

HORSESHOE-SHAPED TOWER-TYPE STRUCTURES ON THE SOUTHERN SLOPES OF MOUNT ARAGATS

ԱՐԱԳԱՏԻ ՀԱՐԱՎԱՅԻՆ ԼԱՆՁԵՐԻ ՊԱՅՏԱՁԵՎ ԱՇՏԱՐԱԿԱՏԻՊ ԿԱՌՈՒՅՑՆԵՐԸ

ПОДКОВОООБРАЗНЫЕ БАШНИ НА ЮЖНЫХ СКЛОНАХ ГОРЫ АРАГАЦ

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Abstract – The present article is devoted to the study of horseshoe-shaped tower-type stone structures distributed across the southern slopes of Mount Aragats and in the adjacent high-land zones, within the context of the Bronze and Iron Ages. The research focuses on two main areas – the Avan-Kosh and Ujan (Vzhan) zones – as well as a single isolated example from the vicinity of Vanki Averk (Bkoy Village). The combination of systematic field investigations, architectural measurements, drone-based aerial photography, digitization, and spatial analysis conducted within a GIS environment has made it possible to consider these structures not as isolated constructions, but as components of spatially organized systems. The article applies a component-based analytical approach, identifying the main structural elements, including internal chambers, approach platforms, entrance-adjacent platforms, and, in certain cases, altars. It is demonstrated that the presence of internal chambers constitutes an almost universal characteristic of this type of structure and, from a structural perspective, exhibits clear similarities with chambered and dolmen-type structures known from regional burial grounds. At the same time, the analysis of approach platforms and stone alignments reveals the significant role of movement, access, and the gradual negotiation of the landscape in the spatial

organization of these monuments. As a result, the horseshoe-shaped tower-type structures are interpreted as components of multilayered architectural and ritual landscapes, the meaning and function of which can be understood only within their broader landscape and systemic contexts.

Ամփոփում – Սույն հոդվածը նվիրված է Արագածի հարավային լանջերին և հարակից բարձրադիր գոտիներում տարածված պայտածև, աշտարակատիպ քարաշեն կառույցների ուսումնասիրությանը՝ բրոնզի և երկաթի դարաշրջանների համատեքստում: Հետազոտությունը կենտրոնանում է երկու հիմնական տեղամասերի՝ Ավան-Կոշ և Ուջան (Վժան), ինչպես նաև Վանքի ավերակի (Բքոյի գյուղ) մեկական օրինակի վրա: Դաշտային համակարգված ուսումնասիրությունների, ճարտարապետական չափագրությունների, դրոնային օդալուսանկարահանման, թվայնացման և GIS միջավայրում իրականացված տարածական վերլուծության համադրումը հնարավորություն է տվել այս կառույցները դիտարկել ոչ թե մեկուսացված շինությունների, այլ տարածականորեն կազմակերպված համակարգերի բաղադրիչների շրջանակում: Հոդվածում կիրառվում է բաղադրատարրային վերլուծության մոտեցում՝ առանձնացնելով կառուցվածքային հիմնական տարրերը՝ ներքին խցերը, պլատֆորմ-ուղիները, մուտքի մոտի հարթակները և որոշ դեպքերում նաև զոհասեղանները: Ցույց է տրվում, որ ներքին խցերի առկայությունը տվյալ տիպի կառույցների համար գրեթե համընդհանուր հատկանիշ է և կառուցողական առումով ունի ակնհայտ ընդհանրություններ տարածաշրջանի դամբարանադաշտերում հայտնի խցային և դոլմենատիպ շինությունների հետ: Միաժամանակ, պլատֆորմ-ուղիների և քարաշարային կապերի վերլուծությունը բացահայտում է շարժման, մոտեցման և լանդշաֆտի աստիճանական հաղթահարման կարևոր դերը այս կառույցների տարածական կազմակերպման մեջ: Նկատի առնելով այդ հանգամանքը՝ առաջարկվում է պայտածև, աշտարակատիպ կառույցները մեկնաբանել որպես բազմաշերտ ճարտարապետական և ծիսական միջավայրերի բաղկացուցիչներ, որոնց իմաստն ու գործառույթը բացահայտվում են միայն լանդշաֆտային և համակարգային համատեքստում:

Аннотация – Настоящая статья посвящена изучению подковообразных башнеобразных каменных сооружений, распространённых на южных склонах горы Арагац и в прилегающих высокогорных зонах, в контексте бронзового и железного веков. Исследование охватывает две основные территории – Аван-Кош и Уджан (Вжана), а также окрестности руин монастыря (деревня Бкой). Совмещение систематических полевых исследований, архитектурных обмеров, дронной аэрофотосъёмки, цифровой фиксации и пространственного анализа в среде GIS позволило рассматривать эти сооружения не как изолированные постройки, а как компоненты пространственно организованных систем. В статье применяется компонентный аналитический подход, в рамках которого выделяются основные структурные элементы: внутренние камеры, платформы-подходы, площадки у входа и в отдельных случаях – жертвенники. Показано, что наличие внутренних камер является практически универсальной характеристикой данного типа сооружений и в конструктивном отношении обнаруживает очевидные параллели с камерными и дольменобразными постройками, известными в региональных могильниках. Одновременно анализ платформ-подходов и каменных рядов выявляет важную роль движения, доступа и постепенного освоения ландшафта в пространственной организации этих памятников. В результате проведенных исследований подковообразные башнеобразные сооружения

предлагается интерпретировать как составные элементы многослойных архитектурных и ритуальных ландшафтов, смысл и функция которых раскрываются исключительно в ландшафтном и системном контексте.

