پژوهش‌های باستان‌شناسی ایران

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انجمن علمی باستان‌شناسی ایران

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گروه باستان‌شناسی دانشکدهٔ هنر و معماری دانشگاه بوعلی سینا

ویژگی‌های کلی مقالهٔ مورد پذیرش

هدف نشریهٔ علمی‌پژوهشی *پژوهش‌های باستان‌شناسی ایران*، انتشار پژوهش‌ها و تجربه‌های علمی در زمینه‌های باستان‌شناسی، تاریخ هنر و معماری است.

نوشتار باید نتیجهٔ پژوهش‌های نویسنده (یا نویسندگان) بوده و در نشریهٔ دیگر منتشری نشده باشد.

پذیرش مقاله برای چاپ پس از داوری و با تأیید در جلسهٔ هیأت تحریریهٔ مجله است.

مسئولیت درستی نوشته‌ها با خود نویسنده (یا نویسندگان) مقاله است.

مقاله باید بر یک روی صفحهٔ استاندارد A۴ (۳۰×۲۱ سانتی‌متر) و با اندازهٔ (سایز) ۱۳ و قلم (فونت) B Mitra با فرمت ۲۰۰۳ و WORD ۲۰۰۷ و حواشی ۲/۵ سانتی‌متر تنظیم شده و در نهایت کل مقاله نباید از ۲۰ صفحهٔ استاندارد (۲۴ سطری) و از ۷۰۰۰ کلمه بیشتر باشد.

صفحهٔ اول باید شامل نام و نشانی کامل و شماره تلفن نویسنده، پست الکترونیک و محل خدمت و مرتبهٔ علمی وی (با دو زبان فارسی و انگلیسی) باشد.

در صورتی که مقاله برگرفته از پایان‌نامهٔ نویسنده باشد، مجوز و ذکر نام استاد راهنما الزامی است.

نوشتارها باید به‌ترتیب شامل: عنوان، چکیده، مقدمه، پیشینهٔ تحقیق، مبانی نظری، بدنهٔ تحقیق شامل: موضوعات مختلف، نتیجه‌گیری، سپاسگزاری، پی‌نوشت، فهرست منابع و بخش انگلیسی (مقالهٔ کوتاه ۱۲۰۰ کلمه‌ای) طبق راهنمای شیوه‌نامه باشد.

– «عنوان» شامل: موضوع مقاله، نام و نام خانوادگی نویسنده و مرتبهٔ علمی و دانشگاه محل تدریس و تحصیل وی است؛ عنوان مقاله باید گویا و بیانگر محتوای نوشتار باشد.

– «چکیده» شرح مختصر، اما جامعی از مسایل محتوایی و نوشتاری شامل: بیان مسئله، اهداف، ضرورت، سؤال، فرضیه، روش پژوهش، نکته‌های مهم و نتیجهٔ بحث است. چکیدهٔ فارسی نباید بیشتر یا کمتر از ۳۰۰ کلمه باشد.

– «واژگان کلیدی» شامل چهار تا شش واژهٔ تخصصی که بسامد و اهمیت آن در متن مقاله بیش از سایر واژگان بوده است.

– «مقدمه» شامل طرح مسئلهٔ اصلی است که مورد پذیرش و هدف پژوهشگر از بررسی و انتشار آن است؛ در این بخش باید به اجمال بیان مسئله،اهداف، ضرورت، سؤال، فرضیه، روش تحقیق و پیشینهٔ تحقیق، مشخص گردد که در طی بررسی به آن پرداخته شود.

– «روش تحقیق» شامل ذکر بسیار مختصر روش و ابداعات نویسنده در پژوهش در این زمینه است.

– «نتیجه‌گیری» شامل جمع‌بندی بحث متن مقاله با روش منطقی و مفید و روشنگر مسئلهٔ مورد پژوهش است و می‌تواند با جدول، تصویر و نمودار و.. هم‌راه باشد.

– «سپاسگزاری» در پایان این بخش نویسنده، راهنمایی دیگران –که در نوشتن مقاله مؤثر بوده‌اند– را یادآوری و از ایشان مختصراً سپاسگزاری می‌نماید (در صورت تمایل).

عناوین جدول‌ها با ذکر شماره در بالا و تصاویر، نقشه‌ها، طرح‌ها و نمودارها با ذکر شماره (توضیحات و ذکر منابع) در پایین ضروری است.

مجموع تصاویر، جداول، نمودارها، نقشه‌ها و طرح‌ها نباید درمجموع بیشتر از ۱۲ عدد باشند و همچنین باید در داخل متن قرار گرفته و یک نسخه از آن‌ها به‌صورت مجزا در یک فایل جداگانه، با فرمت JPEG و کیفیت DPI ۳۰۰ همراه مقاله در وب‌سایت نشریه بارگذاری گردد.

بخش خلاصهٔ انگلیسی:

این بخش باید به‌همراه مقاله در یک فایل جداگانه (Word) به‌عنوان مقالهٔ کوتاه انگلیسی به دفتر نشریه ارسال شود؛ که دربردارندهٔ مشخصات نویسندگان و ترجمهٔ کاملی از خلاصهٔ مقاله (به‌صورت مقاله‌ای کوتاه) در ۱۲۰۰ کلمه، شامل: چکیده (همان چکیدهٔ ۳۰۰ کلمهٔ فارسی و شامل: طرح و بیان مسأله، اهداف و ضرورت پژوهش، پرسش و فرضیهٔ (اصلی) پژوهش، روش تحقیق و مهم‌ترین یافته‌ها و نتیجه‌گیری)، مقدمه (۴۰۰ کلمه و شامل: طرح و بیان مسأله، اهداف و ضرورت پژوهش، پرسش و فرضیه (اصلی و فرعی) پژوهش، به‌صورت جامع)، متن مقاله (۳۰۰ کلمه)، نتیجه‌گیری (۲۰۰ کلمه) و تمامی منابع فارسی و انگلیسی مورداستفاده در تحقیق باشد.

شیوهٔ ارجاع به منابع:

ارجاعات مندرج در مقاله، مستند و مبتنی‌بر منابع خواهد بود و از معتبرترین منابع استفاده شود.

درباره آثار مفقود و نیز منسوب، به منابعی که از آن‌ها یاد کرده و یا توضیحی داده‌اند، ارجاع داده می‌شود.

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لاتین:

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ارجاع به کتاب:

Ward–Perkins, J. B., 1990, *Roman Imperial Architecture London*, Penguin Books.

ارجاع به مقالات مجله‌ها:

Trinkaus, E., 1982, "Artificial Cranial Deformation in the Shanidar 1 and 5 Neanderthals", *Current Anthropology* 23 (2): 198–199.

ارجاع به مجموعه مقالات:

Liverani, M., 2003, "The Rise and Fall of Media", Continuity of Empire (?): Assyria, Media, Persia, (Lanfranchi, G.B and others) eds. Padova, 1–12.

ارجاع به پایان‌نامه‌ها:

Blom, D.E., 1999, "TIvanaku Regional Interaction and Social Identity, a Bioarchaeological Approach", Ph.D. Thesis, Department of Anthropology, University of Chicago.

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فهرست مطالب

بسمه تعالی

گواهی رتبه علمی

جمهوری اسلامی ایران
وزارت علوم، تحقیقات و فناوری
معاونت پژوهش و فناوری
کمیسیون نشریات علمی

نشریه

پژوهش های باستان شناسی

با صاحب امتیازی دانشگاه بوعلی سینا بر اساس آیین‌نامه نشریات علمی مصوب ۱۳۹۸/۰۲/۰۲ در ارزیابی سال ۱۳۹۸، موفق به کسب رتبه الف شده است.

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Comparative Study of the Emergence and Evolution of Symbolic Behavior during the Middle Paleolithic Period, A Review

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Abstract

Symbols are signs interpreted through shared conventions, while symbolic behaviors denote their organized use to produce common social meanings or maintain collective identities. The origins of such behaviors extend to the African Middle Stone Age. Evidence includes ochre engravings, mortuary practices indicating awareness of death, the production of complex artifacts lacking clear utilitarian function, figurines, and personal ornaments such as shells and perforated animal teeth. These behaviors developed progressively in complexity and distribution, becoming a defining component of the cultural record associated with modern humans from the Upper Paleolithic Period onward. Recent discoveries indicate that Neanderthals also engaged in symbolic practices, though to a lesser extent than modern humans. This study examines archaeological evidence for the earliest symbolic behaviors in the Middle Paleolithic/Stone Age using a documentary (library-based) method and a descriptive-analytical approach. Data are systematically evaluated and organized by chronological context, spatial distribution, and authorship, distinguishing between archaic Homo sapiens and Neanderthals. The analysis addresses temporal gaps, trajectories of increasing complexity, and regional or intercontinental variability in the emergence of symbolic behaviors. It also compares the development of such behaviors in both groups within an archaeological framework. Investigating the origins of symbolic behavior is essential for understanding hominin cognitive development and cultural evolution, offering insights into social organization, ritual practices, and belief systems. The findings suggest that prevailing models, which posit either a rapid "behavioral revolution" or a gradual accumulation of symbolic traits from the early Middle Stone Age, inadequately explain the evolution and expansion of symbolic behaviors during the Upper Paleolithic/Late Stone Age. Instead, the "sawtooth" model of spatial-temporal discontinuities proposed by Scerri and Will provides a more robust framework for interpreting the emergence and variability of early symbolic behaviors.

Keywords: Symbolic Behavior, Archaeological Evidence, Middle Paleolithic Period, Middle Stone Age, Eurasia, Africa.

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Introduction

Symbols are signs that are comprehensible solely through social conventions or established rules, serving as physical or abstract manifestations of individual or collective beliefs. Symbolic behavior refers to the capacity of an individual or population to utilize a system of indexical symbols (Faules and Alexander, 1978: 5). Such behaviors fulfill functions including the generation, preservation, and validation of meanings shared within a society (Harris and Nelson, 2007; Jones, 1996), while also safeguarding social interactions. A key aspect of symbolic material culture—and indeed, the principal advantage of mediated symbolic behavior—lies in its ability to connect individuals or groups with others through the transmission of information (Wobst, 1977). Evidence of such behaviors, such as early engravings and personal ornaments, indicates their emergence during the Middle Paleolithic Period. The use of artifacts, including shell beads and engraved tools, could convey complex messages in the absence of the individual's physical presence. This capacity enabled human populations to establish communication with neighboring communities and more distant groups.

An examination of evidence pertaining to symbolic behavior indicates that such behaviors constituted an integral component of the complex social interactions and relationships of human populations at least as early as the Middle Paleolithic. To date, extensive research has been conducted regarding the emergence and transformation of symbolic behaviors. Scholars such as Francesco d'Errico (d'Errico et al., 2005, 2009), Christopher Henshilwood (Henshilwood et al., 2004, 2009, 2011), Marean (Marean et al., 2007), and McBrearty and Brooks (2000), alongside their colleagues, have been instrumental in investigating evidence associated with symbolic behavior, particularly during the Middle and Late Stone Ages. Evidence such as manufactured shell beads, incised objects, and the utilization of pigments in Africa serves as indicators of cognitive transformation and symbolism during these periods. These findings suggest that symbolic behavior emerged not as a sudden revolution, but rather through a gradual and cumulative process. Furthermore, evidence regarding the use of avian feathers and bones for symbolic purposes by Neanderthals (Finlayson et al., 2012; Morin and Laroulandie, 2012) implies that they did not differ significantly from Homo sapiens in cognitive capacity and indeed possessed symbolic and ritual behaviors.

This paper provides a comprehensive (but non-exhaustive) review of the earliest archaeological evidence associated with symbolic behavior during the Middle Paleolithic/Middle Stone Age. This corpus of evidence encompasses mortuary practices and death awareness, the manufacture of complex artifacts, the utilization of personal ornaments, the application of ochre, cave art, early engravings, and indications of complex linguistic structures. Previously, it was posited that such behaviors were exclusive to anatomically modern humans and restricted to the Upper Paleolithic Period (Mellars and Stringer, 1989). However, research from the past three decades on Middle Stone Age and Middle Paleolithic sites in Africa and Eurasia indicates that the origins of these behaviors extend considerably further back in time. Both archaic Homo sapiens and Neanderthals exhibited symbolic behaviors, albeit to a lesser degree than Homo sapiens sapiens. The evidence suggests that prior to the Upper Paleolithic, symbolic behaviors appeared sporadically (Scerri and Will, 2023) before becoming systematically established during the later period. Archaeological data imply that although the expression of these behaviors among Neanderthals may have been characterized by reduced complexity, intensity, and diversity compared to Homo sapiens, certain practices—such as the use of personal ornaments, complex bone tool technologies, death awareness and deliberate burial, and the production of seemingly non-optimal lithic tools—were shared by both groups.

This study aims to first examine the cultural evidence and potential indicators of symbolic behavior within Middle Paleolithic and Middle Stone Age contexts across Eurasia and Africa. Subsequently, this evidence will be categorized according to its content and the nature of cultural materials. Finally, the paper will address the attribution of the discussed evidence to either Homo sapiens or Neanderthal populations.

Complex and Modern Behavior in Archaeology

A central issue in paleoanthropology and archaeology concerns the behavioral transformation of the genus Homo and the emergence of behaviors generally categorized as modern or complex. Symbolic behavior is regarded as a subset of modern behavior. Modern and complex behavior is characterized by innovative and creative culture, language, art, religious beliefs, and complex technologies (d’Errico and Stringer, 2011), and is identifiable through the following attributes (McBrearty and Brooks, 2000):

1. Abstract thinking: The capacity to act upon abstract concepts without temporal or spatial constraints.

2. Precise and profound planning: The ability to formulate strategies based on prior experiences and execute them within a collective framework.

3. Technological, behavioral, and economic innovations.

4. Symbolic behavior: The ability to represent objects, individuals, and abstract concepts through conventional symbols—whether auditory or visual—and to materialize these symbols within cultural practice.

Furthermore, modern behavior encompasses additional components such as the capacity for complex problem-solving and long-term planning (Wynn and Coolidge, 2011). Archaeological artifacts produced through the anticipation of future actions, the forecasting of potential difficulties, and the consideration of responses to contingencies provide evidence of cognitive abilities associated with modern planning (Wadley, 2010).

Research by Wadley and other archaeologists posits that symbolism and the external (contra inside brain) storage of symbolic information—specifically within material culture—mark cultural modernity. These symbols include art, personal adornment, diverse blade production strategies, and the systematic use of space (Wadley, 2001). Some researchers argue that this evidence of "external information storage" indicates that the genus Homo was behaviorally modern as early as the Middle Pleistocene (see e.g.: Bednarik, 1992; 1995; 2003; Wurz, 1999; Foley and Lahr, 1997). However, other scholars contend that such evidence is insufficient in isolation, arguing that the repetition of symbols across time and space is required to confirm the establishment of modern behavior (e.g., Brumm and Moore, 2005; Davidson, 2002).

Consequently, various models have been proposed to interpret the emergence of symbolism and modern behaviors. Despite the aforementioned discourse, classic models remain prevalent. For instance, the "short-range" model posits that Upper Paleolithic symbolism and art appeared suddenly and extensively during a "symbolic explosion" between approximately 40,000 and 50,000 years ago (e.g., Mellars 1998; Klein and Edgar, 2002; Mellars and Stringer, 1989; Knight et al., 1995; Brumm and Moore, 2005). During this period, beads, personal ornaments, paintings, and naturalistic engravings (parietal art) became associated with abstract and social meanings, signifying a major transformation in human creativity (Ambrose, 1998; Klein and Edgar, 2002). Thus, within classic frameworks, the symbolic revolution represents a watershed moment in the history of Homo sapiens, during which artifacts imbued with symbolic meanings and social values came into widespread use. This transformation was accompanied by the advent of new technologies and a diversification of regional styles; for the first time in prehistory, tools were manufactured not solely for utilitarian purposes but also acquired distinct cultural and social significance (Mithen 1996; Dickson and Gang 2002; Brumm and Moore 2005).

Symbolism and Symbolic Behavior during the Paleolithic Period

Tracing the emergence of symbolism in the human lineage is an arduous endeavor due to the multifaceted nature of symbols, the paucity of direct evidence of symbolism from the Middle Paleolithic, and the ambiguity surrounding inferential evidence associated with artifacts that may imply symbolic intent. Over the past three decades, archaeological findings related to the African Middle Stone Age (MSA) have fundamentally transformed our understanding of the chronology regarding the advent of symbolic culture. Until the early 1990s, the prevailing perspective on the "human revolution" was markedly Eurocentric, focusing on the Upper Paleolithic revolution as humanity's "great leap forward". Twenty-first-century discoveries from Africa have effectively doubled the temporal depth of confirmed and accepted evidence for symbolic activities. This development has given rise to four dominant perspectives concerning the timeline of the emergence of symbolic culture (Knight, 2010):

1. Francesco d'Errico: Posits a multifaceted transformation across Africa and Eurasia. Scattered symbolic behaviors existed among the ancestors of both classic Neanderthals and Homo sapiens (D'Errico, 2003).

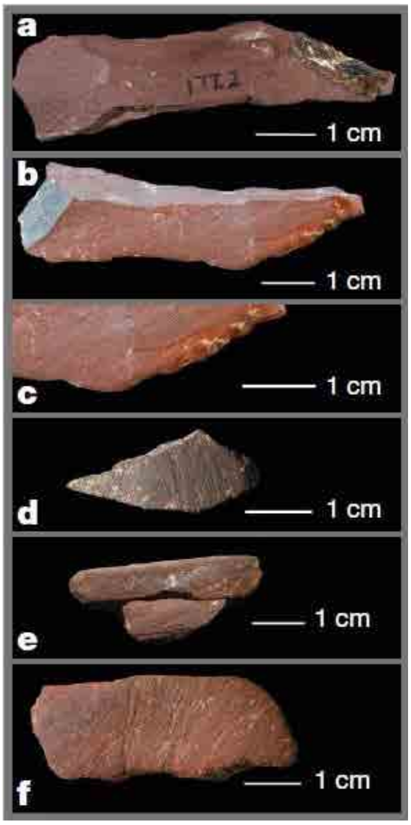
2. Sally McBrearty and Alison Brooks: Argue that the ancestors of modern humans in Africa underwent gradual cognitive and behavioral evolution over a span of 300,000 years. Symbolism, as a component of this suite of modern behaviors, emerged flexibly and creatively within Africa (McBrearty and Brooks, 2000; McBrearty, 2007).

3. Christopher Henshilwood and Ian Watts: Suggest that the human revolution was integral to the speciation of Homo sapiens in Africa. Symbolism, manifesting through personal ornaments and adornments, played a fundamental role in organizing human life following the cognitive transformation in the Upper Paleolithic (Henshilwood and Dubreuil, 2009; Watts, 2009).

4. Richard Klein: Contends that recent interpretations of evidence from the African Middle Stone Age are erroneous. Although MSA hominins were anatomically modern, cognitive transformation did not occur until the Later Stone Age. Symbolic culture emerged approximately 50,000 years ago, resulting from a genetic mutation that induced permanent changes in the brain (Klein and Edgar, 2002).

Currently, the oldest convincing evidence of symbolism has been recovered from Africa and consists of engraved pieces of ochre (Henshilwood et al., 2002). Perforated marine shell beads have also been documented in assemblages associated with these pieces (Henshilwood et al., 2004; d'Errico et al., 2005). These remains, dating to approximately 70,000 years ago, were discovered in Middle Stone Age layers at Blombos Cave in South Africa (Fig. 5). Other evidence related to symbolic behavior, dating to an even older period, has been obtained from a South African coastal site known as Pinnacle Point, which contains remains of mollusks, blades, and red ochre pigments dating back at least 164,000 years (Fig. 1) (Marean et al., 2007). The oldest evidence for the historical use of ochre pigments dates to approximately 300,000–250,000 years ago and is associated with tropical East Africa in Kenya; however, regular and habitual use is attributed to Homo sapiens (Watts 1999: 2009).

According to Henshilwood and Dubreuil (2009), evidence interpreted as personal ornamentation (such as perforated shells) demonstrates the capacity of Middle Stone Age hominins to communicate symbolically. In their view, this indicates that human populations placed importance on their own appearance and were cognizant of how they were perceived by others. The ability to consider the perspectives of others (multiple perspectives) is regarded as a modern capability and constitutes the foundation of all symbolic communication, including language. Consequently, Henshilwood and colleagues concluded that the producers of the pigments and ornaments at Blombos Cave possessed the cognitive prerequisites for language (Knight, 2010).



▲ Fig. 1. Ground and abraded surfaces of ochre pieces from Pinnacle Point Cave. a: Abraded surface. b: Ground surface. c: Close-up view of the ground surface. d: Ground piece of hematite. e: Two pieces of ground siltstone adhering to one another. f: Heavily ground piece of siltstone (Marean et al., 2007).

A Typology of Symbolic Behavior from an Archaeological Perspective[1]

A. Behaviors Associated with the Dead

Mortuary practices and other unique behaviors regarding the deceased are a fixed characteristic of symbolic life in contemporary human societies. The belief that Neanderthals intentionally buried their dead has been a primary factor influencing perceptions of their humanity and, for some scholars, has warranted their inclusion within the genus Homo (McBrearty and Brooks, 2000). Despite ambiguities regarding taphonomic processes and nineteenth-century excavation methodologies, there is a consensus that most relatively complete Neanderthal skeletons were deliberately interred (e.g., Gargett, 1989; Defleur, 1993; Mellars, 1996). For modern human societies, burial signifies respect for the deceased as well as symbolic and ritualistic thought. Although Neanderthals intentionally buried their dead, it cannot be definitively ascertained whether this act was ritualistic in nature or purely utilitarian for sanitary purposes. Furthermore, the absence of grave goods—considered evidence of symbolic behavior—in Neanderthal burials is noteworthy (McBrearty and Brooks, 2000).

The oldest evidence of burial among Homo sapiens was discovered in the Levant at Qafzeh Cave (Bar-Yosef et al., 1986). These burials date to between 90,000 and 120,000 years ago (Schwarcz et al., 1988; Valladas et al., 1988; Bar-Yosef, 1998), and at least one of these interments, specimen number 11, is associated with grave goods (Bar-Yosef & Vandermeersch, 1993). Burials attributed to Neanderthals in Europe date back to 75,000 years ago (Mellars, 1986; 1996), and it is widely accepted that Neanderthals adopted the practice of burying the dead from their modern neighbors in the Near East, whose burials date back to at least 90,000 years ago (McBrearty and Brooks, 2000). In Africa, evidence of deliberate burial by early Homo sapiens has been found, although such findings have been subject to debate. Examples such as Border Cave in South Africa, dating to between 90,000 and 100,000 years ago (Beaumont et al., 1978), and Panga ya Saidi Cave in Kenya, dating back 78,000 years (Martinón-Torres et al., 2021), provide the oldest evidence of Homo sapiens burials in Africa. It is notable that grave goods were also recovered from Border Cave (McBrearty and Brooks, 2000). Recently, claims regarding intentional burial among Homo naledi in South Africa have also been advanced (Berger et al., 2023), a hypothesis that has garnered both support and opposition (see, e.g., Martinón-Torres et al., 2024).

B. Beads and Personal Ornaments

Artifacts imbued with symbolic meaning have long been recognized as a hallmark of modern human behavior. Nevertheless, such behaviors are rarely observed in European Middle Paleolithic contexts. Nearly all these rare instances derive from controversial stratigraphic contexts or excavations lacking adequate supervision (e.g., the sites of La Quina and La Ferrassie in France) or are associated with final Middle Paleolithic layers. Even in the latter case, they predate the arrival of Homo sapiens in Europe (d'Errico et al., 1998; Zilhão and d'Errico, 1998). Hublin and Colleagues (1996) posit that although the manufacturing techniques for perforated dental ornaments during the late Middle Paleolithic differ from those of the early Upper Paleolithic, it appears that Neanderthals acquired concepts related to adornment through the exchange of ideas or imitation of neighboring Homo sapiens populations (McBrearty and Brooks, 2000).

Until a few decades ago, it was assumed that decorative elements were absent from the material culture of African Middle Stone Age (MSA) sites; however, it is now established that the African tradition of body ornamentation extends back tens of thousands of years prior to that of European inhabitants. Beads and personal ornaments recovered from sites such as Hearth Cave, Boomplaas Cave, and various rockshelters in southern and East Africa date to between 30,000 and 52,000 years ago (Mason et al., 1988; Deacon, 1995; Plug, 1982; Cooke, 1971; Mehlman, 1979). These findings indicate that the working of ornaments in Africa has considerable antiquity and is linked to African MSA technology. Furthermore, perforated and engraved objects, such as bones and ochre pieces, have been discovered at sites like Blombos Cave and Apollo 11 Cave, dating back 73,000 to 83,000 years (Henshilwood and Sealey, 1997; McBrearty and Brooks, 2000).

C. The Use of Pigments

While the systematic use of pigments is a defining characteristic of the European Upper Paleolithic (White, 1982), evidence of pigment utilization has been recovered from the Middle Paleolithic and the African Middle Stone Age. Organic compounds can function as pigments; however, those most frequently encountered in the archaeological record are metal oxides. Although carbon in the form of graphite, charcoal, manganese, and kaolin was utilized in prehistory, most pigments found in archaeological contexts are iron oxides. These occur as red hematite (Fe_2O_3) or yellow limonite [$FeO(OH)\ nH_2O$] (Clottes, 1993; McBrearty and Brooks, 2000).

Pigments composed of iron and manganese oxides have been found at approximately twelve Middle Paleolithic sites in Europe (Marshack, 1981; Mellars, 1996). Mellars argues that these pigments were employed for personal use (Mellars, 1996); however, it is equally plausible to infer that pigments served as coloring agents, supporting the notion of symbolic or imaginative life among late Neanderthals. Given that the prevalence of pigment use occurred earlier in the Near East than in Europe (at Qafzeh Cave in the Levant circa 92,000 years ago: Bar-Yosef Mayer et al., 2009), Hublin has proposed that this practice, like burial, may have been acquired by Neanderthals through long-distance cultural transmission (Hublin, 1990; 1998; McBrearty and Brooks, 2000).

In Africa, granite slabs bearing ochre residues have been discovered in Late MSA layers at Nswatugi Cave in Zimbabwe (Cooke, 1971; Larsson, 1996). Additionally, Wendt and Vogelsang report that engraved slabs from Apollo 11 Cave in Namibia are classified within the African MSA horizon, situated above a layer containing artifacts resembling the Howiesons Poort tradition (Wendt, 1975; 1976; Vogelsang, 1996; 1998). These painted slabs date back approximately 59,000 years (McBrearty and Brooks, 2000).

D. Subsistence Economy and Symbolism: The Acquisition and Processing of Pigments

Numerous initial reports regarding MSA sites in southern and East Africa mention grinding stones and ochre; however, these finds have often been overlooked due to the uncontrolled nature of early excavations and the potential for mixing with Later Stone Age (LSA) remains. Undoubtedly, many of these grinding stones were utilized for the processing of plant foods. Nevertheless, evidence concerning the collection, processing, and extensive, controlled, systematic use of pigments in the African MSA is accumulating. Although limited archaeological or biological evidence supports a unique sociobiological interpretation, Knight and colleagues correctly emphasize the significance of pigments in understanding human behavior during the African MSA (Knight et al., 1995; McBrearty and Brooks, 2000: 74).

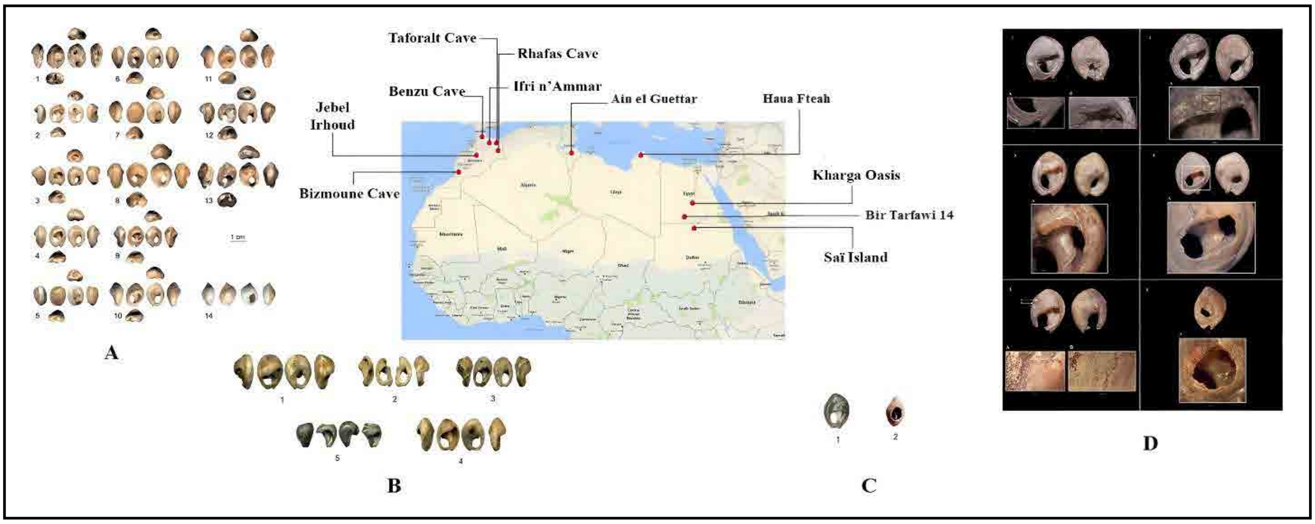
Large-scale hematite extraction during the African MSA has been reported at Lion Cave in Eswatini (formerly Swaziland); Beaumont reports that at least 1,200 tons of prehistoric pigment were mined from the cliff face (Boshier and Beaumont, 1972; Beaumont and Boshier, 1974). These pigments were used for various purposes, including body decoration, rock art, and rituals. Evidence for the storage and use of ochre has been reported at Klasies River on the southern coast of South Africa, dating back more than 100,000 years (Singer and Wymer, 1982; McBrearty and Brooks, 2000: 76).

At certain East African sites, such as GnJh-15 in Kenya, evidence of pigment use has been found in contexts dating between 240,000 and 280,000 years ago. This evidence includes friable hematite pieces and grinding stones stained with pigment. Excavations at this site demonstrate that early humans utilized hematite extensively (McBrearty et al., 1996; McBrearty, 1999). Similarly, in Zambia, evidence of ochre and limonite use dating back 230,000 years has been recovered from MSA contexts (Barham, 1998). These findings indicate a widespread culture of pigment use in Africa, employed as part of the cultural and symbolic traditions of early humans (McBrearty and Brooks, 2000: 76).

Regional Examination of the Evidence

A. The Middle Stone Age in Northern Africa

North Africa constitutes a region extending from the northern expanse of the Sahara Desert to the Mediterranean Sea. Modern nations within this region include Egypt, Libya, Tunisia, Algeria, Morocco, Sudan, Niger, and Western Sahara (Brett et al., 2016). The North African Middle Stone Age (approximately 300,000 to 24,000 years ago) yields archaeological remains that likely encompass some of the oldest Homo sapiens fossils, as well as very early regional manifestations of "symbolic" material culture and technology. This evidence includes perforated shells, ostrich eggshell fragments, ochre residues, and grinding stones (Table 1 & Fig. 2) (d'Errico et al., 2009; Scerri, 2013a; Richter et al., 2017). To date, no continuous stratigraphic sequence has been discovered that encompasses the full chronological span of the North African Middle Stone Age from Marine Isotope Stage (MIS) 8 (circa 300,000 to 245,000 years ago) to MIS 3 (approximately 57,000 to 30,000 years ago). Consequently, the archaeological prehistory of North Africa is constructed from a combination of dated sites and widely dispersed sites lacking absolute chronometric dates (Scerri, 2017: 119).



▲ **Fig. 2. Map of the most significant Paleolithic sites in the northern half of the African continent, and images of symbolic(?) artifacts recovered from them. A: Nassarius shells from Taforalt Cave. B: Marine shells from Rhafas Cave. C: Marine shells from Ifri n'Ammar Cave. D: Shell beads from Bizmoune Cave, along with ochre residues (Bouzouggar et al., 2007; d'Errico et al., 2009; Sehasseh et al., 2021).**

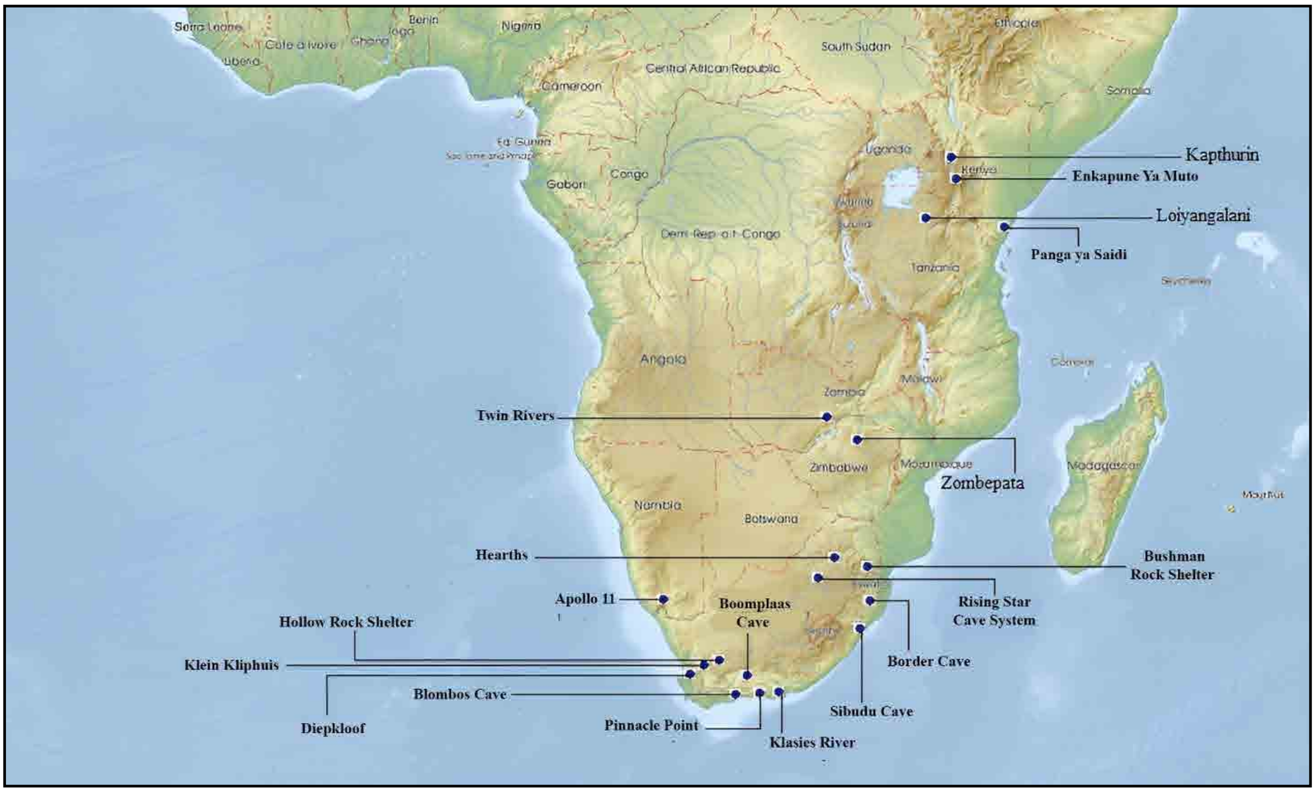
B. The Middle Stone Age in Sub-Saharan Africa

Sub-Saharan Africa, as the nomenclature implies, denotes the region of the African continent situated south of the Sahara Desert, geographically delimited by the southern margins of the desert (Collins and Burns, 2007). Analysis of the archaeological evidence indicates that by at least 100,000 years ago, the cognition and perception of Archaic Homo sapiens populations in southern Africa had become increasingly complex and, in certain respects, analogous to that of modern humans, employing high levels of technological behavior (Fig. 3) (Henshilwood 2012; Lombard 2012; Lombard and Högberg 2021).

Early instances of symbolic behavior, comprising abstract designs and engravings on bone and ochre, date to approximately 100,000 years ago

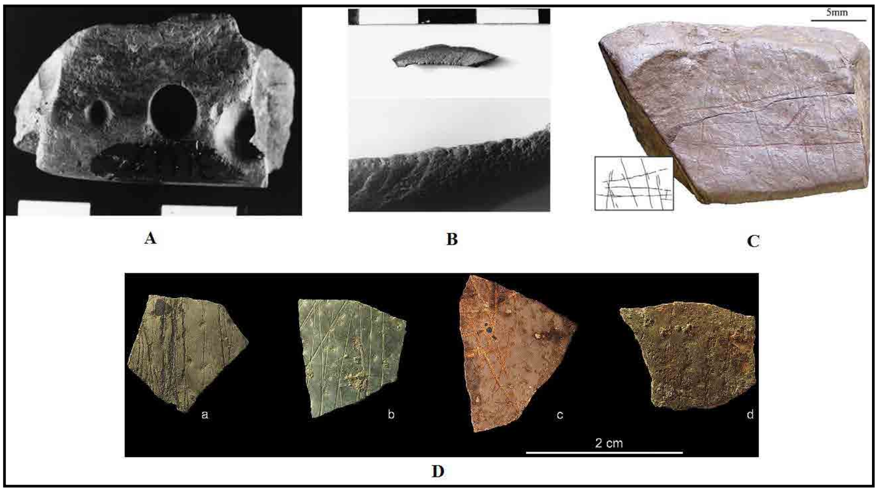
Table 1. The MSA archaeological sites in North Africa associated with symbolic finds (Authors, 2024). ▼

Archaeological Site	Country	Findings	Age (kyr BP)	Reference
Jebel Irhoud	Morocco	Human remains, ostrich eggshell	300	(Richter *et al.*, 2017)
Benzu Cave	Morocco	Shells and lithic artifacts	250	(Ramos *et al.*, 2008)
Saï Island	Sudan	Grinding stones, red and yellow ochre fragments, and a limestone slab	223–182	(Van Peer *et al.*, 2003)
Taforalt Cave	Morocco	13 perforated *Nassarius* shells with evidence of pigments and wear, interpreted as personal ornaments	MIS 5	(Bouzouggar *et al.*, 2007)
Rhafas Cave	Morocco	5 *Nassarius* shells and pigment residues	MIS 5	(d’Errico *et al.*, 2009)
Ifri n’Ammar	Morocco	*Nassarius* shells and pigment residues	MIS 5	(d’Errico *et al.*, 2009)
Bizmoune Cave	Morocco	33 *Tritia gibbosula* shell beads and ochre residues	>142	(Sehasseh *et al.*, 2021)
El Mnasra Cave	Morocco	234 *Tritia gibbosula* shells	112–107	(El Hajraoui *et al.*, 2012)

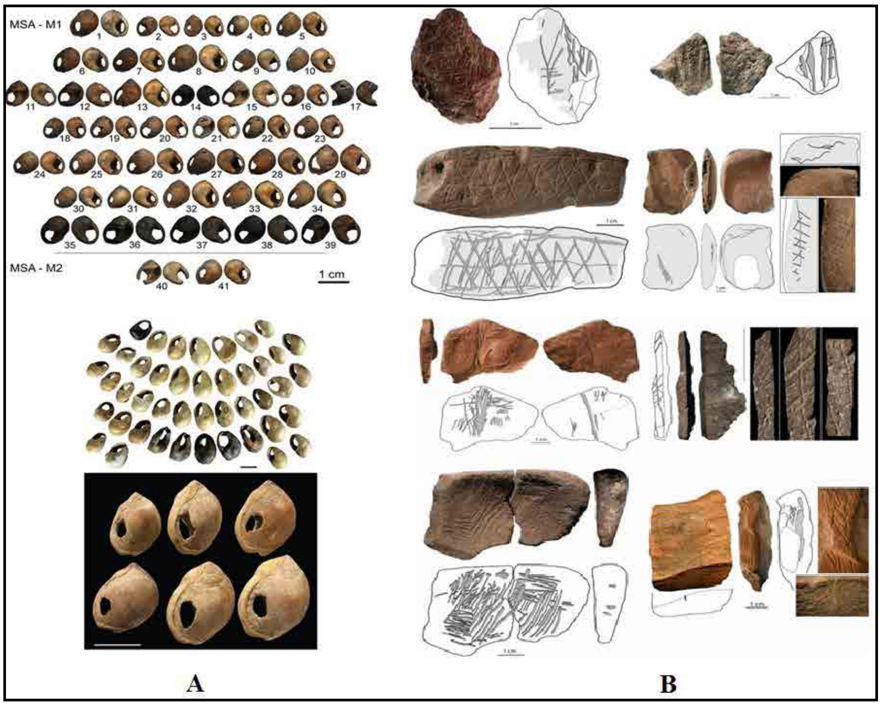


▲ **Fig. 3. Map of the most significant sites in southern Africa yielding symbolic finds (McBrearty & Brooks 2000; Henshilwood et al., 2001, 2002, 2004; d’Errico et al., 2005, 2008; Lombard 2012).**

and have been recovered in South Africa (Fig. 4) (Henshilwood et al., 2009; Henshilwood and Dubreuil, 2012: 132). It is now established that the oldest securely dated evidence of beads derives from sub-Saharan Africa, specifically from Blombos Cave in South Africa (Fig. 5) (d'Errico et al., 2005; Henshilwood et al., 2004; Wilkins, 2010: 110). Furthermore, ancient evidence of deliberate burial has been reported at Panga ya Saidi Cave in Kenya and the Rising Star Cave System in South Africa, dating to between 236,000 and 335,000 years ago (see opposing view in Martinón-Torres et al., 2024) and associated with Homo naledi (Fig. 6 and Table 2) (Dirks et al., 2017; Berger et al., 2023; Martinón-Torres et al., 2021).



◀ **Fig. 4. Examples of engraved pieces recovered from sites in South Africa. A: Engraved ochre from Klasies River. B: Engraved ochre from Hollow Rockshelter. C: Engraved ochre piece from Klein Kliphuis. D: Oldest engraved ostrich eggshell fragments discovered at Diepkloof Rockshelter (McBrearty and Brooks 2000; Mackay & Welz 2008; Texier et al., 2013).**



◀ **Fig. 5. Symbolic artifacts recovered from Blombos Cave. A: Perforated beads of Nassarius kraussianus shells. B: Engraved pieces of ochre (Henshilwood et al., 2004; Henshilwood et al., 2009; d'Errico et al., 2005).**

Fig. 6. Alleged deliberate burial in the Rising Star Cave system of Homo naledi. A. Three-dimensional map of the claimed burial section; B. Image of Homo naledi skeletal remains; C and D. Digital reconstruction of Homo naledi skeletal remains in the probable grave, including a child and an adult (Berger et al., 2023). ▶

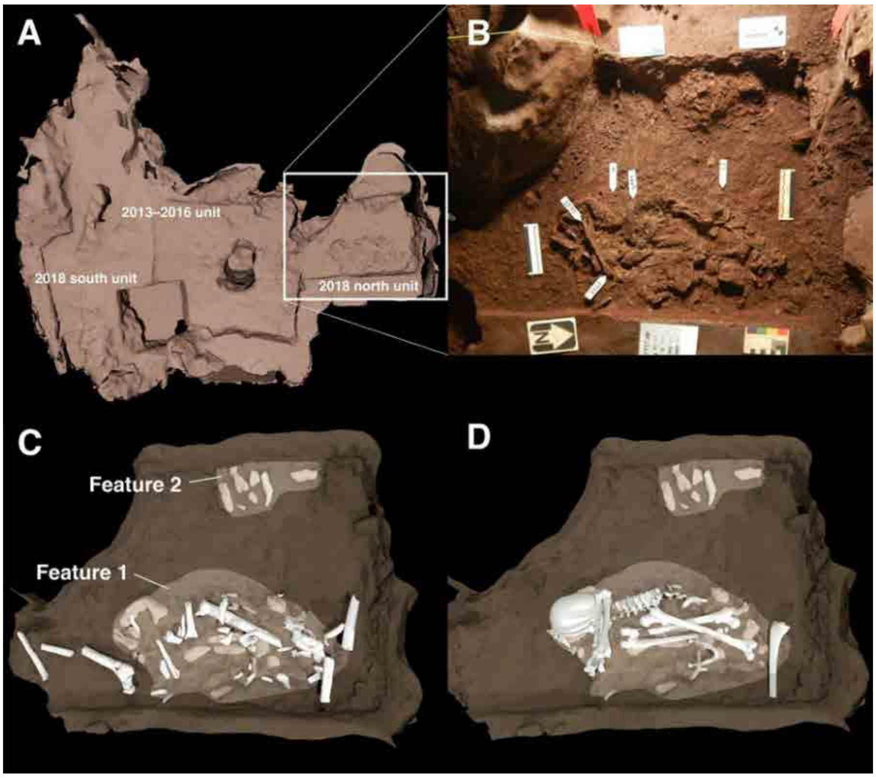


Table 2. Archaeological sites associated with symbolic finds in Sub-Saharan Africa (Authors, 2024). ▼

Archaeological Site	Region	Findings	Age (kyr BP)	Source
Blombos Cave	South Africa	41 perforated *Nassarius kraussianus* shells; engraved bone and ochre pieces	75–70	(Henshilwood *et al.*, 2001, 2002, 2004; d’Errico *et al.*, 2005)
Sibudu Cave	South Africa	Perforated *Afrolittorina africana* shells; ochre residues on the edges of lithic artifacts	71	(d’Errico *et al.*, 2008; Lombard 2006, 2012)
Border Cave	South Africa	Perforated Conus shell; engraved bone	76, 44–42	(d’Errico *et al.*, 2008, 2012b, 2018; Lombard 2012)
Enkapune Ya Muto	Kenya	13 ostrich eggshell (OES) beads	40	(Ambrose 1998; Henshilwood *et al.*, 2004)
Panga ya Saidi	Kenya	Deliberate burial; shell beads; OES bead	78, 67–63	(Shipton *et al.*, 2018; Martinón-Torres *et al.*, 2021)
Boomplaas Cave	South Africa	Beads made from ostrich eggshell	42	(Deacon 1995)
Zombepata Cave	Zimbabwe	Stone ring made from micaceous schist	40.72	(Cooke 1971)
Bushman Rock Shelter	South Africa	Beads made from ostrich eggshell	MSA	(Plug 1982)
Hearths Cave	South Africa	Beads made from ostrich eggshell	MSA	(Mason 1993; Mason *et al.*, 1988)

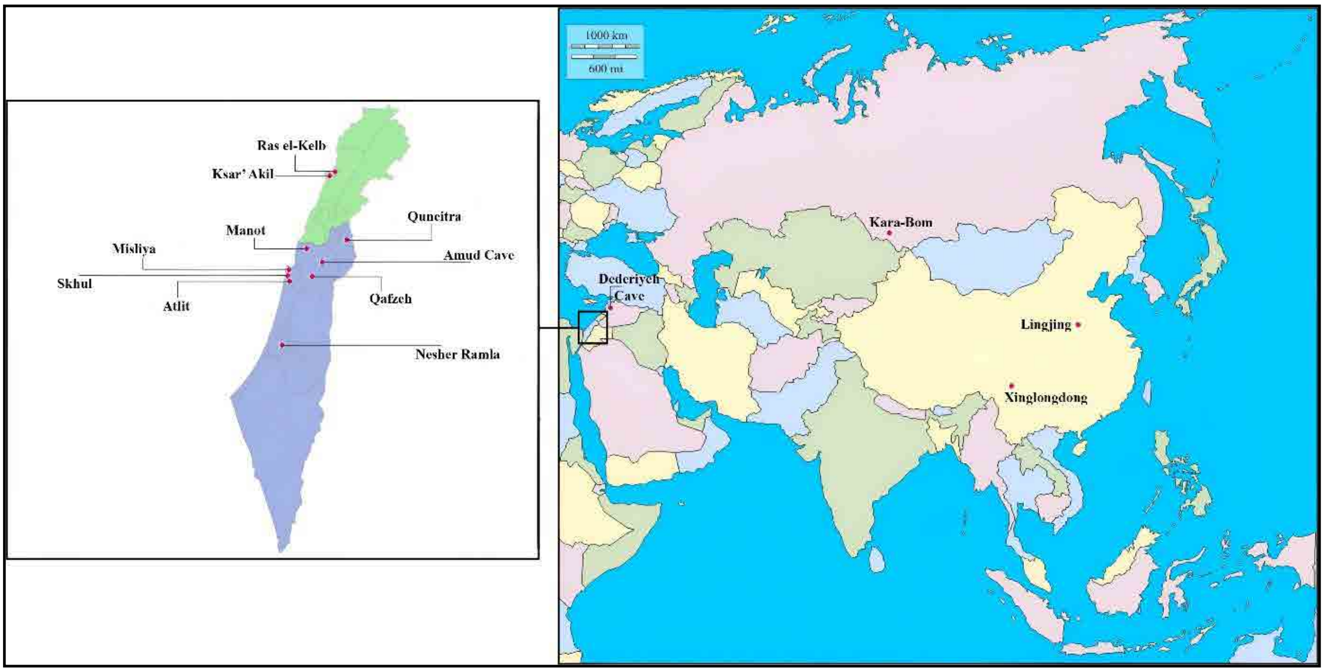
Loiyangalani Site	Tanzania	2 ostrich eggshell beads	MSA	(Thompson *et al.*, 2004)
Klasies River	South Africa	Engraved ochre plaques and two perforated bones	100–85	(Singer and Wymer 1982; d'Errico *et al.*, 2012a)
Apollo 11 Cave	Namibia	Perforated bone and ostrich eggshell fragments	83	(McBrearty and Brooks 2000)
Hollow Rock Shelter	South Africa	Perforated and engraved ochre pieces	MSA	(McBrearty and Brooks 2000)
Diepkloof Rock Shelter	South Africa	Decorated ostrich eggshell fragments	105	(Parkington *et al.*, 2005; Wilkins *et al.*, 2021)
Klein Kliphuis	South Africa	Engraved ochre	80–50	(Mackay and Welz 2008)
Rising Star Cave System	South Africa	Deliberate burial of Homo naledi	335–236	(Dirks *et al.*, 2017; Berger *et al.*, 2023)
Kapthurin Formation	Kenya	Hematite fragments, ochre, and pigment-stained grinding stones	>240	(McBrearty *et al.*, 1996)
Twin Rivers	Zambia	Three pieces of ochre	230	(Barham 2000; Wilkins 2010)
Pinnacle Point	South Africa	57 pieces of pigment	160	(Marean *et al.*, 2007)

C. The Middle Paleolithic in Eurasia

C-1. Asia

The boundary between Asia and Europe is merely a political, historical, and cultural construct; the division of Eurasia into two continents holds little significance, at least within the disciplines of paleoanthropology and prehistoric archaeology. Nevertheless, for the purposes of this study, these two continents are examined in separate sections.

Most Asian Middle Paleolithic sites yielding symbolic artifacts are located in the Levant (Fig. 7 and Table 3). Notable examples include Qafzeh and Skhul caves, from which grave goods and pigment fragments have been recovered (Figs. 8 and 9). The substantial quantity of faunal grave goods in the aforementioned caves led Bernard Vandermeersch to posit the existence of hunting specifically intended for mortuary rites (Vandermeersch, 1970). Engraved bone and stone artifacts constitute further evidence recovered from Asian Middle Paleolithic sites (Fig. 10). For instance, two engraved bones were discovered at Lingjing in Henan Province, China. Analysis of these bones revealed the presence of ochre within the incised lines of one specimen (Fig. 11). These findings provide the earliest evidence of the deliberate use of ochre-infused engravings for symbolic purposes by Late Pleistocene humans in East Asia (Li et al., 2019: 886).



▲ **Fig. 7. Map of the most significant Paleolithic sites on the Asian continent containing symbolic artifacts (Bar-Yosef Mayer et al., 2009, 2020; Vandermeersch 1970, 2006; d'Errico et al., 2010; Ronen 2012).**

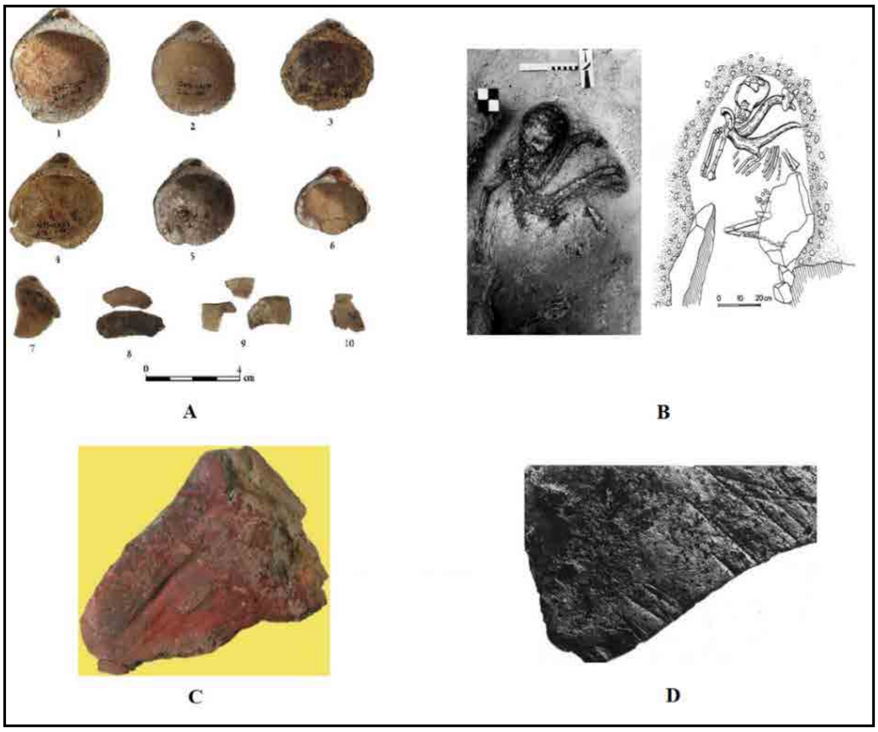
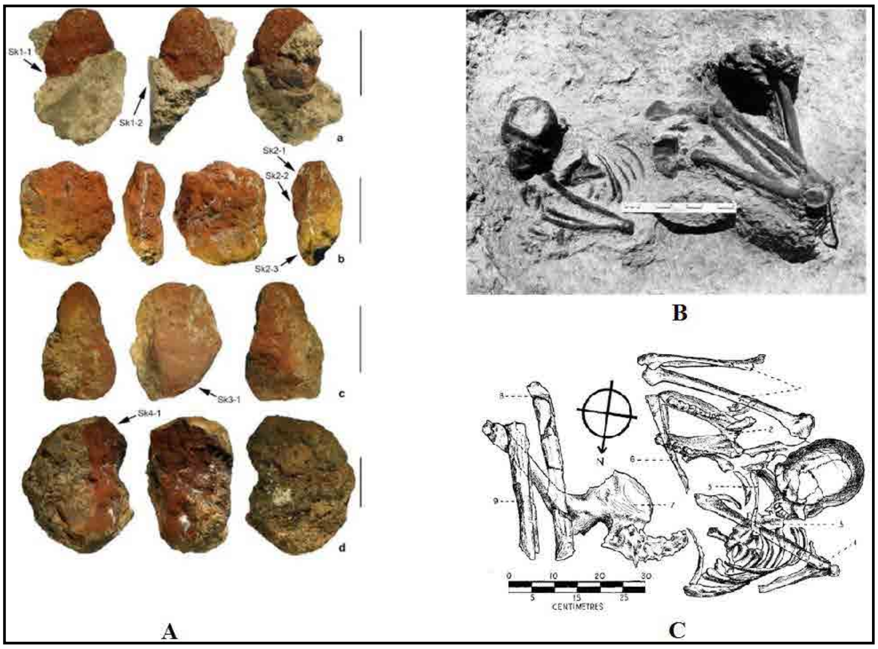


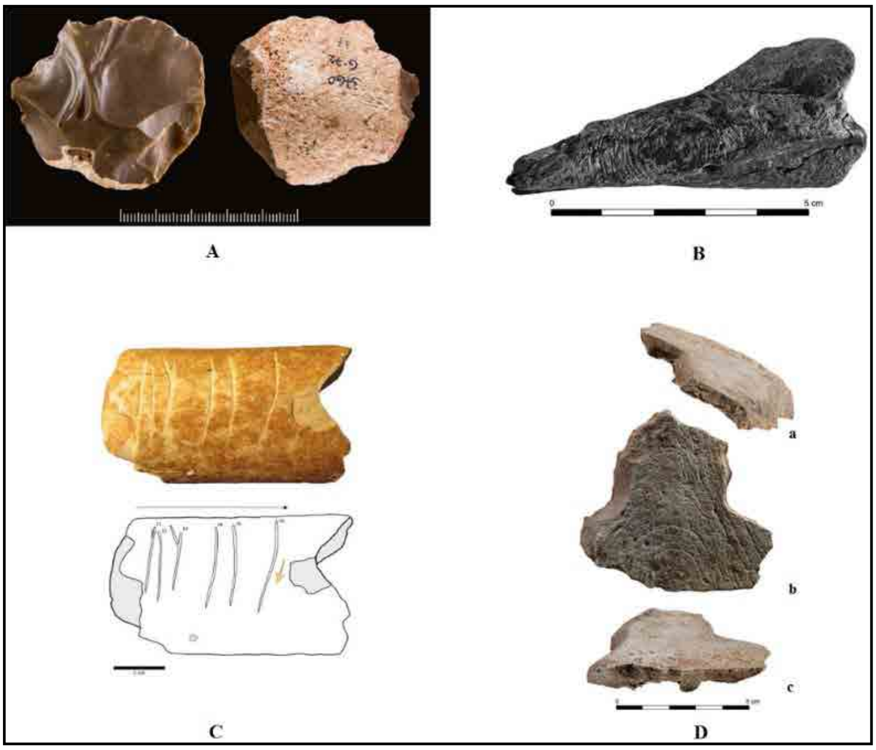
Fig. 8. Symbolic artifacts recovered from Qafzeh Cave. A: Glycymeris shells. B: Image and schematic of Qafzeh 11 burial, showing deer antlers. C: Engraved ochre from Qafzeh 8 burial. D: Engraved stone from Qafzeh 8 burial (Bar-Yosef Mayer et al., 2009; Vandermeersch & Bar-Yosef 2019; Wong 2005; Ronen 2012). ▶

C-2. Europe

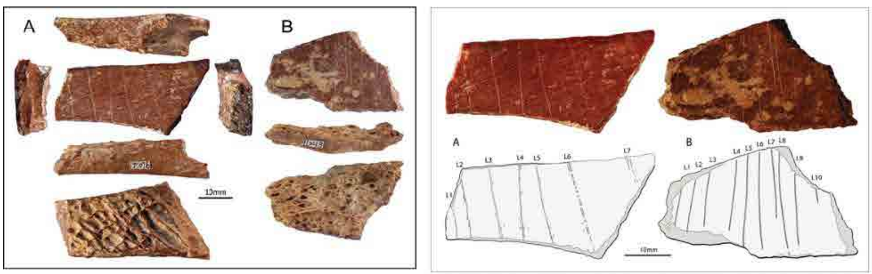
Symbolic evidence has been recovered from numerous Middle Paleolithic sites in Europe (Fig. 12 and Table 4); prominent among these are pigment remains, which appear to have been utilized for body painting, rock art, various rituals, and potentially for medical purposes as well as hide preservation (Fig. 13) (Conard, 2005: 310; Burdukiewicz, 2014: 403).



◀ Fig. 9. Burials and symbolic artifacts found at Skhul Cave. A: Pigment fragments from Mousterian layers with the locations of analyzed samples indicated. B: Human burial. C: Skhul 5 burial, showing the mandible of a wild boar (Ronen 2012; d'Errico et al., 2010).



◀ Fig. 10. Engraved pieces recovered from Levantine sites. A: Manot limestone slab with possible engravings. B: Engraved bone from Quneitra. C: Engraved bones from the open-air site of Nesher Ramla, accompanied by a schematic drawing. D: Engraved stone plaque from Quneitra. a: Close-up of the distal end showing damage marks. b: Engraved stone. c: Close-up of the proximal end showing protrusions (Marder et al., 2018; Shaham et al., 2019; Prévost et al., 2021).



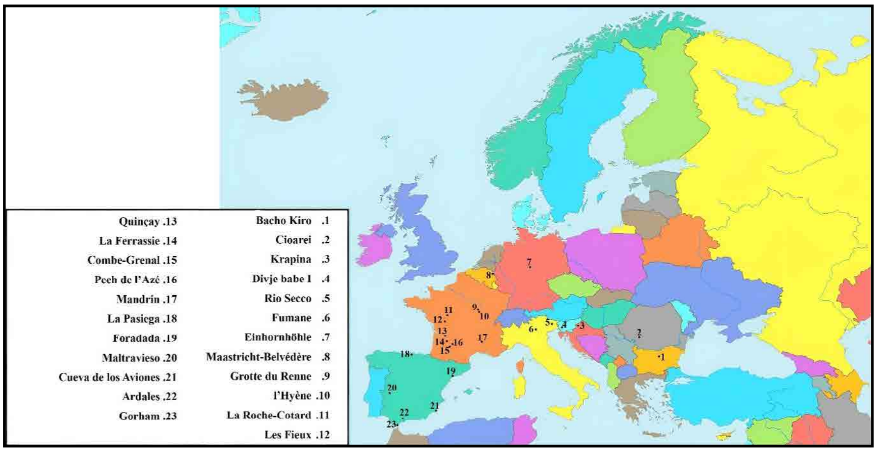
◀ Fig. 11. Images of two engraved bone specimens from the Lingjing site. In the right image, section A, the red dots indicate the locations of ochre residues. B: The second specimen of engraved bone (Li et al., 2019).

Table 3. Middle Paleolithic sites in the Asian continent with evidence indicative of symbolic behavior (Authors, 2024). ▼

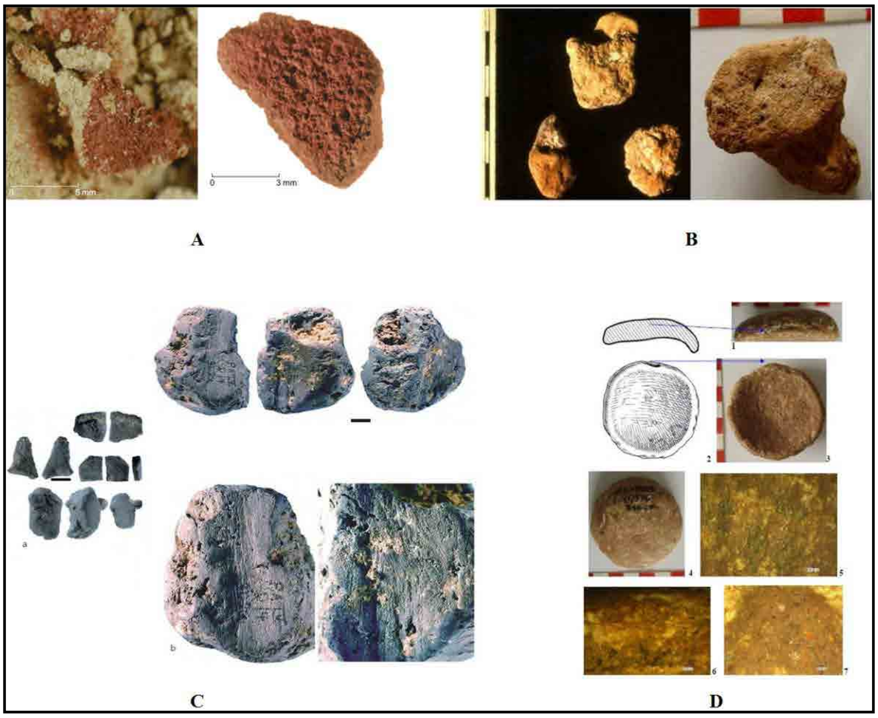
Archaeological Site	Region	Findings	Age (kyr BP)	Reference
Qafzeh Cave	Levant	Ten perforated *Glycymeris* shells with ochre residues; 85 pieces of red ochre; grave goods including a pair of deer antlers and an engraved stone with 27 incisions	90, 130–100	(Bar-Yosef Mayer *et al.,* 2009, 2020; Hovers *et al.,* 2003; Vandermeersch 1970, 2006; Ronen 2012)
Misliya Cave	Levant	11 unperforated shells, displaced by humans	240–160	(Bar-Yosef Mayer *et al.,* 2020)
Skhul Cave	Levant	Perforated *Nassarius gibbosulus* shells; pigment fragments; grave goods including a wild boar mandible, bovine skull, and a flint scraper	130–100	(Vanhaeren *et al.,* 2006; d'Errico *et al.,* 2010; McCown 1937; Garrod 1957)
Atlit Site	Levant	(Perforated?) *Glycimeris* shells	120	(Ronen *et al.,* 2008)
Ksar'Akil Cave	Lebanon	Shell beads	43.75–32	(Mellars and Tixier 1989)
Kara-Bom	Russia	Perforated teeth	43	(Derevianko & Rybin 2003)
Manot Cave	Levant	An engraved Levallois core	46–42	(Marder *et al.,* 2018)
Amud Cave	Levant	Grave goods including the mandible of a deer placed upon the pelvis of a Neanderthal infant	130–100	(Rak *et al.,* 1994)
Dederiyeh Cave	Syria	Grave goods including a flint flake and a rectangular limestone slab	70–50	(Akazawa *et al.,* 2002)
Nesher Ramla Open-Air Site	Levant	An engraved bone fragment	130–80	(Prévost *et al.,* 2021)
Quneitra Open-Air Site	Levant	Engraved bone and an engraved flint stone plaque	56–51	(Shaham *et al.,* 2019)
Ras el-Kelb	Lebanon	Engraved flint flake	52	(Moloney 1998)
Lingjing Site	China	Two engraved bones with evidence of ochre	125–105	(Li *et al.,* 2019)
Xinglongdong Cave	China	Engraved ivory	150–120	(Haynes 1991; Villa and d'Errico 2001; Norton and Jin 2009)

Other symbolic findings include avian remains. Evidence from European Middle Paleolithic sites, particularly in France and Italy, indicates the systematic use of raptor talons by Neanderthals (Fig. 14) (Morin and Laroulandie 2012: 3).

Another significant category of evidence related to symbolic behavior in the European Middle Paleolithic is parietal art. For instance, in Spain, a linear ladder-shaped motif in red has been recovered from La Pasiega Cave, a red hand stencil from Maltravieso Cave, and red-painted flowstone deposits from Ardales Cave (Fig. 15) (Hoffmann et al., 2018: 912–913). Additionally, eight engraved panels exhibiting intentional incisions have



◀ **Fig. 12. Map of the most significant Middle Paleolithic sites in the European continent from which symbolic evidence has been recovered (Soressi 2002; Soressi and d'Errico 2007; Zilhão et al., 2010a; Peresani et al., 2011, 2013; Hoffmann et al., 2018).**



◀ **Fig. 13. Pigment remains discovered from various sites in Europe. A: The largest hematite pieces discovered at the Maastricht-Belvédère site in the Netherlands. B: Several samples of natural ochre discovered at Cioarei Cave in Romania. C: Pigments from the Pech de l'Azé site in France. a: Pigments with worn surfaces; b: Pigment likely scraped with a flint tool. D: Container discovered at Cioarei Cave. 1: Section of the container; 2 and 3: Schematic drawing and photograph of the container with ochre residues; 4: Surface of the container; 5: Overlapping color layers; 6: Combination of black, red, and other shades; 7: Various colored pigments (scale for images 5–7: 250 µm) (Roebroeks et al., 2012; Soressi and d'Errico 2007; Cârciumaru et al., 2015).**

◀ **Fig. 14. Talons with cut marks recovered from Mousterian sites in France and Italy. The bones are sorted by size (Romandini et al., 2014).**

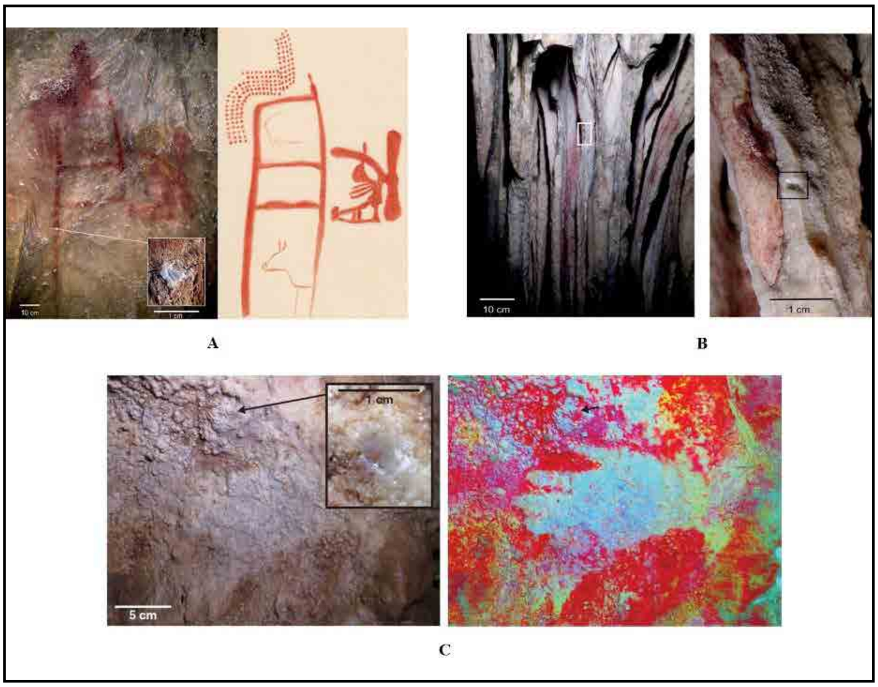


Fig. 15. Cave art discovered in Spain. A: La Pasiega Cave. A linear ladder-shaped motif with red dots, rectangular in form, with unfinished animal images. Left: Photograph of the motif. The enlarged image shows a section of the outer layer sampled and analyzed to determine the minimum age (64.8 ka). Right: Drawing of the motif by Henri Breuil. B: Laminar flowstone with red pigment in Ardales Cave. Left: An assemblage of carbonate sheets showing red pigment at the top; these areas are relatively covered by the growth of the flowstone. The white rectangle indicates the area shown on the right. Right: Detail of the flowstone. The black square indicates the sampling location of carbonate overlying the red pigment. C: Hand stencil in Maltravieso Cave. Left: Original image. The enlarged image shows the sampling location of carbonate for analysis and dating. Right: The same image after processing with DStretch software to enhance color contrast (Hoffmann et al., 2018). ▶

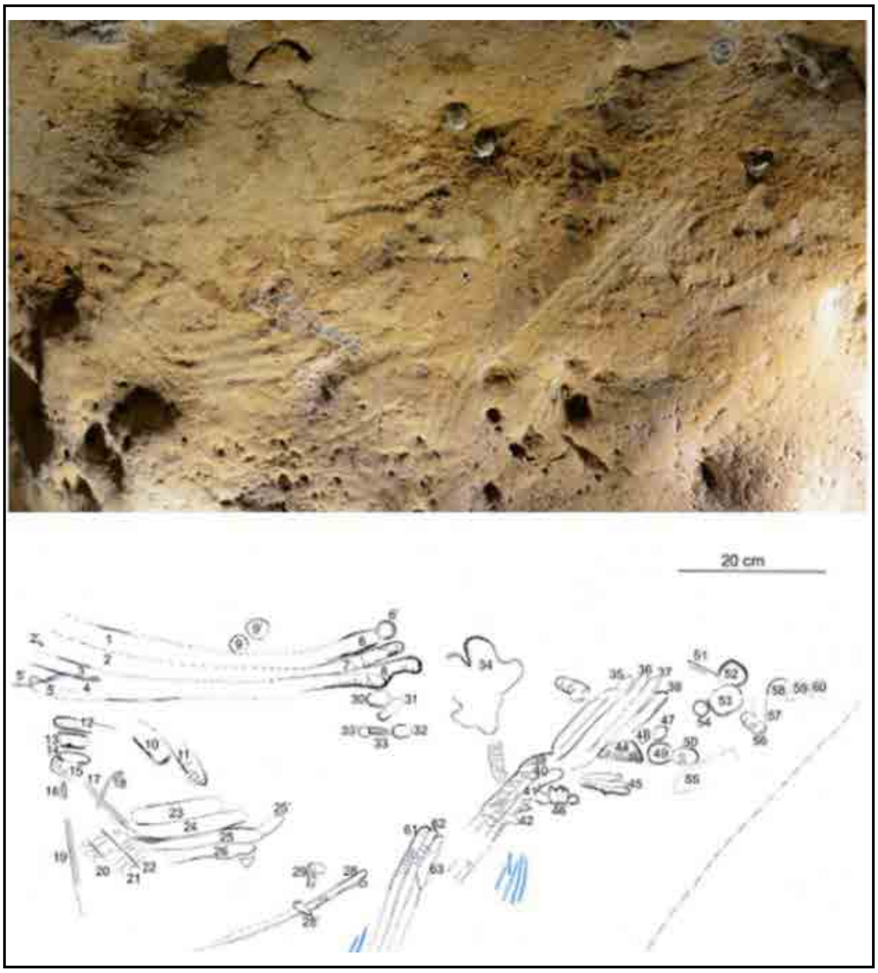


Fig. 16. An example of an engraved panel on the wall of La Roche-Cotard Cave and a schematic drawing of what appears to have been created on this wall (Marquet et al., 2023). ▶

Table 4. Middle Paleolithic sites in Europe with evidence indicative of symbolic behavior (Authors, 2024). ▼

Archaeological Site	Country	Findings	Age (kyr BP)	Reference
l'Hyène Cave	France	*Polypier* and gastropod shells	60	(Soressi 2002; Soressi and d'Errico 2007)
Maastricht-Belvédère	Netherlands	15 pieces of red hematite pigment	250–200	(Roebroeks *et al.*, 2012)
Pech de l'Azé	France	Over 500 pieces of pigment; one brachiopod shell; two golden eagle phalanges	60–43, 100	(Soressi 2002; Soressi *et al.*, 2007, 2008)
Cioarei Cave	Romania	Stalagmitic vessels for ochre preparation	51–45	(Cârciumaru *et al.*, 2015)
Fumane Cave	Italy	*Aspa marginata* shell with hematite residues; a large and diverse assemblage of raptor bones	47.6–45, 44	(Peresani *et al.*, 2011, 2013)
Cueva de los Aviones	Spain	Perforated large bivalve shells with traces of pigmentation; cosmetic container made from an unperforated shell cup; pigment lumps; bone tools with pigment residues	>115, 50–45	(Zilhão *et al.*, 2010a)
La Ferrassie	France	Grave goods including an engraved bone fragment and a limestone slab with cupule marks	75–60	(Peyrony 1934; Defleur 1993; Zilhão 2012)
Grotte du Renne	France	Personal ornaments; decorated bone tools; approximately 18 kg of pigment remains	41–36	(Zilhão 2006, 2007, 2011; Caron *et al.*, 2011)
Quinçay Rock Shelter	France	6 perforated teeth; personal ornaments	40	(Soressi and d'Errico 2007; Roussel and Soressi 2010)
Bacho Kiro	Bulgaria	Two perforated teeth; a spindle-shaped bone pendant	43	(Kozlowski 1982, 2000; d'Errico *et al.*, 2005)
Divje babe I Cave	Slovenia	Bear femur with unusual perforations, possibly a flute	50	(Turk *et al.*, 2018)
Einhornhöhle Cave	Germany	Engraved toe bone of a deer	51	(Leder *et al.*, 2021)
Krapina Cave	Croatia	Engraved Neanderthal cranium; a limestone slab with decorative use; eight talons and one engraved talon bone of white-tailed eagles	130	(Radovčić *et al.*, 2016; Frayer *et al.*, 2020)
Gorham's Cave	Gibraltar	Engraved limestone	39	(Rodríguez-Vidal *et al.*, 2014)
Rio Secco Cave	Italy	Engraved golden eagle phalanx	49.1–48	(Romandini *et al.*, 2014)
Mandrin Cave	France	Engraved golden eagle phalanx	50	(Romandini *et al.*, 2014)
Combe-Grenal	France	Engraved golden eagle phalanx	90	(Morin & Laroulandie 2012)
Les Fieux Cave	France	Two white-tailed eagle phalanges	60–40	(Morin & Laroulandie 2012)
Foradada Cave	Spain	Engraved phalanx of a large eagle	>39	(Rodríguez-Hidalgo *et al.*, 2019)
La Pasiega Cave	Spain	Cave art	64.8	(Hoffmann *et al.*, 2018)
Maltravieso Cave	Spain	Cave art	66.7	(Hoffmann *et al.*, 2018)
Ardales Cave	Spain	Cave art	65.5	(Hoffmann *et al.*, 2018)
La Roche-Cotard Cave	France	Cave art	57	(Marquet *et al.*, 2023)

been discovered at La Roche-Cotard Cave in France (Fig. 16) (Marquet et al., 2023).

Discussion

Researchers have long debated the factors that precipitated the formation of the suite of behaviors characteristic of Homo sapiens. This issue is inextricably linked to the discourse concerning when, where, and how our ancestors became cognitively modern. In the strictest sense, the term "modern" encompasses every facet of culture evident today, ranging from agriculture to iPhone 16. Many scholars employ a list of behavioral traits that distinguish the Middle and Upper Paleolithic periods in Europe. Others utilize the material culture of modern and contemporary hunter-gatherers as a guide. Ultimately, whether a specific assemblage of remains can be regarded as evidence of "modernity" depends upon the evaluator's definition of the concept (Wong, 2005: 94).

Zilhão introduces a proposition regarding the indices of "behavioral modernity" within the African archaeological record, the validity of which has been widely accepted by paleoanthropologists. The first proposition is the explicit and definitive statement by Henshilwood and Marean: "[Modern behavior comprises] artifacts or features that convey a clear, symbolic, and exosomatic message, such as images and motifs, personal ornaments, or even tools explicitly created to identify the [identity of] their maker" (Henshilwood and Marean 2003). The second proposition is Brown and colleagues' distinct interpretation of modernity: "The complex use of technology, specifically the controlled application of fire as an engineering tool to modify raw materials; for instance, heat-treating low-quality siliceous cobbles prior to use to enhance their flaking properties" (Brown et al., 2009). Zilhão argues that if these propositions can be utilized to define modern behavior, then any clear evidence of Neanderthals conforming to these descriptions must be considered indicative of modern behavior within that population (Zilhão 2012; Elias 2012: 7–8).

