

THE ARCHAEOLOGY OF "DESERT KITES" IN ARMENIA: ACHIEVEMENTS, GAPS, AND FUTURE DIRECTIONS

АРХЕОЛОГИЯ «ПУСТЫННЫХ ВОЗДУШНЫХ ЗМЕЕВ» В АРМЕНИИ: ДОСТИЖЕНИЯ, ПРОБЕЛЫ И БУДУЩИЕ НАПРАВЛЕНИЯ

«ԱՆԱՊԱՏԻ ՕԴԱՊԱՐՈՒԿՆԵՐԻ» ՀՆԱԳԻՏՈՒԹՅՈՒՆԸ ՀԱՅԱՍՏԱՆՈՒՄ. ՁԵՌՔԲԵՐՈՒՄՆԵՐԸ, ԲԱՑԹՈՂՈՒՄՆԵՐԸ ԵՎ ԱՊԱԳԱ ՈՒՂՂՈՒԹՅՈՒՆՆԵՐԸ

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Abstract – This article synthesizes current knowledge on the archaeology of "desert kites" in Armenia and outlines priorities for future research. Building on systematic surveys, high-resolution satellite imagery, drone photography, and GIS mapping, approximately two hundred structures have been documented across Armavir, Aragatsotn, and Shirak regions. Morphological analysis confirms the canonical elements: converging stone alignments, large enclosures, and external cells, while highlighting regional traits that align most closely with northern Mesopotamian examples. Excavations and the first series of OSL and radiocarbon measurements currently situate Armenian kites within the Middle and Late Bronze Age cultural horizons (3rd–2nd millennia BC), yet absolute chronology remains fragmentary and often indirect. Functional interpretations likewise remain contested: large-scale hunting traps predominate, but pastoral and ritual readings persist in the absence of decisive faunal or cultural assemblages. Methodological constraints further complicate inference. The article argues for an integrated agenda: systematic radiocarbon/OSL sampling tied to construction deposits; targeted, larger-area excavations across diverse morphological types; expanded surveys into underexplored regions; and conservation measures. By repositioning Armenian kites within interregional comparative frameworks, the study demonstrates their value for understanding prehistoric landscape engineering and the social organization of collective labor in the Armenian Highlands and beyond.

Ամփոփում – Հոդվածում ներկայացվում են «օդապարուկներին» առնչվող հնագիտական ձեռքբերումները Հայաստանում, և սահմանվում են ապագա հետազոտական ուղղությունները: Դաշտային համակարգված հետազոտությունների, արբանյակային և օդային բարձրորակ լուսանկարների, GIS քարտեզագրման շնորհիվ Հայաստանում՝ Արմավիրի, Արագածոտնի և Շիրակի մարզերում, փաստագրվել է շուրջ երկու հարյուր նման կառույց: Դրանց կառուցվածքային վերլուծությունը ցույց է տալիս, որ հայաստանյան օդապարուկներն ունեն դասական կառուցվածք, կազմված են զուգամիտող քարաշարերից, ունեն ընդարձակ շրջապարիսպ և վերջինիս արտաքին կողմից կցված գետնափոր կառույցներ: Միաժամանակ ի հայտ են բերում տարածաշրջանային առանձնահատկություններ, որոնք առավել բնորոշ են հյուսիս-միջագետքյան նմուշներին: Պեղումների և OSL ու ռադիոածխածնային հետազոտությունների ներկայիս արդյունքները թույլ են տալիս ենթադրել, որ Հայաստանի օդապարուկների գործածության հիմնական ժամանակաշրջանը միջին և ուշ բրոնզի դարաշրջաններն են (մ.թ.ա. III–II հազարամյակ), սակայն չի բացառվում, որ դրանք կարող էին նաև ավելի վաղ փուլում կառուցվել: Իսկ դրանց գործառույթի վերաբերյալ տեսակետները շարունակում են խնդրահարույց մնալ: Տիրապետում է այս շինությունների՝ որսորդական խոշոր թակարդներ լինելու վարկածը, սակայն քննարկվում են նաև դրանց անասնապահական կամ պաշտամունքային նշանակություն ունենալու հայեցակետերը: Քննության են առնվում այս շինությունների հետազոտական ապագա ուղղությունները, մասնավորապես՝ ռադիոածխածնային և OSL մեծաքանակ նմուշառումներ, առավել լայնածավալ պեղումներ տարբեր տիպեր ներկայացնող օդապարուկներում, հետախուզական աշխատանքներ Հայաստանի այլ շրջաններում, ինչպես նաև այդ կառույցների պահպանությանն ուղղված միջոցառումների ձեռնարկում: Հայաստանի օդապարուկները քննելով միջտարածաշրջանային համատեքստում՝ հոդվածում ուրվագծվում են վերջիններիս դերն ու նշանակությունը նախապատմական միջավայրի ձևափոխման և կոլեկտիվ աշխատանքի սոցիալական կազմակերպման խնդիրները լուծելու հարցում՝ թե՛ Հայկական լեռնաշխարհում, թե՛ նրա սահմաններից դուրս:

Аннотация – Статья являет собой синтез знаний об археологии «воздушных змеев» в Армении. На основе систематических обследований, высококачественных спутниковых снимков, аэросъёмок и ГИС-картографирования выявлено около двухсот объектов в областях Армавир, Арагацотн и Ширак. Морфологический анализ подтверждает канонические элементы – сходящиеся каменные кладки, огромные ограждённые пространства и внешние камеры, а также указывает на региональные черты, наиболее характерные для сооружений Северной Месопотамии. Результаты раскопок и первые серии OSL и радиоуглеродных датировок в настоящее время позволяют предположить, что в Армении воздушные змеи в основном использовались в период средней и поздней бронзы (III–II тыс. до н.э.), хотя не исключено, что они могли быть сооружены и в более ранний период. Вопрос их функционального назначения также является дискуссионным: преобладает гипотеза о том, что они являлись крупными охотничьими ловушками, однако бытует также точка зрения, что они представляли собой пасторальные либо культовые сооружения. В статье представлены перспективные направления их исследований, в частности, радиоуглеродное/OSL-датирование, целевые раскопки расширенных площадей по разным типам: расширение ареала разведывательных работ в других регионах Армении, равно как и принятие мер по сохранению этих сооружений. Их рассмотрение в межрегиональном контексте демонстрирует значимость и роль данных сооружений в по-

нимании доисторического освоения ландшафта и социальной организации коллективного труда на Армянском нагорье и за его пределами.

Keywords – "Kite", Armenia, archaeology, chronology, function.

Հիմնաբառեր – «օդապարուկ», Հայաստան, հնագիտություն, ժամանակագրություն, գործառույթ:
Ключевые слова – «воздушный змей», Армения, археология, хронология, функция.

Introduction

Over the past century, the study of so-called "desert kites" has become a dynamic field within world archaeology. These monumental stone structures, usually composed of long converging walls that lead into an enclosure and then to cells built on its outer side, are most clearly visible from the air and stretch across vast arid landscapes (Fig. 1). First observed by World War I pilots flying over the Syro-Jordanian Desert (Holt 1923; Maitland 1927; Rees 1929; Dussaud 1929; Crawford 1929; Poidebard 1928) kites have since been documented in enormous numbers. Thousands of examples are currently known from across Central Asia and the Near East, with concentrations in Uzbekistan, Kazakhstan, Turkmenistan, Armenia, Turkey, Iraq, Syria, Jordan, Lebanon, and Saudi Arabia (Fig. 2). Their broad distribution, impressive scale, distinctive morphology, and enigmatic function have resulted in a wide-ranging and interdisciplinary scholarship, which has included archaeological survey, excavation, remote sensing, morphological studies, comparative and typological analyses, together with ethnographic analogy, functional interpretation, and theoretical approaches (Amirov et al. 2015; Barge et al., 2015a; 2015b; 2016; 2021a; 2025; Betts, van Pelt 2021; Çelik, Tolon 2018; Chambrade, Betts 2021; Cras-sard et al. 2022; Kempe, Al-Malabeh 2013; Kennedy 2021; Malkinson et al. 2018; Morandi Bonacossi, Iamoni 2012; Nadel et al. 2015; Şahin, Massa 2025; Ягодин 1991, etc.).

Within this broader panorama, Armenia occupies a distinctive and increasingly significant position. The discovery of kites on the slopes of Mount Aragats has extended the known distribution of the phenomenon beyond its previously recognized southern and northern ranges, positioning Armenia as an intermediate zone for understanding and interpreting these constructions. Within this region, kites are not isolated monuments but components of larger archaeological landscapes that also include settlements, necropoleis, towers, and petroglyphic complexes (Barge et al. 2021b; Nadel et al. 2015; Շախմուրադյան 2023, 52–77). Their investigation therefore not only contributes to the global discourse on kites, but also provides new perspectives on the prehistoric societies of the Armenian Highlands, their subsistence strategies, and their interactions with surrounding cultural spheres.

The study of kites in Armenia has already yielded a number of notable results. Systematic surveys, combined with satellite imagery and aerial photography, have facilitated the mapping and classification of approximately two hundred structures, thereby revealing regional patterns in their distribution and construction (Brochier

et al. 2014; Barge et al. 2021a; Շախմուրադյան 2023). Excavations at selected sites have offered preliminary chronological frameworks (Brochier et al. 2014; Nadel et al. 2015; Kalantaryan 2017; Շախմուրադյան 2023, 78–80). Comparative analyses with kites in Jordan, Syria, and Arabia have also clarified both the shared traits and the unique local expressions of the phenomenon (Barge et al. 2015a, b, Շախմուրադյան 2023). At the same time, major problems remain unresolved. Absolute dating evidence for kites in Armenia remains limited. Their function is similarly debated: while most interpretations emphasize their role as large-scale hunting traps (Barge et al. 2021a, Crassard et al. 2022), other hypotheses point to pastoral (Malkinson et al. 2017) or ritual significance (Շախմուրադյան 2023, 112–114). These debates are complicated by the paucity of faunal and cultural remains directly associated with the structures.