Keywords – Aragats, landscape, tower, route, ritual.

Հիմնարաներ – Արագած, լանդշաֆտ, աշտարակ, ճանապարհ, ծես:

Ключевые слова – Арагац, ландшафт, башня, дорога, ритуал.

Introduction

Systematic field investigations carried out over the past decade on the southern slopes of Mount Aragats and the adjacent highland zones have substantially expanded our understanding of monumental stone-built structures dating to the Bronze and Iron Ages. These studies have identified a distinct group of tower-type monuments characterized predominantly by a horseshoe-shaped ground plan. Until recently, such structures were either not considered as an independent architectural phenomenon or were discussed only through partial and isolated descriptions. The integration of detailed architectural measurements, drone-based aerial documentation, digital modeling, and GIS-based spatial analysis has made it possible to examine these monuments as components of spatially organized systems defined by internal structural and topographic relationships.

The material analyzed in this study is concentrated in two major areas – Avan-Kosh and Ujan (Vzhan) – and is supplemented by a single, isolated example documented in the context of the Vanqi Averk site (Bkoyi village). In the Avan-Kosh area, a north-south-oriented chain of monuments has been recorded within the zone extending between the Avan-Aragats and Kuash fortresses. This chain comprises tower-type structures interconnected by stone alignments, approach platforms, and entrance platforms, forming a continuous and coherent spatial configuration. In the Ujan area, horseshoe-shaped structures are concentrated on the eastern elevated sector of the Motkan-Smbataberd fortress, positioned along a terraced ridge and associated with other tower-type monuments, tombs, and altars. In both areas, the spatial arrangement and interconnections of the monuments indicate deliberate planning and systematic organization of the landscape.

One of the defining structural features of the horseshoe-shaped tower-type structures is the presence of an internal chamber. Drone-based aerial imagery and surface observations demonstrate that central chambers are preserved in nearly all recorded examples, although in many cases they are disturbed or obscured by stone fill and vegetation. The presence of lintels at the chamber entrances and construction principles approaching corbelled (false-vault) solutions allow these structures to be considered within a broader context of constructive parallels with chambered monuments and dolmen-like structures known from regional cemeteries. At the same time, such parallels are noted strictly at the level of constructional similarities,

without predetermining function or categorizing these monuments unequivocally as funerary structures.

The examined monuments do not occur in isolation but are consistently associated with a set of related components, including approach platforms, entrance platforms, stone alignments, and, in certain cases, altars. The combination of these elements forms a spatial model in which movement, approach, and the gradual negotiation of the landscape play a central role. Comparable organizational principles are observed at a number of sites across the Armenian Highlands, as well as in neighboring regions, where roads and pathways constitute integral structural components of monumental complexes.

Accordingly, the horseshoe-shaped tower-type structures documented on the southern slopes of Mount Aragats should be interpreted not as isolated architectural units, but as constituent elements of spatially organized systems whose meaning and potential functions become intelligible only through the analysis of their mutual relationships. This perspective defines the structure of the present study, which proceeds to a component-based analysis of these monuments, examining the chamber, the approach platform–route, the entrance platform, and the altar as fundamental structural elements of the identified systems.

Component-based Analysis

A. Chamber

One of the principal structural elements of horseshoe-shaped tower-type constructions is the presence of an internal chamber. The synthesis of field observations, architectural measurements, and drone-based aerial documentation demonstrates that the existence of a chamber constitutes an almost universal feature of this architectural type, although in many cases it is disturbed, filled with stone debris, or concealed beneath soil and vegetation layers. As a rule, the chambers are located in the central or near-central part of the structures and can be identified by the presence of entrance lintels, as well as by constructional solutions in the upper part that approach the principle of a corbelled vault. These features are documented through architectural measurements and aerial imagery (fig. 7, 13).

Such chambered constructions are not unique to this region. On the southern slopes of Mount Aragats – particularly within the zone between the Avan–Aragats and Kuash fortresses – as well as in the eastern highland sector of the Motkan–Smbataberd fortress area (the Vzhan locality), and in the context of their adjacent cemeteries, stone mounds containing built chambers are widely attested. In disturbed or looted examples, chambers with rectangular or slightly widening ground plans are clearly observable; their walls are constructed of large stone slabs, while the upper courses gradually narrow to form constructional solutions close to the corbelled vault principle (fig. 12). Such structures are documented, in particular, in the

cemeteries associated with the fortresses of Nazrvan, Harich, and several other sites, where they are often characterized as dolmen-type constructions (Хачатрян 1975, 36).

