made of wood.

A quick survey shows that the laternendecke designs then appear in several forms in

“Tserkov’ Medkhane Alem V Adi Kesho I Slozhnosti Datirovki skal’nykh Pamyatnikov Regiona Tygray (Efioipiia),” *Voprosy Vseobshchey Istorii Arkhitektury* 11 (2018): 98–113). Frustratingly, Pei et al. do not give any page references to the works they cite and sometimes the citations seem confused. For example, they write “According to G. Gerster’s research, the original structural design of ‘stacked patio’ and ‘lantern’ may have originated from the former Christian Aksum Palace building and was closely related to southern Arabia.” (“The Building System,” 2). Gerster suggests that South Arabian architectural styles were taken by the Axumites to Ethiopia and seen in early palace buildings, and that some of these styles might be reflected in the later rock-cut churches in Tigray but does not, as such, make this direct link. The Axumite laternendecke are not mentioned in any of the other articles I discuss here.

⁸⁸ David Buxton writes “In my own opinion, much of the existing fabric could easily be as early as the tenth or eleventh century” (*The Abyssinians* (Thames & Hudson Ltd., 1970), 102).

⁸⁹ Gerster, *Churches in Rock*, 72 and fig. 31.

⁹⁰ Also, see Derek Matthews and Antonio Mordini, “The Monastery of Debra Damo, Ethiopia,” *Archaeologia* 97 (1959): plate VII.c., <https://doi.org/10.1017/S0261340900009930>.

⁹¹ On the coins see: Susan Whitfield, *Silk, Slaves, and Stupas: Material Culture of the Silk Road* (University of California Press, 2018), chapter 3.

⁹² Buxton, *The Abyssinians*, 114 and fig. 25, showing Meskele Kristos near Sokota.

⁹³ Buxton, *The Abyssinians*, 32 and see plate Xi.b.

rock-cut churches.⁹⁴ One of the earliest is in Meskele Kristos, mentioned above, traditionally dated to the reign of King Kaleb (495–525) but probably several centuries later. Apart from the rock-carved laternendecke in the ceiling, a painting above the west door showing the trinity and four beasts is also within a painted laternendecke frame. The laternendecke design at the apex of the roof is often used to frame a cross. That in the tenth-century Medhane Alem Adi Kaisho, for example, shows a cross with raised edges inside the inner square of the three-layered carved laternendecke. There is a further cross inside a circle in the center. This use recalls the laternendecke in Buddhist contexts, framing a lotus. Square coffering is also common within the square frames, as two-layered laternendecke at the thirteenth–fourteenth century Mikael Barka.

The Axumites were traders with links to much of Eurasia by routes through the Red Sea and Indian Ocean. Their early links to South Asia are well documented: they are mentioned in the *Periplus of the Erythraean Sea*. And, as mentioned above, a cache of coins from the Central Asian, Kushan Kingdom was discovered in the walls of Debra Damo Monastery, although it had probably reached Axum several centuries earlier. The influence of South Asian architecture on Axum and this as a possible inspiration for this laternendecke, as suggested by Fergusson and Buxton, is also noted above.⁹⁵ But influences from the Eastern Mediterranean/West Asia are also possible, given the Axumites' conversion to Christianity in the fourth century and their contacts with the Christian Byzantine Empire. Given that these examples are not mentioned in most studies of the laternendecke, it would be useful to see a comprehensive survey and further discussion of possible influences.

Form, Function, and Transmissions

The above discussion shows that, by the end of the first millennium/beginning of the second, the laternendecke was used in cultures spread from Eastern Africa to Central, South, and East Asia. Where it is found below-ground or in rock-cut structures, it is probably reasonable to assume that it was emulating above-ground architecture. However, in some cases, such as the painted ceilings at Dunhuang, the architects/painters may have simply been copying the design from other rock-cut temples and had no direct knowledge of the structural form.

In terms of its structure, it can be seen as a development of the corbeled roof, providing a solution to reduce a ceiling opening without needing large pieces of wood or stone. It had the additional properties of providing, if required, a hole for light to enter and smoke to escape and, of course, of being decorative. Its form, in which focus was directed by the frames on the central space often at the apex of the ceiling, was ideal for representing important iconographies, whether the Buddhist lotus, the Christian cross, or cosmological

⁹⁴ Mary Ann Fitzgerald and Philip Marsden, *Ethiopia: The Living Churches of an Ancient Kingdom* (The American University in Cairo Press, 2017), provided several of these examples.