This article seeks to synthesize current knowledge about the archaeology of kites in Armenia, drawing upon the results of recent fieldwork, comparative studies, and theoretical discussions. It is organized around three key aims: to present the achievements of kite research in Armenia and situate them within the wider context of international scholarship; to identify and examine the issues and debates that continue to shape interpretations; and to propose future directions for the investigation, conservation, and interpretation of these monuments. By adopting this structure, the article seeks not only to highlight the significance of evidence from Armenia in the study of kites but also to chart a course for more comprehensive and interdisciplinary approaches in the years ahead.

Achievements in the Study of Kites in Armenia

The archaeology of kites in Armenia is still in its formative stages, yet over the past two decades it has progressed from scattered observations to a coherent field of inquiry. The main achievements can be grouped under several themes: the discovery, the mapping and classification of structures, the results of field investigations, the integration of modern technologies, and comparative studies within the wider Near Eastern and Central Asian frameworks.

Discovery and Mapping

The study of kites in Armenia began only recently, in 2009, when the geologist A. Karakhanyan identified these structures and reported them to the Institute of Archaeology and Ethnography of the National Academy of Sciences of Armenia. Yet the first observations appear to date back much earlier: in the 1920s, reconnaissance work conducted by the Committee for the Preservation of Antiquities of Armenia in the areas of Aghavnatun and Shamiram (Aragatsotn region) recorded long, parallel stone alignments noted by archaeologist A. Kalantar (Քալանթար 1925, 216). Given that both kites and V-shaped structures with long converging walls have since been identified at Shamiram and Aghavnatun, it may be assumed that kites

were already observed in Armenia at that time. Their existence, however, was firmly documented only after systematic surveys in the Aragatsotn, Armavir, and Shirak regions, which confirmed their presence and brought them into the scope of regional archaeological research (Gasparian et al. 2013; Brochier et al. 2014; Nadel et al. 2015; Barge et al. 2021a). The recognition of these monuments immediately attracted scholarly attention, as they showed that the phenomenon was not confined to its well-documented centers in the deserts of Syria, Jordan, and Arabia, or to the steppe regions of Central Asia, but also extended into the Armenian Highlands, an intermediate zone whose position makes it especially significant for understanding the wider distribution and development of kites. Subsequent mapping has documented around two hundred kites in Armenia. More than half are situated in Armavir province (53%), nearly half in Aragatsotn (45%), and a small fraction in Shirak (2%). The largest clusters occur in the vicinity of Koghbavan, Karakert, Shenik, Aragatsavan, Artamet, Ddmasar, and Khanjyan villages (Շախմուրադյան 2023, 19, maps 2–3, diag. 1).

Integration of Modern Technologies

Remote sensing has played a central role in the study of Armenian kites. High-resolution satellite imagery, drone-based aerial photography, and GIS mapping have enabled the identification and documentation of structures that are difficult to detect from ground level. These technologies provide precise measurements, support visibility modeling, and allow spatial analysis on a regional scale. They have also proved highly effective for morphological studies, enabling the recording of enclosure forms, the lengths of stone rows, the number and placement of towers, and other structural features of the kites. Such methods have greatly facilitated both the discovery of new sites and the systematic documentation of their characteristics and distribution.

Morphological and Typological Studies

The majority of kites identified in Armenia display the classical structural components characteristic of this monument type: long converging stone alignments, an entrance, an enclosure, and cells (Barge et al. 2015a; b; 2021a; Շախմուրադյան 2023, 33–52). In most cases, two converging stone alignments form the basic layout, although occasionally additional alignments occur (Fig. 3). Unlike in southern regions, however, these supplementary walls often extend not toward the main enclosure, but radiate outward from it or from cells (e.g., Aragatsavan 2, 4; Koghbavan 6). In some instances, only a single alignment is preserved, or none at all, where natural ridges may have substituted for guiding walls. As elsewhere, the walls are built of unworked stones laid in single or double rows, usually reaching only a few decimeters in height. Their preserved length ranges from 100 to 1600 meters, most commonly between 200 and 700 meters. In certain complexes, the alignments of one kite connect to those of another, creating linked groups, as documented at Aragatsavan (Aragatsavan 1–4).

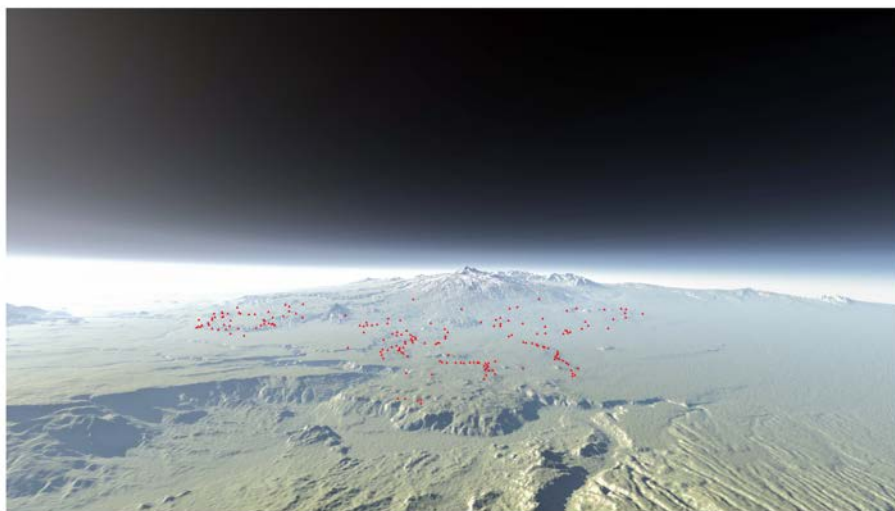


Fig. 1. Distribution of desert kites in Armenia, on the southern and southwestern slopes of Mount Aragats (Map: H. Danielyan)