The chambers of horseshoe-shaped tower-type constructions, displaying clear structural and planimetric affinities with the aforementioned funerary buildings, provide grounds for discussing their possible connection with burial or relic-related functions. In this context, the presence of a chamber should not be regarded as an isolated architectural feature, but rather as an element embedded within the overall structural composition of the monument, its associated components, and its landscape setting. For this reason, the interpretation of chambered solutions is best approached as a scientifically grounded possibility, while deliberately avoiding unequivocal or premature functional definitions.

B. Approach Platform

Within the structural system of horseshoe-shaped tower-type monuments, the platform–pathway constitutes a key component, linking the structure to the surrounding landscape and shaping the architectural scheme of its gradual accessibility. The combined analysis of field observations, architectural measurements, and drone-based aerial documentation demonstrates that such pathways represent a recurrent and characteristic element of this monument type, functioning not as incidental or secondary additions, but as integral components of the overall architectural concept (fig. 8, 9).

Platform–pathways are generally formed as corridors defined by parallel or near-parallel stone alignments, originating from the lower slopes and gradually ascending toward the tower or its immediate surroundings. Their orientation and gradient are determined by the local topography; however, they simultaneously reflect deliberate planning, expressed through a clearly articulated axis, continuity, and structural coherence.

On the southern slopes of Mount Aragats, several tower-type monuments are associated with platform–pathways of considerable length and clearly defined directionality. In particular, the Aragatsotn 1 and Aragatsotn 2 towers are interconnected by a stone-paved route approximately 450 m long, which not only facilitates physical movement but also establishes a unified spatial axis. Comparable monumental approach routes have been documented at other sites, including Aragats 2 (c. 218 m) and Aragats 4 (c. 220 m), while the most extensive example is observed at Arshaluis 1, where the platform–pathway exceeds 400 m in length.

It is noteworthy that platform–pathways often exhibit a marked widening near the monument, gradually converging toward the central zone of the structure's internal layout. However, in contrast to a number of kurgan complexes – where stone-paved roads directly approach the entrance and in some cases form an organic continuation of a dromos – the platform–pathways associated with the horseshoe-shaped tower-type monuments on the southern slopes of Mount Aragats generally do not

lead toward the entrance. Instead, they approach the monument from the opposite side, terminating in proximity to a sector that, based on planimetric and architectural observations, corresponds to the presumed terminal or axial zone of the centrally located chamber. Even in cases where the platform–pathway does not physically abut the structure, its orientation and endpoint remain clearly focused on this axial area.

The structural and conceptual significance of platform–pathways finds close parallels in neighboring regions as well. In the kurgan complexes of Trialeti, stone-paved roads constitute an organic component of the complexes, guiding movement toward the central monuments and, in many cases, merging with entrance systems. Several of these roads reach lengths of up to 500 m, and their construction, orientation, and integration into the landscape attest to a deliberate and non-random role within the overall architectural scheme (Narimanishvili et al. 2019, 82–90).

Thus, platform–pathways should be regarded as a fundamental component of the spatial organization of horseshoe-shaped tower-type monuments, integrating movement, approach, and the gradual negotiation of the surrounding landscape. They function not only as physical routes but also as structuring elements of perception and spatial experience, shaping the manner in which the monument is approached, encountered, and comprehended. In this sense, platform–pathways establish the conceptual and spatial framework for the analysis of the next architectural component – the entrance platform.

C. Entrance Platform

One of the significant constituent elements of horseshoe-shaped tower-type monuments is the platform located in the immediate vicinity of the entrance, functioning as a spatial node that precedes direct access to the structure. Field observations and architectural measurements indicate that these platforms are generally situated directly in front of the entrance or within its immediate surrounding zone and are often characterized by a leveled surface, stone fill, or partially preserved stone alignments defining their edges. Although their degree of preservation varies, in several cases the presence of such platforms remains discernible even when covered by soil and vegetation.

Archaeological parallels demonstrate that comparable platforms are also attested in other burial grounds. In particular, platforms have been documented in the cemeteries of Aygeshat and Sevasar, where they have been interpreted as important components of the spatial organization of funerary ritual practices (Avetisyan et al. 2019, 149–150). Nevertheless, these parallels must be applied with caution and should not be understood as implying direct functional equivalence. The entrance platforms associated with horseshoe-shaped tower-type monuments cannot be automatically interpreted within the same ritual framework; rather, they represent a broader spatial and architectural manifestation of the phenomenon.

Data obtained through field investigations further indicate that similar stone-built platforms or their remains are characteristic not only of horseshoe-shaped monuments but also of other types of tower-type structures. In particular, stone platforms or traces thereof have been documented in the south-eastern sector of the Aragatsotn 1 tower, as well as in the western part of the Shamiram 1 monument and at several other locations. These observations suggest that entrance or near-entrance platforms constitute a recurring element in the spatial organization of tower-type monuments, regardless of their specific planimetric or constructional features. Within this framework, the entrance platforms of horseshoe-shaped structures should be understood as a localized expression of a broader phenomenon, embedded within a deliberately structured system of approach and access surrounding tower-type monuments.

D. Stone Alignment

Within the spatial organization system of horseshoe-shaped tower-type monuments, stone alignments constitute a fundamental structural component that ensures the interconnection of individual elements and adjacent features. Field observations and spatial analyses indicate that, in this context, stone alignments exhibit clear directionality, continuity, and functional significance, extending beyond the scope of simple boundary markers or incidental constructions.