⁹⁵ David Buxton, "I.—The Christian Antiquities of Northern Ethiopia," *Archaeologia* 92 (1947): 1–42, <https://doi.org/10.1017/S0261340900009863>.

elements, such as the sun and moon.⁹⁶

Several arguments presented by various scholars regarding routes of transmission have been mentioned above.⁹⁷ Some of these seem evident, notably those between the northeast coast of Han China and the lands controlled by the Koguryō to its north. Similarly, the argument for transmissions with Buddhism from Central Asia to the rock-cut temples of the northern Tarim Basin and Dunhuang is also quite convincing, with the routes through Sichuan also a possibility. Another route of influence suggested by several scholars is that of the steppe, and this is the route argued by Di Luo to be the conduit for the introduction of the laternendecke from West Asia as discussed above, with corbeled buildings as a mediator. But corbeling is also found in contemporary Indian temples and, without further evidence, the steppe route remains more speculative and we cannot dismiss possible other routes of transmission—by land or sea—or independent development.

Transmission from Indian models has been suggested for its use in Ethiopian/Eritrean churches. As Finnerean notes, they certainly belong to a wider cultural context, which included the architecture of Byzantine churches. However, he continues, “although we may debate the nuances of the dating and developmental schemes and of ‘origins,’ it is clear that these churches exist very much within a continuum and are not novel and innovative structures which burst upon the Ethiopian scene in the later post-Aksumite period. It is from this mindset that spurious and diffusionist ‘origins’ theories, ascribing the churches to Coptic or Indian artisans, for instance, spring.”⁹⁸ Thus, the design of the laternendecke evolved over time, being incorporated into various secular and religious contexts, including Buddhism and Hinduism. When brought into Buddhist contexts, the center, originally opened to allow smoke to exit and light to enter, was closed and became a centerpiece for nonfigurative sculptural forms such as concentric circles or a lotus.

Whether we accept some of all these theories of transmission, there is, I would argue, no strong evidence to support Soper’s argument that this is a conceit that moved eastwards from its inception in Western Eurasia. The laternendecke can be seen as a development of corbeling, which is used by several early cultures across Eurasia. And using a ceiling, especially one with a frame, as a representation of the sky or heavens is hardly ingenious. I would argue that it would be more surprising if cultures across Eurasia did not make use of the ceilings of tombs and other structures in this way.

⁹⁶ Simon argues that “The circular center could be interpreted as a representation of the axis mundi” (“Hybridity, Appropriation,” 6).

⁹⁷ Pei et al. give a summary of these at the start of their paper “The Building System.”

⁹⁸ Niall Finnegan, “Built by Angels? Towards a Buildings Archaeology Context for the Rock-Hewn Medieval Churches of Ethiopia,” *World Archaeology* 41 no. 3 (2009): 424, <https://www.jstor.org/stable/40388317>.

Conclusion

When Alexander Soper propounded his thesis in “The Dome of Heaven” that there was a linear and incremental transmission of an architectural and iconographic form from Europe eastwards, most Western scholars did not have the knowledge or the data to challenge this. Times and knowledge have changed. Greater access to sites and scholarship from across Afro-Eurasia has revealed the region’s cultural richness and the dangers of explaining its development through a simple linear narrative of transmission.⁹⁹ As any study of the Silk Roads shows, most such narratives are confused and messy: the laternendecke is an excellent example. The chronological examination undertaken in this study confirms the use of the laternendecke across different temporal periods and geographical contexts, some predating the proposed transmission routes suggested by earlier scholarship. Although the seeming similarities in this distinctive form of ceiling might suggest routes of transmission, even a cursory examination shows differences in their materials, structure, and use. It could be argued that these are the result of local knowledge being applied to emulate a form introduced from outside—and in some cases this is probably true. Yet the form may also have been developed independently: the need for domestic and communal buildings with an opening for smoke to escape and light to enter is universal, and there are only so many ways to support a roof.