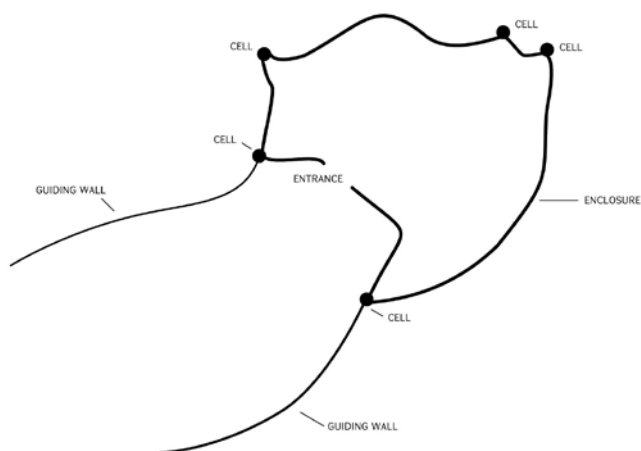


Fig. 2. The main structural elements of the kite (Drawing: H. Sahakyan)

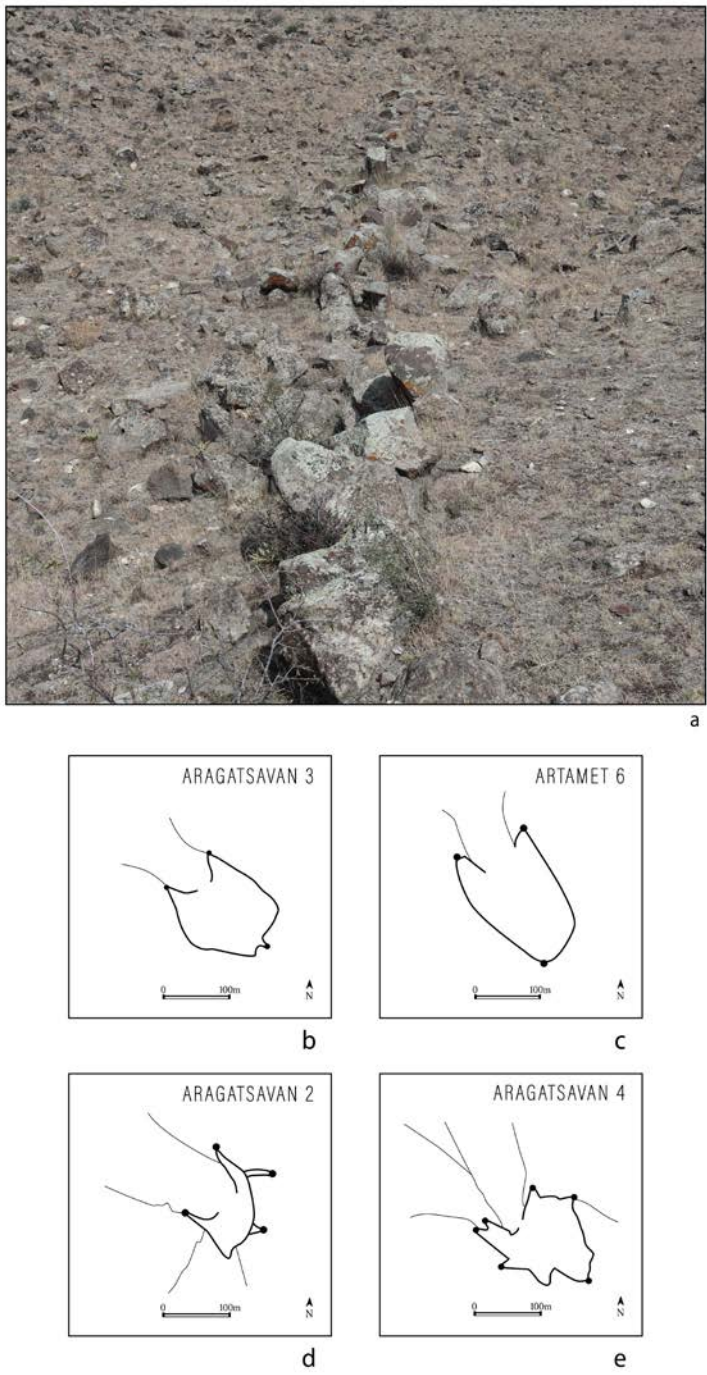


Fig. 3. 1 – A section of the stone row of the *Tlik 3* kite; 2–4. Schematic representations of kites with two or more stone rows (Drawings: H. Sahakyan)

