Acta Globalis Humanitatis et Linguarum
*ISSN: 3030-1718*
*Vol. 3, No. 1 (2026): Ver*

# Geometric Ornamentation in Chalcolithic Pottery from Nakhchivan

[1] **Elmar Bakhshaliyev**
https://doi.org/10.69760/aghel.026001010

| Keywords | Abstract |
| --- | --- |
| Chalcolithic ceramics<br>geometric patterns<br>regional interaction<br>visual system | Geometric patterns on Chalcolithic ceramics from the Nakhchivan region are a stable visual component of local material culture. Despite a limited range of motifs, these patterns show strong compositional regularity, technical consistency, and typological continuity. Typological analysis indicates that the decorative elements form a coherent visual system grounded in standardised forms and production practices. From a cognitive perspective, this stability may be linked to repetitive gestures and motor routines in ceramic manufacture, supporting the stabilization of form and visual order. Simple, rhythmic geometric configurations further offer advantages for motor control and attentional organisation. Regional comparisons suggest that Nakhchivan's ceramic ornamentation developed in close interaction with the Urmia basin and the wider Near Eastern cultural sphere. Painted assemblages from Nakhchivan Tepe show affinities with the Dalma Tepe tradition, while material from Bülövqaya indicates connections with Halaf and Ubaid contexts. Overall, Chalcolithic ceramic ornamentation in Nakhchivan reflects processes shaped by both local continuity and interregional interaction. |

## Introduction

The Chalcolithic period in the Nakhchivan region is characterised by the intensive development of material culture, particularly in ceramic production. Among the most persistent and widely distributed features of Chalcolithic ceramics are geometric decorative patterns, which show notable continuity and standardisation over extended periods. The sustained reproduction of these patterns suggests they are unlikely to represent arbitrary ornamental choices. Instead, they can be understood as outcomes of recurrent behavioural routines and structured modes of engagement embedded in ceramic production practices (Bakhshaliyev, 2024, p. 56). From this perspective, Chalcolithic ceramics may be approached not only as indicators of technological

[1] BAKHSHALIYEV, E., Nakhchivan Branch, Azerbaijan National Academy of Sciences. Email: elmarbakhshaliev@gmail.com. ORCID: https://orcid.org/0000-0003-3360-0961

development but also as material contexts through which shifts in cognitive organisation become archaeologically visible. Within traditional archaeological research, decorative patterns on ceramics have primarily been treated as typological and chronological markers. Such approaches have proven instrumental in identifying regional parallels and reconstructing networks of cultural interaction (Bakhshaliyev et al., 2018, pp. 18, 21; Bakhshaliyev, 2018, p. 97; Bakhshaliyev et al., 2025, p. 13), thereby contributing to broader reconstructions of Chalcolithic cultural trajectories. However, a strictly typological framework remains limited in its capacity to account for the relationships between decorative practices, production processes, embodied behaviour, and the cognitive mechanisms that underlie them (Malafouris & Renfrew, 2008, p. 382).

Recent studies by Vali Bakhshaliyev have examined Chalcolithic settlement patterns in Nakhchivan, primarily through analyses of material culture and habitation characteristics (Bakhshaliyev, 2022, pp. 53-150). This line of research foregrounds space as a socially constituted domain rather than a purely functional setting. Complementary interpretations further suggest that architectural forms within Chalcolithic settlements emerged through dynamic interactions with ideological frameworks and belief systems (Bakhshaliyev, 2021, p. 172). Taken together, these perspectives create a conceptual opening for interpreting ceramic ornamentation not merely as a descriptive archaeological attribute but as an active component within broader social, cognitive, and symbolic processes. At the same time, the limited availability of contextual data constrains the direct reconstruction of ancient worldviews from spatial and architectural evidence alone. Under such conditions, systems of ornamentation on ceramic vessels acquire particular interpretive significance. Decorative patterns provide one of the most accessible material domains through which symbolic modes of thought, cognitive models, and cosmological conceptions may be approached. Despite this potential, the mental and perceptual dimensions of Chalcolithic ceramic ornamentation in Nakhchivan have not yet been examined systematically.