In the zone between the Avan–Aragats and Kuash fortresses, as well as in the eastern highland sector of the Motkan–Smbataberd fortress (the Vzhan area), stone alignments frequently connect horseshoe-shaped tower-type monuments to one another or link them to approach platforms, entrance platforms, and nearby funerary features. These connections form spatially organized systems in which individual structures are perceived not as isolated entities, but as components embedded within a network of mutual relationships.

A significant parallel for the structural role of stone alignments connecting platforms and central monuments is provided by the Aylakh complex, where a stone alignment approximately 65 m long extends southward from the main platform and constitutes a key organizing element of the complex (Avetisyan et al. 2025, 29–30; 159). A comparable organizational principle is observed at the Andokaberd 2 cemetery, where remnants of a fortification wall preserved along the summit of the hill attest to the systematic spatial arrangement of the area (Avetisyan et al. 2025, 41).

Stone-built routes leading toward funerary areas are also well attested in burial ground contexts. Pathways defined by stone alignments have been documented at Talin Cemetery No. 10 (Avetisyan et al. 1994, 5–6), in the eastern sector of the Shamiram settlement (Арешян 1978, 503–505), and at the Karashamb cemetery (Melikyan 2015, 9–10). These examples are of particular comparative value, as they demonstrate that the creation of spatial connections through stone alignments

represents a characteristic phenomenon within ritual and commemorative landscapes of the Bronze and Early Iron Ages.

Field research further demonstrates that similar alignment-based connections are characteristic of tower-type monuments as well. Stone alignments may link towers to one another or connect them with funerary groups or modified rock outcrops, thereby forming spatially integrated systems. Such patterns of interconnection have been recorded, among other sites, in the Aygashat and Norakert complexes, where stone alignments establish directed and continuous links between tower-type monuments.

Thus, stone alignments should be regarded as a fundamental component of the spatial organization of tower-type monuments, integrating individual features into coherent systems and shaping the structural logic through which the landscape is perceived and navigated. This role of stone alignments is directly connected to the analysis of the next component – roads and pathways.

E. Roads and Pathway

The ritual landscape formed on the eastern highland sector of the Motkan–Smbataberd fortress is characterized by a terraced organization, in which a massive road ascending from the foothills of the mountain spur functions as a primary spatial axis, while stone-built paths branching from each terrace and joining this road create a clearly articulated system of movement and approach. This structural principle – where the road not only connects individual monuments but also organizes the landscape as a whole – finds direct parallels in the ancient sanctuary of Berdik, where stone-defined pathways constitute a fundamental component of the complex's spatial framework (Avetisyan et al. 2025, 44–45). The presence of such extended and directionally organized routes is likewise documented in other areas of the southern slopes of Mount Aragats, including contexts distant from the Avan–Kosh zone and associated with other tower-type monuments. This broader distribution indicates that the use of roads and pathways represents a widely attested phenomenon in the spatial organization of tower-type and ritual constructions.

The Avan-Kosh Area

The Avan-Kosh area represents the most densely concentrated and structurally coherent cluster of horseshoe-shaped tower-type monuments recorded on the southern slopes of Mount Aragats. The area extends from the immediate surroundings of the Avan-Aragats fortress to the approaches of the Kuash fortress, encompassing the lower sections of the mountain spur and the adjacent predominantly flat terrain, where the spatial distribution of the monuments forms a clearly articulated north-south-oriented chain.

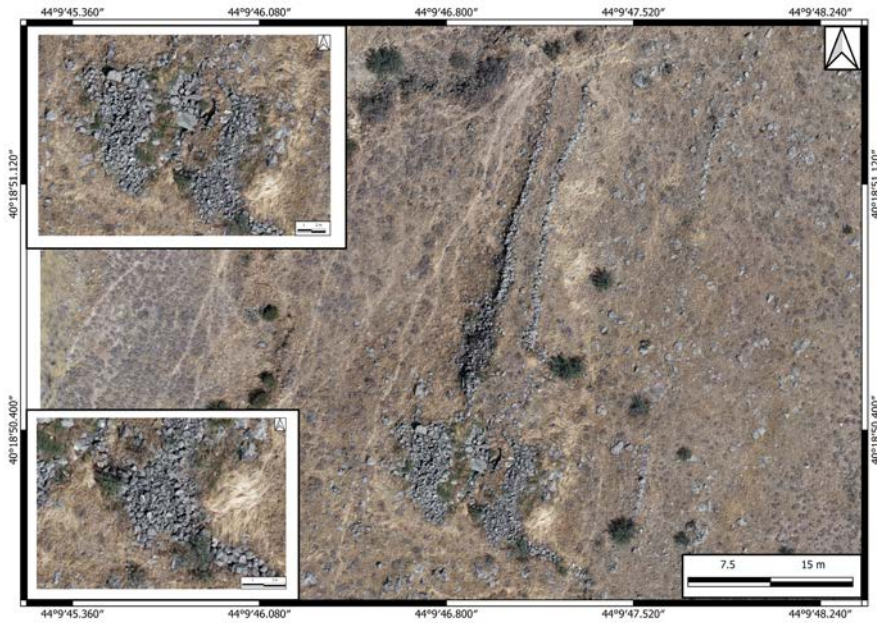


Fig. 1. Kuash 20: Orthophoto plan of the overall area, with details of the central part of the structure and the entrance platform