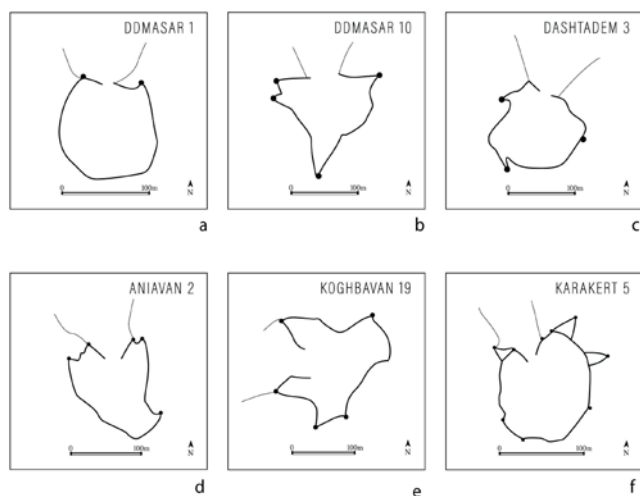


Fig. 4. Common types of entrances of kites in Armenia (Drawings: H. Sahakyan)

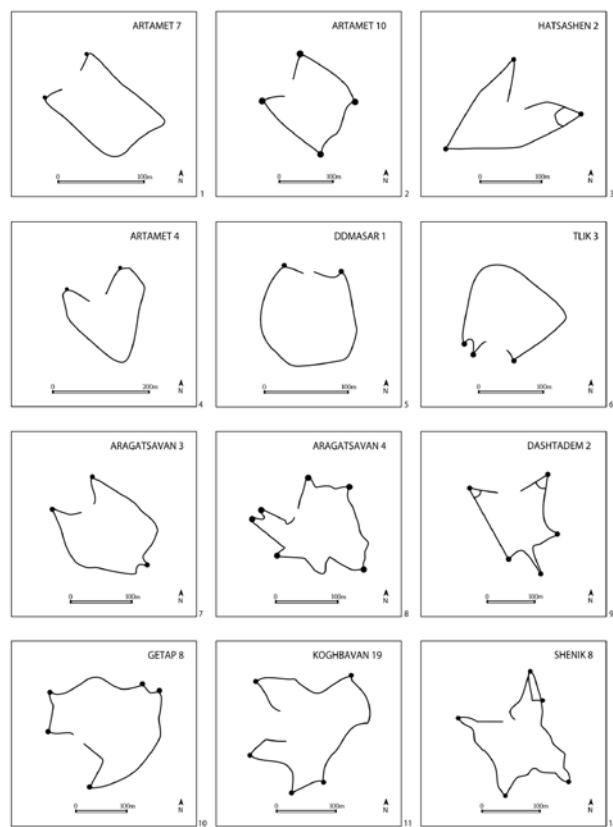


Fig. 5. Examples of enclosure forms of Armenian kites (Drawings: H. Sahakyan)

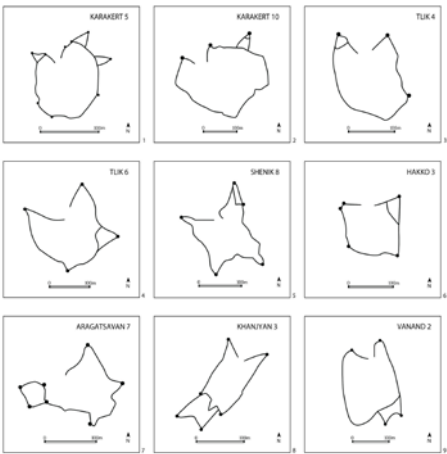


Fig. 6. 1–3. Schematic representations of enclosures with open and closed niches; 4–6. Schematic representations of enclosures with internal subdivisions; 7–9. Schematic representations of enclosures with external annexes (Drawings: H. Sahakyan)

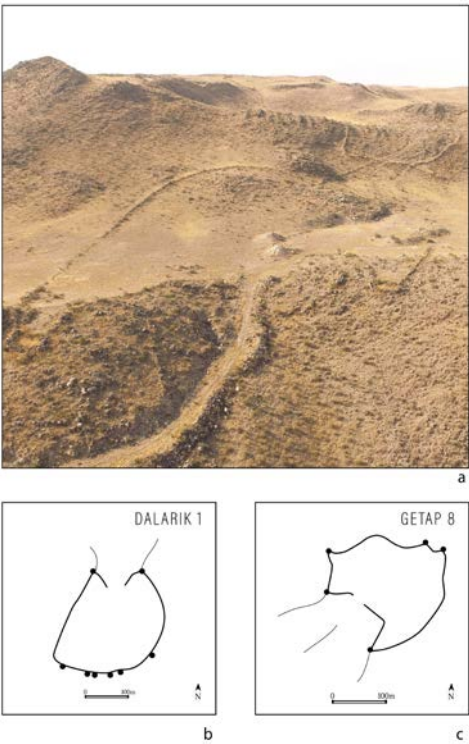


Fig. 7. 1. Top view of the cell of the Aragatsavan 1 kite (Aerial photo: A. Mkrtchyan); 2–4. Examples of cell placement along the enclosure perimeter (Drawings: H. Sahakyan)

Entrances to Armenian kites usually fall into two main types: some are simple openings in the enclosure wall (e.g., Artamet 7, Dashtadem 3, Yervandashat 4), while others are created by walls that curve inward at the point of entry (e.g., Koghbavan 19, Myasnikyan 4, Karakert 5) (Fig. 4). Rare examples of blocked entrances are also attested. Entrance widths typically range between 20 and 35 meters.