In contemporary cognitive archaeology, material culture is no longer viewed as a passive outcome of human thought. Instead, sustained engagement with material forms is recognised as constitutive of modes of thinking (Malafouris & Renfrew, 2008, p. 382). From this perspective, material culture actively participates in the formation, stabilization, and transmission of cognitive processes over time (Malafouris, 2009, p. 258; Malafouris, 2010, p. 51). Studies of archaic systems of thought further indicate that repetition and formal order function as key mechanisms through which human communities experience the world as stable and intelligible (Frazer, 1912, p. 28). Recurrent visual forms, particularly within ritualised contexts, contribute to the maintenance of this perceived stability. In this study, geometric patterns observed on Chalcolithic ceramics from Nakhchivan are examined with respect to form, cognition, and perception. Rather than treating these patterns as decorative or purely symbolic elements, the analysis seeks to clarify their role as material means through which cognitive structures are enacted, reinforced, and sustained within Chalcolithic communities.

**Typology of Geometric Patterns in Chalcolithic Ceramics**

The typological analysis of geometric patterns on Chalcolithic ceramics from the Nakhchivan region is grounded in considerations of form, compositional organisation, and application technique. Rather than exhibiting extensive formal variability, the decorative repertoire of Chalcolithic ceramics from Nakhchivan is characterised by the recurrent use of a limited set of motifs, combined with a high degree of compositional regularity. This consistency suggests that geometric patterns should not be understood as arbitrary decorative additions but rather as elements of a stable, socially maintained visual tradition.

Geometric motifs applied to ceramic surfaces can be broadly classified as simple or composite. Simple motifs consist primarily of parallel lines, zigzag bands, and wavy linear elements. Composite motifs include superimposed triangles, contiguous rhomboid forms, grid-like arrangements, and intersecting linear structures. These motifs were rarely applied as isolated visual units. Instead, they were organized into continuous, repetitive sequences, indicating the presence of shared production practices and collectively transmitted decorative conventions (Baxşəliyev, 2018, p. 96).

From a typological perspective, the spatial distribution of geometric ornamentation on ceramic vessels is also significant. In most cases, decoration is concentrated along the rim and the upper portion of the vessel body, areas that are both visually prominent and readily perceptible during use. Painted vessels from the settlements of Nakhchivantepe (fig. 1) and Bülövqaya (fig.2) show that geometric patterns were arranged in distinct compositional schemes across different vessel zones. This variation suggests that decorative organisation did not arise from individual aesthetic preferences but followed shared, socially regulated compositional principles (Baxşəliyev & Baxşəliyev, 2023, p. 19). The typology of geometric ornamentation is closely related to ceramic production techniques. In Neolithic examples made from chaff-tempered clay, decorative elements were predominantly executed as broad bands and relatively simple linear combinations. By contrast, vessels produced from untempered clay and fired at higher temperatures during the Chalcolithic period exhibit denser, more rhythmically structured, and more precisely executed ornamental compositions. This developmental pattern points to a direct relationship between advances in ceramic technology and the emergence of increasingly controlled and standardised decorative schemes (Baxşəliyev, 2018, p. 92).

**Figure 1:** Painted pottery from the Nakhchivantepe.


Regional comparison further situates the geometric repertoire of Nakhchivan Chalcolithic ceramics within a broader cultural horizon. Ceramic assemblages attributed to the Dalma Tepe culture of the Urmia Basin display distinctive typological structures and decorative conventions (Hamlin, 1975, p. 121, Fig. 4), and Nakhchivan ceramics show close affinities with these (Baxşəliyev & Baxşəliyev, 2023, p. 7). In particular, materials from the Bülövqaya settlement are characterised by ornamental compositions featuring net-like triangular arrangements, contiguous rhombi, and intersecting linear elements. Comparable pattern types have also been documented at other Chalcolithic sites in Nakhchivan, as well as in the Urmia Basin and parts of Northern Mesopotamia (Baxşəliyev et al., 2025, p. 19). These similarities are best understood not as evidence of direct formal equivalence or unilinear diffusion, but as the outcome of shared visual strategies that emerged under comparable ecological and social conditions. From this perspective, the typology of geometric patterns in Nakhchivan Chalcolithic ceramics should not be treated merely as a classificatory system based on form. Instead, it constitutes an analytical framework through which ceramic production practices, visual standardisation, and mechanisms of cultural transmission can be examined. The proposed typological organisation thus provides a methodological foundation for the cognitive and neuroarchaeological interpretations developed in the following sections.