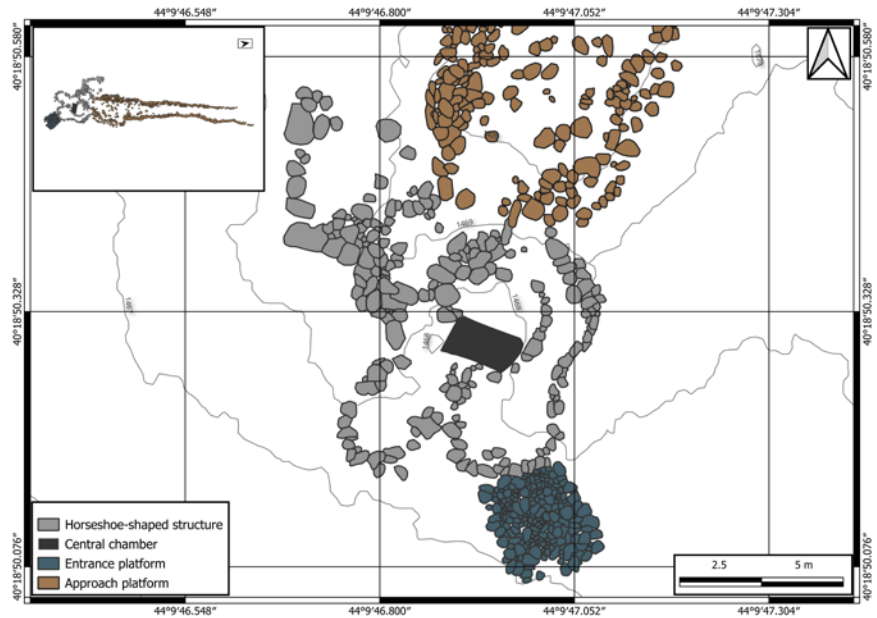


Fig. 2. Kuash 20: Architectural measurements and central plan, with details of the overall dimensions of the structure

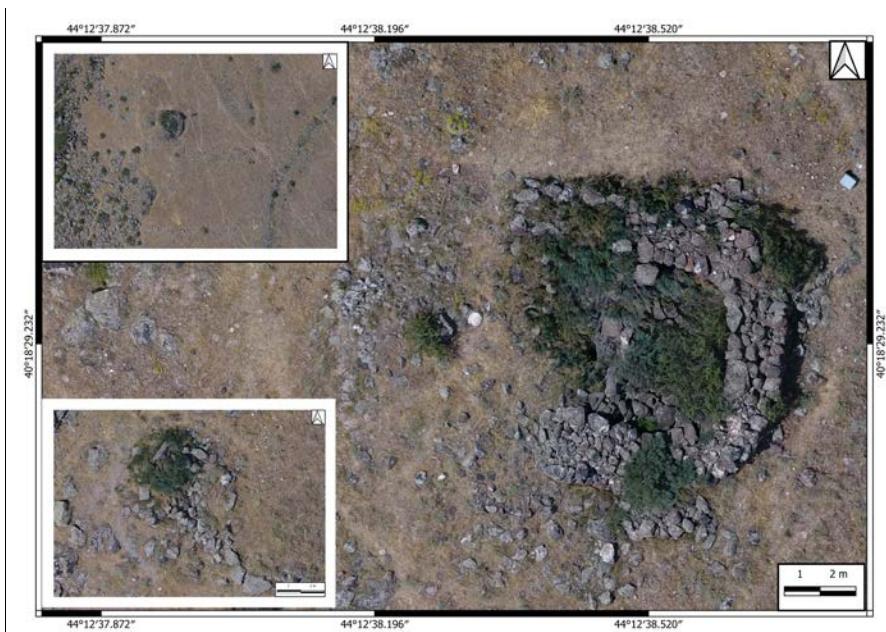


Fig. 3. Vzhn 18: Orthophoto plan of the structure, with details of the occupied area, the main stone-built road, and an associated burial monument in the surrounding context