One argument that has led to the dismissal of evidence of symbolism among Neanderthals is the belief that this development was a very late phenomenon, emerging among Neanderthals solely due to coexistence and imitation of Homo sapiens behavior in Europe. A second argument posits that, firstly, sites containing symbolic evidence associated with Neanderthals are exceedingly rare, and secondly, in these rare instances, layers containing artifacts associated with Homo sapiens overlie the lower layers attributed to Neanderthal habitation, exhibiting a degree of stratigraphic overlap (Elias, 2012: 8).

Zilhão contends that recent chronologies demonstrate that the emergence of the Châtelperronian tradition (associated with Neanderthals) predates the Early Aurignacian culture (attributed to Homo sapiens) and is older than the oldest skeletal evidence of anatomically modern humans throughout Europe. Furthermore, he counters the second argument—regarding the intrusion of symbolic artifacts belonging to Homo sapiens into Neanderthal layers in multi-period sites—by citing the existence of numerous Neanderthal sites from which symbolic objects have been recovered. He references evidence from other Châtelperronian sites in Europe, including Quinçay Rockshelter in France, Ilsenhöhle Cave in Germany, Trou Magrite in Belgium, Bacho Kiro Cave in Bulgaria, Klisoura 1 Cave in Greece, and Fumane Cave in Italy. At each of these sites, artifacts with a distinctly symbolic nature have been found within Châtelperronian contexts, with each assemblage dating to between 41,000 and 45,000 years ago (Zilhão, 2012; Elias, 2012: 8–9).

In recent years, the evidence discussed above has been widely accepted by both the public and the scientific community. Zilhão suggests that this acceptance aligns with the publication of the initial results of the Neanderthal Genome Project, which was released at approximately the same time (Green et al., 2010). Ancient DNA evidence indicates that a portion of the DNA of Homo sapiens is shared with Neanderthals, demonstrating admixture between these two groups during the Late Pleistocene. This, in turn, eliminated the necessity of viewing Homo sapiens and Neanderthals as entirely separate and competing species. Consequently, such evidence has contributed to undermining the notion of a lack of symbolic capacities in Neanderthals. However, not all archaeologists or paleoanthropologists are convinced. Old beliefs (the notion of a fundamental difference between Neanderthals and "wise" humans) persist stubbornly, both within archaeology and in other fields (Elias, 2012: 9).

Some researchers, in studying the process of modernization, consider organized symbolic behavior, which includes language. Henshilwood articulates his claim as follows (Henshilwood, 2007): "It appears that the ability to store symbols outside the human brain is the primary agent of everything we do today". Although the emergence of a symbolic-based communication system may not be directly traceable in the archaeological record, it seems researchers have at least accepted it as a defining characteristic of the human mind as we know it, rather than as it exists (Wong, 2005: 94).

Since the early Lower Paleolithic, humans have collected shells and transported them to their habitats (Joordens et al., 2015). However, around 120,000 years ago, hunter-gatherers began the deliberate collection of shells that were naturally abraded and perforated. It may be a reasonable hypothesis that these shells, like those from Qafzeh Cave, were strung for body adornment (Vanhaeren et al., 2013). Nevertheless, at two sites associated with the Middle Stone Age at Pinnacle Point Cave in South Africa, dating to 164,000±12,000 years ago, and the Middle Paleolithic Misliya Cave, the shells were not perforated (Hershkovitz et al., 2018; Marean et al., 2007; Jerardino and Marean, 2010). Of particular interest is that in both sites, the collected shells were relatively small and polished and belonged to the genus Glycymeris (Jerardino and Marean, 2010; Bar-Yosef Mayer et al., 2020: 9–10). It appears that the reasons for collecting shells in the early Middle Paleolithic Period varied from complex conceptual symbols related to the reverence for life to the representation of identity (Steinhardt, 2010). Specific attention to bivalve shells was likely driven by cognitive patterns inherent in all humans. Beyond potentially alluding to cosmic powers, they also signify the belief that life originates from the sea (Bar-Yosef Mayer et al., 2020: 9). These, of course, remain speculations that may never be empirically tested.

Results of recent research indicate the existence of a wide range of symbolic culture, including visual arts and perhaps even music (?), among Neanderthals, although such findings remain very scarce. Regarding the emergence of new forms of symbolic culture, European and Middle Eastern Neanderthals differed little from African Homo sapiens. Contrary to some popular beliefs, the development of symbolic culture cannot be linked to specific human populations. The capacity for symbolic thought likely evolved independently in Neanderthals and Homo sapiens, or perhaps it emerged from a common early ancestor before the two groups embarked on separate evolutionary trajectories. White (2003) expresses his conjecture as follows: “I cannot prove my claim, but I am certain that Homo heidelbergensis possessed the capacity for symbolic thought”. Henshilwood also believes that the emergence of symbolism-based thought is latent within the Middle Stone Age (Wong, 2005: 95).

The growing body of evidence from Europe and Southeast Asia supports the hypothesis that the cultural adaptations of archaic hominins included mediated symbolic behavior, thereby challenging the belief that modern cognitive abilities were restricted to Homo sapiens. Today, while many researchers have accepted this hypothesis regarding Neanderthals, evidence from Siberia and East Asia suggests that this may also hold true for Denisovans—the probable creators of some of the engravings found at these sites (Li et al., 2019: 896). However, further research is required to elucidate the rules and details of the initial emergence and development of symbolic culture (Burdukiewicz, 2014: 404).

Conclusion

The search for evidence of increasing behavioral complexity in the history of the genus Homo is primarily conducted through the examination of behavior in contemporary primitive groups, or rather, through ethnoarchaeological research. In this pursuit, researchers largely focus on behaviors related to abstraction, symbolism, and language, the creation of art, hypersociality[2], altruism, and cumulative culture within these groups. Among these, symbolism, abstraction, and artistic creation are considered integral components of complex and so-called modern behavior, the search for whose material evidence entails specific difficulties. These difficulties include the rarity and dispersion of material evidence at the inception of these behaviors (the Middle Stone Age and the Middle Paleolithic), spatiotemporal discontinuities even during the Upper Paleolithic or Later Stone Age, the role of taphonomic processes and natural factors in the obliteration of such evidence, and the challenge of achieving a consensus regarding the attribution of certain material remains to symbolism, abstraction, and art.

In anthropology, the concept of modern behavior has historically typically been examined as a binary of presence-absence (a zero-one variable), predominantly viewed as a sudden, “revolutionary” emergence associated with the onset of the Upper Paleolithic and the marked differences between Neanderthal and “wise” human behavior (see, e.g., Mellars, 1989; Mellars and Stringer, 1989). Richard Klein was the first to extend a hypothesis similar to this Eurasian revolutionary transformation to Africa and the Later Stone Age (Klein, 1994; 2000; 2009). The seminal paper by McBrearty and Brooks (2000) served as a response to these hypotheses, locating the origins of modern behavior in the Middle Stone Age and conceptualizing “modernization” as a gradual process. Consequently, various scenarios regarding the emergence of modern behavior and its subset, symbolic behavior, have been discussed to date, including: (1) the sudden appearance of modern behavior as a “package”; (2) the gradual emergence of behavioral complexities in humans with an African origin; and (3) a direct correlation between these developments and changes in brain structure. The most recent perspective in this regard belongs to Scerri and Will (2023). They argue that, rather than continent-centric views or the gradual accumulation of materials related to complex behaviors over time, the material evidence suggests the presence of such indicators in a non-synchronous and discontinuous manner across different regions of Africa (extensible to Eurasia). Evidence from the African Middle Stone Age points to a mosaic of discontinuous and fragmented trajectories in space, diverse in timing, and dependent on the evolutionary histories of specific population groups. Furthermore, there is currently no direct evidence establishing a correlation between changes in human brain structure and the appearance of so-called modern (and symbolic) behavioral packages. In this context, it appears that the most critical factors in the emergence and persistence (more continuous presence) of complex behaviors are those related to demographic processes, such as population structure and size, and the degree of connectivity between different populations.

It should be noted that this new perspective (in: Scerri and Will, 2023) had its precursors. Since the beginning of the 21st century, many researchers have ceased to believe in a single location and time as the origin of modern behavior (e.g., Wadley, 2001; Wynn et al., 2016), tracing the emergence of such behaviors from the late Middle Pleistocene and the transition between the Middle and Late Pleistocene in Africa, without a specific center (e.g., Conard, 2015). Similar hypotheses have also been proposed for Eurasia (e.g., d'Errico, 2003; Zilhão, 2007). Moreover, it was during this period that models related to human behavioral evolution increasingly focused on diversity, flexibility, and the plasticity of behaviors (e.g., Shea, 2011; Kandel et al., 2016; Roberts and Stewart, 2018). Scerri and Will argue that traits attributed to modern behaviors—such as engraving on cultural materials like shells and limestone slabs (art?), the transport of raw materials such as shells from distant locations, the presence of perforated shells, evidence of deliberate burial, and the use of pigments, particularly the mineral ochre—may reflect the formation of group identity and social networks, individual and intra-group communication, coding, the existence and creation of shared beliefs, social solidarity, and the multilateral interdependence of individuals within a group, as well as planning, innovation, experimentation and trial-and-error, dietary flexibility and habitat adaptability, the ability to control, reconstruct, and modify landscapes and ecosystems, and specialization in generalism (Scerri and Will, 2023).

In summary, there is a consensus that the oldest evidence associated with so-called symbolic behavior in Africa dates back to early Homo sapiens in the Middle Stone Age context. Furthermore, the examination of this category of evidence in Eurasia indicates that the history of the emergence of symbolic behavior extends back several tens of thousands of years prior to the beginning of the Upper Paleolithic or Later Stone Age. Evidence of symbolic behaviors among Neanderthals demonstrates that this human species also possessed the capacity for symbolic expression, although the intensity and breadth were not equivalent to those of Homo sapiens. While the precise reasons for the greater frequency and development of these behaviors among Homo sapiens populations remain unclear, it appears that demographic discussions related to "wise" human groups—such as higher population density, larger population sizes, and the endeavor to form collective identities and establish connections with neighboring groups and distant societies—play a role (Negash et al., 2011; Blegen et al., 2018).

In addition to the foregoing, discoveries related to the Homo denisova species and the documentation of modern behavior at sites attributed to this population have further complicated the situation. Based on the aggregate evidence from the three human species, it can now be stated that one should no longer seek a "package" of modern and complex behaviors and their subsets, such as symbolic behavior, in Paleolithic sites; rather, they should be viewed as a general capacity among human groups. In effect, the absence or scarcity of material evidence related to these behaviors at sites attributed to these two human species should not be interpreted as an indication of low or high cognitive capacity. Factors such as demographic issues (size and density), social aspects, and environmental conditions may have inhibited the expression of these behaviors among Neanderthals (Scerri and Will, 2023); in other words, Neanderthals may not have had a need to manifest such behaviors in certain regions and periods. Therefore, based on the principle of optimality, an initial need, as well as a social function and objective, must exist for complex behaviors to manifest.

Finally, it appears that both the sudden emergence model (the modern behavior package) and the gradual process model (gradual emergence in the Middle Stone Age) possess deficiencies. Today, given the evidence, it seems that the "saw-tooth" model (Scerri and Will, 2023) explains the Middle Stone Age cultural materials of Africa. Analogous to the teeth of a saw, which are inclined on one face and perpendicular to the axis of movement or the main axis of the saw on the other, an innovation in the realm of modern (and symbolic) behavior would occur in the African Middle Stone Age, and after decades of the scattered presence of such evidence across the continent, this type of behavior would abruptly vanish entirely. On the other hand, as previously discussed regarding spatiotemporal discontinuities and the mosaic nature of this evidence, it was not the case that throughout Africa at a specific time within the Middle Stone Age, we witness the continuous and uniform emergence of one aspect of modern behavior (such as the symbolic use of ochre).

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Author Contributions
Author Contribution: S. Dehqani and S. M. Hashemi contributed equally to this work.

Conflict of Interest
The Authors, while observing publication ethics in referencing, declare the absence of conflict of interest.

Endnote

1. This section draws substantially upon the framework established by McBrearty and Brooks (2000).
2. A term popularized by Curtis Marean (2015: 541), denoting highly cooperative and intensely altruistic behavior toward other group members, the community, and even strangers, without the expectation of material or tangible gain. This trait is often considered specific to Homo sapiens.

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بررسی مقایسه‌ای پیدایش و تطور رفتار موسوم به نمادین در دوران پارینه‌سنگی میانی با مروری بر منابع

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چکیده

نمادها به نشانه‌هایی گویند که به کمک دسته‌ای از قراردادها قابل درک هستند. رفتارهای موسوم به «نمادین» نیز به استفادهٔ سیستماتیک از نمادها اطلاق می‌شود که اهدافی چون ایجاد معناهای مشترک اجتماعی یا حفظ هویت گروهی را دنبال می‌کند. پیشینهٔ پیدایش رفتار نمادین دست‌کم به عصر سنگ میانی در آفریقا بازمی‌گردد. شواهد آن نیز حکاکی بر روی مواد معدنی چون کانی اُخرا، تدفین و مرگ‌آگاهی، ساخت دست‌ساخته‌های به‌ظاهر غیربهینه و پیچیده، ساخت پیکرک‌ها و استفاده از زیورآلات احتمالی چون صدف‌ها و دندان‌های جانوریِ سوراخ‌شده است. لازم به ذکر است که بروز رفتارهای نمادین به‌تدریج پیچیده‌تر شد و گسترش یافت و جزو جدایی‌ناپذیری از مواد فرهنگی مرتبط با انسان مدرن در دوره‌های پارینه‌سنگی جدید و فراپارینه‌سنگی/میان‌سنگی شد. در دهه‌های اخیر مشخص شده است که علاوه‌بر انسان مدرن، نئاندرتال‌ها نیز رفتارهای نمادین، هرچند در مقیاس بسیار کوچک‌تر، از خود بروز می‌دادند. در این جستار به شواهد باستان‌شناختی مرتبط با کهن‌ترین رفتارهای نمادین در دوران پارینه‌سنگی میانی/عصر سنگ میانی با روش کتابخانه‌ای (اسنادی) پرداخته می‌شود. این شواهد براساس گاهنگاری، پراکنش فضایی در قاره‌ها (دید هم‌زمانی) و نیز، براساس پدیدآورندگان (انسان خردمند باستانی، نئاندرتال) بررسی و طبقه‌بندی می‌شوند؛ سپس، تلاش می‌شود که به پرسش‌هایی چون تفاوت‌های درزمانی، روند پیچیده‌تر شدن و تفاوت‌های بین‌قاره‌ای یا منطقه‌ای میان بروز رفتارهای نمادین اولیه پرداخته شود. علاوه‌بر آن، بروز رفتارهای نمادین میان انسان خردمند باستانی و نئاندرتال‌ها نیز در چارچوب باستان‌شناسی بررسی و مقایسه خواهند شد. بررسی‌ها نشان‌داد که امروزه دیگر مدل‌های پیدایش یک‌بارهٔ بستهٔ رفتارهای مدرن و دگرگشت تدریجی رفتارها از ابتدای عصر سنگ میانی پاسخ‌گوی تحولات رخ‌داده و شکفته‌شدن و رواج رفتارهای نمادین در دوران پارینه‌سنگی جدید نیستند؛ بلکه درحال‌حاضر، مدل ناپیوستگی‌های فضایی-زمانی موسوم به «مدل دندانهٔ اره‌ای» شاید بتواند شواهد یافت‌شده در چند دههٔ اخیر از آغاز رفتارهای نمادین در عصر سنگ میانی و پارینه‌سنگی میانی را توضیح دهد.

کلیدواژگان: رفتار نمادین، شواهد باستان‌شناختی، دوران پارینه‌سنگی میانی/عصر سنگ میانی، اوراسیا، آفریقا.

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Formation and Transformation Dynamics of Ancient Settlements in the Miankouh Region, Pol-e Dokhtar County, Lorestan

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Abstract

Pol-e Dokhtar County is located in the south of Lorestan Province and along the northern borders of Khuzestan. The present study presents the results of an archaeological survey conducted in the eastern and western Miankouh districts of this county. These two rural districts, covering an area of approximately 1,000 km², comprise the eastern sector of Pol-e Dokhtar. The study area, with the exception of the two small plains of Vashyan in the northeastern vicinity of Pol-e Dokhtar town and Dadabad along the northern boundary of the county with Khorramabad, lacks extensive fertile plains and is predominantly mountainous, characterized by narrow valleys and difficult mountain passes. Nevertheless, this area has consistently attracted human occupation across different cultural periods due to its strategic location along the communication route linking the Khuzestan Plain with the Central Zagros and the Iranian Central Plateau. Analysis of the survey data indicates the presence of cultural materials representing several archaeological periods. At the conclusion of the survey, 178 archaeological sites were documented, spanning prehistoric, historical, and Islamic periods. Of these, 88 sites date to the prehistoric period, 75 to the historical period, and 30 to the Islamic period. One of the most significant findings of this research is the identification of more than 50 settlement sites attributable to various phases of Paleolithic, underscoring the sustained and intensive occupation of the Miankouh region during these periods. Furthermore, the documentation of nearly 20 defensive-administrative architectural structures dating to the historical and Islamic eras, along with the construction of several caravanserais along this route during the Safavid period, reflects the strategic and administrative importance of the region in later Islamic centuries. Among the other noteworthy discoveries is Kogan Cave, which, based on the available archaeological evidence, has been dated to the middle Islamic centuries and appears to have been functionally associated with the fortress located above it. Ultimately, the cultural richness of the region, coupled with its considerable environmental potential, appears to reflect its pivotal role as one of the shortest and most strategic communication corridors between the Khuzestan Plain, the Khorramabad Valley, and the broader region of Lorestan.

Keywords: Lorestan, Pol-e Dokhtar County, Archaeological Survey, Eastern Miankouh, Western Miankouh.

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Introduction

Archaeological surveys constitute the initial but fundamental stage of archaeological research, providing the primary data necessary for reconstructing patterns of past human settlement within a given region. The results derived from such surveys, in addition to illuminating various aspects of ancient lifeways and cultural sequences, establish the empirical foundation for subsequent analytical studies aimed at reconstructing human activities across different chronological periods. The more systematic and comprehensive these surveys are, the more refined and nuanced our understanding of regional settlement dynamics and socio-cultural developments becomes. Reliance on systematically collected survey data enhances the reliability of interpretations and enables analyses grounded in material evidence. Archaeological research in Pol-e Dokhtar has a relatively long history. Beyond the accounts of early travelers such as Rawlinson, Edmonds, and De Bode, who passed through the region, the area was subjected to sporadic archaeological investigations prior to the Islamic Revolution, particularly during the 1960s and 1970s. Notably, the expeditions led by Hole (1979) and Goff (1971) conducted surveys that underscored the strategic importance of the region in terms of communication networks and the study of nomadic societies. In the post-revolution period, additional surveys were undertaken in the county. A Paleolithic survey directed by Kourosh Roustaei and colleagues examined three areas in Lorestan Province, Khorramabad Valley, Kouhdasht County, and Pol-e Dokhtar, and reported evidence of Stone Age human occupation north of Pol-e Dokhtar town (Roustaei et al., 2000).

Furthermore, a survey of the rock shelters of the county was conducted under the direction of Babak Moradi (Moradi, 2006). However, in a more systematic framework aimed at documenting and registering archaeological sites in Pol-e Dokhtar County, two seasons of survey were carried out in 2005 and 2006. The first, under the supervision of Ali Akbar Vahdati, focused on the districts of Jelogir and Jaydar (Vahdati, 2005), while the second, directed by Mohammad Taghi Ataei, concentrated on the districts of Malawi and Afrineh (Ataei, 2006). These investigations resulted in the identification and registration of more than one hundred archaeological sites. In recent years, archaeological activities in the county have also included projects aimed at defining site boundaries and formally registering cultural heritage monuments. Among the most significant of these is the delimitation of the Neolithic site of Kalek Asadmorad, where evidence of settlement dating to the second half of the ninth millennium

BC was identified (Moradi et al., 2016). Pol-e Dokhtar County is situated in southern Lorestan along a major corridor connecting the Susiana Plain with the Lorestan Highlands and the Iranian Central Plateau. One of these long-standing communication routes corresponds to the present-day Khorramabad–Pol-e Zal highway. Given the importance of such intermediary zones in examining cultural interactions between adjacent regions and considering the absence of a comprehensive archaeological assessment of the Miankouh region, particularly for prehistoric periods, the present research was undertaken to address this gap (Bahrami, 2020). The study was conducted in the area known as Miankouh, which, according to current administrative divisions, comprises the two rural districts of East and West Miankouh (Fig. 1).

Survey Method

Due to the mountainous topography and challenging environmental conditions of the region, a fully systematic and comprehensive pedestrian survey was not feasible. Consequently, the research team adopted a multi-scalar approach to enhance field efficiency and coverage. This approach incorporated the analysis of topographic maps, high-resolution aerial imagery from Google Earth, consultation with local guides and knowledgeable residents, and reliance on the prior field experience of team members. Prior to commencing field operations, maps of rural access routes, water resources and springs, as well as the courses of permanent and seasonal streams were carefully examined and analyzed. This preparatory stage enabled the team to enter the field with a well-developed understanding of the region's environmental potential and settlement affordances. Close engagement with local inhabitants, particularly trusted and well-informed individuals, proved instrumental in identifying archaeological locations. While local guidance and cartographic resources were especially effective in locating sites dating to the historical and Islamic periods, the identification of prehistoric occupations, particularly those of the Paleolithic period, relied primarily on the technical expertise and survey experience of the research team. Through the implementation of this integrated strategy, the project ultimately succeeded in identifying and documenting 178 archaeological sites and cultural remains, spanning a chronological range from the Paleolithic period to the Late Islamic centuries.

Physiography

Pol-e Dokhtar County is characterized by a diverse, four-season climate.

Its lowest elevations, situated along the border with Khuzestan province at approximately 500 meters above sea level, fall within the tropical zone. Conversely, the high-altitude mountainous regions to the east, abutting the Hashtad Pahlou massif, are classified as part of the highlands of Lorestan. Excluding two relatively small alluvial plains -Vashyan on the northeastern periphery of Pol-e Dokhtar and Dadabad on the northern border with Khorramabad- the study area lacks expansive fertile lowlands. Instead, it is predominantly rugged and mountainous, defined by difficult-to-pass valleys and high mountain passes. Due to its latitudinal position and proximity to Khuzestan, the Vashyan plain is the lowest topographic basin in Lorestan along the transit corridor from Khorramabad to Khuzestan. The Hashtad Pahlou mountains, situated 26 km southeast of Khorramabad, extend to the Sezar River in the east and border Pol-e Dokhtar and the Dadabad region to the west. As an alpine feature, Hashtad Pahlou retains perennial snow until late summer. This massif is characterized by dense forest cover, diverse fauna, and numerous perennial springs (Amanollahi Baharvand, 1991: 130). The prominent relief and deep valleys in the eastern sector of the study area present significant topographic barriers, which necessitated the formation of a historical road connecting Khuzestan to Khorramabad through the Miankouh region. Miankouh is situated between Hashtad Pahlou to the east and the Kashkan River valley to the west. The region is partitioned into three distinct zones by three parallel mountain ranges: from north to south, the Ghazal, Khargooshan, and Kialo. Khargooshan Mountain serves as the topographic boundary between two rural districts intersected by the Dalich Pass. The orographic influence of these snow-capped peaks facilitates high hydraulic discharge, particularly in eastern Miankouh. This area, with its temperate, well-watered valleys and an altitude of roughly 2,000 m asl, serves as a seasonal habitat for pastoral nomads who winter in northern Khuzestan or the lowland regions south of Pol-e-Dokhtar. To traverse these rugged highlands, nomadic groups utilize natural passes such as Dalich and Hilem.

The Zal River delineates the eastern border of this territory and Pol-e-Dokhtar, eventually confluencing with the Seymareh River to form the Karkheh. Furthermore, the Ghazal (or Chulhoul) River, which drains the northern slopes of Mount Ghazal, flows into the Kashkan after merging with minor tributaries such as the Kogan, Taei, and Ghal-e Nsir near Afrineh. In contrast, the Western Miankouh Rural District exhibits lower elevations and is comparatively poorer in terms of hydrological and botanical resources.

Fig. 1: Location of the eastern and western Miankouh rural districts in the east of Pol-e Dokhtar County (Author, 2023). ▶

The importance of communication routes in the Miankouh region

Given the importance of communication routes in the formation and development of settlements in this region, it is essential to provide a brief discussion of the transportation networks of Lorestan, with particular emphasis on the routes leading to Khuzestan as recorded in historical sources. Lorestan is strategically situated at the intersection of two principal axes of movement, oriented north–south and east–west. These routes can be categorized into two primary branches, as follows:

1- The North–South Route: Estakhri, in Masalek va Mamalek (p. 163), describes the mountainous cities under the heading of the distances between Hamadan and Khuzestan as follows: “From Hamadan to the Rawar River is seven farsakhs; from the Rawar River to Nahavand, nine farsakhs; from Nahavand to Lashtar (Aleshtar), ten farsakhs; from Lashtar to Shaberkhast, present-day Khorramabad, twelve farsakhs; from Shaberkhast to Lur, thirty farsakhs, with no settlements in between; from Lur to Andamesh, present-day Andimeshk, two farsakhs; and from Pol-e Andamesh to Jondishapur, two farsakhs”. This route is described in similar terms by Ibn Hawqal. At present, much of this route traverses mountainous terrain. From Nahavand it extended toward Gamasyab and from there to Chehel Nabaleghan, the well-known peak of Mount Garin. At this point the road divided into two branches. The western branch led toward Delfan, while the other branch, after passing through the Dare Ash pass, reached the Aleshtar plain and continued from Aleshtar toward Shapurkhast, present-day Khorramabad. The distance between Shapurkhast and "Lur" remains approximately thirty farsakhs along a mountainous route. Historically, the most challenging segments of this major thoroughfare were located between Shapurkhast and Lur, as the road traversed rugged highlands and dense oak forests. During the Safavid period, numerous caravanserais were constructed along this route, several of which have survived. Among those recorded in the Khorramabad region are Goshesh, Chamshak, Qaleh Nasir, Aow Sar, Mishvan, Rezeh, and Charta (Izdpanah, 1997). This corridor corresponds to the same route that passed through the Miankouh region. From Shapurkhast, a secondary route extended toward Boroujerd, Isfahan, and the central plateau. Lestrange, citing Tarikh-e Gozideh, describes this route as follows: "Beyond Boroujerd there is a road that comes from Nahavand and proceeds toward Isfahan, where it divides into two branches. The right branch leads to Shapurkhast, while the left branch, which constitutes the principal route, extends eastward to Karaj Abu Dolaf" (Lestrange, 1996: 217–218).

2- All of these routes mentioned in historical sources of the middle and late Islamic centuries remain in use today, at least in modified form. Rawlinson, who traveled to Iran in the nineteenth century, described in his travelogue the routes between Khuzestan and Khorramabad as follows: "There are three roads from Dezful to Khorramabad. The first road reaches Khorramabad via Jaydar, present-day Pol-e Dokhtar, along the northeastern route, at a distance of ten miles. The second road, eight miles in length, passes through the Zal River and, after crossing the Kialan and Dalich mountains, leads to Khorramabad. The third road runs directly through the mountains, generally heading north, and reduces the distance between the two cities to four miles" (Rawlinson, 1939: 129). These three routes were subsequently described by numerous travelers. The first route was traversed and recorded by Baron de Bode. The second route functioned as the principal corridor during the Safavid and Qajar periods until the construction of the present Khorramabad to Pol-e Dokhtar highway, and it was described in detail by Edmonds, who personally traveled along it (Edmonds, 1983). This route corresponds approximately to the modern Khorramabad–Pol-e

Zal highway. The third route was traveled by Rawlinson himself as well as by Cherikov and appears to represent the oldest communication route in Lorestan (Rawlinson, 1983; Cherikov, 2000).

The foregoing discussion underscores the strategic importance of the Miankouh region in Pol-e Dokhtar County within historical sources. It demonstrates that, throughout both prehistoric and historical periods, this area functioned as a principal communication corridor linking Khuzestan with Lorestan and the Central Zagros region.

Chronology

During the survey of the Eastern and Western Miankouh rural districts, a total of 178 archaeological sites were identified. Through the analysis of surface materials collected from these locations, evidence for the majority of the region's archaeological cultural periods was confirmed. The documented sites and cultural materials span a chronological range from the Middle Paleolithic period to the Late Islamic centuries. Of the total, 88 sites were attributed to prehistoric periods (Fig. 2), 75 sites to historical periods (Fig. 9), and 30 sites to the Islamic period (Fig. 13). Several of these sites yielded evidence indicating occupation during multiple chronological phases. In the following sections, these data and their respective archaeological periods will be described and analyzed in detail.

Prehistoric Sites

The Central Zagros, with its abundance of Paleolithic sites, has long attracted the attention of Paleolithic archaeologists. One of the most significant results of the present study was the identification of 32 Middle Paleolithic sites. Although some of these lacked diagnostic lithic tools typically associated with this period, their attribution to the Middle Paleolithic was based on the overall assemblage characteristics, the high density of lithic flakes, and the contextual patterning of the sites, taking into account the probable function of each location. The settlements of this period were distributed across both rural districts. Levallois cores, various types of scrapers, and numerous flakes constituted the most important surface finds from these sites (Fig. 3). The evidence of Middle Paleolithic occupation was recorded at a wide range of elevations. For example, the Tir Kouh site in eastern Miankouh is situated at an altitude of 2,235 meters above sea level, whereas the Bon Kareh site in western Miankouh lies at approximately 930 meters. Lithic industries of this period have previously been documented at major Paleolithic sites in Iran, particularly within the Zagros Mountains and the Khorramabad Valley (Biglari and Shidrang, 2006; Bazgir et al., 2014).

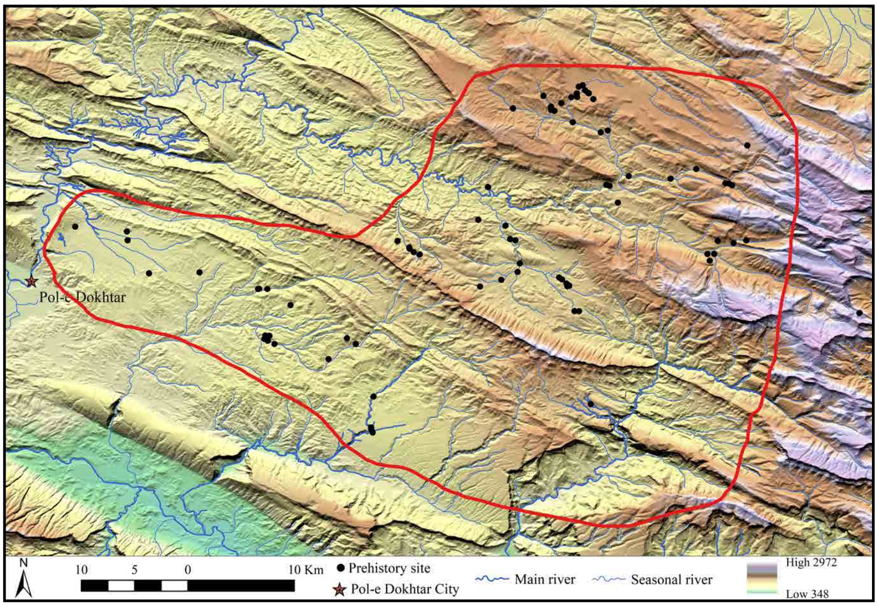


Fig. 2: Distribution of prehistoric sites within the survey area (Map: H. Ghobadizadeh), (Author, 2023).

Possible evidence from the Upper Paleolithic period was identified in the Vezmiya region, particularly on the slope in front of Vezmiya Cave. The assemblage includes mixed cores, retouched blades, borers, and scrapers (Fig. 4), suggesting the probable presence of Homo sapiens in this area. Unfortunately, no archaeological evidence was recovered from the interior of the cave. The high density of animal dung resulting from the long-term presence of nomadic herds has most likely covered the cultural deposits and obscured earlier occupational layers. The identification of Middle Paleolithic sites in the vicinity of the cave further strengthens the likelihood that Vezmiya Cave was used during both the Middle and Upper Paleolithic periods. Comparable Upper Paleolithic lithic assemblages have been reported from numerous sites across the Zagros region, most notably Yafteh Cave in the Khorramabad Valley (Hole and Flannery, 1967; Otte et al., 2007). Based on excavation results, Hole divided the lithic industry of this period, which had previously been termed the Bradostian industry by Solecki following his excavation of Layer C at Shanidar Cave (Solecki, 1958), into two phases, an earlier and a later phase. He emphasized the prominence of blades and bladelets, various types of scrapers, borers, and Arjeneh or El Wad points within this industry (Hole, 1970).

From the Epipaleolithic period, 12 sites were identified. Surface surveys at Vezmiya 1, Kogan, and Zour Azma 2 yielded specimens of blade and bladelet cores (Fig. 5: 3, 6, 7), sickle blades (Fig. 5: 1, 4), borers (Fig. 5: 2), and geometric bladelets. These materials, together with the broader lithic assemblages collected from the sites, strongly support their attribution to the Epi Paleolithic period. The lithic industry of this period in the Zagros region is known as the Zarzian industry, which is well represented at the Warwasi rockshelter (Olszewski, 1993a). In several assemblages attributed to this period, the presence of sickle blades used for harvesting wild cereals has been reported (Mohammadifar and Motarjem, 2008). Comparable examples of such sickle blades were also identified at the above mentioned.

Fig. 3: Samples of Middle Paleolithic Levallois cores and flacks from Rahmati locality (Author, 2023). ▶

From the Neolithic period, when human communities began producing food under new climatic conditions while drawing upon earlier subsistence experiences, four settlements were identified: Deymeh, Bon Ghela, Afrineh 1, and Chenareh. No pottery sherds were recovered during the surface survey, and all four settlements were therefore attributed to the Pre-Pottery Neolithic period. The high frequency of blades and bladelets, together with numerous bullet-shaped cores, underscores the significance of these settlements during the Neolithic period (Fig. 5). Among these sites, Deymeh Tepe, covering approximately one hectare, and Bon Ghela Tepe are particularly noteworthy due to the high density of lithic artifacts, whereas the Chenareh site has been severely damaged and disturbed as a result of modern village construction over the mound. In addition to the predominantly chert lithic assemblages characteristic of the Neolithic, obsidian tools and debitage were also identified on the surfaces of the Deymeh and Afrineh 1 sites. Given the chronology of obsidian exploitation and its geological sources, these materials are likely to date to after 7200 BC (Darabi and Glascock, 2013). The lithic industries recovered from the surface of these sites are comparable to assemblages reported from other Zagros sites (Kozlowski and Aurenche, 2005), particularly those documented in the Central Zagros region (Bahrami et al., 2012; Darabi et al., 2011).

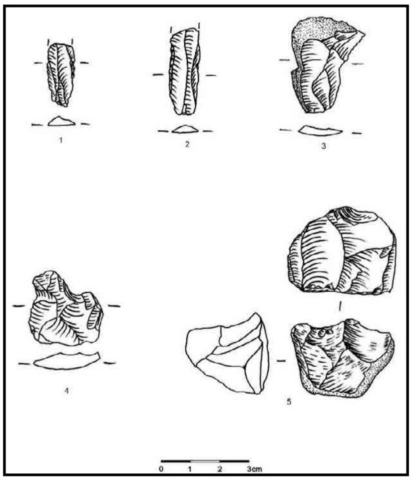
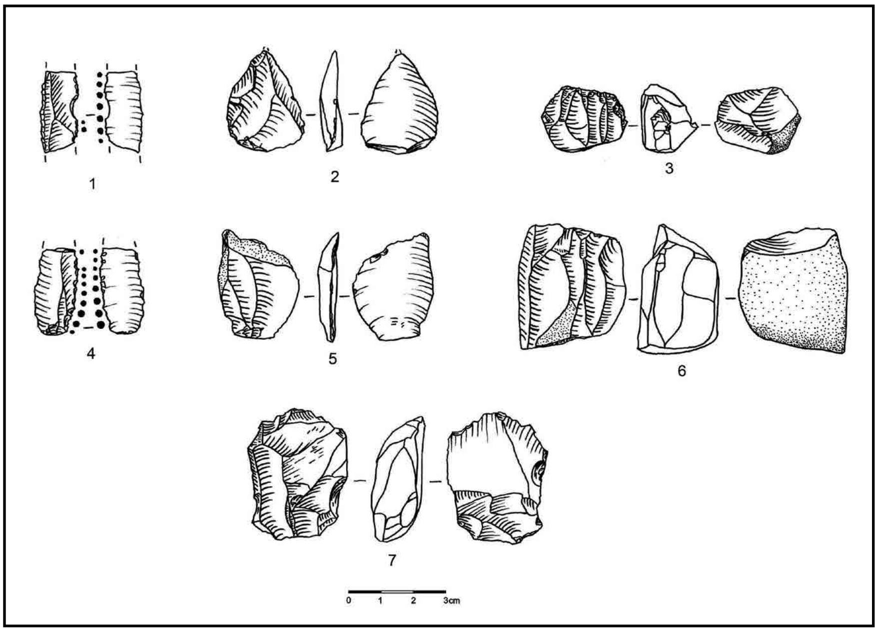
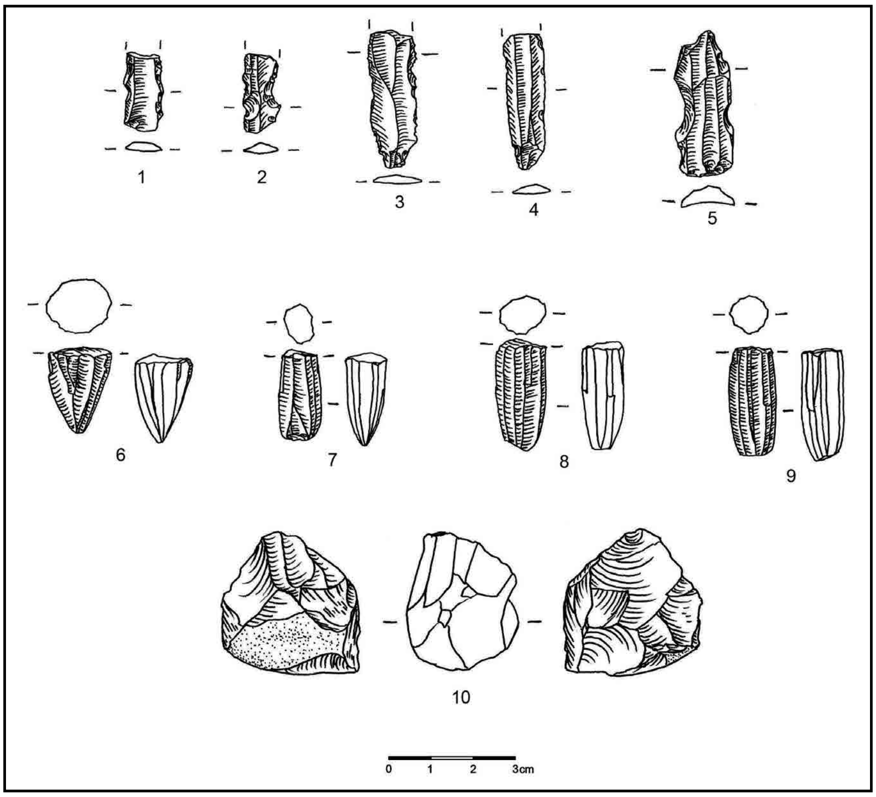


Fig. 4: Samples of stone tools from the Eshkaft Vezmya that probably belong to the Upper Paleolithic period (1 and 2. retouched blade, 3. borer, 4: notched flake, 5: mixed core) (Author, 2023). ▶



◀ **Fig. 5: Samples of Epipaleolithic stone tools from the Zour Azma 2 site. (1 , 4: sickle blades; 2 , 5: borers; 3, 6 , 7: mixed flake and bladelet cores), (Author, 2023).**



◀ **Fig. 6. Sample of Neolithic stone tools from Tepe Deymeh. (1: side scraper on bladelets; 2: notched bladelet; 3: double side scraper; 4: Plain blade; 5: notched blade on bladelet core; 6-9: Bullet shaped core; 10: Mixed core) (Author, 2023).**

From the Chalcolithic period (5500–3000 BC), the archaeological evidence recovered from the Miankouh region presents a different pattern. No sites were identified from the Early Chalcolithic period, during which the Bagh-e No cultural tradition was dominant in Lorestan. From the Middle Chalcolithic period, only four sites were identified: Bon-Ghela, Nazar Alivand, Dawat Malga, and Deh Bozorg. In contrast to the preceding periods, the Late Chalcolithic period, particularly during the fourth millennium BC, exhibits a markedly different settlement pattern in the region. A total of 13 settlements were identified from this phase, including three large and central mounds, -Tepe Afrineh, Nasir Tepe Vashyan, and Cheshmeh Kogani- as well as several small or seasonal sites: Bagh-e Darband, Darband, Mintako, Ahmad Abad Cemetery, Tok-Tok Aow, Maz-Chokela, Bardbal, Pusht Tepe Gerdakaneh, Darkolen Cemetery, and Koul Sorkhmal 2. The most prominent of these is Tepe Afrineh, which was documented in pre-revolutionary surveys and discussed by Clare Goff (1971) under the title Pre-Iron Age Settlements of Lorestan. The pottery assemblage of this period (Fig. 7) can be compared with characteristic Late Uruk materials from the Central Zagros region, particularly Godin VI (Young, 1969). Among the ceramic forms, club-rimmed vessels (Nos. 3, 7) are comparable to similar examples from Godin VI (Young 1969, fig.

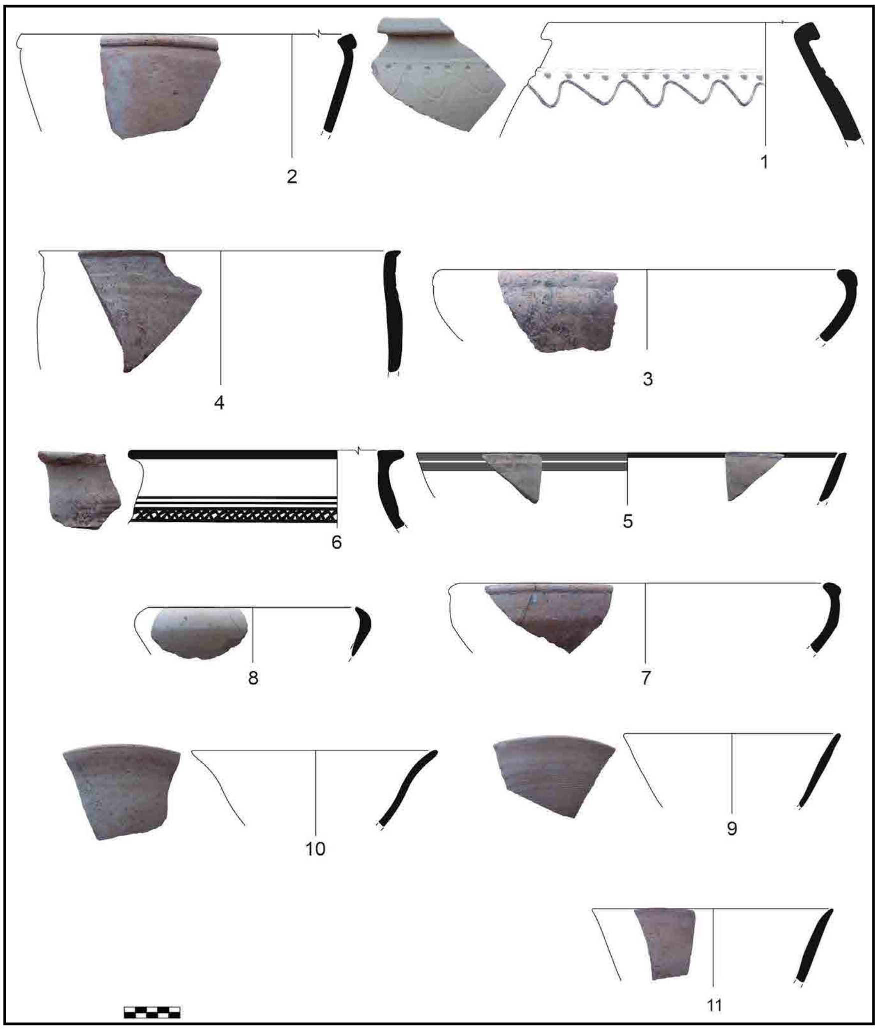


Fig. 7: Pottery sherds of Late Chalcolithic from Tepe Afrineh (Author, 2023). ▶

No	Type	Description	Chronology	Comparison
1	rim	Buff-colored fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness, incised decoration	Late Chalcolithic	-
2	rim	Buff-colored fabric, orange-buff slip, well-fired, handmade, mixed temper, medium wall thickness	Late Chalcolithic	Goff, 1971: Fig. 5: 17-18
3	rim	Buff to dark-buff fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness	Late Chalcolithic	Goff, 1971: Fig. 7: 10-12; Young, 1969: Fig. 8:4, 12
4	rim	Buff to dark-buff fabric, thin buff slip, well-fired, handmade, mixed temper, medium wall thickness	Late Chalcolithic	-
5	rim	Buff to dark-buff fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness, painted decoration	Late Chalcolithic	-
6	rim	Buff fabric, dark red slip, well-fired, handmade, sand temper, medium wall thickness, painted decoration	Late Chalcolithic	Goff, 1971: Fig. 6: 34
7	rim	Buff to dark-buff fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness	Late Chalcolithic	Goff, 1971: Fig. 7:10-12; Young, 1969: Fig. 8:4,12
8	rim	Buff fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness	Late Chalcolithic	Goff ,1971: Fig. 7: 2-6; Young, 1969: Fig. 8: 4,12
9	rim	Buff fabric, buff slip, well-fired, wheel-made, mixed temper, medium wall thickness	Late Chalcolithic	Young, 1969: 69, Fig. 8: 22; Gopnik& Rothman, 2011: 123, Fig. 4.44: VI.1; Henrickson, 1994: 97, Fig. 3: 17, 22
10	rim	Buff fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness	Late Chalcolithic	Young, 1969: 69, Fig. 8: 3; Gopnik & Rothman, 2011: 124, Fig. 4.45: VI. 1, 2
11	rim	Buff fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness	Late Chalcolithic	-

◀ **Table 1. Characteristics of the potsherds recovered from Tepe Afrineh (Fig. 7), (Author, 2023).**

8:4, 12) and Babajan V (Goff 1971: fig. 7:10–12). Likewise, shallow bowls with inverted rims (No. 8), comparable to specimens from Kunji Cave in Khorramabad (Wright et al. 1975, fig. 6: m), have also been reported from Godin VI (Levine and Young 1987, fig. 17: 7, 13) and Babajan V (Goff, 1971, fig. 7: 2–6), which Goff identifies as belonging to the Uruk B phase (Ibid: 134).

Ten sites dating to the Bronze Age were identified, including both cemeteries and settlement sites. The Bronze Age cemeteries of this period exhibit a distinctive architectural tradition, characterized by the use of large stone blocks arranged in a gabled roof form. Among these burial grounds, only the Chemeshk cemetery preserved intact grave structures, which had been exposed by unauthorized excavations. As a result of looting activities, only a limited number of pottery sherds were recovered from these graves. Not far from this cemetery, the Chemeshk settlement mound was identified, dating to the Bronze Age and likely associated with the cemetery. In addition to these two sites, Bronze Age material evidence was also documented at Darband (Fig. 8), Chal Kher Gelou, Ahmad Abad Cemetery, Ghelangari, Kord Ali, Sarab-e Abdul Ali, Dada Golab, and Chah-Shirin Ahmadi Cemetery. The ceramic assemblages from these sites fall within the broader cultural framework of the Bronze Age in Lorestan. Comparable materials have been reported from Kunji Cave in Khorramabad, attributed to the Lower Bronze Age (Emberling et al., 2002), as well as from the Godin III cultural horizon (Henrickson, 1987). The Godin III sequence, dated between 2600 and 1450 BC, corresponds to the Middle and Late Bronze Age. In terms of morphology and decorative treatment, the pottery of this period shows close parallels with the Godin III6 and III5 phases (Nos. 5, 10), which are contemporaneous with the Early Dynastic III period, the Babajan V phase, and Susa IVA. Henrickson

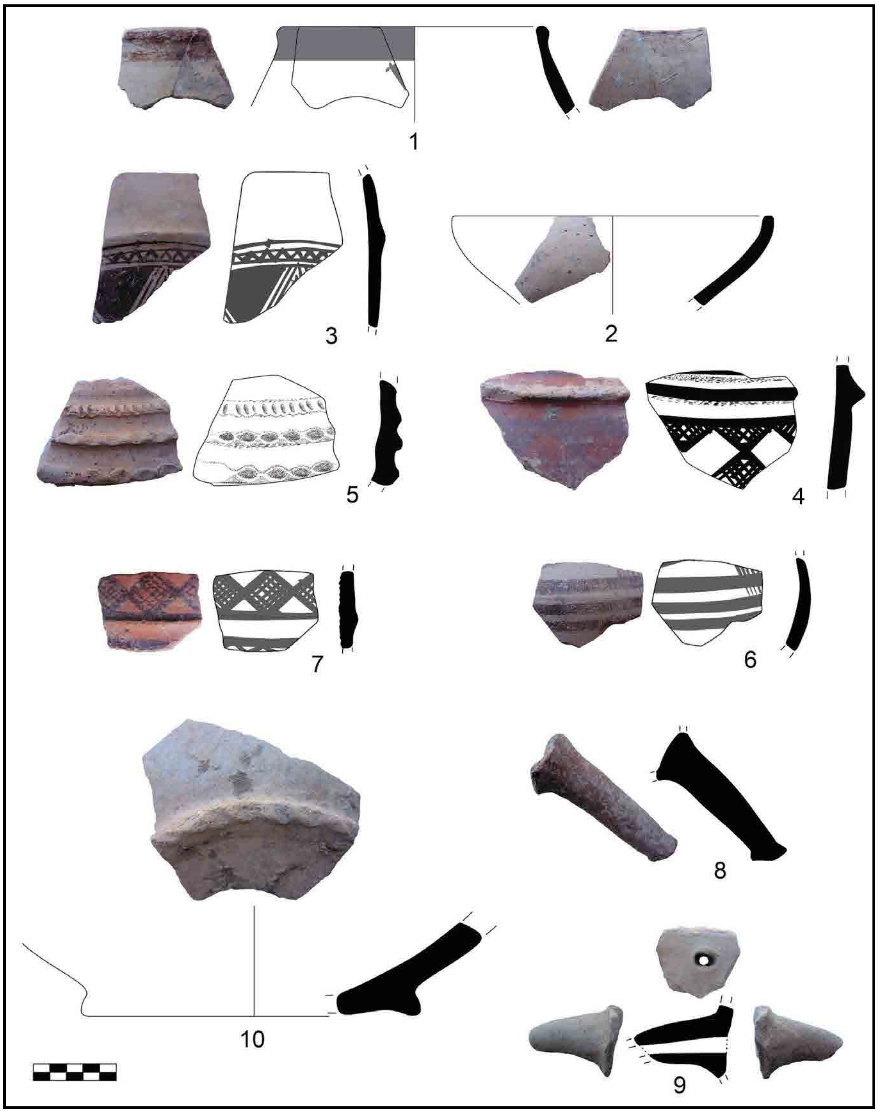


Fig. 8: Samples of Bronze Age potsherds from Darband (Author, 2023).▶

No	Type	Description	Chronology	Comparison
1	rim	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness, carved decoration	Bronze Age	Henrickson, 1987, P: 92, Fig. 10: 9
2	rim	Buff fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness	Bronze Age	Henrickson, 1987, P: 98, Fig. 16: 2-4
3	body	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness, painted	Late Bronze Age	-
4	body	Buff fabric, red-dark slip, well-fired, wheel-made, sand temper, medium wall thickness, painted	Late Bronze Age	Henrickson, 1987, P: 91, Fig. 9: 1-2
5	body	Buff-orange fabric, buff-orange slip, well-fired, wheel-made, sand temper, medium wall thickness, added rope-pattern decoration	Middle Bronze Age	Henrickson, 1987, P: 96, Fig. 14
6	body	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness, painted	Bronze Age	-
7	body	Orange-buff fabric, red-white slip, well-fired, wheel-made, sand temper, medium wall thickness, painted	Late Bronze Age	Gopnik, 2011, p: 252, Fig. 6.37a
8	spout	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness, tripod stand	Middle Bronze Age	Schmidt *et al.*, 1989: Plate 93
9	spout	Buff fabric, buff slip, well-fired, handmade, mixed temper, medium wall thickness, pipe vessel	-	-
10	base	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness, rope pattern on bottom	Middle Bronze Age	Henrickson, 1987, P: 91, Fig. 9: 2

◀ Table 2. Technical specification of potteries recovered from Darband (Fig. 8), (Author, 2023).

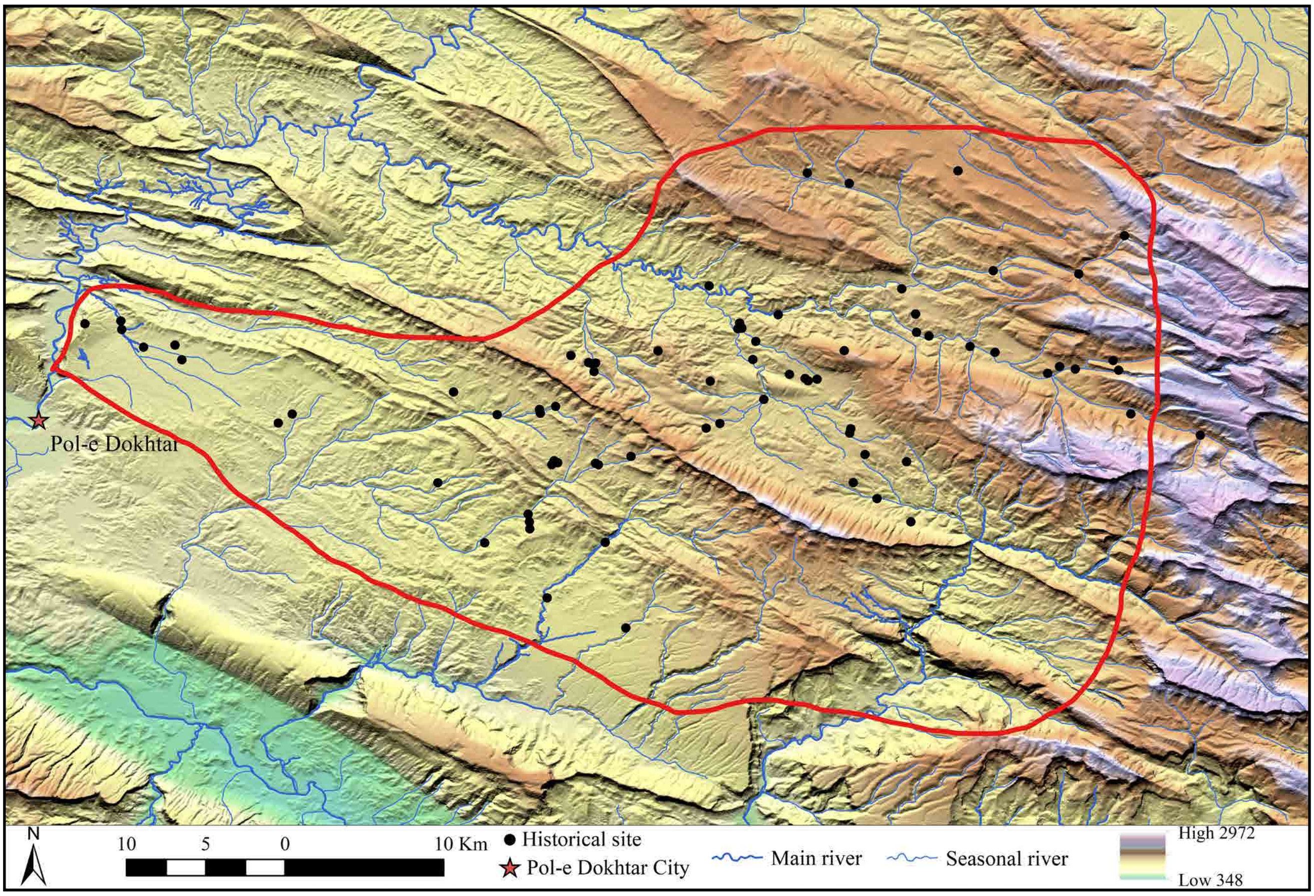
proposes a date for this cultural phase between the mid third millennium BC and approximately 2200 BC (Henrickson, 1987: 417 to 414). Several Bronze Age ceramics from the Miankouh region can further be attributed to the Godin III2 phase, dated to 1900 to 1600 BC. Pottery Nos. 3, 4, and 7, characterized by a pronounced shoulder projection, belong to this phase.

Evidence related to the Iron Age was identified at eight sites: Ghelacheh Sarsang, Nirkoo, Merow Hoshka 1 and 2, the cemetery of Bon Ghela, Mi-Gerowa, Bera Balikou, and Koul Sorkh Mal 1. The sites attributed to this period comprise both settlement areas and cemeteries. Among them, Koul Sorkh Mal 1 is particularly noteworthy, as, in addition to pottery sherds, stone blades and projectile points were collected from the surface. These materials are comparable to examples reported from the Pai Kool cemetery in Poshtkouh, Lorestan (Overlaet, 2013: 788), and the Sangtarashan site in southern Khorramabad (Malekzadeh, 2008). At one of these sites, water erosion had partially cut through the mound, exposing the structure of a grave. From this exposed context, pottery sherds of the Genre Lorestan tradition were recovered, which are comparable to Babajan III ceramics (Goff, 1978) and to materials from the lower strata of Falak-ol-Aflak Castle in Khorramabad (Bahrami, 2022).

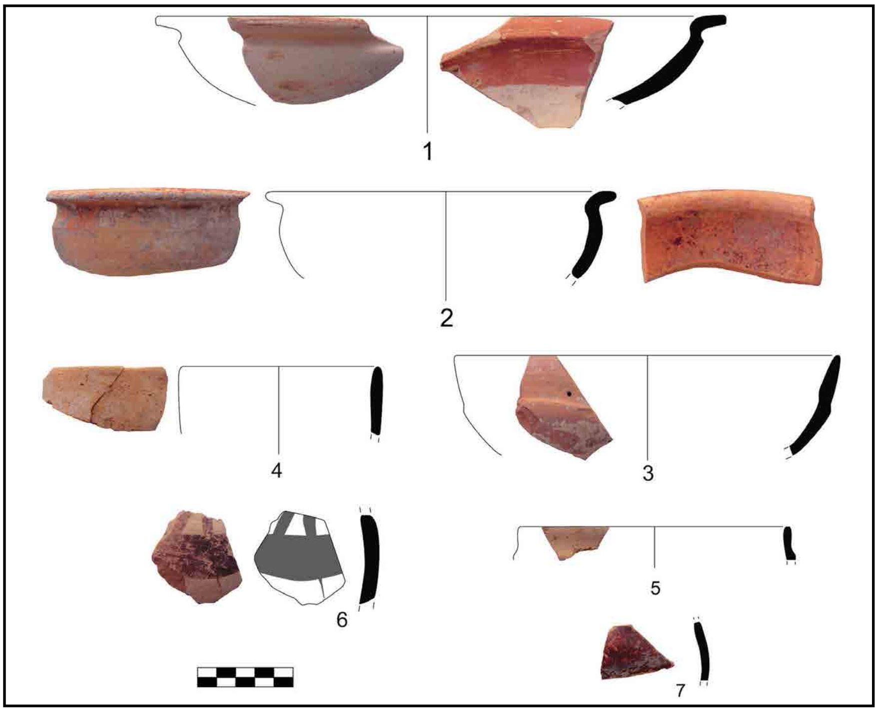
Historical Period Sites

As the result of survey, settlement evidence was identified from the Achaemenid, Seleucid, Parthian, and Sassanid historical periods (Fig. 9). Among these, three sites, Malga Sha Cemetery, Tepe Roustayeh Malga Sha, and Takht-e Shir Hill 1, belong to the Achaemenid period, as they yielded pottery types characteristic of this era, including the so-called carinated (boat-shaped) bowls. These forms are comparable to the examples obtained from Pasargadae (Stronach, 2000) and Susa (Stronach, 1974). Notably, Achaemenid pottery is largely absent in central Lorestan, and it is most likely that the presence of such wares in southern Lorestan reflects the proximity of this region to the Susiana Plain. From the Seleucid period,

Fig. 9: Distribution of identified historical sites within the survey area (Map: H. Ghobadizadeh). ▼



six ancient sites were identified, characterized by finely fired, thin, cream-colored pottery incorporating a mixture of fine minerals and decorated in ochre, brown, and dark tones (Fig. 10).



◄ Fig. 10: Samples of Seleucid-related potsherds recovered from Tepe Heraskah, (Author, 2023).

◄ Table 3. Technical specification of pottery sherds from Heraskah (Fig. 10), (Author, 2023).

No	Type	Description	Chronology	Comparision
1	rim	Buff fabric, buff-white slip, well-fired, wheel-made, soft sand temper, medium wall thickness, painted	Seleucid	Rahbar, *et al.*, 2014: Pl. 5
2	rim	Orange-white fabric, orange-white slip, well-fired, handmade, soft sand temper, medium wall thickness, painted	Seleucid	Rahbar et al., 2014: Pl. 5
3	rim	Red-orange fabric, red-orange slip, well-fired, wheel-made, soft sand temper, thin wall thickness, painted	Seleucid	-
4	rim	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness	Seleucid	-
5	rim	Buff fabric, buff slip, well-fired, wheel-made, sand temper, thin wall thickness	Seleucid	-
6	body	Buff to dark-buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness, painted	Seleucid	Rahbar et al., 2014: Pl. 5
7	body	Orange fabric, red-dark slip, wheel-made, well-fired, wheel-made, soft sand temper, thin wall thickness, painted	Seleucid	Rahbar et al., 2014: Pl. 5

One characteristic form of this period is the thermos, a broken example of which was recovered at the Aow Madian site in Western Miankouh (Bahrami, 2020: 541). These samples are comparable to pottery from Sorkh Dom Laki in Kouhdasht (Shishehgar, 2004: 190). Seleucid-period pottery has also been reported from prominent sites including Laodicea in Nahavand (Rahbar et al., 2014: Pl. 5, 6), Falak-ol-Aflak Castle in the Khorramabad Valley (Bahrami et al., 2015), Noushijan (Stronach, 1974: Pl. LV.7), Sorkh-Dom Laki (Shishehgar, 2004) in western Iran, and Susa in the Khuzestan Plain (Bucharlat, 1987; De Miroschidji, 1987). The presence of settlement evidence from this period in the Miankouh region, alongside the aforementioned sites, demonstrates the existence of connections between the Susiana Plain and western Iran via this communication route and underscores its historical importance.

The conditions of the Miankouh region during the Parthian and Sassanid periods appear broadly comparable to those of the preceding periods. One of the prominent features of the region in these periods, which continued into the later Islamic era, is the construction of governmental and defensive architectural complexes adjacent to settlement areas. All of these structures were built of rubble stone bonded with plaster mortar. From the Parthian period, 43 sites were identified that yielded characteristic ceramic assemblages of this era, including buff wares decorated with light brown painted motifs from the early phase of the period and the distinctive so-called “Clinky” wares (Fig. 11) attributed to the Middle and Late Parthian phases (Haerinck, 1997). These ceramics are comparable to characteristic Parthian types documented at Yazdgerd Castle (Keall & Keall, 1981),

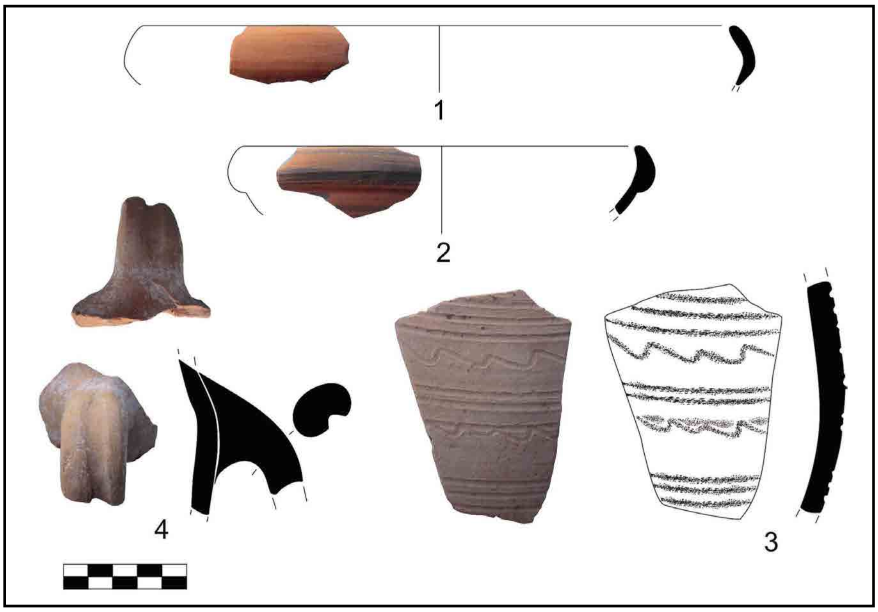


Fig. 11: Samples of Parthian period pottery from the Ghazal Village Tepe (Author, 2023). ▶

No	Type	Description	Chronology	Comparison
1	rim	Gray fabric, orange-white slip, well-fired, wheel-made, soft sand temper, thin wall thickness	Parthian	Haerinck, 1997: Fig. 15: 4; Alibeigi, 2011: 158, Fig. 4: 3
2	rim	Gray fabric, orange-white slip, well-fired, wheel-made, soft sand temper, thin wall thickness	Parthian	Haerinck, 1983, Fig. 8: 15
3	body	Buff fabric, buff slip, well-fired, wheel-made, soft sand temper, medium wall thickness, carved decoration	Parthian	Haerinck, 1983: Fig. 14: 2; Keal & Keal, 1981: Fig. 28: 21-22
4	handle	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness	Parthian	-

◀ **Table 4: Typological specification of potteries from Ghazal Village Tepe (Fig. 11), (Author, 2023).**

Bisotun (Klais, 2006), and the Temple of Laodicea at Nahavand (Rahbar & Alibeigi, 2011). In addition to the ceramic evidence, defensive architectural remains of this period have also been documented in the region. Notable examples include Ghalacheh Kamancheh, located atop Ghalacheh Mount at an elevation of approximately 2000 m on the right side of the entrance to the Darband Strait, as well as Abshoureh Mehr Castle and Dehgah Hill.

From the Sassanid period and the early centuries of Islam, 22 sites were identified. Of these, seven architectural complexes and castles were recorded: Ghela Kush Kharan, Ghelacheh Gholamreza, Ghela Deh-Bozorg, Ghela Baraftab, Ghela Chemeshk, Ghela Darbaghe, and Ghela Khalil Akbar, in addition to several settlement sites, the most significant of which is the Dareh Shahr site (Fig. 12). At these sites, pressed, incised, and applied decorative techniques are particularly prominent. The most common decorative motifs include fish-scale patterns, linear rope designs, applied strips bearing finger-impressed marks, and wavy lines. The majority of the ceramics are thin to medium in thickness, with vessel rims or bases sloping outward. The pottery assemblage from this period is comparable to characteristic types reported from Yazdgerd Fortress (Keall & Keall, 1981) and the city of Barzqavaleh, Seymareh (Sharifi, 2015). As in the Parthian period, the presence of substantial architectural remains and defensive fortifications dating to the Sassanid era reflects the strategic and communicative importance of this region.

Islamic Period Sites

The Miankouh region retained its significance throughout the Islamic period, as evidenced by abundant extant remains of architectural structures, fortified citadels, and caravanserais situated alongside settlement sites. A total of 16 sites dating to this period were identified (Fig. 13). Among these, eight settlements yielded characteristic pottery diagnostic of the Seljuk

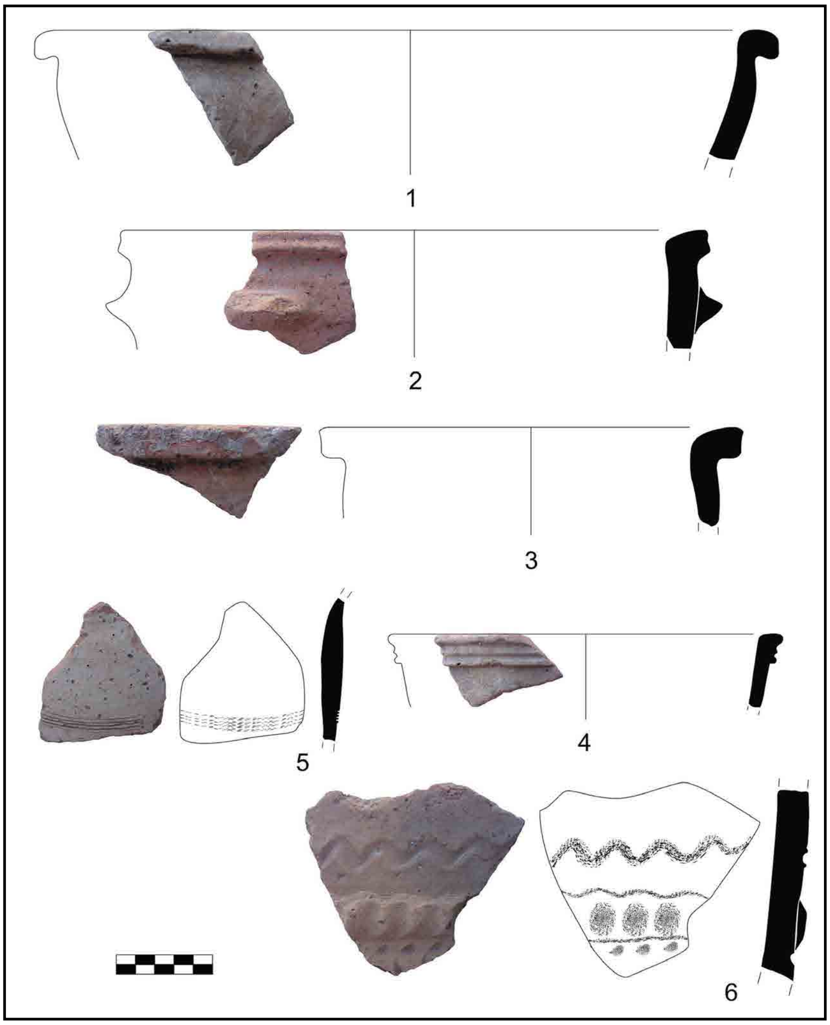
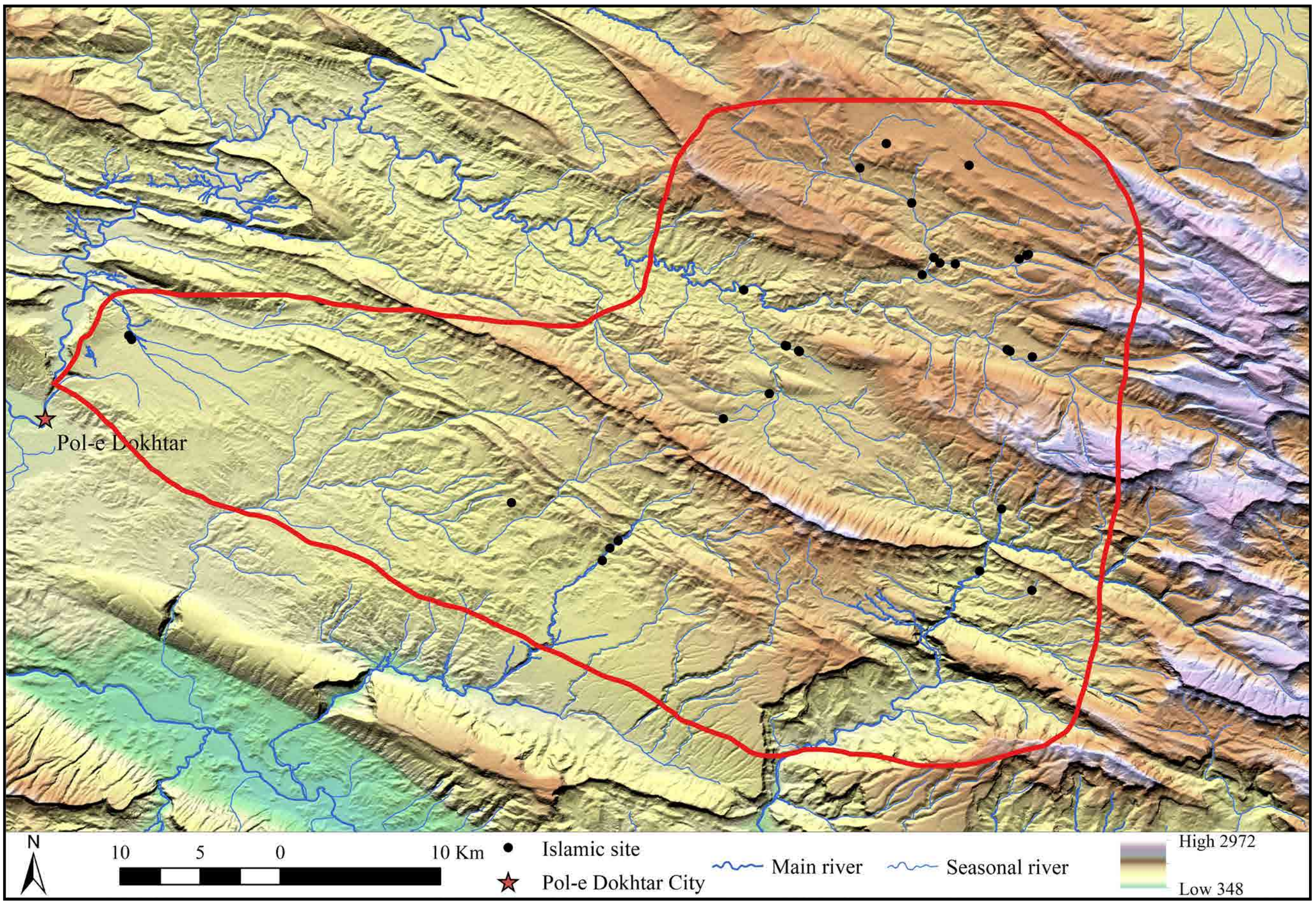


Fig. 12: Samples of Sassanid period pottery from Darreh Shahr (Author, 2023). ▶

Table 5: Technical specification potteries of Dare Shahr site (Fig. 12), (Author, 2023). ▶

No	Type	Description	Chronology	Comparison
1	rim	Orange-buff fabric, orange-buff to whitish slip, well-fired, wheel-made, sand temper, medium wall thickness	Sassanid	Whitcomb, 1985: Fig. 53. no. r
2	rim	Orange to whitish fabric, orange-white slip, well-fired, handmade, lime and sand temper, medium wall thickness	Sassanid	Tajbakhsh & Azarnoush, 2013: 223, Fig. 1
3	rim	Buff fabric, buff to orange slip, well-fired, wheel-made, sand temper, medium wall thickness	Sassanid	-
4	rim	Buff to orange fabric, light buff slip, well-fired, wheel-made, sand temper, medium wall thickness	Sassanid	Whitcomb, 1985: Fig. 23, no. f
5	body	Buff fabric, buff to whitish slip, well-fired, wheel-made, sand temper, medium wall thickness, incised decoration	Sassanid	Keall & Keall, 1981: Fig. 28: 26
6	body	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness, applied and incised decoration	Sassanid	Keall & Keall 1981: Fig. 28: 20



▲ **Fig. 13. Distribution of identified Islamic sites within the study area (Map: H. Ghobadizadeh).**

period (roughly the 5th to 7th centuries AH). The most prominent ceramic types included turquoise-glazed wares and plainwares featuring molded decorative designs. Furthermore, fritware (stonepaste) vessels of various types have been documented across Lorestan, including monochrome specimens finished in lapis lazuli, cobalt, and turquoise glazes. The use of this specific fabric ends in the 7th century AH, with several examples recovered from the sites under study (Fig. 14: 8). Monochrome green sgraffiato wares have also been recorded in various parts of Iran and Lorestan (Ibid). This assemblage has been dated to the Seljuk and Middle Islamic periods (Henshaw, 2010: 165; Whitcomb, 1985). During this era, carved arabesque motifs emerged on the exterior surfaces of the pottery (Fig. 14: 4); such motifs were identified at several sites within the Miankouh survey (Fig. 14: 1, 5, 6, 7, 9, and 10). Notable among the other sites identified in the Miankouh region is the architectural complex in the Kogan district. At this location, in addition to Kogan Cave, which represents a significant example of rock-cut architecture in Iran and has undergone extensive prior investigation, evidence of a defensive stronghold was examined on the summit of the mountain housing the cave. A study of the ceramic corpus, specifically the green, azure, and monochrome sgraffiato wares, alongside fritware, arabesque carved motifs, and comb-incised decorations, indicates a chronology spanning the Middle Islamic period (Fig. 14).