## Cognitive and Symbolic Functions of Geometric Patterns

Interpretations of geometric patterns on ceramic vessels have generally been approached in archaeological scholarship through two principal theoretical perspectives. The first interprets patterned decoration as a visual medium through which affiliation, interaction, and social differentiation are communicated (Wobst, 1977, pp. 16-17; Wiessner, 1983, p. 256; Hegmon, 1992, p. 518). The second emphasizes the relationship between geometric form, perception, and memory, arguing that such motifs should not be understood as mere ornamentation but as

material expressions of cognitive processes (Renfrew & Zubrow, 1994, p. 187). In contemporary archaeological discourse, these perspectives are no longer treated as mutually exclusive explanatory frameworks. Instead, they are increasingly applied together within the same material contexts, reflecting a broader recognition that the social and cognitive dimensions of material culture are deeply interwoven (Wynn et al., 2024, pp. 485, 503, 1216). Within this integrated perspective, geometric patterns are understood not only as mechanisms of social communication and differentiation but also as material means through which thought is stabilized, reproduced, and transmitted within shared social environments (Malafouris, 2018, p. 755; Overmann & Wynn, 2019, p. 464).

**Figure 2:** Painted pottery from the Bulovkaya.

1   2

The socio-stylistic approach is grounded in classical theories of style, in which decorative patterns serve as media through which social groups articulate identity, affiliation, and difference. Within this framework, Wiessner emphasizes that stylistic choices are not arbitrary but are embedded in social relations and serve as carriers of social information (Wiessner, 1983, p. 268). Hegmon further develops this position by arguing that patterned decoration should not be regarded merely as an aesthetic preference but as an analytical domain through which social processes can be traced archaeologically (Hegmon, 1992, p. 518).

In the Chalcolithic ceramics of Nakhchivan, the repeated appearance of specific geometric motifs across multiple settlements is particularly significant. This repetition suggests that decorative practices were guided less by individual potters' preferences than by shared visual norms and conventions (Baxşəliyev, 2018, p. 95). From a cognitive archaeological perspective informed by Material Engagement Theory, these patterns are not conceived as ornaments designed solely in the mind. Instead, they emerge through sustained bodily action and socially embedded production practices that shape and stabilize modes of thinking.

Within this view of material culture as an active component of cognition, cognition is understood to emerge through the dynamic interaction of brain, body, and material forms, rather than residing exclusively within the brain (Malafouris & Renfrew, 2013, pp. 2-3, 17; Malafouris, 2018, p. 764). Accordingly, the repeated geometric patterns observed on ceramic surfaces should not be treated merely as finished visual outcomes. Instead, they can be understood as material manifestations of cognitive processes that take shape during production and are reinforced through repetition, embodied practice, and behavioural regularity. The repetitive hand movements involved in executing ornamentation contribute to stabilizing production behaviour and transform individual acts into shared visual representations preserved within collective memory. In the Nakhchivan assemblages, technical consistency, a limited range of motifs, and the sequential organisation of compositions closely align with this interpretive framework (Baxşəliyev & Baxşəliyev, 2023, p. 14). In this context, symmetry and repetition play a central role. Washburn conceptualises symmetry not merely as an aesthetic property but as an organising principle of perception, social order, and structured thought (Washburn & Crowe, 2004, p. 304). More recent studies similarly suggest that formally stable, repetitively structured visual forms play a key role in stabilizing cognitive processes, functioning as mechanisms through which knowledge is materially mediated and transmitted with continuity over time (Overmann, 2015, p. 4; Bruner, 2023, p. 18; De Cruze, 2024, pp. 98-99).