While some transmission pathways appear plausible—particularly the Buddhist networks linking Central Asia to south and east Asia, or the political connections between Han China and Koguryō—many proposed routes lack substantive supporting evidence. It could be argued that, in many cases, the laternendecke emerges as a logical architectural solution derived from pre-existing corbeling traditions found independently across many Afro-Eurasian cultures. The functional requirements it addresses—structural support combined with provisions for light and ventilation—represent universal building challenges that might well produce comparable solutions. Furthermore, the symbolic deployment of ceiling spaces for cosmological or religious representation constitutes a widespread human impulse rather than a borrowed innovation. It could also be argued that the laternendecke’s remarkable adaptability across Buddhist, Christian, Islamic and secular contexts reflects not cultural borrowing but the fundamental compatibility between practical architectural needs and symbolic expression. Rather than documenting transmission, in many cases the evidence suggests parallel innovation.

It could also be argued that the laternendecke’s remarkable adaptability across Buddhist, Christian, Islamic and secular contexts reflects not cultural borrowing but the fundamental compatibility between practical architectural needs and symbolic expression. Rather than documenting transmission, in many cases the evidence suggests parallel innovation. This architectural form thus challenges us to reconsider how we trace cultural influences,

⁹⁹ As Steinhardt writes in her summary of Soper’s work: “Written without data that has come to light since the 1940s, it is now well documented that forms and motifs do not move across Asia or Eurasia in straight paths ... Soper’s study strikes the nerve of what is most dangerous about an exploration of a theme or motif over long periods and huge distance” (*Chinese Architecture*, 273–74).

demanding that we remain sceptical about transmission theories until there is compelling evidence.



Figure 1a–c. Laternendecke methods of construction: Using rectangular blocks of stone at Gemlik, Anatolia (after Mansel, fig 6); with triangular stone blocks, Wu family tomb in Shandong China, photograph by Li Chen, figure 2-15b; wooden frames in a modern Anatolian House, photograph by Alev Erarslan.



Figure 2. Audience room in Obaidullan Khan's house, Meragram, Pakistan, photograph by Aurel Stein, 1906. The British Library: Photo 392/27(24).

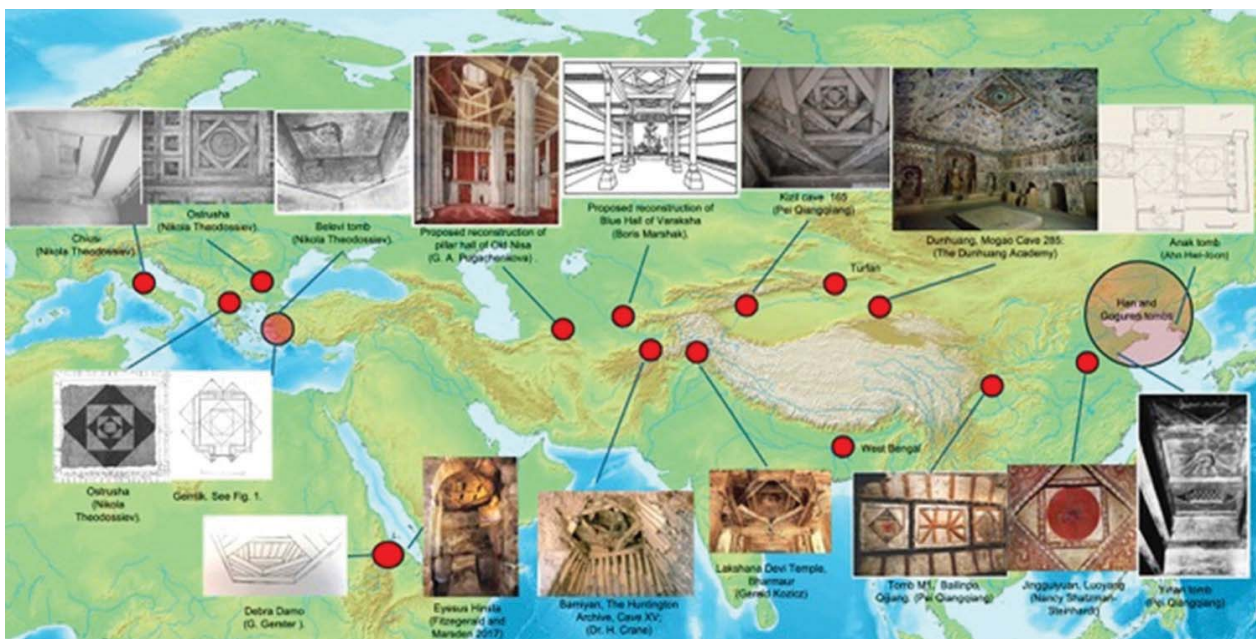


Figure 3. Map showing regions of the laternendecke discussed. Photographs/credits in brackets.

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