The enclosures themselves are generally large and open, built in dry-stone construction with single or double rows filled with smaller stones. While most kites feature a single enclosure, occasionally additional, smaller enclosures are appended to the main one (e.g., Aragatsavan 7, Khanjyan 3). Natural features such as cliffs or hill slopes are sometimes incorporated into the perimeter (e.g., Artamet 3, Myasnikyan 3). The preserved height of walls usually ranges from 0.5 to 1.5 meters, though excavations at Aragatsavan 1 suggest original heights of at least 1.5 meters. Most enclosures cover areas of 1–3 hectares, with a few exceptionally large examples extending up to 6.7–7 hectares (e.g., Mayisyan 1, Khanjyan 9). Their forms are strikingly diverse, including rectangular, triangular, circular, trapezoidal, arrow-shaped, spade-shaped, and crescentic variants, alongside more irregular plans. Niches are often observed in the enclosure walls (e.g., Karakert 5, 10). Internal partitions and external annexes are also sometimes present (Fig. 5, 6) (Barge et al. 2015a, b; 2021; Շախմուրադյան 2023, 33–52).

Cells are attached externally to the enclosure walls, often positioned at the ends of niches (Fig. 7). Most kites in Armenia include two to five cells, although rare examples preserve as many as seven or eight (e.g., Aragatsavan 4). They are constructed of unworked stone in dry masonry, usually with double-faced walls filled with smaller stones. In plan, they are generally circular, oval, or rounded-rectangular, with internal diameters ranging from 3 to 10 meters and depths up to 3–4 meters. The cells are closed structures, without openings toward the enclosure or the exterior, though occasionally a low, door-like aperture is preserved (e.g., Karakert 10, Hakko 1).

Taken together, these features demonstrate that Armenian kites embody the essential structural elements common across the broader distribution of the phenomenon. Built in dry-stone masonry, with converging alignments, large enclosures, and external cells, they fit within the architectural tradition documented from Arabia to Central Asia. At the same time, they display regional particularities: unlike Jordanian examples (Barge et al. 2015; Betts, Burke 2015; Kempe, Al-Malabeh 2013), they lack numerous converging walls and dozens of cells; unlike Arabian kites (Kennedy 2021), they do not include multiple nested enclosures; and unlike some Central Asian sites (Ягодин 1991; Amirov et al. 2015; Barge et al. 2016) they rarely feature smaller subsidiary enclosures attached to the main structure. In terms of both scale and design, Armenian kites most closely parallel those of northern Mesopotamia (Iraq, Turkey, northern Syria), reflecting geographical proximity and shared cultural spheres.

By virtue of their structural diversity, and high state of preservation, Armenian kites offer a promising basis for addressing broader questions of diffusion, regional adaptation, and the function of these constructions.

Field Investigations and Archaeological Context

Excavations of Armenian kites have been carried out by several collaborative teams, including expeditions of the Institute of Archaeology and Ethnography of the National Academy of Sciences of Armenia, the University of Haifa, and the Globalkites project.

The Armenian–Israeli team excavated the Aghavnatun 1 kite, together with the V-shaped structures Aghavnatun 2, 3, and Lernamerdz 1. At Aghavnatun 1, OSL samples taken from the sediments of a cell suggested a Late Bronze Age date, while surface finds including pottery, stone tools, and arrowheads, ranged from the Chalcolithic to the Late Bronze Age (Nadel et al. 2015, 120, 141).

In parallel, a series of radiocarbon and OSL dates were produced within the framework of the Globalkites project, providing *termini ante quem* for several sites, including the 14th–16th centuries AD at Karakert 8 (AM 140), the 7th century AD at Karakert 5 (AM 59), the 2nd century BC at Shenik 1 (AM 10), the 3rd century BC at Aragatsavan 4 (AM 4), the 8th century BC at Karakert 9 (AM 15), and the late 2nd millennium BC at Karakert 10 (AM 14) (Barge et al. 2021a, tab. 4/1). The Armenian–French team also excavated an agglomerative house at Arteni 1, about one kilometer southwest of the Ddmasar 4 kite, dated to the Late Bronze Age (15th–13th centuries BC) (Kalantaryan et al. 2017).

The excavations of the team of the Institute of Archaeology and Ethnography of Armenia at the Aragatsavan and Tlik complexes have shed light on the associated settlements of the kites. At the Aragatsavan complex the adjacent settlements belong to the Middle Bronze Age (21st–20th centuries BC). At Tlik, settlements provide further chronological anchors: Tlik 4 dates to the Middle Bronze Age (20th–18th centuries BC), while Tlik 2 preserves multiple layers from the Early and Late Iron Age (8th–5th centuries BC) through to the Classical and Medieval periods (Շախմուրադյան 2023, 79–80).

Although finds remain relatively scarce, these investigations demonstrate that Armenian kites are not isolated features but integral parts of broader archaeological landscapes. Their associations with settlements, necropoleis, and other monuments place them firmly within regional cultural traditions, while the growing body of absolute dates, though still limited, offers a picture of their long and complex histories of construction and use.