The symbolic functions of geometric patterns have been interpreted through several complementary analytical approaches. One emphasizes their role in expressing group identity and mediating social relationships (Wobst, 1977, p. 12; Wiessner, 1983, p. 257). A second associate geometric motifs with ritual behaviour, protective beliefs, and symbolic practices, situating patterned decoration within broader cosmological and ritual frameworks (Hodder, 1982, p. 227; Insoll, 2004, p. 158; David & Kramer, 2001, p. 171). A third perspective treats motifs as formally stabilized markers transmitted within social environments, thereby making specific spatial and temporal contexts recognisable in the archaeological record. Through processes of social transmission, repetition, and standardisation, visual forms acquire diagnostic value while enhancing perceptual differentiation (Sackett, 1977, p. 371; Lewis-Williams, 2002, p. 47).

In the case of Nakhchivan ceramics, the presence of geometric patterns exhibiting broad geographic parallels indicates complex historical processes that cannot be explained solely by direct cultural transmission. Instead, these correspondences are best understood as the outcome of multiple, overlapping mechanisms, including migration, interregional interaction, and local adaptation, which should be regarded as complementary rather than mutually exclusive explanatory models (Baxşəliyev et al., 2025, pp. 19-20). Alternative frameworks have likewise emphasized the circulation of shared visual repertoires through extensive networks of contact, with comparable forms adapted to distinct social and environmental contexts (Childe, 2003, p. 31; Kristiansen, 1998, p. 64). Other approaches have argued for independent emergence, suggesting that similar geometric forms may arise autonomously in different regions under

comparable conditions (Sackett, 1982, p. 73). A more controversial line of interpretation links specific geometric motifs to internally generated visual patterns produced by the human perceptual system. Lewis-Williams and Dowson have proposed that some formal elements may originate from entoptic visual phenomena (Lewis-Williams & Dowson, 1988, p. 202). This hypothesis has been subject to sustained critique, particularly on methodological grounds, with scholars cautioning against attributing similar formal structures universally to identical cognitive or neurophysiological processes (Dronfield, 1996, p. 379; Bahn, 1997, p. 65). Taken together, these approaches provide a conceptual framework for situating Chalcolithic ceramic ornamentation within broader discussions of cognition, perception, and material practice.

**Interpreting Ceramic Ornamentation in a Neuroarchaeological Context**

The primary analytical significance of the geometric patterns observed on Chalcolithic ceramics from Nakhchivan lies not in what these motifs explicitly depict, but in why particular forms were selectively maintained and repeatedly reproduced over extended periods of production. Rather than serving as representational images, these patterns draw attention to the processes through which visual forms were stabilized within ceramic-making traditions. Within contemporary archaeological scholarship, this issue has been addressed through a range of interpretive frameworks that differ in their methodological assumptions and explanatory scope.

From a neuroarchaeological perspective, cognition is not understood as a process confined solely to the brain. Instead, it is conceived as a dynamic system that emerges through sustained interaction between bodily movement and the material environment (Malafouris, 2009, p. 255; Malafouris, 2013, p. 3). Within this framework, the geometric patterns applied to ceramic surfaces should not be interpreted as material representations of pre-existing ideas. Instead, they constitute material traces of cognitive habits formed through the repetition of regulated, sequential actions during production.

The execution of ceramic ornamentation requires sustained motor coordination and controlled bodily movement. Repetitive engagement with such patterned actions contributes to the stabilization of behaviour, whereby specific formal configurations are maintained on vessel surfaces as normative visual structures. An explanation grounded in interaction with material culture is therefore more analytically productive in this context. As Malafouris emphasizes, material objects are not merely tools employed by humans but actively participate in shaping cognitive processes (Malafouris, 2013, p. 191). The long-term repetition of identical motifs across ceramic assemblages provides empirical support for this position. In such cases, stability is preserved not in the motif as an abstract visual form, but in the manner of its execution and in the embodied sequences of action through which it is produced.