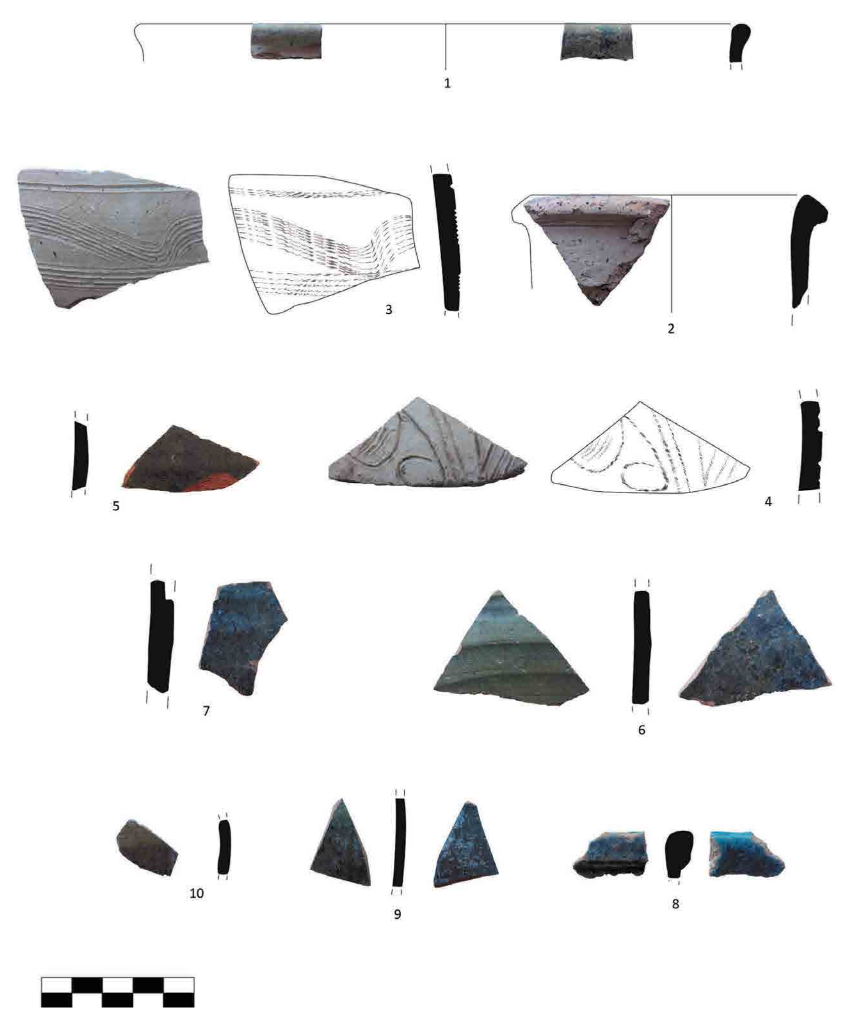


Fig. 14: Samples of middle Islamic period pottery from Catle-Cave of Kogan (Author, 2023). ▶

Table 6: Typological specifications of potteries from Castle-Cave of Kogan (Fig. 14), (Author, 2023).▶

No	Type	Description	Chronology	Comparison
1	rim	Buff-orange fabric, green glaze on both surfaces, well-fired, wheel-made, soft sand temper, medium wall thickness	Middle Islamic	Henshaw, 2010: 165, Fig. 5, 20
2	rim	Buff-orange fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness	Middle Islamic	-
3	body	Buff fabric, buff slip, well-fired, wheel-made, sand temper, medium wall thickness, carved decoration	Middle Islamic	Whitcomb, 1985: 59, Fig. 20: h
4	body	Buff fabric, thin buff slip, well-fired, wheel-made, soft sand temper, medium wall thickness, carved vegetal decoration	Middle Islamic	Whitcomb, 1985: 69, Fig. 24: h

5	body	Buff-orange fabric, green glaze on both surfaces, well-fired, wheel-made, soft sand temper, thin wall thickness	Middle Islamic	Henshaw, 2010: 165, Fig. 5, 20
6	body	Buff-orange fabric, green glaze on both surfaces, well-fired, wheel-made, soft sand temper, medium wall thickness	Middle Islamic	Henshaw, 2010: 165, Fig. 5, 20
7	body	Buff-orange fabric, green glaze on both surfaces, well-fired, wheel-made, soft sand temper, medium wall thickness	Middle Islamic	-
8	rim	Buff fabric, turquoise glaze on both surfaces, well-fired, wheel-made, sand temper, medium wall thickness	Middle Islamic	Alizadeh, 2014, Plate 92: D
9	body	Buff fabric, green glaze on both surfaces, well-fired, wheel-made, soft sand temper, thin wall thickness	Middle Islamic	Henshaw, 2010: 165, Fig. 5, 20
10	body	Buff fabric, yellow glaze on both surfaces, well-fired, wheel-made, soft sand temper, thin wall thickness	Middle Islamic	Alizadeh, 2012: Plate 101: D

Of the eight identified sites dating to the late Islamic centuries, four are the Chemeshk Caravanserai (Fig. 15), Ghela Nasir, Aowsar, and Mishvan, all located along the route from Khorramabad towards Khuzestan. These caravanserais belong to the Safavid period. Approximately 300 meters to the southeast of the Chemeshk Caravanserai stand the remains of a ruined minaret. Given its proximity to the structure, it was probably built contemporaneously to serve as a landmark to guide caravans. Within the village of Ghela Nasir, a fortified stronghold and administrative building were constructed in previous centuries by a regional Khan named Nasir. The remains of its towers and walls still stand today. In addition to the aforementioned structures, evidence of two further defensive fortresses was

◀ **Fig. 15. Chemeshk Caravanserai on the side of the freeway and the Ghazal River (Author, 2023).**

documented, which belonged to the local Khans during the Early Pahlavi period. One of these is the Esfandiar Khan Fortress, constructed using stone and gypsum mortar. The other is the Ali Morad Khan Castle, which is composed of mud brick. Both fortifications feature four round towers at the cardinal corners and incorporate defined entrances, residential spaces, ancillary annexes, and warehouses.

Discussion

The cultural richness of the Miankouh region reflects its high ecological potential and its pivotal role as a link between two distinct and contrasting environments: the lowland Susiana plain and the high mountains of Lorestan. This transitional positioning underscores the significance of its archaeological record. Based on the recovered cultural remains and their chronology, it can be concluded that the Miankouh region, a constituent of the larger Balagriveh territory, was first occupied by Neanderthal populations. The highest density of settlement sites dates to this period. Whether this intensive presence reflects the region's role as a migratory corridor, and whether these hominids moved between the Susiana plains in the south and the northern mountains in response to seasonal changes, remains a subject for further specialized research, particularly in the southern regions bordering Khuzestan. The identification of 32 settlement sites assigned to the Middle Paleolithic period, when viewed within the context of Central Zagros studies, indicates the importance of this geographic zone in the evolutionary developments of the era and the existence of a significant Neanderthal population. The probable presence of Upper Paleolithic lithic industries and evidence of Homo sapiens at Eshkaft-e Vezmiya, alongside prolific Middle Paleolithic assemblages, may address key questions regarding the timing and nature of the transition from Neanderthal to Homo sapiens populations in the Zagros. This potential must be verified through systematic scientific excavations.

During the Neolithic period, following the transition from hunting and gathering to food production and sedentism, the Miankouh region remained a focal point for pastoral and agricultural communities. The lithic assemblages recovered from the four identified settlements, characterized by an abundance of bullet cores, blades, and bladelets, alongside obsidian samples, are comparable to material from western and southwestern Iranian sites such as Kallek Asad Morad, Tepe Abdul Hosein, Ali Kosh, and Tule-i. Given the established chronologies of these sites and the absence of ceramics within the Miankouh settlements, it is highly likely that these occupations date to the late 9th to early 7th millennium BC. Following the

Neolithic, and despite the cultural flourishing of Lorestan and Susiana in the late 6th and 5th millennia BC (including the Bagh-e-No, Daraei, and Middle/Late Susiana cultures), the Miankouh region appears to have been less utilized by human societies. Consequently, only diffuse evidence has been documented from the Middle Chalcolithic II.

Unlike the previous era, the Late Chalcolithic period (4th millennium BC) witnessed a significant degree of cultural homogeneity between Susiana and the Central Zagros. Simultaneously with the spread of the Uruk culture, this region played a pivotal intermediary and connecting role between the lowland Susiana plain and the Lorestan highlands. In addition to ephemeral nomadic sites, evidence of this period was identified at several mounded sites featuring permanent architectural remains. The most notable and significant among these is Tepe Afrineh, which stands as a prominent tell with a height of more than 10 meters. This site contains visible architectural sequences and stratified levels exposed within the deep trenches and cuts created by illicit excavations. Tepe Afrineh most likely functioned as a strategic hub for providing security and facilitating regional communication between Susiana and the Central Zagros during the Susa II and Godin VI cultural horizons.

In the Bronze Age, human activity is manifested through two distinct archaeological aspects: residential settlement sites and extensive necropolises characterized by megalithic stone-built tombs. One highly distinctive and interesting feature of the Miankouh settlements during this period is the observed co-occurrence of pottery from the final phase of the Late Chalcolithic (Godin V) alongside diagnostic Bronze Age ceramic data and assemblages. Notable examples of this transitional phase include the Darband site and the Ahmad Abad cemetery. This stratigraphic situation, observed across several sites and cemeteries, strongly suggests the possibility of long-term cultural continuity and uninterrupted permanent settlement from the Chalcolithic and Jemdet Nasr periods directly into the Bronze Age within this region. However, this comprehensive survey yielded no primary cultural evidence of polychrome pottery of the specific Jemdet Nasr type, despite such wares being previously documented and reported in areas of the Lorestan Posht-Kuh and at Kunji Cave near Khorramabad (Haerinck, 2011).

Based on the cultural remains and diagnostic artifacts recovered from various sites in the Miankouh region, it is evident that the Iron Age communities of Lorestan were actively present in this territory. In addition to the ubiquitous pottery sherds found at nearly all sites, significant evidence of stone arrowheads characteristic of this period was obtained. These lithic artifacts, which parallel those previously reported at the Pay-Koul cemetery in Posht-Kuh and the Sangtarashan site in Khorramabad, were recovered from the Koul Sorkh Mal 1 site located in the southernmost point of the study area within the Takht-Cho region, north of Mount Kialo. The presence of these artifacts serves as a direct reflection of the broad cultural homogeneity prevalent across Lorestan during this era. Additionally, diagnostic evidence of pottery known as the "Genre of Lorestan," closely associated with the Baba Jan III period, was identified within an Iron Age grave at the Nirkou site in the Taei region. According to the interpretations of researchers such as Goff and Medvedskaya, this archaeological occurrence may serve as a clear indication of the extent of Ellipian political influence and territorial presence within the eastern Miankouh region.

Upon entering the historical era, specifically during the Achaemenid and Epi-Achaemenid periods, the Miankouh region remains relatively under-reported compared to other regions of Lorestan. In those neighboring areas, significant pottery and settlement evidence has traditionally been identified at important sites such as Takht-Shir 1 and Heraskah. Quite notably, these sites in our study area are situated exclusively in the western Miankouh rural district; consequently, no occupations or archaeological footprints from this period were identified in eastern Miankouh. This distributional situation is also mirrored in the records from central Lorestan, the fundamental reason for which remains currently obscure and hidden from our understanding. While this settlement scarcity is specific to the Achaemenid period, the Epi-Achaemenid and Seleucid horizons present a different archaeological record. Similar to other surveyed areas in the Miankouh region, cream painted pottery has also been reported in the stratigraphic excavations of Falak-ol-Aflak Castle, Sorkh-Dom Laki, and various other prominent localities.

The archaeological landscape becomes completely different during the Parthian period. During this epoch, we witness a significant and marked increase in the total number of settlements, representing new demographic conditions that are clearly reflected in the rich data obtained from these systematic surveys. Undoubtedly, the most important category of material culture for these archaeological studies is pottery. The characteristic ware introduced and utilized during the early Parthian period in western Iran is the distinctive buff pottery decorated with light brown motifs. As the period progressed into the middle and late Parthian phases, these were replaced by the well-known and diagnostic Clinky pottery (Haerinck, 1997). During this time, we witness the initial formation of defensive and potentially administrative-governmental architectural structures in the Miankouh region for the first time. Some of these defensive architectural structures, such as Ghalecheh Kamancheh, are located precariously on the summits of mountains. These peaks are very difficult to access and easy to defend, which strongly implies that such sites had exclusively military and defensive uses. Others, such as the Ghale-e Roustaye Khalil Akbar 1 and 2, were built on lower ridges. These sites, in addition to having inherent defensive capabilities, probably served more complex roles as administrative-governmental centers.

This settlement pattern established during the Parthian period was repeated in the later Sassanid and Islamic periods, providing a direct reflection of the strategic importance of the Miankouh region as a vital communication route between Khuzestan and Lorestan throughout these periods. In the Sassanid and Islamic periods, in addition to settlement sites without visible extant architectural structures, the most important of which is the Dareh Shahr site, military and defensive castles and citadels can be seen situated on the heights of the region. These fortifications existed alongside administrative and government structures built in the more accessible flat areas. It appears that these two distinct types of architectural structures together played a vital complementary role, especially when considering the often incompatible or volatile political conditions in the region throughout these centuries.

Since the Miankouh region possesses a rugged mountainous and difficult geography, this terrain, combined with its important communication role, provided favorable grounds for the activities of bandits and frequent attacks on travelers. These administrative and defensive structures are a physical reflection of the aforementioned security conditions. In this organizational system, people living in the primary government centers would likely settle in the upland defensive castles in times of danger or during an attack by bandits and other enemies to stay safe and confront the threat. Considering the use of local materials in the construction of these architectural structures, which consist mostly of rubble stone and gypsum plaster mortar, it is very difficult to determine the precise date of construction for these structures based solely on the materials themselves. Therefore, the only possible way to ascertain a reliable date was through the analysis of pottery finds, even though some of these diagnostic sherds were very rare.

This situation underwent a significant transformation during the Safavid period, coinciding with the political stability brought about by a strong central government and empowered local authorities. Consequently, several caravanserais were established along this route to facilitate traffic and provide essential services to traveling parties. The extant remains of these structures can still be observed along the route, specifically the Chemeshk (Fig. 15), Ghela Nasir, Aowsar, and Mishvan complexes. These caravanserais were strategically established at specific intervals determined by geographical conditions. The most significant of them, which has survived to the present day and undergone restoration by the Lorestan Cultural Heritage Organization, is the Chemeshk caravanserai. This structure is situated on the northern side of a narrow strait of the same name, adjacent to the confluence of the Chemeshk and Ghazal rivers.

The placement of the caravanserai was intended to ensure proximity to downstream water sources along the river, yet the local topography made it somewhat difficult for travelers to locate the site easily. To rectify this and guide the caravans effectively, the builders erected a navigational pillar on the summit of a natural mound approximately 300 meters southeast of the main complex. It is plausible that the construction of this marker occurred after the caravanserai was completed, perhaps in response to the difficulties encountered by merchants in finding the installation. Since this communication route remained vital prior to the construction of the Khorramabad-Mamoulan-Pol-e Dokhtar road during the Early Pahlavi era, it was largely controlled by local Khans during the Qajar period. These regional leaders commissioned residential and defensive strongholds to secure the territory. A prominent example is the Nasir Fortress, located in the village of the same name, which was commissioned by Nasir. Subsequent structures were built by his descendants, including the Esfandyar Fortress in Reykhan 1 and the Ali Morad Khan Fortress in Dada Nosrat.

Conclusion

The Miankouh region is situated in the eastern portion of Pol-e Dokhtar County, within southern Lorestan Province. Based on the archaeological data recovered from identified sites and settlements, the Miankouh region represents one of the few geographical zones containing diverse evidence across nearly every cultural horizon, spanning from the Middle Paleolithic to the late Islamic centuries. The significance of Miankouh was first established during the Middle Paleolithic, coinciding with the presence of Neanderthal populations in the Near East. A total of 32 sites yielding diagnostic lithic industries from this era have been identified. Undoubtedly, the persistent occupation by human societies throughout most prehistoric and historical periods into contemporary centuries reflects more than the high ecological potential of the region. It clearly underscores the critical role of this territory as a strategic corridor connecting the lowland, arid Susiana plain in the south with the northern Khorramabad Valley, which serves as a central hub within the Lorestan highlands.

The underlying factors contributing to this significance have varied across each successive era. In the epochs preceding the Neolithic revolution and the subsequent transition to food production, Paleolithic societies, subsisting on hunting, gathering, and the exploitation of wild resources from the northern mountains and southern plains, highly utilized the biological diversity of the Miankouh region. During the Neolithic period, as human populations transitioned toward animal husbandry and agriculture through the domestication of caprines, wheat, and barley, the Miankouh region retained its prominence. It served as a vital corridor and a primary destination for burgeoning nomadic herders. With the conclusion of the Neolithic period and the emergence of the Bagh-e No culture during the second half of the sixth millennium and the first half of the fifth millennium BC, a shift occurred. Likely due to the localized expansion of sedentary life, the interregional connections between Khuzestan and Lorestan diminished, resulting in an apparent occupational gap within the Miankouh region. This disruption did not last long; by the Middle Chalcolithic, and more notably during the Late Chalcolithic period in the fourth millennium BC, the landscape shifted again. Simultaneously with the onset of urbanization, isolated settlements gave way to widespread communication networks. The formation of sites like Tepe Afrineh represented a key mechanism for establishing security along this strategic communication route. In the Bronze and Iron Ages, we witness the further expansion of nomadism, evidence for which has been recovered from both residential settlements and extant cemeteries. One of the noteworthy features of the Bronze Age settlements in this region is the synchronous presence of Late Chalcolithic pottery alongside Bronze Age ceramic assemblages. The detailed study of this material overlap may elucidate the complex transition from the Chalcolithic to the Bronze Age within the broader context of Lorestan.

The Miankouh region during the Parthian, Sasanian, and Islamic periods witnessed the emergence of central governments, a development accompanied by the establishment of administrative centers and military fortresses alongside ordinary settlements. This spatial organization underscores the great importance of communication routes regarding military and commercial logistics. The existence of nearly 20 sites featuring defensive and administrative architecture, as well as related structures, further emphasizes the pivotal role of this region in establishing connectivity between Khuzestan and Lorestan. This network reached its peak of prosperity during the Safavid period with the creation of a comprehensive network of caravanserais. This traditional route only fell into decline approximately one century ago during the Early Pahlavi period, when the Khorramabad - Pol-e Dokhtar and Khuzestan highway was created along the Kashkan River valley. However, in recent years, with the construction of the Khorramabad - Pol-e Zal highway traversing this region, it has regained its former significance and strategic prominence. The modern infrastructure effectively mirrors the ancient transit corridors, revitalizing the historical landscape.

Acknowledgments

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Conflict of Interest

The Author, while observing publication ethics in referencing, declare the absence of conflict of interest.

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روند شکل‌گیری و تحول استقرارهای باستانی در منطقهٔ میان‌کوه شهرستان پلدختر، لرستان

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چکیده

شهرستان پلدختر در جنوب استان لرستان و در مرزهای شمالی خوزستان واقع شده است. پژوهش حاضر برآیند بررسی دو دهستان میان‌کوه شرقی و غربی این شهرستان است. این دو دهستان با مساحت حدود هزار کیلومترمربع بخش شرقی پلدختر را شامل می‌شوند. محدودهٔ بررسی به‌جز دو دشت کوچک واشیان در کنارهٔ شمال‌شرق شهر پلدختر و دادآباد در مرز شمالی شهرستان با خرم‌آباد، فاقد دشت‌های حاصلخیز است و بیشتر کوهستانی با دره‌ها و گردنه‌های صعب‌العبور است؛ با این‌وجود، این منطقه به‌دلیل واقع‌شدن در مسیر ارتباطی دشت خوزستان به زاگرس‌مرکزی و فلات‌مرکزی همواره در دوره‌های مختلف فرهنگی موردتوجه جوامع انسانی بوده است. با مطالعهٔ یافته‌های بررسی، ما شاهد شناخت مواد فرهنگی از بیشتر دوره‌های باستان‌شناسی بودیم. در پایان بررسی و با تجزیه و تحلیل داده‌های باستانی تعداد ۱۷۸ اثر فرهنگی از دوره‌های گوناگون پیش‌ازتاریخی، تاریخی و اسلامی شناسایی شد. از این تعداد ۸۸ اثر مربوط به ادوار پیش از تاریخ، ۷۵ اثر مربوط به ادوار تاریخی و ۳۰ اثر متعلق به دوران اسلامی بودند. از مهم‌ترین یافته‌های این بررسی، شناسایی بیش از ۵۰ استقرار از دوره‌های گوناگون عصر سنگ بود که در نوع خود جالب‌توجه بود و نشانهٔ توجه جدی گروه‌های انسانی در این دوره‌ها به منطقهٔ میان‌کوه است. هم‌چنین شناسایی نزدیک به ۲۰ ساختار معماری دفاعی-اداری متعلق به دوره‌های تاریخی و اسلامی و احداث چندین کاروانسرا در طول این مسیر در دورهٔ صفویه، نشانه‌ای از اهمیت ارتباطی آن در دوره‌های متأخر اسلامی است. از دیگر آثار ارزشمند محدودهٔ بررسی غار تمام دست‌کند کوگان است که در بررسی شواهد موجود و ارتباط آن با قلعهٔ بالادست آن به قرون میانهٔ اسلامی تاریخ‌گذاری گردید. درنهایت، به‌نظر می‌رسد غنای فرهنگی منطقه، علاوه‌بر پتانسیل بالای زیست‌محیطی، بازتابی از جایگاه ارتباطی آن به‌عنوان کوتاه‌ترین راه ارتباطی خوزستان با درهٔ خرم‌آباد و لرستان است.

کلیدواژگان: لرستان، پلدختر، بررسی باستان‌شناسی، دهستان میان‌کوه شرقی، دهستان میان‌کوه غربی.

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Petrographic and XRF Analysis of Jemdet Nasr Pottery from the Mehran Plain, Southwestern Iran

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Abstract

Southwestern Iran occupies a pivotal position in Iranian archaeological research, particularly concerning the proto-urban and early historic eras. Within this context, the Mehran Plain of Ilam Province is distinguished by cultural remains that are contemporaneous with and analogous to Jemdet-Nasr assemblages. Settlement data indicates that during this era, the Mehran Plain was intrinsically linked to, and shaped by, the environmental and cultural trajectories of Mesopotamia. To elucidate the proto-urban period -a phase defined by profound socio-political and economic complexity-and addressing the limited understanding of this epoch in southwestern Iran, fourteen Jemdet-Nasr pottery sherds from Mehran Plain sites were selected for laboratory analysis, having been procured through excavations and systematic surveys. The study aimed to ascertain whether the Jemdet-Nasr ceramics of the Mehran Plain were manufactured locally or were the products of Mesopotamian specialists imported into the region. Archaeological data from Choghā Ahowān and Choghā Boicheg provides robust evidence for indigenous ceramic production within the plain. Petrographic analysis demonstrated the ubiquitous presence of calcite in all samples, manifesting as both micrite and sparite. These findings are corroborated by XRF results; in certain specimens, calcite exhibits thermal alteration with only reaction halos persisting, whereas in others, its preservation implies firing temperatures did not exceed 800°C. Synthesizing geological surveys of the Mehran Plain with laboratory data, it is deduced that the majority of the pottery was fabricated locally. Consequently, while stylistic attributes, forms, and manufacturing techniques display affinities with Mesopotamian counterparts, these similarities are indicative of cultural interaction rather than direct importation, though validating this hypothesis necessitates further inquiry into production facilities and in situ ceramic assemblages.

Keywords: Jemdet-Nasr Period, Mehran Plain, Petrography, XRF, Southwestern, Iran.

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Introduction

Southwestern Iran occupies a central position in archaeological research, particularly regarding the emergence of early urban societies. Despite nearly 150 years of archaeological investigations in this region, the Jemdet Nasr period remains poorly understood, largely because most excavations related to this period have been conducted in Mesopotamia, often within temple complexes.

Chronologically encompassing the late fourth and early third millennia BCE (ca. 3200–2900 BCE), this era aligns in southwestern Iran with the Proto-Elamite cultural tradition; in western Iran and Mesopotamia with the Jemdet Nasr cultural horizon; and across the Zagros highlands and segments of the Iranian Plateau with the Kura–Araxes (Transcaucasian) tradition. Throughout this epoch, the historical foundation of cities was established, paralleled by the emergence of characteristics intrinsic to early urbanism, including craft specialization, administrative structures, and the advent of early writing and record-keeping systems.

The inception of the Proto-Elamite period is dated to approximately 3200–3100 BCE, with diagnostic artifacts comprising bevel-rim bowls (BRB), clay tablets inscribed with Proto-Elamite script, and cylinder seals. This chronological phase is contemporaneous with the Late Uruk and Early Dynastic I–II horizons in Mesopotamia and the western peripheries of the Susiana Plain. The Mehran Plain in Ilam Province has yielded cultural assemblages analogous to Jemdet Nasr materials. Settlement patterns indicate that during this era, the region was intrinsically connected to Mesopotamian environmental and socio-economic trajectories. Prior scholarly research has largely concentrated on the typological classification of Jemdet Nasr pottery within the Mehran Plain; however, while evidence from Choghā Ahowān and Choghā Boicheg implies indigenous production, systematic mineralogical or chemical provenance investigations have hitherto been absent. Consequently, this research seeks to establish the provenance of these ceramics and estimate their firing temperatures via petrographic thin-section analysis and X-ray fluorescence (XRF). Thin sections were examined utilizing a James Swift polarizing microscope (4× magnification) at the Conservation and Restoration Research Institute in Tehran, while XRF analyses were performed employing a SPECTRO XEPOS spectrometer (AMETEK), with data processing conducted through XLab Pro software.

The Ceramic Assemblage

Overall, the ceramic remains from the Early Urban period of Mehran exhibit a comprehensive affinity with documented Mesopotamian assemblages. This collection can be categorized into two primary groups: Coarse and Fine wares.

Coarse Wares

The coarse vessels are characterized by light brown or buff hues, featuring vegetal tempering. They are handmade and devoid of any surface decoration. These ceramics primarily appear as handleless jars with irregular surfaces. The recovery of numerous ceramic scrapers from excavations at Chogha Ahowan, as well as surface surveys of other sites, provides direct empirical evidence of the manufacturing process for this ware.

Morphologically, this assemblage is categorized into two primary typological groups:

1. Jars: Characterized as spritless (lacking spouts), these vessels possess an average depth of approximately 50 cm. They display a firing spectrum ranging from medium -evidenced by a light grey core- to well-fired. The dominant chromatic variation extends from light reddish buff to brown.

2. Bowls: These vessels share a comparable fabric and color signature and are interpreted as a technological continuation of the Uruk BRB tradition. The forms were recovered in miniature, small, and medium dimensions, incorporating both flat and ring bases.

Fine Wares

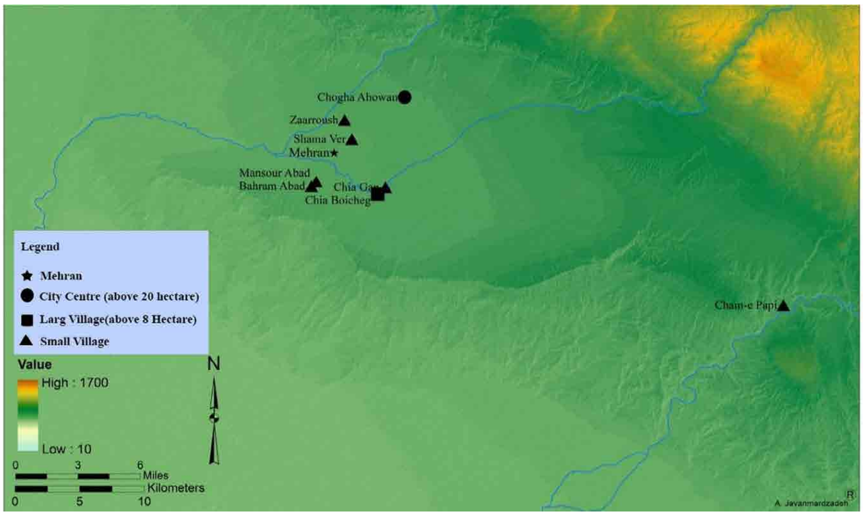
The fine ceramics generally replicate the morphological forms of the coarse group yet are distinguished by a well-levigated fabric and mineral tempers. These vessels are embellished with monochromatic, bichromatic, and polychromatic geometric motifs. This ware is observed exclusively within a buff color spectrum, manifesting most frequently as small basket-handled or spouted jars, alongside medium-to-large storage jars.

• Decorative Variation: In the smaller jars, monochromatic motifs -predominantly ranging from light to dark black- are applied with relatively limited technical proficiency. Conversely, the larger jars demonstrate a heightened degree of complexity, incorporating two or more colors (typically a red and black palette).

• Composition and Symmetry: There appears to be a deliberate and significant correlation between the decorative scheme, the fabric, the vessel morphology, and its intended function. In these types, high-precision motifs are localized to the upper half or upper third of the vessel. However, small jars frequently feature a simple, solid monochromatic wash across the entire exterior.

• Plastic Decoration: Additional decorative techniques encompass applied "rope" motifs generated through finger-impressed patterns in diverse configurations.

Regarding the iconography and "design grammar" of these ceramics, the assemblage shares a broad stylistic framework with contemporaneous Mesopotamian types, although precise parallels are challenging to establish. This phenomenon -general stylistic affinity coupled with idiosyncratic detail- is likely attributable to localized production. This hypothesis is strongly corroborated by the identification of primary production evidence in the western sectors of Chogha Ahowan and Chogha Boichag (Javanmardzadeh, 2017: 99-116).



◄ **Fig. 1: Location of the Mehran Plain within Iran, indicating the identified archaeological sites from the Urban Period (Javanmardzadeh, 2014: 20).**

Archaeological Sites

A total of eight sites within the Mehran Plain provide evidence pertinent to this chronological phase, comprising Chogha Ahowan, Chogha Boicheg, Chia Gap, Bahramabad, Mansourabad, Zarroush, Shameh Var, Ram-Rameh, and Cham Papi. Among these, three sites contain occupation layers from antecedent periods, whereas five represent newly established settlements. Significantly, these new settlements were founded on the periphery of the plain in zones devoid of prior habitation (Javanmardzadeh, 2014: 211). For the objectives of this research, four pivotal sites -Chogha Ahowan, Chogha Boicheg, Zarroush, and Bahramabad- were selected for comprehensive examination and sampling. During this era, Chogha Ahowan emerged as a paramount urban center, encompassing over 20 hectares and exerting hegemony over the entire plain. Evidence strongly implies that the site maintained extensive extra-regional interactions. The substantial expansion and development of Chogha Ahowan can likely be ascribed to its functional role as a regional nexus, facilitating connections with neighboring societies, including those in the Dehluran Plain and Mesopotamia (Javanmardzadeh, 2017: 99-116).

Surface surveys at Chogha Ahowan uncovered architectural remains of mud-brick and stone, alongside kilns and vitrified kiln slag. The kilns and slag are predominantly clustered in the southwestern sector, whereas architectural features are more prevalent in the central zone. The ceramic assemblage is characterized by:

• Buff Ware: Plain buff, plain purple, and painted varieties exhibit high density across the entirety of the site.

• Painted Buff Ware: These demonstrate a lower frequency relative to other types and are primarily concentrated in the central and southwestern sectors.

• Spouted Vessels: A higher density of spouted vessels was documented in the southern half of the mound.

• Bevelled Rim Bowls (BRBs): Although these iconic diagnostic vessels occur in relatively low proportions, their highest concentration is observed in the northern sector of the mound (Javanmardzadeh, 2014: 212).

Table 1: Characteristics of the study areas (Javanmardzadeh, 2014: 257). ▼

No.	Survey Code	Site Name	N	E	E (a.s.l)	Dimension (metres)	Elevation above the ground	Geographical Feature (distance/ Direction
1	MS 022	Zarroush	609321	3667909	164	100×90	1	Kojan Cham river- 600 m. northwest
2	MS 027	Choghā Ahovān	613753	3670076	215	550×500	10.5	Kojan Cham river- 3200 m. west
3	MS 029	Chia Boicheg	612346	3662348	172	350×300	12.5	Close to Gavi River
4	MS 032	Bahrām Abad	607210	3662516	149	100×80	2.5	Badoleh stream- 1 km. North

The surface survey of Chia Boicheg yielded a diverse assemblage of material culture, encompassing plain and painted buff wares, plain and painted purple wares, vitrified (burnt) ceramics, fragments of gypsum storage jars, stone door sockets, grinding stones (querns), and clay sickles.

• Spatial Distribution: Painted buff wares exhibit a higher density within the elevated (northern) sector of the mound. Conversely, purple wares are distributed across the entire site, with a notable accumulation in the southeastern area.

• Stratigraphic Indicators: The southeastern sector also contains a higher frequency of ash layers relative to other zones. On the northern slope, evidence of burning and thermally altered mud-brick walls is visible on the surface, whereas the southern sector reveals distinct remains of mud-brick architecture.

• Chronology: Predicated on ceramic analysis, a chronological span of 5300–2900 BCE is proposed, encompassing the Early, Middle, and Late Chalcolithic (Village Period) through the Proto-Urban and Urban periods (Javanmardzadeh, 2014: 213).

The surface of Zarroush is heavily scattered with brick kiln slag and brick fragments. However, the prehistoric findings are characterized by:

Ceramics: Plain and painted buff wares, alongside plain purple wares.

Lithic Industry: The lithic assemblage primarily comprises blades and micro-blades manufactured from dark gray chert (flint).

Chronology: Surface pottery indicates a timeframe of 3200–2900 BCE, corresponding strictly to the Urban Period (Javanmardzadeh, 2014: 214-215).

The survey at Bahramabad identified plain purple and buff wares, clay sickles, ground stone vessels, querns, and stone door sockets, along with various lithic artifacts. Analogous to Zarroush, the ceramic evidence suggests a relatively ephemeral occupation during the Urban Period, dated to approximately 3100–2900 BCE (Javanmardzadeh, 2014: 214-215).

Petrographic Analysis

The provenance study of ancient ceramics is conducted through the petrographic analysis of thin sections and the examination of their inclusions (such as tempering agents). This method systematically investigates the origins of the clay and the tempers used, correlating them with the geographical location and geological characteristics of the study area (Noghani & Emami, 2012). The primary objective of thin-section petrography is to characterize clay-based materials by examining their microscopic properties. This is primarily achieved using a polarized light microscope (PLM). By transmitting polarized light through thin sections, two main components are identified: The clay matrix and Non-plastic inclusions.

Furthermore, this technique allows for the analysis of voids and pores, as well as observable details regarding surface treatments and finishing processes. The technical and physical attributes of the final product are identified through the type, frequency, and distribution of these features. Other observations derived from thin sections provide critical data regarding the fabric, manufacturing technology, and provenance of the pottery (Peterson, 2009).

Petrographic studies are performed on microscopic thin sections. To prepare these sections, a small fragment of the ceramic sample is first detached using a precision diamond saw. The sample is then ground and polished to eliminate scratches and blade marks. Finally, the specimen is mounted onto a glass slide using epoxy resin (Quinn, 2013: 21). In this study, a total of 14 ceramic samples were selected for petrographic analysis from four key sites: Chogha Ahowan, Chogha Boicheg, Zarroush, and Bahramabad.

Fig. 2: Potsherds of the Mehran Plain's sites selected for petrographic and XRF analysis (Authors, 2023). ▶

Sample 1 from Bahram Abad; the fabric and Mineralogical Composition: The fabric of Sample 1 from Bahram abad is characterized as a heterogeneous silty fabric. The primary constituents identified include quartz, calcite, chert fragments, iron oxides, and minor metamorphic rock fragments. The grain size of these inclusions is generally less than 0.5 mm.

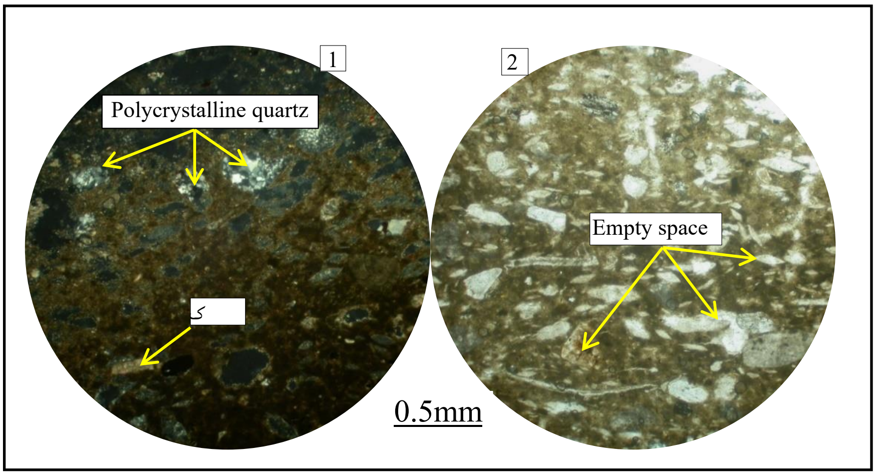
• Quartz: This is the most abundant mineral, accounting for approximately 5% of the total volume. It appears in both monocrystalline (phenocryst) and polycrystalline forms, with morphologies ranging from angular to sub-rounded.

• Calcite: Distributed throughout the matrix as coarse-grained crystals, comprising about 3% of the fabric.

• Chert: Identified as coarse-grained fillers within the matrix, with a frequency of 3%.

• Metamorphic Fragments: Observed in trace amounts.

The ceramic matrix (groundmass) consists of a calcareous-clayey composition. A significant number of voids is present, characterized by an elongated and oriented morphology. A distinct preferred orientation (alignment) is observed among the inclusions and the elongated voids within the matrix. This microstructural feature is a diagnostic indicator of the potter's wheel technique, where the rotational force aligns the particles and air pockets during the shaping process.



◄ **Fig. 1: Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Heterogene-ous silty fabric exhibiting polycrystalline quartz associated with calcite.**

◄ **Fig. 2: Photomicrograph (Plane-Polarized Light - PPL), field of view: 2.7 mm. Heterogene-ous silty fabric. Note the high frequency of elongated voids and their preferred orientation, in-dicating that the vessel was wheel-made (Authors, 2023).**

The fabric of Sample 2 is characterized as a homogeneous silty fabric. The inclusion assemblage consists of quartz, calcite, chert fragments, and iron oxides. Similar to Sample 1, the inclusion size remains below 0.5 mm.

• Chert Fragments: These function as coarse-grained fillers within the matrix, accounting for approximately 3% of the total volume.

• Quartz: Present in both monocrystalline (phenocryst) and polycrystalline forms. The grains exhibit morphologies ranging from angular to sub-rounded, comprising about 2% of the sample volume.

• Calcite: This constituent appears in two distinct forms: integrated within the clay matrix and as coarse-grained individual fragments.

The groundmass (matrix) exhibits a homogeneous calcareous-clayey composition. Compared to the previous sample, the matrix shows a more uniform distribution of fine-grained particles. The presence of voids is relatively high, indicating a specific level of porosity in the ceramic body (Fig. 3 & 4).

The Sample 3 from Bahram Abad is exhibiting a porphyritic texture within a heterogeneous matrix. The primary mineralogical constituents include calcite, quartz, and iron oxides. The inclusion size varies significantly, ranging from microns to 1 mm.

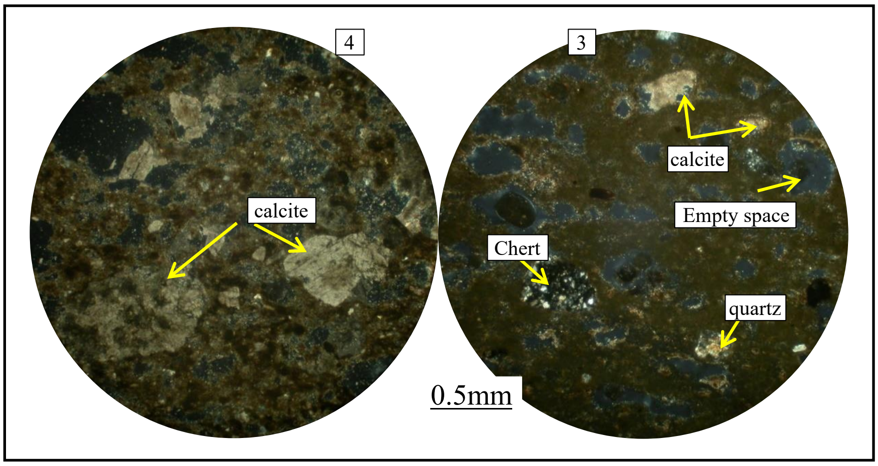


Fig. 3: Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Homogeneous silty fabric. Primary inclusions including quartz, chert, and calcite are visible within the matrix. Note the relatively high frequency of voids (Authors, 2023). ▶

Fig. 4. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Porphyritic texture. Characterized by the presence of abundant coarse-grained calcite fragments embedded within the finer-grained ceramic groundmass (Authors, 2023). ▶

• Calcite: This is the predominant mineral, appearing in two forms: as coarse grains and integrated within the groundmass. Notably, it occurs as sparry calcite (coarse crystals) within the fabric.

• Quartz: Observed as monocrystalline phenocrysts with morphologies ranging from angular to sub-rounded, comprising approximately 2% of the sample volume.

• Mineralogical Note: Unlike the previous samples, this specimen is devoid of chert fragments.

• Matrix: The groundmass consists of a homogeneous calcareous-clayey composition.

Zarroush: Sample 1 The fabric of this sample is categorized as silty with a homogeneous matrix. The inclusion assemblage is more complex, containing quartz, calcite, chert, iron oxides, and fragments of metamorphic and igneous rocks. The grain size of these constituents is generally less than 0.5 mm.

• Chert Fragments: These function as coarse-grained fillers, with a frequency of 2%.

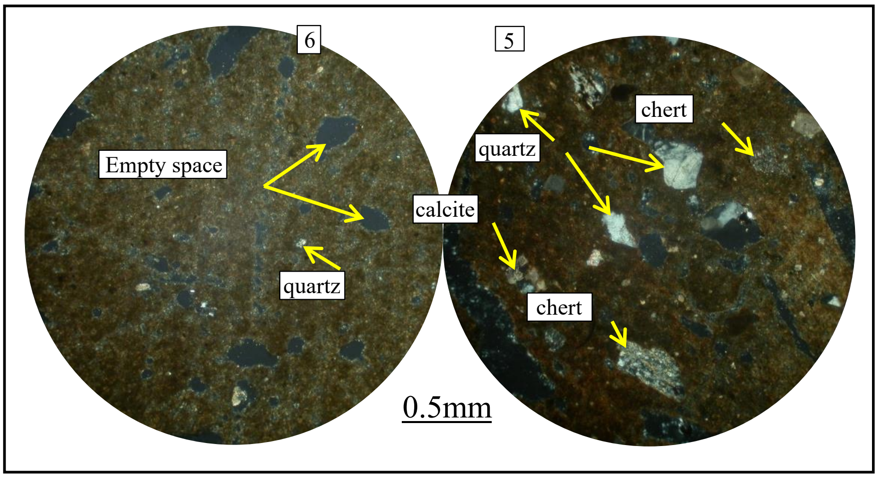
• Quartz: Present in both monocrystalline and polycrystalline forms, with angular to sub-rounded margins, accounting for about 2% of the volume.

• Calcite: Appears both as a constituent of the matrix and as coarse individual fragments.

• Metamorphic & Igneous Fragments: Identified as trace inclusions, providing a distinct mineralogical signature for this site.

• Matrix: Exhibits a homogeneous calcareous-clayey composition (Fig. 5 & 6).

Zarroush: Sample 2: The fabric is characterized as silty with a homogeneous matrix. The inclusions consist of quartz, calcite, chert,



◀ Fig. 5. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Silty fabric featuring fragments of quartz, metamorphic rock, chert, and calcite. The groundmass is homogeneous with a calcareous-clayey composition (Authors, 2023).

◀ Fig. 6. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Silty fabric with a highly homogeneous matrix. Note the limited distribution of calcite and quartz. Voids (porosity) appear as dark areas within the fabric (Authors, 2023).

and iron oxides. A distinguishing feature of this sample is its extremely fine-grained nature, with inclusion sizes generally remaining below 20 microns. All constituents are finely dispersed and well-integrated into the groundmass.

• Calcite: Comprises 2% of the volume.

• Quartz: Comprises 1% of the volume.

• Chert: Occurs in trace amounts (less than 1%).

• Matrix: The groundmass is highly homogeneous and calcareous in composition.

Zarroush: Sample 3: This sample exhibits a silty fabric with a homogeneous matrix. The mineralogical suite is more diverse, including quartz, calcite, mica, iron oxides, and fragments of metamorphic and igneous rocks. The grain size of these inclusions is less than 0.5 mm.

• Quartz: Identified in both monocrystalline (phenocryst) and polycrystalline forms, with angular to sub-rounded margins. It is the most abundant inclusion, accounting for approximately 5% of the sample volume.

• Thermal Alteration (Calcite): A critical observation in this sample is the thermal decomposition of calcite. Due to high firing temperatures, the primary calcite has been destroyed, leaving behind characteristic calcite ghosts (rims or halos).

• Mica (Biotite): Fragments of biotite (black mica) are present but appear darkened/opaque, another indicator of the firing process.

• Matrix: Unlike previous samples, the matrix is non-calcareous and exceptionally homogeneous. The sample is devoid of chert fragments (Fig. 7 & 8).

The fabric of Sample 1 from Chia Boichegis is characterized as porphyritic with a heterogeneous calcareous matrix. The inclusion suite

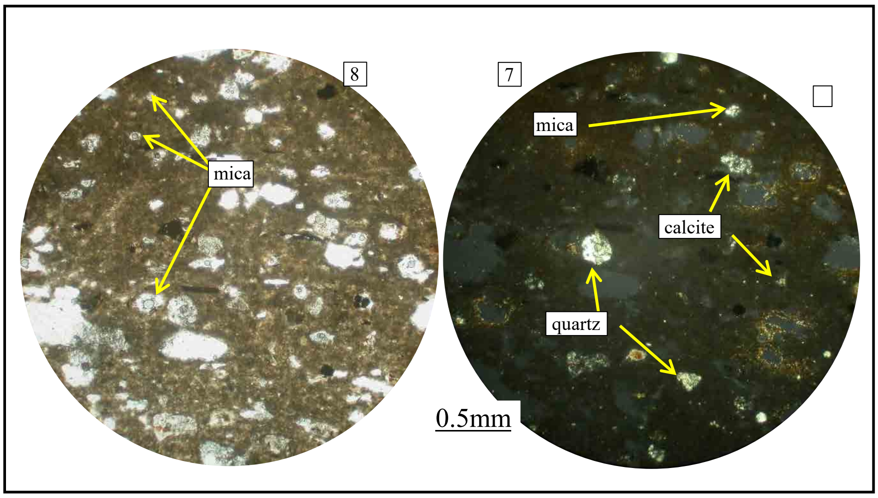


Fig. 7. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Silty fabric with a strictly homogeneous, non-calcareous matrix. Visible features include quartz, biotite (thermally altered/darkened), and calcite ghosts (remnants of decomposed calcite). Voids (porosity) appear as dark areas within the fabric (Authors, 2023). ▶

Fig. 8. Photomicrograph (Plane-Polarized Light - PPL), field of view: 2.7 mm. Silty fabric. This image represents the same field of view as Figure 7, captured under plane-polarized light. In this mode, voids and porosity are clearly distinguishable as bright (translucent) areas within the matrix (Authors, 2023). ▶

primarily consists of calcite, quartz, and iron oxides. The grain size of these constituents exhibits a wide range, from a few microns to 1 mm.

• Calcite: This is the dominant mineral, accounting for approximately 20% of the total sample volume. It occurs in two distinct forms: sparry calcite (coarse-grained crystals) and micritic calcite (fine-grained crystals) within the fabric.

• Bioclasts (Fossils): A significant feature of this sample is the presence of fossil fragments embedded within the matrix, providing important clues regarding the sedimentary origin of the clay.

• Quartz: Identified as monocrystalline phenocrysts with angular to sub-rounded margins, comprising about 1-2% of the volume.

• Mineralogical Note: Similar to Bahramabad Sample 3, this specimen is devoid of chert fragments and possesses a markedly heterogeneous calcareous-clayey matrix (Fig. 9 & 10).

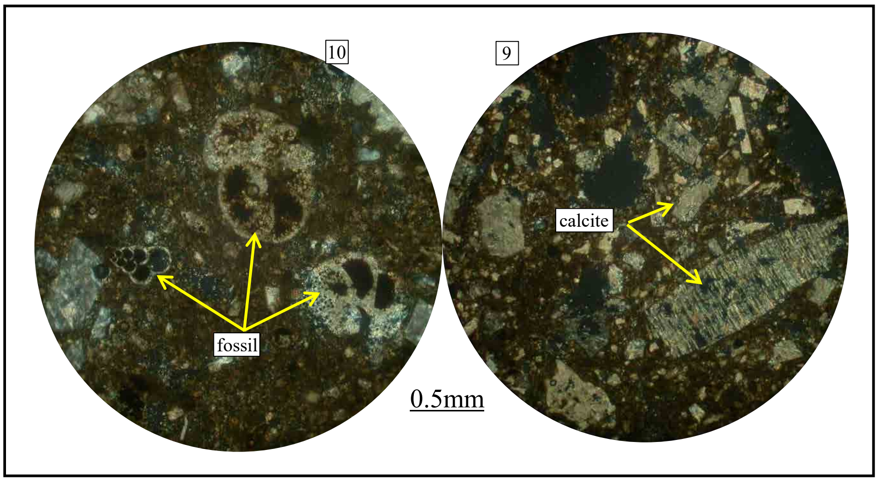


Fig. 9: Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Porphyritic texture showing abundant and large calcite fragments embedded in the ceramic groundmass (Authors, 2023). ▶

Fig. 10. Photomicrograph (Plane-Polarized Light - PPL), field of view: 2.7 mm. An example of bioclasts (fossils) present within the ceramic matrix (Authors, 2023). ▶

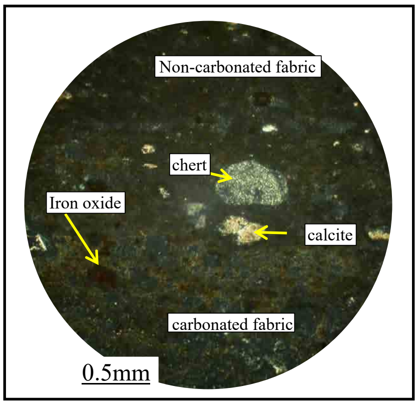
The fabric of Sample 2 is classified as silty with a homogeneous matrix. The identified inclusions include quartz, calcite, chert fragments, and iron oxides. The grain size of these constituents is consistently below 0.5 mm.

• Chert Fragments: These appear as sparsely distributed inclusions within the matrix, accounting for approximately 1% of the total volume.

• Quartz: Present in both monocrystalline (phenocryst) and polycrystalline forms. The grains exhibit morphologies ranging from angular to sub-rounded, comprising about 2% of the sample volume.

• Calcite: This constituent is observed both as coarse-grained fragments and integrated within the groundmass.

• Matrix: The groundmass displays a homogeneous calcareous-clayey composition, showing a uniform mixture of clay and micro-crystalline carbonates (Fig. 11).



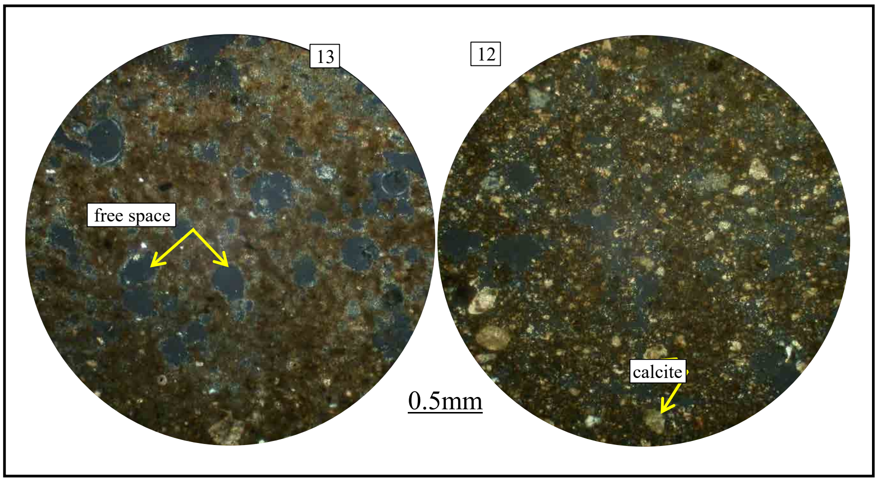
▲ **Fig. 11. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Silty fabric. Visible inclusions include chert fragments, calcite, and iron oxides embedded within the ceramic matrix. The distinction between the calcareous and non-calcareous phases of the groundmass is clearly discernible (Authors, 2023).**

The fabric of Sample 3 from Chia Boicheg is classified as silty with a heterogeneous matrix. The mineralogical constituents include calcite, quartz, and iron oxides. The inclusion size is generally less than 0.5 mm.

• Calcite: This mineral is abundant, constituting approximately 15% of the total sample volume.

• Quartz: Occurs as monocrystalline (phenocryst) forms, sparsely distributed within the ceramic groundmass.

A significant observation is the distinct microstructural variation from the center to the edge of the sample. As one moves toward the rim (periphery), the fabric transitions into a fine silty texture that is markedly devoid of calcite inclusions. This indicates a non-uniform distribution of tempering agents during the shaping process (Fig. 12 & 13).



◀ **Fig. 12. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Abundant calcite inclusions distributed within the ceramic groundmass (Authors, 2023).**

◀ **Fig. 13. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. The rim (periphery) of the sample, which is devoid of calcite inclusions and exhibits a homogeneous, uniform matrix. Dark areas represent voids (porosity) within the groundmass (Authors, 2023).**

The fabric of Sample 4 is classified as silty with a homogeneous, non-calcareous matrix. The mineralogical constituents include quartz, calcite, chert fragments, metamorphic rock fragments, and plagioclase feldspar. The grain size of these inclusions is generally below 0.5 mm.

• Quartz: Present in both monocrystalline (phenocryst) and polycrystalline forms, with angular to sub-rounded margins, comprising about 4% of the sample volume.

• Chert Fragments: These occur as sparsely distributed inclusions within the matrix, with a frequency of 2%.

• Calcite: Present as coarse-grained fragments, accounting for 1% of the total volume.

• Metamorphic Fragments & Plagioclase: Identified in trace amounts within the ceramic groundmass.

• Matrix: The groundmass is characterized by a red-colored, homogeneous, non-calcareous composition, indicating an oxidizing firing atmosphere and distinct clay sourcing (Fig. 14 & 15).

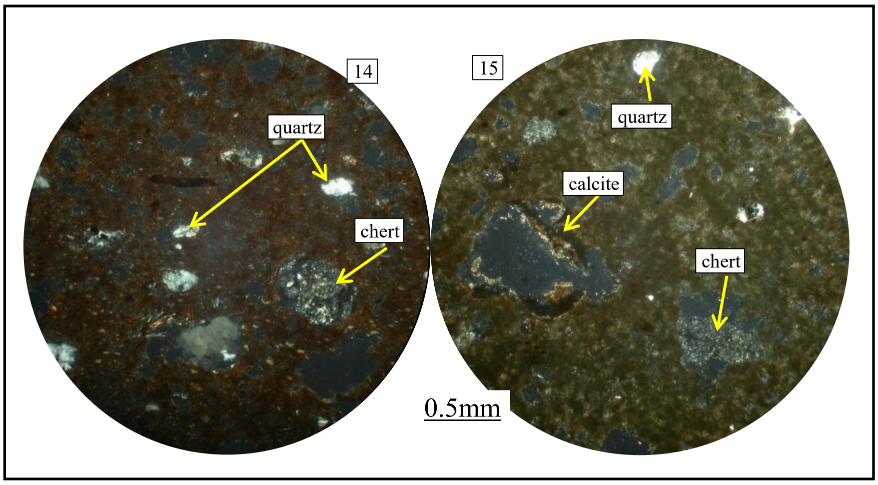


Fig. 14. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Sparsely distributed chert fragments, quartz, and iron oxides within the ceramic groundmass. The inclusions are low in frequency, and the matrix exhibits a distinct red color with a non-calcareous composition (Authors, 2023). ▶

Fig. 15. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. The ceramic groundmass features a calcareous-clayey composition and is highly homogeneous. Chert fragments, calcite remnants, and quartz phenocrysts are sparsely distributed (Authors, 2023). ▶

Both samples from Chogha Ahowan exhibit a silty fabric with a homogeneous matrix. The mineralogical composition is remarkably similar, consisting of quartz, chert fragments, calcite, and siltstone. The inclusion size is consistently below 0.5 mm.

• Chert Fragments: Distributed sparsely within the matrix, accounting for approximately 3% of the volume in both samples.

• Quartz: Identified in both monocrystalline (phenocryst) and polycrystalline forms, with angular to sub-rounded margins, comprising about 2% of the sample volume.

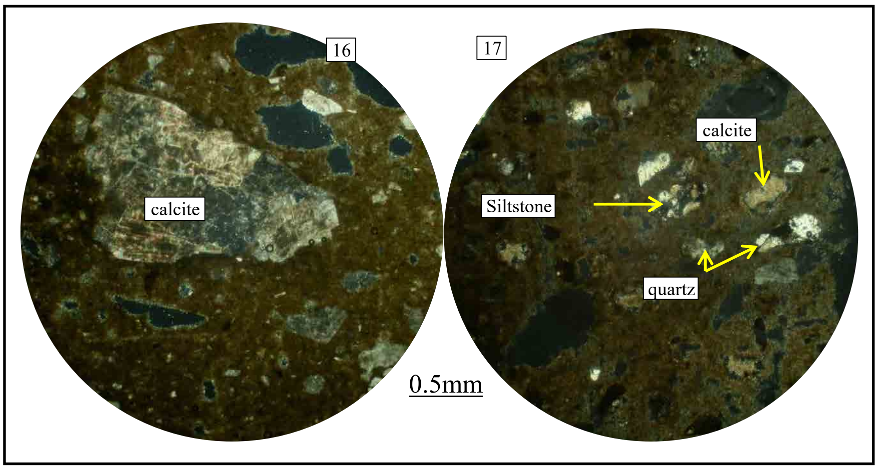
• Calcite & Thermal Alteration: A critical observation in both specimens is the thermal decomposition of calcite, resulting in the preservation of only characteristic calcite ghosts (rims). This indicates high firing temperatures.

• Sedimentary Rock Fragments: Siltstone fragments are present in trace amounts within the ceramic groundmass.

• Matrix: The groundmass consists of a homogeneous calcareous-clayey composition.

Comparative Note

Sample 2 is petrographically identical to Sample 1, suggesting a standardized production process or a common clay source for these vessels (Fig. 16 & 17).



◄ **Fig. 16. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. The ceramic groundmass features a calcareous-clayey composition and is highly homogeneous. Siltstone fragments (a sedimentary rock), calcite ghosts, and quartz phenocrysts are sparsely distributed (Authors, 2023).**

◄ **Fig. 17. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Abundant large calcite fragments are found within the ceramic groundmass. Voids (porosity) appear as dark areas (Authors, 2023).**

The sample 3 from Chogha Ahowan exhibits a porphyritic texture within a homogeneous matrix. The primary mineralogical constituents are calcite, quartz, and iron oxides. Inclusion sizes range from a few microns to 1 mm.

• Calcite: This is the dominant mineral, comprising approximately 10% of the sample volume. It occurs in two forms: sparry calcite (coarse-grained crystals) and micritic calcite (fine-grained crystals) within the groundmass.

• Quartz: Present as monocrystalline phenocrysts with morphologies ranging from angular to sub-rounded, accounting for 1–2% of the volume.

• Mineralogical Note: The sample is devoid of chert fragments. The ceramic groundmass features a heterogeneous calcareous composition.

• Comparative Note: Petrographically, this sample is similar to Bahramabad Sample 3 and Chia Boicheg Sample 1.

Sample 4 from Chogha Ahowan displays a silty fabric with a homogeneous matrix. The inclusion suite includes quartz, chert fragments, and calcite. Inclusion sizes are generally less than 0.5 mm.

• Chert Fragments: Distributed sparsely within the matrix, accounting for 3% of the volume.

• Quartz: Identified in both monocrystalline (phenocryst) and polycrystalline forms, with angular to sub-rounded margins, comprising about 2% of the volume.

• Thermal Alteration (Calcite): Like Samples 1 and 2, the calcite has undergone thermal decomposition, leaving behind only characteristic calcite ghosts (rims).

• Technological Indicators: The groundmass exhibits a distinct preferred orientation (alignment) of inclusions and elongated voids. This microstructural feature is a definitive indicator that the vessel was wheel-made.

• Matrix: The groundmass consists of a calcareous-clayey composition (Fig. 18 & 19).

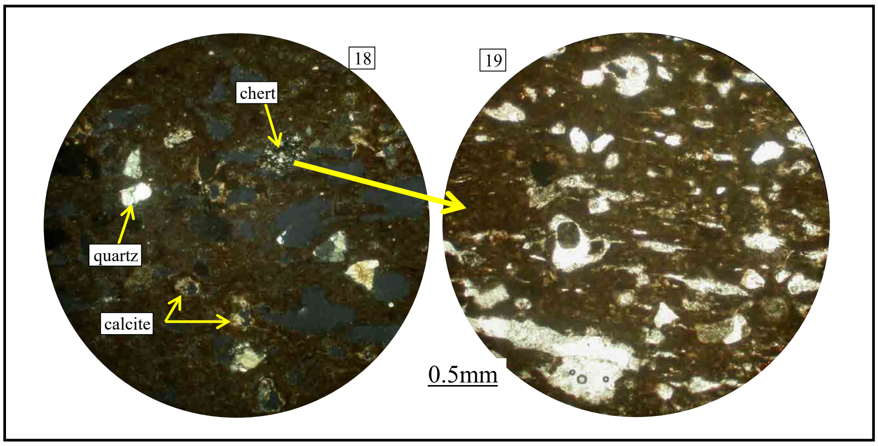


Fig. 16: Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. The ceramic groundmass features a calcareous-clayey composition and is highly homogeneous. Siltstone fragments (a sedimentary rock), calcite ghosts, and quartz phenocrysts are sparsely distributed (Authors, 2023). ▶

Fig. 17. Photomicrograph (Cross-Polarized Light - XPL), field of view: 2.7 mm. Abundant large calcite fragments are found within the ceramic groundmass. Voids (porosity) appear as dark areas (Authors, 2023). ▶

Based on the study of three ceramic samples from Tepe Bahram Abad, it can be concluded that Samples 1 and 2 are similar in terms of the constituent components, paste, and matrix composition. The primary difference between them lies in the relative abundance of each component. In contrast, Sample 3 differs completely in composition from the other two. In this sample, sparry calcite fragments were used as temper, and it exhibits a coarse (porphyritic) texture. In the other two samples, chert fragments were employed, and both display a silty (fine-grained) texture.

The three ceramic samples from Tepe Zarroush differ entirely from one another. Samples 1 and 2 have a carbonate–clay composition. In Sample 1, various fragments of quartz, calcite, and chert are observed, whereas Sample 2 is almost devoid of inclusions and shows a completely homogeneous texture. Sample 3 from Zarroush has a non-carbonate paste composition; the calcite originally present has been eliminated due to firing. Additionally, biotite (mica) appears burnt brown because of the heat generated during the firing process.

Among the samples from Tepe Chia Boicheg, Samples 1 and 3 are compositionally similar, both containing abundant calcite fragments. It should be noted that the size of the inclusions in Sample 1 is considerably larger than those present in the paste of Sample 3. Sample 2 has a carbonate–clay paste that differs completely from Samples 1, 3, and 4. Sample 4 has a non-carbonate composition and contains minor amounts of metamorphic rock fragments and plagioclase, which were not observed in the other three studied samples. Sample 16 appears to have a completely different origin compared to the other samples analyzed from Tepe Chogha Boicheg

The three samples from Tepe Chogha Ahowan are compositionally similar, with their main differences lying in the relative percentages of constituent components. However, Sample 2 from Chogha Ahowan differs from the others. This sample lacks chert and instead contains various calcite fragments used as temper. It is comparable to Sample 1 from Tepe Chogha Boicheg and Sample 3 from Tepe Bahram Abad.

For ease of reference to the petrographic results, the findings are presented in Table 2. This table is based on the petrographic study of ceramics. The first row lists the ceramic constituents, while the first column provides the name and number of each sample separately. The presence of a given mineral in a sample is indicated by an asterisk, its absence by a dash (–), and trace amounts are marked as (tr).

Table 2. Results of petrographic study of pottery from Bahram Abad, Zarroush, Chogha Boicheg and Chogha Ahowan. Guide: Qz(Clean)=Clear quartz and phenocryst. Qz(Cloudy)=Cloudy quartz and polycrystalline. Plg=Plagioclase and feldspar. Fe-oxid=Iron oxide. Cc=Calcite. P-Rock=Igneous rock (plutonic). V-Rock=Igneous rock (volcanic). M-Rock=Metamorphic rock. S.R=Sedimentary rock (Authors, 2023). ▼

No. of Sample	Qz (Clean)	Qz (Cloudy)	Plg	Fe-oxid	Cc	Mica	Chert	P.Rock V.Rock	M.Rock	S.R	Texture
Bahram Abad-1			-			-		-	Tr	-	Heterogeneous silt
Bahram Abad-2			-			-		-	-	-	silt
Bahram Abad-3		-	-			-	-	-	-	-	Porphyry
Zarroush		-	-			-		tr	Tr	-	silt
Zarroush		-	-			-		-	-	-	silt
Zarroush		-	-				-	-	Tr	-	silt
Chogha Boicheg		-	-			-	-	-	-	-	Porphyry
Chogha Boicheg			-			-		-	-	-	silt
Chogha Boicheg		-	-			-	-	-	-	-	silt
Chogha Boicheg			tr			-		-	Tr	-	silt
Chogha Ahovan			-			-		-	-	Tr	silt
Chogha Ahovan			tr			-		-	-	Tr	silt
Chogha Ahovan		-	-			-	-	-	-	-	Porphyry
Chogha Ahovan			-			-		-	-	-	silt

X-ray Fluorescence (XRF) Analysis of the Mehran Plain Samples

Chemical analysis constitutes one of the most reliable methods for identifying the elemental composition and concentration of elements in archaeological materials, such as ceramics, glass, and metal objects (Sarhadi-Dadian et al., 2015; Bieber et al., 1976; Marghussian et al., 2017).

In this method, an X-ray beam is directed at the unknown samples, causing atomic excitation and the emission of secondary X-rays. By determining the wavelength or energy of the secondary X-rays, the constituent elements can be identified. Specifically, the X-ray beam emitted from the X-ray tube strikes the sample, bombarding the atoms and ejecting inner-shell electrons. The replacement of these electrons by others from higher energy levels results in the emission of characteristic X-rays. This phenomenon is analogous to bombarding the sample with electrons (Golestani-Fard et al., 2010: 93). For the X-ray fluorescence analysis, 5 grams of powder was separated from each ceramic specimen for preparation and analysis. The results of this analysis are presented semi-quantitatively in Table 3.

As indicated in Table 3, most of the elements identified are present in trace amounts.

1. Silicon Dioxide (SiO_2) and Iron Oxide (Fe_2O_3)

Bahramabad Samples 1 and 2 exhibit the highest concentrations of silicon dioxide (SiO_2). This chemical finding is corroborated by the petrographic analysis, which identified abundant chert fragments within these samples. Furthermore, these samples also show the highest concentrations of iron oxide.

2. Aluminum Oxide (Al_2O_3)

The concentration of aluminum oxide (Al_2O_3) is uniform across all samples. This consistency is directly linked to the composition of the clay raw material used in the ceramic production process.

3. Calcium (Ca)

Chogha Boicheg Sample 1, Zarroush Sample 1, and Chogha Boicheg Sample 3 display significantly higher concentrations of calcium (Ca) compared to the other specimens. Petrographic examination of these samples reveals that this high calcium content is due to the presence of abundant calcite inclusions and a calcareous-clayey matrix.

Table 3: The semi-quantitive Analytic results (Authors, 2023). ▶

Sample No.	Chogh.B18	Zarvash1	Chogh.B9	Zarvash4	Bahram Abad23	Bahram Abad24
Na2O	1.015	1.011	1.184	1.013	1.299	1.352
MgO	0.380	0.772	0.429	0.633	0.711	0.688
Al2O3	3.504	3.202	3.381	3.854	4.270	4.025
SiO2	19.745	18.431	19.343	21.852	25.657	22.843
P2O5	0.955	0.932	0.974	0.820	1.006	1.172
SO3	1.439	2.146	2.336	0.890	0.486	0.877
Cl	0.042	0.124	0.069	0.101	0.328	0.243
K2O	2.463	1.785	2.005	2.090	3.008	1.676
CaO	47.272	46.962	47.509	44.795	38.743	43.963
TiO2	1.277	1.062	1.236	1.277	1.455	1.321
V2O5	0.036	0.037	0.037	0.046	0.045	0.051
Cr2O3	0.052	0.042	0.038	0.046	0.107	0.066
MnO	0.128	0.175	0.130	0.177	0.220	0.213
Fe2O3	9.653	10.266	9.573	11.282	14.907	13.333
CoO	<dl	<dl	<dl	<dl	0.008	0.013
NiO	0.028	0.042	0.030	0.047	0.078	0.064

CuO	0.007	0.013	0.007	0.009	0.021	0.168
ZnO	0.041	0.041	0.042	0.041	0.045	0.042
Ga	0.004	0.004	0.004	0.004	0.004	0.003
Ge	<dl	<dl	<dl	<dl	<dl	<dl
As2O3	0.002	0.003	0.002	0.002	0.003	0.003
Se	0.000	0.000	0.000	<dl	<dl	0.000
Br	0.001	0.002	0.001	0.001	0.002	0.002
Rb2O	0.012	0.011	0.011	0.009	0.011	0.006
SrO	0.550	0.479	0.521	0.496	0.384	0.472
Y	0.006	0.007	0.006	0.007	0.008	0.007
ZrO2	0.035	0.037	0.037	0.040	0.051	0.041
Nb2O5	0.004	0.004	0.004	0.004	0.004	0.004
Mo	<dl	0.001	0.000	0.001	0.000	0.000
Ag	<dl	<dl	0.001	0.002	0.001	0.005
Cd	0.003	<dl	<dl	<dl	0.000	0.003
SnO2	0.004	0.003	0.003	0.002	0.003	0.009
Sb2O5	0.005	0.003	0.004	0.003	0.003	0.008
Te	0.003	<dl	<dl	<dl	0.000	0.006
I	0.008	0.004	0.005	0.001	0.005	0.007
Cs	<dl	0.007	<dl	<dl	<dl	<dl
Ba	0.082	0.115	0.100	0.096	0.088	0.051
La	<dl	<dl	<dl	<dl	<dl	<dl
Ce	0.031	<dl	<dl	<dl	<dl	<dl
Pr	0.012	0.003	0.005	0.006	0.003	0.005
Nd	0.025	0.013	0.014	0.016	0.016	0.011
Er	<dl	<dl	<dl	<dl	<dl	<dl
Yb	<dl	<dl	<dl	<dl	<dl	<dl
Hf	<dl	<dl	<dl	<dl	0.000	<dl
Ta2O5	0.028	0.027	0.029	0.027	0.028	0.033
WO3	0.032	0.009	0.034	0.021	0.046	0.048
Hg	<dl	<dl	<dl	<dl	<dl	<dl
Tl	0.000	<dl	0.000	0.000	0.000	0.000
PbO	0.004	0.006	0.007	0.003	0.005	0.004
Bi	<dl	<dl	<dl	<dl	<dl	<dl
Th	0.002	0.002	0.002	0.002	0.002	0.002
U	0.001	0.001	0.001	0.001	0.001	0.002
l.o.i	11.105	12.216	10.883	10.278	6.936	7.149

Conclusion

The final centuries of the fourth millennium BCE marked a pivotal era characterized by the emergence of comprehensive political entities and the inception of writing in southern and central Mesopotamia, as well as parts of southwestern Iran. This period, spanning approximately 3200–2900 BCE, is recognized as the Urban Period or the Jemdet Nasr Period. While the process of sedentarization in Mesopotamia began in earlier periods, the transformation of settlement patterns and the rapid expansion of cities in central and southern Mesopotamia are explicitly witnessed during the Jemdet Nasr period.

1. Cultural Context and Ceramics: Concurrent with this development in Mesopotamia, a distinct culture emerged in southwestern Iran and the

Iranian Plateau (ca. 3100 BCE), known as the Proto-Elamite cultural tradition. In southwestern Iran, cultural unity with southern Mesopotamia is clearly corroborated by ceramic types and seal impressions (Matthews, 1992: 201). The ceramics identified from the Jemdet Nasr period in the Mehran Plain are similar to Mesopotamian examples. These ceramics can be broadly divided into two groups: coarse and fine wares. The vessels are light brown or buff in color, devoid of any decoration, and are primarily observed in the form of unhandled jars with rough bodies.

2. Petrographic and Geological Insights: The study area is rich in geological resources, featuring various types of limestone, sandstone, marl, gypsum, evaporite minerals, shale, and fragments of chert and chalcedony within its sediments and rock outcrops. The geomorphology and climatic conditions of the region allow for the occurrence of rocks with distant origins, such as metamorphic and igneous fragments, in archaeological sites and riverbeds, which are incorporated into the fabric of some ceramic samples.

• Fabric Analysis: The ceramic fabric of the region is either coarse (porphyritic) or fine-grained (silty). Quartz minerals, in both monocrystalline and polycrystalline forms, along with calcite, constitute the primary inclusions. Calcite is also present within the clay matrix. In some ceramics, fossil remnants are visible; however, it appears that many of the shaped voids in the samples from the Mehran Plain are the result of fossil decomposition from the clay matrix.

• Tempering Agents: Chert and calcite fragments, abundantly available in the plain, were utilized as tempering agents (fillers) in these ceramic samples. Metamorphic, igneous, sedimentary rocks, and plagioclase are present in trace amounts.

3. Firing Technology and Provenance: Calcite minerals exist in both micro-crystalline (micrite) and coarse-crystalline (sparite) forms. Since calcite decomposes at temperatures above 800°C, it serves as a thermal indicator in ceramic studies. With the exception of Chogha Ahowan Samples 1, 2, and 4, and Zarroush Sample 3, where calcite has been thermally decomposed leaving only characteristic calcite ghosts, the presence of calcite in the remaining samples indicates that the firing temperature was below 800°C.

• Production Techniques: The microstructure of several samples reveals a flow texture, likely resulting from the use of the potter's wheel. Color variations within the vessels are not related to their composition but are rather due to oxidizing or reducing conditions and oxygen availability during the firing process.

• Local Production: Based on the geological studies of the Mehran Plain and the results of laboratory analyses conducted on samples collected from four sites, along with strong evidence of local ceramic production in the western sections of Chogha Ahowan and Chogha Boicheg, it can be concluded that the majority of these samples are of local origin. The minor differences between the southwestern Iranian samples and the Mesopotamian examples are attributed to this local production.

Geographic Locations and Archaeological Sites (Mehran Plain):

1. Pashmin
2. Jebal-e Hamrin
3. Konjān Cham
4. Gāvi
5. Changouleh
6. Choghā Ahowān
7. Choghā Boycheg (Chogha Buicheg)
8. Chiā Gap (Chia Gab)
9. Bahrām Ābād
10. Mansour Ābād
11. Zarroush
12. Shama Ver
13. Remah
14. Cham-e Pāpi
15. Inclusion: The fragment of a rock or mineral enclosed within another rock.
16. Epoxy Stone Glue (Epoxy Resin Adhesive): A two-component, resin-based adhesive used for bonding stone pieces in industries, residential applications, construction, and facade work.
17. Glass Slide: A rectangular glass plate used for mounting thin sections.
18. X-ray Fluorescence (XRF): A technique used for elemental analysis of materials.

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Author Contributions

All authors have had equal participation.

Conflict of Interest

The Authors, while observing publication ethics in referencing, declare the absence of conflict of interest.

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تحلیل پتروگرافی و XRF سفال‌های دورهٔ جمدت نصر دشت مهران، جنوب‌غربی ایران

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چکیده

منطقهٔ جنوب‌غرب ایران در مطالعات باستان‌شناسی ایران در ادوار مختلف و به‌ویژه دوره‌های آغازتاریخی و شهرنشینی اهمیت بسیار ویژه‌ای دارد. دشت مهران در استان ایلام ازجمله مناطقی است که دارای مواد فرهنگی هم‌افق و مشابه نمونه‌های جمدت‌نصر است. براساس یافته‌های زیستگاهی، می‌توان دشت مهران را در این دوره، تابعی از تغییرات زیستگاهی بین‌النهرین به‌حساب آورد. برای درک دورهٔ آغازشهرنشینی که سرآغاز بزرگ‌ترین و پیچیده‌ترین تغییرات سیاسی-اقتصادی و اجتماعی است و در جنوب‌غربی ایران هم‌چنان ناشناخته باقی‌مانده، تعداد ۱۴ قطعه سفال دورهٔ جمدت‌نصر محوطه‌های دشت مهران را که طی کاوش و بررسی‌های میدانی جمع‌آوری شده و موردمطالعه قرار گرفته است، جهت انجام آزمایشات انتخاب شدند. این پژوهش با هدف آگاهی یافتن و فرض این مسئله که سفال نوع جمدت‌نصر دشت مهران به‌صورت محلی تولید می‌شده، یا این‌که توسط متخصصین بین‌النهرینی تولید می‌شده و یک محصول وارداتی بوده است، انجام شده است. شواهد تولید سفال در چغاآهوان و چغابُویچِگ، به‌ویژه تولید محلی سفال‌های دشت مهران را تأیید می‌کند. در تمام نمونه‌های موردمطالعهٔ دشت مهران، کانی کلسیت به‌صورت ریز بلور (میکرایت) و درشت بلور (اسپارایت) وجود دارد. نتایج آنالیز XRF نیز با یافته‌های پتروگرافی مطابقت دارد. در این نمونه‌ها، کلسیت در اثر حرارت از میان رفته و تنها هاله‌ای از آن باقی‌مانده است؛ وجود کلسیت در باقی نمونه‌ها نشان می‌دهد که درجهٔ پخت سفال‌ها کمتر از ۸۰۰ درجهٔ سانتی‌گراد بوده است. درنهایت براساس مطالعات و بررسی‌های زمین‌شناسی دشت مهران و نتایج آنالیز آزمایشگاهی صورت‌گرفته، می‌توان بیان کرد که سفال‌ها تولید داخلی و محلی داشته‌اند و مربوط به خود دشت هستند؛ هرچند سبک و فرم و تکنیک تولید مشترک با گونه‌های هم‌زمان بین‌النهرینی خود است؛ چراکه اثبات این فرض نیاز به مطالعات و آزمایشات تکمیلی تأسیسات تولید سفال و هم‌چنین سفال‌های دست‌نخورده و برجا دارد.

کلیدواژگان: دورهٔ جمدت‌نصر، دشت مهران، پتروگرافی، XRF، جنوب‌غربی ایران.

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Signs to Scripts: Cultural Evolution and Visual Transformation of the Proto-Elamite Writing System

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Abstract

This study develops a heuristic cultural-evolutionary framework to trace the visual transformation of the Elamite writing system (ca. 3500–1850 BCE), emphasizing how evolving signs and artistic styles co-shaped the emergence, stabilization, and regional diversification of early writing systems. Grounded in cultural evolution theory, the research examines the Proto-Iranian writing sequence, encompassing Proto-Elamite and Linear Elamite as reconceptualized by Desset. Co-evolving stylistic trajectories are traced from representational motifs to increasingly abstract linear forms. A corpus of approximately 400 artefacts was systematically coded using analytically defined graded variables capturing pictoriality-abstraction, motif-script integration, stylistic complexity, and overall compositional geometry, enabling a detailed assessment of cultural dynamics and temporal patterns. Manually generated heuristic cultural-evolutionary reconstructions visualize directional patterns of change, highlighting continuity, divergence, experimentation, and innovation without asserting discrete clades or formal homologies. Findings demonstrate that iterative engagement with visual signs structured variation, transmission, and selective retention, while artistic styles actively mediated abstraction, spatial standardization, and compositional integration in writing. Integrating Material Engagement Theory (MET), this study emphasizes the distributed and entangled nature of cognition, showing how repeated interactions with clay tablets, seals, and other artefacts distributed memory and structured knowledge across mind, body, environment, and social practice. MET provides a conceptual lens for understanding how material engagement both scaffolds cognitive processes and actively shapes cultural evolution, facilitating individual learning, apprenticeship, and population-level transmission of stylistic and scriptural conventions over extended temporal and spatial scales. While material engagement and artistic conventions played a central role, administrative and socio-economic constraints simultaneously shaped the evolution of writing, functioning as integral components within the mind/brain-body-environment nexus. By operationalizing graded variables through a heuristic framework, this research offers a theoretically rigorous yet flexible methodology for studying early writing systems under comparable archaeological and stylistic conditions, highlighting the reciprocal influence of cognition, culture, and material engagement in the co-evolution of writing and visual style across diverse contexts.