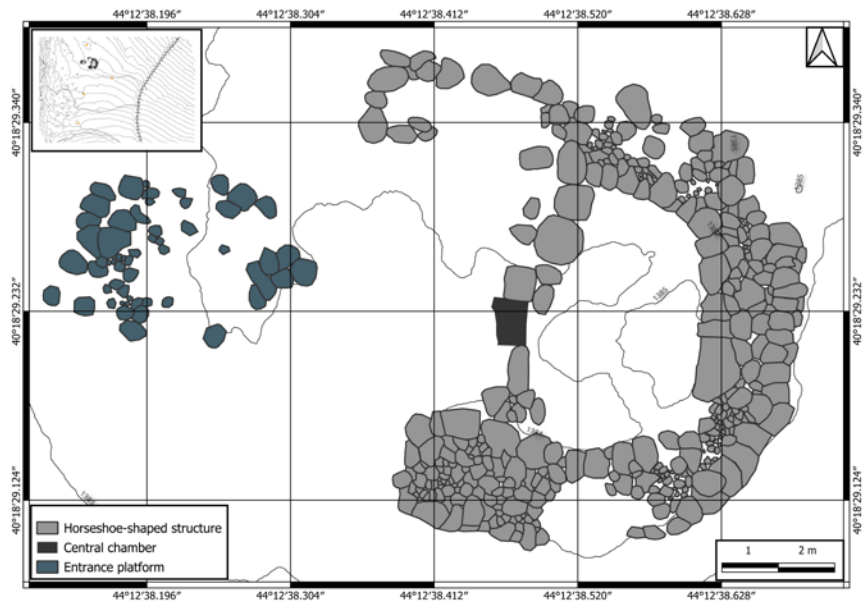


Fig. 4. Vzhn 18: Architectural measurements and spatial context of the structure, with details of the burial monument, stone alignments, and the main road



Fig. 5. Kuash 20: Aerial photograph of the monument, view from the south, 2025



Fig. 6. Kuash 20: General view from the south, 2018



Fig. 7. Kuash 20: Detail of the chamber and the entrance lintel stone, 2018



Fig. 8. Kuash 20: Detail of the approach platform with Avan-Aragats fortress in the background, 2018



Fig. 9. Kuash 20: Architectural-technical detail of the approach platform, highest preserved section



Fig. 10. Vzhan 1: General view, northern aspect, 2017



Fig. 11. Vzhan 1: Looted tomb within the cemetery adjacent to the tower, 2017



Fig. 12. Vzhan 18: General view, southeastern aspect, 2017



Fig. 13. Vzhan 18: Detailed view of the chamber entrance and lintel, 2017

This chain consists of a series of monumental stone-built structures interconnected through various architectural and spatial elements. The combined presence of these connections indicates that the monuments should be interpreted not as isolated constructions, but as components of a unified and deliberately organized system.

One of the defining characteristics of the area is the clarity of the spatial and structural relationships preserved between the monuments. The horseshoe-shaped towers are positioned primarily on flat or gently sloping surfaces, in locations that ensure both visual and physical connectivity. This circumstance allows the Avan-Kosh area to be understood as a landscape-integrated structural system, in which each monument plays a specific role within the overall organization.

The internal chambered arrangements documented within the monuments, together with their planimetric organization and constructional features, further emphasize the complex and multi-component character of these structures in the Avan-Kosh area. On the one hand, these features are integrated into the general spatial organization of the area; on the other, they provide an essential basis for the comparative analysis of this monument type.

Thus, the Avan-Kosh area emerges as a complete and developed example of the spatial organization of horseshoe-shaped tower-type monuments, whose analysis is best approached not through isolated elements, but within the framework of an integrated system.

A. Kuash 20. Horseshoe-Shaped Tower-Type Site

The horseshoe-shaped tower-type monument Kuash 20 occupies a key position within the linear system of the Avan-Kosh area and is distinguished by its dimensions, monumentality, and degree of preservation. It is situated along the principal north-south axis of the complex and represents one of the largest and most architecturally pronounced examples within this chain (fig. 1, 2, 5–9).

The structure displays a clear north-south orientation, with the entrance opening toward the south. The external dimensions measure approximately 10.00 m east-west and 8.20 m north-south. The horseshoe-shaped plan is formed by a developed curved section on the northern side, with an average wall thickness of approximately 2.00 m. The lateral walls differ in thickness: the right lateral wall measures about 2.75 m, while the left reaches approximately 3.00 m, locally increasing toward the terminal section to nearly 4.00 m, imparting a pronounced monumental character to the structure.

The maximum preserved height reaches approximately 3.00 m, particularly in the northern curved sector and the initial part of the left lateral wall. The volume of collapsed stone observed within the structure indicates that the original height was substantially greater.

The internal space is relatively narrow. The internal width measures approximately 2.50 m, while the internal depth reaches about 4.50 m. In the entrance zone, a marked narrowing is observed, with the lateral walls approaching one another closely. This condition may result from collapse and disturbance of wall courses, as well as from an originally intentional architectural solution.

The masonry is predominantly double-faced. Medium and large stones were used, frequently reaching lengths of up to 70 cm. The arrangement is partially irregular, with stones laid longitudinally in some sections and transversely in others. The core fill consists of small and medium-sized stones. The exterior faces of the walls are locally covered by soil and vegetation.

Within the interior of the structure, the presence of a central chamber is recorded. The chamber is partially legible but filled with collapsed stones. A large lintel stone has been preserved, measuring approximately 2.10×1.10 m, indicating the significant size and structural importance of the chamber.

In the southern sector of the structure, immediately adjacent to the right lateral wall, a nearly square platform is preserved, measuring approximately 3.20×2.80 m and reaching a height of about 0.70 m. At present, it does not obstruct the entrance. The masonry of this platform is comparatively rough and, based on its constructional characteristics, may be regarded as an addition to the primary structure.