The typological continuity observed in Chalcolithic ceramics from Nakhchivan can thus be understood as a precise instance of visual stabilization (Baxşəliyev, 2018, p. 93; Baxşəliyev &

Baxşəliyev, 2023, p. 8). From a complementary perspective, cognition is viewed as a distributed phenomenon that emerges through interaction with the surrounding environment. Within this model, knowledge is not localised within individual minds but distributed across people, material objects, and modes of production (Hutchins, 1995, p. 128). Archaeologically, this implies that ceramic ornamentation cannot be interpreted as the product of individual artisans' personal creativity. Instead, these patterns represent the surface manifestations of taught, repeated, and collectively maintained production practices.

Across multiple Chalcolithic settlements in the Nakhchivan region, the same categories of geometric motifs recur with notable consistency. The archaeological record thus indicates the existence of learned and transmitted technological routines embedded within the production process. Within a neuroarchaeological framework, such formal stability is not understood as a simple decorative preference. Instead, ornamentation is interpreted as the outcome of metaplastic processes shaped through long-term engagement with material practices. Repeated and formally simple geometric motifs are acquired through sustained body-object-environment interaction during production. These characteristics reduce cognitive load during learning and execution. While early stages of practice require heightened attention and motor control, repeated engagement gradually leads to behavioural automatization, allowing production to proceed with reduced conscious monitoring. Through this process, technical behaviour becomes standardised and transmissible at a collective level. As emphasized by Malafouris, such stabilization rests on the reciprocal interaction between neural plasticity and the formative role of material culture (Malafouris, 2010, p. 58).

A further dimension concerns social recognition. Stabilized visual forms generate a shared and widely recognizable stylistic framework, within which ceramic decoration functions as a socially legible marker linking material products to specific communities of practice (Wiessner, 1983, p. 257; Hegmon, 1992, p. 518).

At the same time, a cautious position has been articulated within the literature regarding cognitively oriented interpretations. Some scholars emphasize that cognitive processes cannot be directly inferred from archaeological material alone and caution that such approaches risk obscuring cultural variability (Wynn, 1989, p. 5; Killin, 2023, p. 540). Accordingly, within contemporary scholarship, neuroarchaeological interpretations are best understood not as definitive conclusions but as interpretive models grounded in material evidence and constrained by archaeological context.

The interpretive landscape is further complicated by regional interaction spheres involving the Urmia Basin and Northern Mesopotamia. Ceramic assemblages from Nakhchivantepe indicate that painted vessels were embedded within broader Near Eastern ceramic traditions, whereas stamped pottery exhibits stronger affinities with Neolithic traditions of the Karabakh region (Baxşəliyev & Baxşəliyev, 2023, p. 23). Ceramics from Bülövqaya, although broadly

contemporary, display closer ornamental affinities with Halaf and Ubaid traditions than with materials from Nakhchivantepe. These differences are not best explained through models of direct migration. Instead, they are more plausibly understood within a framework of long-term regional interaction, parallel production practices, and shared technological knowledge (Baxşəliyev et al., 2025, pp. 19-21).

Accordingly, the primary significance of geometric ornamentation on Chalcolithic pottery does not lie solely in its capacity to convey specific symbolic meanings. Instead, the critical issue concerns how these forms were learned, how they were repeatedly reproduced, and why they were maintained over time. Recurrent geometric motifs can thus be understood to contribute to the stabilisation of thought within a shared social environment. In the Chalcolithic context of Nakhchivan, ceramic ornamentation may therefore be interpreted as the outcome of dynamic interactions between cognition, embodied behaviour, and material culture.