Keywords: Cultural Evolution, Proto-Elamite Writing System, Artistic Styles, Visual Transformation, Proto-Iranian Script.

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Introduction

Writing systems do more than record information: they actively reshape cultural repertoires through repeated interactions with material supports such as clay tablets, seals, and pottery. This study adopts François Desset's (2017; 2021) chronology, which frames Proto-Elamite and Linear Elamite as successive phases of a broader Proto-Iranian writing tradition spanning roughly 3500-1850 BCE. This framework represents a productive working model rather than a definitive scholarly consensus. Building on this temporal foundation, I develop a cultural-evolutionary account that foregrounds the visual dimension of script change: specifically, how artistic idioms, from representational motifs to streamlined linear conventions, co-evolved alongside graphic signs.

The central claim of this paper is that stylistic conventions functioned as channels of transgenerational memory and as active agents reshaping sign repertoires, influencing variation, transmission fidelity, and selective retention. Rather than treating the shift from pictorial marking to abstract script as a unilinear, purely functional progression, this study emphasizes the mutual, co-evolutionary dynamics between visual style and written signs, including branching tendencies across securely dated archaeological contexts. To explore this, a corpus of approximately 400 artefacts spanning the Susa I through Neo-Elamite horizons was systematically analyzed. This corpus enables tracing recurrent compositional strategies, motif distributions, and the evolving spatial relations between image and inscription.

While prior accounts have emphasized administrative drivers of early writing (e.g., accounting or bureaucratic needs), this paper proposes a complementary explanation: material engagement and stylistic dynamics jointly contributed to the stabilization and transformation of graphic systems, with administrative and socio-economic constraints functioning as integral components of the mind/brain-body-environment nexus. The study integrates Material Engagement Theory (MET; Malafouris 2013) with cultural-evolutionary concepts of variation, inheritance, and selection, exploring how repeated mark-making, apprenticeship conventions, and surface constraints shaped trajectories of script standardization.

The following sections develop this argument by outlining the theoretical framework, describing the corpus and coding methodology, and presenting heuristic cultural-evolutionary reconstructions that visualize directional trajectories, branching tendencies, and co-evolutionary patterns of style and script, without asserting formal homologies or statistically inferred lineages.

Research Questions: Four guiding research questions frame this study: 1. How and why did artistic forms shift from pictorial to abstract configurations, and what co-evolutionary and branching patterns do these shifts reveal? 2. How did interactions with Proto-Elamite signs structure variation, transmission, and innovation? 3. How did stylistic change mediate administrative, social, and material practices? 4. Can cultural-evolutionary modeling provide a transferable framework for analyzing related early writing traditions?

Theoretical Framework: Material Engagement Theory (MET)

This study integrates Material Engagement Theory (MET; Malafouris 2013), a central framework within Evolutionary Cognitive Archaeology (ECA; Wynn & Coolidge 2017; Fenici & Garofoli 2017; Malafouris 2019), as a complementary lens to cultural evolution. MET conceptualizes material artefacts not as passive records but as active extensions of intergenerational memory and practice (Malafouris & Renfrew 2010; Renfrew 2004). Cognition and culture emerge through recursive human–material entanglement: clay tablets, seals, motifs, and other artefacts distribute memory and structured knowledge across body, objects, and environment (Malafouris 2013).

Artistic creation is understood not merely as aesthetic expression but as a fundamental cognitive process, intertwined with technological innovation, apprenticeship, and cultural transmission (Malafouris 2013: 89-90; Garofoli 2016). Artistic styles act as dynamic mnemonic scaffolds, evoking past practices and shaping future adaptations without requiring deliberate symbolic encoding. Visual conventions mediate abstraction, compositional organization, and spatial standardization in graphic systems. By explicitly linking artefact features to graded stylistic variables, the integrated MET–ECA framework provides the foundation for understanding how recurrent mark-making, apprenticeship, and material constraints drove variation, selective retention, and co-evolution in the Proto-Iranian script (Farsi & Hoseinzadeh 2025). This approach positions material engagement and artistic style as constitutive elements in the cultural evolution of writing, complementing socio-economic and administrative influences within the broader mind/brain-body-environment nexus. Moreover, by integrating MET with a heuristic cultural-evolutionary approach, this study links micro-level material interactions with macro-level cultural trajectories, allowing us to operationalize co-evolutionary patterns between style and script in a manner not achievable by either framework alone.

The Emergence of Early Writing Systems in Iranian Plateau

Literacy in Proto-Elamite society was likely restricted to a small administrative and religious elite. Evidence from seal ownership, scribal training tablets, and restricted find-contexts indicates that writing served institutional rather than popular communication. Consequently, the durability of clay as a medium for recording information has preserved critical insights into ancient civilizations, particularly through the Proto-Elamite writing system (ca. 3500–1850 BCE), one of the earliest scripts on the Iranian Plateau. This section outlines the historical development of this script, focusing on its evolution and artistic styles, to contextualize the cognitive archaeological model proposed in this study. Drawing on Material Engagement Theory (MET), it explores how material interactions with clay tablets, seals, and pottery shaped cognitive and cultural processes (Malafouris, 2013) in Elamite society, beyond their administrative roles. Following François Desset's (2022) reinterpretation, this study adopts his six-stage framework that redefines the script as Proto-Iranian writing, encompassing Early, Middle, and Late phases, and identifies its language as the Hatamtite to avoid historical misconceptions associated with the later Elamite polity (Desset 2016; 2017).

The Proto-Iranian writing system emerged in Susa around 3300–2900 BCE, primarily for administrative purposes, and was abandoned by 1850 BCE, likely due to the adoption of Mesopotamian cuneiform (Potts, 2004). Algaze (2008) links the rise of early writing and accounting to growing "interpersonal interactions" that enabled intergenerational memory storage through material artifacts like tablets (pp. 135–139). This aligns with MET's view of writing as a cognitive scaffold that externalized memory and thought (Malafouris, 2013). Yet, the complexity of early scripts up to 1,500 signs restricted literacy to an elite few, reinforcing social stratification or "technologies of power" (Mann, 1986). Cooper (2004) emphasizes that writing's emergence was not inevitable; as some complex societies lacked writing, and its presence did not always enhance complexity (p. 94). In Susa, the 1,560 texts from the Susa III period primarily document administrative practices, such as recording goods (Potts 2004; Dahl 2009), but their artistic styles, visible in tablet layouts and seal motifs, suggest broader cognitive and cultural roles (Fig. 1).

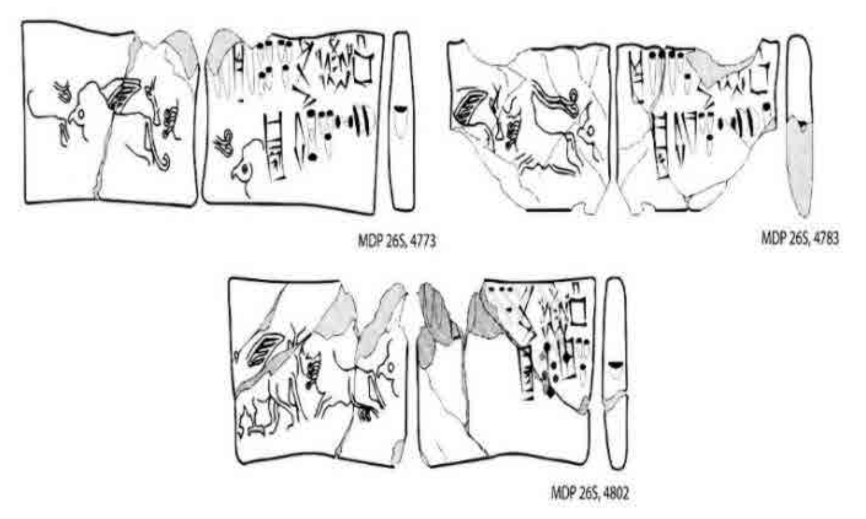


Fig. 1: The placement of motifs with numerical (Matthews & Fazeli Nashli, 2022, fig 7.2).▶

Historical Model: The Evolution of Proto-Iranian Writing

Following Desset's six-stage schema (2025, direct conversation with Desset), this paper treats the Proto-Elamite and Linear Elamite corpora as chronologically and structurally linked components within a unified Proto-Iranian script tradition. He proposes that Early Proto-Iranian (Proto-Elamite), Middle Proto-Iranian, and Late Proto-Iranian (Linear Elamite) represent stages of a single evolving writing system, rather than distinct scripts, culminating in the adoption of cuneiform for the Hatamtite language. This six-stage model, based on material evidence from tablets, seals, and pottery across the Iranian Plateau, traces the script's development and its cognitive implications:

Stage 1 (3500–3300 BCE): Numerical tablets and proto-writing emerged, using tokens and counting objects, widespread from Syria to central Iran. Signs represented numerical values or objects, with pictorial motifs (e.g., zoomorphic designs) dominating.

Stage 2 (3300/3000–2900 BCE): Early Proto-Iranian writing developed in Susa, paralleling Proto-Cuneiform in Mesopotamia and early scripts in Egypt. This stage introduced a complex system of approximately 1500-1700 more abstract logograms and phonetic signs, retaining pictorial elements but requiring learned conventions, indicating a shift toward cognition.

Stage 3 (3000/2900–2300 BCE): Middle Proto-Iranian writing, a transitional phase, is poorly documented, with only four known texts. Logogrammatic signs were gradually abandoned, and phonetic signs decreased from 250–300 to under 100 by 2300 BCE, suggesting scribal standardization and cognitive adaptation to simpler, more abstract systems.

Regional variations are evident across sites like Susa, Tell Malyan, Tepe Yahya, Shahr-i Sokhta, Tepe Ozbaki, and Tepe Sialk, reflecting local cultural and linguistic diversity in numerical systems and anthroponymic sequences.

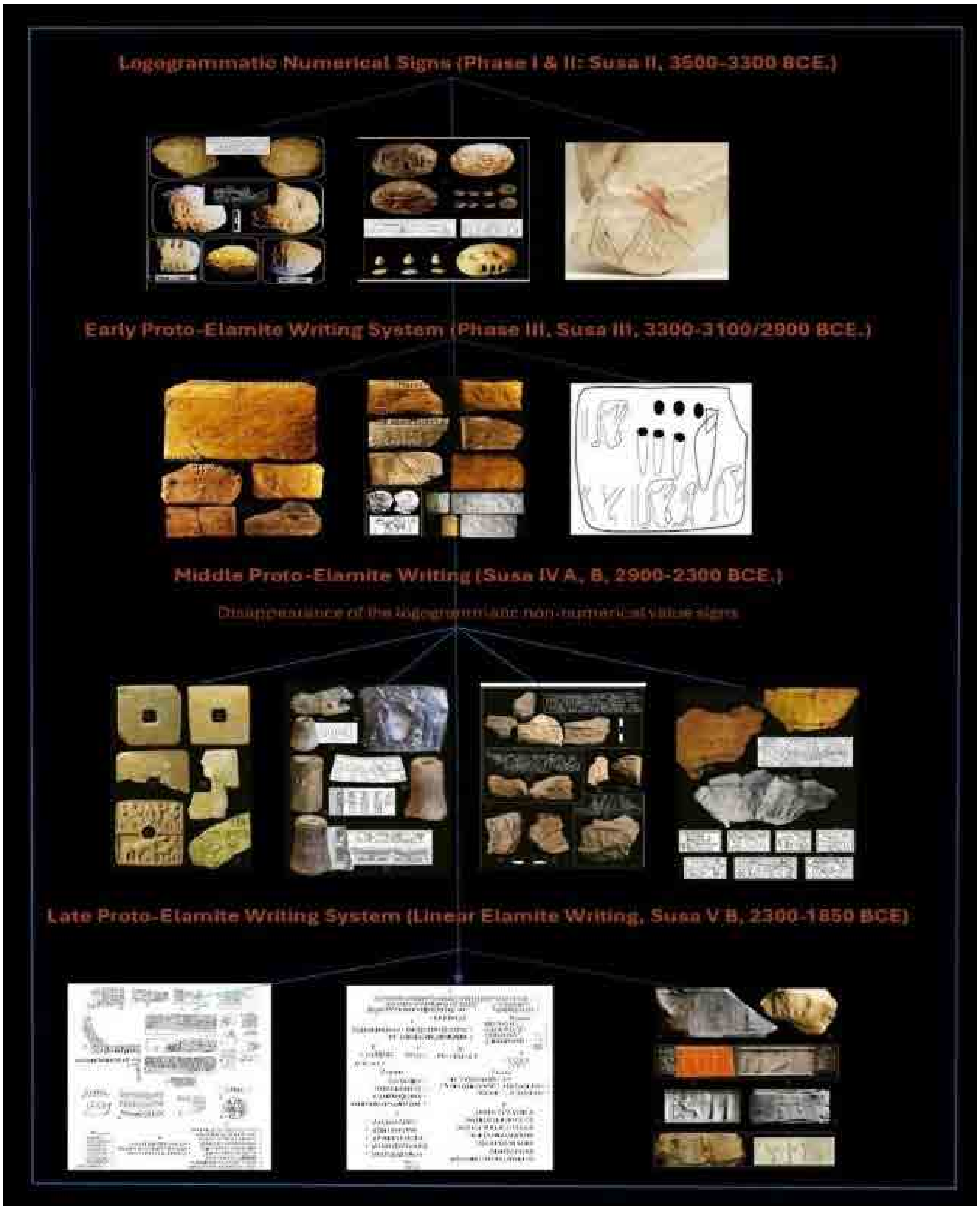
Stage 4 (2300–2000 BCE): Late Proto-Iranian writing, or Linear Elamite, saw further reduction in signs, fully documented in western (Susa, Fars) and eastern (Shahdad, Konar Sandal) traditions. Inscriptions, such as those of Puzur-Shushinak in Susa, reflect a fully abstract script, requiring formal learning and indicating advanced cognitive demands.

Stage 5 (2000–1850 BCE): Cuneiform was adopted alongside Late Proto-Iranian writing to record the Hatamtite language, extending from Susa to Fars. This phase marks a transitional period of coexistence between local and Mesopotamian scripts (Potts 2004).

Stage 6 (After 1850 BCE): The Proto-Iranian script disappeared, supplanted by Mesopotamian cuneiform, likely due to its growing influence among Hatamtite scribes. By the 19th century BCE, cuneiform dominated official and administrative records in Susa and Fars (Desset 2021; 2017; 2016; Potts 2004).

The historical model highlights the Proto-Iranian script's evolution from pictorial to abstract forms, paralleled by changes in artistic styles (e.g., from zoomorphic to geometric motifs) observed in seals, tablets, and pottery. While this framework effectively traces the temporal development of the script, it primarily focuses on the progression of writing systems, with less attention to the evolution of artistic styles and their significance in shaping cognitive and cultural dynamics. This study addresses this aspect by proposing that the transformation and significance of these artistic styles are integral to understanding the broader context of Elamite society (see: Tables 1-2). MET's concept of metaplasticity suggests that these material engagements through repetitive inscribing and learning drove neural plasticity, fostering cognitive capacities like memory offloading and abstraction, which underpinned Elamite social complexity (Malafouris, 2013). Furthermore, the script's regional variations reflect localized cognitive and cultural practices, enriching the cognitive archaeological model proposed in this research. Desset's work provides the detailed six-stage evolutionary schema of the Proto-Iranian writing system, including the progressive reduction of sign inventories and the emergence of phonetic components. For clarity, the present study adopts this widely accepted chronological framework without modification (see also: Álvarez-Mon 2020 for complementary visual documentation).

Table 1: Motif-sign integration on a Proto-Elamite tablet, illustrating historically informed relationships between visual forms and framing conventions. (Author; based on Matthews & Fazeli Nashli, 2022 & Álvarez-Mon, 2020). ▼



A Heuristic Cultural-Evolutionary Approach to Elamite Writing and Artistic Styles

Cultural evolution provides the central analytical lens for this study, conceptualizing stylistic and scriptural change as processes of variation, transmission, and selective retention across generations (Boyd & Richerson 1985; Mesoudi 2011, 2016; Henrich 2016). Unlike genetic inheritance, cultural transmission is context-sensitive and reconstructive: inferential reasoning, material constraints, and local practices frequently introduce modifications, producing mutation-like diversity (Henrich & Boyd 2002). Consequently, cultural lineages rarely follow strict, tree-like patterns familiar from biology, instead exhibiting branching tendencies interwoven with innovation, borrowing, and recombination (Temkin 2016; Straffon 2019). Following Straffon (2019), this study adopts a heuristic approach to tracing cultural evolution. Because our reconstructions are manually generated and exploratory rather than statistically inferred, the term heuristic cultural-evolutionary emphasizes structured, theory-driven visualizations of directional and co-evolutionary patterns in style and script, without implying formal biological homology or discrete lineages. This approach allows us to trace continuities, divergences, and innovations across securely dated artefacts, connecting material evidence, stylistic analysis, and cultural-evolutionary principles in a coherent framework.

A critical distinction in material culture research is between typological and phylogenetic approaches. Typological classification groups artefacts according to shared formal or technical attributes without necessarily implying historical descent (Bahn 1992). Phylogenetic approaches, by contrast, aim to reconstruct patterns of descent with modification, tracing structured continuities and transformations over time (O'Brien & Lyman 2009; Straffon 2019). In cultural contexts, strict biological homology rarely applies, as traits often blend, borrow, or recur in new forms (Straffon 2019). In this study, phylogenetic inference is explicitly heuristic: it does not posit discrete clades or formal homologies but serves as a theory-driven, exploratory tool to visualize directional tendencies, branching possibilities, and co-evolutionary patterns in stylistic and scriptural change. The term heuristic cultural-evolutionary highlights structured, analytical visualizations derived from repeated material practices, apprenticeship conventions, and securely dated archaeological contexts, rather than statistically inferred trees or biologically grounded lineages. In this sense, the approach aligns with cultural evolutionary principles while remaining flexible to new data and interpretive refinements, and is closer to an explicitly theory-driven, exploratory seriation than to a formal phylogenetic reconstruction.

Approximately 400 visual artefacts from Susa, Tepe Yahya, and Konar Sandal (ca. 3500-1850 BCE) were analyzed to explore co-evolutionary dynamics between artistic styles and the Proto-Iranian writing system. Four analytically defined variables capture how visual conventions responded to the progressive abstraction and formalization of script: 1) the pictoriality-abstraction continuum; 2) motif-script integration, including spatial and compositional interactions, framing, and alignment; 3) stylistic complexity, encompassing emergence, combination, diversification, and omission of traits; and 4) overall compositional geometry, focusing on visual balance and the distribution of occupied versus empty space.

Rather than statistically inferred phylogenies, heuristic cultural-evolutionary reconstructions were manually produced in strict chronological order for each artefact class. Hand-made pottery and seals/seal impressions generated the most continuous and diagnostically robust evolutionary signals, reflecting their abundance, fine-grained chronological resolution, and pronounced stylistic variation. These reconstructions foreground patterned continuity, divergence, and innovation, illustrating how repeated engagement with visual signs structured transmission and shaped the evolving form of Proto-Iranian writing (Table 3).

By emphasizing directional trends, branching tendencies, and co-evolutionary interactions, this heuristic cultural-evolutionary approach provides a coherent framework for connecting material evidence, stylistic analysis, and cultural evolutionary theory. It demonstrates how artistic styles mediated the emergence, abstraction, and spatial standardization of writing, offering a model that is both theoretically rigorous and archaeologically grounded.

Materials and Methods

This design explicitly links theoretical constructs to measurable artefact variables, allowing us to operationalize the co-evolution of script and style in a reproducible and transparent manner. To operationalize the heuristic cultural-evolutionary framework described above, a corpus of approximately 400 visual artefacts was assembled, including hand-made pottery, seals and seal impressions, tablets, jewellery, figurines, and statuettes. Artefacts were deliberately selected to ensure broad chronological coverage (ca. 3500-1850 BCE) and to capture diagnostically informative stylistic variation across securely dated archaeological contexts. Each artefact was systematically coded by the author using four analytically defined graded variables designed to measure stylistic change along continua rather than as discrete categories. Coding followed explicit rubrics (see: Appendix A), allowing each variable to be assessed consistently across artefact classes, promoting reproducibility and minimizing subjective bias.

The four variables operationalize theoretical constructs central to the study:

1. Pictoriality–abstraction continuum, evaluates the degree to which visual elements retain figurative qualities versus exhibiting schematic or abstract forms.

2. Motif–script integration, examines the spatial and compositional relationships between visual motifs and written signs, including overlap, framing, alignment, and mutual constraint, capturing how script influenced or was influenced by artistic composition.

3. Stylistic complexity, tracks the emergence, combination, diversification, and omission of visual traits within and across artefact classes, providing an index of cumulative innovation and selective retention.

4. Overall compositional geometry, addresses the organisation of visual space, including balance, symmetry, and the distribution of occupied versus empty areas, operationalizing the interaction between motif placement and spatial abstraction.

Cultural-evolutionary reconstructions were manually generated from the character matrix in strict chronological order for each artefact class. These reconstructions are explicitly heuristic, intended to visualise directional trajectories of stylistic and scriptural change over time, rather than to assert discrete clades or formal homologies. Separate reconstructions for each artefact category were employed to prevent cross-media distortion. For example, a Susa III seal depicting a zoomorphic motif was scored 3/5 on the pictoriality-abstraction continuum, reflecting partial abstraction while retaining figurative clarity. Hand-made pottery and seals/seal impressions produced the most continuous and diagnostically robust evolutionary signals, owing to their abundance, fine-grained chronological resolution, and pronounced stylistic shifts (Table 1). Table 2 presents a deliberately selective subset of artefacts with the clearest and most extreme expressions of the four variables in each chronological phase, serving as paradigmatic illustrations of broader co-evolutionary trends.

Selective presentation in tables and figures reflects constraints of space and analytical clarity rather than data exclusion. The complete corpus of approximately 400 artefacts, including all coded variables, reconstruction diagrams, and supplementary visual materials, is openly archived at Zenodo (https://doi.org/10.5281/zenodo.17345251), enabling further examination, reanalysis, and comparative research. By explicitly linking coded variables to theoretical constructs and heuristic reconstructions, this section clarifies how the methodology operationalizes cultural-evolutionary principles, addresses interpretive challenges, and provides a structured approach to examining stylistic-script co-evolution across securely dated archaeological contexts.

Caveats and Limitations

Several limitations of the present study should be acknowledged, particularly given the heuristic and exploratory nature of the phylogenetic reconstructions. First, the reconstructions presented here are manually generated and explicitly heuristic rather than statistically inferred phylogenies. The term heuristic cultural-evolutionary refers to visually inferred evolutionary trajectories that emphasize directional trends, branching tendencies, and co-evolutionary dynamics, without implying formal homology, discrete clades, or biological lineage structures. Apparent branching patterns illustrate potential divergences and innovations in stylistic trajectories, rather than asserting discrete historical lineages. These reconstructions function as interpretive heuristics, offering structured insights into the co-evolutionary dynamics of script and artistic style while remaining flexible to revision as new data emerge.

Second, the coding of artefacts using graded variables inherently involves interpretive judgment, particularly along continua such as pictoriality-abstraction or motif-script integration. Explicit rubrics were applied to promote internal consistency, ensure reproducibility, and minimize subjective bias; however, alternative coding schemes or thresholds could highlight distinct trajectories or emphasize alternative stylistic dimensions. These considerations ensure that interpretations remain exploratory, emphasizing general tendencies rather than asserting deterministic causal relationships between stylistic change and script evolution. Researchers should treat these variables as analytical tools to operationalize theoretical constructs, rather than as absolute measurements.

Third, although all 400 artefacts from Susa, Tepe Yahya, and Konar Sandal were systematically analyzed, the selective presentation of diagnostically strong specimens in Tables 1, 2 and 3, and in figures reflects constraints of space and analytical clarity rather than data exclusion.

Table 2: Heuristic overview of the co-evolutionary dynamics between artistic styles and writing systems across Elamite periods (Author; based on Matthews & Fazeli Nashli, 2022 & Álvarez-Mon, 2020). ▼

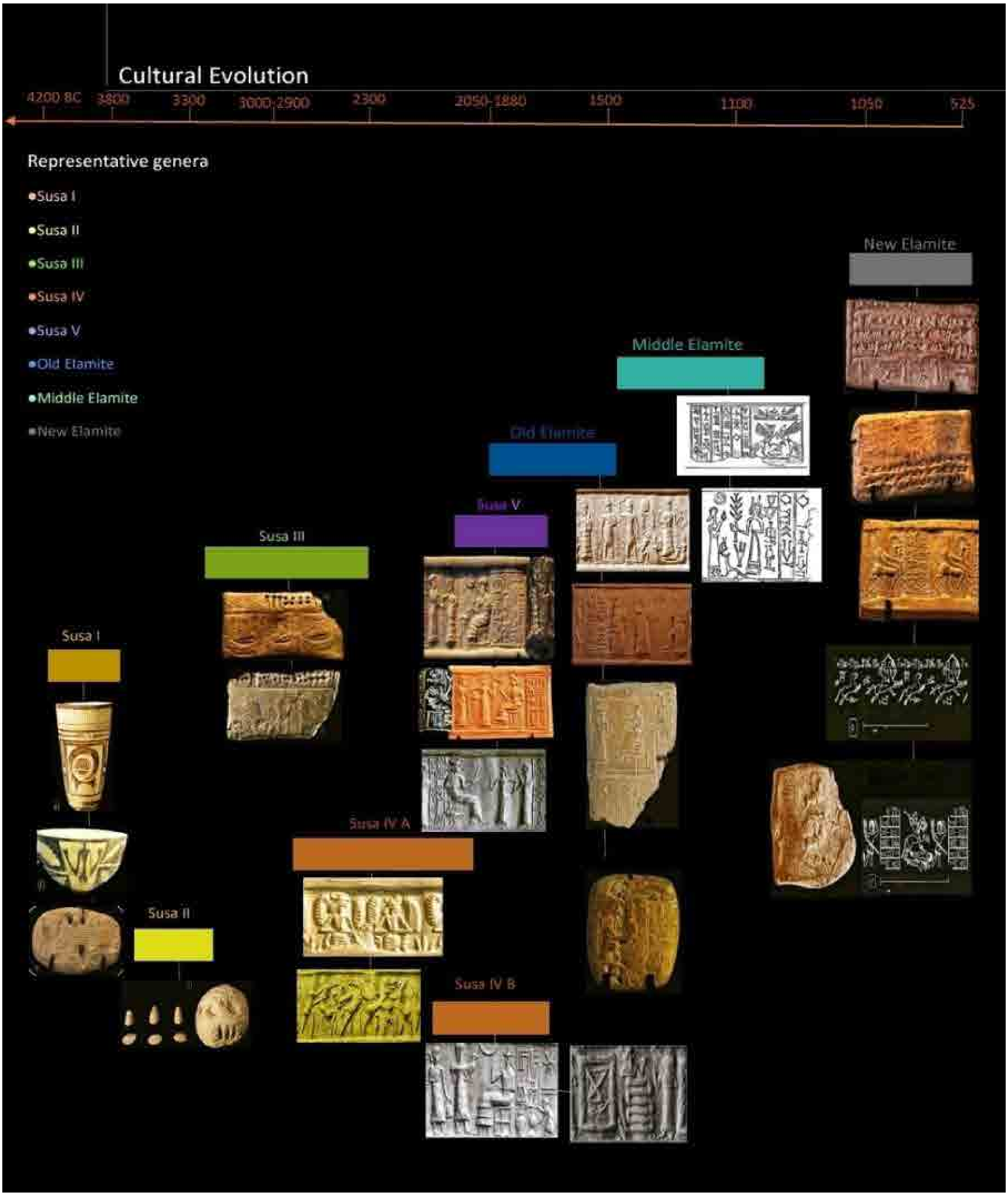
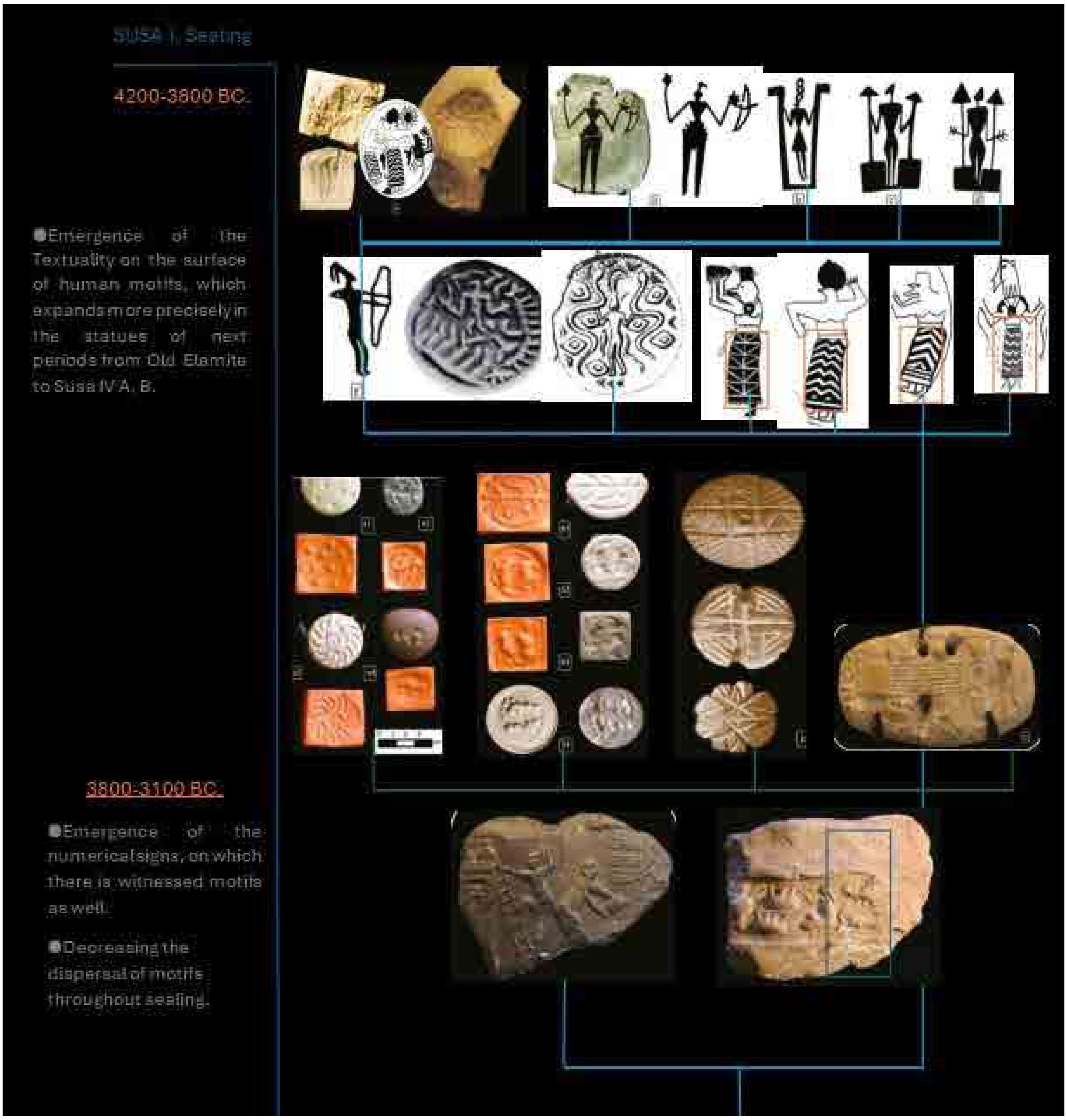
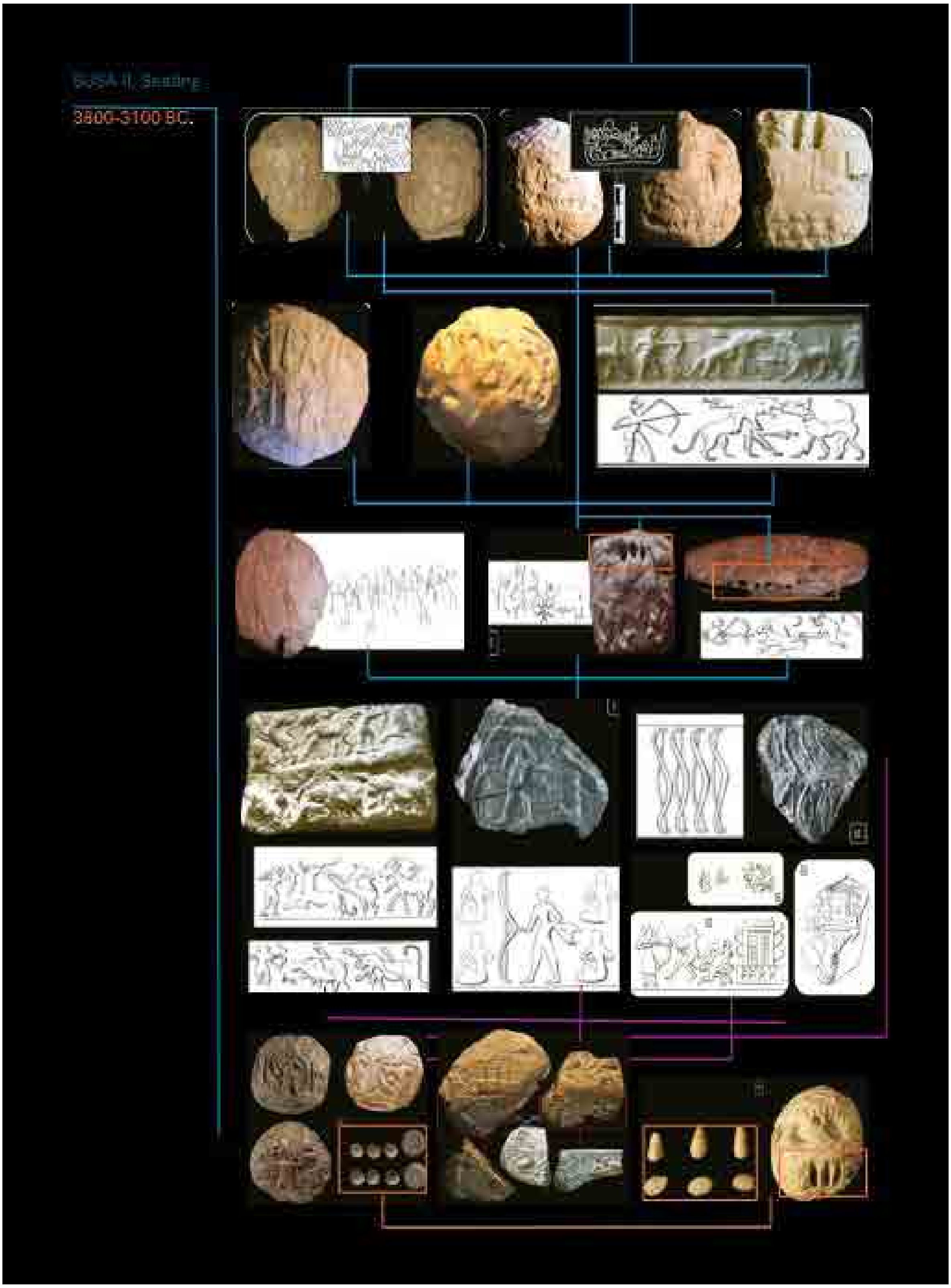
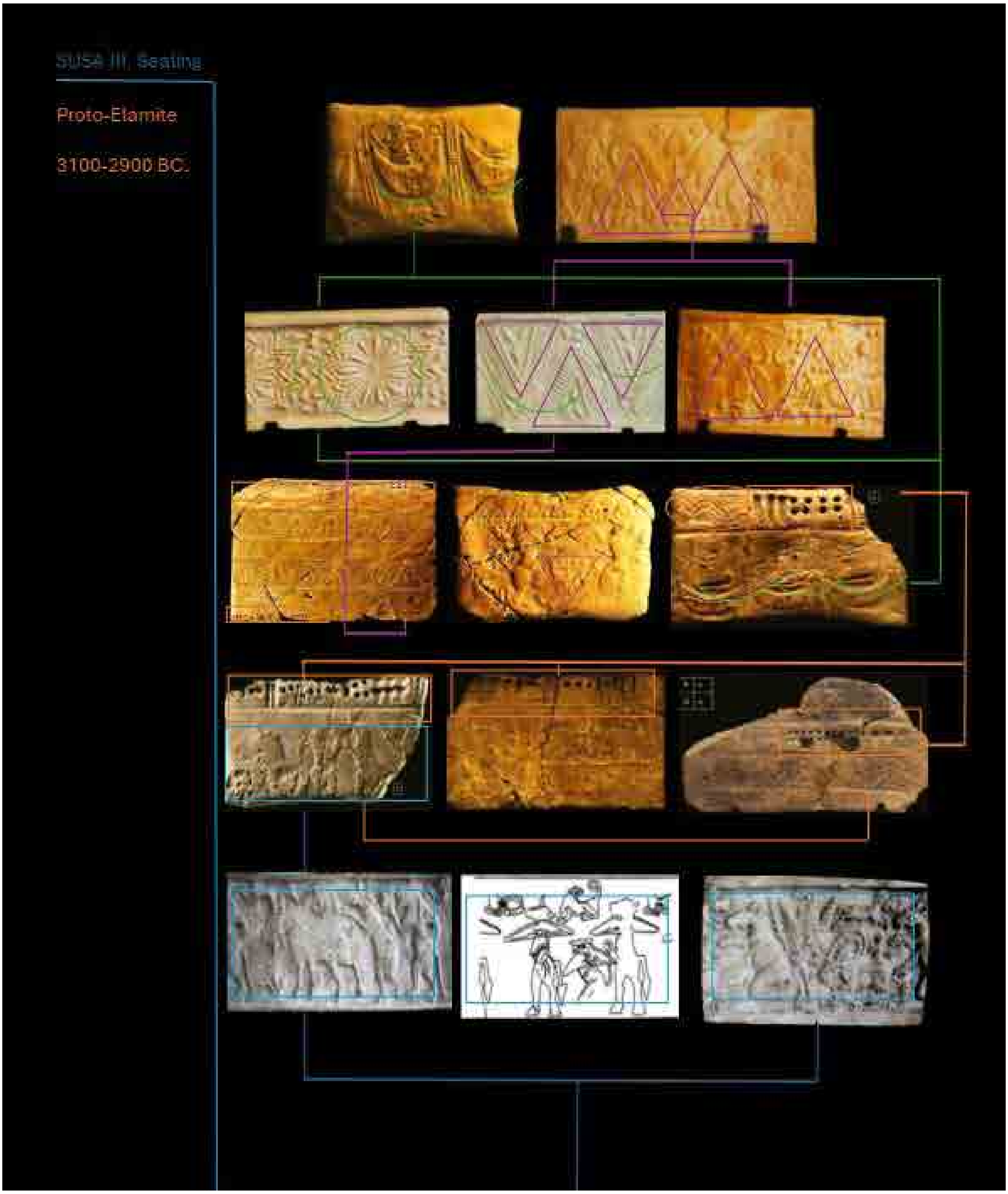
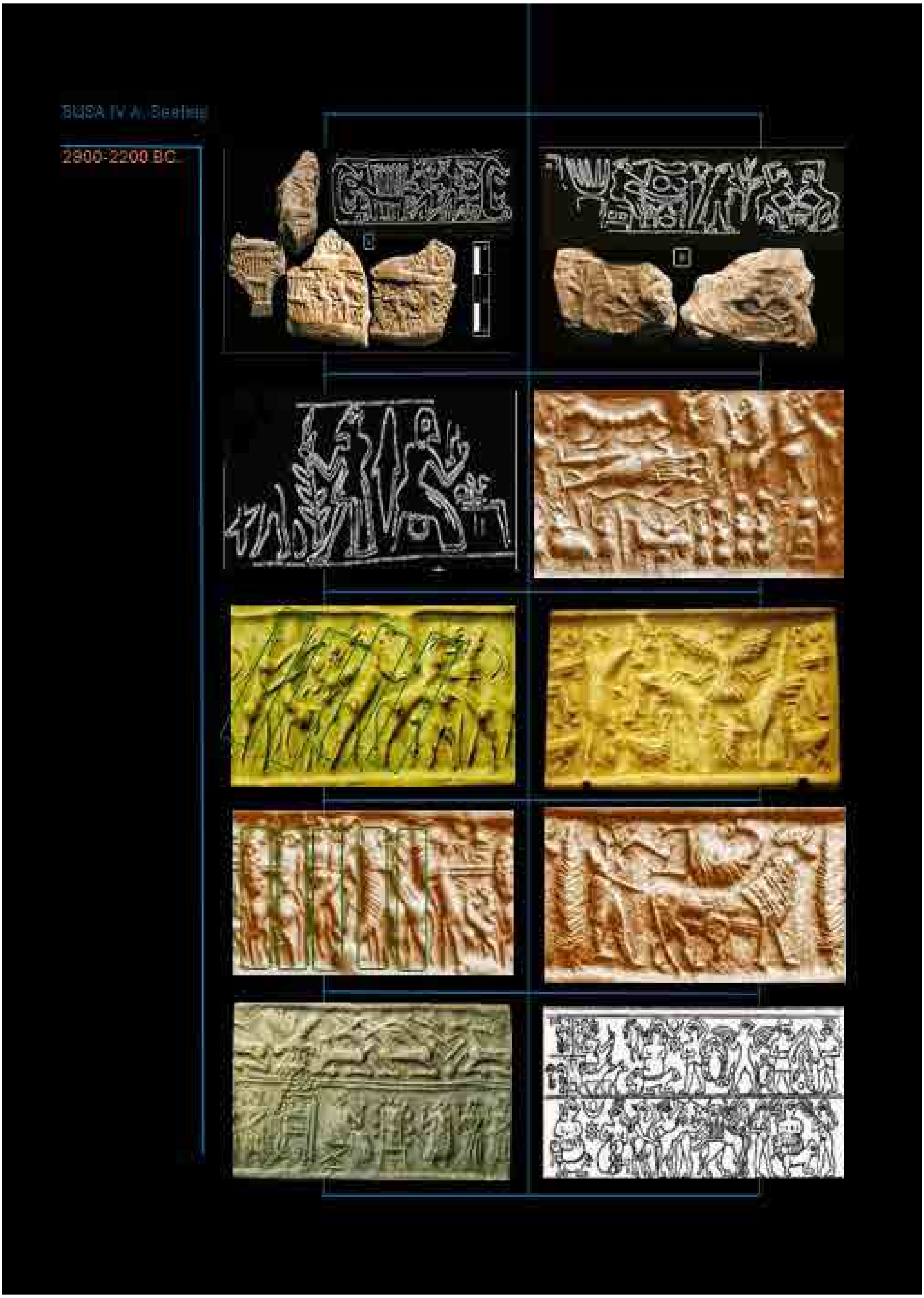


Table 3: Heuristic cultural-evolutionary reconstruction of sealing styles illustrating directional trends and branching tendencies in the cultural evolution of visual forms (Author; based on Matthews & Fazeli Nashli, 2022 & Álvarez-Mon, 2020). ▼




SUSA II, Sealing
3800-3100 BC.


SUSA III, Sealing
Proto-Elamite
3100-2900 BC.


SUSA IV A, Sealing
2900-2200 BC


SUSA IV B. Sealing
2350-2100 BC.
●Emergence of Writing signs after passing Susa IVA; which usually have been bounded by frames.
●After a while that ground and placing motifs on specific lines was not defined. we witness frames around the writing elements purposely. Accordingly, the order of motifs is in the same line which gives a most geometry and discipline, and consequently, decrease the dispersal of motifs.

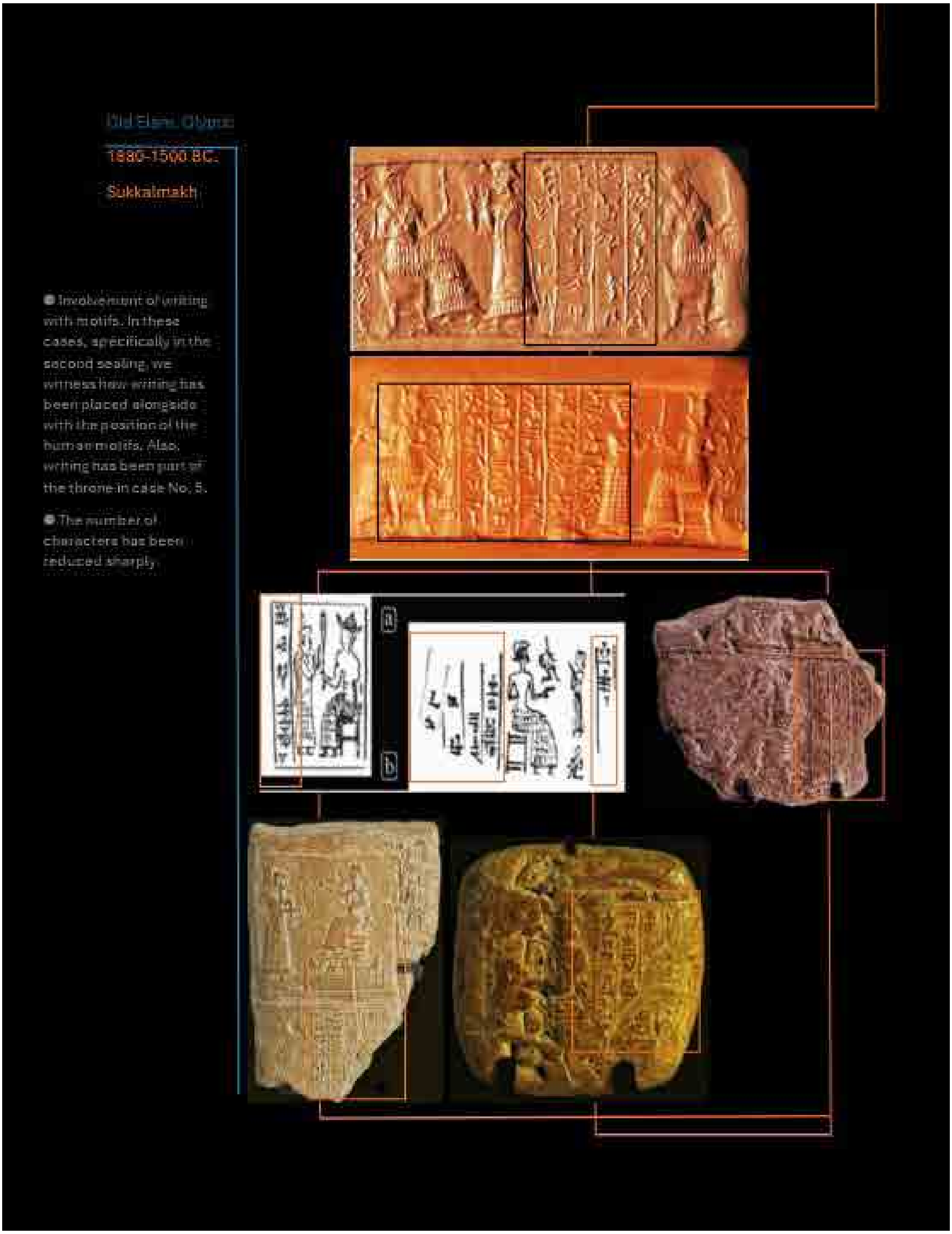

SUSA V B, Sealing
2050-1880 BC.
Shimashki Period
= Ur III
Distinguishing the writing elements continues more consciously, so that frames will come around the writing elements.
Writing is the main part of sealing in this era and next ones. This is writing which organizes the quality and number of motifs. The portion of writing in comparison with previous eras is thoroughly visible.
a
b

Old Elam, Sealing

1880-1500 BC.

Sukkalmakh

Writing as the main part of sealing comes within the motifs and plays a crucial role in shaping motifs. In the other, in some sealings the writings are presented as a pillar between the individuals, a part of motifs. So, in the first picture in the left side, we can see how the writing has been placed and there is a mutual connection between motifs and writings to define the specific art style of this era


Old Elam, Olymic
1880-1500 BC.
Sukkalmakh
● Involvement of writing with motifs. In these cases, specifically in the second sealing, we witness how writing has been placed alongside with the position of the human motifs. Also, writing has been part of the throne in case No. 5.
● The number of characters has been reduced sharply.
a
b

Middle Elam Sealing

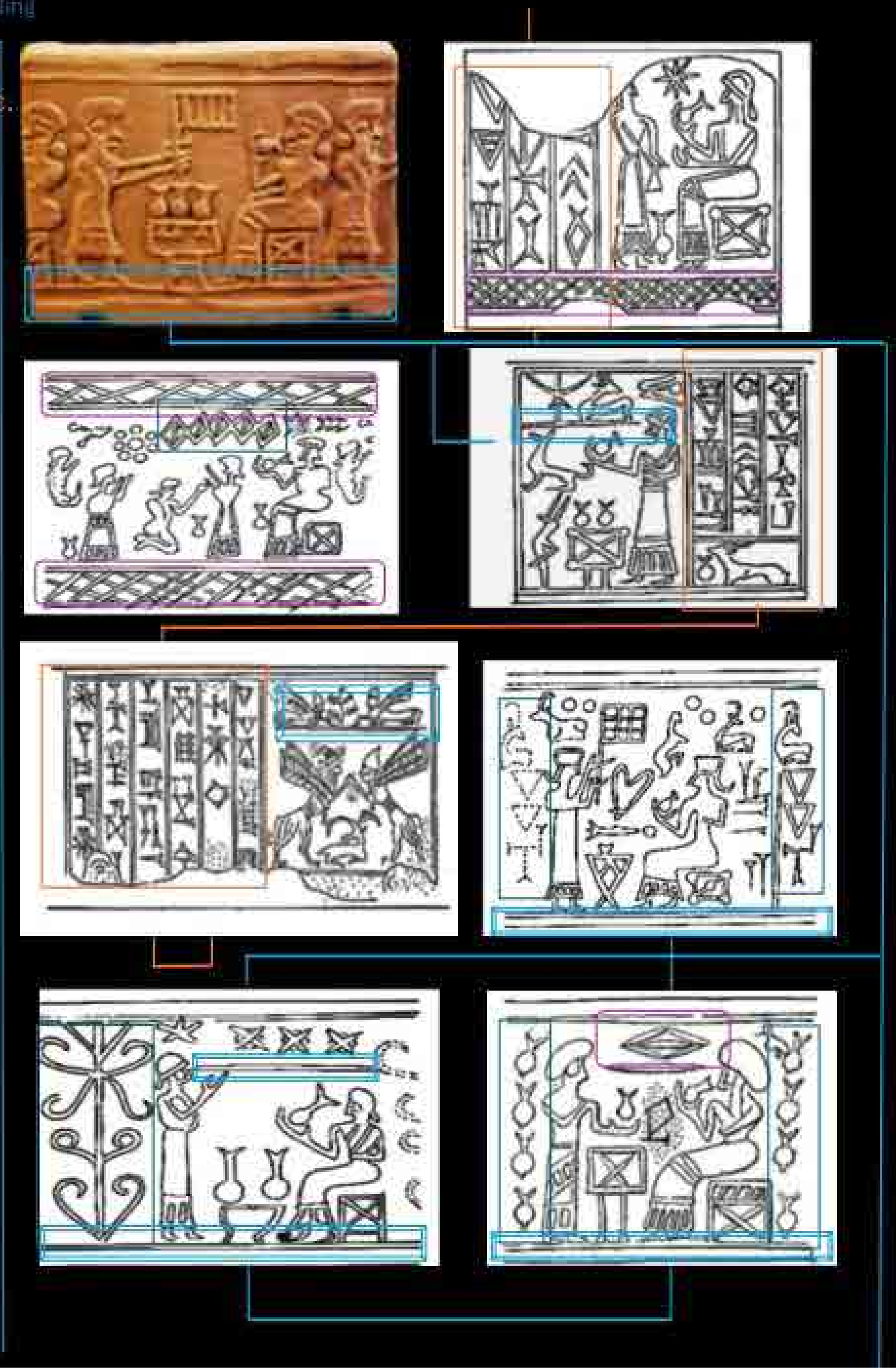
1880-1100 BC.

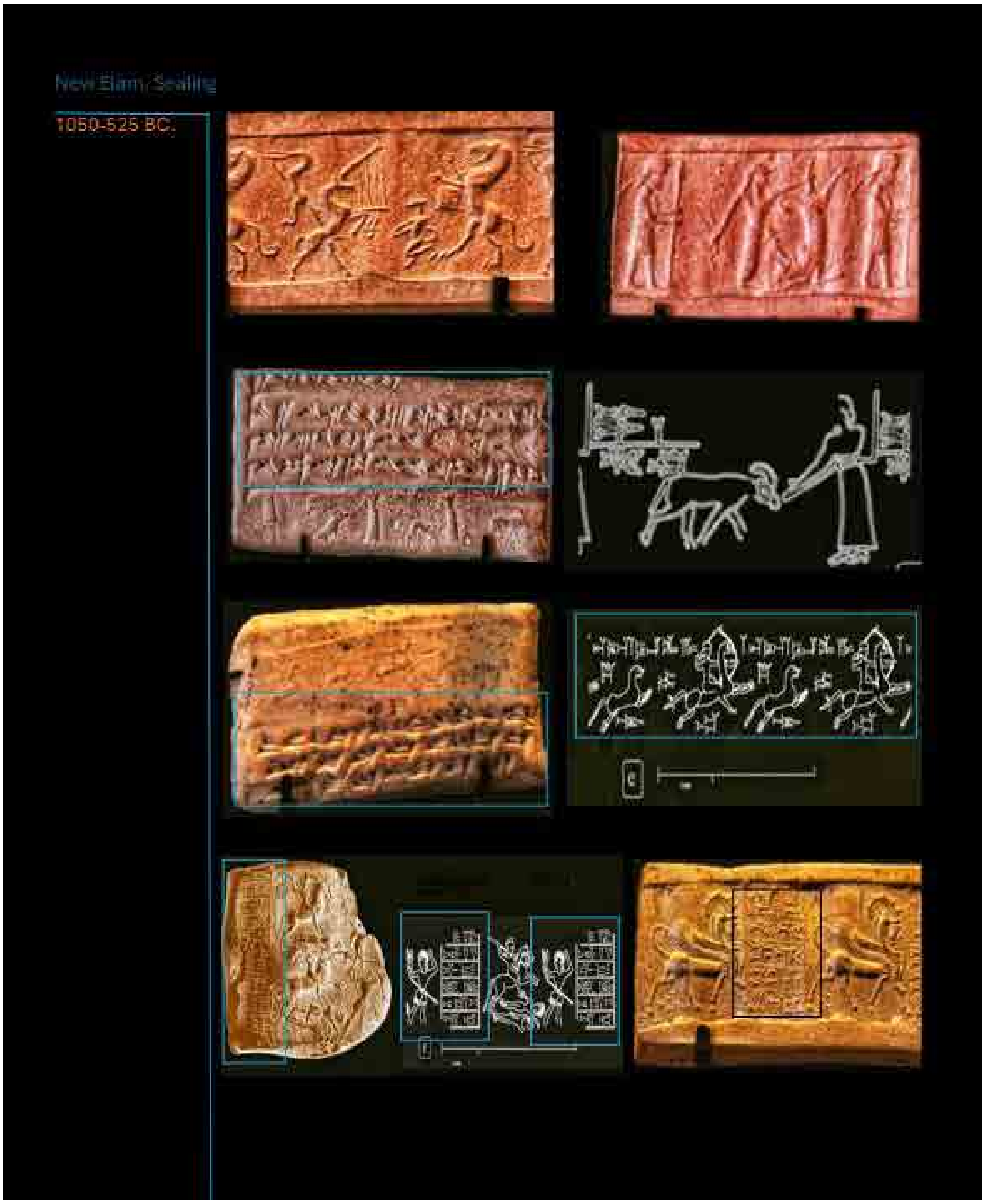
Or, 1500-1100 BC.

Susa & Anshan

- Advent of expanded frames again.
- Repetition of different motifs and characters which the first usage dates back to Susa II – Susa IV
- Placement of some motifs around the narrations with the arrows of writings are alike, that refers to the writing as a part of design and art style. They are playing a role such a framework around narrations. (Light blue lines)
- Considering different lines as different grounds and set up
- Numerous lines are observed throughout the spaces, appearing at the bottom of motifs as the designated placement for these motifs; these function as so-called ground lines.

In a way, each of these lines can be considered a sign of the renewed beginning of drawing or engraving motifs, meaning that in the sequence of depicting various motifs on a seal, each line represents the start of the maker's thought process, who at each stage decided consciously or unconsciously to engrave a different motif in that specific section.





Less extreme or ambiguous examples may reflect parallel practices, local experimentation, or short-lived stylistic deviations, which are not foregrounded in the reconstructions. The complete dataset, including coded variables, reconstruction diagrams, and supplementary visual materials, is openly archived at Zenodo (https://doi.org/10.5281/zenodo.17345251), enabling further exploration, comparative research, and reanalysis.

This study adopts Desset's Proto-Iranian framework as a provisional working model rather than a settled consensus. The evolutionary trajectories identified here, including increasing abstraction, motif-script integration, compositional standardization, and apparent branching tendencies, are contingent upon current chronological, epigraphic, and archaeological interpretations, and should therefore be understood as heuristic and open to revision in light of new data, alternative models, or complementary analytical approaches. By explicitly recognizing these caveats, the study balances methodological rigor with interpretive caution, clarifies the scope and limits of inference, and maintains coherence with its heuristic cultural-evolutionary framework and co-evolutionary emphasis.

Conclusion

Proto-Elamite artistic styles functioned as active extensions of cognition, distributing memory and practice across body, artefact, and environment. Visual and scriptural forms co-evolved, producing directional trends in abstraction, compositional geometry, motif–script integration, and stylistic complexity. Early phases (Susa I-III) emphasized figurative motifs, allowing narrative prominence alongside textual marks, while later Linear and Neo-Elamite phases show stronger structural interdependence between text and image, reflecting the growing spatial dominance of script. These developments demonstrate that stylistic and scriptural change were mutually constitutive rather than solely administratively driven. This argument does not seek to replace administrative or socio-economic explanations, but to situate them within a broader co-evolutionary framework in which material engagement and visual conventions operated alongside. Visual styles and material engagement did not act as isolated causal forces, but operated in continuous interaction with documented administrative pressures, jointly shaping the trajectories of abstraction, standardization, and transmission.

Manually generated heuristic reconstructions trace these co-evolutionary trajectories, highlighting continuity, divergence, experimentation, and selective retention without asserting discrete clades or formal homologies. Coding graded variables, including pictoriality-abstraction, motif-script integration, stylistic complexity, and compositional geometry, enabled systematic tracking of nuanced shifts, while selective presentation of diagnostically strong artefacts emphasizes broader trends without excluding local variation.

The Proto-Iranian script emerged through matter-mind-culture entanglement, where repeated mark-making and apprenticeship fostered new cognitive capacities and behavioral routines. Its eventual disappearance reflects shifting social and institutional pressures rather than cognitive regression. This heuristic framework not only clarifies the intertwined evolution of visual culture and cognition in Elamite society but also offers a transferable methodology for analyzing other early writing systems, emphasizing the enduring role of material engagement in shaping cultural persistence and transformation. Finally, it bears emphasis that the Proto-Iranian framework adopted from Desset is employed here as a productive and explicitly provisional working model rather than as a settled scholarly consensus. The evolutionary trajectories identified in this study, such as increasing abstraction, changing motif-script relations, and regional branching tendencies, remain contingent upon current chronological, epigraphic, and archaeological interpretations, and are open to revision as new evidence or alternative models emerge.

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Conflict of Interest

The Author, while observing publication ethics in referencing, declare the absence of conflict of interest.

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از نشانه تا خط: تکامل فرهنگی و تغییرات بصری ریخت‌شناختی نظام نوشتاری آغازایلامی

مریم فارسی[I]

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صص: ۱۳۷-۱۱۱

چکیده

این مطالعه، چارچوبی در حوزهٔ تکامل فرهنگی ارائه می‌کند تا تغییرات بصری سیستم نگارشی ایلامی (حدود ۳۵۰۰ تا ۱۸۵۰پ.م.) را دنبال کند و و بر این نکته تأکید می‌ورزد که چگونه نشانه‌های در حال تحول و سبک‌های هنری، به‌طور مشترک سیستم‌های نگارشی اولیه را شکل داده‌اند. این پژوهش، با اتکا بر نظریهٔ تکامل فرهنگی، توالی نگارشی پیشا-ایرانی را بررسی می‌کند، که شامل خطوط «آغازایلامی» و «ایلامی خطی» (براساس بازنگری‌های دِسه) است. هم‌چنین، این پژوهش مسیرهای هم‌تطوریِ سبک‌شناختی را از نقشمایه‌های بازنمودی (Representational) تا فرم‌های خطیِ انتزاعی دنبال می‌کند. در همین‌راستا، مجموعه‌ای مشتمل بر حدود ۴۰۰ اثر باستانی به‌طور سیستماتیک و با استفاده از متغیرهای رتبه‌بندی شده کدگذاری شدند تا مؤلفه‌هایی چون «میزان تصویری بودن-انتزاع»، «ادغام و یکپارچگی میان نقش‌مایه-خط»، «پیچیدگی سبکی» و «هندسهٔ کلی ترکیب‌بندی» را استخراج کنند. بازسازی‌های غیرآماری مبتنی‌بر مؤلفه‌های نظریهٔ تکامل فرهنگی، الگوهای جهت‌دار تغییر را با تأکید بر تداوم، واگرایی و نوآوری تأکید دارند -بدون ادعای وجود کلادهای (Clades) مجزا یا هم‌سانی‌های (Homologies) شکلی- به تصویر می‌کشند. یافته‌ها نشان می‌دهند که تعامل مکرر با نشانه‌های بصری، به تنوع، انتقال و حفظ گزینشی آن‌ها ساختار بخشیده است. سبک‌های هنری به‌طور فعالی در فرآیند انتزاع، استانداردسازی فضایی و ادغام ترکیبی خط نقش میانجی را ایفا کرده‌اند. این مطالعه، با پیوند دادن متغیرهای رتبه‌بندی شده به شواهد باستان‌شناختی و بنیان‌های نظری، اصول تطور فرهنگی را عملیاتی کرده و نشان می‌دهد که خط و سبک بصری به‌مثابه نظام‌هایی وابسته به یکدیگر تکامل یافته‌اند که توسط کنش‌های مادی مکرر در بستر فرهنگی و محیطی‌شان شکل‌گرفته‌اند. اگرچه تعامل مادی و قراردادهای هنری نقشی کلیدی ایفا کرده‌اند، اما محدودیت‌های اداری و اجتماعی-اقتصادی نیز به‌عنوان اجزای جدایی‌ناپذیر محیط در پیوند میان «ذهن/مغز-بدن-محیط»، سیر تکامل نگارش را شکل‌داده‌اند. این رویکرد، چارچوبی محتاطانه و در عین‌حال منعطف برای بررسی دیگر سیستم‌های نوشتاری اولیه تحت محدودیت‌های باستان‌شناسی و سبکی مشابه فراهم می‌کند و بر تأثیر متقابل شناخت، فرهنگ و تعامل مادی تأکید می‌ورزد.

کلیدواژگان: تکامل فرهنگی، نظام نوشتاری آغازایلامی، سبک‌های هنری، تغییرات بصری، خط پیشا-ایرانی.

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47 پژوهش‌های باستان‌شناسی ایران

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Reassessing the Iron Age in the Region of Gorgan (Southeast of the Caspian Sea): New Evidence from the Excavations at the Site of Mahiyan, Ali Abad-e Katul, in the Eastern Alborz, Iran

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Abstract

The Iron Age in the Gorgan region represents one of the least understood archaeological periods. Most studies have focused on Iron Age II and III, primarily within cemetery contexts. Research has tended to emphasize both earlier and later periods in the plains, with limited targeted investigation in the mountainous areas. During test excavations at the Mahiyan site in Ali Abad-e Katul (Golestan Province), a funerary structure was uncovered containing two human burials accompanied by grave goods. This article presents these new findings to refine the current understanding of the Early Iron Age chronology and material culture in the region, with a particular focus on its understudied mountainous zone. The study addresses two main questions: What are the cultural and funerary features of the Mahiyan site, and how does its material culture compare to contemporary cemeteries in neighboring regions? I hypothesize that the Mahiyan cemetery displays cultural and burial characteristics typical of the Late Bronze Age and the Early Iron Age in the northern Alborz Mountains. Moreover, it likely shares cultural affinities with contemporaneous sites in northeastern Iran, west of the Alborz, and the Central Plateau. Using descriptive-analytical methods, data from the trial trenches were examined. Typological assessment and comparative analysis indicate that Mahiyan burial practices closely resemble those found in Iron Age cemeteries throughout the Caspian Sea Basin, the Central Plateau of Iran, and the Sumbar Valley in Turkmenistan. In total, seven pottery vessels and two metal artifacts were recovered. These artifacts correspond closely to finds from the early phases of the Marlik cemetery, the Jamshidabad and Qeytariyeh cemeteries, as well as Cemetery 1 of Sumbar and Parkhai 2 in Turkmenistan. All these sites date to the Late Bronze Age through Iron I (circa 1500–1300 BC).

Keywords: Mahiyan Site, Gorgan Region, Iron Age I, Burial.

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Introduction

The archaeological record regarding the onset of the Iron Age in the Gorgan region is extremely limited. Existing data are confined to the later Iron II and III periods. Investigations to date have primarily focused on the plains and on either antecedent or subsequent periods, and mountainous zones in particular remained largely neglected. A joint survey and test-excavation program was conducted in July 2011 by the Iranian Center for Archaeological Research, the Research Institute of Cultural Heritage and Tourism and the General Directorate of Cultural Heritage and Tourism of Golestan Province. This intervention aimed at determining the core zone and propose a protective boundary for the Mahiyan site[1], following an enquiry from private landowners within its approximate buffer zone (Nokandeh, 2012: 450). Within this program, five test pits were excavated on the private land in the immediate vicinity of the site.

The salvage excavation of the Mahiyan site led to the discovery of a grave containing a human burial and associated grave goods from the beginning of the Iron Age. This discovery is significant in its own right and represents the first such find from this geographical area. The findings from this excavation provide new evidence for the beginning of the Iron Age in the mountainous regions of Gorgan and offer information, albeit limited, concerning cultural changes from the end of the Bronze Age to the onset of the Iron Age.

This research was conducted with the aim of achieving a better understanding of the onset of the Iron Age in the mountainous regions of Gorgan and examining the cultural characteristics of this period, based on the new discoveries from the Mahiyan cemetery. The primary objectives of this study are: 1) to investigate the cultural and funerary characteristics of the Early Iron Age at the Mahiyan site in the Gorgan region; 2) to compare the findings from the Mahiyan site with those from other contemporaneous sites within the Caspian Sea Basin and the Iranian Central Plateau.

This research seeks to address the following questions: 1) What cultural and funerary characteristics can be identified at the Mahiyan cemetery in Aliabad-e Katul, located in the mountainous region of Gorgan? 2) What similarities and differences exist between the findings from this site and other contemporaneous cemeteries in the Caspian Sea region and the Iranian Central Plateau?

In line with the proposed questions, the following hypotheses have been put forward: 1) The Mahiyan cemetery contains cultural and funerary features characteristic of the Late Bronze Age and the Early Iron Age in the northern regions of the Alborz Mountains and the Gorgan area; 2) This cemetery likely shares cultural affinities with contemporaneous sites in the northeast, the western Alborz, and the Central Plateau.

Following the salvage excavation of the Mahiyan site and the precise documentation of archaeological findings, including burials, grave goods, and tomb structures, we analyzed the typology of the ceramic and metal objects unearthed, in comparison with similar finds from other contemporaneous archaeological sites within the Caspian Sea Basin, the Iranian Central Plateau, and Turkmenistan.

This study aims to present the findings from the Mahiyan cemetery, thereby contributing to an enhanced archaeological understanding of the beginning of the Iron Age in the mountainous region of Gorgan.

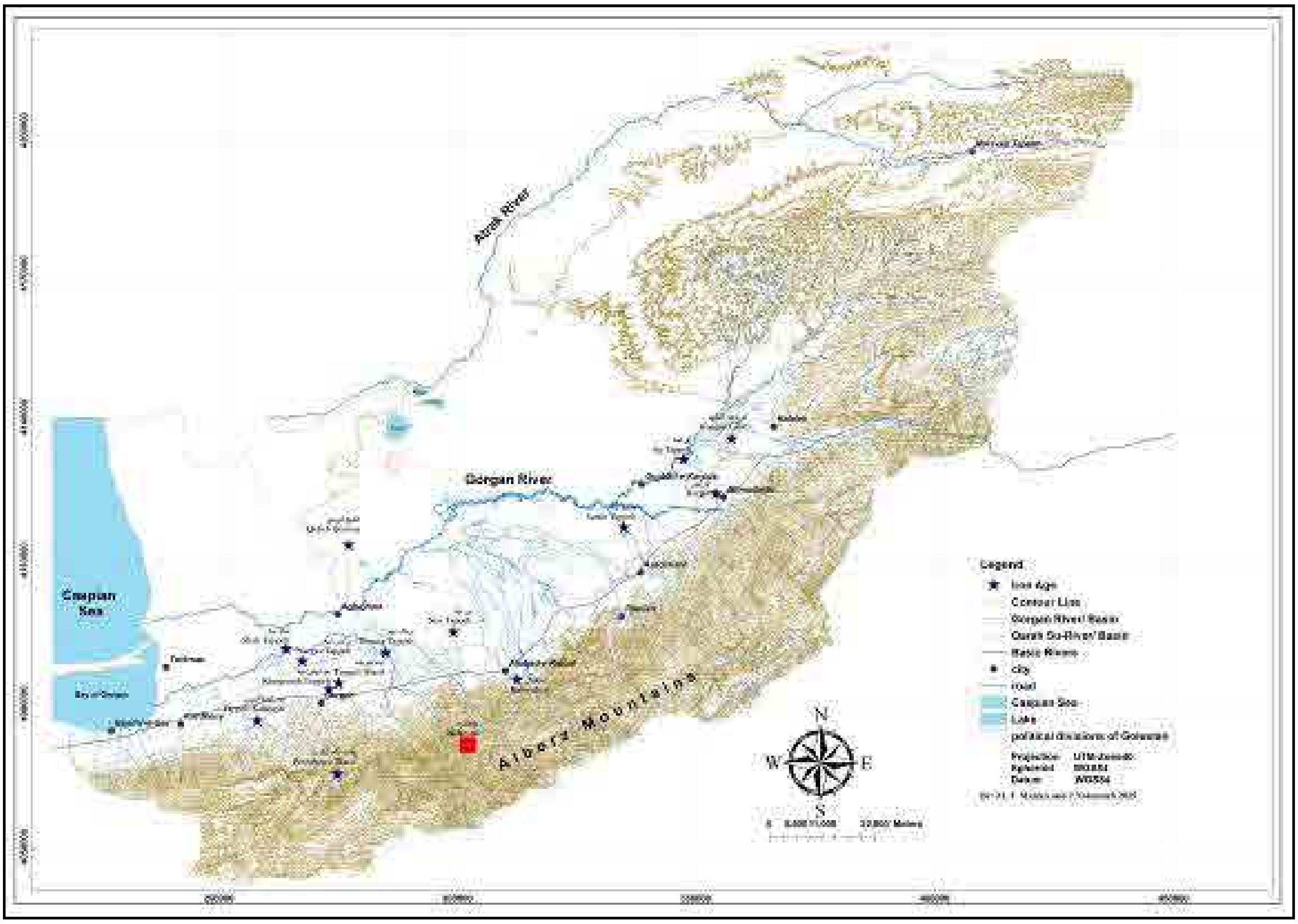
Geographical Setting

The Gorgan region has been and remains one of the pivotal human habitats in the history of Iran. Geographically, the land of Gorgan is situated in the southeastern Caspian Sea area, and it is positioned between the steppes of Turkmenistan to the north and the eastern Alborz Mountain range to the south (Map 1). The Gorgan Plain was formed from alluvial fan deposits deriving from the Alborz Mountains, combined with sediments from the Gorgan River and deep accumulations of loess. The mountainous region of Gorgan encompasses a significant portion of the forest-covered Alborz range. The Hyrcanian forests are situated on the northern slopes of the Alborz Mountains, with the majority of early human settlements established on the forested foothills and along the southern periphery of the Gorgan Plain (Shumilovskikh et al., 2023; Hopper, 2017: 131; Wilkinson et al., 2013: 28-40).

Paleoclimatic research at Lake Kongor has provided new insights into the geomorphological sequence of the region. This research indicates climatic changes and the presence of an arid period between 5900 and 3900 years before present (Shumilovskikh et al., 2016).

Research background

Archaeological research on the Gorgan Plain has a long history. The region was first surveyed and excavated by Jacques de Morgan during the reign of Naser al-Din Shah Qajar (De Morgan, 1896: 110). Among the significant sites explored, worth noting in particular are Yarim Tappeh near Gonbad-e Qabus (Crawford, 1963: 263-272) and Torang Tappeh near Gorgan (Deshayes, 1963, 1965; Mousavi, 2004), which have produced material remains not only from the Iron Age but also from the Neolithic through to the Islamic periods.

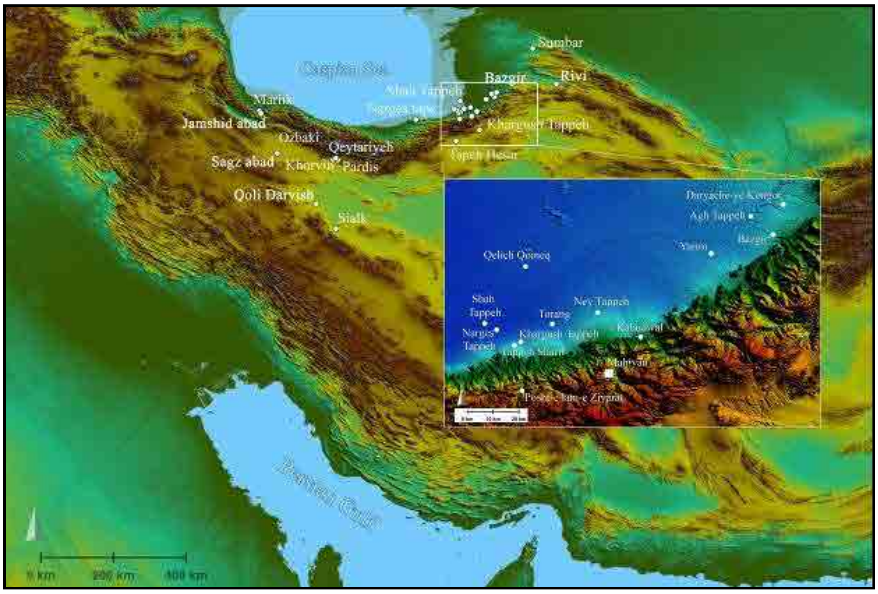


▲ **Map 1: Location of the Mahiyan site and other key Iron Age sites in the Gorgan Region (Maleka and Nokandeh, 2025).**

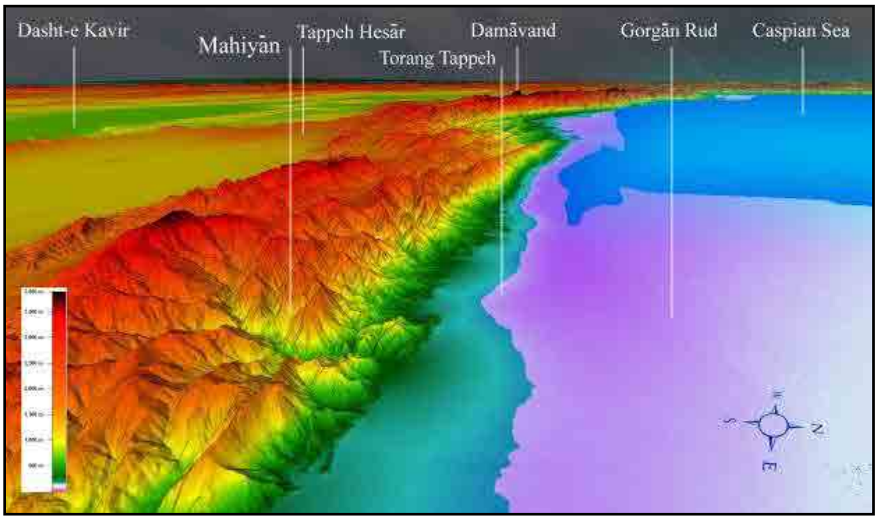
Several sites have yielded evidence from the Late Iron Age (the Late Iron II and Iron III periods). These include Aq Tappeh near Gonbad-e Qabus (Malek Shahmirzadi and Nokandeh, 2000: 55 and 69), Narges Tappeh in northwestern Gorgan (Abbasi, 2011), Qelich Qoineq near the Great Wall of Gorgan (Sauer et al., 2013: 407-418; Priestman 2013: 525-527), Tappeh Bazgir in Minudasht County (Nokandeh et al., 2006: 113-129; Abbasi, 2016: 35-37), Ney Tappeh to the north of Fazelabad (Jahed, 2021) and Sharif Tappeh near Gorgan (Rezaei, 2016). The Ziarat Collection (Alaheddin, 2015) and the Kabudval Collection (Mirmousavi and Nokandeh, 2017) represent two out-of-context assemblages from the Gorgan region that are attributed to the Iron Age (Map 2).

The Site

The Mahiyan site is located in a village of the same name, situated approximately 14 kilometers south of Fazelabad, 16 kilometers southwest of Aliabad-e Katul, 34 kilometers southeast of Gorgan and 26 kilometers southeast of Torang Tappeh (Map 3).