Comparative Studies within Wider Frameworks

Inclusion of Armenia in the distribution zone of kites has extended the phenomenon into the Armenian Highlands and provided a new basis for interregional

comparison. Within the framework of the Globalkites project, as well as by the author, comparative morphological studies have examined Armenian examples alongside those from the Near East and Central Asia (Barge et al. 2015a, b; Շախմուրադյան 2023). These analyses demonstrate that Armenian kites embody the essential structural elements of the wider tradition: converging stone alignments, large enclosures, external cells, and dry-stone construction. At the same time, they display distinctive regional features, lacking the numerous converging walls and multiple cells characteristic of Jordan, the nested enclosures of Arabia, or the subsidiary attachments noted in parts of Central Asia. In terms of scale and design, Armenian examples most closely parallel those of northern Mesopotamia (Iraq, Turkey, northern Syria). Placed within this comparative framework, the Armenian material contributes directly to broader studies of kite morphology across the Near East and Central Asia.

Gaps and Debates

Despite notable achievements in the study of kites in Armenia, many fundamental issues remain unresolved. These gaps stem both from methodological limitations and from the inherent complexity of interpreting large-scale prehistoric structures that yield little direct material evidence. The principal gaps concern chronology and function.

Chronological Uncertainty

Despite several excavation campaigns and the first series of radiocarbon and OSL analyses, the chronology of kites in Armenia remains only partially defined. Excavations at Aghavnatun 1 yielded OSL samples pointing to a Late Bronze Age date, while surface finds extended back to the Chalcolithic (Nadel et al. 2015: 120, 141). The Globalkites project has produced additional dates that establish *termini ante quem* for a number of sites, ranging from the late 2nd millennium BC at Karakert 10 to the Medieval period at Karakert 8 (Barge et al. 2021a, tab. 4/1). The Armenian–French excavations at Arteni 1 likewise provided a Late Bronze Age date for an associated agglomerative house (Kalantaryan et al. 2017). Work at the Aragatsavan and Tlik complexes indicates that the settlements in the vicinity of kites date from the Middle Bronze Age through the Iron Age (Շախմուրադյան 2023, 79–80).

Taken together, these results offer important chronological anchors, yet they remain fragmentary and inconclusive. The available dates are few, often indirect, and sometimes reflect later horizons of use rather than the original construction of the kites. In many cases, chronology is inferred from associations with nearby settlements, burials, or surface material, rather than from secure stratified contexts. As a result, the absolute dating of Armenian kites is still uncertain, and major questions persist as to whether they were first built in the Bronze Age, or whether their origins might extend into earlier periods, as documented elsewhere in the

Near East (Helms, Betts 1987; Betts, Burke 2015; Akkermans et al. 2014; al-Khasawneh et al. 2019). Addressing these gaps requires a larger and more systematic program of radiocarbon and OSL analyses directly tied to the structures themselves.

Functional Interpretations

The debate over the function of kites is perhaps the most long-standing and contentious issue. The dominant interpretation, supported by comparative evidence from the Levant, Arabia, and Central Asia, is that kites were large-scale hunting traps designed to capture herds of wild ungulates. The converging walls would channel animals into enclosures, then to pits, where they were killed en masse (Barge et al. 2021a, Crassard et al. 2022; Rosen, Perevolotsky 1998; Zeder et al. 2013).

Yet alternative interpretations persist. Some scholars suggest a pastoral function, viewing the enclosures as corrals for domestic animals (Échallier, Braemer 1995; Kirkbride 1946; Malkinson et al. 2017). Others emphasize ritual or symbolic roles, arguing that the monumental scale, shapes, and associations with petroglyphs and cemeteries indicate that kites may have been imbued with meanings beyond subsistence (Kobusiewicz 1999; Շախմուրադյան 2023).

The scarcity of direct archaeological evidence exacerbates these debates. Few faunal assemblages have been recovered from kite contexts in Armenia, and none are sufficient to demonstrate mass kills or specialized butchery. Without such evidence, interpretations rely heavily on analogy, which, while valuable, remains speculative.

Methodological Limitations

The interpretation of Armenian kites is further hindered by methodological challenges. Excavations have been limited in scale, often revealing only partial sections of walls or enclosures. Large-scale excavation is difficult due to the immense size of the structures. The scarcity of associated cultural material has made it difficult to reconstruct the activities that took place within or around the kites. Remote sensing has provided valuable data, but it cannot resolve questions of chronology or function on its own. Similarly, while visibility and spatial analyses offer suggestive patterns, they remain probabilistic rather than conclusive. The absence of faunal remains or artifacts directly linked to kite use represents a significant gap in the evidentiary base.

Conservation and Heritage Protection

Beyond academic debates, kites in Armenia face practical challenges of conservation and heritage management. Many are located in open mountain environments, exposed to natural erosion and human activity. Agricultural expansion, construction, mining, and stone removal threaten the integrity of these structures. Unlike more conspicuous monuments such as fortresses or towers, kites are difficult

to recognize on the ground, leaving them particularly vulnerable to neglect or destruction. There is also a problem of public awareness. Kites are little known outside specialist circles, and their protection depends on integrating them into broader heritage frameworks. Without legal protection, site management plans, or community involvement, many kites risk further damage. This issue is compounded by the fact that most kites remain unpublished or only briefly described, limiting their visibility in both scholarly and public domains.