**Discussion**

The results of this study suggest that the geometric patterns observed on Chalcolithic ceramics from Nakhchivan constitute a structured and cognitively grounded visual system rather than the outcome of arbitrary decorative practice. When examined through an integrated typological, cognitive, and neuroarchaeological framework, these patterns reveal a limited repertoire of forms and motifs combined with a high degree of compositional and procedural stability. Such regularity indicates that geometric ornamentation functioned as a normalized visual system embedded within established traditions of ceramic production and decoration (Baxşəliyev, 2018, p. 94; Baxşəliyev & Baxşəliyev, 2023, p. 13).

From a cognitive perspective, this typological stability cannot be fully explained by aesthetic preference or social convention alone. Instead, the repeated gestures and ordered sequences involved in the production of geometric ornamentation point to its role in shaping and reinforcing habitual modes of cognition. Within this interpretive framework, material culture is not understood merely as an external outcome of thought, but as an active medium through which cognitive processes are formed, stabilized, and reproduced over time (Malafouris, 2013, p. 17; Malafouris, 2018, p. 760). A neuroarchaeological perspective further strengthens this interpretation by situating the production of geometric patterns within embodied networks of manual motor activity, sustained attention, and procedural memory. Repetitive geometric compositions facilitate learning processes, normalize behavior, and contribute to the standardization of production practices, thereby supporting the transmission of technical knowledge across generations (Hutchins, 1995, p. 129; Malafouris, 2010, p. 60).

In this context, the typological continuity observed in Nakhchivan Chalcolithic ceramics should not be interpreted solely as the persistence of cultural tradition. Instead, it can be understood as an indicator of the close relationship between production processes and cognitively stabilized

models operating within shared social environments. Regional comparison situates these findings within a broader cultural and historical context. Typological similarities identified in assemblages from the Urmia Basin and Northern Mesopotamia may, in some cases, reflect direct cultural contact and historical interaction. However, the overall structure of geometric ornamentation cannot be adequately accounted for by a single, linear model of cultural diffusion.

Instead, these parallels are more plausibly interpreted as arising under comparable ecological conditions and shared economic strategies. They may also reflect partial convergence in production habits formed within similar modes of social organisation, rather than direct and uniform cultural transmission (Baxşəliyev & Baxşəliyev, 2023, p. 24; Baxşəliyev et al., 2025, p. 20). Contemporary interpretive approaches likewise emphasize the value of multi-centred and diachronic models that accommodate convergent developments shaped by environmental, economic, and social factors.

At the same time, the methodological limitations of cognitive and neuroarchaeological interpretations must be explicitly acknowledged. Archaeological materials do not provide direct access to mental processes, and interpretations linking material patterns to cognition necessarily remain inferential. For this reason, such explanations are best framed not as definitive conclusions but as theoretically informed models grounded in observable material regularities (Wynn, 1989, p. 4; Killin, 2023, p. 550). Adopting this position enhances analytical rigour while maintaining openness to alternative explanatory frameworks.

Overall, this discussion demonstrates that the significance of geometric ornamentation in Nakhchivan Chalcolithic ceramics extends beyond questions of symbolic meaning alone. Its primary analytical value lies in structuring ceramic production traditions and in stabilizing collective, embodied forms of memory. From this perspective, geometric ornamentation can be understood both as a mechanism that contributes to cognitive stabilization and as the material expression of shared visual norms operating within Chalcolithic social environments.

## Conclusion

This study has demonstrated that the geometric motifs on Chalcolithic pottery from the Nakhchivan region exhibit a relatively limited typological range. Despite this apparent restriction, these motifs evolved into highly structured visual forms, characterised by consistent sequences of application, compositional stability, and long-term regional continuity. These features indicate that Chalcolithic ceramic ornamentation cannot be understood as arbitrary decoration. Instead, it represents the material expression of a collectively transmitted tradition of production and visual ordering.

When considered alongside cognitive and neuroarchaeological perspectives, typological observations suggest that geometric motifs served purposes beyond mere aesthetics or purely symbolic functions. Embedded within repetitive production practices, these motifs functioned as

material means through which cognitive routines were formed, stabilised, and reproduced over time. The persistence of patterned decoration is therefore more plausibly explained by the continuity of learned production behaviours and normative practices than by the transmission of fixed or invariant symbolic meanings.