Map 2: Location of Mahiyan and the other contemporary sites discussed in the text (Rokni and Nokandeh, 2025). ►

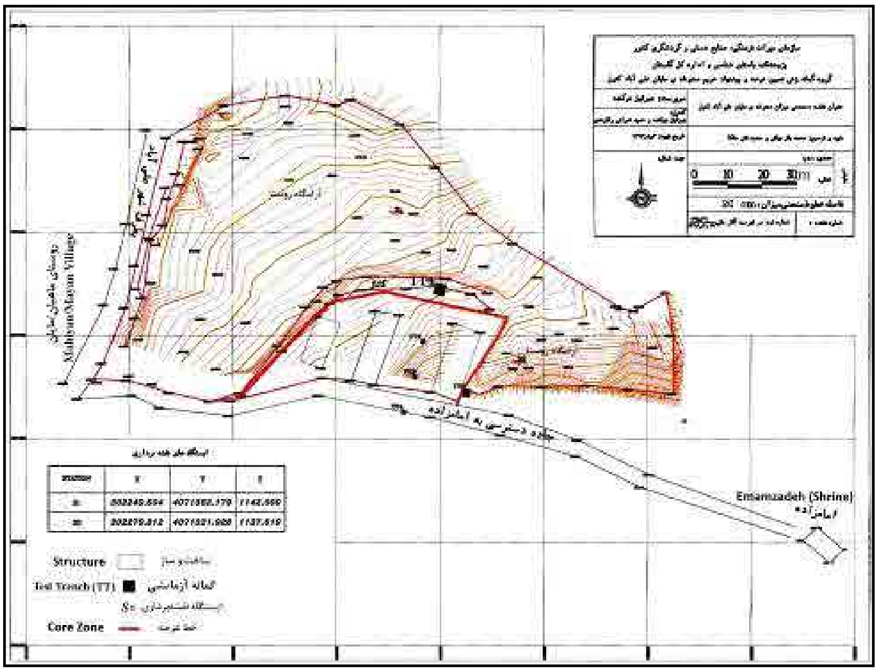


Map 3: Aerial view of the Mahiyan site on the northern slope of the Alborz Mountains, facing the Caspian Sea (basemap: Google Earth; modified by Rokni and Nokandeh, 2025). ►

The Mahiyan site lies at an elevation of 1,133 meters above sea level in a forested mountainous (upland) area. It extends over an area of approximately one hectare (Map 4). In 2011, following a request from the landowners, a section of the site's perimeter was subjected to a test-pit survey under the direction of Jebrael Nokandeh. A total of five test pits were excavated during this project. Findings from one of these pits yielded new evidence pertaining to the Iron Age.

In addition to the Iron Age remains, surface evidence indicates the presence of an Islamic-period cemetery, featuring upright and box-shaped seated grave markers. This cemetery likely dates to the late medieval Islamic period and appears to have remained in use until recent times. Furthermore, surface surveys of the site have identified fragments of

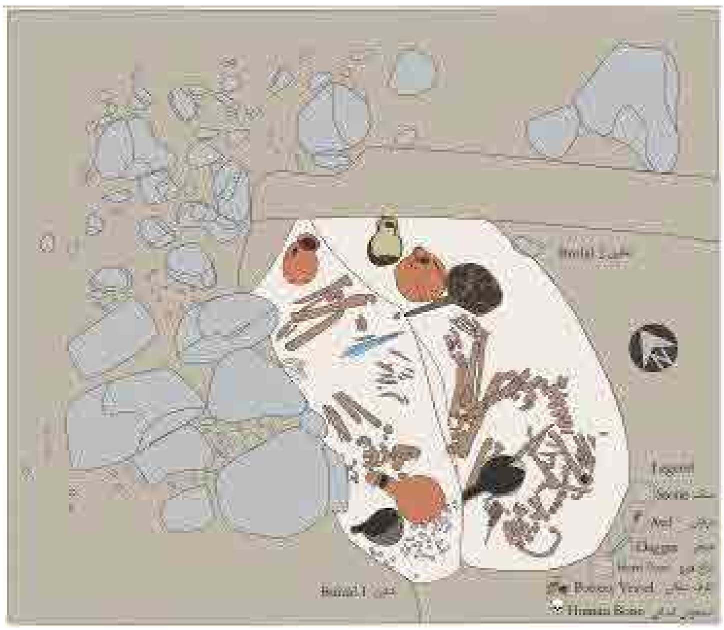
Islamic-era pottery, similar to ceramics known from the ancient city of Gorgan (Kiani, 1984).



◀ Map 4: Topographic map of the Mahiyan site showing the location of test trenches (after Bayati et al., 2012).

The Mahiyan Cemetery and Burial Practices

In Test Trench No. 1, the remains of a grave containing two human burials accompanied by grave goods were discovered[2]. The first skeleton was interred approximately 80 to 90 centimeters below the modern ground surface, and the second skeleton at a depth of approximately 110 to 120 centimeters (Fig. 1).



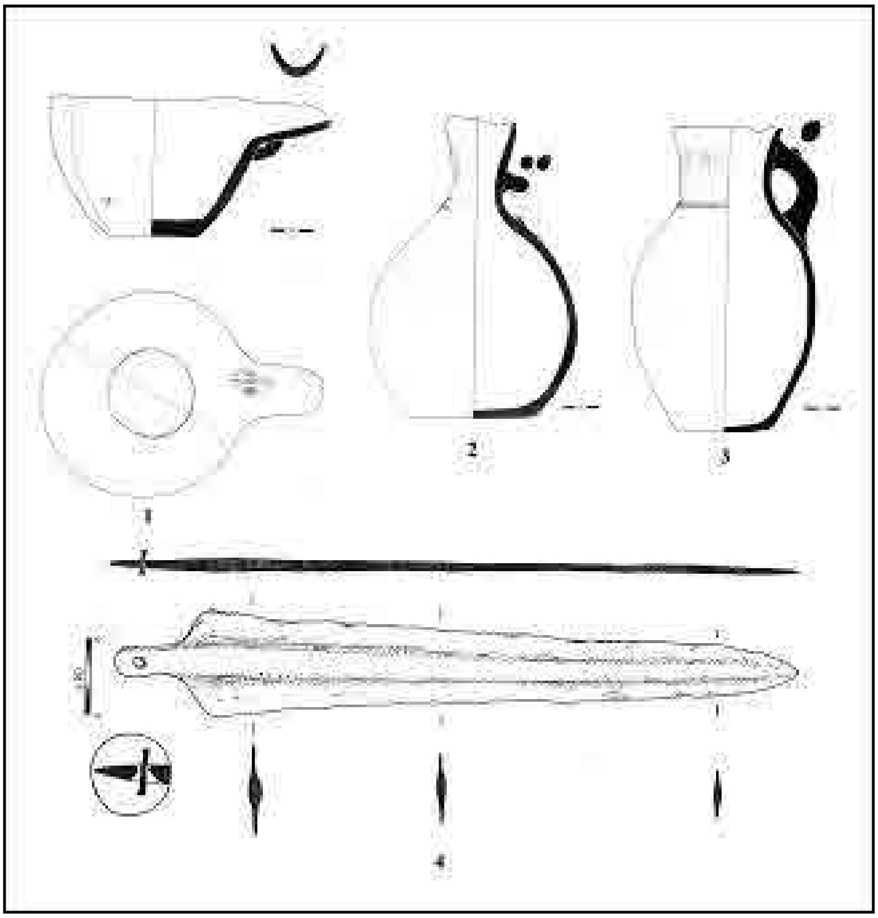
◀ Fig. 1: Plan of Test Trench 1 with human burials (drawn by M. Madihi).

The grave was in a burial pit whose walls were lined with unworked river cobbles set in a clay mortar. No evidence of a roof or covering for the grave was found. The remains of the western wall were visible to a height of 65 centimeters, comprising three courses of stone, the first of which was disturbed. It is likely that the grave originally had a rectangular plan, the northern, eastern, and southern walls of which have been destroyed due to illegal excavations.

Skeleton No. 1, Feature 104 (Excavation No. 1114): This skeleton was oriented north-south, lying on its left side with the face turned to the west. Due to weathering and moisture, the bones had suffered severe deterioration and damage, making them extremely fragile; however, the overall layout was recognizable. The arms were flexed and positioned in front of the face, and the legs were bent at the knees and drawn close to the abdomen. This burial posture is commonly described as flexed (or tightly flexed) (Fig. 2).

Fig. 2: a) General view of Test Trench 1 and the grave structure containing Burials 1 and 2; b) Burial 2 after the removal of grave goods; c) In situ long-spouted grey ware jug and red jar from Burial 2, Mahiyan site (photographs by the author). ▶

Skeleton No. 1 belongs to an adult individual with a robust build and heavy skeletal structure. Based on the robust skeletal morphology, prominent mastoid processes, pronounced frontal bone and brow ridges, muscular occipital bone, a femoral head with a very broad neck, and a femoral shaft of short length, this individual is identified as a male of relatively short stature. The age at death is estimated, based on available evidence, to between 45 and 50 years3. The grave goods associated with Skeleton No. 1 consist of: a tube spout bowl and a holemouth jar placed above the cranium, a tanged dagger located on the pelvis, a red-colored handled pitcher positioned beneath the feet (Fig. 3) and two ram horn cores placed opposite the knees. These horn cores were positioned beside the knees of the skeleton and to the west of the dagger. These two horn cores likely belong to a single individual of wild sheep. It appears that the base and tip of one of the horns may have been deliberately cut. The species of wild sheep that currently inhabits the Gorgan region (notably the Golestan National Park) is known as the Urial or eastern sheep (Ovis orientalis).



◀ **Fig. 3: Grave goods from Burial 1, Test Trench 1: 1) Open-spouted, grey ware bowl with a perforation beneath the spout; 2) Red ware holemouth jar with a vertical handle; 3) Red ware pitcher with a vertical handle; 4) Bronze tanged dagger with a wire rivet through the tang (drawn by Mohaddesh Mansouri Razi).**

The inclusion of animal remains, such as horns, can provide insights into funerary practices and the relationship between humans and animals in this region. The horns could have been utilized as tools or decorative objects, and their presence serves as evidence for the hunting of this animal for both subsistence and non-subsistence purposes (Fig. 2).

Skeleton No. 2, Feature 105 (Excavation No. 1125): Skeleton No. 2 was oriented north-south and laid on its left side, with the face turned to the west. The arms were flexed and positioned in front of the face, while the legs were bent at the knees and drawn close to the abdomen. This body was also placed in a flexed (fetal) position (Figs. 2b and 4).

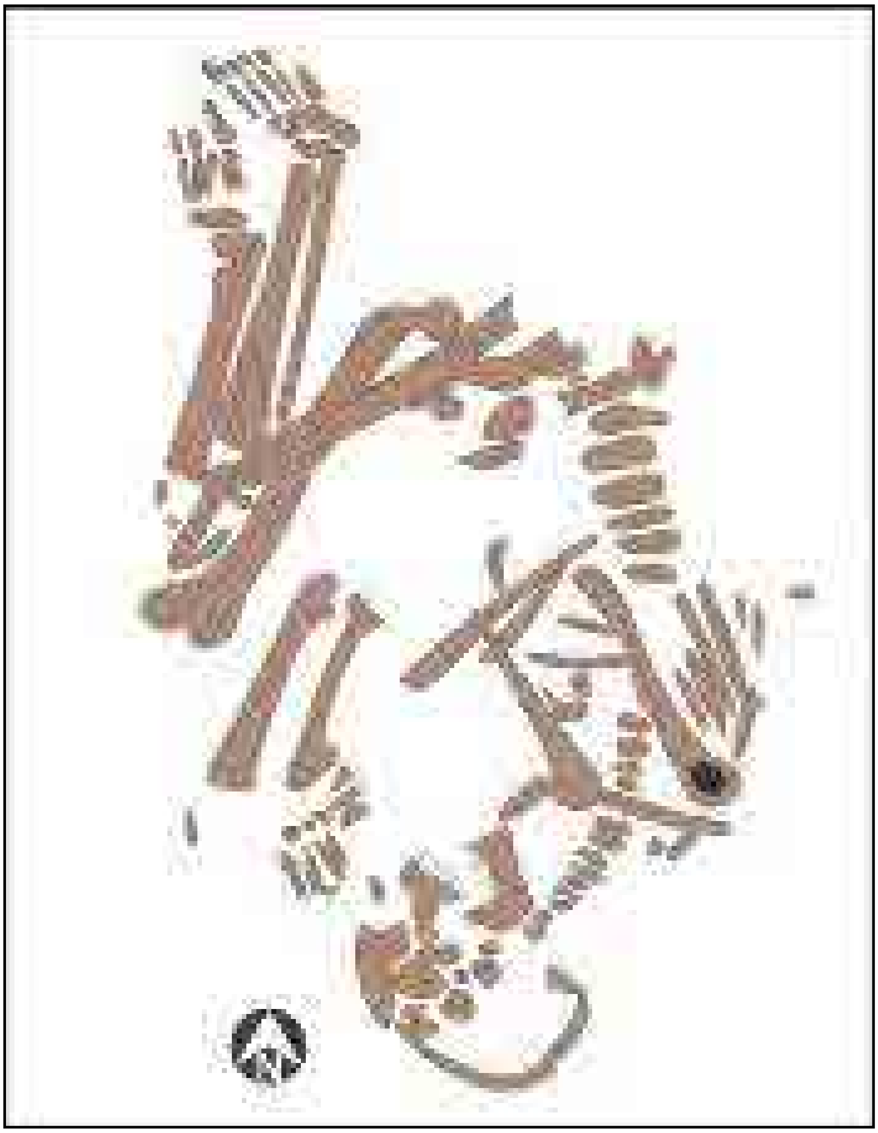
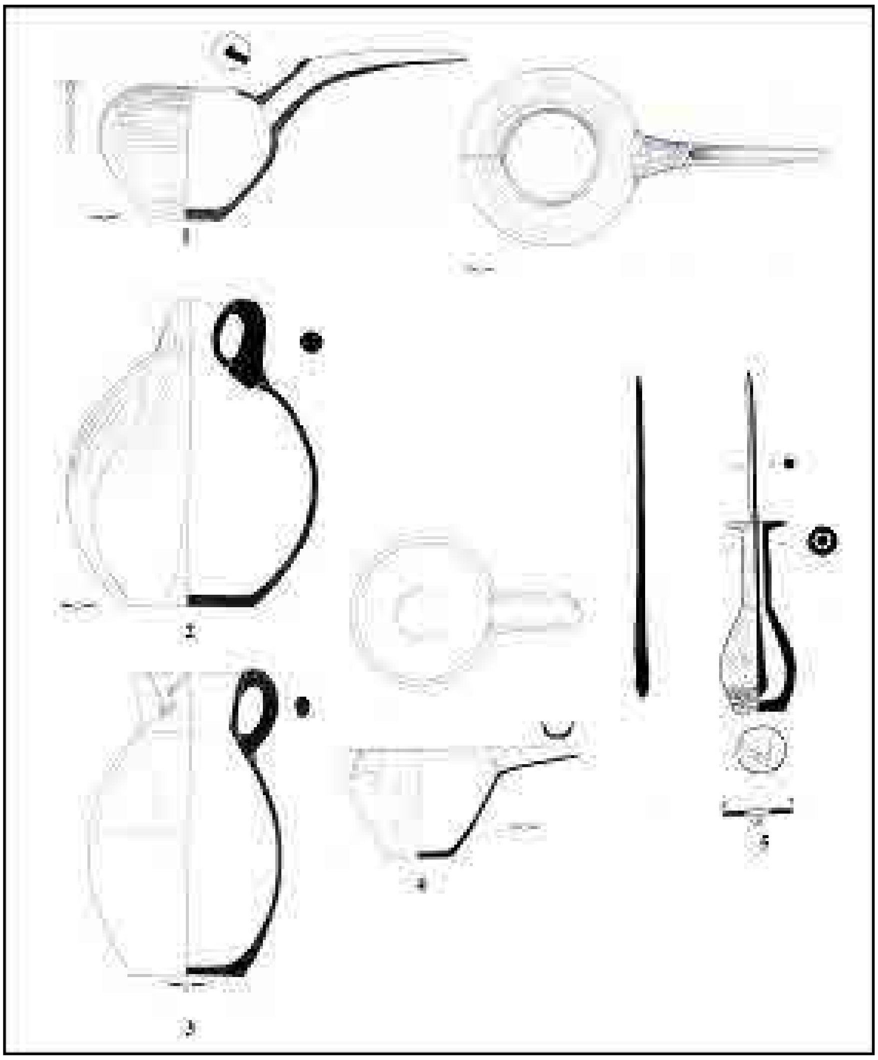


Fig. 4: Plan of Burial 2 at the Mahiyan site (drawn by M. Madihi). ▶

The robust bone development and pronounced, muscular jaw indicates male sexual characteristics. The dentition shows fully developed third molars, with evidence of significant and oblique dental wear. The cranial vault is of medium volume. Based on the available evidence, the individual's age at death is estimated to between 35 and 40 years.

The assemblage of grave goods associated with Skeleton No. 2 consists of: a bronze awl with ceramic handle, positioned in front of the forehead on a north-south axis, a tube spout bowl located between the chin, chest, and forearm and a grey bridgeless spouted pot , accompanied by two vessels—a red jar and a grey pitcher —placed beneath the feet of the deceased (Fig. 5).



◄**Fig. 5: Grave goods from Burial 2, Test Trench 1: 1) Grey ware bridgeless-spouted pot; 2) Red ware holemouth jar with a vertical handle; 3) Grey ware pitcher with a vertical handle; 4) Grey ware open-spouted bowl; 5) Bronze awl with a grey ware, burnished ceramic handle (drawn by Mohaddesh Mansouri Razi).**

Ceramic Analysis: Typology and Comparative Dating

A total of seven ceramic vessels were discovered in the Mahiyan grave (Table 1). Three vessels are associated with Burial 1, and four are associated with Burial 2. Four vessels are grey in color, while three fall within the red to reddish-brown spectrum. All vessels are wheel-made, appearing to have been produced primarily using a slow wheel (i.e., a slow rotational axis). Four vessels exhibit proper firing, while the remaining three show evidence of uneven or insufficient firing. The ceramic temper consists of fine sand and soft sand.

The exteriors of the vessels predominantly feature either a wash or a thick slip. Some are decorated with burnished patterns, a knob-like appliqué on the handles or a raised band on the necks of jugs and on pitchers at the junction of the body and neck, as well as around the spouts of the pots.

Table 1: Detailed description of pottery vessels (Author, 2025). ▶

No.	ID	Description	Dimensions (in cm)	Remarks
1	1112	Tube spout bowl with an open mouth, grey on brown, wash slip, sand-tempered, insufficiently-fired, coarse ware, wheel-made,	H:9.6, Di of bottom: 6.8 Di of mouth: 15, Length with Di of mouth with tube spout: 20.1	A hole beneath the tube spout
2	1113	Holemouth jar with vertical handle, brown on red color, red-slipped, sand- and mica-tempered, well-fired, fine ware, wheel-made	H:24, Di of bottom :10.5, Di of mouth :6.3	Applied decoration on handle and applied band between body and neck
3	1115	Pitcher with a vertical handle, red on brown, wash slip and burnished pattern, sand-tempered, well-fired, fine ware, wheel-made	H:25.8 Di of bottom :9.5 Di of mouth :9.5	Applied decoration on handle and applied band between body and neck
4	1118	Grey bridgeless spouted pot, grey slip, burnished pattern and two applied bands on spout, sand-tempered, reduced-fired, coarse ware, hand-made	H:17.2 Di of bottom :9.1 Di of mouth :15	On the body of the vessel, a vertical band, resembling a column, runs prominently in the direction opposite to the vessel's spout, extending from the rim down to the bottom. The spout of the vessel has two forms, close and open shapes; the closed section connects to the body just beneath the rim, and there are also two applied bands on this closed section of the spout. Burnished patterns are visible on most parts of the body, especially on the spout.
5	1117	Holemouth jar with a vertical handle, red on brown color, slip and burnished pattern and applied band, sand-tempered, insufficiently-fired, medium ware, wheel-made	H:26.8 Di of bottom :11.7, Di of mouth :9.5	Applied band between body and neck
6	1116	Pitcher with a vertical handle, grey color, wash slip, and burnished pattern, sand-tempered, reduced fired, medium ware, wheel-made	H:25.7 Di of bottom :9.7 Di of mouth :9.8	
7	1123	Tube spout bowl with an open mouth, grey color, wash slip, sand-tempered, well-fired, fine ware, wheel-made	H:12.4 Di of bottom :7.3 Di of mouth :16 Length with tube spout: 25.5	

Typological Characteristics and Relative Chronology of the Mahiyan Ceramic Vessels (Fig. 6)

Type 1: bridgeless spouted pot (Fig. 6 type 1): This pot features an open, trough-shaped spout horizontally attached to a cylindrical neck. A similar pot was recovered from Grave No. 17 at the Marlik cemetery (Negahban, 1996: 233, Fig. 25, 579 and Pl. 110: 579). According to the revised chronology of the Marlik cultural materials, Grave 17 is attributed to the early phase of the Old Marlik culture, dated circa 1500–1300 BC (Late Bronze Age) (Vahdati and Piller, 2018: 24–27 and Table 1; Piller, 2008: 215 and 237–8: Abb. 33).

This vessel form is comparable to a long-spouted, grey, globular-bodied jug from Grave 53 at Qeytariyeh, Tehran (Kambakhsh Fard, 1991: 56, Image 104, artifact no. 324 and 2045; Farrokhnia, 2020: 100, Table 1, type Q.G). The sole difference lies in the decorative appliqué. A similar Late Bronze Age jug was also discovered at Gohar Tappeh, Behshahr. The Gohar Tappeh example has a cylindrical body and three raised bands on the spout (Mahfrouzi and Piller, 2009: Figs. 6 and 8.4), whereas the Mahiyan jug has a globular body and two raised bands. A parallel form was also found in Grave 3 at the Jamshidabad cemetery, featuring raised bands on the vessel rim (Fallahian, 2020: 61–62, Figs. 3–27, 3–26, and 3–30). These vessels share a general structural similarity with the Mahiyan example, differing only in minor decorative details. Furthermore, this vessel type resembles jugs discovered in over 18 graves at the Sumbar cemetery (Chlopin, 1986: Abb. Va-b-c) and in Graves 1, 6, 7, and 11 at the Parkhai 2 cemetery (Chlopin, 1986: Abb. 105: 3, 107:6, 108: 2, 110: 11), which are dated to the Late Bronze Age.

Type 2: Tube spout bowl: This is a wide-mouthed vessel featuring an open, trough-shaped spout at the rim and a flat base. This variant lacks a handle (Fig. 6: Type 2a). In another subtype, instead of a handle, a small, perforated horizontal lug or knob is present at the junction of the spout and the vessel body (Fig. 6: Type 2b).

Type 3: Pitcher with a vertical handle: The rim diameter is approximately equal to the base diameter. The vessel has a flat base. In subtype 3a, a knob-like projection is present on the handle, and an applied, raised band encircles the junction of the neck and body (Fig. 6: Type 3).

Type 4: Holemouth jar with a round body: This vessel has a vertical handle. The rim diameter is less than the diameter of its flat base (Fig. 6: Type 4).

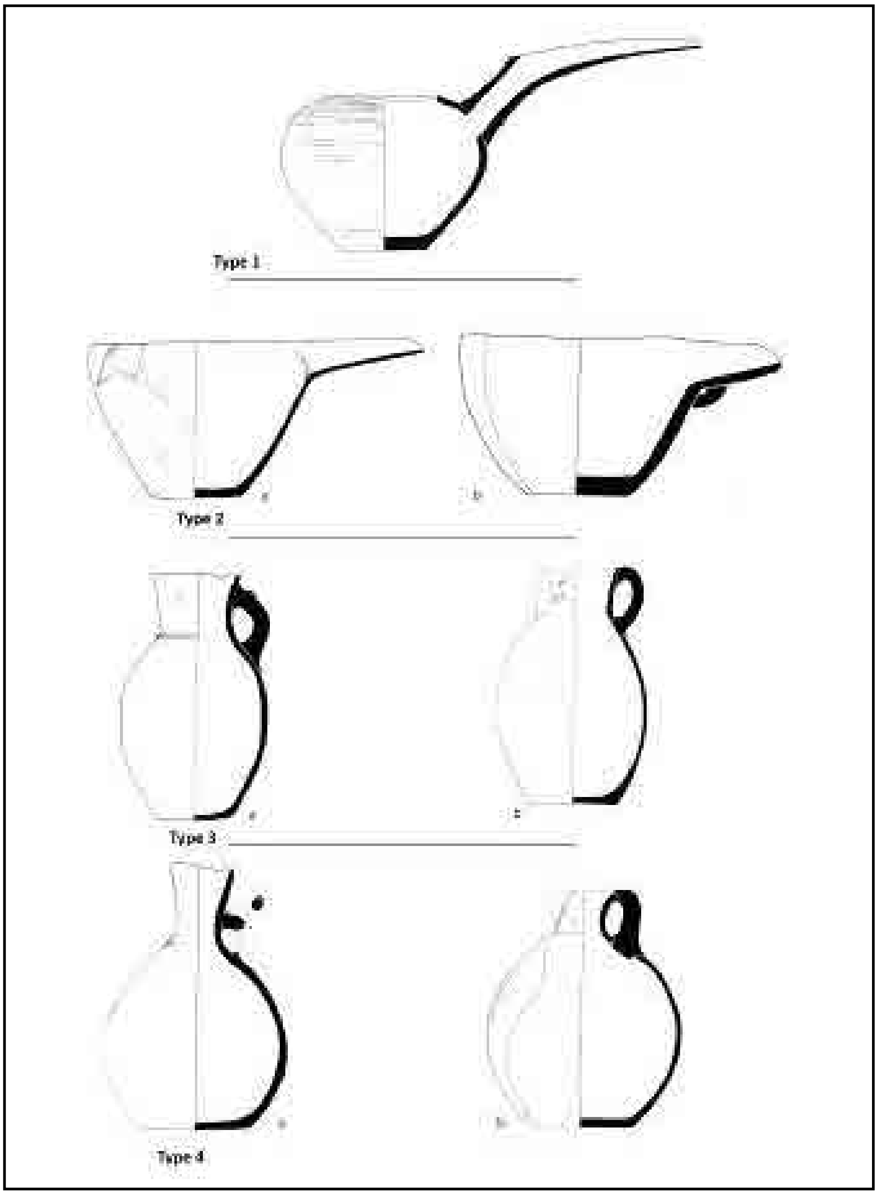
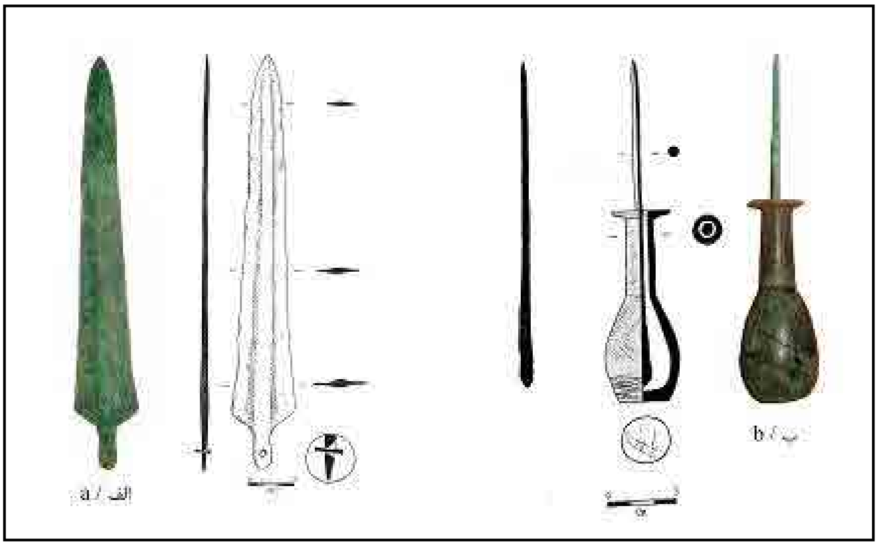


Fig. 6: Principal ceramic vessel types (Author, 2025). ▶

Metal Objects

A single metal object was associated with each burial. A bronze tongue dagger was discovered on the pelvis of Skeleton No. 1 (Figs. 1, 2, 3 and 7a) while a bronze awl with ceramic handle was found with Skeleton No. 2 (Figs. 1, 2, 5 and 7b).

The Bronze Dagger: The dagger was manufactured using a bivalve casting technique. Both the hilt and the blade were subsequently worked via hot forging after being removed from the mold. Hammer marks are evident on the distal end of the hilt. This secondary forging was likely employed for two reasons: 1) The thinness of the hilt and blade sections would have made them difficult to cast successfully, as the low fluidity of



◄ **Fig. 7: Metal objects: a) Bronze tanged dagger; b) Bronze awl with ceramic handle (drawn by Mohaddesh Mansouri Razi).**

the molten metal increases the risk of incomplete mold filling in thin areas; 2) Forging increases the strength and structural integrity of the blade, enhancing its resistance to impact and stress.

A perforation was drilled into the hilt post-casting, probably for the attachment of a wooden handle. Following the hot forging of the blade, the final polishing was carried out. Use-wear is visible on the blade, including a bending of the cutting edge backward from impact. A central midrib runs the length of the blade from tip to base, serving to increase rigidity. This is a tanged dagger type.

Dimensions of the dagger are as follows: total length 26.4 cm; maximum blade width 4.1 cm, minimum width 3 mm; midrib thickness 4.05 mm, width 1.05 cm. The tang length is 2.5 cm, with a maximum width of 1.2 cm and a minimum of 1 cm. The rivet hole in the tang has a diameter of 3 mm. The surviving rivet is 9 mm long and 1 mm in diameter. The total weight of the dagger is 118 grams (Fig. 7a).

Radiography analysis on the dagger shows indications of spots and cavities in the form of dark spots, which were created as a result of variations in thickness and changes in density within the object. (Fig. 8b). Based on the results obtained from X-ray fluorescence (XRF) spectrometry (Fig. 8) conducted on the bronze dagger from Mahiyan, copper, at 53.4% (expressed as oxide), is the primary constituent element of the sample, as shown in Table 2. The presence of tin alongside copper indicates a bronze alloy. Typically, this alloy consists of approximately 90% copper and 10% tin (Bahramzadeh and Miri, 2014).

The presence of elements such as aluminum, sulfur, and other trace elements detected could be attributed either to the sample's prolonged interaction with the burial environment or may originate from the primary ore (gangue). Sulfide compounds in bronze artifacts, resulting from impurities, are derived from the primary ore and remained in the metal due to incomplete extraction and refining processes. This is also related to copper's strong affinity for sulfur (Rezavizadeh and Vaghar, 2003). The presence of chlorine is likely due to chloride corrosion, which typically appears as a light green, powdery deposit on the sample.

Furthermore, X-ray diffraction (XRD) results indicate a significant presence of quartz, which aligns with the XRF findings and the detection of silicon. Quartz is a primary mineral found in soil and is a major component of many soil types with varying compositions. Illite, another identified mineral phase, belongs to the category of secondary minerals formed from the weathering of micas (biotite or muscovite). Another phase is albite, a sodium-rich variety from the alkali feldspar group (Emami, 2022: 182 and 208). All three of these phases are attributable to the burial soil and sediments adhering to the sample. No phases indicative of the object's original metallic structure or of copper and its alloy corrosion products were observed (Table 2; Fig. 8).

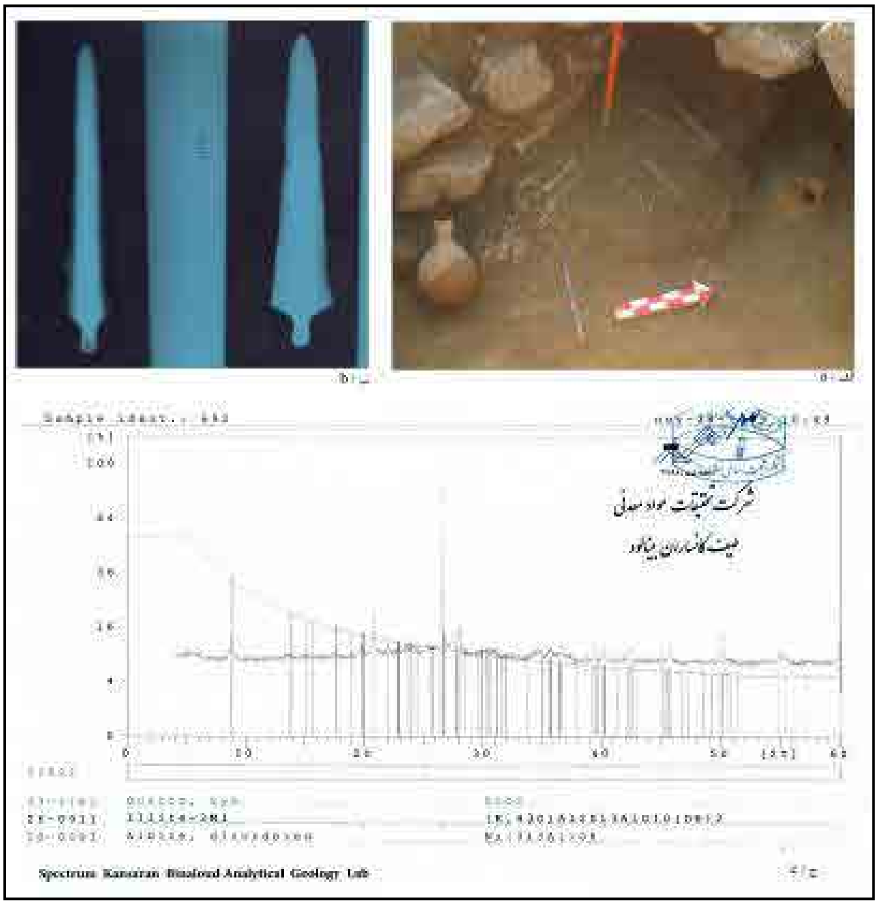


Fig. 8: a) Bronze dagger in situ, Burial 1 (photograph by the author); b) Radiograph of the bronze dagger (Marziyeh Moslehi); c) X-ray diffraction (XRD) pattern of the bronze dagger, identifying mineralogical phases (analysis by Binalud Spectroscopy Mineral Research Company and Marziyeh Moslehi). ▶

Table 2: X-ray fluorescence (XRF) analysis of the bronze dagger from the Mahiyan site (Binalud Spectroscopy Mineral Research Company and Moslehi). ▼

P2O5	Sio2	Cao	Fe2O3	Cuo	Sno2	CI	A12o3	K2O	Mgo	NA2O	s	pbo	Cr2o3	Tio2	Ag2O
%19.40	%8.90	%5.20	%4.60	%53.40	%1.30	%1.19	%1.04	%1.00	%0.95	%0.83	%0.65	%0.15	%0.12	%0.09	%0.03

Typologically, the Mahiyan dagger is comparable to tanged daggers from Jeyran Tappeh (Majidzadeh, 2010: Fig. 97, Pl. 2: 12), Qeytariyeh Tappeh (Kambakhsh Fard, 2001: 35, 37, 41, and 56; Kambakhsh Fard, 1991: 103, Fig. 10; Farrokhnia, 2020: 106), and the bronze dagger from Grave 12 at the Marlik cemetery (Negahban, 1995: 67, Pl. IX, Fig. 116; Piller, 2008: Taf. XII: 2). This grave at Marlik is attributed to the Old Marlik culture (15–13th centuries BC) (Vahdati and Piller, 2018: 24, Fig. 3 and Table 1; Piller, 2008: 213–237 and 238, Abb. 23). Furthermore, this dagger resembles the example discovered in Grave 133 at Cemetery 1 in Sumbar, Turkmenistan (Chlopin, 1986: Abb. 9: 10 and Abb. 85: 2).

One of the most common dagger types of the Iron Age features a tang at the base of the blade, which was inserted into the handle (Medvedskaya, 2005: 116). The use of this dagger type dates back to the Chalcolithic period, evidenced by examples from the Sialk III period at the Southern Tappeh of Sialk, Kashan (Nokandeh, 2010: Taf. 114) and the Middle and Late Plateau / Sialk III period at Tappeh Qabrestan, Qazvin (Majidzadeh, 2017: 61, Pl. 3-1). The use of such daggers continued through the Bronze and Iron Ages (Medvedskaya, 2004: 116). The Mahiyan dagger is consistent with this type (Medvedskaya, 2004: Fig. 12: 5).

Bronze Awl: The bronze awl (Excavation No. 1124) is fitted with a high-quality ceramic handle, properly fired to a greyish-brown color and bearing applied decoration (Fig. 2). The metal shaft appears green due to corrosion, suggesting it is made of copper or a copper-base alloy (bronze) and was manufactured by forging. The total length of the awl is 17.8 cm. The metal shaft is 13.2 cm long, and the ceramic handle is 8.2 cm in height. The upper diameter of the handle is 2.6 cm, and its central diameter is 3.6 cm. The use of metal (copper) awls with bone handles in Iran dates back to prehistoric times, as evidenced by examples from Tappeh Zagheh (Malek Shahmirzadi, 1977: 396) and Tappeh Qabrestan at Qazvin (Majidzadeh, 2017: Fig. 24c). This type of awl with a wooden handle continues to be used in traditional shoemaking today (Fig. 9).

Discussion and Conclusion

Over a century of archaeological research in the Gorgan region has provided a diachronic overview from the Paleolithic to the late historical periods. As in other regions of Iran, this area exhibits both cultural

Fig. 9: Modern shoemaking awl compared with the ancient bronze awl from Burial 2, Mahiyan site (photograph by the author).▶

continuity and disjuncture. The full publication of results from key sites such as Torang Tappeh (Mousavi, 2004) and Yarim Tappeh (Stronach, 1972), along with the archaeological map of the Gorgan Plain produced by Japanese expeditions, could potentially address some of these gaps in the record.

The comparatively clearer picture we have of the Bronze Age, Sasanian, and Islamic periods in Gorgan stems largely from systematic research conducted in the plains. Sufficient methodical surveys have yet to be carried out in the mountainous regions, highlands, and foothills.

As noted, many sites containing Bronze and Iron Age cultural materials feature highly diagnostic "pot"-type vessels (Mousavi, 1999: 174-178). Long-spouted vessels in the Gorgan region have their origins in the Bronze Age (e.g., Torang Tappeh, Tappeh Bazgir, Narges Tappeh, Shah Tappeh (Arne, 1945), and this ceramic tradition continued into the Iron Age. According to Kambakhsh Fard, similar pots in the Qeytariyeh cemetery were typically placed either above the head or below the feet of the skeleton (Kambakhsh Fard, 1991: 83). At Mahiyan, the pot was positioned beneath the feet of the skeleton.

Regarding the two burials discovered at Mahiyan, it can be stated that each burial was accompanied by a metal object, a spouted bowl, a pitcher, and a jar. In both cases, the spouted bowl was placed above the head of the burial. The bodies were aligned and buried back-to-back, facing west and laid on their left sides.

The new finds from Mahiyan, particularly the pot and dagger, correspond with the first type of spouted vessels from the Qeytariyeh cemetery, attributed to the Early Iron Age (Mousavi, 1999: 175, Fig. 1:4). Recent research at Qeytariyeh indicates a date between 1600 and 1500 BC (Farokhnia, 2020: 110).

Furthermore, these finds are analogous and comparable to those from the aforementioned first stage of the Marlik cemetery. The revised chronology and recent research at Marlik assign this layer to the Late Bronze Age, circa 1500–1300 BC (Vahdati and Piller, 2018: 24, Fig. 3, and Table 1; Piller, 2008: 213–237 and 238, Abb. 23).

This proposed chronology is earlier than the absolute dates established for Iron Age I at Yarim Tappeh and, more broadly, for the Gorgan region (Stronach, 1972: 23; Young, 1985: 376). Based on this comparative analysis, the Mahiyan site is attributed, provisionally and relatively, to Iron Age I. This attribution may be subject to revision following absolute dating. The excavated sites in the Gorgan region underscore its significance during the Iron Age.

The majority of published research on the Iron Age in this region pertains to the Iron II and III periods. Sites related to Iron Age I remain largely unexplored, unpublished, and shrouded in uncertainty. This raises a critical question: Did this region, similar to other eastern and central areas of Iran, experience a decline following the Bronze Age? Young also poses the question of where the populations of the Gorgan Plain went after the collapse of the Bronze Age cultures. He suggests that many likely remained in the region, but their archaeological traces have yet to be found. This gap could stem from two causes: either key sites have not been properly excavated, or these populations adopted a different subsistence strategy, such as pastoralism and nomadism (Young, 1985: 372).

The findings from the Mahiyan site indicate that evidence from the Late Bronze and Early Iron ages exists in the mountainous and piedmont zones. This suggests that if an environmental crisis, such as aridity, prompted lifestyle changes in the plains, settlements may have shifted to higher elevations. It is also highly probable that human populations inhabited these mountainous areas even before the Bronze and Iron Ages.

This research question can be addressed through a multi-method program, including a systematic archaeological survey of the Gorgan highlands, an examination of the spatial and functional relationship between cemeteries and habitation sites, and the integration of bioanthropological analyses with scientific techniques—such as stable isotope analysis of dental enamel—

alongside archaeozoological and archaeobotanical studies. Together, these approaches will refine our understanding of Iron Age cultural dynamics in the Gorgan region and clarify the nature of its interactions with adjacent areas.

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Author Contribution

The author is solely responsible for the writing, analysis, and interpretation presented in the manuscript, "Reassessing the Iron Age in the region of Gorgan (southeast of the Caspian Sea): new evidence from the excavations at site of Mahiyan, Ali Abad-e Katul, in the eastern Alborz, Iran".

Conflict of Interest

The author declares that there are no conflicts of interest. All sources have been duly cited in accordance with academic publication ethics.

Endnotes

1. The archaeological fieldwork was conducted over ten days, commencing on July 11, 2011, to determine the core and buffer zone of the Mahiyan site (also locally pronounced "Mayan") and to investigate the prehistoric mound of Chino. The project was supervised by Jebrael Nokandeh (Nokandeh, 2011: 450) and jointly organized by the Iranian Center for Archaeological Research (ICAR), the Research Institute of Cultural Heritage and Tourism (RICHT), and the Cultural Heritage, Handicrafts, and Tourism Organization of Golestan Province (Nokandeh, 2012).
2. Test Trench No. 1 was initially excavated as a 1×1 meter unit. Following the removal of the surface layer, the identification of grave architecture necessitated the enlargement of the trench to a 3×3 meter square.
3. The physical anthropological analysis of the Mahiyan burial was conducted by Dr. Farzad Forouzanfar on May 10, 2012.

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چکیده

عصر آهن یکی از کم‌شناخته‌شده‌ترین دوره‌های باستان‌شناسی در منطقهٔ گرگان است. بیشتر پژوهش‌های منتشرشده از این عصر، مربوط به دورهٔ آهن II و III است که در بافت گورستانی شناسایی شده‌اند. آگاهی ما دربارهٔ شروع این عصر، بسیار محدود است و پژوهش‌های باستان‌شناسی در منطقه بیشتر بر دوره‌های کهن‌تر و جدیدتر در بخش جلگه‌ای متمرکز بوده است. پژوهش‌های هدفمند باستان‌شناسی در منطقهٔ کوهستانی تاکنون صورت نگرفته است. طی گمانه‌زنی به‌منظور تعیین عرصه و پیشنهاد حریم محوطهٔ ماهیان در منطقهٔ کوهستانی علی‌آباد کتول در استان گلستان، بقایای یک ساختار گور با دو تدفین انسانی و گورآوندها شناسایی شد. این پژوهش تلاش می‌کند به معرفی نویافته‌های گورستان ماهیان بپردازد تا آگاهی‌های باستان‌شناسی از شروع عصر آهن منطقه، به‌ویژه مناطق کوهستانی، افزایش یابد. پرسش اصلی این پژوهش این است که، چه ویژگی‌های فرهنگی و تدفینی در محوطهٔ ماهیان قابل شناسایی است؟ و چه شباهت‌ها و تفاوت‌هایی در فرهنگ مادی این محوطه با دیگر گورستان‌های هم‌دوره در مناطق همجوار وجود دارد؟ فرضیه‌های مطروحه عبارتنداز این‌که گورستان ماهیان دربردارندهٔ ویژگی‌های فرهنگی و تدفینی اواخر عصر مفرغ و اوایل عصر آهن در نواحی شمالی رشته‌کوه البرز است و این گورستان احتمالاً اشتراکات فرهنگی با محوطه‌های هم‌زمان در شمال‌شرق، غرب البرز و فلات‌مرکزی دارد. اطلاعات گردآوری شده از گمانه‌زنی، با روش توصیفی-تحلیلی بررسی شدند. درنتیجه گونه‌شناسی یافته‌ها و انجام مطالعات تطبیقی، مشخص شد که شیوهٔ تدفین در ماهیان، مشابه دیگر گورستان‌های عصر آهن حوضهٔ دریای کاسپی و فلات‌مرکزی ایران و درهٔ سومبار ترکمنستان است. درمجموع، هفت ظرف سفالی و دو شئ فلزی کشف‌شدن که قابل‌مقایسه با یافته‌های مرحلهٔ اول تپه مارلیک، گورستان جمشیدآباد رودبار گیلان، گورستان قیطریه و گورستان ۱ سومبار و پرخای ۲ ترکمنستان هستند. این گورستان‌ها همگی به دورهٔ مفرغ جدید و آهن I (حدود ۱۵۰۰ تا ۱۳۰۰ پ.م.) تاریخ‌گذاری شده‌اند.

کلیدواژگان: محوطهٔ ماهیان، منطقهٔ گرگان، دورهٔ آهن I، تدفین.

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Neo-Assyrian Empire Hegemony: Structure and Function

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Abstract

In contemporary research, various terms are used to describe periods of relative transregional stability within specific temporal and spatial settings; however, these terms carry different meanings, and a single definition cannot be applied uniformly across all contexts. In the Late Bronze Age, sudden climatic and social developments led to heightened tensions and widespread political–social conflicts, and the powers active in that period were unable to establish durable transregional stability. With the transition from the Late Bronze Age to the Iron Age, the emergence and expansion of the political, economic, military, and ideological system of Neo-Assyria became evident—an order that succeeded in establishing a new transregional framework in the Iron Age, bringing the ancient Near East under its control, and shaping an early form of global order. The central concern of this study is to understand and analyze how Neo-Assyrian hegemony formed and persisted during the Iron Age. Accordingly, by drawing on written Neo-Assyrian sources, relief inscriptions, field-based archaeological studies, and research data produced from investigations conducted between 1967 and 2023 CE, the hegemonic system of the Neo-Assyrian Empire has been reconstructed through a systemic analytical model. The primary objective is to clarify the functional mechanisms of Neo-Assyrian hegemony and to explain how a transregional order in the ancient Near East was realized. The findings indicate that the political and economic structure of Neo-Assyria possessed coherent systemic characteristics that enabled the expansion and consolidation of its hegemony throughout the ancient Near East. Although the sudden collapse of Assyria occurred following the formation of anti-hegemonic alliances, the underlying transregional order persisted, and Assyrian hegemonic patterns were reflected in subsequent empires. Therefore, Neo-Assyria can be regarded as the first global power to generate a transregional hegemonic system.

Keywords: Hegemony, Pax, Peace, Iron Age, Neo-Assyrian Empire.

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Introduction

At the end of the Late Bronze Age[1], the political system of the Middle East collapsed due to sudden climatic and social upheavals, and from the remnants of this period, a new order emerged in the Iron Age, with a structure fundamentally distinct from the preceding political system (Iravani Ghadim & Amiri Nejad, 2023: 97–123). This new order in the ancient Near East was embodied by the Neo-Assyrian Empire. Empires exhibit distinctive structural characteristics, and by situating these structures within a systemic framework, their various dimensions can be analyzed and conceptualized as an integrated system. Given the transregional order established by the Neo-Assyrian state in the Iron Age Middle East, a central question arises: what constitutes a hegemonic system, and how can such a system be understood in the context of the Neo-Assyrian Empire?

The structure of the Assyrian hegemonic system can be modeled during the peak of Neo-Assyrian power, from 746 to 631 BCE. By constructing a standardized model of Assyrian hegemony, it becomes possible to examine how this system functioned. Accordingly, the study investigates the historical background of Neo-Assyrian hegemony, the operation of its hegemonic system, and the causes of its eventual decline. The results indicate that the Neo-Assyrian Empire possessed a distinct hegemonic system that produced a new order in the ancient Middle East. Moreover, the characteristics of this hegemonic order and its core structural elements can be observed in subsequent empires, including the Achaemenid and Roman Empires.

Literature Review

Extensive research has been conducted on hegemonic systems in general (Adamson, 1980; Watson, 2006; Parchami, 2009; Worth, 2015); however, relatively few studies have focused specifically on the Neo-Assyrian hegemonic system. The earliest research in this field relied primarily on the Hebrew Bible, with scholars such as Cogan analyzing the Neo-Assyrian hegemonic order in terms of its imperial character and its relationship to religious ideology (Cogan, 1993). Subsequently, scholars such as Paul-Alain Beaulieu sought to conceptualize a broader, transregional hegemonic system. In his article "World Hegemony, 900–300 BCE", he examines this structure within the Neo-Assyrian, Babylonian, and Achaemenid Empires (Beaulieu, 2007).

The most substantial contributions to the study of Neo-Assyrian hegemony, however, have been made by Bradley J. Parker. His seminal work, "Power, Hegemony, and the Use of Force in the Neo-Assyrian

Empire" (Parker, 2015), appears in the volume Understanding Hegemonic Practices of the Assyrian Empire. In the same volume, Düring's chapter, "Middle Assyrian Hegemony", addresses the foundational principles underlying the formation of the Assyrian hegemonic system (Düring, 2015). More recent studies have examined the effects of Assyrian hegemony by analyzing socio-political structures in the Levant during the Bronze and Iron Ages. These investigations often focus on specific instruments of hegemony within a transregional order, such as deportation, as discussed in Valk's research (Valk, 2022), and cultural mechanisms, as explored in Thompson's work (Thompson, 2023).

Structure and Function of the Hegemonic System

Hegemony derives from the Greek term hêgemonía, meaning leadership or rule. Conceptually, it refers to the dominance of one group or its representatives over other groups through a combination of coercion and consent, whereby the dominant group, or hegemon, secures a degree of acquiescence from those under its control (Meiggs, 1972; Williams, 1977; Cox, 1981; Lebow, 2003; Griffiths, 2005: 63; Clark, 2011; Worth, 2015; Schmidt, 2018: 3; Roger, 2019: 29). Although the hegemon constitutes the dominant power, hegemony does not imply absolute control, total exploitation, or omnipotence over others (Layne, 2006).

In this framework, a hegemon can be understood as a power that possesses superior military, political, cultural, and economic capabilities relative to other powers, enabling it to establish a hierarchical system and assert itself as the central authority over other regions and political entities (Nexon & Wright, 2007: 253). Hegemony is thus both relational and structural: it is expressed in the capacity of the dominant power to influence, regulate, and shape the behavior of subordinate entities while maintaining systemic stability across a transregional order.

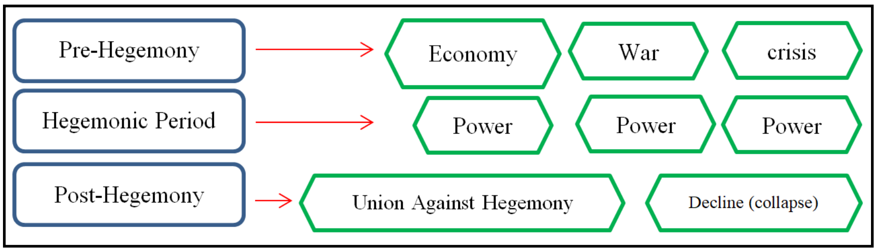
Historically, two conceptualizations of hegemony, classical and modern, can be distinguished. In the classical conception, hegemony encompasses power, leadership, command, dominance, sovereignty, and empire. It represents a hierarchical military-political structure achieved and maintained primarily through successful warfare, with mechanisms of control reinforced through economic, cultural, and religious resources. In this context, ancient hegemonic systems often relied on the competence and charisma of individual rulers, kings or emperors, and, due to the fear they instilled in medium and independent powers, depended heavily on military strength. From the perspective of the hegemon, threats were typically internal, in the form of rebellion or resistance, rather than external rivals.

If a hegemonic system failed to manage vulnerabilities posed by internal and external pressures, or could not adapt to changing circumstances, it risked rapid collapse. Ancient hegemonic systems frequently fell abruptly, often due to the intervention of anti-hegemonic alliances during warfare, demonstrating the fragile balance inherent in classical power structures (Wilkinson, 2008).

The modern concept of hegemony was revived in the 19th century by Marxist theorists, such as Plekhanov, as a critique of the Tsarist system, and was subsequently developed through the work of Antonio Gramsci, a Marxist theorist (Gramsci, 1971). In contrast to the classical model, Gramsci proposed that a dominant group, or its representatives, could achieve leadership prior to asserting military dominance. Through political, ideological, and economic struggle, consent could be secured from subordinate groups. Accordingly, modern hegemony relies less on military force or individual charisma and more on the pervasive influence of culture, which disseminates authority and shapes civil society (Roger, 2019).

The classical concept of the hegemonic system provides the most appropriate framework to analyze the 8th and 7th centuries BCE in the ancient Near East, under the dominance of the Neo-Assyrian Empire. Hence, the cultural-political developments of this period are conceptualized and examined using the terms ‘hegemony’ and ‘ancient hegemonic system’.

Emerging from a pre-hegemonic era characterized by chaos, protracted warfare, and weak economies, the Neo-Assyrian hegemonic period witnessed the concentration of superior military, political, economic, and religious power in the hands of the hegemon. Despite the establishment of a transregional order, this period was historically brief. The system experienced a rapid decline and ultimately collapsed due to external anti-hegemonic pressures. The Neo-Assyrian hegemonic system, despite its structural and cultural sophistication, was unable to sustain stability indefinitely, and its collapse underscores the inherent vulnerability of even the most dominant ancient empires (Fig. 1).



◀ **Fig. 1: Cyclical of the Hegemonic System in Ancient (Authors, 2024).**

The formation of ancient hegemonic systems occurs in regions undergoing severe socio-political and economic crises, as exemplified by the Assyrian, Persian, and Roman hegemonies. Such a system combines a dominant political-religious ideology with territorial expansion centred on the core authority. It establishes direct control through coercive force and indirect control via economic-political treaties and oaths, all underpinned by military power. Through these mechanisms, the hegemon exerts influence over surrounding regions and creates a stable transregional order (Amiri Nejad, 2024; Fig. 2).

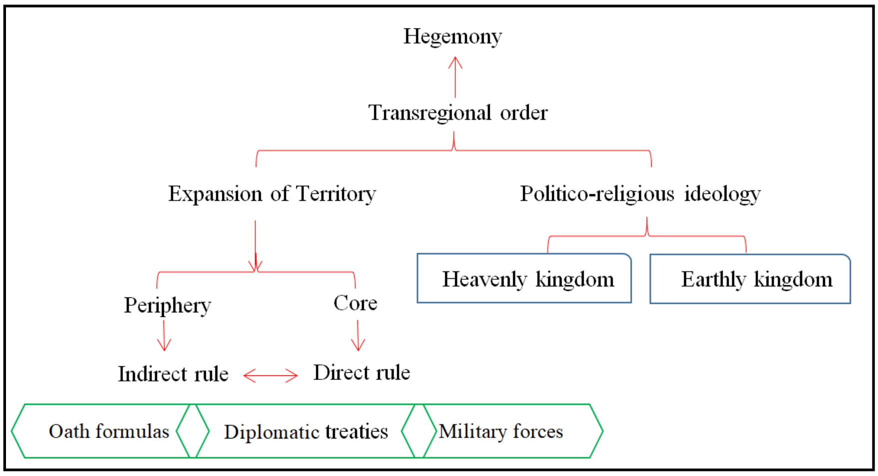


Fig. 2: Development and Structure of the Ancient Near Eastern Hegemonic System (Authors, 2024). ▶

As previously conceptualized in the theory of hegemony, the hegemon possesses superior regional power, although this does not imply absolute control. This framework recognizes the continued presence of medium powers, vassal states, and buffer states. Buffer states, due to their limited economic, political, and geographical capacities, are not directly targeted by the hegemon and are maintained largely by their lack of direct interaction with medium powers. In contrast, vassal states within the hegemonic system are generally loyal to the hegemon, securing their interests through political and economic treaties. These treaties typically involve provisions for military and political support from the hegemon to the vassal state. Medium powers, positioned just below the hegemon, actively seek to diminish its authority by challenging its military, economic, and political-religious dominance. Such powers inevitably attract the attention of the hegemon, which aims to curb their influence or, where feasible, eliminate them entirely. Nevertheless, in instances where the hegemon's power weakens, the formation of an anti-hegemonic alliance may precipitate the collapse of the entire hegemonic system (Fig. 3).

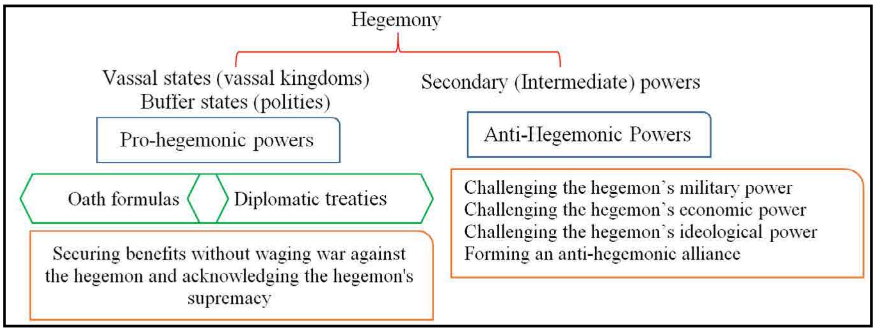


Fig. 3: Hegemonic Power and Peripheral Relations (Authors, 2024).

Assyrian Hegemony: Structure and Function

The end of the Late Bronze Age was marked by sudden climatic and social upheavals that led to the collapse or weakening of Middle Eastern powers. Consequently, the Sea Peoples ravaged the Eastern Mediterranean, the Hittites in Anatolia were destroyed, the Kassites in southern Mesopotamia were weakened, and Egypt lost its influence in the Levant (Amiri Nejad & Iravani Ghadim, 2024: 159–191). Archaeologically, this period is recognized as the transitional phase from Assyro-Mesopotamia to the Neo-Assyrian Kingdom. The Neo-Assyrian Kingdom began with the reign of Ashurnasirpal II (934 BCE) and continued until the ascension of Tiglath-Pileser III (745 BCE) (Frahm, 2017: 162–208). At the outset of this period, the empire expanded intermittently, extending westward to the Mediterranean coast and eastward to the Iranian Plateau. However, between 823 BCE and 745 BCE, internal conflicts intensified, including the rebellions of Arappa and Calah, the weakening of central Assyrian authority, and the growing strength of Urartu. These conditions enabled Tiglath-Pileser III to seize power in 746 BCE, initially supported by select military and civil elites, whom he swiftly curtailed in influence (Fuchs, 2008: 95). It was during this period that Assyrian hegemony began to take shape (Fig. 4), with the empire's territory doubling and approaching Egypt (Radner, 2006–08: 56–63). Tiglath-Pileser III was succeeded by Shalmaneser V, who further expanded the western territories during his reign (Becking, 1992: 21–60; Fuchs, 1998: 84–85; Bagg, 2011: 227–32). In 722 BCE, following a coup and the transfer of power, Sargon II deposed Shalmaneser V and initiated a period of expansion and consolidation of Assyrian hegemony. During this transition, several Assyrian urban centers rebelled, and in 720 BCE, Sargon II destroyed the city of Hamath and exiled 3,600 rebellious Assyrians there (Radner, 2011). In the same year, he suppressed uprisings in the western part of the empire, deporting insurgents to Syria and the east (Becking, 1992: 61–104). Between 713 and 716 BCE, Sargon II focused his military campaigns on the eastern empire, and in

710 BCE, he defeated the Babylonian–Elamite alliance, seizing control of the Babylonian throne (Foster, 2005: 790–813; Mayer, 2012). Following Sargon II's death in battle in 705 BCE, Sennacherib became emperor of Assyria (Frahm, 1999: 74–76). Between 701 and 700 BCE, he defeated a coalition of Babylon, Elam, Arameans, Chaldeans, and Arabs (SAA 15: XXXII–XXXIII). In 701 BCE, he moved westward to quell rebellions in the empire's western regions (Bagg, 2011: 244–252), and his campaigns in the west are documented in classical sources, including 2 Kings (18: 13–19: 36), Isaiah (36: 1–37: 37), 2 Chronicles (32: 1–23), Herodotus (2.141), as well as modern studies (Gallagher, 1999; Grabbe, 2003).

From 699 to 695 BCE, Sennacherib undertook extensive construction and urban development projects in Nineveh (Matthiae, 1999). In 689 BCE, he successfully captured Babylon, where the Babylonian king was taken prisoner and executed, and numerous statues of gods, along with large portions of the city, were destroyed or desecrated (Richardson, 2012). Although Sennacherib was able to consolidate Assyria's power in both the western and eastern regions, he was assassinated in 681 BCE as a result of an internal coup (Parpola, 1980). Esarhaddon (680–669 BCE) avenged the emperor's death by punishing the conspirators. He expanded Assyrian influence further east than his predecessors, but his most significant achievement was the conquest of Egypt (Onasch, 1994: 16–59). In 672 BCE, Esarhaddon required all his officials and commanders, both domestic and foreign, to swear an oath of loyalty to the king and the crown prince, which was then sent to the central court (SAA 2: 115–16). Copies of this oath have been discovered in Ashur and Calah (SAA 2: 135–136; Lauinger, 2012). As the empire's territory, power, and wealth expanded, so too did the plots against the emperor and his authority. In 670 BCE, Esarhaddon, with the assistance of his intelligence network and spies, carried out a purge of numerous high-ranking Assyrian officials (Parpola, 1993; Grayson, 1975: 86). The last powerful Assyrian king, Ashurbanipal, reigned from 668 to 631 BCE. During his rule, the Assyrian military remained highly mobile, and between 667 and 664 BCE, anti-Assyrian alliances in Egypt were defeated, resulting in the capture of the capital of Upper Egypt (the 25th Dynasty). Significant spoils, including electrum obelisks, were transported back to Assyria (Onasch, 1994: 61–158). Ashurbanipal's primary military objective was the conquest of Elam (Waters, 2000: 42–80). In 652 BCE, an anti-Assyrian coalition of Babylon and Elam sparked a four-year war (Frame, 1992: 131–190). Ultimately, in 648 BCE, Ashurbanipal captured and destroyed Babylon, and in 647 BCE, he devastated Susa and its royal cemetery, returning the statue of the goddess Nanaya to Uruk (Iravani Ghadim, et al., 2026: 49–55).

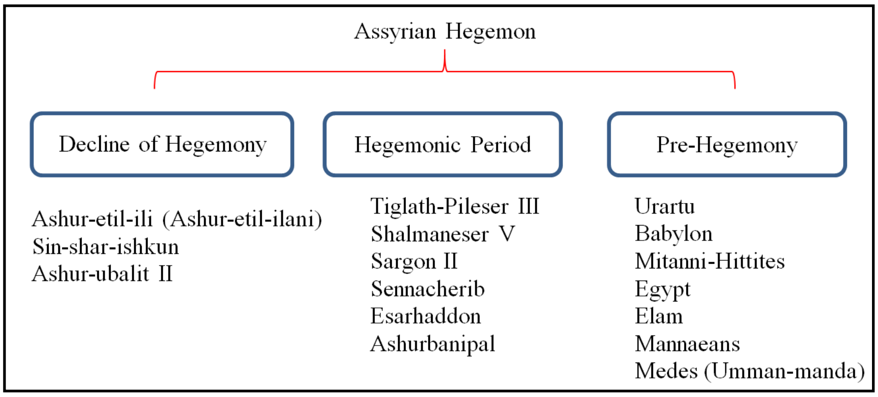


Fig. 4: Assyrian Hegemony (Authors, 2024).

The ideology of kingship was a deeply entrenched concept among the Assyrians, rooted in their religion, in which the god Ashur symbolized the power of Assyria. The Assyrian king was regarded as the representative of divine authority, the embodiment of celestial sovereignty, and the nominal son of the god Ashur (iššak Aššur). However, Assyrian kings never claimed divine status themselves throughout their political history (Karlsson, 2016: 84). Assyrian rulers portrayed themselves as embodiments of wisdom, mercy, justice, and the power of Ashur, frequently adopting titles such as “the kind man,” “the good shepherd,” “the wise ruler,” “servant of the gods,” and “the just judge” (Toro, 2014: 140–145; Karlsson, 2016: 113). The king also held the role of commander of the army, although ultimate military leadership was attributed to the god Ashur. Assyrian military campaigns were thus considered a form of ritual worship, conducted in accordance with the divine will of Ashur (Weippert, 1972: 476–484). Just as Ashur was regarded as the king of the gods in the heavens (šar gimrat ilāni rabûti), this celestial hierarchy was mirrored on earth, where the Assyrian king was understood as the ruler of the four corners of the world. Consequently, it was this integration of political and religious ideology that enforced the dominion of Ashur over the world and placed the earthly realm under the supervision of his representative, the king of Assyria[5] (Karlsson, 2016: 59).

The political-religious ideology of Assyria granted the king the authority to punish earthly rulers for betrayal and rebellion, as well as to transfer the divine representations of their gods (i.e., cult statues) to Assyria (Figs. 5–6). This practice was justified on the grounds that the defeated peoples had failed to show proper reverence toward their own deities, who were understood to remain faithful to the god Ashur in the heavens. Accordingly, the gods themselves were not considered responsible for the disloyalty of their worshippers. As a result, this ideological framework legitimized both the transfer and the subsequent veneration of the gods and sacred objects of conquered peoples within Assyrian temples[6] (Toro, 2014: 149).

The religious tolerance exhibited by Assyrian kings, together with their demonstrative respect for both Mesopotamian and foreign deities, functioned as a form of imperial propaganda designed to secure the allegiance of vassal states and regions under indirect control. In this context, the kings actively sponsored the construction and restoration of temples and presented offerings to various gods[7] (Holloway, 2001: 338–425; Radner, 2009: 184–85).

▲ **Fig. 5: The transport of the gods to Calah (Layard, 1853).**

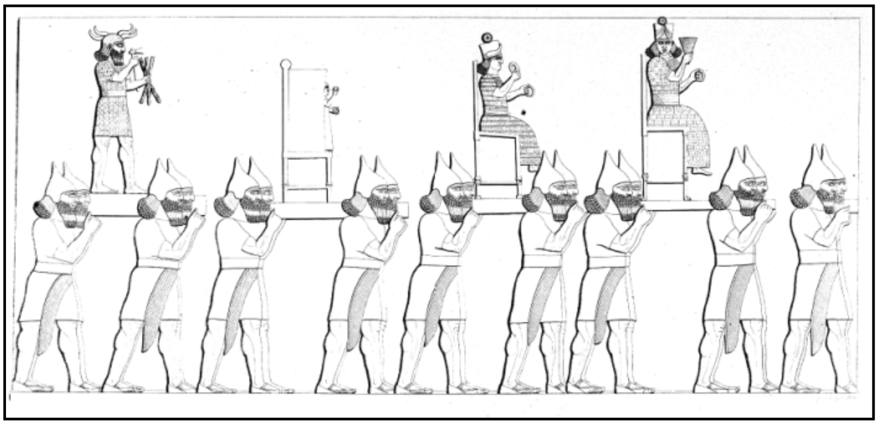
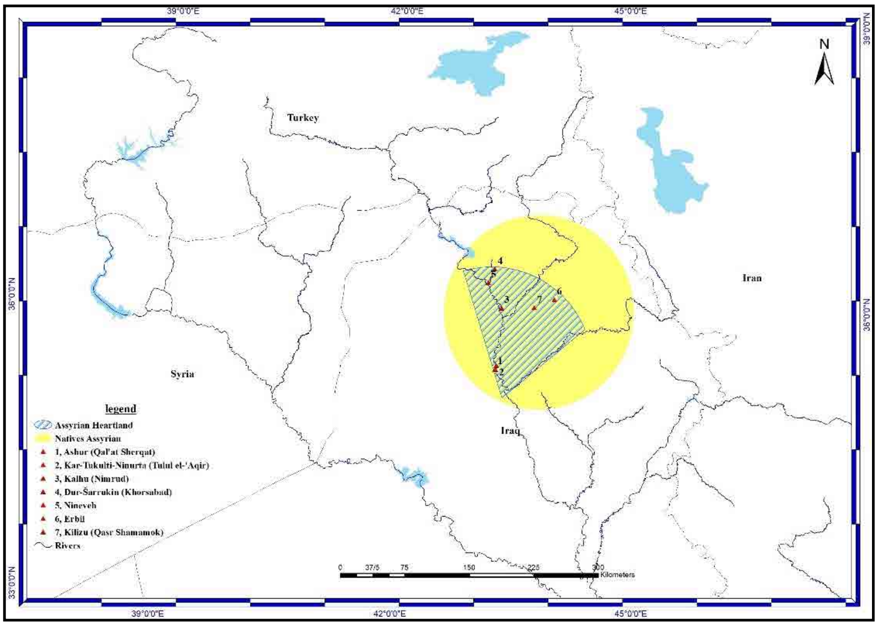


Fig. 6: The transport of the gods by the soldiers of Tiglath-Pileser III (Layard, 1853).▶

The Neo-Assyrian Empire, in its pursuit of establishing a global order, depended upon the sustained provision of resources to its imperial core. To achieve this, the economic-political structure of Neo-Assyria, unlike that of other Mesopotamian powers, was structured into two principal regions: Central Assyria and Greater Assyria. The central region encompassed the Assyrian capital and other major urban centers, such as Arbela, Nineveh, Ashur, Nimrud, and others (Fig. 7). These areas, characterised by arable and fertile land, were administered directly by the Assyrian king and members of the royal court (Iravani Ghadim & Amiri Nejad, 2023: 97–122). Greater Assyria comprised territories beyond the central region, administered both directly and indirectly through provincial institutions, vassal states, and buffer zones under the authority of the Neo-Assyrian palace. The Greater

Assyrian territories functioned primarily to provision the central region, with provincial centers annually delivering fixed quotas of tribute, taxation, and labour, while vassal states and buffer zones were tasked with securing the empire's frontiers against military and political pressures. Greater Assyria remained continuously connected to the imperial core through a complex network of bureaucratic administration and communication routes (Parker, 2001: 251–2).



◀ **Fig. 7: The central heart of Assyria (Authors, 2024).**

The imperial policy at the centre of the Assyrian realm included the expansion of settlements, the implementation of large-scale infrastructure projects (such as hydrological systems, temple construction, and public architecture), the enhancement of agricultural production, and the storage of surplus crops. Archaeological fieldwork conducted between 2000 and 2022 in the Greater and Lesser Zab River basins indicates that, of the 461 Neo-Assyrian settlements identified in the study area, 245 were either newly founded or reoccupied (Altaweel, 2004, 2008; Mühl, 2013; Kopanias et al., 2013, 2016; Pappi, 2018; Dezső, 2021; Simi, 2019; Pfälzner et al., 2015, 2016, 2017; Ur et al., 2013, 2016, 2017, 2019, 2021; Radner et al., 2016, 2017, 2018, 2019; Herr, 2018; Giraud, 2016; Koliński, 2012, 2013, 2014, 2015, 2016, 2018, 2019, 2020a–b, 2022; Schurtz, 2022). The empire employed exile as a deliberate policy to promote settlement expansion (Fig. 8), resulting in the displacement of more than 4.5 million individuals within the Assyrian deportation system (Oded, 1979: 21). Tiglath-Pileser III conducted 37 deportations, Shalmaneser V one, Sargon II 38, Sennacherib 20, Esarhaddon 12, and Ashurbanipal 16 (Ibid: 20). The largest number of mass deportations originated from Babylonia and southern Assyria, totalling 36 recorded instances, most of which were carried out under Tiglath-Pileser III, Sargon II, and Sennacherib. The Zagros populations, primarily dispersed Median tribes, accounted for 18 deportations, followed by Elam (13), the Mannaeans (12), and Urartu (number unspecified in the sources). By the late 8th century BCE, most deportations were directed toward the Assyrian heartland, with the highest frequency occurring during the reign of Sennacherib (Oded, 1979: 26). The empire pursued specific objectives through these deportations, including the suppression of rebellion from a political standpoint, the intensification of production and enrichment of the imperial core from an economic perspective, the reinforcement of military capacity through the incorporation of deported populations, and the expansion of major infrastructural projects through compulsory labour (corvée) for civil purposes[8].

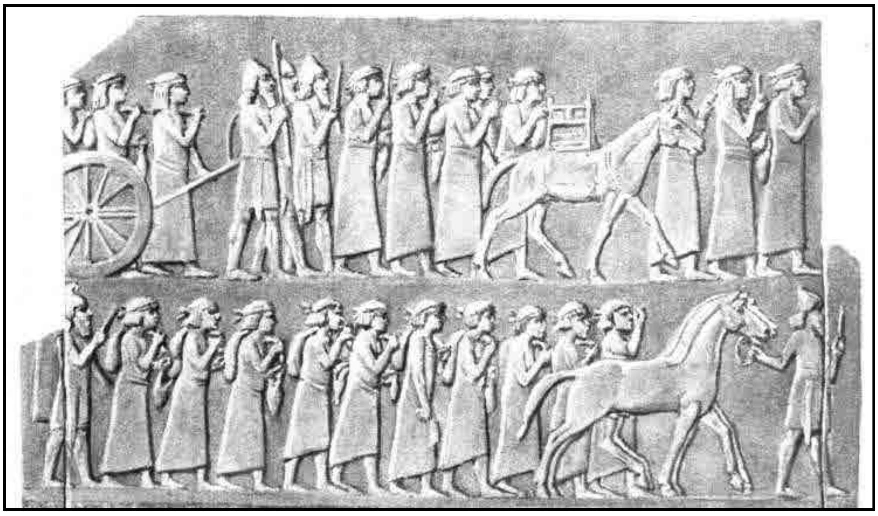


Fig. 8: Mass Deportations, Room F, Palace of Ashurbanipal at Nineveh, 668-627 BCE (Barnett, 1967, SLAB 14, PLATE XX). ▶

The stabilization and continuity of the imperial core necessitated the expansion of its territorial periphery. To achieve this objective, the empire adopted three principal policies: war, treaties (pacts), and economic integration[9]. Within its military strategy, the empire sought to increase wealth through tribute, taxation, and the mobilisation of military-economic labour. As discussed in the framework of ancient hegemonic systems, Assyria undertook decisive measures against medium powers that threatened its hegemony (Table 1). For instance, Urartu, in the years prior to 746 BCE, encroached upon Assyrian territory and posed a serious challenge to its hegemonic authority (Iravani Ghadim, 2007: 148–154; Iravani Ghadim, 2017: 129–136). During the expansion of Assyrian hegemony (from Sargon II to Ashurbanipal), Urartu was progressively weakened, and by the first half of the 7th century BCE, it ceased to undertake significant military activity. In the 640s BCE, Sarduri III (or IV), the last king of Urartu, acknowledged the supremacy of Ashurbanipal and rendered tribute (Hellwag, 2012). Therefore, the Assyrian hegemon successfully neutralised one of the surrounding medium powers to such an extent that it played no role in the eventual collapse of the empire. Elam, another medium power during the hegemonic period, experienced a comparable trajectory (Iravani Ghadim, 2007: 148–154; Iravani Ghadim, 2017: 129–136). Throughout its political history in this era, Elam sought to curb Assyrian dominance by forming anti-hegemonic alliances (Waters, 2000: 42–80). This policy led Assyrian kings to adopt a severe stance toward this rival power, as evidenced by the destruction of Susa and the Elamite royal cemetery in 647 BCE, as well as the return of the statue of the goddess Nanaya to Uruk (van Koppen, 2013: 380). The confederation formed by the Medians, Babylonians, and Scythians ultimately brought about the fall of Assyria and the conquest of Nineveh. The Scythians are referred to as Asguzai and Iskuzai in Assyrian sources, Skythai in ancient Greek sources, Isguzulu in Urartian texts, Askenaz in the Torah, and Saka in Achaemenid inscriptions. In the inscription of Darius the Great, these groups are described under three different designations, "Saka tigraxauda," "Saka tayaiy paradraya," and "Saka haumavarga", across distinct geographical contexts (Iravani Ghadim, 2018: 23–24; Iravani Ghadim & Beikzadeh, 2018: 120).

Assyrian Hegemon	The Rise of Hegemony	Expansion of Hegemony	Decline of Hegemony
Urartu	1	2	3
Elam	4	2	3
Mannaeans	5	6	3
Babylon	7	7	8
Medes (Umman-manda)	9	5	8
Egypt	9	7	10

◀ **Table 1: The function of the Assyrian hegemonic system against secondary (intermediate) powers (Authors, 2024).**

1. Military campaigns and the establishment of buffer states; 2. Indirect control and the dismantling of rival powers; 3. The absence of effective regional authority; 4. Economic and political treaties; 5. Military campaigns combined with economic and political treaties; 6. Military campaigns and indirect administration; 7. Military campaigns and direct administration; 8. Anti-Assyrian coalitions; 9. The establishment of buffer states; 10. Withdrawal from Assyrian hegemony.

During the hegemonic period, political-military stability and economic-commercial treaties[11] were promulgated in the form of loyalty oaths by the Assyrian hegemon. These oaths were formalised in the name of the god Ashur, and any violation of their terms incurred severe punishment imposed by the Assyrian king in accordance with the divine mandate of Ashur (Holloway, 2001: 160–77). A prominent example of such oaths is attested during the reign of Esarhaddon[12], when vassal rulers and provincial governors swore allegiance by recognising Ashurbanipal as the designated successor to the Assyrian throne (SAA 2: 6). The oath contained multiple clauses, including a stipulation that anyone who heard hostile or subversive statements against the king or the land of Assyria and failed to report them would be subject to punishment (SAA X: 199).

In the Assyrian hegemonic model, one observes a phase during which Assyria attained considerable power and wealth while expanding its territorial domain. Meanwhile, the lands incorporated within Greater Assyria benefited from relative security, judicial order, and political stability. However, this raises a fundamental question: Why did the most powerful and complex political structure of the first half of the first millennium BCE in the ancient Near East collapse so abruptly? In fact, the internal dynamics of the Assyrian hegemonic system itself constituted a primary factor in its eventual collapse. Four major crises caused the hegemonic structure to operate against the hegemon (Table 2). These crises include: Political-Religious Crisis[13]: The political history of Neo-Assyria reveals that between 824 and 745 BCE, Assyria experienced significant internal instability, with effective authority concentrated in the hands of regional civil and military elites. Nevertheless, during this period, the legitimacy of the monarchy was not directly contested. This situation changed in 626 BCE, when a chamberlain named Sîn-šumu-līšir declared himself king of Assyria[14]. This unprecedented act undermined the sacral legitimacy of the monarchy, which was ideologically conceived as the earthly representative of the god Ashur, thereby generating a structural crisis within the political-religious order. Crisis of Central Authority: The provinces and vassal states, as peripheral regions, were expected to channel their economic surplus, -taxation, tribute, labour, and other resources- to the imperial centre.