Broader Theoretical Debates

Finally, the kites are entangled in wider theoretical debates about prehistoric social organization, landscape use, and human-animal relations. Were these installations instruments of cooperative hunting, implying the participation of large groups and complex coordination? Were they used as enclosures for domestic animals, reflecting the pastoral and economic functions of such structures? Did they serve as territorial markers delineating controlled communal spaces? Or were they, rather, ritual landscapes? Each of these perspectives carries implications for how we understand the societies that built and used the kites. At present, the lack of decisive archaeological evidence prevents firm conclusions. Nevertheless, the very multiplicity of interpretations underscores the importance of these structures for theoretical discussions.

Future Directions

The archaeology of kites in Armenia has reached a stage where achievements must be consolidated and outstanding problems addressed through new research strategies.

Perhaps the most urgent priority is the establishment of reliable absolute dates. Without firm chronological anchors, interpretations of function, cultural affiliation, and regional significance remain speculative. Radiocarbon dating of organic remains, if recovered from kite contexts, would provide the most direct evidence. However, given the paucity of such material, alternative methods such as optically stimulated luminescence (OSL) should be employed to date sediments from construction layers or associated deposits. Systematic sampling during future excavations, combined with laboratory collaboration, could gradually build a chronological framework that situates Armenian kites within the Bronze Age or possibly earlier horizons.

The next essential step is the expansion of field surveys and excavations. While remote sensing has revolutionized the study of kites, excavation remains indispensable for addressing questions of their construction, use, and abandonment. Future projects should combine large-scale mapping with targeted excavation of key sites, chosen for their morphological diversity and strategic location. At least some kites should be excavated extensively enough to expose enclosures, entrances, and associated features. Surveys should also expand to underexplored regions of Armenia, particularly the southern highlands, where comparable structures may yet be

discovered. By broadening the geographical coverage, it can be assessed whether kites were confined to specific ecological niches or distributed more widely across the Armenian Highlands.

The research of kites should not only solve empirical problems but also contribute to broader theoretical debates. By addressing questions of landscape modification, and human-animal relations, kites can illuminate the social dynamics of prehistoric communities. Future work should explore whether the construction and use of kites imply hierarchical leadership or collective decision-making, whether they represent strategies of subsistence in challenging environments, and how they articulate with ritual practices evident in funerary contexts.

Through such inquiries, kites can be repositioned from enigmatic structures to key evidence for understanding the complexity of prehistoric societies. They can serve as case studies in how humans created monumental infrastructures to manage ecological resources, organize collective labor, and inscribe meanings onto the landscape.

The preservation of kites is as important as their study. Many structures are endangered by mining, and construction, making heritage management an urgent concern. Future directions should therefore include the development of protective measures, such as legal recognition of kite sites, the creation of buffer zones, and the integration of kites into national heritage inventories.

Conclusion

The archaeology of kites in Armenia has progressed from scattered observations to a structured field of research, producing significant achievements while also revealing critical gaps and charting clear future directions. Among the main accomplishments are the discovery and mapping of nearly two hundred kites, the integration of satellite imagery, drones, and GIS technologies into their documentation, and the establishment of morphological characteristics and regional distributions. Excavations, though still limited, currently point to the integration of Armenian kites within Middle and Late Bronze Age, as suggested by both OSL results and associated archaeological contexts. At the same time, the presence of the Early Neolithic settlement at Lernagog, situated in close proximity to a kite, leaves open the possibility of an earlier origin for the phenomenon in this region. In either case, the kites are embedded within broader prehistoric landscapes that encompass settlements, necropoleis, tower structures, petroglyphic complexes, and other types of archaeological monuments. In doing so, the evidence from Armenia has extended the known range of the kite phenomenon and enriched comparative studies across the Near East and Central Asia.

At the same time, major uncertainties remain. Chronology is not yet firmly established, as available radiocarbon and OSL dates provide only fragmentary and often indirect anchors. The function of kites likewise continues to be debated, oscillating between hunting, pastoral, and ritual interpretations in the absence of

decisive faunal or cultural assemblages. Methodological constraints, from the sheer scale of the monuments to the scarcity of associated finds, further complicate efforts to reconstruct their original role and significance.

Looking forward, future research must focus on consolidating chronological frameworks through systematic radiocarbon and OSL sampling, expanding excavation programs to encompass diverse morphological types, and extending surveys into underexplored areas of the Armenian Highlands. Equally urgent is the need to safeguard these structures through legal protection, heritage management strategies, and public engagement, ensuring that they are recognized as integral parts of Armenia's archaeological record.

In summary, the archaeology of kites in Armenia demonstrates both how far research has advanced and how much remains to be done. By addressing the gaps in chronology and function, while simultaneously developing strategies for preservation and outreach, future scholarship can transform these enigmatic constructions into an important basis for understanding the social, economic, and symbolic dimensions of prehistoric societies in the Armenian Highlands and their connections to the wider ancient world.

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