From this perspective, geometric ornamentation in Nakhchivan Chalcolithic ceramics should not be interpreted solely as an indicator of cultural interaction or external influence. Instead, it offers an analytical entry point for examining how cognition was structured and stabilized within shared social environments through material practice. The archaeological record further indicates that these processes did not unfold uniformly across the region but emerged in different configurations across distinct chronological phases and cultural contexts.

Ceramic assemblages from Nakhchivantepe, dated to the Early Chalcolithic and associated with an early phase of the Dalma Tepe cultural horizon, suggest that local visual traditions developed primarily on an indigenous basis. At the same time, certain ornamental features in this assemblage reflect broader visual principles comparable to those documented in Halaf and Ubaid contexts. By contrast, painted pottery from the Bülövqaya settlement, dated to the early fifth millennium BCE, exhibits ornamental characteristics distinct from those of the Dalma Tepe complex, suggesting more direct engagement with broader Near Eastern ceramic traditions.

Taken together, these findings indicate that a single migration-based or diffusionist model cannot adequately explain the development of Chalcolithic ceramic ornamentation in Nakhchivan. Instead, the evidence supports an interpretation in which ornamentation emerged through culturally mediated interactions occurring at different times and with varying intensities, alongside the transmission of technical knowledge and learning practices. In this sense, geometric motifs can be understood as material instruments that contributed to the stabilization of social cognition and the shaping of visual thinking within Chalcolithic communities. Their long-term persistence across the region is thus more plausibly linked to the continuity of production traditions and collective memory than to the endurance of specific symbolic content.

**Literature**

Bahn, P. G. (1997). *Membrane and numb brain: A close look at a recent claim for shamanism in Palaeolithic art*. *Rock Art Research*, 14(1), 62-67.

Baxşəliyev, E. (2018). Naxçıvan təpə yaşayış yerinin boyalı keramika məmulatı. *Azərbaycan Milli Elmlər Akademiyasının Xəbərləri. İctimai elmlər seriyası*, (2), 91-99.

Baxşəliyev, E. (2021). *Naxçıvanın qədim memarlığında inancların rolu*. Naxçıvan Universiteti. Elmi əsərlər, *(2)*, 164-174.

Baxşəliyev, V. (2023). *Naxçıvan arxeologiyası: Yeni tapıntılar işığında*. Naxçıvan: Əcəmi.

Baxşəliyev, V., & Baxşəliyev, E. (2023). *Dalmatəpə mədəniyyətinin mənşəyi*. Naxçıvan: Əcəmi.

Baxşəliyev, V., Quliyeva, Z., Həşimova, T., Mehbalıyev, K., & Baxşəliyev, E. (2018). *Naxçıvan təpə yaşayış yerində arxeoloji tədqiqatlar*. Əcəmi.

Bakhshaliyev, E. (2024). *The role of painted pottery from Nakhchivan Tepe in early Azerbaijani civilizations*. *Global Spectrum of Research and Humanities, 1*(2), 55-64. https://doi.org/10.69760/gsrh.01022024006

Bakhshaliyev, V., Ceylan, N., Bakhshaliyev, E., Hasanova, H., & Memmedova, Z. (2025). *An Ubaid settlement in the South Caucasus - Bülövkaya (Nakhchivan, Azerbaijan)*. Amisos, *10*(18), 13-32. https://doi.org/10.48122/amisos.1631186

Bruner, E. (Ed.). (2023). *Cognitive archaeology, body cognition, and the evolution of visuospatial perception*. Academic Press.

Childe, V. G. (1951). *Man makes himself*. The New American Library.

David, N., & Kramer, C. (2001). *Ethnoarchaeology in action*. Cambridge University Press.

De Cruz, H. (2024). *Wonderstruck: How wonder and awe shape the way we think*. Princeton University Press.