Over time, the imperial centre evolved from a predominantly Assyrian polity into a multi-ethnic society in which loyalty to Assyrian state ideology progressively eroded. The widespread deportations and massacres of traditional Assyrian families during the reigns of Sargon II, Sennacherib, Esarhaddon, and Ashurbanipal weakened the indigenous aristocracy and contributed to the gradual dissolution of ideological cohesion within the empire. The army became increasingly composed of non-Assyrian soldiers, and the royal court was guarded by foreign forces, including Median contingents (Lanfranchi, 2003: 107; Toro, 2014: 179–285). During the period of hegemonic decline, Neo-Assyrian kings, as reflected in their correspondence and administrative reports, appear to have been more preoccupied with the security of the royal court and the person of the king than with the welfare of the broader imperial population (Toro, 2014: 179–283). Socio-Economic Crisis: Deportees, who had been among the principal drivers of Assyrian hegemonic expansion, were increasingly subjected to exploitation by the palace, temples, and high-ranking officials in the final phase of the empire. This exploitation generated structural imbalances between producers and consumers within the imperial economy (Liverani, 2001: 387). The distant territories governed indirectly became progressively more difficult to control due to the escalating costs of military deployment, and as the empire expanded, its capacity to sustain effective administrative and military oversight diminished. External Crisis: The external crisis took the form of an anti-hegemonic coalition which, capitalising on the political-religious, central, and socio-economic crises, delivered the decisive blow to the empire. Following a period of profound internal systemic instability, Assyria was unable to withstand external assault, resulting in its abrupt collapse.

Pre-hegemony	The new hegemon	Decline of hegemony	The new hegemon
Regional instability	Hegemony of Assyria	Crisis of political-religious legitimacy	Hegemony of Achaemenids (Persian hegemony)
Prolonged warfare		Crisis of central authority	
Fragile economy		Absence of support from lower social classes	
		Foreign coalition attack against the hegemon	

◀ **Table 2: The hegemonic cycle of the ancient Near East (Authors, 2024).**

Conclusion

By applying the concept of hegemony to describe the period of transregional stability in the first half of the first millennium BCE in the Near East, the most appropriate term is "hegemony" in its classical sense. Classical hegemony denotes a transregional order sustained through a religious-political ideology, -specifically, the ideology of kingship- and the hierarchical structuring of relations between the imperial core and its peripheries, underpinned by military power. The Assyrian hegemonic system, in its systematic organisation, closely reflects this model, with the emperor positioned at the apex of the imperial hierarchy. The hegemon, drawing legitimacy from the king's role as the earthly representative of the god Ashur and as the "King of Kings" on Earth, administers and orders the four corners of the world. To this end, the hegemon expands the Assyrian hegemonic framework, imposing order upon a wider sphere of political and social disorder. In this process, the Assyrian emperor establishes a unified imperial order in the ancient Near East through the coordinated exercise of military, economic, and religious authority, ensuring social, economic, and political stability for both the central core and the peripheral territories.

The research findings indicate that the functioning of Assyrian hegemony operated as a unified system, with Assyria and its ruler at its apex, establishing a transregional order grounded in a single religious-political ideology and the hierarchical structuring of relations between the core and periphery. This system was sustained through the continuous interaction of military, political-religious, and economic subsystems. Such a dynamic enabled the hegemonic framework to adapt to internal disturbances and mitigate the risk of systemic collapse. The Assyrian hegemonic system demonstrates that when internal stability could not be maintained, the system rapidly lost equilibrium, leaving it vulnerable to anti-hegemonic external alliances and eventual collapse. Based on these findings, it can be concluded that the functioning of the Assyrian hegemonic system relied on the integration of theoretical principles and practical governance structures, which, when supported by military power, facilitated both imperial expansion and systemic stability.

Based on the modeling and analysis of the Assyrian hegemonic structure, it can be argued that the Assyrian Empire was the first power in the ancient Near East to establish a fully articulated hegemonic system, a concept later adapted and redefined by the Persian and Roman empires. It is anticipated that future research on systems of domination in historical empires will increasingly employ the concept of "hegemony" to describe the systematic organisation of transregional order across different periods and to evaluate the operational dynamics of imperial power.

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Author Contribution

All authors have had equal participation.

Conflict of Interest

In adherence to ethical publication standards, the authors affirm that there are no conflicts of interest, either personal or financial, that could have influenced the content or conclusions presented in this research.

Endnotes

1. This cultural period in Mesopotamia spans from 1200 to 1100 BCE.

2. During this period, the political systems of the Hittites in Anatolia, Egypt in the Eastern Mediterranean, the Kassites in Babylonia, and Assyria in northern Mesopotamia were all established.

3. Other terms used in the archaeological literature as alternatives to "hegemony" include "peace" and "pax," which warrant brief discussion. According to the Cambridge Dictionary (2021), "peace" is defined as freedom from war and violence, particularly when people live and work together harmoniously and without conflict. The Larousse Dictionary defines peace as the absence of war between nations. The concept of peace has its roots in the Greek eirene, the Roman pax, and the Hebrew shalom (Oswald et al., 2014). Galtung defines peace as the absence of violence, which in the context of international relations entails respect for sovereignty, equality of rights, immunity, territorial integrity, and non-interference in the internal affairs of other states (Galtung, 1996). Pax (Latin): Linguistically, pax signifies peace and refers to stability achieved through agreements, settlements by consensus, or the act of making peace. Functionally, pax can be understood in terms of treaties and pacts between two social groups (Cornwell, 2017: 17). The Encyclopædia Britannica (2024) notes that pax also refers to the Roman goddess and symbol of peace, introduced during the reign of Augustus. The Merriam-Webster Dictionary defines pax as an inscribed tablet associated with a sacred figure, kissed by participants during religious or ceremonial rites. Additionally, when combined with a specific Latin designation, pax conveys the notion of stability enforced under the influence of military dominance (Merriam-Webster, 2024). Historically and culturally, pax was venerated as the Roman goddess and symbol of Roman peace. The concept of pax as a political term dates back to the Roman Republic and is closely related to the religious concept of pax deorum (the peace of the gods), which constituted a fundamental element of Roman intellectual and religious culture (Linderski, 2000; Santangelo, 2011). During the Republic and the civil wars, the term pax evolved into a political concept used to express political authority, security, and internal stability. In the late Republic and early Principate, pax became a central political concept symbolizing the resolution of internal Roman conflicts, and it played a key role in Augustus' discourse of legitimacy (Cornwell, 2017: 14–42). During the Empire, the idea of Roman peace transitioned from pax republica to Pax Augusta, through which Rome asserted dominance over the known world by means of military power and conquest, while internally signifying the cessation of civil strife. Over time, the concept of pax became increasingly intertwined with the name of the emperor, such that it ultimately came to symbolize the imperial order itself (Cornwell, 2017: 194–195). As previously noted, the concept of pax in the Roman period is fluid, since during the republic and the civil wars it denoted negotiation, conflict, and internal political victories within Roman discourse. However, during the Empire, it evolved into an ideological construct signifying internal stability and territorial expansion under the authority of the emperor, thereby shaping contemporary understandings of Roman imperial power (Barton, 2007: 251–253).

4. Mušezib-Marduk.

5. I am Esarhaddon, king of the world, king of Assyria, valiant warrior, foremost of all rulers, son of Sennacherib, king of the world (and) king of Assyria, (ii 15) descendant of Sargon (II), king of the world (and) king of Assyria, creation of the god Aššur (and) the goddess Mullissu, beloved of the gods Sîn and Šamaš, chosen by the gods Nabû (and) Marduk, favorite of the goddess Ištar, the queen, desired by the great gods, capable, able, intelligent, learned, the one whom the great gods (ii 20) raised to be king in order to restore the great gods and to complete the shrines of all of the cult centers of the great gods; the one who (re)constructed the temple of the god Aššur, (re)built Esagil and Babylon, (and) restored the gods and goddess(es) who (live) in it; the one who returned the plundered gods of the lands from the city Aššur to their (proper) place and let (them) dwell in security (ii 25) As soon as I had completed the temples (and) had installed (them) on their daises as (their) eternal dwelling(s), with their great help I marched triumphantly from the rising sun to the setting sun and I had no rival (therein). I made the rulers of the four quarters bow down at my feet (and) they (the gods) entrusted to

me (any) land that had sinned against the god Aššur. (ii 30) The god Aššur, the father of the gods, gave me (the power) to let (cities) fall into ruins and to (re)populate (them, and) to enlarge Assyrian territory (Esarhaddon 001: ii 12-40).

6. The Assyrian kings venerated both Mesopotamian and foreign deities and invoked them in their oaths and treaties as divine guarantors of loyalty and the preservation of treaty obligations (Collon, 1987).

7. During the period of Assyrian hegemony, only three major temples are recorded as having been destroyed by Assyrian kings, those located in Musasir, Babylon, and Susa. Their destruction appears to have been politically and economically motivated, as these cult centers posed a significant challenge to Assyrian hegemonic authority. Musasir, for example, was sacked in 714 BCE by Sargon II, primarily for economic reasons, and the statue of the god Haldi was carried off to Aššur. However, according to the sources, the statue was returned to the temple at Muṣaṣir the following year, reflecting a policy of religious pragmatism within Assyrian imperial practice (Frame, 2021: 53–83; SAA 01: 9).

8. I deported the people of the cities Sukkia, Bāla, Abitikna, Pappa, (and) Lalluknu from their (own) places and (re)settled them in the city Damascus and the land Ḫatti (Syria). (58) I conquered six cities of the land Niksamma (and) captured Šēp-šarri, the city ruler of Šurgadia. I added those cities to the province of the land Parsuaš.(59) (As for) Bēl-šarru-uṣur of the city Kišesim, I brought him, together with (his) property (and) possessions, the treasure of his palace, to Assyria. I set a eunuch of mine as provincial governor over his city (and) (re)named it Kār-Nergal. [I m] ade a royal image of myself and erected it inside (that city). I conquered six settlements in its neighborhood and added (them) to its province. (61) I surrounded Kibaba, the city ruler of Ḫarḫar, (and) conquered (that city). I counted him as booty together with the people of his land. I reorganized (the administration of) that city. I settled there people from the lands that I had conquered (and) set a eunuch of mine as provincial governor over them. I (re)named (that city) Kār-Šarrukīn, set up the weapon of the god Aššur, my lord, there, (and) erected a royal image of myself inside (that city). I conquered six districts neighboring it and added (them) to his (or: its) province.(64b) I surrounded (and) conquered the cities of Kišešlu, Qindāu, Bīt-Bagāya, (and) Anzaria. I restored (them) and reorganized (their administration). I (re)named them the cities of Kār-Nabû, Kār-Sîn, Kār-Adad, (and) Kār-Ištar (respectively).(65b) In order to subjugate the land Media in the environs of the city Kār-Šarrukīn, I strengthened (its) garrison. I conquered thirty-four districts of the land Media and made (them part of) the territory of Assyria. I imposed upon them the annual payment of horses as tribute (Sargon II 7, 57-65b).

9. To the god Aššur, the king of all the gods, lord of (all) the lands, begetter of everything, king of all the great gods, one who controls (all) regions (of the world); almighty lord of (the city) Baltil (Aššur), (the god) who in his great raging anger crushes the rulers of the world and has put the proud to confusion; the honored one, the hero from whose net the evildoer cannot escape and (with whose net) the one who does not respect an oath (sworn) by him (the god Aššur) is eradicated (lit.: “his root is torn out”); with respect to the one who does not revere his (the god Aššur’s) name (and) (instead) trusts in his own strength, disregards the greatness of his (the god Aššur’s) divine nature, and talks boastfully, (120) he (the god Aššur) rushes angrily against him in the heat of battle, shatters his weapons, and scatters his well-organized forces to the wind. Moreover, with respect to the one who observes the judgment(s) of the gods, trusts in the fair decision of the god Šamaš, and reveres the divine nature of the god Aššur, the divine Enlil of the gods, he (the god Aššur) has fierce axes go at his side (and) causes him to stand in triumph over (his) enemies and foes (Sargon II 7, 116).

10. ...harbor district of Egypt, mingled together [the people of Assyria and Egypt], and allowed (them) to engage in trade (Sargon II 1, 17b).

11. “In the 730s BCE, Tiglath-Pileser III received an annual tribute from the Kingdom of Tabal in western Taurus, consisting of 10 talents of gold, 1,000 talents of silver (equivalent to 32 tons), and 2,000 horses. After the Battle of Carchemish, Sargon II acquired significant spoils, and he converted the Assyrian currency from copper to silver”.

12. I am the youngest of my older brothers (and) by the command of the gods Aššur, Sîn, Šamaš, Bēl, and Nabû, Ištar of Nineveh, (and) Ištar of Arbela, (my) father, who engendered me, elevated me firmly in the assembly of my brothers, saying: ‘This is the son who will succeed me.’ He questioned the gods Šamaš and Adad by divination, and they answered him with a firm ‘yes,’ saying: ‘He is your replacement.’ (i 15) He heeded their important word(s) and gathered together the people of Assyria, young (and) old, (and) my brothers, the seed of the house of my father. (i 17) Before the gods Aššur, Sîn, Šamaš, Nabû, (and) Marduk, the gods of Assyria, the gods who live in heaven and netherworld, he made them swear their solemn oath(s) concerning the safe-guarding of my succession. (i 20) In a

favorable month, on a propitious day, in accordance with their sublime command, I joyfully entered the House of Succession, an awe-inspiring place within which the appointing to kingship takes place (Esarhaddon 001, i8-20).

13. Sources studied for the political-religious crisis: Grayson, 1975; Parpola, 1993; Grayson, 1996; Mattila 2000; Fuchs 2008; Radner, 2011; Siddall 2013; Radner, 2016; Elayi, 2021.

14. Aššur-etel-ilani: After my father and begetter (i.e., Assurbanipal) had departed, no father raised me or taught me to spread my wings; no mother cared for me or oversaw my education. The Chief Eunuch Sîn-šumu-lēšir, who had faithfully served my father and begetter and who guided me constantly like a father, safely installed me upon the throne of my father and begetter. He caused the people of Assyria, great and small alike, to safeguard my kingship during my minority and to honor my royal authority (Kataja and Whiting 1995: nos. 35 and 36).

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هژمونی امپراتوری آشورنو: ساختار و عملکرد

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چکیده

در پژوهش‌های معاصر، واژگان متنوعی برای توصیف دوره‌های ثبات نسبی فرامنطقه‌ای در بازه‌های زمانی و مکانی مشخص به‌کار گرفته می‌شود؛ با این‌حال، این اصطلاحات واجد معانی گوناگونی‌اند و نمی‌توان در تمامی زمینه‌ها از تعریفی یکسان برای آن‌ها استفاده کرد. در اواخر عصر مفرغ، تحولات ناگهانی اقلیمی و اجتماعی موجب بروز تنش‌ها و درگیری‌های گستردهٔ سیاسی-اجتماعی شد و قدرت‌های سیاسی در این دوره قادر به ایجاد ثبات فرامنطقه‌ای پایدار نگردیدند. با گذار از عصر مفرغ متأخر به عصر آهن، شاهد ظهور و گسترش نظام سیاسی، اقتصادی، نظامی و ایدئولوژیک آشور نو هستیم؛ نظامی که موفق شد نظم فرامنطقه‌ای جدیدی را در عصر آهن بنیان نهد، خاورمیانهٔ باستان را تحت کنترل درآورد و نوعی نظم جهانی اولیه را شکل دهد. مسئلهٔ محوری این پژوهش، درک و تحلیل چگونگی شکل‌گیری و تداوم هژمونی آشور نو در عصر آهن است. بر این‌اساس، با بهره‌گیری از منابع مکتوب آشوری، نقش‌برجسته‌ها، مطالعات باستان‌شناسی میدانی و داده‌های پژوهشی حاصل از تحقیقات انجام‌شده بین سال‌های ۱۹۶۷ تا ۲۰۲۳م.، تلاش شده است نظام هژمونیک امپراتوری آشور در قالب یک مدل تحلیلی سیستمی بازسازی شود. هدف اصلی، تبیین سازوکارهای عملکردی هژمونی آشور و چگونگی تحقق نظم فرامنطقه‌ای در خاورمیانهٔ باستان است. یافته‌های پژوهش نشان می‌دهد که ساختار سیاسی و اقتصادی آشور نو واجد ویژگی‌های سیستمی منسجمی بوده است که زمینه‌ساز گسترش و تثبیت هژمونی این امپراتوری در پهنهٔ خاورمیانهٔ باستان گردید؛ هرچند فروپاشی ناگهانی آشور درپی شکل‌گیری ائتلاف‌های ضدهژمونیک رخداد، اما ساختار نظم فرامنطقه‌ای آن تداوم یافت و الگوهای هژمونتیک آشوری در امپراتوری‌های پسین نیز بازتاب یافت؛ از این‌رو، می‌توان امپراتوری آشور نو را نخستین قدرت جهانی دانست که الگوی یک نظام هژمونتیک فرامنطقه‌ای را پدید آورد.

کلیدواژگان: هژمونی، آشورنو، عصر آهن، بین النهرین، امپراتوری.

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The Formation and Evolution of Spiral Staircases in Pre-Islamic Iranian Architecture

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Abstract

Iranian architecture has been a pioneer and innovator in the structural, technical, and artistic fields worldwide, producing valuable masterpieces throughout historical times. Despite this, there are many unknowns and ambiguities regarding its various aspects, including issues related to design, execution, techniques, and architectural elements. In this regard, although Iran is recognized as one of the pioneers in the design and construction of the first spiral staircases, as well as in demonstrating the important role of this element in the architecture of various historical periods, no comprehensive scientific study has yet been conducted, and therefore its origin, formation process, and evolution remain unclear. Focusing on these ambiguities, and relying on archaeological sources and data, the present study adopts a descriptive-analytical approach to determine Iran's role and position in the construction of spiral staircases. Based on the research conducted and considering references in Latin sources to the earliest identified example of a spiral staircase in Italy dating back to 480 BC, the first identified example in Iran is much older and dates back to the late second millennium BC, although similar examples had previously been identified in the regions of Syria and Mesopotamia. The process of their formation and expansion in the architecture of the first millennium BC in northwestern Iran (Hasanlū V and IV) and western Iran (Bābā Jān III and the main Median settlement at the Nush-i Jan site), and their continuation during the Achaemenid (Susa), Parthian, and Sasanian periods (Qal'a-ye Dukhtar and the palace of Artaxerxes I in Firuzabad), can therefore be traced and studied. This architectural element has subsequently secured a permanent place in the Islamic period.

Keywords: Spiral Staircase, Architecture of the Iron Age, Median Architecture, Susa, Hasanlū.

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Introduction

With a history of about ten thousand years, Iranian architecture has pioneered and innovated in various structural, technical, and artistic fields and has presented valuable masterpieces to the world across different historical and Islamic periods. Despite nearly a century of research on various aspects of traditional Iranian architecture, many untold stories and details unfortunately remain unstudied and unclear due to the lack of historical documents and the limited survival of architectural remains. These include issues related to design, execution, techniques, and architectural elements. Meanwhile, despite the fact that Iran is one of the pioneers in the design and implementation of the first spiral staircases, and despite the important role of this architectural element in various historical periods, no scientific research has yet been conducted on this subject, and its origin, formation process, and evolution remain unclear. The origin of this architectural element, its formation process, and evolution have been explained in different ways across other cultural contexts.

Flat-beamed roofs are common in the architecture of various regions of Iran, especially in the Zagros region. Access to the roof (and later to the upper floors of the building) was a necessity due to the preservation and maintenance of thatched roofs and their various functional uses. For this reason, solutions have been developed from the prehistoric period to the present to provide easy and quick access to the roof or upper floor. Typically, portable wooden ladders were the simplest solution in the early period and were often used along the outer wall of buildings. However, gradually, to enable quicker and safer access in buildings with important functions, and in response to climatic conditions -especially during the cold seasons in the Zagros region- as well as the high density of certain settlements, staircases were relocated inside buildings and constructed using more durable materials; nevertheless, the earlier method has continued in simpler buildings in the architecture of the region to this day. Considering the importance of architectural space, architects preferred to implement the staircase in the most efficient manner while occupying the least possible space. The spiral staircase thus emerged as the most effective solution in such a way that, thousands of years after its formation, it has been used in approximately the same way in various governmental, religious, tomb, memorial, and other types of buildings by different ethnic groups.

Problem Statement

As mentioned in the introduction, the spiral staircase is an important architectural element with a long history in Iranian and world architecture. However, to date, no comprehensive scientific research has addressed its origin, formation processes, underlying reasons, evolutionary development, or architectural characteristics in the prehistoric and historical periods of Iran, leaving fundamental questions unresolved, which the present study seeks to address through archaeological evidence from various prehistoric and historical contexts. Recognizing and systematically examining the formation and evolution of this architectural element can clarify the pioneering contribution of Iranian architecture in introducing innovative concepts to world architecture and contribute to revising existing theories concerning the history and development of spiral staircase construction.

Research Methods

In this research, data collection was carried out through both field investigations and library-based research, and data processing was conducted using a descriptive–analytical approach. The time frame of the research extends from the emergence of the spiral staircase in the second half of the second millennium BC to the end of the Sassanid period, and the geographical framework of the research primarily encompasses the Iranian Plateau. However, in order to examine the stages of formation and to provide a more comprehensive analysis of this architectural element, examples beyond the aforementioned geographical framework have also been considered.

Spiral Staircases and Factors Behind Their Adoption A “spiral staircase” consists of a series of steps constructed using different materials and techniques, organized around a central column or pillar and enclosed by a surrounding wall, which was initially quadrilateral in form and later developed into a circular layout; in most cases, the staircase revolves clockwise around the central pillar (and counterclockwise in examples such as Bābā Jān and Hasanlū), providing access to roofs or upper floors. Based on this definition, a spiral staircase can be distinguished from later stair types that lack a central pillar, commonly referred to as helical staircases.

A spiral staircase requires more complex planning and construction than conventional staircases and, consequently, its development must have been motivated by specific functional and architectural considerations. It appears that the principal reason for adopting this design, which remains valid today, is the limited space required for constructing this type of staircase compared with conventional alternatives. Optimal use of architectural space has long been, and continues to be, a fundamental principle for designers, architects, and building users.

Another reason for adopting this design was to restrict and control access to upper floor(s), a consideration closely linked to issues of security and movement control in historical contexts. This function is particularly evident in the staircases of castles and important governmental buildings. Many spiral staircases in medieval European castles and in buildings of the historical and Islamic periods of Iran were constructed with narrow passages and dimly lit interiors, and their rotation commonly followed the direction of clock hands. The constructional characteristics of these staircases hindered attackers, who typically wielded swords in their right hands, by restricting both movement and visibility, while defenders positioned on the upper steps could strike more effectively toward those below. In other words, the central column or pillar functioned as a defensive shield for the defender.

A third reason, more characteristic of later periods, concerns the aesthetic appeal and visual attractiveness of spiral staircases compared with more conventional stair types.

These functional, structural, and aesthetic considerations collectively explain why, following its development, this type of staircase came to be widely used across diverse geographical regions, civilizations, and cultural contexts, appearing in both religious and secular architecture -including castles, churches, mosques, and funerary monuments- and being constructed using a variety of materials and building techniques.

Literature Review

The data and information available have primarily been published through excavation reports and descriptive accounts of the architectural remains recovered from these sites. The results of Dyson's excavations at Hasanlū have provided key evidence for some of the earliest spiral staircases associated with the Iranian Iron Age in northwestern Iran (Dyson, 1977; 1989 a, b). Goff's excavations at Bābā jān demonstrate the continued construction and use of such staircases in western Iran (Goff, 1968; 1970; 1977). The results of the excavations carried out by the Stronach Archaeological Team at Nush-i Jan have revealed more developed and architecturally refined examples of these staircases during the Median period (Stronach & Roaf, 2007). The construction of spiral staircases appears to have continued, though on a more limited scale, during the Achaemenid period (Ladiray, 2013; Perrot, 2013; Hesse, 2013). Variants of these staircases in later forms have been reported from the Qūmis site dating to the Parthian period (Hansman, 1968; Hansman et al., 1970; Hansman & Stronach, 1974). Such staircases are also preserved at Qal'a-ye Dukhtar of Firuzabad (Huff, 1976; 1978 a, b; 2005) and at the Firuzabad Palace (Michell & Eaton, 1992).

A Historical Analysis of the Construction and Use of Spiral Staircases Although the use of stairs and staircases in conventional forms is nearly as old as architecture itself, the spiral staircase, with its more complex and evolutionary design, emerged comparatively later. The remains of the staircase foundation of Temple A at Selinunte in Sicily, Italy, date to around 480 BC and are presented in most sources as the earliest surviving example of a spiral staircase (Miles, 1998: 2, Fig. 1). In the same body of literature, the internal staircase of Trajan's Column in Rome is also described as one of the earliest surviving spiral staircases in the world (Lancaster, 1999: 425, Fig. 4), constructed and completed in 113 AD (Ibid: 419). According to written sources, the history of such staircases extends back even further. In the Old Testament, reference is made to the building constructed by Solomon in the fourth year of his reign (about 966 BC): "… and they went up with winding stairs into the middle chamber, and out of the middle into the third" (Old Testament, Kings I, 6, 8). However, architectural history sources generally fail to acknowledge earlier examples preserved in Iran that more clearly demonstrate the formation and evolutionary development of this architectural element.

New archaeological data offer a clearer picture of the development of this architectural form. The limited survival of prehistoric architectural remains makes it difficult to study all construction details, particularly systems of access between spaces. However, based on archaeological excavations in Syria and Mesopotamia, it appears that the earliest stages in the formation of this type of staircase belong to this region and date to around the third millennium BC. At the site of Eshnunna, a ruler's palace from the late third millennium BC has been excavated, where a spiral staircase was discovered adjacent to the reception hall and its entrance space (Stronach & Roaf, 2007: 187). This type of staircase was later repeated in similar architectural contexts within Assyrian palaces, eventually becoming a standard feature, although variations in construction details are observable (Ibid).

By the middle of the second millennium BC, in northwestern Iran at the ancient site of Hasanlū (Dyson, 1989 a, b), a distinctive architectural tradition emerged, the central feature of which was the columned hall. Gradually, during the late second and early first millennium BC, spiral staircases, and later columned porticoes, were incorporated into this architectural scheme, eventually becoming a fixed component of this type of plan and spreading across different regions (Stronach & Roaf, 2007; Goff, 1968; 1970; 1977). This architectural element continued to occupy an important position in Iranian architecture during subsequent periods as well. It is therefore essential to examine the processes of formation, development, and continuity of this feature during the Iron Age, as well as in the Median, Achaemenid, Parthian, and Sasanian periods, all of which have thus far received insufficient scholarly attention.

The Formation Process of Spiral Staircases in Iran

The first identified examples of spiral staircases on the Iranian plateau date to the Iron Age I period (1450–1200 BC). The Iron Age in Iran and surrounding regions was characterized by significant developments in technology, economy, culture, and communication, including the growth and advancement of architecture and its structural components, among them the spiral staircase, which forms the focus of the present study (Mollazadeh, 2014: 211–212). The successive stages in the formation and development of architecture during this period, which later provided the foundations for Median and Achaemenid architectural traditions, and in particular the emergence and development of spiral staircases, can best be examined through evidence from the site of Hasanlū. This site functioned as the center of a wealthy local polity with extensive commercial, political, and cultural connections during Iron Age I, remaining active until approximately 800 BC (Dyson, 1977; 1989).

Iron Age I and II: Hasanlū

Hasanlū is located in West Azerbaijan Province, on the Solduz Plain at the southwestern edge of Lake Urmia, and represents a settlement sequence extending from the sixth millennium BC to the Ilkhanid period (Dyson, 1989a: 6). According to Dyson's chronology, Level V of the site corresponds to an Iron Age I settlement (1450–1250 BC), while Level IV is attributed to Iron Age II (1250–800 BC) (Roaf, 2012: 2). This chronological framework has recently been revised by Michael Danti (Danti, 2013: 53–142); however, these revisions do not affect the present discussion.

In Level V, a new architectural pattern appears in comparison with earlier phases, characterized by a plan centered on a columned hall accompanied by a counter, a spiral staircase, and surrounding rectangular rooms (Fig. 1). In Level IV, this architectural scheme was further expanded and refined in terms of scale, design, and structural details, subsequently serving as a model for Median and Achaemenid architecture and continuing, with modifications, into later periods within the architectural traditions of the Zagros region.

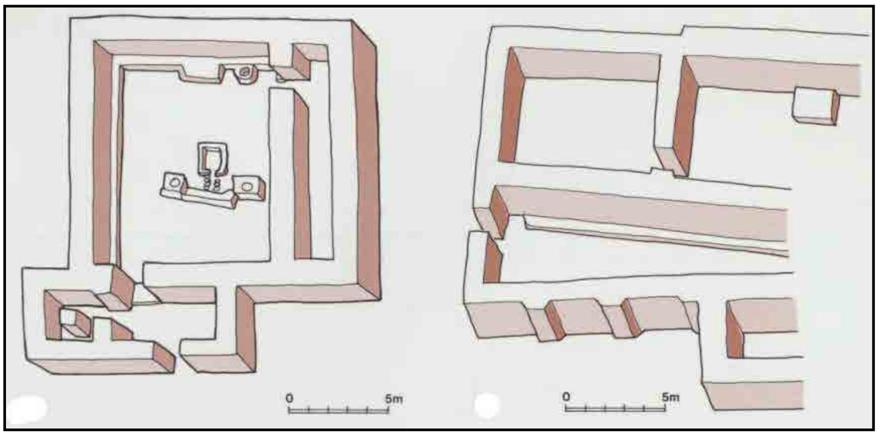
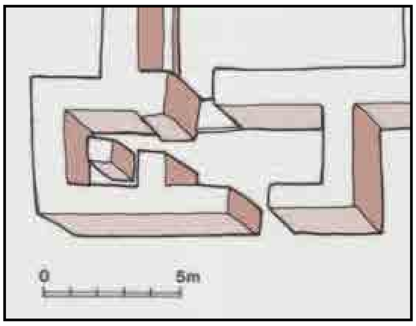


Fig. 1: Isometric drawing of architectural remains discovered in the Level V of the Hasanlū site (Dyson, 1989 b, 108, Fig. 2a, b). ▶



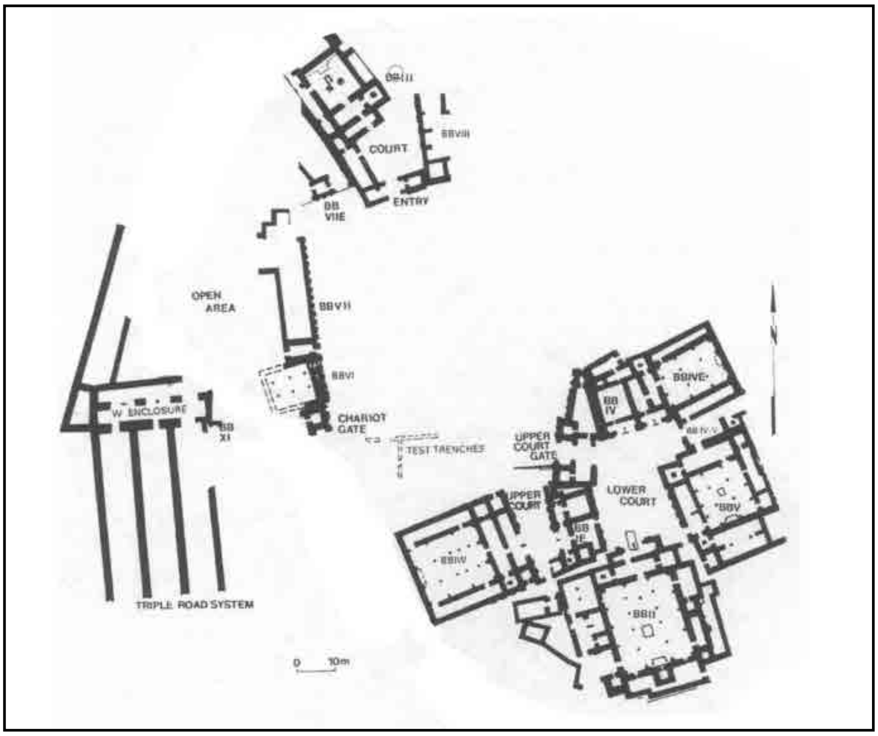
▲ Fig. 2: Isometric drawing of the architectural remains of the counter and the spiral staircase discovered in the Level V of Hasanlū (Dyson, 1989 b, 108, Fig. 2a).

To date, the earliest identified spiral staircases in Iran have been discovered in Level V at Hasanlū, dating to approximately 1450–1250 BC (Fig. 2). In this level, two residential units have been uncovered, each comprising a counter, staircase, columned hall, surrounding rectangular rooms, and mud-brick benches. Due to the limited extent of the excavations, however, it has not been possible to reconstruct the complete layout or all architectural components of the complex, and it remains possible that additional staircases existed within this level. As noted, each residential unit accessible from the counter appears to have contained a spiral staircase. Each staircase occupies a square space entered from the counter and includes a central mud-brick pillar. The building foundations were constructed of rubble stone, while the upper sections were built of mud-brick. No additional architectural elements of the staircases have survived to clarify the precise construction technique of the steps. However, based on the remains of the staircase from Building BB IV in Level IV of the site, it appears that the lower portions of the steps were constructed of mud-brick, while the upper sections were likely made of wood, possibly accompanied by a mud-brick arch surrounding the central pillar.

A relatively complete building from Level V was excavated at the northern end of BB VII in Trench RS22-23, and based on radiocarbon analysis, it has been dated to 1360–1290 BC (Dyson, 2012: 34). Reconstructions based on Level IV buildings indicate that the structure featured a hall measuring 2.6×8.85 m, with a staircase at its southern end measuring 2.6×2.6 m, centered on a mud-brick pillar of 60×80 cm. The steps, apparently constructed from raw mud-brick, spiraled around the central pillar from the room floor, providing access to the second floor and the roof of the passage (Ibid).

With the gradual expansion and evolution of architectural designs in Level IV (1250–800 BC), seven spiral staircases have been identified in religious, governmental, and residential buildings of Level IVB (Fig. 3). Four staircases are located to the right of the entrance, and three to the left, reflecting a proportional relationship to the overall building plan (Fig. 4). The dimensions of the central pillar and the surrounding four walls vary according to the overall proportions of each building. Some are square-rectangular in shape (BB II), others exhibit a more irregular plan (BB V), while the staircase in BB IW, the most recently constructed building on this level, presents the most regular, near-square plan among these examples.

The dimensions of staircase rooms and their central mud-brick pillars in Level IV buildings range from 4×5 m (BB III) to 2.7×2.9 m (BB IE), with central pillars varying from 1.3×1.2 m (BB III) to 0.7×0.7 m (BB IE) (Dyson, 2012: 34–35). The steps ascended in a counterclockwise direction. While the columned halls were single-story, the side rooms were two-story, and access to the flat roof was a functional necessity in regional architecture from prehistoric times onward, serving tasks such as annual maintenance of thatched roofs and providing usable seating or activity areas during the warmer months.



◀ **Fig. 3: Map of architectural remains discovered in Level IVB of Hasanlū (Dyson, 1989 b, 112, Fig. 6b).**

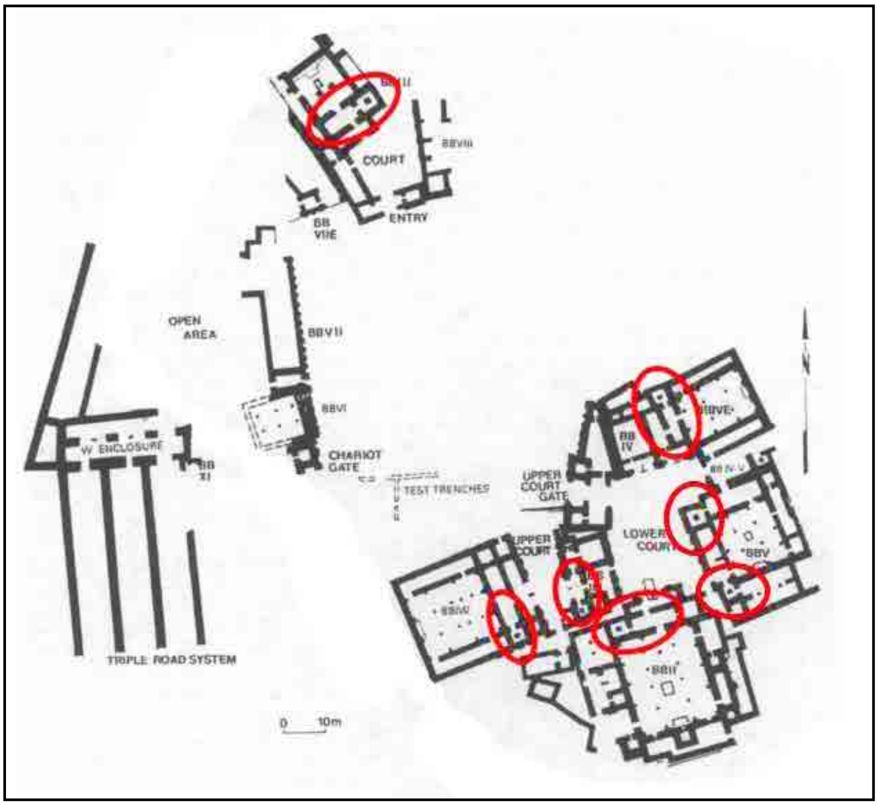


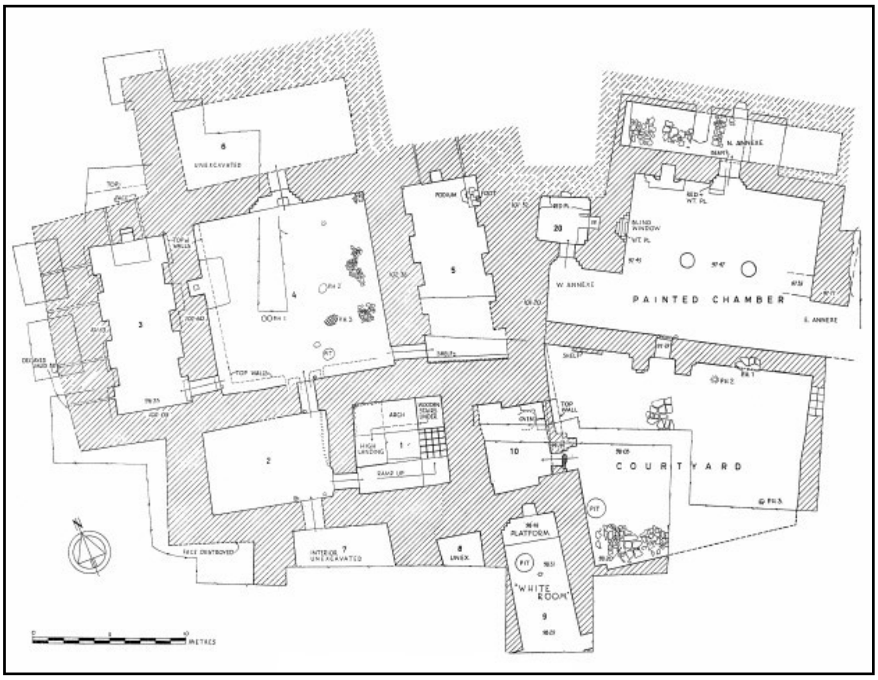
Fig. 4: Map of the architectural remains of the counter and the spiral staircase discovered in the level IVB of Hasanlū (red parts) (Dyson, 1989 b, 112, Fig. 6b). ▶

] The steps in the lower section were constructed from mud-bricks directly on the ground. The remaining architectural evidence is insufficient to provide precise details regarding the construction of the upper steps or the exact distance between the central pillar and the surrounding four walls. It is possible that the upper steps were supported by wooden beams (Dyson, 1989 b: 119). Given the availability of advanced arching techniques during the Median period, arches were commonly incorporated into spiral staircases at the Nush-i Jan site (Stronach & Roaf, 2007: 187). However, no comparable evidence has yet been identified at Hasanlū.

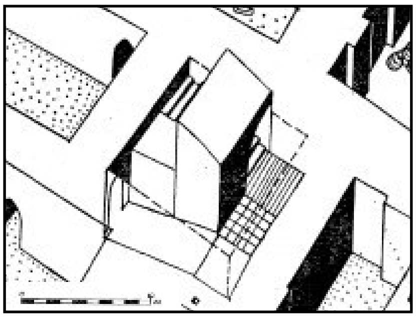
Considering the data presented, it appears that the construction and use of spiral staircases on the Iranian Plateau during Iron Age I (1450–1250 BC) were established and expanded at Hasanlū. Factors such as the environmental conditions of the Zagros region, the emergence of a ruling class and associated elite architecture, and extensive cultural interactions with neighboring regions, particularly Mesopotamia and Syria (see: Young, 2012: 81–102), all contributed to this development. Consequently, the architectural forms and staircases implemented in northwestern Iran during the 9th and 8th centuries BC spread to western Iran, with their evolved examples observable in chronological sequence at the Bābā Jān and Nush-i Jan sites.

Iron Age II: Bābā Jān Archaeological Site

Bābā Jān is located on the Delfan Plain, near the city of Nurabad in Lurestan Province. The site was excavated by Goff between 1966 and 1969. An administrative complex dating to the 9th century BC was uncovered on the eastern mound, featuring a spiral staircase within its counter (Fig. 5–6) (Goff, 1970: 150–151). Like the examples from Hasanlū, this staircase comprises a four-walled enclosure with a central cubic pillar. After the entrance, a sloping mud-brick surface winds around the central pillar. Beyond the first landing, the ramp's height decreases, likely to accommodate the continuation of the steps and their connection to the next landing, which may have involved several steps or a wooden sloping surface; burnt wooden remains were found in this section.



◀ **Fig. 5: Map of the architectural remains discovered from the level III of the eastern mound of Bābā jān (Goff, 1977: 104, Fig. 1).**



▲ **Fig. 6: Isometric reconstruction of the architecture of the spiral staircase discovered from Level III of the eastern mound of the Bābā jān site (Goff, 1977: 110, Fig. 6).**

The central pillar was constructed independently but was connected to the ramp at the top and to the west, serving as support for the remains of an arch on the second landing, which was probably linked to the northern wall of the staircase area. The arch did not survive the excavation, as it had collapsed before detailed documentation could be made (Ibid). Based on the evidence and reconstruction, the staircase provided access to the second-floor rooms and the roof of the building (Goff, 1977: 113). The spiral staircase at Bābā Jān ascended in a counterclockwise direction, similar to the examples from Hasanlū.

Considering the similarities between various elements of the Bābā Jān complex, such as the columned hall, the counter, the spiral staircase, the portals, and the stair-shaped niches, and the architectural plan of the Hasanlū complex, and taking into account the dating of the Hasanlū examples, it appears that the architectural developments originating in northwestern Iran during the 9th century BC were transmitted to western Iran through connections between local authorities and cultural networks. These design features subsequently became a standard tradition in the construction of governmental buildings and in the broader architectural practices of the Zagros region in later periods.

Median Period: Nush-i Jan

The Nush-i Jan site, located on the Malayer Plain in southern Hamedan Province, is one of the most significant sites of the Median period, notable for the durability of its architectural components and elements, and holds a special place in the history of Iranian architecture (Mollazadeh, 2014: 103–137). The site was excavated between 1967 and 1977 by an archaeological team led by Stronach (Stronach & Roaf, 2007). During these excavations, a religious complex dating to the Median period (circa 750–625 BC) was uncovered, and its occupants, upon leaving the site, had carefully filled the spaces and prepared the ground in a manner that contributed to the preservation of the structures. Of particular importance to the present study is the discovery of four spiral staircases, some of which are exceptionally well preserved (Fig. 7). These staircases are associated with the central temple, the old western building, the fort, and the northern area of the site.

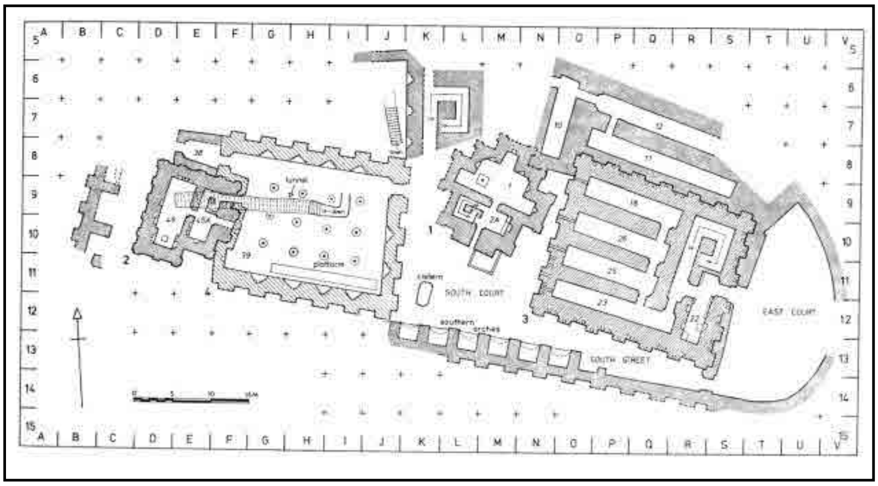
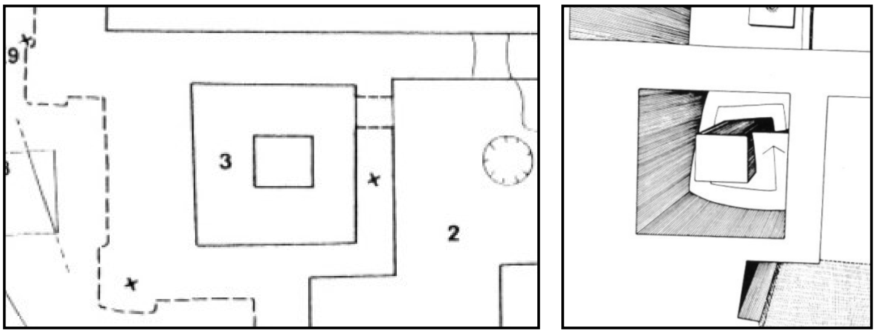


Fig. 7: Map of the architectural remains of the Median settlement in the Nush-i Jan site (Stronach & Roaf, 2007: 55, Fig. 1.9). ▶

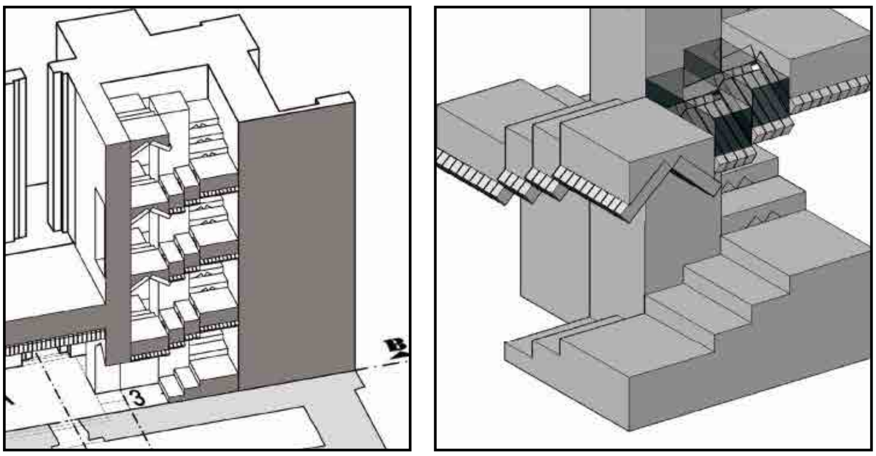
The staircase of the central temple, despite being constructed of mud-brick and covered with a vaulted roof, has been remarkably well preserved thanks to the measures taken by its occupants when they abandoned the site (Stronach & Roaf, 2007: 171). Unlike the examples at Hasanlū and Bābā Jān, the architectural details of this staircase can be thoroughly studied

(Fig. 8). The staircase was situated on the western side of the counter space, to the left of the entrance, and provided access to the second floor of the counter as well as the roof. During excavation, three and a quarter turns of the full staircase, corresponding to a height of 8 meters relative to the counter floor, remained intact.

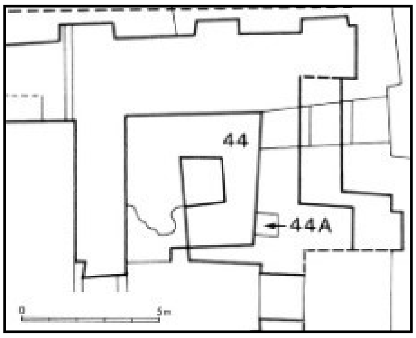


◀ **Fig. 8: Isometric map and design of the architectural remains of the spiral staircase discovered in the central temple of the Nush-i Jan site (Stronach & Roaf, 2007: 69, Fig. 2.3; 70, Fig. 2.4).**

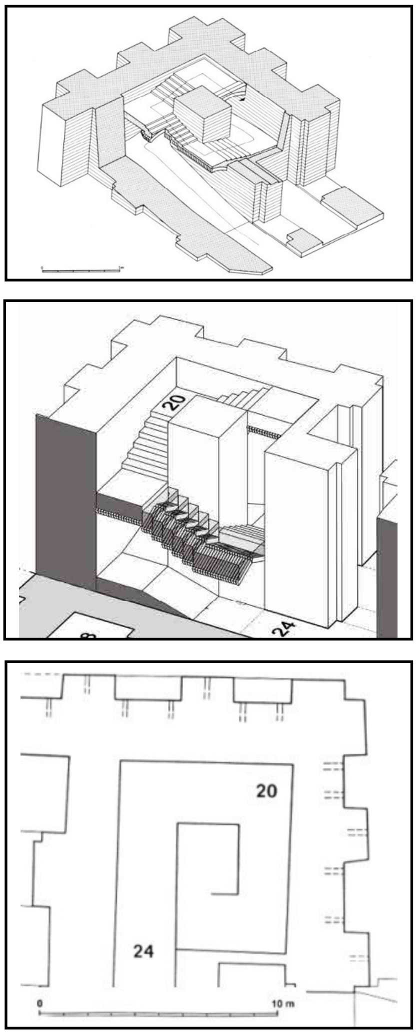
The general structure of the staircases at the Nush-i Jan complex closely resembles the examples from Hasanlū and Bābā Jān, comprising a quadrangular space with a central pillar, with steps ascending counterclockwise around the pillar; however, the construction of the steps and their covering differs from the aforementioned sites. The staircase has a width of 0.80–1.10 meters and revolves around a rectangular central pillar measuring 0.95×1.10 meters. On average, the height of the staircase increases by 50 centimeters per flight of steps, equivalent to 2 meters for a full rotation, resulting in an average slope of approximately 1:4. The staircase covering was constructed using mud-brick battens, which are short and straight, lacking curvature (Fig. 9). The bricks measure 55–60 cm in length, 10–11 cm in width, and 13–14 cm in thickness. The arrangement of these mud-brick arches forms a stepped arched covering, a pattern that is mirrored in the mortar covering above. Specifically, every four consecutive pairs of arches form one step, while the next four pairs at a higher level



◀ **Fig. 9: Isometric drawings of the method of implementing stepped arches in the exposed spiral staircase in the central temple of the Nush-i Jan (Molazadeh and Mohammadian Mansour, 2011: 128, Fig. 12; Ibid: 129, Fig. 14).**



▲ **Fig. 10. Map of the architectural remains of the spiral staircase discovered in the old western temple in the Nush-i Jan site (Stronach & Roaf, 2007: 93, Fig. 3.1).**



▲ **Fig. 11. Architectural plan and isometric reconstruction of the spiral staircase in the Fort building at Nush-i Jan (Stronach & Roaf, 2007: 113, Fig. 4.6; Mollazadeh & Mohammadian Mansour, 2011: 132, Fig. 18).**

form the subsequent step (Stronach & Roaf, 2007: Fig. 2.4; Ibid: 79; Mollazadeh, 2014: 114).

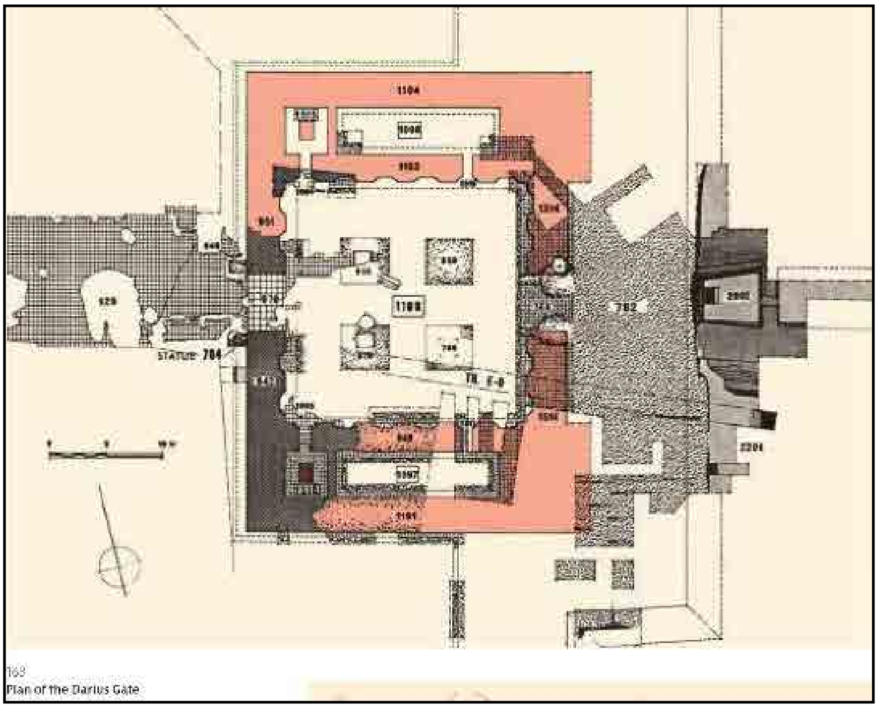
The staircase of the old western temple (space 44), unlike that of the central temple, is located to the right of the entrance on the northern side of the counter (space 45A) and provided access to the second floor and the roof (Fig. 10). During the excavation, a full turn of this staircase remained intact, reaching a height of 230 cm. Its construction and execution closely resemble those of the central temple, with mud-brick arches measuring 18 cm in width and 9 cm in thickness (Stronach & Roaf, 2007: 100–101). It appears that the staircase of the old western temple was used after the temple's abandonment, with certain modifications, to access the roof of the main columned hall (Stronach & Roaf, 2007: 187; Mollazadeh, 2014: 124). The staircase ascends clockwise around a pillar approximately 2 meters wide. Consequently, the location and direction of rotation of a staircase seem to have been determined by the building plan rather than by a fixed architectural tradition, as the central temple and the old western temple were constructed within a short interval of time. Evidence of five turns of this staircase is preserved, although seven turns would have been required to reach the roof at an approximate height of 640 cm (Mollazadeh & Mohammadian Mansour, 2011: 131).

The Fort building (warehouse complex, space 20) also contains a spiral staircase, which appears to have served purposes beyond mere roof access (Fig. 11), providing entry to the second floor of the structure. Like the staircase in the old western temple, it is situated to the right of the entrance and ascends in a clockwise direction. The staircase entrance measures 2 meters in height and just under 2 meters in width. The stair surface initially slopes gradually toward the north, winding around a substantial mud-brick pillar with an area of approximately 2 square meters. Seven full turns were required to reach the upper floor, corresponding to a height of about 6.40 meters. Traces of the arch covering remain on various sides of the central pillar, indicating that the staircase was covered using a stepped arch system composed of mud-brick arches, with each step formed by four opposing arches. Each mud-brick arch measures 18 cm in height and 9 cm in thickness (Stronach & Roaf, 2007: 113, Fig. 4.6).

The large number of spiral staircases and the sophisticated and elaborate methods used to cover them, particularly the arched constructions in several spaces of the Nush-i Jan complex, represent a mature stage in the development of spiral staircases, whose earliest examples are found at Hasanlū. The placement of the staircases within the Median complex, their direction of rotation, dimensions, and other features were determined by the overall building plan and the functional importance of each structure, although the general layout and construction techniques remained consistent. The use of mud-brick arches to create stepped arched coverings was first identified at this site, and its continuation can be traced in the Achaemenid and Parthian periods (Mollazadeh & Mohammadian Mansour, 2011: 136–137).

Achaemenid period: Susa

With the establishment of the Achaemenid Empire and the emergence of its distinctive architectural tradition, although significant transformations are observable in scale, materials, construction techniques, architectural elements, and decorative programs compared with earlier periods in Iran, certain design principles, most notably the columned hall and columned porch as the central core of Achaemenid architecture, as well as elements such as the spiral staircase, continued, albeit executed on a larger scale and with greater refinement. In the Pasargadae complex, as the earliest architectural ensemble of the Achaemenid period, no spiral staircase has yet been identified, possibly due to the limited preservation of architectural remains. However, well-documented examples have been identified in the gate building of the Susa palace complex, dating to the reign of Darius I (522–486 BC), and in the Shaūr Palace, attributed to the reign of Artaxerxes II (405–359 BC) (Fig. 12–13).



◀ **Fig. 12: Map of the architectural remains of the gate of Darius I discovered at Susa (Ladiray, 2013: Fig. 168).**

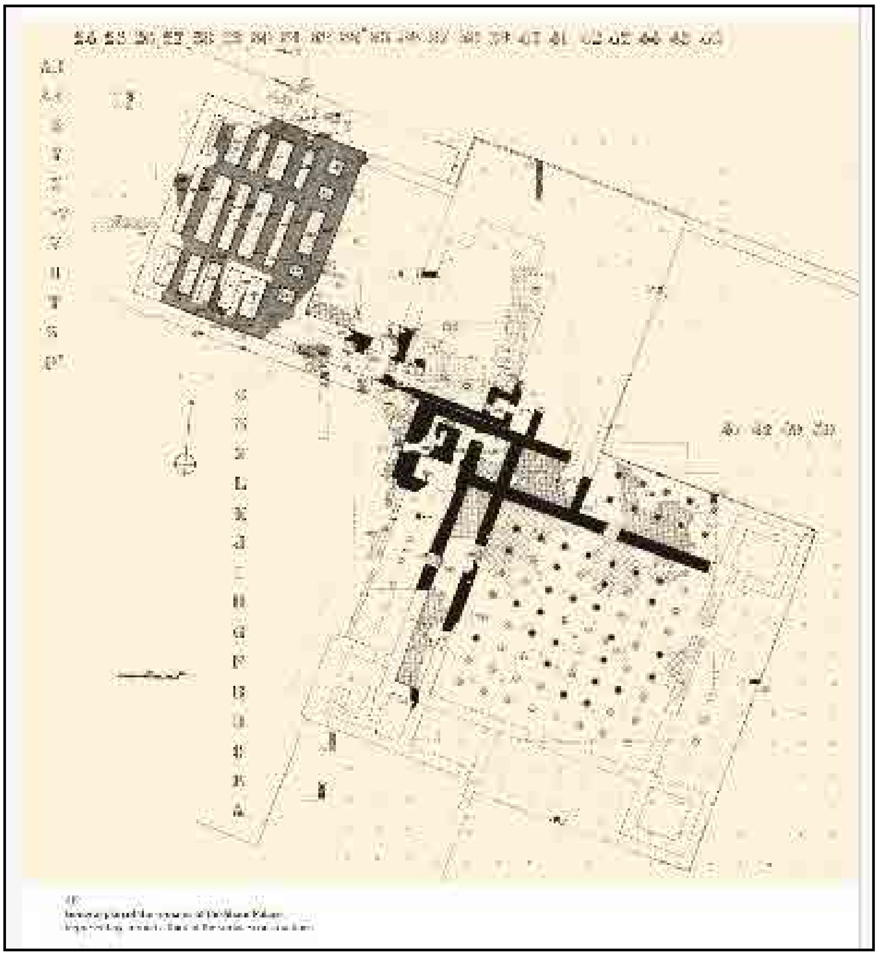
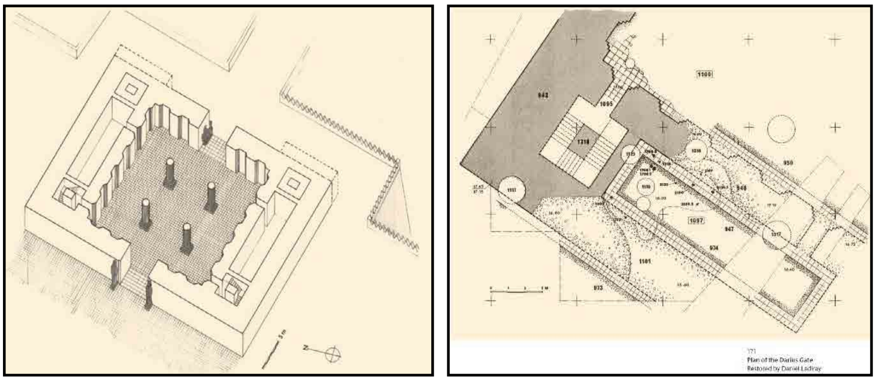


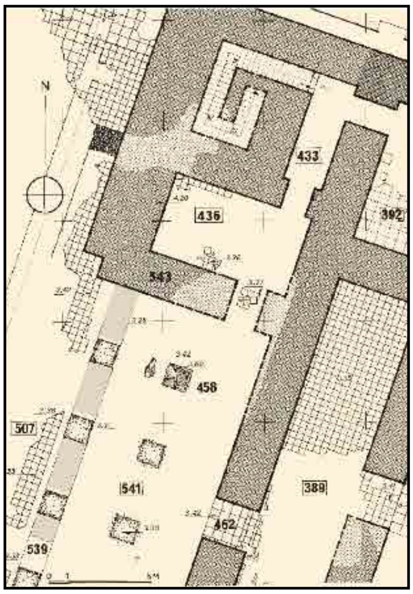
Fig. 13: Map of the architectural remains of the Shaūr palace discovered at Susa (Hesse, 2013: Fig. 419).▶

The Gate of Darius I: The Gate of Darius I is a freestanding rectangular structure measuring 28×40 meters along an east–west axis. The structure consists of a central hall with four columns measuring 1.21×1.21 meters, flanked by rectangular rooms (14×3.5 meters) on either side, with additional corner rooms that likely housed spiral staircases (possibly in two corners). A trilingual inscription of Xerxes I (XSa) is carved on one of the columns of the central hall, which refers to the completion of the building founded by Darius I (Kent, 1931: 225; 1953: 113; Lecoq, 1997: 261–262). The remains of two spiral staircases have been identified in the northwest and southwest corners of the rooms adjacent to the hall, providing access to the upper floor and the roof (Fig. 14). These staircases are small, cubic spaces with a quadrangular pillar in the center, around which the steps ascended. Only the first step remained at the time of excavation. The other side of the building was severely damaged, and the existence of such staircases on the other side remains uncertain. The steps ascended clockwise around a mud-brick pillar inside a rectangular space and provided access to the upper floors and the roof (Ladiray, 2013: 168, Fig. 168, 169 & 171).



◀ Fig. 14: Lef: Spiral staircase discovered in the gate of Darius I, Susa (Ladiray, 2013: 170, Fig. 171) and right: isometric drawing (Ibid: 169, Fig. 169).

Shaūr Palace Complex: The remains of the Shaūr Palace Complex, dating to the reign of Artaxerxes II (404–359 BC), have been excavated on the west bank of the Shaūr River, approximately 50 meters from the Apadana of Darius I, and are located only a few meters above the plain; the complex derives its name from the adjacent river. Shaūr Palace comprises a complex consisting of a large columned hall and residential and recreational buildings within an area measuring 150×220 meters. These remains were excavated in the 1970s by Remy Boucharlat and Audran Labrousse; the site plan was subsequently prepared and completed by Albert Hesse. Based on the reconstructed map, the Shaūr Palace Complex consisted of three main buildings, courtyards or open spaces, and other destroyed buildings. The main columned hall (Building I) measures 34.6×37.5 meters, and its plan is similar to that of the Apadana of Susa, with its central ceiling resting on eight rows of eight columns. In the middle of each side of this hall, there was a columned porch. On both sides of the western columned porch, there were corner towers, of which only remains in the northwest part have survived. Inside these towers, a room and a spiral staircase were constructed, accessible through the western porch (Fig. 15). The direction of movement of this staircase was counterclockwise, opposite to the clockwise examples previously discussed (Hesse, 2013: 373–403). No other spiral staircases have been identified in the main palaces of Susa or the Persepolis complex, possibly due to the extensive destruction of these structures. It seems that with the expansion of architectural scale and the need to facilitate access to large and monumental buildings, broad, conventional staircases with landings were generally preferred, while spiral staircases, more suitable for confined spaces, were used less frequently.



▲ Fig. 15: Spiral staircase discovered in the western porch of the Shaūr palace, Susa (Hesse, 2013: 382, Fig. 426).

Parthian period, Qūmis site: Relatively few architectural remains from the approximately five-hundred-year Parthian period survive on the Iranian Plateau, and very little information is available regarding the form and architectural characteristics of the staircases used during this period.

The only identified examples from this period are from the Qūmis site, which was excavated by Hansman between 1967 and 1972 AD. Three religious buildings have been discovered at this site, which are particularly well-preserved owing to their accumulation and burial during the Parthian period (Hansman, 1968; Hansman et al., 1970; Hansman & Stronach, 1974) (Fig. 16). The plan, architectural details, and function of these buildings are very similar to the central temple of Nush-i Jan from the Median period (Mollazadeh, 2011: 124). However, the staircase, despite certain similarities, particularly in the execution of the arch, exhibits notable differences from the spiral types of earlier periods. The discovered staircase at Qūmis is located in a rectangular space with a central wall and employs a stepped arch to create a sloping passage providing access to the second floor and the roof; its direction of rotation is clockwise, contrary to some of the earlier examples discussed (Fig. 17). Despite the limited number of identified spiral staircases from this period, and considering the continued use of such staircases in the Sassanid period, it is likely that their use remained common during the Parthian era as well.

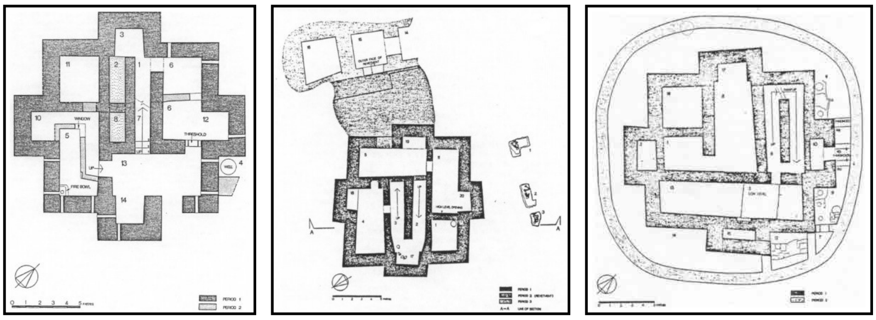


Fig. 16: Left: Buildings with spiral staircases discovered at Qūmis, site 4 (Hansman & Stronach, 1974: 9, Fig. 1); center: site 7 (Ibid: 13, Fig. 2 b); right: site 13 (Ibid: 15, Fig. 3). ▶

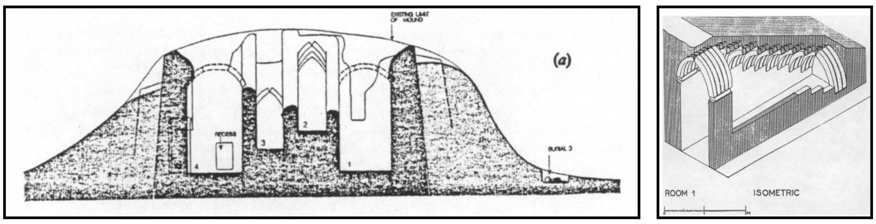
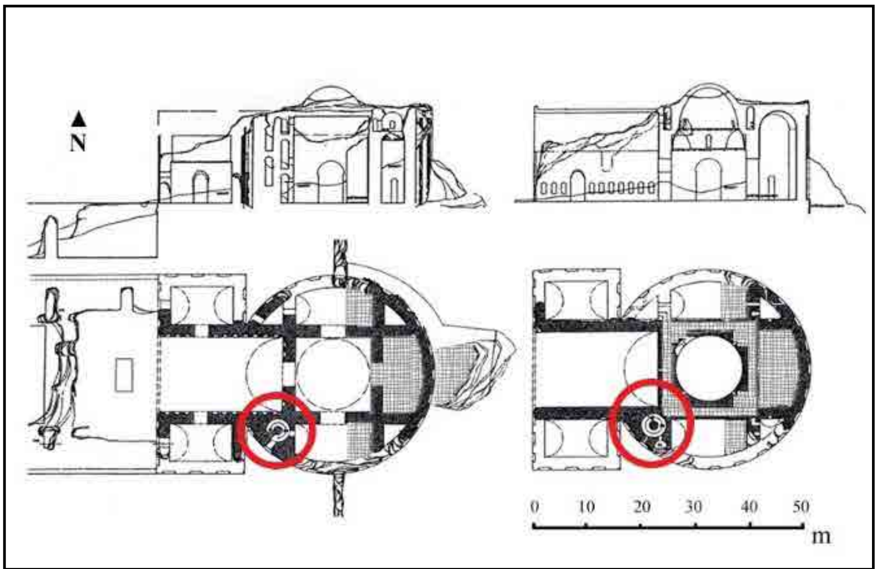


Fig. 17: Comparative illustration of the arched roofing technique employed in two excavated structures at Qūmis; left: longitudinal section of Site 7 (Hansman & Stronach, 1974: 13, Fig. 2a); right: isometric plan of Room 1, Site 4 (Hansman et al., 1970: 50, Fig. 10). ▶

Sassanid building at Firuzabad

Firuzabad, the first seat of Ardašir I of the Sassanid dynasty (224–240 AD) (attributed to the early Sassanid period, though some scholars assign parts of it to the late Parthian period), preserves the architectural remains of two spiral staircases and another distinctive example. These remains not only attest to the continued and expanded use of this architectural element into the Sassanid period but also illustrate a transitional phase from spiral staircases with a cubic external form to those with a circular plan. The first structure is the Firuzabad Tower, a monumental edifice originally measuring 18×18 meters and approximately 40 meters in height. It comprised a central cubic core, a staircase winding around the central pillar, an outer wall, and a room or space at the uppermost level (Hoff, 1987: 91). Today, apart from the remains of the central core, the other components, including the spiral staircase, have not survived (Huff, 1989, fig. 5). This tower, located at the focal point of the city of Firuzabad and likely influential in the circular urban design of the city, is roughly contemporary with the Trajan's column (113 AD) and the Column of Marcus Aurelius (196 AD) in Rome. Unlike the Firuzabad Tower, however, these Roman monuments were constructed with circular shafts and on a smaller scale, and they are regarded as among the earliest Roman structures incorporating internal spiral staircases.

Another building is the Qal'a-ye Dukhtar of Firuzabad, constructed on a mountain overlooking the Firuzabad plain. This palace-fortress, covering approximately 500 square meters, was built by Ardašir I in the early years of his reign, probably prior to the final overthrow of the Parthian dynasty. The complex was erected on a sloping mountainside across three distinct levels. Its principal section includes a large porch and a domed hall situated behind it. Surrounding the porch and hall was a corridor, with rooms on the second floor accessible via a spiral staircase with a circular plan (Herrmann, 1994: 93; Huff, 2005: 373–374). This example represents the earliest identified instance of a spiral staircase with a fully circular plan in Iranian architecture (Fig. 18).



◀ **Fig. 18: Plans and sections of the Qal'a-ye Dukhtar of Firuzabad; discovered spiral staircase (marked in red) (Huff, 2005).**

The third structure is the palace of Ardašir I at Firuzabad, also referred to as the "Ataškada" building (Fig. 19). Erected on a plain overlooking a lake, this complex comprises two principal divisions, generally interpreted as reception (outer) and residential (inner) sections. The reception, or main, section consists of a large porch flanked by side pavilions, with three domed chambers situated behind them. A surrounding corridor and a series of residential rooms, likely intended for members of the royal household, were arranged on the upper level around the porch and domed halls. Access to this upper floor was provided by a substantial spiral staircase positioned at the center of the northwest side of the complex. Unlike the example at Qal'a-ye Dukhtar, this staircase was designed and executed with a square plan (Huff, 2005: 373–374) (Fig. 20). This contrast may be attributed to spatial constraints and the more overtly defensive character of Qal'a-ye Dukhtar, which likely necessitated a more compact, circular configuration. The principal construction materials employed in Sasanian architecture were rubble stone, occasionally hewn, and gypsum mortar, while the staircases were roofed with vaulted coverings.

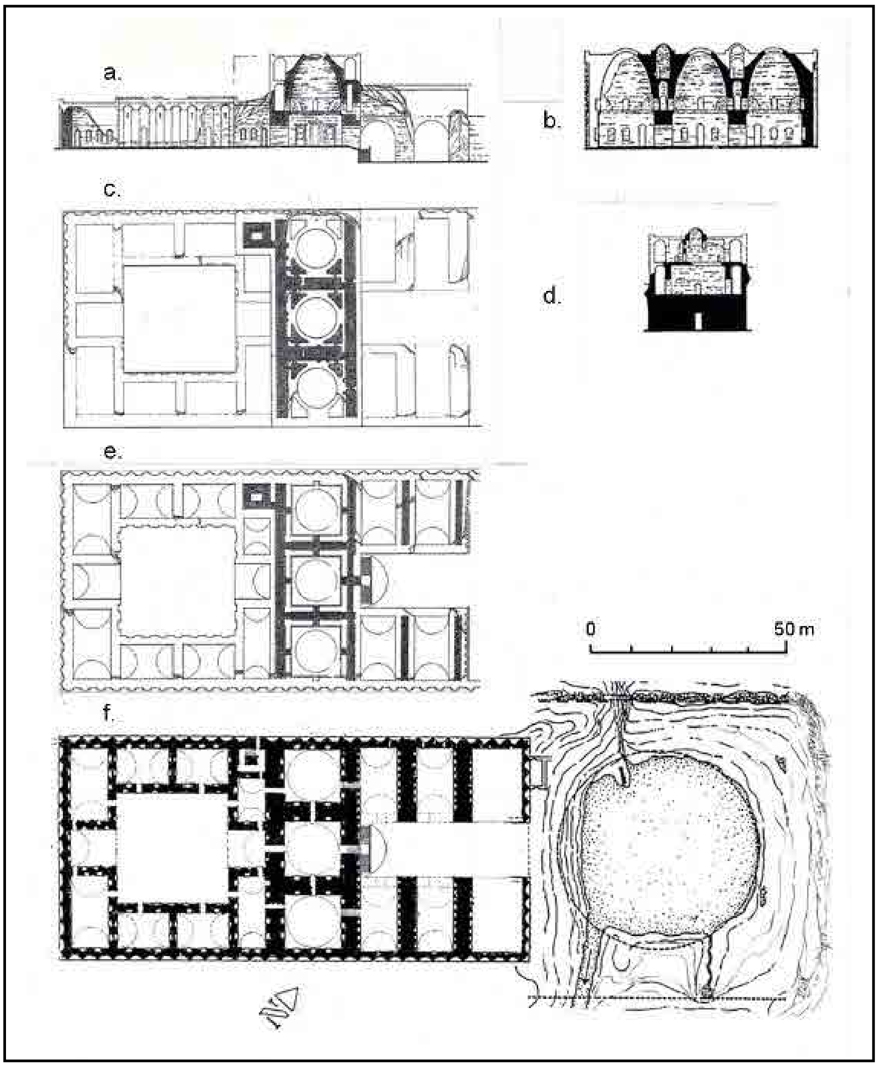
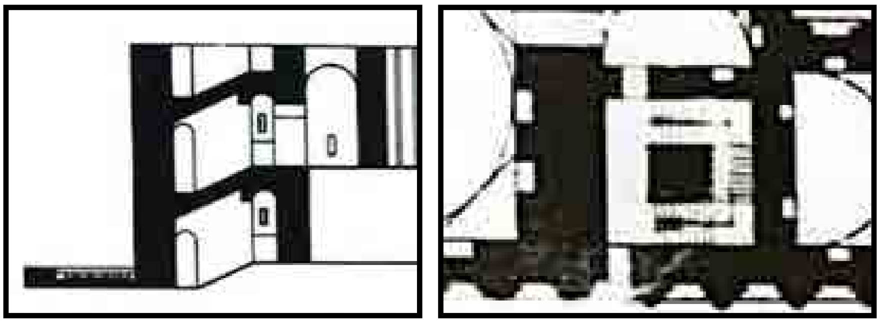


Fig. 19: Sections and plans of the Firuzabad palace (Michell & Eaton, 1992). ▶



◀ **Fig. 20: Discovered spiral staircase in the Firuzabad palace; Left: plan (Michell & Eaton, 1992) & Right: Longitudinal section (Ibid).**

Table 1: Comparative architectural analysis of spiral staircase typologies across the historical periods of the Iranian Plateau (Authors, 2025).▼

Architectural features Site	Level	Chronology	Building	Location in the building	Direction
Hasanlū	V	Iron Age I (1450-1250 BC.)	Residential House	Left side of the counter	Clockwise
	IVC	Iron Age II (1250-1050 BC.)	BB II	Right side of the counter	Counterclockwise
			BB III	Right side of the counter	
			BB IV E	Left side of the counter	
			BB V	Right side of the counter	
	IVB	Iron Age II (1050-800 BC.)	BB I E	Right side of the counter	
			BB I W	Left side of the counter	
			BB V-IV	Right side of the counter	
Bābā jān	III	Late Iron Age II	Fort	Right side of the counter	Counterclockwise
Nish-i jān	-	Iron Age III (800-650 BC.)	Central Temple	Left side of the counter	Counterclockwise
			Old Western Temple	Right side of the counter	Clockwise
			Fort		
Susa	-	Darius I (Around 518 BC.)	Palace-gate (Probably 2 cases)	No counter	Clockwise northwest staircase
					Southwest Staircase Counterclockwise
		Artaxerxes II (404-359 BC.)	Shaūr Palace		Counterclockwise
Qūmis	-	Parthian (247 BC. – 224 AD.)	Site 4	No counter	Clockwise
			Site 7		
			Site 13		
Firuzabad	-	Ardašir I (224 – 240 AD.)	Qal'a-ye Dukhtar	No counter	Counterclockwise
			Ataškada or Palace	Right Side of The Counter	Clockwise

Conclusion

The widespread adoption of flat roofs constructed of straw and mud in the Middle East was closely associated with the functional significance of rooftops and upper stories. Access to upper floors, often the principal residential spaces, together with the need to utilize rooftops for a range of domestic activities and to undertake periodic maintenance and renewal of roof coverings, necessitated the provision of stable and permanent means of vertical circulation. By contrast, in regions characterized by humid climates where truss or gabled roofs predominated, or in hot and arid areas where vaulted and domed roofing systems were common, rooftops generally lacked comparable functional importance. Consequently, the construction of fixed and substantial structural access to the roof was not essential. In such contexts, wooden staircases or temporary structural solutions were often sufficient for reaching upper levels. In the ancient Near East, however, the functional importance of flat roofs created early and sustained demand for durable vertical access systems. From the earliest phases of architectural development, particularly with the expansion in building scale during the fourth and third millennia BC, as indicated by archaeological evidence, various forms of access to upper stories and rooftops were devised and implemented. Given the pioneering role of Mesopotamia and northern Syria in numerous civilizational and architectural innovations, it is reasonable to assume that these regions were also early innovators in the development of the staircases under consideration.