From the north, Kuash 20 is approached by a substantial **Approach Platform**, which constitutes one of the key elements of the monument's spatial organization. The Approach Platform is oriented north-south and has a total length of approximately 34 m. Its width measures about 3.40 m at the starting point and gradually increases toward the monument, reaching approximately 6.20 m. The preserved height locally attains 2.00 m, and the slope is clearly articulated. In section, lateral stone-built alignments are visible, attesting to a high level of constructional planning.

From the platform area of Kuash 20, a stone alignment extends toward the southeast, leading in the direction of neighboring horseshoe-shaped structures and integrating the monument into the broader linear system of the Avan-Kosh area.

Overall, Kuash 20 represents one of the most monumental and architecturally developed horseshoe-shaped tower-type monuments within the Avan-Kosh area. Its dimensions, wall thickness, chambered layout, and massive Approach Platform underscore its exceptional position within the system and render it a key reference point for the study of this monument type.

The Surroundings of the Vanki Averak (Ruins of Vank, Bqoyi Village)

In the western part of the Vzhan area, within the administrative territory of Bqoyi village, the surroundings of the ruins of Vank represent an isolated yet landscape- and structurally significant locus. The horseshoe-shaped tower-type monument documented here is situated within the immediate sphere of influence of the

fortress, while remaining outside the clearly defined linear or terraced systems that characterize other parts of the Vzhan area (fig. 10).

The structure occupies a naturally leveled, slightly elevated surface, the selection of which appears to have been determined by visibility and the potential for controlling the surrounding terrain. The immediate landscape does not display intensive stone alignments or organized pathway systems, allowing this example to be interpreted as a **freestanding** representative of the horseshoe-shaped tower-type monuments. This circumstance is of particular importance, as it demonstrates that the application of such monuments was not limited exclusively to densely organized complexes, but could also occur in isolated positions adjacent to fortress environments.

The example from the ruins of Vank, despite its relatively limited set of associated components, nevertheless emphasizes its typological affinity with other monuments of the Vzhan area and constitutes an important intermediate link between linear-complex systems and isolated horseshoe-shaped structures.

The Eastern High-Altitude Landscape of the Motkan–Smbataberd Fortress

The principal and most structurally saturated part of the Vzhan area is formed within the eastern high-altitude zone of the Motkan–Smbataberd fortress, where the landscape is characterized by a clearly articulated terraced organization and a north–south-oriented mountain spur. This territory stands out not only for its natural relief but also for the density and interconnectivity of its monuments, forming a spatially organized and coherent environment.

The terraces descend gradually toward the south, providing multiple levels for the placement of architectural structures. Within this system, square, circular, polygonal, and particularly horseshoe-shaped tower-type monuments have been recorded, along with tombs and an altar. At the summit zone of the complex stands a polygonal tower (Vzhan 11), which functions as the spatial and visual focal point of the entire system.

A key organizing element of the landscape is a massive stone-built road that ascends gradually from the foothills of the mountain spur toward the summit areas. This road not only facilitates physical accessibility but also serves as a spatial axis to which stone-lined pathways from individual terraces converge. This networked system establishes a clear structure of movement, approach, and orientation, highlighting the deliberate organization of the landscape.

The horseshoe-shaped tower-type monuments within the Vzhan area are positioned precisely within this terraced and road-based framework, at times directly connected to the main route, and at other times approaching it via subsidiary stone alignments. Such spatial arrangements indicate that the placement of these structures was governed not solely by defensive considerations or visibility, but by a more

complex spatial logic, in which the landscape and architectural elements together form an integrated system.

Thus, the eastern high-altitude zone of the Motkan–Smbataberd fortress should be regarded as the principal ritual–architectural environment of the Vzhan area, in which horseshoe-shaped tower-type monuments function not as isolated features, but as constituent elements of a coherent system defined by terraced organization, road networks, and stone alignments.

A. Vzhan 18

The horseshoe-shaped tower-type monument Vzhan 18 represents one of the most monumental and representative examples within the terraced complex formed on the eastern highland sector of the Motkan–Smbataberd fortress. It is distinguished not only by its dimensions and state of preservation, but also by its positional significance, occupying a key location in relation to the main route organizing the complex (fig. 3, 4, 12, 13).

The structure is situated on an individual terrace and displays a clearly defined orientation, with its entrance directed toward the Motkan fortress, a feature that further emphasizes its visual and symbolic connection with the central sector of the fortress. The overall dimensions of the monument measure 8.40 m along the east–west axis and 8.30 m along the north–south axis. The ground plan is distinctly horseshoe-shaped, with a clearly articulated curved segment measuring approximately 1.70 m; the length of the right lateral wing is approximately 1.90 m, while that of the left wing measures about 1.75 m.

The maximum preserved height of the structure reaches approximately 1 m. At present, the walls are largely covered by a vegetation layer; however, the masonry remains locally well legible and is executed in a double-row construction technique. The stones are medium to large in size, reaching up to 60 cm in length. In the inner row, the stones are laid longitudinally, while in the outer row they are placed transversely; the core is filled with small stones, a constructional feature characteristic of this type of monumental stone architecture.