Dronfield, J. (1996). The vision thing: Diagnosis of endogenous derivation in abstract arts. *Current Anthropology, 37*(2), 373-391. https://www.jstor.org/stable/2744359

Frazer, J. G. (1912). *The golden bough: A study in magic and religion* (3rd ed., Part V: *Spirits of the corn and of the wild*, Vol. II). Macmillan.

Hamlin, C. (1975). Dalma Tepe. *Iran*, *13*, 111-127.

Hegmon, M. (1992). *Archaeological research on style*. Annual Review of Anthropology, 21, 517-536. https://doi.org/10.1146/annurev.an.21.100192.002505

Hodder, I. (1982). *Symbols in action: Ethnoarchaeological studies of material culture*. Cambridge University Press.

Hutchins, E. (1995). *Cognition in the wild*. MIT Press.

Insoll, T. (2004). *Archaeology, ritual, religion*. Routledge.

Killin, A., & Pain, R. (2023). How WEIRD is cognitive archaeology? Engaging with the challenge of cultural variation and sample diversity. *Review of Philosophy and Psychology, 14*(3), 539-563. https://doi.org/10.1007/s13164-021-00611-z

Kristiansen, K. (1998). *Europe before history: The societies of the European Bronze Age*. Cambridge University Press.

Lewis-Williams, D. (2002). *The mind in the cave: Consciousness and the origins of art*. Thames & Hudson.

Lewis-Williams, J. D., & Dowson, T. A. (1988). The signs of all times: Entoptic phenomena in Upper Palaeolithic art. *Current Anthropology, 29*(2), 201-245. https://www.jstor.org/stable/2743395

Malafouris, L. (2009). Neuroarchaeology: Exploring the links between neural and cultural plasticity. In J. Y. Chiao (Ed.), *Progress in Brain Research* (Vol. 178, pp. 253-261). Elsevier. https://doi.org/10.1016/S0079-6123(09)17819-6

Malafouris, L. (2010). Metaplasticity and the human becoming: Principles of neuroarchaeology. *Journal of Anthropological Sciences*, *88*, 49-72.

Malafouris, L. (2013). *How things shape the mind: A theory of material engagement*. The MIT Press.

Malafouris, L. (2018). Bringing things to mind: 4Es and material engagement. In S. J. Cowley & F. Vallée-Tourangeau (Eds.), *Cognition beyond the brain: Computation, interactivity and human artifice* (pp. 755-771). Springer.

Malafouris, L., & Renfrew, C. (2008). Introduction. *Cambridge Archaeological Journal*, *18*(3), 381-385. https://doi.org/10.1017/S0959774308000425

Overmann, K. A. (2015). The role of materiality in numerical cognition. *Quaternary International*. Advance online publication. https://doi.org/10.1016/j.quaint.2015.05.026

Overmann, K. A., & Wynn, T. (2019). Materiality and human cognition. *Journal of Archaeological Method and Theory, 26*(2), 457-478.

Renfrew, C., & Zubrow, E. B. W. (Eds.). (1994). *The ancient mind: Elements of cognitive archaeology*. Cambridge University Press.

Sackett, J. R. (1977). The meaning of style in archaeology: A general model. *American Antiquity, 42*(3), 369-380. https://doi.org/10.2307/279062

Sackett, J. R. (1982). Approaches to style in lithic archaeology. *Journal of Anthropological Archaeology, 1*, 59-112. https://doi.org/10.1016/0278-4165(82)90009-4

Washburn, D. K., & Crowe, D. W. (Eds.). (2004). *Symmetry comes of age: The role of pattern in culture*. University of Washington Press.

Wiessner, P. (1983). *Style and social information in Kalahari San projectile points*. American Antiquity, 48(2), 253-276. https://doi.org/10.2307/280450

Wobst, H. M. (1976). *Stylistic behavior and information exchange*. *Michigan Anthropological Papers*, 61, 317-342.

Wynn, T. (1989). *The evolution of spatial competence*. University of Illinois Press.

Received: 01.05.2025
Revised: 01.25.2025
Accepted: 02.08.2026
Published: 02.12.2026