The populations of northwestern Iran in the late second and early first millennia BC, identified with Hurrian groups, maintained cultural affinities and sustained interactions with northern Syria and Mesopotamia. Through such contacts, certain architectural concepts and construction techniques were likely transmitted. Nevertheless, architectural form is ultimately conditioned by environmental context. The general architectural configuration of northwestern Iran, which persisted into the Median and Achaemenid periods, emphasized columned halls, porches, and lateral subsidiary spaces—features not characteristic of Mesopotamian architecture. In this light, it is plausible that this architectural scheme, together with the development of spiral staircases, emerged and evolved independently in the northwestern Iranian context before disseminating to other regions of western Iran. The example discovered in Level V at Hasanlū appears to represent the earliest known spiral staircase. During this period, Hasanlū witnessed the consolidation of a ruling elite and the emergence of an associated architectural program. As Huff has demonstrated in his study of elite residential architecture, the large halls and adjacent ground-floor spaces were devoted to reception and service functions, whereas the second-floor spaces were allocated to the private quarters of the ruling family. These elevated residential spaces offered practical advantages, including improved protection from ground-level humidity, dust, and pollution, as well as enhanced ventilation; they were also visually and functionally connected to the reception halls through architectural openings (Huff, 2005: 372–374). In view of the functional and symbolic importance of the upper story, as well as the necessity of roof access, the provision of secure and permanent vertical circulation was essential. Such staircases may therefore be understood as integral components of elite architectural planning, shaped in accordance with the environmental conditions of the Zagros region and in continuity with other local architectural traditions of the period.

The architectural schemes developed in northwestern Iran likely spread to western Iran through interregional political and cultural interactions among local polities during the ninth century BC, subsequently undergoing modifications in the course of their evolution. This process is particularly evident in the Median period at the Nush-i Jan site, where the use of stepped arches constructed with mud-brick voussoirs in the roofing of spiral staircases appears to represent a technical innovation. It has been suggested that this technique may reflect constructional traditions carried by Iranian groups from their earlier Central Asian homelands (Mollazadeh, 2011: 135). This hypothesis gains relevance when contrasted with the longstanding architectural practices of the Zagros region, where flat roofs supported by wooden beams had predominated since prehistoric times. Given the ready availability of timber, the relative economy of beam construction, its technical simplicity, and the functional versatility afforded by flat roofs, such solutions were environmentally and materially well suited to the region.

During the Achaemenid period, notwithstanding the significant enlargement of architectural scale and transformations in design principles, construction techniques, and materials, spiral staircases continued to be employed. However, the monumental expansion of architectural programs and the relative absence of spatial constraints favored the widespread adoption of broad, straight staircases designed to facilitate ceremonial and practical movement. The staircases constructed within the corner towers of the buildings conventionally identified as the Apadana at Persepolis and Susa exemplify this approach.

Unfortunately, relatively few architectural remains from the Parthian period have survived with sufficient detail to permit thorough study, and the present investigation has not identified clearly documented examples from this era. Nevertheless, considering that the spiral staircases attributed to the reign of Ardašir I at the beginning of the Sassanid period are chronologically close to the final phase of Parthian rule, it is reasonable to infer that the tradition of constructing spiral staircases persisted throughout the Parthian period and continued into the Sassanid era. This interpretation is further supported by the broader observation that Sassanid architecture constitutes, in many respects, a direct and natural continuation of Parthian architectural traditions.

It can be asserted that the overall configuration of spiral staircases, including the general layout and the direction of rotation, remained largely consistent throughout the period under study (circa 1450 BC to the third century AD) (Table 1). Nevertheless, towards the end of this timeframe, the emergence of a spiral staircase with a circular plan, as exemplified by the Qal'a-ye Dukhtar of Firuzabad, marks a notable innovation, likely motivated by spatial constraints and potentially influenced by Roman architectural practices. In all identifiable cases, the rotation of the steps is counterclockwise. This orientation appears to reflect a functional relationship with the design of the counter space, the placement of the staircase entrance, and—most importantly—a right-sided movement pattern, which may represent an ancient architectural convention that has persisted to the present day. With respect to construction materials and techniques, the studied staircases exhibit a clear correspondence with environmental conditions and prevailing cultural practices. During the Iron Age through the Achaemenid period, mud-brick constituted the principal building material; brick was occasionally employed in the foundations of Achaemenid examples, while stone and plaster were used in Sassanian constructions. The dimensions of mud-bricks varied across periods: in Hasanlū, large square bricks measuring approximately 12×45×45 cm were employed; in the Median period, rectangular mud-bricks of approximately 10×25×42 cm were used, often complemented by mud-brick arches to cover the staircases; and in the Achaemenid period, mud-bricks or, in some instances, square bricks measuring roughly 10×33×33 cm were utilized.

Precise information regarding the covering of the Hasanlū and Bābā jān staircases remains unavailable. It appears that these coverings were executed either using mud-brick arches or with the support of small wooden and mud-brick beams. In contrast, staircases from the Median, Achaemenid, and Sassanian periods consistently employed arched coverings. A key conclusion of this study is the extensive chronological depth of spiral staircase construction in Iran, which predates comparable Western examples. As noted in the introduction, many sources identify the staircase of the Temple of Selinunte in Italy, dated to 480 BC, as the earliest known spiral staircase, followed much later by the staircase within Trajan's Column, constructed in 113 AD. Iranian examples, however, can be traced to approximately a millennium earlier. It should be emphasized that the Roman instances represent the earliest spiral staircases with a circular plan, which likely evolved from earlier examples featuring a square configuration.

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Conflict of Interest
The Authors, while observing publication ethics in referencing, declare the absence of conflict of interest.

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چکیده

معماری ایران با سابقهٔ حدود ده‌هزار سال در زمینه‌های مختلف ساختاری، فنّی و هنری پیش‌گام و نوآور بوده و شاهکارهای ارزشمندی را در دوران تاریخی و اسلامی به جهان عرضه کرده است. باوجود پیشینهٔ پژوهشی حدود ۱۰۰ساله جنبه‌های مختلف معماری سنّتی ایران، هنوز، ناگفته‌ها و جزئیات زیادی وجود دارد که شوربختانه به‌دلیل فقدان مدارک و اسناد تاریخی و نیز بقایای معماری اندک برجا مانده، موردمطالعه و روشن‌گری قرار نگرفته است. معماری ایران در زمینه‌های ساختاری، فنّی و هنری در جهان، پیش‌گام و نوآور بوده و شاهکارهای ارزشمندی در دوران تاریخی عرضه کرده است. باوجود این موضوع، در ارتباط با جنبه‌های مختلف آن، نادانسته‌ها و ابهامات زیادی وجود دارد. مباحث مربوط به طرّاحی، اجرا، فنون و عناصر خاصّ معماری از این‌جمله است. در این ارتباط، باوجود پیش‌گامی ایران در زمینهٔ طرّاحی و اجرای نخستین راه‌پلّه‌های مارپیچی‌شکل و نیز نقش مهمّ این عنصر در معماری دوران تاریخی، پژوهشی علمی صورت نگرفته و منشأ، روند شکل‌گیری و سیر تکامل آن مشخّص نیست. پژوهش حاضر با تمرکز بر این ابهامات، با تکیه‌بر منابع و داده‌های باستان‌شناسی، به شیوهٔ توصیفی-تحلیلی تلاش کرده روشنگر نقش و جایگاه ایران در زمینهٔ ساخت راه‌پلّه‌های مارپیچی‌شکل باشد. براساس پژوهش‌های انجام‌شده و باتوجه به اشاره منابع لاتین به نخستین نمونهٔ شناسایی‌شده راه‌پلّه مارپیچی‌شکل در ایتالیا مربوط به سال ۴۸۰پ.م.، نخستین نمونهٔ شناسایی‌شده در ایران در حسنلوی V بسیار قدیمی‌تر و مربوط به اواخر هزارهٔ دوّم پیش‌ازمیلاد بوده و روند شکل‌گیری و گسترش استفاده از آن‌ها در معماری هزارهٔ اوّل پیش‌ازمیلاد شمال‌غرب در حسنلوی V و IV، در غرب ایران در باباجان III و استقرار اصلی ماد در محوطهٔ نوشیجان و تداوم آن در دورهٔ هخامنشی در محوطهٔ شوش، در دورهٔ اشکانی در محوطهٔ قومس و در دورهٔ ساسانی در قلعه‌دختر و کاخ اردشیر یکم در فیروزآباد قابل مطالعه و پیگیری است.

کلیدواژگان: راه‌پلّه مارپیچی، معماری عصر آهن ایران، معماری ماد، شوش، حسنلو.

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An Iconographic and Iconologic Analysis of Chovgan Motifs on Early Islamic Pottery: Socio-Cultural Implications in the Samanid Era

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Abstract

Polychrome slip-painted ceramics attributed to Nishapur, distinguished by their unique iconography, are recognized as among the most prominent artistic achievements of the Samanid period in the Near East. Despite significant advancements in scholarly research regarding the provenance and semantics of these motifs, certain pictorial scenes remain inadequately interpreted. One such scene depicts a game of Chovgan (polo), illustrated on a polychrome ceramic vessel currently housed in the Asian Art Museum. Although previous attempts have sought to interpret this image through historical sources, its social and cultural significance during the third and fourth centuries AH remains shrouded in ambiguity. Consequently, the primary objective of this study is to re-examine and critically analyze this depiction within the broader social, cultural, and political context of the Samanid era. To achieve this, the study employs Erwin Panofsky's iconological approach as its analytical framework, interpreting the results in light of contemporary historical and literary texts from the Samanid period. Guided by this research problem and method, the study addresses two primary questions: 1) How does the depiction of Chovgan on Nishapur ceramics reflect the symbols of military and social skills characteristic of the Samanid era? 2) What symbolic and cultural meanings associated with educational, aristocratic, and political concepts of the Samanid period are embedded in the image of Chovgan on Nishapur ceramics? The research method employed is historical, utilizing an analytical-comparative approach based on library-based data collection and synthesis. The interpretation, grounded in this analytical-comparative framework, posits that the depiction of Chovgan on Nishapur ceramics is not merely a representation of leisure activity; rather, it functions as a symbol of martial and social competencies within the Samanid aristocracy. Furthermore, the image implicitly conveys concepts related to political power, bravery, and aristocratic social identity. The findings indicate that Chovgan, beyond representing physical exertion, was integral to the social and political structures of the Samanid era, as evidenced by its portrayal on Nishapur ceramics.

Keywords: Slip-painted Pottery, Nishapur, Chovgan, Iconography, Samanid Period.

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Introduction

Polychrome slip-painted ceramics produced in northeastern Iran during the third and fourth centuries AH, contemporaneous with the Samanid era, constitute some of the most prominent examples of ceramic art from this period. Despite the distinctive manufacturing technique employed in these vessels, known as the slip-painted/engobe method (Fehérvári, 2000: 50; Blair & Bloom, 2004: 122; Watson, 2004; Kiani, 1978: 15), and despite extensive research conducted on the production history and provenance of these works, most scholars still attribute their manufacture to Nishapur (Wilkinson, 1973: 3, 138–139; Fehérvári, 2000: 63; Watson, 2004: 248), Samarkand (Wilkinson, 1961: 105; Cooper, 2000: 89; Lane, 1948: 12), Sari (Cooper, 2000: 89; Lane, 1948: 12; Wilkinson, 1961: 105), and Kerman (Fehérvári, 2000: 61–63; Allen, 1988: 60). Consequently, the diversity and intricacy of the motifs executed on these slip-painted vessels, including floral, geometric, anthropomorphic, zoomorphic, and narrative scenes, have attracted significant scholarly attention (Ettinghausen & Yarshater, 2000: 141). Nevertheless, a precise analysis of the implicit meanings and the relationship between these narrative scenes and the social and cultural contexts of that period remains lacking.

The scene of the Chovgan game is one of the most significant narrative images attributed to Nishapur slip-painted ceramics, depicted on a bowl currently housed in the Asian Museum of Islamic Art. Although studies have been conducted by scholars such as Askari Alamouti (2016) relying on historical texts regarding this narrative scene, a comprehensive and methodological interpretation of the meanings embedded in relation to the cultural and social context of the era still requires deeper re-examination and reflection. The present study endeavors to conduct a more profound re-examination and analysis of this narrative image -the Chovgan game- within the social, cultural, and political foundations of the Samanid era, utilizing Erwin Panofsky's iconological method1. This method consists of three stages: pre-iconographic description (precise and scientific description of visual details), iconographic analysis (examination of the structure and relationships of visual elements), and iconological interpretation (discovery of semantic layers in connection with historical and cultural contexts) (Panofsky, 1980: 34; Mokhtarian, 2011: 7, 13). This analytical framework enables us, beyond understanding the aesthetic conventions of the image, to uncover the meaning embedded within it.

Based on what has been mentioned, the primary objective of this research is to elucidate the implicit meanings in the image of the Chovgan game on the Nishapur slip-painted vessel. These concepts, in addition to representing a leisure activity, symbolize military skills and social agency among the aristocratic classes of the Samanid era. This article seeks to reveal the relationship of these motifs with the political, cultural, and social concepts of the period and, through iconographic analysis and the use of historical sources, uncover the meanings embedded in the Chovgan scene to achieve a deeper understanding of the social and military context of the Samanids.

Research Questions: Based on its primary hypothesis, this study addresses two main questions: 1) How does the narrative scene of the Chovgan game on the Nishapur slip-painted vessel serve as a symbolic representation of military and social skills in the Samanid era? 2) What symbolic and cultural meanings associated with educational, aristocratic, and political concepts of the Samanid era are embedded in the depiction of the Chovgan game on Nishapur slip-painted ceramics?

Research Method: This research employs an analytical-comparative approach based on historical sources and library-based data collection, conducted in three continuous stages. In the first stage, the polychrome slip-painted vessel under study is documented. To this end, its visual details, forms, figures, ornaments, and compositional elements are represented and recorded using CorelDRAW software to provide an accurate basis for analysis and to prevent subjective or undocumented interpretations. In the second stage, an iconographic analysis of the narrative scene is performed according to Erwin Panofsky's approach. During this phase, the compositional structure, the depiction of figures, and the relationships between visual elements are examined to identify the semantic foundations and narrative structure of the scene, thereby moving beyond mere descriptive analysis. In the third stage, an iconological interpretation is provided based on historical and literary sources related to the concept of the Chovgan game during the Samanid and pre-Samanid periods. In this phase, by examining written texts in Pahlavi, Arabic, and the Shahnameh, the cultural and social themes of the Chovgan game scene are re-examined and extracted in connection with the educational, aristocratic, and political concepts of the Samanid era.

Literature Review

Following Charles Wilkinson's excavations in 1973 and the transfer of some Nishapur findings to the Metropolitan Museum of Art, studies on polychrome slip-painted ceramics gained greater coherence and breadth. Since then, researchers have examined these artifacts from multiple perspectives. In the realm of technical and technological classification, Wilkinson, in his book Nishapur: Pottery of the early Islamic period, analyzed decoration techniques, coloring, and surface appearance, investigating pictorial patterns including human and animal motifs (Wilkinson, 1973). Subsequent scholars such as Watson (2004), Fehérvári (1973, 2000), and Lane (1948) continued his work, proposing new approaches to classification. Additionally, Karimi and Kiani (1985) and Morgan (2005) analyzed the types and techniques of such ceramics, while Nouri (2014) and Ziaei-Bigdeli (2017) focused on conservation and authentication, conducting comparative studies on museum collections.

In the field of content and visual studies, the scope of research is even more extensive. Notable studies include those by Firouz (1966), Zick-Nissen (1973), Fitzherbert (1983), Rogers (1995), Kiani (2001), Grube (2005), Daneshvari (2007), Mirzaei and Moradkhani (2019), Shayeganfar and Nouri (2016), Pancaroglu (2013), Samanian and Bahmani (2013), Azadbakht and Tavousi (2012), Changiz and Rezalou (2011), Khaledian (2008), Ahmad-zadeh et al. (2018), Ataei et al. (2012), Quchani (2005), Salehi-Kakhki and Nouri (2016), Changiz and Bolkhari-ghahi (2016), Akbari-shaketayi and Taghavi (2018), and Samavaki (2021). The synthesis of these studies indicates that the origins of Nishapur ceramic motifs can be traced to connections with Sassanian traditions and pre-Islamic myths, astrological symbolism, the link between anatomical decorations and local Khorasan traditions and Central Asian myths, the influence of literary and religious sources, the reflection of Mithraism rituals, the echo of shared religious festivals, the connection of symbols with native and ritual traditions, dating and epigraphic studies, and the examination of religious, numerical, animal, and religious, social, and cultural mythological themes.

In the research by Askari Alamouti (2016), in an article titled "Re-reading the Content of Nishapur Ceramic Motifs in the Fourth Century AH with a Focus on Religious Beliefs and Astronomical Predictions," the slip-painted vessel depicting the Chovgan scene was examined. Based on the repeated presence of bird motifs, he read the narrative scene as being connected to Mahdavist discourse and, more particularly, to the figure of Abu Muslim Khorasani. However, this interpretation is questionable; the connection between the bird motif and Abu Muslim Khorasani is not substantiated in his analysis, nor is its link to the narrative nature and socio-ritual function of the Chovgan game convincing. The mere presence of the bird element cannot serve as a basis for relating this scene, which has a recreational, ritual, or aristocratic nature like Chovgan, to Mahdavist or messianic concepts, as Chovgan in pre-Samanid traditions was primarily associated with military exercises, the upbringing of princes, and symbols of political power. Therefore, Askari Alamouti's analysis requires revision and a clear distinction between motifs with religious functions and scenes with independent socio-ritual functions. Generally, a review of existing literature indicates that while there is an abundance of studies on the provenance of motifs, the practical and semantic domains related to games and socio-sports activities of the Samanid era have received less attention, highlighting the necessity of this research.

Ultimately, the combination of the three stages mentioned above provides a context in which the narrative scene of the Chovgan game on the Nishapur slip-painted ceramic is re-read not only in terms of form and image but also from semantic and cultural identity perspectives prevalent in the Samanid era, clearly revealing its relationship with the social structure of that period.

Iconographic Analysis of the Chovgan Motif

A noteworthy example among polychrome slip-painted ceramics attributed to Nishapur is a bowl that directly depicts a game, specifically Chovgan (Fig. 1). In this image, we observe a high-ranking Samanid rider wearing courtly attire, including a tunic, trousers, tall boots, and an ornate crown. He is depicted riding a galloping horse, holding a mallet in his right hand and the reins in his left. Beneath the horse's belly, a rooster is depicted, while the scene is surrounded by motif-based decorations such as leaf patterns, inscriptions, and geometric designs, whose semantic functions will be examined in the iconographic analysis section. Before entering Panofsky's three-stage process, it is necessary to provide an overview of the characteristics and manufacturing technique of this ceramic vessel to establish a basis for the systematic analysis of its imagery. The ceramic vessel under discussion in this study (Fig. 1) bears a strong resemblance in manufacturing technique and decoration style to the slip-painted ceramics excavated from Nishapur (Table 1: Figs. 1–3), which date to the third and fourth centuries AH. One of the manufacturing and decorative styles of ceramics in these centuries is the slip-painted method, which encompasses a diverse range of types (Karimi and Kiani, 1985: 16).

Wilkinson, the excavator of Nishapur, classifies slip-painted ceramics into six types based on decoration technique and motifs:

1. Slip-painted ceramics with painted decoration on a buff-colored background (polychrome type);
2. Polychrome slip-painted ceramics on a white background;
3. Black slip-painted ceramics on a white background;
4. Slip-painted ceramics on a colored background;

5. Black slip-painted ceramics that yield a yellow hue;

6. Imitation gold slip-painted ceramics (Wilkinson, 1973).

Slip-painted ceramics were produced in the kilns of Nishapur, Samarkand, Sari, Kerman, and other production centers (Wilkinson, cited in Ettinghausen et al., 1997: 64-65; Fehérvári, 2009: 11; Watson, 2004: 205). Despite the abundance of slip-painted ceramics, an appropriate sequence and dating have not yet been provided. Wilkinson proposes a timeframe for these vessels in the third and fourth centuries AH (Wilkinson, 2000: 139). Allan, based on architectural evidence and historical clues, dates the Lashkari Bazar site to the third century AH and suggests a timeframe of the third and fourth centuries AH for the ceramics from this site, emphasizing the overlap between the Lashkari Bazar ceramics and the polychrome slip-painted ceramics of Nishapur (Allan, 1988: 60–66). Bulliet also believes that polychrome slip-painted ceramics from Nishapur emerged as a subsequent stage after the common epigraphic vessels (Bulliet, cited in: Grabar, 2005: 45).

The polychrome slip-painted ceramics, which are the subject of this research, are among the types reminiscent of Nishapur slip-painted ceramics and are considered one of the most exquisite ceramics of the third and fourth centuries AH (Grube, 2005: 45). They feature motifs such as floral, geometric, anthropomorphic, and zoomorphic designs (Ettinghausen and Grabar, 2011: 308; Whitehouse, 1992: 310). Three examples of these ceramics are presented in Table 1 (Figs. 1–3), which show considerable similarity to the bowl in the Asian Art Museum (Fig. 1) in terms of manufacturing technique, glaze, motif drawing, and compositional elements.

Among the similarities between this bowl (Fig. 1) and other examples (Table 1: Figs. 1–3) are the following: The depiction of hair and its arrangement at the back of the head (Table 1: Figs. 1–3); the style of crown depiction (Table 1: Fig. 3); clothing coloration (Table 1: Figs. 1, 3); similarity in boot depiction (Table 1: Figs. 1–2); similarity in horse and its decoration depiction (Table 1: Fig. 1); the type of bird and its drawing style (Table 1: Figs. 1–2); and the type of drawing and decoration of surrounding motifs, including floral patterns, evil eye symbols, and pseudo-inscriptions. These visual similarities suggest that the bowl in Figure 1, housed in the Asian Art Museum, belongs to the third and fourth centuries AH and the Nishapur style, and can be attributed to Nishapur, falling under the study of this cultural tradition.

Fig. 1: Depiction of the Chovgan game, illustrated on the slip-painted ceramic vessel attributed to Nishapur (Authors, 2025). ▶

	
The drawing of the bowl motif (Authors, 2025).	Bowl with the motif of a horseman holding a mallet, Registration No. 1956.153, Asian Art Museum (URL: 1)

Table 1. Examples of polychrome slip-painted ceramics attributed to Nishapur in other museums (Authors, 2025). ▶

		
Fig. 1: Bowl with the motif of a horseman holding a goatling; Registration No. 1967.93, Denver Art Museum (URL: 2)	Fig. 2: Bowl with the motif of a horseman holding a weapon, Registration No. 3909 (National Museum of Iran)	Fig. 3: Bowl with the motif of a winged human, Registration No. 40.38.290, Metropolitan Museum of Art (URL: 3)
		
The drawing of the motif (Authors, 2025).	The drawing of the motif (Authors, 2025).	The drawing of the motif (Authors, 2025).

1) Pre-iconographic Description

The central portion of the image, set against a background completely covered in light mustard pigment, depicts a rider mounted on a robust horse. The face of this high-ranking rider is rendered in a three-quarter profile, while his body is shown frontally and his legs in a lateral view. He possesses large, triangular eyes, continuous eyebrows that meet in the middle, a broad nose, and small lips. The rider's straight black hair is decorated with a four-petaled flower in a mustard color, gathered at the back of his head. On his head rests an oval-shaped headband in mustard color, symbolizing a royal crown. His neck is buff-colored and broad. The rider wears a light green tunic with long sleeves and a round, V-neck collar. The mid-section of the V-neck collar down to his waist is covered in a yellow-colored glaze. His torso, from the mid-section to the lower body, is clad in a yellow belt, simple and unadorned trousers, and a light green background. He also wears a black, pointed-toe boot decorated with a vertical buff-colored line and a rich yellow glaze. The rider's foot is placed inside the horse's stirrup. His hands are raised; simultaneously, his left hand holds the horse's reins, and his right hand holds the polo mallet. The long handle of the mallet and the horse's reins are also covered in a light green glaze.

The horse, depicted with a robust and sturdy physique and relatively short legs, is shown in a semi-profile view. Its fixed forward gaze, furrowed eyebrows, pointed ears, and short muzzle, combined with its head held low, lend it an aggressive appearance. The horse's mane is decorated with horizontal black lines on a buff-colored background. The horse has a long, apparently braided tail in buff color, in which vertical and horizontal black lines with green glaze are visible. Its black body is adorned with narrow buff-colored bands and irregular circles in rich yellow and light green glazes. The saddle features two sections, upper and lower, in buff and rich yellow colors, separated from each other by black horizontal lines on a yellow background. On the rich yellow background, non-geometric decorations with small black dots are visible, while the yellow-buff background features solid black dots with green and yellow glazes, along with a light green border. Beneath the horse's belly and legs, a rooster is depicted in a semi-profile view with spread wings. The bird's head is buff-colored, with wide, staring eyes, a small, pointed beak, and a triangular comb. Its body and legs are black. The rooster's wings are buff-colored and feature a combination of vertical and curved black lines, covered with decorative green and yellow glazes. Due to the improper angle of the photograph, the rooster's tail is not visible in the image. Surrounding the central main image are multi-petaled and spiral flowers, evil eye symbols, large Kufic lines, and geometric motifs in the shape of two nested triangles, covered with green and yellow glazes. On the sides of the outer triangle, curved lines are present, with an evil eye symbol at its apex.

2) Iconographic Analysis:

Based on the pre-iconographic descriptions provided, the motif on the slip-painted ceramic under study (Fig. 1) depicts a non-military activity, showing significant differences from similar examples related to battle and hunting (Table 2: Figs. 1–3). In this bowl, the rider is depicted wearing courtly attire, including a tunic, trousers, tall boots, and a crown. Furthermore, the size of the figure and its central placement within the image frame indicate the rider's importance and social status. Unlike the warrior and hunter examples (Table 2: Figs. 1–3), no combat instruments or hunting equipment—such as swords, spears, axes, shields, bows, or slings—are observed on the vessel in Figure 1. The absence of these elements suggests a departure from war-centric and hunting-centric traditions, pointing instead to a non-military and recreational activity. Another noteworthy aspect is the posture and movement of the rider, which is a significant feature. In the bowl shown in Figure 1, the rider is depicted in motion, galloping in a festive-like setting, and clearly carrying a stick with a curved head resembling a polo mallet. The considerable visual similarity between this rider's action and the game of Chovgan, a sport common in ancient Iran, reinforces this interpretation, without directly engaging in cultural or historical analyses.

Table 2. Warrior and hunter motifs illustrated on polychrome slip-painted ceramics attributed to Nishapur (Authors, 2025). ▶

		
Fig. 3: Bowl with the motif of a horseman hunting, Registration No. 1344 (Reza Abbasi Museum).	Fig. 2: Bowl with the motif of a horseman holding a weapon, Registration No. 325 (Reza Abbasi Museum).	Fig. 1: Bowl with the motif of a horseman holding a weapon, Registration No. 38824 (Bonyad Museum).
		
The drawing of the motif (Authors, 2025).	The drawing of the motif (Authors, 2025).	The drawing of the motif (Authors, 2025).

A) Etymology of Chovgan

The term Chovgan (Cogan) in Persian has its roots in the Pahlavi language.

It appears in various forms, such as Cwpgn or Copagan, in different sources. This word is likely cognate with Cop, meaning wood, and refers to the initial tool used for striking the ball (Azarnoush, 2013: 13). In Pahlavi texts, this word appears in forms such as Copagan or Cowagan in the treatise of Khusrow and Ridag (paragraph 12) and Copigan in the Karnamag-i Ardashir-i Papagan (Part 1, paragraph 29) (Jamasp-Asana, 1992: 73; Anonymous, 1950: 5, 101). In these texts, Chovgan referred to the stick used to drive the ball, and the name of the tool was subsequently generalized to refer to the game itself (Azarnoush, 2013: 13).

In addition to its Pahlavi roots, the game of Chovgan was known in Arabic texts by the term Sulajan (mace/staff). From the second century AH, this term appears in Arabic poetry and literature. It was used in various forms, such as al-lu'ab al-sualjan (the game of the mace), al-darb bi'l-sulajan (striking with the mace), or darb al-kura bi'l-sulajan (striking the ball with the mace). Gradually, the word kura (ball) replaced sulajan, and the expression al-darb (or al-lu'ab) bi'l-kura (striking/playing the ball) became common. In the sixth century AH, this term underwent a further Arabization that made it more Persian-like, and the Ayyubids used it in the form Gukan or Gawakan. This word replaced sulajan and gradually became prevalent throughout the Arab world. Additionally, the title Jukandar, derived from the Persian pattern Chovgandar (Chovgan player), was used at the same time as an aristocratic governmental title (Ibid: 15–16).

B) The Origin of Chovgan as a Sport

The Pahlavi text Khusrow and Ridag mentions the game of Chovgan alongside equestrian skills and archery from horseback, emphasizing that proficiency in Chovgan was an indicator of the military and educational training of the nobility (Jamasp-Asana, 1992: 72–73). The Karnamag-i Ardashir-i Papagan also states that Ardashir learned skills such as horsemanship and Chovgan from his father in childhood and later from Ardavan, the Parthian king. This indicates that Chovgan was valued in aristocratic and royal courts, particularly among the Parthians and Sassanians, prior to Islam (Anonymous, 1950: 5–6).

In pre-Islamic historical sources, there is no direct visual or textual evidence of Chovgan from the Achaemenid period. Only indirect references by al-Tabari, as reflected in Tarikh-i Bal'ami, suggest an awareness and application of Chovgan during this era (al-Tabari, 1996, Vol. 2: 489–490; Tarikh-i Bal'ami, 1974, Vol. 2: 694–695). This scarcity of evidence suggests that while Chovgan likely existed, it was not prominent in the official records of that period, and its status was primarily transmitted through later narratives (Azarnoush, 2013: 44–45).

In the Sassanian period, more documented and reliable evidence exists in Pahlavi and historical texts, indicating that Chovgan held special importance within the aristocratic and educational structures. The Karnamag-i Ardashir-i Papagan explicitly states that proficiency in Chovgan and horsemanship was part of the necessary education for princes and nobles. This game was not merely a pastime but served as a means for practicing martial skills and strengthening physical and mental abilities (Anonymous, 1950: 5–6). Cultural and literary reflections are also clearly observed in Persian epic texts, particularly in the Shahnameh, spanning the period from the legendary Kianian dynasty to the Sassanians (Ebrahimipour, 1974: 2). Ferdowsi refers to the game of Chovgan in verses concerning Goshtasp (verses 613–635) (Ferdowsi, 1996, Vol. 5: 47–49), Siyavash (verses 1321–1377, 1770–1773) (Ferdowsi, 1990, Vol. 2: 289–292, 322), and Rostam (verses 8–16) (Ibid: 104). In these contexts, the game is depicted alongside concepts such as knighthood, martial skill, and royal status (Azarnoush, 2013: 37–44). Furthermore, Shahnameh mentions the playing of Chovgan during the reigns of Sassanian kings such as Ardashir and Hormizd (verses 253–259) (Ferdowsi, 2005, Vol. 6: 210–211), Shapur II (verse 21) (Ibid: 292), Bahram (verses 113-114, 165, 118, 2022–2026) (Ferdowsi, 2005, Vol. 6: 369, 373, 424, 568), and Khusrow Parviz (verses 912–924) (Ferdowsi, 2007, Vol. 8: 70–71). This indicates the continuity of its importance in the cultural and social memory of Iranians.

These literary sources, alongside historical texts and social reports such as Tarikh-i Qom, Waqa’i‘-i ‘Abbasi, and local narratives, demonstrate that the game of Chovgan was not limited to royal courts but was prevalent among the nobility and even broad segments of society, provided that horses and equipment were available (Azarnoush, 2013: 60). In Tarikh-i Qom, the game is referred to as Goybazi (ball game). Its definition states that a ball is a round sphere used in Chovgan, played in groups between two teams of riders, with the objective of driving the ball into a goal. Each player held a mallet, passed the ball to one another, and threw it into a goal. This game contributed to the training of horsemanship skills as well as leisure and social interaction (Qomi, 2006: 694).

Additional historical and literary sources provide substantial evidence of the importance of Chovgan among Iranians and the elite. Beyhaqqi reports that Chovgan was not merely a pastime for the aristocracy but also a component of political and social relations within the court and local spheres. The way the game was played and the orderliness of the playing fields reflected the power and status of the individuals involved (Beyhaqqi, 2001: 152). Similarly, Hamawi highlights the role of Chovgan in the power structure and court ceremonies, emphasizing that nobles participated in the game regularly to maintain their physical fitness and martial skills (Hamawi, 2002, Vol. 2: 848–849). Al-Khatib al-Baghdadi narrates that observing Chovgan matches in the fields of Khorasan and other regions, accompanied by technical skills, social order, and the presence of servants, had an educational aspect and demonstrated social authority (al-Khatib al-Baghdadi, 1997, Vol. 9: 359). Ibn al-Esfandiar also records fatal incidents during Chovgan games in Tabaristan and Gorgan; despite the physical risks, these incidents highlight the mobility and skill required for this sport, underscoring its importance in martial training and the empowerment of the aristocracy (Ibn al-Esfandiar, 1987: 288–295). Azarnoush further emphasizes that Chovgan in these regions was regarded as a serious and dynamic activity, not limited to leisure (Azarnoush, 2013: 62).

Alongside horsemanship and chess, Chovgan has always held a special place as part of the acceptable customs and techniques in the educational and training system of the Iranian nobility. The account of Hasan ibn-Sahl indicates that the education and practice of Chovgan and other aristocratic sports were considered not only for entertainment but also as an inseparable part of etiquette, art, physical education, and martial skills, thereby enhancing the importance of this sport in the social and cultural structure (Hasri, 1998, Vol. 1: 150; Azarnoush, 2013: 60). In these narratives, the connection between Chovgan and horsemanship, as well as horse control, transformed it into a symbol of skill, physical ability, social status, and political position. Mastery of this sport indicated an individual’s command over their physical capabilities and their social standing.

This perspective is further reinforced by Ibn al-Nadim, who reports that during the second and third centuries AH, field games and equestrian and archery competitions, including Sulajan (Chovgan), were of interest in legal and literary sources and were considered part of the martial skills and sports of the Iranian nobility (Ibn al-Nadim, 2002, Vol. 2: 362). He also identifies Abu Bakr Muhammad ibn Yahya ibn Abbas al-Suli as a skilled literary figure and chess player who, in the presence of al-Mutawakkil and other nobles, was engaged in teaching literary and sports competitions (Ibid: 248, 256). This evidence indicates that Chovgan and other field games were recognized, from the early Islamic periods, as part of military education, physical training, and the cultural status of the aristocracy.

Furthermore, evidence suggests that Chovgan was continuously prevalent in various regions of Iran, including Khorasan, Tabaristan, Transoxiana, Guilan, and Gorgan, and was occasionally used as part of martial and educational skills during wars and local conflicts (Azarnoush, 2013: 62). For example, in 312 AH, incidents resulting from Chovgan games in Tabaristan were reported in the presence of the king and local ministers, indicating that even in tense situations, Chovgan was maintained as a symbol of authority, skill, and military training (Ibn al-Esfandiar, 1987: 288–289). Similarly, in 323 AH, it was reported that Chovgan games were held by emirs and local forces, and dangerous incidents occurred during them, again highlighting the importance of skill and physical training in this sport (Ibid: 295).

Given all these historical, literary, and social evidence, it can be concluded that the game of Chovgan in Iran, both pre-Islamic and during the Islamic period, was more than a simple pastime or entertainment. It held a special place in society and among the nobility and princes as a symbol of skill, physical ability, social status, and cultural and educational dimensions. This deep-rooted and rich tradition provides the background for analyzing the reflective role of Chovgan on the Nishapur slip-painted ceramic in the subsequent iconological analysis stage, within the framework of the culture, educational, and political system of the Samanid era; a context where skill, status, and aristocratic identity are simultaneously reflected. In the slip-painted bowl in question (Fig. 1), an image of the Chovgan game is likely visible, in which an aristocratic horseman, based on his attire, crown, and depiction style, clearly belongs to the Samanid nobility. This figure is playing Chovgan and holding a polo mallet; an act for which no direct and comparable visual example has been reported in pre-Islamic visual sources up to the date of this research.

The combination of this sports scene with symbolic motifs such as the rooster and protective elements like evil eye symbols indicates that the image is not merely a representation of a recreational activity but is situated within a symbolic framework. Therefore, this imagery can be analyzed within the social and cultural context of the third and fourth centuries AH, a period during which the game of Chovgan had a prominent place in the culture of the Samanid elites as a symbol of skill, social status, aristocratic education, and political identity. In this framework, the image on the bowl is a visual reflection of the educational, martial, and aristocratic concepts reported in the historical and literary texts of this period. The following section presents the iconological interpretation of this bowl.

C) Iconological Interpretation

During the Samanid era, Chovgan was recognized as one of the prominent and common sports among the aristocracy and princes. Its importance was such that books and manuals were compiled to instruct on its proper execution. Ibn Qutayba, in his work Oyun al-Akhbar, citing a Pahlavi code of conduct (whose original text is no longer extant), refers to instructions regarding the handling and swinging of the mallet and striking the ball. Although the original text is lost, the game was intuitively understandable, and it involved technical nuances for correct execution (Ibn Qutayba, 2000, Vol. 1: 217). Onsur al-Ma'ali Keykavus Ziyari also mentions safety limits and principles of the game in the Qabusnameh, emphasizing that even occasional Chovgan activities must be conducted with caution, and that the number of players and their arrangement in the field should be such as to minimize the risk of fatal injury (Onsur al-Ma'ali, 1956: 82–83). These points indicate that Chovgan in this period was not merely a pastime but an integral part of the military training and physical education of the nobility.

Multiple historical evidence also reveal the social and political significance of Chovgan. Narratives from Samanid emirs, including Nasr II and Ahmad ibn Isma'il, indicate that Chovgan was held in important centers such as Bukhara and Herat. In Bukhara, fields such as Rigestan were recognized as the official venues for this sport, and competitions were held in the presence of nobles and emirs. These competitions, in addition to their recreational aspect, demonstrated the ability, skill, and status of the players before authorities and spectators (Tha'alibi, 2001, Vol. 4: 85; Anonymous, 1987: 329; Hamawi, 2002, Vol. 1: 317). The potential lethality of the game, evidenced by the death of one Samanid emirs, highlights its dual role as a dangerous pursuit and a key marker of aristocratic identity and social prominence (al-Narshakhi, 2008: 134; al-Gardizi, 1984: 354; Ibn al-Athir, 2005, Vol. 12: 5078). These points underscore the importance of Chovgan as an activity transcending mere entertainment, serving instead as a symbol of skill, status, and social power.

From an iconological perspective, the peripheral elements of the Chovgan motif (Fig. 1), such as the rooster and protective symbols, carry specific symbolic meanings. The rooster in these motifs symbolizes victory and courage (Yahaqqi, 1990: 179–180), while protective symbols like the evil eye emphasize the safety of the players and the ritualistic aspect of the game (Shakur-zadeh, 1984: 176–274). Consequently, the depiction of Chovgan on the Nishapur slip-painted ceramic is not merely a representation of physical activity; rather, it signifies the connection between skill, social status, military education, and the culture of the Samanid elites.

Historical narratives indicate that the prestige and reputation of players were directly linked to the observations and assessments of emirs and nobles. For instance, Ahmad ibn Isma'il and other Samanid emirs not only attended the matches but also followed them with precision, paying close attention to the players' skills and courage. Based on these performances, the status and credibility of individuals within the court and society were established (Hamawi, 2002: Vol. 1: 317). Mastery in Chovgan served as a symbol of capability, horsemanship, and ball control, reflecting the player's social status and bravery. Its role extended far beyond that of a mere sport.

Based on this evidence, it can be concluded that the Chovgan motifs on the Nishapur slip-painted ceramic (Fig. 1) reflect the culture, education, skill, and aristocratic identity of the Samanids. These motifs simultaneously present the sport, social status, military education, and symbolic elements such as the rooster and the evil eye within a coherent visual framework, highlighting the importance of this sport in Samanid society as a symbol of power, courage, and social credibility. This analysis completes the third stage of Panofsky's method, establishing the image of Chovgan, alongside the previous two stages (formal description and primary iconography), as a semantic and cultural representation of a recreational activity among the elites of the Samanid era.

Conclusion

This study, through the iconographic and iconological analysis of slip-painted ceramic, has for the first time formulated the connection between the visual components of a sporting activity and the semantic system of the Samanid court. The fundamental contribution of this research extends beyond the identification of the motif's subject (the Chovgan game) to the discovery of the image's dual function as an "instrument for legitimizing aristocratic identity" and a "representation of martial skills framed as entertainment". The findings indicate that the depicted scene is not merely an imitative representation of reality; rather, it is a sophisticated combination of courtly elements (such as attire and crown) with protective symbols (such as the rooster and evil eye signs). This combination emphasizes the symbolic aspects of the game, highlighting concepts such as courage, victory, and safety. These symbols reinforce the role of the Chovgan game as an emblem of victory, social power, and political authority, offering an interpretation presented here for the first time. This reveals a new pattern of “authority figuration” in Samanid ceramics. From a social perspective, the innovation of this research lies in demonstrating that Chovgan in this period served as an “internal educational and training system” for the ruling class, which, through this ceramic vessel, was transferred from the physical space of the Chovgan field to the symbolic space of functional vessels.

Therefore, the analysis of this motif demonstrates that, contrary to previous approaches, the Nishapur-related ceramic was not merely a decorative object, but a visual document of the connection between physical skills, political status, and the military structure of Samanid society; an aspect that had been overlooked in prior studies of Nishapur ceramics. Relying on historical and literary evidence, this study proves that the Chovgan motif on this vessel is the essence of the Samanid worldview in relation to power and skill. Its primary innovation lies in providing a structured analysis of the transmission of the ruling ideology’s concepts to the ceramic art of the third and fourth centuries AH.

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The Authors, while observing publication ethics in referencing, declare the absence of conflict of interest.

Endnote

1. Until the mid-twentieth century, iconography and iconology were often used interchangeably, but Panofsky established a clear distinction between them (Panofsky, 1955: 26). Iconography deals with the identification and explanation of obvious elements, themes, and motifs in a work of art; that is, what is directly visible in the image. In contrast, iconology is built upon iconographic findings and, with a deeper perspective, interprets hidden meanings, beliefs, values, and the worldview of the culture in which the work of art was created (Taheri, 2017: 25; Panofsky, 1955: 26). In Panofsky’s words, where iconography stops, iconology continues its work (Zeimaran, 2013: 214), striving to reveal fundamental principles that constitute the intellectual infrastructure of a nation, a historical period, an artistic school, or a religious and philosophical system (Taheri, 2017: 25).

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۴۷ پژوهش‌های باستان‌شناسی ایران

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تحلیل آیکنوگرافیک و آیکنولوژیک نقشِ بازی چوگان در سفال‌های نخستین سده‌های دوران اسلامی: بازتاب فرهنگی و اجتماعی در دورهٔ سامانی

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چکیده

سفالینه‌های گلابه‌ای رنگارنگ منسوب به نیشابور با نقوش منحصربه‌فرد خود، به‌عنوان یکی از برجسته‌ترین آثار هنری دورهٔ سامانی شناخته می‌شوند. باوجود پیش‌رفت‌های قابل‌توجه در مطالعات مربوط به منشأ و معنای این نقوش، برخی از صحنه‌های تصویری هنوز به‌طور کامل و درست تفسیر نشده‌اند. یکی از این صحنه‌ها، تصویری از بازی چوگان است که بر یک سفالینهٔ رنگارنگ به تصویر کشیده شده و در موزهٔ هنر آسیا نگه‌داری می‌شود. این صحنه، باوجود تلاش‌های پیشین برای تفسیر آن براساس منابع تاریخی، هنوز در زمینه‌های اجتماعی و فرهنگی سده‌های سوم و چهارم هجری‌قمری در هاله‌ای از ابهام قرار دارد؛ بنابراین، هدف اصلی این پژوهش، بازخوانی و تحلیل دقیق‌تر این تصویر در بستر اجتماعی، فرهنگی و سیاسی دورهٔ سامانی است. برای این‌منظور، از رویکرد آیکنوگرافی اروین پانوفسکی به‌عنوان چارچوب تحلیلی استفاده شده و نتایج برپایهٔ متون تاریخی و ادبی و منابع مکتوب هم‌دوره با سامانیان تفسیر می‌گردد. با توجه به مسئله و روش پژوهشی، پرسش‌های اصلی این پژوهش بدین‌شرح است: ۱) چگونه تصویرسازی بازی چوگان بر سفالینهٔ نیشابور، نمادهای مهارت‌های نظامی و اجتماعی دورهٔ سامانی را بازتاب می‌دهد؟ و دیگر ۲) کدام معانی نمادین و فرهنگی در تصویر بازی چوگان بر سفالینهٔ نیشابور در پیوند با مفاهیم آموزشی، اشرافی و سیاسی دورهٔ سامانی مطرح است؟ روش این پژوهش تاریخی با رویکرد تحلیلی-تطبیقی و مبتنی‌بر مطالعات و گردآوری داده‌ها به شیوهٔ کتابخانه‌ای است. تفسیر این پژوهش مبتنی‌بر رویکرد تحلیلی-تطبیقی انجام گرفته است که تصویر بازی چوگان بر سفالینهٔ نیشابور، نه‌تنها بازنمایی یک فعالیت تفریحی است؛ بلکه به‌عنوان نمادی از مهارت‌های رزمی و اجتماعی در طبقات اشرافی دورهٔ سامانی عمل می‌کند؛ هم‌چنین، این تصویر به‌طور ضمنی مفاهیم مرتبط با قدرت سیاسی، شجاعت و هویت اجتماعی اشرافی را بازتاب می‌دهد. برآیند این پژوهش نشان می‌دهد که بازی چوگان، علاوه‌بر نمایاندن یک فعالیت جسمانی، به‌عنوان بخشی از ساختار اجتماعی و سیاسی دورهٔ سامانی در سفالینه‌های نیشابور مطرح می‌شود.

کلیدواژگان: سفال گلابه‌ای، نیشابور، بازی چوگان، آیکنوگرافی، سامانیان.

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Tepe Anouj of Malayer
The Key Site in East of Central Zagros, Iran

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Abstract

Tepe Anouj (locally known as Qaleh Bolandeh) is situated in a village of the same name in the county of Malayer, Hamadan Province, and represents one of the key archaeological sites in the eastern Central Zagros. Archaeological research at the mound was carried out in 2018 and identified various cultural occupation periods from the Middle Chalcolithic to the Middle and Late Islamic periods. However, no evidence was recovered for several intermediate cultural periods, including Iron Ages I and II, as well as the Achaemenid, Seleucid, Sasanian, and early Islamic periods. The gathering of cultural data involved fieldwork activities such as archaeological excavation and survey. Additional information was obtained from published sources and existing reports. Ultimately, the cultural sequences of different periods at the site were systematically examined and analyzed. The primary research question guiding this study is as follows: What is the stratigraphic sequence at Tepe Anouj, and which cultural periods does it include? The results of this research indicate that evidence of occupation and various cultural periods has been identified at the site, including the Middle and Late Chalcolithic, Early Bronze Age (Godin IV or Yanik), Middle and Late Bronze Age (Godin III), Median (Iron Age III), Parthian, Ilkhanid, and Qajar periods. The findings of this excavation not only clarify the chronology of occupation at Tepe Anouj but also demonstrate that the site has significant potential to contribute to a better understanding of regional cultural developments, as it contains discontinuous yet long-term evidence of occupation spanning from prehistory to the Islamic period.

Keywords: Western Iran, Centeral Zagros, Malayer, Tepe Anouj, Salvage Excavation, Stratigraphy, Pottery, Typology.

Introduction

Tepe Anouj, known locally as Qaleh Bolandeh, is one of the most important archaeological sites located to the east of Anouj village in Malayer County, Hamadan Province. Due to its strategic geographical position at the transitional boundary between the southern part of Hamadan Province and the Silakhor Plain (Lurestan Province), the site has long played a significant role in regional cultural and commercial interactions. Based on surface evidence and the architectural remains of a castle on the mound, occupation at the site spans from prehistory to the late Islamic period (Safavid and Qajar). Archaeological excavations at the site, particularly the salvage excavation conducted in 2018 on the northern side of the mound, together with systematic surface surveys, have provided valuable data regarding its stratigraphy and cultural sequence. The pottery and architectural remains recovered from this excavation indicate a discontinuous yet recurrent pattern of occupation from the Middle Chalcolithic to the late Islamic centuries and allow for comparative analysis with other sites in the eastern Central Zagros. This research was designed with the overall aim of clarifying the chronological and cultural context of Tepe Anouj, using a descriptive-comparative method based on data obtained from stratigraphic excavation and surface survey of the site. Accordingly, the operational objectives of the research were as follows: to determine the chronological sequence of occupation at Tepe Anouj and identify its temporal range; to compare material culture data (pottery) with other sites in order to understand cultural connections and regional chronology; and to provide a more precise framework for the relative chronology of the site based on archaeological evidence. The findings of this research indicate that occupation at Tepe Anouj occurred intermittently from the Middle Chalcolithic to the Qajar period. The significance of this research lies not only in clarifying the occupation history of Tepe Anouj but also in providing a foundation for broader studies on cultural interactions between the Iranian Central Plateau and the Central Zagros. Given its location in the southern part of Hamadan Province, adjacent to the communication corridor towards Borujerd and the Silakhor Plain, as well as its connection to the plain leading to the slopes of Mount Garin (Nahavand and Kangavar), Tepe Anouj is considered a key site for archaeological research. This study can also serve as a basis for future research and conservation planning for this valuable site.

Research Method

The nature of the present research is fundamental, employing a descriptive-comparative approach designed to analyze and interpret the archaeological data from Tepe Anouj. Data collection in this study is based on two main methods: fieldwork and library-based and comparative studies. By integrating field data (including stratigraphy and surface survey) with comparative studies, this research seeks to establish the chronology, outline the cultural sequence, and understand intra-site developments at Tepe Anouj. The findings of this research not only enrich the archaeological knowledge of the region but also provide essential foundational data for the design of future research and informed decision-making regarding the preservation of the site. The data for this research were collected through salvage excavation and stratigraphic investigation at Tepe Anouj, conducted in 2018. The site was in a critical condition, with collapses occurring in the detached northern and northeastern parts (Areas A and B). To rescue these endangered areas, salvage operations and complete documentation (including excavation, photography, and stratigraphic section drawing) were carried out as a first step, with the aim of preserving archaeological information prior to its complete destruction. The objectives of this excavation were to document the cultural layers, determine the chronological sequence, and carry out the salvage of these parts. Following the completion of excavation and data recovery, and to address immediate hazards and ensure safety, the loose and unstable sediment volumes in these areas were removed and reduced to achieve a stable slope. The debris resulting from this operation were then deposited and compacted at the base of these stabilized slopes to serve as a protective barrier against further erosion. To better understand the cultural position of Tepe Anouj, the data obtained from this excavation were compared with findings from contemporary and similar sites in the Central Zagros. This comparison was conducted through the examination of written sources, archaeological reports, and previous research, and it contributes to the analysis of cultural and chronological similarities and differences between Tepe Anouj and neighboring regions.

Research Background

Tepe Anouj was first registered in the National Heritage List of Iran on 14 March 1975, under registration number 1093 (Encyclopedia of the History of Architecture and Urban Planning of Iran, 2019). The site was subsequently re-surveyed during archaeological surveys of the Samen district of Malayer County in 2008, directed by Zabihollah Bakhtiari. In that survey, only potsherds from various periods of the Bronze Age (Early, Middle, and Late) were reported from the site (Bakhtiari, 2008: 296).

Finally, in 2012, the core zone of the site was delimited, and a protective buffer zone was proposed (Bakhtiari, 2012). In recent years, sediment removal for fertilizing agricultural lands, the use of soil from the mound for construction purposes, and the creation of access routes to certain neighborhoods and alleys of Anouj village have caused parts of the main core of the mound to become detached, thereby posing serious risks to the safety of local residents. Consequently, with the decision of the Cultural Heritage Administration of Hamadan Province and the formal approval of the Institute of Cultural and Archaeological Research (ICAR), it was determined that the site would undergo salvage excavation in the detached part (the purpose of salvage in these parts was, in effect, to mitigate documented hazards). Accordingly, it was decided that the fieldwork team would, while mitigating hazards in this part of the site, establish stratigraphic and study trenches using scaffolding; to achieve this, scaffolding without buttresses or locking mechanisms was erected to a height of 12 meters, representing an extremely difficult and hazardous operation adjacent to the aforementioned part, in order to identify the stratigraphic sequence of these areas and ultimately mitigate hazards to a specified height.

Geological location and Enverormental Condition

Malayer is located in the southern part of Hamadan Province. The Samen district lies to the southwest of the city of Malayer, within which the studied site is situated. This district is bounded to the north by the city of Malayer, to the south by Lurestan Province (including the Sefid-kuh heights) and Borujerd County, to the east by the Zand and Central districts, and to the west by Nahavand County. The Samen district has a lowland and piedmont setting and is, in terms of climate, classified as mountainous. Among the most important water resources of this region are seasonal rivers, springs, and a number of dug qanats. Samen is located on the communication route between Malayer and Borujerd, and between Malayer and Nahavand (Khaksar, 2008). Tepe Anouj is located in a village of the same name, approximately 40 km from the city of Malayer and 25 km south of the Samen plain, adjacent to the communication road connecting Nahavand to Malayer and Borujerd. The village is bounded to the north by the Samen plain and to the south by the Sefid-kuh heights. Tepe Anouj, with its circular base, is situated at 34°06’28.6” N latitude and 48°34’03.2” E longitude, on the eastern edge of Anouj village (Figs 1, 2). The mound rises 21 m above the surrounding ground level, measures 110 m in length and 93 m in width and covers an area of approximately 10,230 m². A considerable portion of this mound has been levelled as a result of residential construction, and at present, houses surround the mound on all sides (Hemati Azandaryani, 2018: 19) (Figs 3, 4).

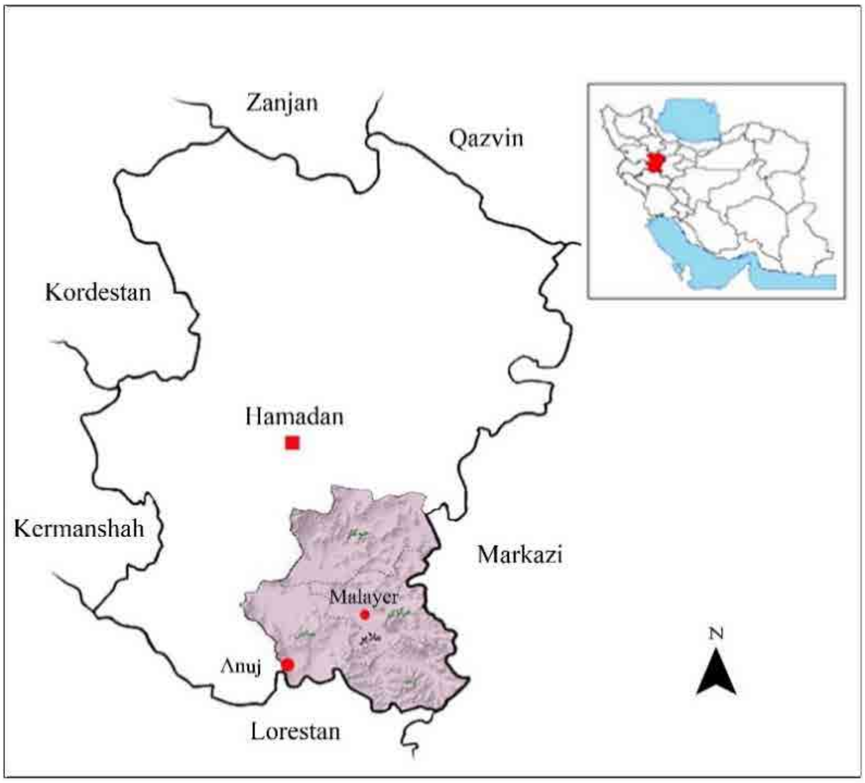

Fig. 1: Location of Tepe Anouj in Malayer, Hamadan Province (Authors, 2025). ▶

Fig. 2: Location of the rock-cut structure of Anouj near the ancient mound of Qaleh Bolandeh, Anouj (Google Earth, 2018). ▶

◀ **Fig. 3: General view of Tepe Anouj (Hemati Azandaryani, 2018: 21).**

◀ **Fig. 4: The main core zone of Tepe Anouj (Authors, 2024).**

Aechaeological Findings

At Tepe Anouj, salvage excavation was conducted to mitigate the potential hazard posed by detached deposits on the northern side of the mound. For this reason, and in order to obtain maximum information from the detached part of the mound, stratigraphic excavation was carried out through section drawing and systematic data recording. The excavation was undertaken in two parts: Trenches A and B. Their stratigraphy revealed the Middle and Late Chalcolithic, the Early Bronze Age (Yanik tradition), and the Middle and Late Bronze Age (Godin III tradition). Since the total height of the mound is 21 m and the excavated part reached a lesser depth, encompassing only the prehistoric layers of the site, the research continued with a surface survey of the mound, through which layers from the historical periods—including Median (Iron Age III), Parthian, and the Middle and Late Islamic centuries—were identified (Hemati Azandaryani, 2018).

Tepe Anouj was excavated for two main reasons:

1) To mitigate the risk of collapse in the detached parts (A and B) from the main core of the mound on its northern and northeastern sides;

2) For research purposes, to understand the stratigraphic sequence in this area and to determine the chronological evidence of the mound based on the data obtained, supplemented by existing surface survey data.

Stratigraphic Excavtion

On the northern side of Tepe Anouj, to obtain the maximum possible information from the unstable and hazardous portion, scaffolding was erected at the location designated for the stratigraphic section before fieldwork commenced. In the two detached areas on the northeastern side of the main mound, two stratigraphic sections were established: Trench A in the detached northern part and Trench B in the detached northeastern part. Part A is situated in the northern area of the site at a height of 1050 cm above the surrounding ground level. There, with the aim of establishing a section and investigating the stratigraphic sequence, 17 loci of various kinds were identified. Part B is located on the western side of the mound. This part stood at a height of 750 cm above the surrounding ground level, and based on the condition of the layers, a total of 13 loci were identified. Furthermore, due to the difference in height between the overall mound (21 m) and the detached areas (Part A: 10.5 m; Part B: 7.5 m), a surface survey of the site was also conducted. Cultural data and evidence belonging to periods including the Median (Iron Age III), the Parthian, and the Islamic periods were identified on the surface of the site (Hemati Azandaryani, 2018: 28, 68). Although such surface evidence alone cannot indicate the thickness, continuity, or quality of occupation in any given period, it certainly attests to the presence of human activity within the site during these eras. This finding further underscores the significance of the site and the necessity of systematic stratigraphic excavation in the elevated, undisturbed core of the mound to clarify the complete occupational sequence and to assess the quality of occupation in each period.

Stratigraphic section of Part A (Trench A)

Trench A was excavated in a detached portion of Tepe Anouj, situated on its northern and northeastern sides. A section measuring 1 m in width and 10–15 cm in depth was established in this part (the section was limited to a width of 1 m because the maximum width of the remaining deposits at the highest point was 1 m; moreover, a large rounded boulder with a diameter of 70 cm and weighing over 200 kg posed a safety risk to the excavation team, as further impact and disturbance during section cutting could have dislodged it). This part, rising to a height of 10.5 m above the surrounding ground level, presents a vertical stratigraphic sequence to a comparable depth. The recording of 17 loci in this section reveals a continuous, multi-phase picture of occupation and transformation at the site (Figs. 5, 6). The upper layers, consisting of thick mudbrick collapse and cultural deposits containing brick fragments and coarse pottery sherds, likely reflect phases of rapid destruction and accumulation during later occupational phases. In the middle of the section, architectural evidence, including stone-lined structures and compact clay floors, indicates periods of stable and organized occupation. Furthermore, repeated layers of ash and burnt soil throughout the sequence attest to continuous fire-related activities. Toward the lower layers, the density and richness of cultural finds, such as pottery and bone, increase, indicating more intensive human activity in the earlier periods (Table 1). The chronological sequence identified in this section, from top to bottom, includes the Middle and Late Bronze Age, the Early Bronze Age, and the Late and Middle Chalcolithic periods (Hemati Azandaryani, 2018: 28–50).

◀ **Fig. 5: Trench A: Stratigraphy in the part detached from the northern part of Tepe Anouj (Hemati Azandaryani, 2018: 51).**

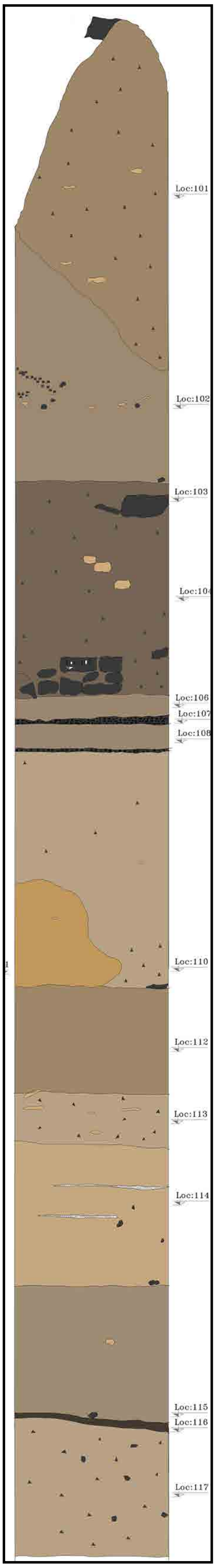

Fig. 6: Stratigraphic section wall of the detached Part A (Hemati Azandaryani, 2018: 54). ▶

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       [101] Mud-brick Debris (Latest)
            |
       [102] Cultural Deposit
            |
       [103] Natural Accumulation
            |
       [104] Mud-brick Debris
           / \
          /   \
     [105] Stone Structure (Wall/Foundation)   [106] Compact Clay Mass (Secondary Floor)
          |           |
          |       [107] Ash Residue
          |           |
          |       [108] Compact Clay Mass (Probably Main Floor)
          |           |
          |       [109] Ash Layer
          |           |
          --------------[110] Natural Accumulation
                     / \
                    /   \
           [111] Mud-brick Debris [112] Natural Accumulation
                    |          |
                    |      [113] Cultural Accumulation
                    |          |
                    |      [114] Cultural Accumulation
                    |          |
                    |      [115] Natural Accumulation
                    |          |
                    |      [116] Cultural Accumulation
                    |          |
                    --------------[117] Cultural Deposit (Earliest)
```

◄ Table 1: Stratigraphic matrix of the detached Part A (Authors, 2025).

Stratigraphic section of Part B (Trench B)

This part is located on the western side of Tepe Anouj, adjacent to the road leading to the qanat. The section established in this part, like Trench A, was cut to a width of 1 m and a depth of 10–15 cm owing to potential safety hazards, the risk of collapse, and the loose consistency of the layers in this area. This part stood at a height of 750 cm above the surrounding ground level, and a total of 13 loci were identified (Figs. 7, 8). The loci in this section consisted primarily of sediment, small stone fragments, pottery sherds, particles of ash and lime, as well as debris from mudbrick collapse. Few pottery finds were recovered from this section, and most of the sherds belong to the Middle and Late Bronze Age. These pottery finds have been typed and analyzed.

Surface Survey of the Site

Following the stratigraphic work in the detached parts A and B, a surface survey of Tepe Anouj was also conducted to study the chronology of the site. This survey was carried out across the site with the aim of supplementing stratigraphic data and identifying the occupational periods. Based on the pottery evidence collected from the surface, the presence

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Fig. 7: Ternch B: Stratigraphy in the part detached from the main mound (Hemati Azandaryani, 2018: 88). ▶

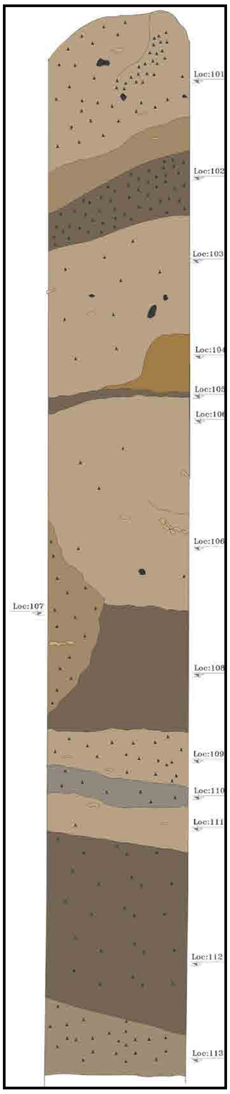


Fig. 8: Stratigraphic section wall of the detached Part B (Hemati Azandaryani, 2018: 90). ▶

Table 2: Stratigraphic matrix of the detached Part B (Authors, 2025).