Within the interior of the structure, a clearly defined central chamber is recorded. The internal width of the chamber measures approximately 4.55 m, and its depth about 4.85 m. The chamber is preserved to a depth of roughly 1 m and has a clearly delineated outline. At the entrance zone, a lintel stone has been preserved in situ, measuring approximately 1.50×0.50 m, whose position attests to the deliberate and planned construction of the chamber.

Vzhan 18 does not possess a platform directly adjoining the structure itself; however, from its southern side begins a stone alignment approximately 35 m in length, which connects the monument to the main route organizing the complex. This connection further underscores the integration of the structure within the

overall spatial system and indicates that it functioned not in isolation, but within a carefully organized environment of movement and approach.

In the immediate vicinity of the monument, additional significant components have been documented: the Vzhan 19 structure is located approximately 43 m to the north on the next terrace, while an altar is situated about 85 m to the southeast. This spatial proximity forms a dense structural and semantic environment, within which Vžan 18 functions as an intermediate and balancing node.

Overall, Vzhan18 constitutes a key example among the horseshoe-shaped tower-type monuments of the Motkan–Smbataberd complex, allowing for a comprehensive understanding of the volumetric solutions, chamber system, and the role of such structures within a terraced, route-organized ritual landscape.

Conclusion

The present study conducted on the southern slopes of Mount Aragats demonstrates that horseshoe-shaped tower-type monuments cannot be interpreted as isolated or incidental architectural phenomena. Rather, they appear as constituent elements of spatially organized systems, whose meaning and function become intelligible only within the context of their landscape setting, internal interconnections, and associated architectural components. The evidence documented in the Avan–Kosh and Ujan (Vzhan) areas indicates that these monuments form clearly structured environments, integrated through stone alignments, approach platforms, entrance-adjacent platforms, and, in certain cases, altars.

The component-based analysis has allowed the identification of several stable and recurring constructive principles. The presence of internal chambers, their architectural solutions, and their central positioning indicate that the chamber system constitutes one of the fundamental characteristics of this monument type. At the same time, the constructive similarities between these chambers and the chambered and dolmen-type structures known from regional cemeteries provide grounds for discussing their potential funerary or relic-related functions, while deliberately avoiding unequivocal or premature conclusions. The approach platforms and road systems, in turn, highlight the role of movement, access, and the gradual negotiation of the landscape in the spatial organization of these monuments, establishing meaningful parallels with other sites in the Armenian Highlands as well as with complexes in neighboring regions.

The results of this study suggest that horseshoe-shaped tower-type monuments should be regarded as components of multilayered architectural and ritual environments, in which constructive, spatial, and symbolic factors are closely intertwined. This perspective offers a framework not only for expanding the documentation and comparative analysis of such monuments, but also for re-evaluating prevailing interpretations of landscape organization and monumental systems during the Bronze and Iron Ages.

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References/Գրականություն/Литература

1. Avetisyan H., Gnuni A., Sargsyan G., Mkrtchyan L., Bobokhyan A. 2025, Megalithic Culture of Artsakh, Yerevan, Institute of Archaeology and Ethnography NAS RA.
2. Melikyan V. 2015, Newly Found Middle Bronze Age Tombs of Karashamb Cemetery: Preliminary Report, Aramazd, Armenian Journal of Near Eastern Studies, IX/1, 9–10.
3. Narimanishvili N., Shanshashvili N., Narimanishvili G. 2019, Kurgans of Trialeti: The Roads to Eternity, in: Proceedings of the International Workshop Held in Florence, Italy, on March 29–30, 2018, Studies on the Ancient Near East and the Mediterranean, 82–90.
4. Ավետիսյան Պ., Մուրադյան Ֆ. 1994, Թալինի դամբարանադաշտի 1991 թ. պեղումները, ՀՀ-ում 1991–1992 թթ. դաշտային հնագիտական աշխատանքների արդյունքներին նվիրված գիտական նստաշրջան, զեկուցումների թեզիսներ, Երևան, 5–6: Avetisyan P., Muradyan F. 1994, Excavations of the Talin Cemetery in 1991, in: Scientific Session Dedicated to the Results of Field Archaeological Work Conducted in the Republic of Armenia in 1991–1992, Abstracts of Reports, Yerevan, 5–6 (in Armenian).
5. Ավետիսյան Հ., Բորիսյան Ա., Գնունի Ա., Մկրտչյան Լ., Ավետիսյան Ն. 2019, Թաղման ծեսի իրավիճակային վերլուծության փորձ, Պատմություն և մշակույթ հայագիտական հանդես, Երևան, 145–157: Avetisyan H., Bobokhyan A., Gnuni A., Mkrtchyan L., Avetisyan N. 2019, An Attempt at a Contextual Analysis of the Burial Rite, History and Culture: Journal of Armenian Studies, Yerevan, 145–157 (in Armenian).
6. Арешян Г. 1978, Исследования в Шамираме, Археологические открытия в 1977 г., Москва, 503–505. Areshyan G., 1978, Investigations at Shamiram, in: Archaeological Discoveries in 1977, Moscow, 503–505 (in Russian).
7. Хачатрян Т.С. 1975, Древняя культура Ширака, Ереван, изд. Ереванского государственного университета. Khachatryan T.S. 1975, Ancient Culture of Shirak, Yerevan, Yerevan State University Press (in Russian).