```
                 [101] Natural Accumulation (Latest)
                     |
                 [102] Colluvial/Debris Accumulation (Wall collapse)
                     |
                 [103] Natural Accumulation
                     / \
                    /   \
             [104] Mud-brick Debris [106] Mud-brick Debris (Main)
              |       |        | \
              |       |        |  \
[105] Ash Layer |      |   \
                |      |    \
                |      |    [107] Filled Pit (Cut Feature)
                |      |     /         \
                |      |    /           \
                |      |   /             \
                |      |  /               \
                ---------[108] Ash Layer---------
                       |
                  [109] Natural Accumulation
                       |
                  [110] Cultural Accumulation
                       |
                  [111] Natural Accumulation
                       |
                  [112] Natural Accumulation
                       |
                  [113] Natural Accumulation (Earliest)
```

of communities from the Middle Chalcolithic to the Late Islamic period (Safavid and Qajar) was revealed. The surface pottery evidence indicates the presence of cultural materials dating to the first millennium BC (Median/Iron Age III), the Parthian period, as well as the Late Islamic periods (Safavid and Qajar). Although these finds alone are not sufficient to demonstrate continuous occupation throughout all these periods, the scattered yet diverse presence of pottery from each period across the site raises the possibility of continued human activity—whether in the form of settlement, environmental exploitation, or even ritual use—during the aforementioned timeframes. Determining the precise nature of these activities (residential, funerary, industrial, etc.) will require systematic excavations and stratigraphic investigations in the future.

Pottery Evidence from the in-situ and Surface Context

Stratigraphic Pottery Finds

Among the most significant archaeological data obtained from the stratigraphic context at Tepe Anouj are the various pottery finds from different cultural periods. In the following sections, these pottery finds from each excavation trench will be analyzed and categorized separately (It should be noted that the salvage excavation and hazard mitigation at Tepe Anouj were very different from a conventional stratigraphic excavation. There was a constant risk of collapse from the very loose layers and of resulting debris from the upper part. Consequently, it was not possible for the excavation team to record non-diagnostic pottery data, given the constant danger of debris collapse and the opening of joints without locking mechanisms on the scaffolding at a height of 12 meters. The information presented here is therefore based on diagnostic pottery sherds.

Trench A (The detached northern part)
Middle Bronze Age (Godin III)

The Middle Bronze Age pottery at Tepe Anouj (predominantly from Locus 107 and 108) is characterized by a buff-colored paste with mineral temper. The surface bear a thin buff slip. The pottery of this period was wheel-made and well-fired. Most sherds feature geometric decorations in dark brown, including horizontal, diagonal, and wavy lines, as well as shark-tooth (flame) motifs. A point of interest regarding Tepe Anouj is its location adjacent to the Silakhor Plain of Borujerd, near the Garin Mountains of Nahavand—an important center for the production of Godin III painted pottery, attributed to the Middle and Late Bronze age. This pottery type can be identified as a continuous cultural phenomenon throughout this region. The most common vessel forms of this period include angle-necked pots and jars with rounded profiles, as well as hemispherical bowls. The pottery recovered from this period is comparable to Levels III:6 and III:5 at Godin Tepe (Henrickson, 1984: 385; 1987) (Fig. 9).

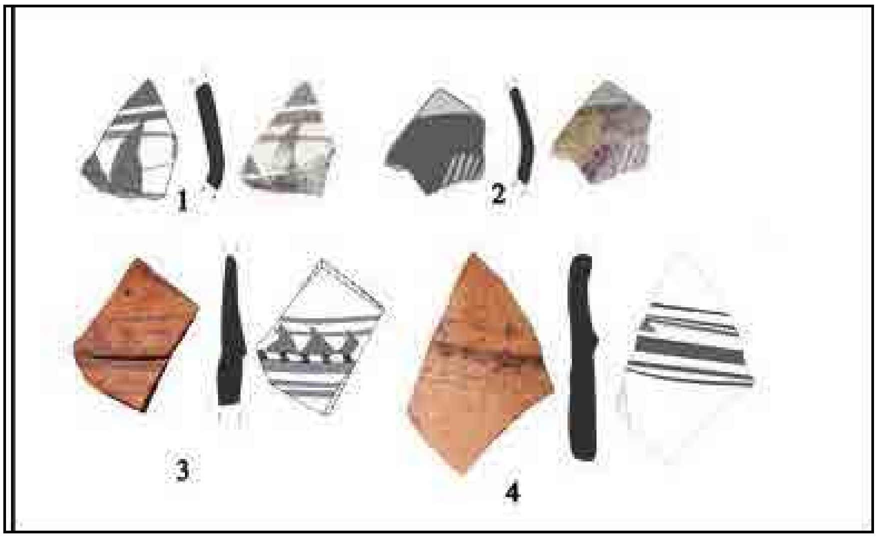


Fig. 9: Middle and Late Bronze age (Godin III) potsherds recovered from Trench A and comparative samples (Authors, 2025). ▶

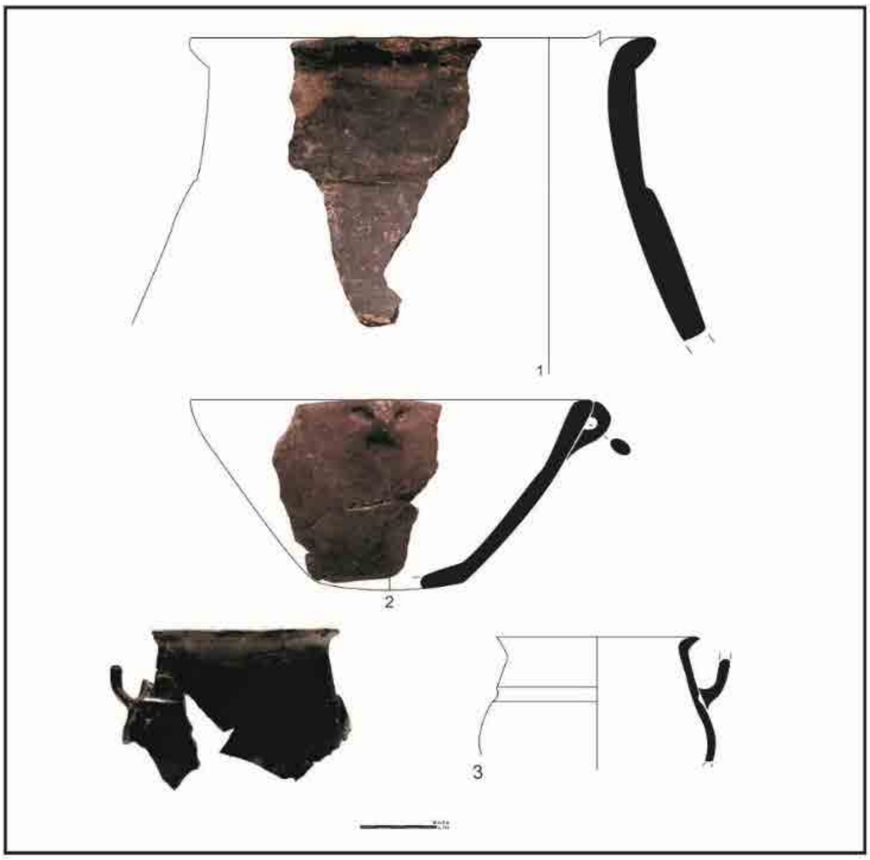
Early Bronze Age (Yanik/Godin IV tradition)

The pottery sherds from this period consist predominantly of grey-black wares. Three diagnostic sherds of this type (Locus 111) were recovered during the excavation, all of which are plain and lack incised decoration. One example takes the form of a diagnostic Early Bronze Age (Yanik cultural tradition) sherd bearing a Nakhchivan handle. Comparable examples of these sherds have been reported from Level IV at Godin Tepe (Young, 1969: 75; Young & Levine, 1974: 85), Gourab Tepe in Malayer (Khaksar, 2006: 125, 202; Khaksar et al., 2014: 57), and Baba Kamal Tepe in Tuyserkan (Mohamadifar & Hemati Azandaryani, 2021). The forms of this pottery type include:

1) Jars with a cylindrical and relatively elongated neck, with a convex shoulder profile;

2) Bowls with an open mouth and a vertical loop handle (known as a Nakhchivan handle);

3) Carinated goblets with a loop handle at the junction of the body and rim (Fig. 10).



◀ **Fig. 10: Early Bronze Age (Yanik/Godin IV) potsherds recovered from Trench A and comparative samples (Authors, 2025).**

Late Chalcolithic Period

Ceramic finds from the Late Chalcolithic period (corresponding to Godin

VII and VI) were recovered in limited quantities from the excavation at Tepe Anouj (mostly from Locus 114). All potteries from this period are handmade. Typologically, diagnostic forms of Godin VII include hemispherical bowls with vertical walls and inverted rims, while Godin VI types appear mainly as open-mouthed bowls and spherical jugs with sloping shoulders, comparable to known examples from Godin Tepe and Tepe A, E, and F at Seh Gabi (Young, 1969: 65, 67; Young & Levine, 1974: 12). The pottery of this period at Tepe Anouj can be classified into two main groups according to slip type (it should be noted that these sherds are plain and handmade, lacking the refinement of wheel-made pottery and polychrome geometric designs. This pottery type bears the closest resemblance to Godin VI and VII ceramics):

1- Pottery with a thick red slip (diagnostic of Godin VII);

2- Pottery with buff-painted paste (diagnostic of Godin VI) (Fig. 11).

Several potsherds (coarse ware with plant temper) with curved rims were recovered from the site. These resemble primitive and proto-types of bevelled-rim bowls and are typologically comparable to early examples of bevelled-rim bowls from Godin Tepe (Young, 1969: 71; Gopnik & Rothman, 2011: 107) (Fig. 12).

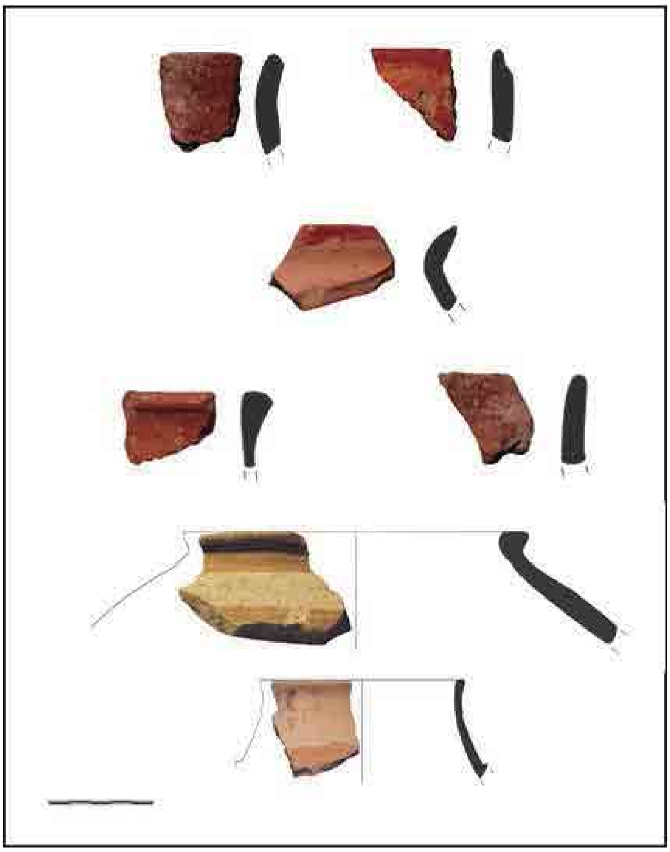
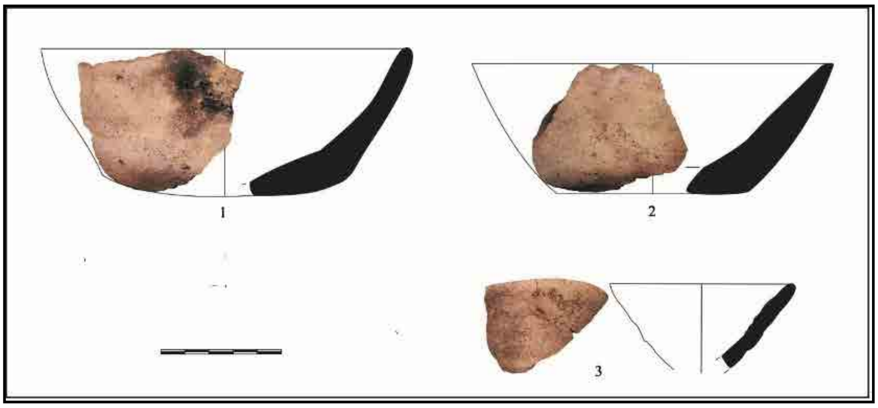


Fig. 11: Late Chalcolithic potsherds recovered from Tepe Anouj, Trench A, and comparative examples (Authors, 2025).▶

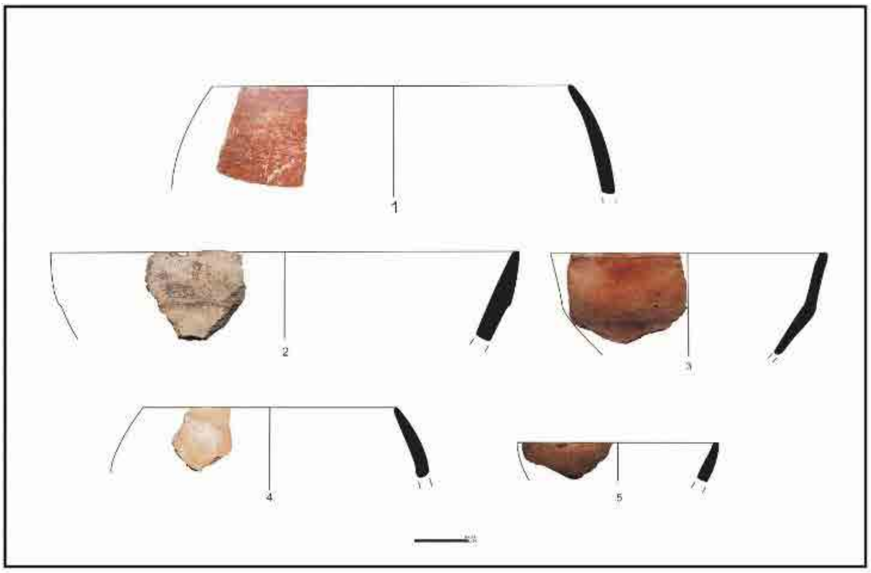


◀ **Fig. 12: Pottery types (similar to bevelled-rim bowls?) recovered from Tepe Anouj, Trench A, and comparative examples (Authors, 2025).**

Middle Chalcolithic Period

Pottery from the Middle Chalcolithic period at Tepe Anouj was recovered from the lower layers of Trench A (particularly Locus 116). This pottery is characterized by handmade manufacture, organic temper (straw), medium to coarse texture, and medium wall thickness. The paste color ranges predominantly from reddish-buff to red-brown. The surfaces are generally devoid of painted or incised decoration and are finished with a thick slip and burnished surface. This pottery bears the closest resemblance to plain Dalma ceramics from various sites in the eastern Central Zagros, and no examples of impressed or painted Dalma pottery were found in this excavated area.

Typologically, diagnostic forms of this period include open-mouthed pots and hemispherical bowls, which are comparable to examples reported from Period B sites at Tepe Seh Gabi and Siahbid (Henrickson, 1983: 240, 371, 375) (Fig. 13).



◀ **Fig. 13: Middle Chalcolithic (Dalma) pottery recovered from Trench A at Tepe Anouj and comparative samples (Authors, 2025).**

Trench B (The detached northeast part)
Middle Bronze Age (Godin III)

Pottery from this period was recovered from the stratigraphic context of Trench B (Locus 105). It has a buff-colored paste with mineral temper. The pottery was wheel-made and well-fired. The sherds of this type recovered from Trench B are predominantly plain and devoid of decoration. However, examples of geometric designs in brown have also been observed among them. Typologically, this pottery is comparable to materials from Phase 6 of Godin Tepe Period III (Henrickson, 1984: 448; Young & Levine, 1974: 99) (Fig. 14).

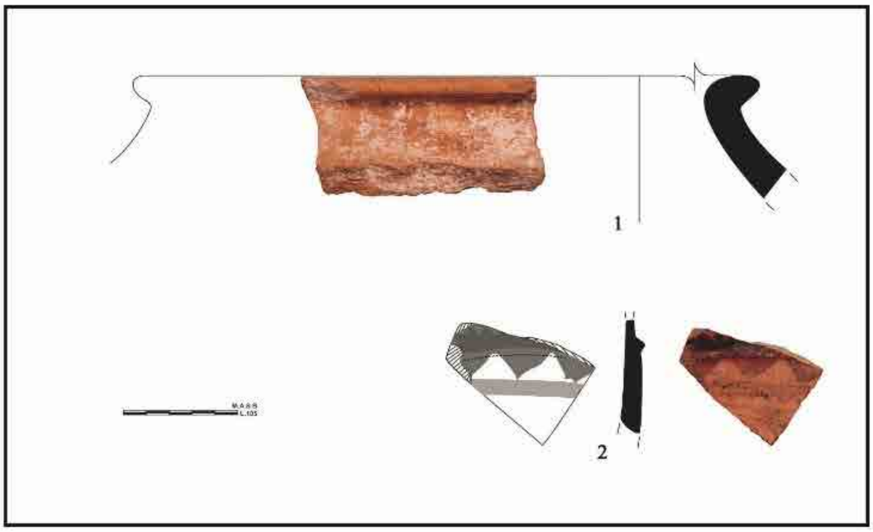


Fig. 14: Middle Bronze period pottery sherds recovered from Tepe Anouj, Trench B, and comparative samples (Authors, 2025). ▶

Pottery Finds from the Surface Survey

Subsequently, a systematic surface survey of the site and selective sampling of features and pottery scatters yielded evidence from historical periods, including Iron Age III (probably Median), the Parthian period, and the Late Islamic period. In the following sections, the pottery recovered from these periods is examined, categorized, and compared.

Median period (Iron Age III)

Broadly speaking, the Iron Age can be examined as a period in which a ceramic uniformity exists across the western regions of Iran. Based on archaeological surveys, the number of ancient sites dating to Iron Age III in western Iran shows a relative increase compared to earlier periods (Faraji Cheshmeh Zangi, 2013: 57). Iron Age pottery at Tepe Anouj was identified during the surface survey in the southern part of the mound, adjacent to the area of illegal excavation (at the entrance to this area, mudbricks comparable in dimensions to those of the Median period were observed, leading to underground spaces located beneath the surface of the mound. These spaces appear to have been created in the late Islamic period, possibly the Qajar period, and, through 3D laser scanning, it was determined that they were connected to a watchtower located on the southwestern surface of the mound; these spaces are completely separated from the rock-cut architectural complex of Anouj). The Median or Iron Age III finds consist of plain buff pottery. The paste of these sherds ranges from buff to orange to brick-red with sand and grit temper. The sherds are well-fired and are wheel-made. In terms of texture, they fall into the category of coarse wares. The general forms include simple bowls with slightly everted (S-shaped) rims, small cups with a convex inward mouth and convex body lacking handles (Nagshineh, 2012: 106), as well as carinated vessels with simple rims (Vahid Dastjerdi, 2015: 114). The pottery samples recovered from this period at Tepe Anouj are comparable to the examples from Godin II (Gopnik, 2011: 360, 358, 318; Young, 1969: 121, 42), Baba Jan I (Goff, 1985: 19, 15), Baba Kamal (Mohamadifar & Hemati Azandaryani, 2021: 65), Haji Khan Temple (Hemati Azandaryani *et al,* 2022) and the Iron Age III sites of Jakhroman and Qaleh Kohneh Khaneqah in Sonqor county (Heydarian, 2008: 1144, 1194) (Fig. 15).

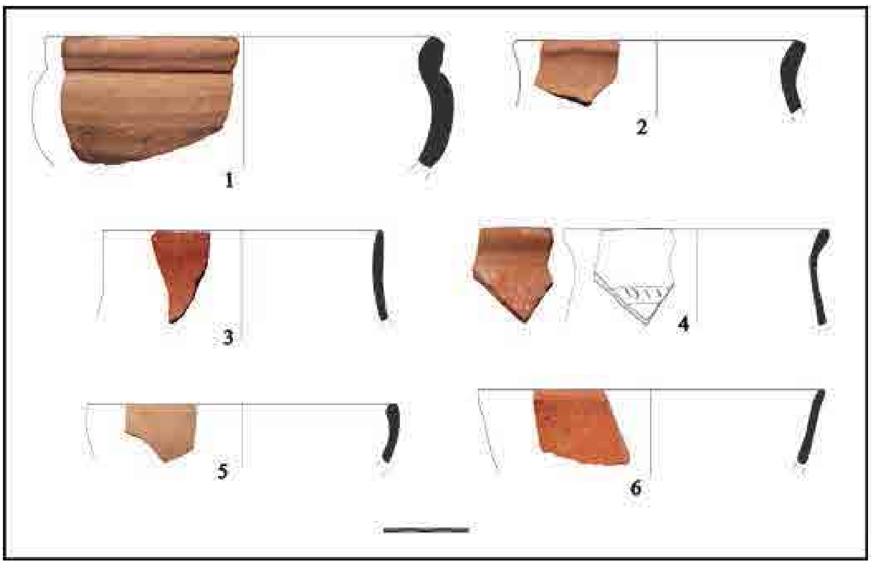


Fig. 15: The Median (Iron Age III) potsherds recovered from Tepe Anouj and comparative samples (Authors, 2025).

Parthian Period

The sherds of this period at Tepe Anouj can be classified in two groups: simple and painted pottery.

Plain Pottery

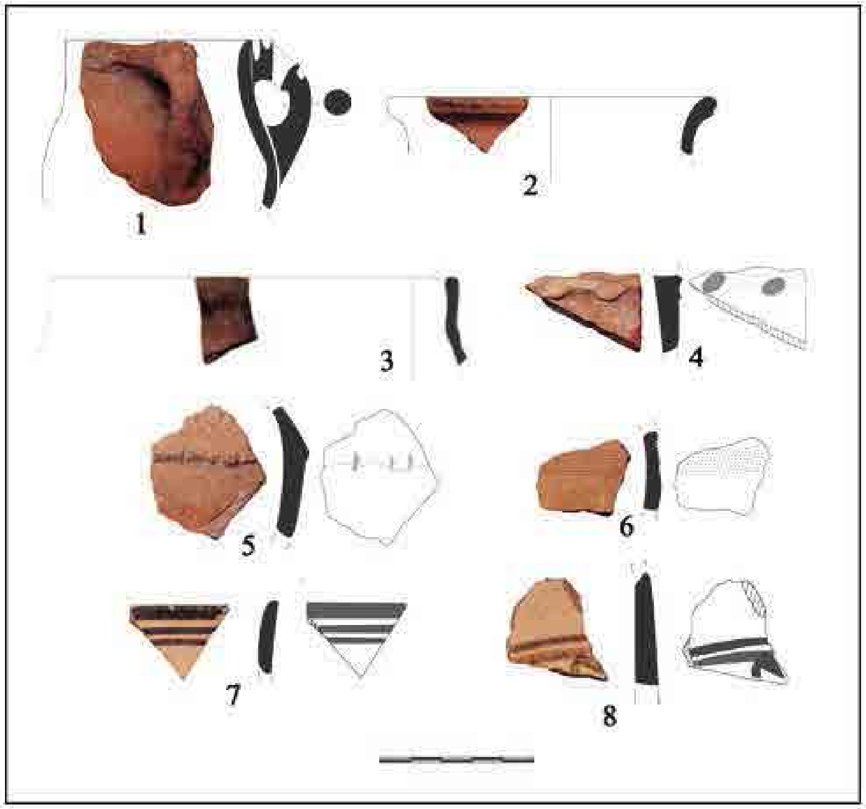
The plain wares range predominantly in color from buff to light brown to light red. Most of these sherds have clay paste and slip with mineral temper ranging from fine- to coarse-grained particles. The majority of the sherds are wheel-made and exhibit regular, uniform shapes. In general, most vessels were intended for everyday use. The plain wares of the site can be classified into two classes based on decoration:

a. This class consists mainly of storage jars. On these sherds, decoration in the form of applied clay coils was added to the vessel body after forming. These bands form interconnected chains, also known as "rope" decoration, which are wrapped horizontally around the vessels. On these bands, additional decorations such as finger-impressed marks and incised vertical and diagonal lines have been executed. Similar pottery has been reported from Qaleh Yazdigird (Keall, 1981: Fig. 25: 14), the Laodicea Temple in Nahavand (Rahbar et al., 2014: 319), the Sang-e Shir site in Hamadan (Afshari & Nagshineh, 2014: 118), and Hegmataneh (Azarnoush et al., 2016: 127). Storage jars and pottery bearing such decoration fall into the category of medium to coarse wares. Other forms of plain ware include jars that typically have a single handle attached at one side to the neck or rim and at the other side to the body. Comparable examples of this pottery type have been recovered from excavations at Qaleh Yazdigird (Khosrowzadeh et al., 2020: 136) (Fig. 16: 1–4).

b. The pottery of this group features incised decoration and applied geometric motifs. The incised decoration consists of straight and parallel lines, or wavy and diagonal lines, executed in one or multiple lines on the pottery. All incised motifs and lines are located on the shoulder or neck of the vessels. These sherds are wheel-made and adequately fired. The predominant colors are buff and brown. Comparable examples of this type have been observed at Qaleh Yazdigird (Khosrowzadeh et al., 2020: 136), the Sang-e Shir site in Hamadan (Afshari & Nagshineh, 2014: 120, 124), and Hegmataneh (Azarnoush et al., 2013: 182) (Fig. 16: 5, 6).

Painted Ware

The production of painted pottery in western Iran first appeared in the Early Parthian period and continued into the Middle Parthian period (Haerinck, 1997: 115). This pottery type was wheel-made and well-fired. Its paste is fine and mineral-tempered, with colors ranging from buff to pinkish-buff to orange and brown. The painted decoration on this pottery type was executed on the exterior surface of narrow-mouthed vessels and on the interior surface of open-mouthed vessels. The color of the motifs ranges from red to brown to orange. The shapes and forms of the vessels mainly include small cups, bowls, and plates. The most important decorations on the painted pottery of Tepe Anouj are geometric motifs, executed as single or multiple horizontal parallel lines, as well as wavy and diagonal lines. The Parthian painted pottery samples from Tepe Anouj are comparable to samples recovered from the Laodicea Temple in Nahavand (Rahbar et al., 2014: 317) and Hegmataneh (Azarnoush et al., 2016: 127, Fig. 2) (Fig. 16: 7, 8).



◀ **Fig. 16: Typical Parthian pottery sherds and comparative examples (Authors, 2025).**

Islamic Period

The Islamic period pottery of Tepe Anouj, recovered from the surface survey of the site, is divided into two groups: unglazed and glazed, each of which is described below. The pottery recovered from the Ilkhanid period at the site consists of simple monochrome glazed wares and underglaze painted wares. These ceramic types are examined in the following sections.

Plain Monochrome, Turquoise-Glazed Ware

This pottery type takes the form of bowls with angular bodies, tall circular concave bases, and flat T-shaped rims. It is comparable to the bowl examples widely produced in Sultanabad during the 13–14th centuries CE (Karimi & Kiani, 1985: 42), and similar to examples recovered from the rock-cut structures of Samen, Arzanfoud, and Tepe Hegmataneh (Hemati

Azandaryani et al., 2017: 195; Hemati Azandaryani & Khaksar, 2022: 178; Ranjbaran, 2012: 475, 493) (Fig. 17: 4, 5).

Monochrome Ultramarine-Blue Glazed Ware

This group of pottery has been recovered from most Islamic sites in various Islamic periods, especially the Middle and Late Islamic centuries. These sherds, in shades of ultramarine blue, have been found at Tepe Anouj. In terms of form, they resemble bowls and small cooking pots. Comparable examples of this pottery type include wares from Samen (Hemati Azandaryani et al., 2017: 195), Takht-e Soleyman (Haddon, 2011: 98), Zino-Abad in Bahar city (Mohammadi & Shabani, 2016: 144), and Arzanfoud (Hemati Azandaryani & Khaksar, 2022: 177) (Fig. 17: 2, 3).

Under painted Glazed Ware

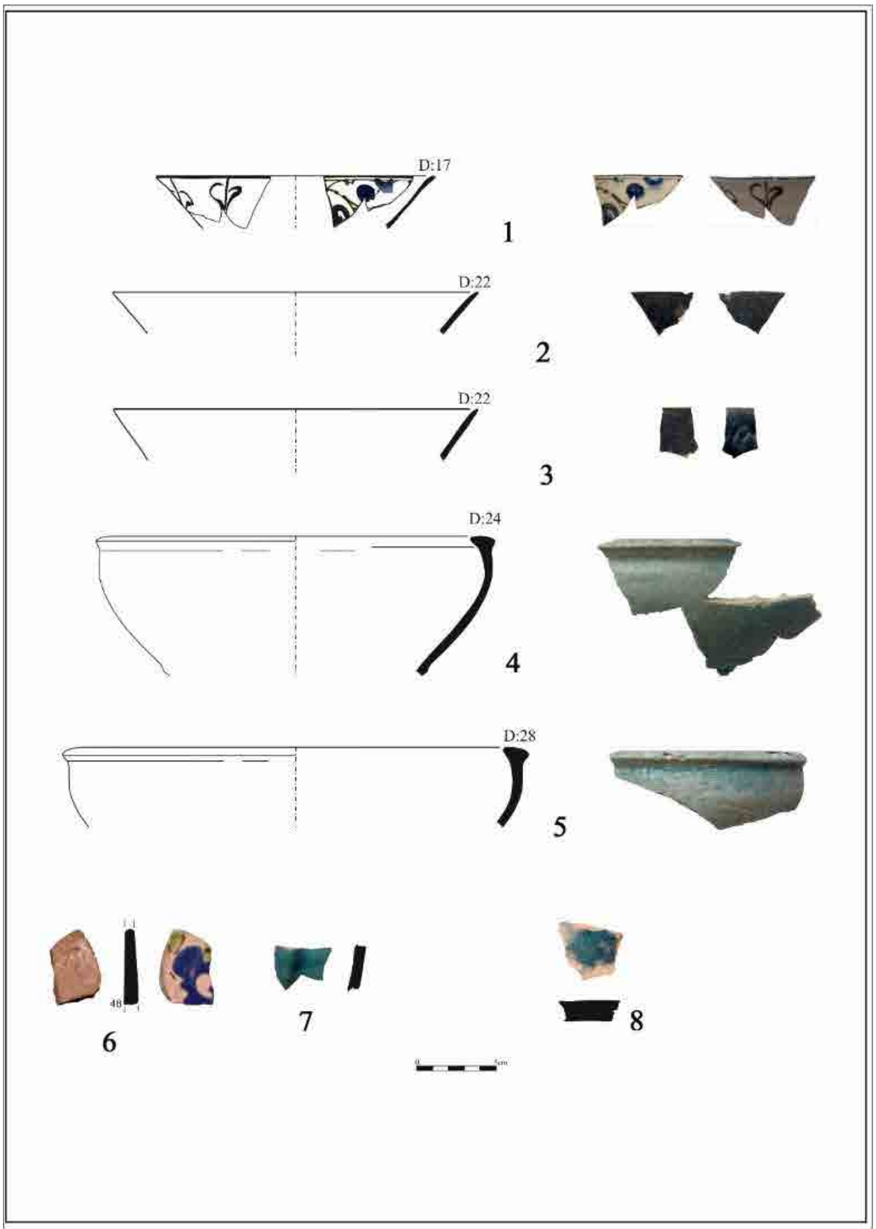
This group of pottery features black designs on a turquoise background. In this type, the vessel body is made of a stone-paste (fritware) with a semi-coarse and porous texture. The black motifs are painted directly onto the vessel body. The pottery is then covered with a transparent turquoise glaze (Zarei et al., 2014: 87). The vessel forms recovered from the surveys at Tepe Anouj are bowls with geometric designs, which are comparable to examples from Sultanabad (Karimi & Kiani, 1985: 42), the rock-cut structure of Samen (Hemati Azandaryani et al., 2017: 198), Zino-Abad in Bahar (Mohammadi & Shabani, 2016: 145), Bisotun Bridge (Khanmoradi, 2022: 236, Fig. 5: 31–33), and Arzanfoud (Hemati Azandaryani & Khaksar, 2022: 182) (Fig. 17: 7, 8).

Blue-and-White pottery

Blue-and-white ware began to develop and spread from the 13th–14th centuries CE, coinciding with the Illkhanid period, and reached its peak of prosperity and distribution during the Safavid period. The forms of this pottery type are diverse, with large plates, storage jars, jars, bottles, ewers, small cups, and large bowls being among the most common forms (Karimi & Kiani, 1985: 65). Limited examples of this pottery type have been found at Tepe Anouj. The examples have a stone-paste (fritware) body. These sherds feature geometric designs in blue under a transparent glaze, covered with a milky slip on the surface. They are comparable to examples from Samen (Hemati Azandaryani et al., 2017: 198), Zino-Abad in Bahar (Mohammadi & Shabani, 2016: 145), and Arzanfoud (Hemati Azandaryani & Khaksar, 2022: 184) (Fig. 17: 7, 8).

Qajar Blue-and-White pottery

Blue-and-white wares continued into the Qajar period, albeit with some fluctuations. Part of the blue-and-white production of this period continues the decorative traditions of the Safavid period. In this period, we see the combination of the blue-and-white technique alongside one or two other colors. Alongside white and blue, colors such as pale brown, green, pink, and pale lemon yellow were used (Khanian, 2017: 34–35). Sherds belonging to this period were recovered during surface surveys at Tepe Anouj (Fig. 17: 6).



◀ **Fig. 17: Middle and Late Islamic period pottery sherds recovered from Tepe Anouj and comparative samples (Authors, 2025).**

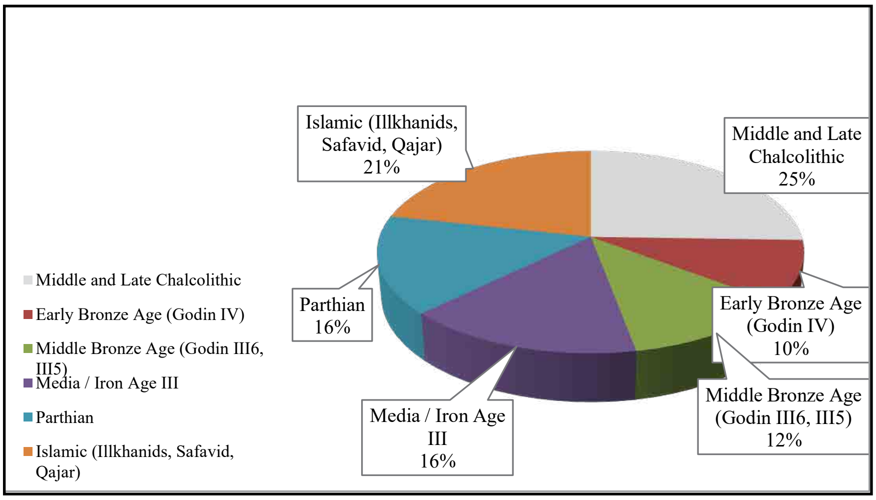
Discussion

The fieldwork at Tepe Anouj focused on two parts detached from the main core zone of the mound (Parts A and B). The primary objective was to mitigate the risk of collapse, which allowed not only for the resolution of potential hazards caused by falling debris and loose layers detached from the main core of the mound but also for stratigraphic study. As a result of this excavation, cultural remains from three prehistoric periods were identified at the site: the Middle and Late Chalcolithic, the Early Bronze Age, and the Middle and Late Bronze Age. The excavation revealed that the earliest attested occupation in the stratigraphic trenches of Tepe Anouj began in the Middle Chalcolithic period (it should be noted that if future archaeological excavations are conducted at depths below the level of the surrounding ground, earlier layers may also be identified). Given that the height of the main core zone of the mound is 21 m above the surrounding ground level, while the highest excavated part reached only 10.5 m, the Iron Age, historical, and Islamic layers were not recovered through excavation. For this reason, a surface survey of the mound was also conducted to complete the chronology of the site (Hemati Azandaryani, 2018). From the surface survey, evidence of the Median period (Iron Age III), the Parthian period, and the Middle and Late Islamic periods was identified. Accordingly, based on the results of the analysis of the cultural data obtained from both the excavation and the surface survey, the following chronology is proposed for this mound (Table 3).

Table 3: Classification and periodization of the contexts at Tepe Anouj (Authors, 2025). ▶

Period	Stratigraphy / Surface Survey
Islamic (Illkhanids, Safavid, Qajar)	Surface survey
Parthian	Surface survey
Median / Iron Age III	Surface survey
Middle Bronze Age (Godin III6, III5)	Stratigraphy
Early Bronze Age (Godin IV)	Stratigraphy
Middle and Late Chalcolithic	Stratigraphy

In the present research, the pottery sherds recovered from the excavation at Tepe Anouj in 2018 and the sherds collected from the surface survey of the site, conducted to complete the chronology, were selected as the statistical population of this study (Chart 1). First, these sherds were grouped based on technical characteristics (paste color, temper type, firing level, and slip type) and form. Subsequently, the results of this typology were compared with evidence from neighboring regions, and the typological relationships of the site's pottery with other areas were assessed. Accordingly, the degree of typological connection and ceramic similarity, as well as the chronology of Tepe Anouj, were suggested. Initially, the Chalcolithic period and its pottery were analyzed, leading to the identification of both the Middle and Late Chalcolithic periods based on ceramic evidence. The Middle Chalcolithic pottery sherds include Dalma types, while the Late Chalcolithic sherds consist predominantly of pottery with a thick red clay slip. The latter are mostly in the form of hemispherical bowls, open-mouthed bowls, and spherical jugs with everted rims. The pottery finds from this period are comparable to Dalma pottery samples from Tepe B at Seh Gabi, Godin VII and VI, and the pottery from Siahbid and Maran (Henrickson, 1983; Young & Levine, 1974).



◄ **Chart 1: Pie chart of the frequency of pottery sherds from the occupational periods of Tepe Anouj (Authors, 2025).**

In the subsequent layer of the excavation, pottery sherds from the Early Bronze Age belonging to the Yanik culture (referred to as Godin IV in the Central Zagros) were recovered. The pottery from this layer consists of grey, unburnished sherds that are plain and devoid of decorative motifs. The common vessel forms of this period at the site include jars with cylindrical necks, open-mouthed bowls with Nakhchivan lugs, and carinated goblets with loop handles. The Yanik culture data from the mound are comparable to Level IV at Godin Tepe in the Central Zagros (Levine & Young, 1974), Gourab Tepe on the Malayer Plain (Khaksar, 2006: 60; Khaksar et al., 2014: 57), Tepe Pisa (Mohamadifar & Motarjem, 2008), Qaleh Sarsakhti in Shazand (Shirzadeh, 2021: 54), Baba Kamal Tappeh in Tuyserkan (Mohamadifar & Hemati Azandaryani, 2021), and Yanik Tepe in northwestern Iran (Burney, 1961; 1962). Following this layer, evidence belonging to the Middle and Late Bronze Age (Godin III) was identified. This phase represents the latest layer recovered from the excavation of Parts A and B at Tepe Anouj. The pottery of this period at the site has a buff-colored surface slip. The pottery sherds from this layer are comparable to those from Godin Tepe, particularly Phases III:6 and III:5 at that site (Henrickson, 1984). In terms of form, the pottery vessels from this layer include angle-necked pots and jars with rounded profiles, as well as hemispherical bowls. Some of the pottery features dark brown motifs, including shark-tooth (flame) patterns, as well as horizontal, diagonal, and wavy lines. During the surface survey conducted following the salvage excavation of the site in 2018, evidence from Iron Age III, the Parthian period, and the Late Islamic period was identified. In this research, the pottery finds obtained from this survey have also been analyzed and studied. First, the pottery types of the Iron Age are discussed. During the surface survey of Tepe Anouj (and not from the stratigraphic excavation), mud-brick fragments measuring 42×24×12 cm were found. These are comparable in size to mud-bricks from the Median period, including those from Nush-i Jan (Stronach, 1978), Moush Tepe (Mohamadifar et al., 2015), Haji Khan Temple (Hemati Azandaryani et al., 2022), Baba Kamal Tappeh (Mohamadifar & Hemati Azandaryani, 2021), and Gunespan Tepe (Young, 1969; Naseri et al., 2016: 108). Furthermore, based on typological and comparative evidence with the Central Zagros region, the Median (Iron III) Period pottery recovered from Tepe Anouj dates to Iron Age III (800–550 BC). The main vessel forms of this period at the site include simple bowls with S-shaped profiles, small cups with convex inward-turning mouths, and carinated vessels. In form, these are comparable to examples from Godin Tepe Level II (Gopnik & Rothman, 2011: 358, 360), Baba Jan Level I (Goff, 1985: 15, 19), as well as surface surveys conducted in western Iran, including those in Sonqor city (Heydarian, 2006).

The next period for which evidence was identified from the surface survey of the site is the Parthian period. The pottery from this period at the site was found in two forms: plain ware and painted ware. The plain wares consist mainly of storage jars and single-handled jars, with decoration in the form of applied rope motifs and incised designs. Examples of this type from Tepe Anouj are comparable to sites such as Qaleh Yazdigird (Keall, 1981: 14, Fig. 25), the Laodicea Temple in Nahavand (Rahbar et al., 2014: 319), the Sang-e Shir site in Hamadan (Afshari & Nagshineh, 2014: 118), and Hegmataneh (Azarnoush *et al.,* 2016: 127). Painted pottery from the Parthian period has also been recovered from Tepe Anouj. The motifs on these sherds are predominantly horizontal lines, which are comparable to examples recovered from surveys in western Iran, such as those from Harsin in Kermanshah (Chehri *et al.,* 2016: 87).

Surface surveys of the site also indicate the presence of cultural materials from the Late Islamic periods (Ilkhanid, Safavid, and Qajar). Diagnostic examples include Ilkhanid glazed wares (with turquoise and ultramarine, blue glazes) as well as Safavid and Qajar blue-and-white wares. Within the framework of this research, these have been compared with diagnostic examples from neighboring sites (such as the rock-cut structures of Samen, Arzanfoud, Zino-Abad, and the Laodicea Temple) and relatively dated. Based on the pottery finds recovered from Tepe Anouj through the excavation of Trenches A and B as well as the surface survey of the site, it has been determined that the site was first occupied by human groups during the Middle Chalcolithic period and continued to be settled through the Middle and Late Islamic periods. According to the surface survey, the site was abandoned for a period following the Middle and Late Bronze Age and was reoccupied during Iron Age III. After this period, evidence from the Parthian, Ilkhanid, Safavid, and Qajar periods was found on the surface of the site, in chronological order.

The architectural finds from the site, including mudbricks with standardized dimensions comparable to Median period examples from other sites (Nush-i Jan Tepe, Godin Tepe, and Gunespan Tepe), indicate the observance of common structural patterns of that period and possibly shared architectural traditions in the region. Furthermore, the identification of compacted soil layers (with potential floor features), along with the distribution of charcoal particles and animal bone fragments, provides tangible evidence of settlement and subsistence activities at the site. These finds primarily reflect activities such as cooking, food processing, and domestic waste disposal within the settlement area. Given the evidence for initial occupation at Tepe Anouj from the Middle Chalcolithic period and the cultural similarities with Median period sites, it can be proposed that Tepe Anouj played an important role in the regional interaction network of western Iran. However, to determine the precise chronology and achieve a more comprehensive understanding of the subsistence economy and ancient environment, more extensive stratigraphic excavation in the main core of the mound, together with absolute dating (C14) on charcoal and bone samples, as well as specialized archaeobotanical studies (to reconstruct vegetation and agriculture) and zooarchaeological analyses (to examine patterns of hunting, animal husbandry, and the use of animal resources), appears essential. In summary, with its relatively continuous occupational sequence spanning the transitions from the Chalcolithic to the Median (Iron III Age), this site can be considered a key site for the study of cultural and settlement developments during this specific time frame in the region. Continued field and laboratory research focusing on these periods can significantly contribute to a better understanding of the position of Tepe Anouj within the archaeological framework of western Iran during the fifth to first millennia BC.

Conclusion

The results of the present research at Tepe Anouj have revealed a relatively extensive chronology of cultural and occupational periods at the site. The cultural sequence begins with the Middle Chalcolithic period (Dalma culture) and continues through the Late Chalcolithic (Godin VII–VI), the Early Bronze Age (Yanik/Godin IV), and the Middle Bronze Age (Godin III). This continuous sequence, obtained from the salvage excavation (hazard mitigation) in the detached portion of the northern and northeastern parts of the mound, demonstrates the pivotal role of this site in the developments of the fifth to second millennia BC in the region. Furthermore, surface surveys confirmed the presence of scattered cultural materials from Iron Age III (Median period), the Parthian period, and the Late Islamic periods (Ilkhanid to Qajar), indicating reoccupation or temporary settlement in the later historical periods following a probable occupational hiatus. Taken together, these findings reflect, on the one hand, the continuity of settlement and subsistence activities during the prehistoric periods and, on the other hand, highlight the strategic communicative position of Tepe Anouj within the cultural corridor of western Iran. However, methodological limitations arising from the nature of the salvage excavation mean that questions concerning absolute chronological precision, the process of internal site development, and the details of the subsistence economy must be addressed through future research. To complete our understanding of the site's significance, extensive stratigraphic excavation in the central core of the mound, absolute dating, and specialized interdisciplinary studies are recommended. In summary, Tepe Anouj, with its valuable sequence of cultural developments from the Chalcolithic to the Bronze Age, represents a key document for the chronology and archaeology of the Malayer region and the Central Zagros.

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Authors' Contribution

All authors contributed equally to this research.

Conflict of Interest

The authors, while adhering to publication ethics in citation and referencing, declare that there is no conflict of interest.

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۴۷ پژوهش‌های باستان‌شناسی ایران

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چکیده

تپه انوج (معروف به قلعه بلنده) در روستایی به‌همین نام از توابع شهرستان ملایر در استان همدان واقع شده است که از محوطه‌های شاخص بخش شرقی زاگرس‌مرکزی است. پژوهش‌های باستان‌شناختی در این تپه در سال ۱۳۹۷هـ.ش. انجام گرفت و منجر به شناسایی ادوار مختلف فرهنگی از دوران مس‌وسنگ میانی تا دوران میانی و متأخر اسلامی گردید؛ هرچند شواهدی از برخی دوره‌های میانی (مانند: عصر آهن I, II، دورهٔ هخامنشی، سلوکی، ساسانی و صدر اسلام) در این پژوهش به‌دست نیامد. برای گردآوری داده‌های فرهنگی، از فعالیت‌های میدانی نظیر کاوش و بررسی‌های باستان‌شناختی استفاده شد. هم‌چنین، اطلاعات لازم از طریق منابع کتابخانه‌ای و گزارش‌های موجود تکمیل گردید. درنهایت، فرهنگ‌های دوره‌های مختلف در محوطهٔ موردمطالعه، بررسی و تحلیل شدند. مهم‌ترین پرسش مطرح‌شده در راستای پژوهش حاضر بدین‌صورت است که توالی لایه‌های گاهنگاری در تپه انوج چگونه است و چه دوره‌هایی را دربر می‌گیرد؟ نتایج این پژوهش بیانگر آن است که شواهد استقرار و ادوار مختلف فرهنگی، ازجمله: دوره‌های مس‌وسنگ میانی و جدید، مفرغ قدیم (گودین IV)، مفرغ میانی و جدید (گودین III)، آهن III، اشکانی، ایلخانی، و قاجاریه در این محوطه شناسایی شده است. نتایج این پژوهش، نه‌تنها گاهنگاری استقرار در تپه انوج را روشن می‌سازد، بلکه یافته‌های این کاوش نشان می‌دهد که محوطهٔ انوج دارای پتانسیل بالایی برای مشارکت در درک بهتر تحولات فرهنگی منطقه است؛ چراکه شواهد استقراری ناپیوسته، اما طولانی مدتی را از دورهٔ پیش‌ازتاریخ تا دوران اسلامی در خود جای داده است.

کلیدواژگان: ملایر، تپه انوج، کاوش نجات‌بخشی، لایه‌نگاری، سفال، گونه‌شناسی.

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47 پژوهش‌های باستان‌شناسی ایران

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Reconsidering the Historical Trajectory of Old Dehdasht: Formation and Decline through the Lens of the Citadel's Archaeology

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Abstract

The citadel of a city is not only regarded as a defensive and governmental center, but it also narrates a significant part of the political, cultural, and social history of that city. Citadels, as symbols of authority, have always played an influential role in cultural and commercial interactions. Considering that one of the most important physical elements of historical cities is the citadel, which constitutes the ruling and administrative quarter, understanding the origins of urban formation and the role of cities in the political-administrative and social life of each region depends on recognizing this structural element. The historical analysis of the formation, prosperity, and decline of the old city of Dehdasht, along with the study of various architectural aspects and the significance of archaeological findings from its historical citadel, has made this research necessary. During the years 1399 and 1401 (2020 and 2022), two excavation and survey seasons were conducted at the historical citadel of Dehdasht with the aim of identifying its towers and fortifications. In addition to architectural remains, a very small number of potsherds from historical periods and various types of Islamic-period ceramics were discovered. The present study seeks to answer two questions concerning the history of the formation, prosperity, and collapse of the city and its citadel: 1. Based on historical written sources and comparison with archaeological findings, to which period does the historical citadel of Dehdasht -as the most important structural element of the city-belong, and what was the process of its formation, expansion, and destruction? 2. Based on archaeological findings from excavations in the citadel of Dehdasht, as well as the study of ancient texts, what were the cultural and economic interactions of the district (rustaq) of Baladshapur, centered on Dehdasht, in the Kuhgiluyeh region with other areas? The data collection method of this research is field-based and documentary, and the research approach is descriptive-analytical and historical-analytical. The study of architectural remains and archaeological findings, including ceramics, indicates that the historical citadel had been inhabited at least since the 4th century AH (10th century CE) and was rebuilt at least three times until the mid-Qajar period. Historical sources and archaeological evidence, such as ceramic finds, demonstrate that this city maintained transregional exchanges with various regions of Iran, including Isfahan, Mashhad, and Kerman, and even with distant countries such as China, India, and Europe.

Keywords: Old Urban Area of Dehdasht, Historical Citadel, Archaeological Excavation, Historical Texts.

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Introduction

The old city of Dehdasht stands as one of the relatively well-preserved historical urban fabrics of Iran from the Islamic period, located in southwestern Iran (Fig. 1). The physical layout of this city comprises mosques, bazaars, residential houses, bathhouses, funerary monuments, defensive structures such as watchtowers, fortification walls (bārū), and the citadel (arg), as well as alleys and passageways, each of which demands independent archaeological and architectural research for proper understanding. The Dehdasht citadel, measuring 150 m in length and 100 m in width (1.5 hectares), is situated on the eastern side of the old city (Fig. 2). Despite its paramount importance as the political and administrative center and as the locus of historical events of the Islamic period in the Kuhgiluyeh and Baladshapur regions (for further information on these events see: Shamlu, 1375/Vol. 1: 110–111; Eskandar Munshi, 2020/Vol. 1: 200; Siahpur, 2012; Rowshanfekr and Moʿini Rudbali, 2020; Zaki-pur, 2010), the citadel has received scant attention from researchers and has suffered significantly more damage compared to other historical structures of the city of Dehdasht. Undoubtedly, one of the most critical physical elements in the foundation and formation of cities during the historical and Islamic periods of Iran was the citadel and governmental fortress, serving as symbols of political and military power and as the administrative center of the city. Citadels, as defensive centers, played a pivotal role in protecting cities and their populations against internal and external invasions.

On the other hand, these citadels also served as centers of wealth and state treasuries, and a wide range of consumable and non-consumable goods, such as various types of ceramic and glass vessels, were utilized within them. Consequently, governmental citadels are considered important centers for studying various aspects of social, cultural, political, and even religious life. In view of such a position, excavation and study of the historical citadel of Dehdasht were undertaken. The presence of modern constructions built over the remains of the historical citadel of the old city of Dehdasht has caused damage to it. During the solar years 1399 and 1401 AHSh (2020 and 2022 CE), excavations were conducted in three sectors -the northern, western, and southern fronts of the Dehdasht citadel- in order to clarify the towers of the southwestern side and the fortification wall. These excavations were carried out with the objectives of protection and prevention of the expansion of urban infrastructure and the destruction of the remaining citadel remains, initiating precise identification of the architectural plan and its physical elements, and ultimately understanding the background of the formation of the Dehdasht citadel structure.

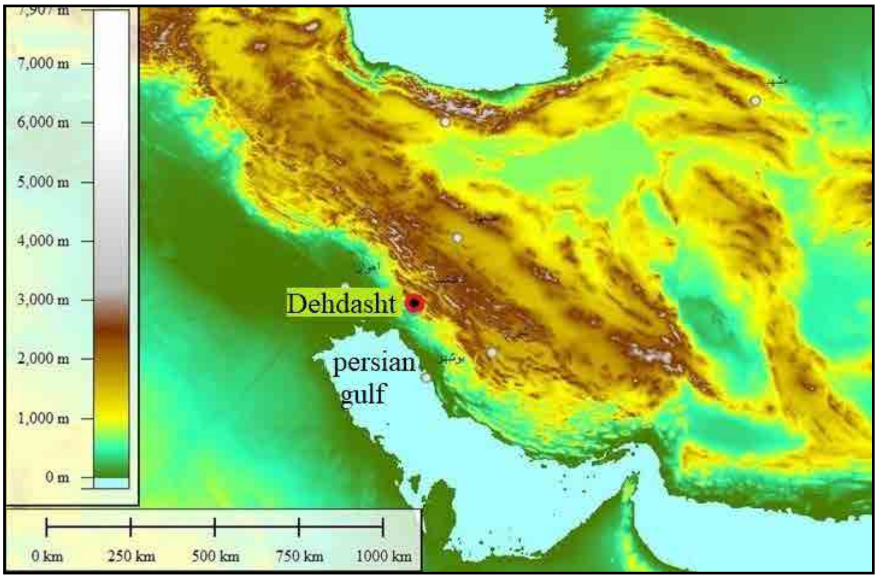
The following section presents the results of the study and analysis of archaeological findings, encompassing the architectural remains of the northwestern and southwestern towers and fortifications, alongside pottery recovered from various trench contexts during the two excavation seasons at the citadel. The objective is to understand the process of development and formation of this political-administrative and defensive physical element of the city of Dehdasht within the geographical extent of the mountainous Kuhgiluyeh region, which has been integrated and compared with historical sources.

Research Questions: In this research, an attempt has been made to answer two fundamental questions regarding the history of the formation of the city of Dehdasht: 1. Based on historical written sources and comparison with archaeological findings, to which period does the historical citadel of Dehdasht, as the most important physical element of this city, belong, and what was the process of its formation, expansion, and destruction? 2. Synthesizing archaeological data from the Dehdasht citadel with textual sources, to what extent do the findings elucidate the cultural and economic dynamics of the Baladshapur rustaq within the broader Kuhgiluyeh region and its external networks?

Research Hypotheses: Corresponding to the research questions, the most important hypotheses regarding the history of the formation, prosperity, and decline of the city of Dehdasht are as follows: 1. The construction of the Dehdasht citadel dates back to the early Islamic centuries, and the process of its expansion, abandonment, and destruction continued until the later Islamic centuries. 2. During the Islamic period, the city of Dehdasht had cultural and economic interactions with various regions of Iran such as Khuzestan, Fars, Isfahan, Kerman, and Mashhad, and even with distant countries such as China, India, and Europe.

Research Method

The present study has been conducted using historical written sources, architectural remains, and archaeological findings such as ceramics. The research findings were collected through two methods: field excavation and documentary sources. In the field method, the findings obtained from excavations were documented, introduced, compared, and studied based on their trenches and depositional contexts in the northwestern, southwestern, and southeastern sectors of the excavation. The archaeological findings were compared with historical written sources concerning the history of the rustaq of Baladshapur and the city of Dehdasht and ultimately interpreted and analyzed.



◀ **Fig. 1: Location of Dehdasht in southwestern Iran (Authors, 2024)**

◀ **Fig. 2: The urban layout of the old city of Dehdasht and the location of the historical citadel in a satellite image from 1959 (Authors, 2024).**

Research Background

From an archaeological perspective, the Kuhgiluyeh region and the city of Dehdasht received minimal scholarly attention until the past two decades. In 1315 AHSh (1936 CE), Harrison, observing the absence of inhabitants in the city, noted robust and intact buildings and domed structures, suggesting an era of peace, security, and agricultural prosperity in the region (Harrison, 1936: 28). Two years after Harrison's visit, in 1317 AHSh (1938 CE), Stein described the city as abandoned, presenting a striking scene of ruin (Stein, 1938: 32). In 1359 AHSh (1980 CE), Heinz Gaube, continuing his studies of the northern parts of the Arjan district, documented certain buildings and architectural remains of the city of Dehdasht. Notably, none of these researchers provided any description or documentation of the historical citadel of the city. Archaeological surveys conducted in 1387 AHSh (2008 CE) revealed that the oldest identified remains here comprised a site measuring 4,900 square meters, dating to the Upper Paleolithic period, located approximately 600 m southwest of the city (Azadi, 2008). Evidence from this site includes stone tools such as scrapers, borers, blades, bladelets, bladelet cores, flakes, and flake cores. These artifacts are also paralleled in assemblages of the Paleolithic period in the Central Zagros and southwestern Iran (Azadi, 2008: 686–687). In the spring of 2012 CE, in conjunction with the project to revive the Imamzadeh Jāber neighborhood and for the purpose of identifying the cultural periods of the city, a test trench measuring 2×2 m was excavated, continuing to a depth of 3.25 m. The study of ceramic findings demonstrated that the city of Dehdasht possessed an occupation dating back to the Bakun period, specifically the Chalcolithic period (Tahmasebi and Musavi, 2012: 251). The most authoritative source concerning the archaeology of Dehdasht is the book "Archaeology of the Historical Fabric of Dehdasht" (Rayegani, 2017), in which the author sought to study the political and social life of the city of Dehdasht by introducing the architectural physical elements of the city and examining surface ceramics, tiles, and recovered coins. Nevertheless, the author confined himself only to describing the defensive position of the citadel (Ibid: 130–133). In another study, regarding the process of formation and the rise and decline of the city of Dehdasht, an attempt was made -based on coins discovered from the funerary monument of Pir Ghazi- to demonstrate that the name of Dehdasht prior to the Safavid period was Kuhgiluyeh (Masʿudi-nia et al., 2021: 137–158). Pakbaz and Karimian attributed the formation and initial growth of the city to the Ilkhanid and Timurid periods, and its prosperity and flourishing to the Safavid period (Pakbaz and Karimian, 2024: 171–172); however, newly discovered archaeological findings from excavations in the historical citadel of the city indicate that the formation of the city dates back at least to the 3rd and 4th centuries AH.

Excavation Approach

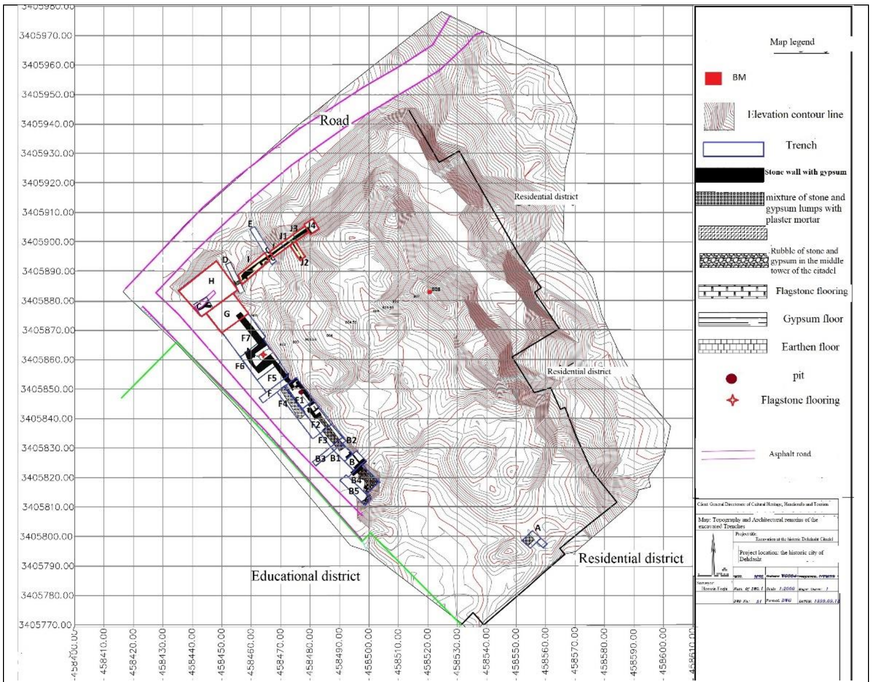
Over the course of two excavation seasons, a total of 24 trenches were established to clarify the towers and fortification wall of the citadel (Table 1). The fixed datum point was selected at the highest part of the citadel, on the central wall of the fortress, which rested on bedrock and stood at an elevation of 808 m above sea level. The numbering of contexts began with 001, and with any change in soil texture, soil color, type of find, or observation of any new architectural structure within a trench, a separate context number was assigned. For the recording of movable finds, the designation Deh.Arg (Dehdasht Citadel), followed by the year, trench number, context number, and find number, was utilized. In the first excavation season in 1399 AHSh (2020 CE), Trench A was opened in the middle of the southern side; Trenches F and B were established at the location of the gateway and the central tower on the southwestern side (at the junction of the tower and the fortification wall); Trench C was situated at the location of the western tower of the citadel; and Trenches D and E were laid out in the middle of the northwestern side of the citadel, adjacent to the modern road (Fig. 3). The width of most trenches was 5 m, and their length varied between 5 and 10 m, intended to obtain the maximum possible information regarding architectural changes and to trace the fortification wall and towers of the citadel. In the second excavation season in 1401 AHSh (2022 CE), Trench G was excavated as a continuation of Trench F7 from the previous season, beneath which a portion of the fortification wall was located, and Trench H was opened on the western side, where it had previously been assumed that limited remains of the tower foundation existed in Trench C from the previous season (Fig. 4). Upon determining the condition of Trench H, it became clear that during the widening of the road and the installation of the water pipeline channel, the western tower had been destroyed. Consequently, excavation was focused on the fortification wall on the northwestern side through the creation of longitudinal trenches-oriented northeast–southwest, designated I and J–J4, with widths of 2–3 m and lengths of 5 m. The architectural remains and ceramic finds contribute more than any other evidence to understanding the process of formation and development of the citadel structure.

No.	Trench Name	Trench Dimensions (m)	Trench Location within the Site	Excavation Year
1	A	5 × 5	Southeastern	2020
2	B-B4, C	10 × 5	Southwestern	2020
3	F	10 × 2	Southwestern	2020
4	F1-F7	10 × 10	Southwestern	2020
5	D, E	10 × 2	Southwestern	2020
6	G, H	10 × 10	Southwestern	2022
7	I, J-J4	5 × 3	Northwestern	2022

◄ **Table 1: Location of excavated trenches and their dimensions (Authors, 2025).**

Architecture

Through excavation and tracing, remains of the fortification wall on the northwestern side, segments of the fortification wall and the central tower on the southwestern side, and two entrances to the structure on the southwestern side were uncovered. At the conclusion of the two excavation seasons, it may be inferred that the wooden door of the entrance beside the central tower of the fortress was burned during a fire (?) event, as evidenced by the presence of ash deposits at the entrance façade (Fig. 4, P–T). Based on architectural evidence of the fortification wall on the three sides -northwest, southwest, and southeast- as well as the rammed gypsum floor layers of the projecting entrance portal, the castle entrance beside the central tower, and ceramic finds, it appears that the citadel underwent at least three construction phases:



a. Location of excavated trenches from the first season (blue) and second season (red)

b. Location of the tower and rampart trenches from the first excavation season (yellow)

c. Location of the trenches from the second excavation season (yellow)

Fig. 3: Location of the trenches from two excavation seasons and the soundings/tracing of the tower and rampart of the historical Arg of Dehdasht (Sepidnameh, 2022). ▶

First Period

The earliest evidence from this phase consists of the main fortification wall identified in Trenches F–F2 on the southwestern side and Trenches I and J, which was constructed with considerable strength using rubble stone and gypsum mortar, with a width of 1 m (Fig. 4, A). In Trench F1, this wall is clearly visible beneath the reconstruction of a later wall, in such a way that the stones display regular arrangement, and their surfaces are flaked and affected by erosion. In this construction phase, the stones used in building the wall are predominantly rectangular, with average dimensions of 12×20×30 cm and 20×23×40 cm. The stones are arranged in a regular horizontal pattern, and the gaps between the stones, filled with gypsum mortar, measure approximately 2 to 4 cm (Fig. 4, B). In Trench F2, this wall, constructed of rubble stone and gypsum mortar, measures 4 m in length, 115 cm in width, and 30 cm in thickness. On its western side, it has two buttresses projecting approximately 50 cm outward from the wall. In this period, based on the collapsed remains on the western side in Trench F4, it is likely that the citadel was destroyed because of an event, such that the wall was dislodged from its original position and had fallen approximately one meter toward the west. The remains of a stone mortar, as well as gypsum leveling molds found among the collapse debris in Trench F4, clearly attest to this event. In Trenches I and J–J1, this wall, constructed of rubble stone and gypsum mortar, extends for a length of 24 m. The northwestern façade of the wall, composed of buff-colored sandstone blocks, is heavily eroded, with surfaces turning reddish and exhibiting flaking. The entrance located in the middle of the southwestern side of the citadel, aligned with the aforementioned walls in Trenches B and F (Fig. 4, P–Th), belongs to the first construction period of the citadel.

Second Period

During this period, the fortification wall, constructed of rubble stone and gypsum mortar, features a setback or recess of approximately one meter in the middle of the western side. Within this recessed portion of the wall, some of the internal spaces of the fortress were obscured by the newly constructed fortification wall. Evidence of this is observable in Trenches F1 and F2 on the southwestern side of the citadel, as well as in Trench J2 on the northwestern side (Fig. 5, A). Evidence of reconstruction during the second period is clearly indicated by the refuse pit in Trench F1 and by the rectangular arrangement of the stones on the wall façade. In this construction phase of the citadel, the stones used in building the wall are predominantly rectangular, though somewhat irregular (polygonal), with average dimensions of 15×20×45 cm and 15×20×25 cm. The arrangement of the stones is relatively irregular in both horizontal and vertical alignment, and the gaps between the stones, filled with gypsum mortar, measure approximately 10 to 15 cm (Fig. 5, B). The wall of the second period in Trench B was constructed upon the wall of the initial construction period of the citadel for the purpose of rebuilding and repairing the structure (Fig. 5, P).

b. Masonry technique and use of materials in the initial construction and repair phase of the *Arg*

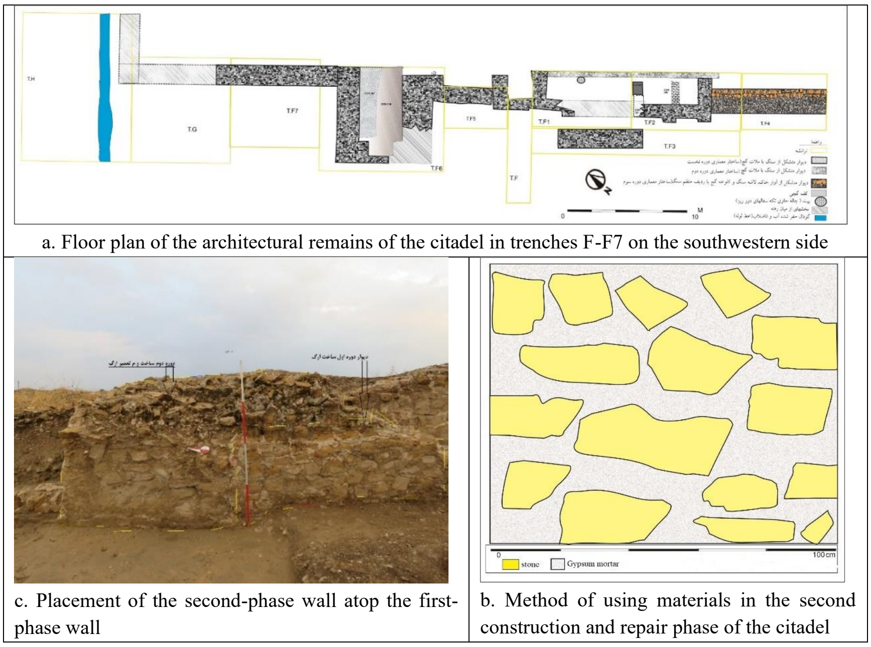
a. Wall on the northwestern side of the *Arg* rampart in trenches J-I; view from the northwest

d. Central entrance on the southwestern side of the citadel in Trench B

c. Evidence of burning at the front of the central entrance on the southwestern side of the Arg in Trench B

e. View of the contexts on the northeastern side of trenches B-B1 in the central entrance area of the southwestern side of the citadel

Fig. 4: Architectural remains related to the first construction phase of the Arg (Sepidnameh, 2022). ▶



a. Floor plan of the architectural remains of the citadel in trenches F-F7 on the southwestern side

c. Placement of the second-phase wall atop the first-phase wall

b. Method of using materials in the second construction and repair phase of the citadel

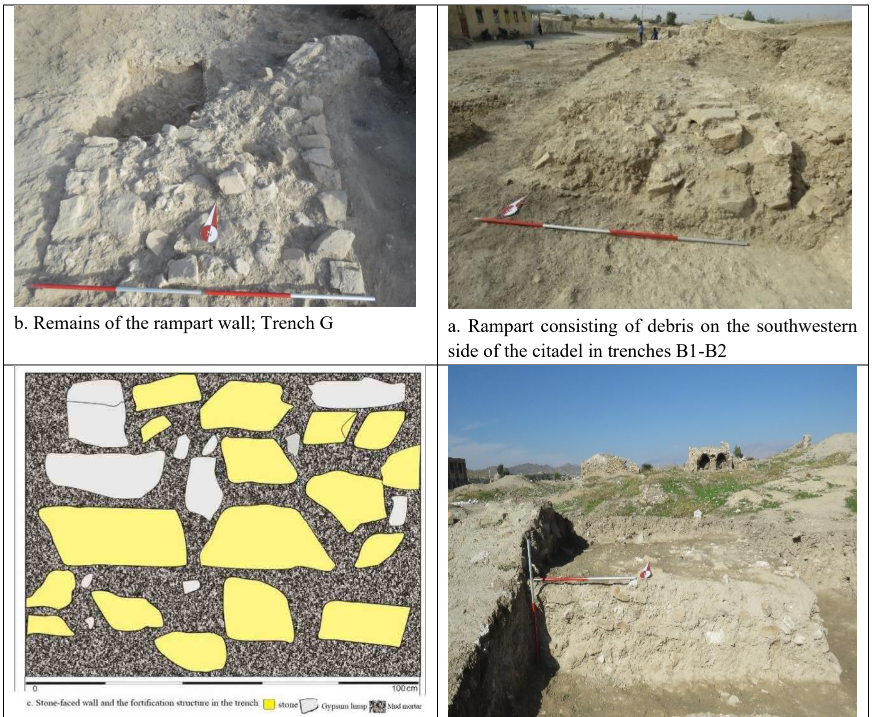
Fig. 5: Architectural remains related to the repair and reconstruction of the second construction phase of the citadel (Sepidnameh, 2022). ▶

Third Period

In this period, mud mortar and gypsum lumps were used to rebuild the citadel wall. Evidence of this late wall is visible in Trenches A on the southeastern side, B1, B2, and F3 on the southwestern side, and Trenches J3 and J4 on the northwestern side of the citadel. On the southwestern side of the citadel, this architectural structure consists of two courses of stone with regular arrangement and a width off approximately two meters (Fig. 6, A–B), constructed using rubble stones with average dimensions of 24×23×15 cm and gypsum lumps bonded with mud mortar. At the same level as this section of the wall, a debris layer was placed as a buttress on the western side and on the exterior façade of the wall. Based on the placement of this structure on a rammed gypsum layer in Trench B1 and its continuation in Trench B2, it appears that during the final phase of occupation of the citadel, after the destruction of its fortification wall, it was reused. The wall structure on the northwestern side (J3–J4) and the southeastern side of the citadel (Trench A) in the third phase was rebuilt using rubble stone, mud mortar, and gypsum lumps. This architectural structure consists of a single course of stone with relatively regular arrangement, constructed using rubble stones with average dimensions of 12×20×21 cm and 9×12×13 cm, and gypsum lumps with average dimensions of 5×8×12 cm and 9×17×15 cm, bonded with mud mortar (?), within which construction debris and even ceramic fragments are also visible (Fig. 6, P–T). Reconstruction and repair of the fortification walls during the third phase in Trenches J and I were carried out on top of the wall of the first construction phase of the structure, indicating destruction of portions of the fortification wall on the northwestern side.

Ceramic Finds: Classification and Chronology

During the two excavation seasons at the citadel, diverse ceramic types were identified, which can assist in understanding the formation history of this part of the old city of Dehdasht. The precise classification and chronological analysis of these ceramics will lead to a more accurate understanding of the process of formation and collapse of the city of Dehdasht within the rustaq of Baladshapur. Out of a total of 683 ceramic fragments recovered during the two excavation seasons at the citadel, diverse types of ceramics from the historical and Islamic periods were identified (Fig. 1), including: 222 rim fragments, 107 base fragments, 344 body fragments, three handle fragments attached to the shoulder, one ceramic tripod base, and six ceramic lid fragments. The ceramic types obtained from the two excavation seasons are as follows:



b. Remains of the rampart wall; Trench G

a. Rampart consisting of debris on the southwestern side of the citadel in trenches B1-B2

d. Masonry technique and use of materials in the late construction and repair phase of the citadel

c. Rampart consisting of debris on the southwestern side of the citadel in trenches B1-B2

Fig. 6: Architectural remains of reconstruction and repair related to the third construction phase (Sepidnameh, 2022). ▶

1) Unglazed Ceramics

The types of unglazed ceramics obtained from the excavation of the citadel include: red ware, gray ware, buff ware with incised decoration, and painted unglazed ware known as pseudo-prehistoric ware.

1-1) Plain Red Ware

Red ware is among the least frequent ceramics found among the ceramic fragments recovered from the citadel, and only two small rim fragments of this ceramic type were obtained from Context 010 of Trench F1 (pit) (Table 2, Nos. 1 and 2). These two fragments have a clay fabric of red color with a thin red slip applied to both surfaces matching the color of the fabric, with soft sand temper. The firing temperature was sufficient. Both fragments are wheel-made and relatively fine. The form of one of the rims, which can be classified within the gutter-rim type (Table 2, No. 2), based on comparable examples (Labaf Khaniki, 1387/2008: 170, Fig. 5), can be attributed to the Sasanian period.

1-2) Plain Gray Ware

Gray ware is very scarce among the ceramics recovered from the two excavation seasons at the citadel, and only two fragments of this fine wheel-made ceramic type were obtained, both having relatively burnished surfaces (Table 2, Nos. 3 and 4). These ceramics have a fabric of gray to dark gray color with soft sand temper and a dense texture. These ceramics have a black surface coating and were sufficiently fired. Burnished black ware has also been found at Qalʿeh Golrokh, one of the Sasanian period sites in the hinterland plains of the northern Persian Gulf (Table 2, No. 3).

1-3) Unglazed Ware with Incised Decoration

Unglazed ceramics with incised decoration are very limited among the ceramic fragments obtained from the two excavation seasons at the Dehdasht citadel, and only five fragments were found, including one rim fragment and four body fragments (Table 2, Nos. 3–8). These fragments have buff-colored fabric, and mineral temper consisting of grit and soft sand was used in their production. They are wheel-made and sufficiently fired. The rim fragment bears incised decoration on a raised band, and the body fragments are decorated with horizontal grooved incisions, isolated circular motifs, and petal-like designs. Fragment No. 5 (Table 2), based on comparable examples in terms of decoration type, can be compared with specimens recovered from Tapeh Ashraf, Isfahan (Jafari Zand, 1389/2010: Plate 73, No. 535). Some body fragments (Table 2, No. 8) are also comparable with specimens recovered from Layer 9 of Trench B of the Mahrūban excavation, dated to 50–240 AH (Ismaeili Jelodar, 1389/2010: 256–276), and other fragments recovered from the city of ʿAskar-e Mukaram, Khuzestan, dated to the 5th century AH (Atayi, 1395/2016: Plate 13, Nos. 3 and 5).

1-4) Unglazed Ware with Buff Slip

After fine red ware, buff-slipped ware has the lowest frequency among the ceramic fragments recovered from the citadel, and only one small fragment of this type was obtained from Context 010 of Trench F1 (pit) (Table 2, No. 6). The application of plain slip-on ceramics is also observed in pre-Islamic pottery, and examples of ceramic vessels produced using this technique have been dated to the Achaemenid period (Azizi, 1390/2011: 66). The difference is that in pre-Islamic vessels vegetal temper or mixed mineral-vegetal temper was used, whereas in Islamic period vessels mineral temper (soft sand) was used. Ceramic vessels produced using this technique in the Islamic period have been attributed to the 3rd and 4th centuries AH (Tohidi, 1384/2005: 261).

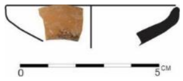
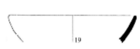
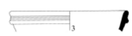
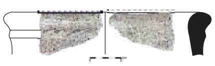
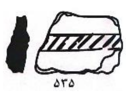
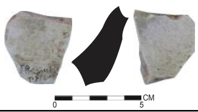
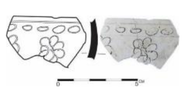
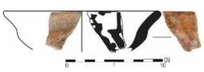
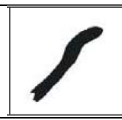
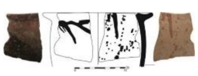
1-5) Painted Unglazed Ware (Pseudo-Prehistoric Ware)

After unglazed wares, the most frequent ceramics recovered from the two excavation seasons at the citadel consist of painted unglazed wares (101 fragments) (Table 2, Nos. 9–12), which in Iranian archaeological literature are referred to as painted unglazed ware (Gaube, 1359/1980: 377–381) and pseudo-prehistoric ware (Whitcomb, 1382/2003, Rajabi, 1394/2015: 183). The main characteristic of these ceramics is an orange fabric with grit temper and relatively sufficient firing, with both the interior and exterior surfaces covered by a thin slip layer of ochre and gray colors. The predominant form of these ceramics is bowls. The soot-blackened surfaces of some vessels indicate that they were exposed to fire and used for cooking. The main decoration of these vessels consists of reddish-brown bands on both surfaces and brown spots applied irregularly. Some vessels, in addition to these brown bands, are decorated with circular incised motifs and applied bands with incised decoration (Fig. 9). Based on several research (Rajabi, 1394/2015: 184; Sepidnameh et al., 1401/2022; Sumner & Whitcomb, 1999: 320) and comparable examples (Table 2, Nos. 9–12), this ceramic type can be dated to the 3rd to 6th centuries AH (9–12th centuries CE).

2) Glazed Ceramics: The glazed ceramics from the citadel consist of various types, including plain monochrome glazed ware, blue and white ware, painted lack on turquoise ware, yellow, and white glaze grounds, ware with incised decoration under the glaze, ware with applied/relief decoration under the glaze, turquoise ware with black line decoration (black-on-turquoise), and matte turquoise-splashed glazed ware (Table 3).

2-1) Simple Monochrome Glazed Ware: The largest number of ceramics found during the two excavation seasons at the citadel comprises simple monochrome glazed wares (322 pieces out of a total of 683 ceramic pieces). These have paste made of brown or buff-colored clay tempered with fine sand and are sufficiently fired. The glazes on these ceramics are in colors such as green, blue, yellow, eggplant (purple), and white, with fine black particles also visible within the glaze composition. The thickness of the body sherds is approximately 7 to 9 mm, the rim diameter ranges from 20 to 28 cm, and the concave base diameter is about six to eight cm. They are mostly bowls, plates, and oil lamps. The form of some ceramic fragments (Table 3, No. 1) is comparable to examples found at the historical site of Askar Mukram, dated to the 3rd to 7th centuries AH (9-13th centuries CE) (Ataei, 2016: 228, Plate 23, No. 3). The oil lamp can also be dated to the 6th century AH / 12th century CE based on similar examples (Morgan, 2004: 163). Some deep bowls with sloping walls (Table 3, No. 2) are comparable to ceramics from the 5th to 7th centuries AH / 11-13th centuries AD found at sites in Ramhormoz (Alizadeh et al., 2016: 462, L), Gorgan (Kiani, 2001:

Table 2: Types of plain and painted unglazed ceramics found at the historical citadel of Dehdasht (Authors, 2024). ▼

No.	Location Found		Type of Sherd, Paste Color, Temper, Surface Coating, Manufacturing Technique, Firing Quality, Decoration	Figure	Comparative Source / Dating	Comparative Source figure
	Trench	Context				
1	F2	002	Rim, Red, Thin clay slip, Wheel-made, Sufficient		Labaf Khaniki, 2008: Fig. 1, No. 19	
2	F3	001	Rim, Red, Thin clay slip, Wheel-made, well-fired		Labaf Khaniki, 2008: 170, Fig. 5	
3	A	002	Body, Gray, Fine sand, Burnished, Wheel-made, well-fired, No decoration		Gholami et al., 2022: 173, Fig. 11	
4	A	002	Body, Gray, Fine sand, Burnished, Wheel-made, well-fired, No decoration			
5	E	002	Rim, Buff, Coarse sand/grit with high density, No coating/slip, Hand-made, well-fired, Incised decoration		Jafari Zand, 2010: Plate 73, No. 535	
6	F	010	Body, Brown, Fine sand, Buff clay slip, Wheel-made, well-fired, No decoration		Esmaeili Jelodar, 2010: 298, Fig. 5-34	
7	D	001	Hookah base/brazier, Orange, Coarse sand/grit, Wheel-made, well-fired, Ordinary, Incised decoration		Rajabi, 2015: 184; Sumner & Whitcomb 1999: 320	-
8	F	010	Body, Buff, Fine sand, No coating/slip, Wheel-made, well-fired, Incised decoration		Esmaeili Jelodar, 2010: 256; Ataei, 2016: Plate 13, No. 5	
9	B	002	Rim, Orange, Coarse sand/grit, Thin clay slip, Wheel-made, well-fired, Brown geometric motifs		Sedighian & Gholami, 2012: 141, Table 4, No. 44	
10	J	002	Body, Orange, Coarse sand/grit, Thin clay slip, Hand-made, Insufficient firing, Brown painted decoration		Whitcomb, 2003: 93, Fig. 4-y	
11	J	002	Body, Orange, Coarse sand/grit, Thin clay slip, Hand-made, Insufficient firing, Combination of brown painted and incised decoration		Rajabi, 2015: 184; Sumner & Whitcomb 1999: 320	-
12			Body, Orange, Coarse sand/grit, No coating/slip, Hand-made, Insufficient firing, Brown painted and applied/relief decoration		Qezelbash & Parviz, 2013: 124, Fig. 3, No. 9	

39), the Kasehgaran site in Alamut (Sadraei, 2007: 99, Design 1), Ras al-Khaimah in the Persian Gulf region (Kennet, 2004: fig.12, 496), and Dezhkuh in Kohgiluyeh (Sepidnameh, 2021: 191).

2-2) Turquoise silhouette Ware: this type is one of the ceramic types found dating to the Seljuk-Ilkhanid periods (Tohidi, 2005: 271). Only two pieces of this type were found during the two excavation seasons (Table 3, No. 10). These two fragments were found in context 001 of Trench B and context 001 of Trench B5. The fragments of this ceramic type recovered from the citadel excavation include one rim fragment and one base fragment with a buff-colored paste tempered with fine sand, featuring black decoration under a turquoise glaze, adorned with a four-petaled floral motif. The fragments of black-on-turquoise ceramics from the citadel excavation can be dated to the 6th and 7th centuries AH (12-13th centuries CE), and similar examples in terms of decorative technique have also been found at sites such as Jiroft (Amirhajloo & Sedighian, 2020: 170, Image 7, No. 10).

2-3) Monochrome Glazed Ware with Incised Decoration (Sgraffito): This group of ceramics has a clay paste tempered with fine sand and is well-fired (Table 3, Nos. 6 and 7). The glazes on these ceramics are in colors such as blue, lapis lazuli blue, turquoise, white, green, and yellow, and are transparent. The decorative motifs are mainly vertical and horizontal incised grooves on the exterior body, and in a few instances, geometric incised designs are applied to the interior of the vessel. The quality of the ceramics is ordinary, and their thickness varies between 7 and 10 mm. Based on the preserved rim and base fragments, the vessel forms were mainly bowls and plates. The fragments of sgraffito ware from the citadel excavation can be dated to the Seljuk period, and similar examples in terms of decoration have been obtained from sites such as Jiroft (Choubak, 2012: Image 37).

2-4) Monochrome Glazed Ware with Applied/Relief Decoration: Among the ceramic fragments found at the citadel, there are four pieces with applied decoration (Table 3, No. 8). One piece of this ware has a brown clay paste tempered with fine sand, decorated with an applied strip ornamented with finger-impressed designs, all under a greenish-turquoise glaze. Based on similar examples, this piece is comparable to ceramics from the 3rd and 4th centuries AH / 9-10th centuries CE found at the Askar Mukram site (Ataei, 2016: Plate 32, Nos. 1-4). Similar examples have also been found at the ancient city of Jiroft (Choubak, 2012: 91), Qaleh Sang in Kerman (Amirhajloo & Sedighian, 2020: 166, Image 6, No. 3), and surveys in Mianab Shooshtar (Soleimani, 2006: 388-389, Fig. 112, No. 3).

2-5) Paint-on-glaze ware: Ceramics with blue-turquoise glaze painted with black stripes are among the distinctive wares of the two excavation seasons (Table 3, No. 11), constituting a small percentage of the finds from the first excavation season. The paste of these ceramics is buff-colored, tempered with fine sand, and they are decorated with geometric motifs in a clumsy and irregular manner. The body thickness is about 8 mm, the rim diameter is about 12 cm, the quality of the pottery is ordinary, and they are wheel-made. In terms of decorative technique, the mentioned ceramics are comparable to examples found at the Qorq Tappe Si and Samen Malayer site in Hamedan (Hemati Azandiani et al., 2017: 201, Image 17).

2-6) Matte Turquoise-Splashed Glazed Ware: One of the common types in the old city of Dehdasht is ware with a white glaze coating, where the body and base are decorated with stripes and geometric motifs, as well as X- and Z-like marks (possibly potter's marks or signatures), using turquoise color decoration under an alkaline glaze, and the rim is decorated with black color (Table 3, Nos. 3 and 4). The paste of these ceramics, whose forms are mostly bowls, is made of buff-colored clay tempered with fine sand and they are sufficiently fired. These ceramics are comparable to the blue and white wares dated to the 6th and 7th centuries AH / 12-13th centuries CE at the Meshkin Tappeh Parandak site in Markazi Province (Mahjour & Sedighian, 2009: 119, Image 6), Gorgan (Mortezaei, 2007: 453, Image 3-97), and the Zolfabad Farahan site (Nemati, 2019: 40). This ceramic type is also comparable to the underglaze painted ware in the Fitzwilliam Museum dating to the 6th and 7th centuries AH / 12-13th centuries AD (Table 3, No. 4). However, it seems that these ceramics might be datable to an earlier period than the 6th and 7th centuries AH. Priestman has referred to this ware as "Matte Turquoise-Splashed Glazed Ware," which is made with a clay paste and a thick, matte white glaze, its surface decorated with scattered splashes of light turquoise copper oxide pigment (Priestman, 2013: 561). While comparing this ceramic type with the Samarra style, Kush ware, and also Siraf ware, he attributes its origin to southern Iraq and dates it to the 3rd and 4th centuries AH / 9-10th centuries AD (Priestman, 2013: 561). This dating is more consistent and compatible with some findings from Dehdasht, such as the wooden door of Imamzadeh Hamzeh Ma'sum (AS), which has been dated to the late Buyid period (Tandaro et al., 2020).

2-7) Blue and White Underglaze Painted Ware: The blue and white ceramics found at the historical citadel of Dehdasht can be classified into four groups based on color and type of decoration.

1. The first group of blue and white glazed ceramics are those with clay paste and white glaze (Table 3, No. 12). This ceramic type is attributable to the productions of the city of Kerman (Rogers, 1995: 266), decorated with vegetal and geometric motifs in blue and lapis lazuli blue. Some examples from this group are comparable to finds from the historical city of Natel (Hosseinnia Amirkolaei et al., 2020: 96, Image 2, Nos. 36 and 37) and Sistan (Mousavi Haji & Ataei, 2010: 248, Plate 40, Design 36), which are dated to the 7th to 9th centuries AH / 13-15th centuries CE.

2. The second group of blue and white glazed ceramics from Dehdasht features blue motifs on a white ground, outlined with black and sometimes blue lines. This is a specific characteristic of the blue and white productions from Mashhad workshops during the Safavid period, distinguishing them from Chinese examples (Akbari & Sadeghi Taheri, 2014: 81). Vessels with such characteristics were also produced in Kerman workshops during the 10th and 11th centuries AH / 16th-17th centuries CE (Mousavi Haji et al., 2019: 1061).

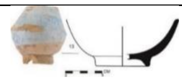
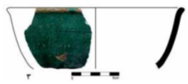
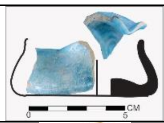
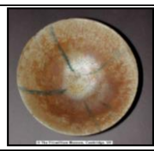
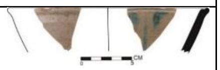
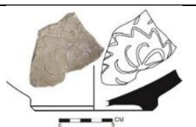
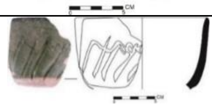
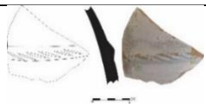
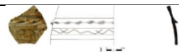
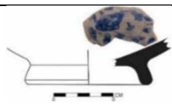
3. The characteristic feature of the third group of blue and white ceramics is a kaolinitic or siliceous paste with a white glaze and blue motifs. The variety of motifs in this group is very extensive, ranging from Chinese architectural landscapes to geometric, vegetal, and even human motifs (Table 3, No. 11). An example of pottery with Chinese-style architectural decoration has also been reported from the Zolfabad Farahan site (Nemati, 2019: 43). This ceramic type appears to be a product of Mashhad, whose decorations imitated Chinese and Buddhist landscapes (Fehervari, 2009: 75).

4. Another type of fine blue and white ware found at the historical citadel of Dehdasht (11 pieces), discovered among the ceramics from the pit in Trench F1 (Table 3, Nos. 14-16), consists of fragments of fine bowls and plates with a white glaze and grayish-blue motifs. Their production began in the 9th century AH / 15th century CE and ended in the 12th century AH / 18th century CE (Mahjour, 2009: 143). One of these ceramic fragments, a plate form with its rim adorned with a brown stripe (Table 3, No. 15), based on a similar example in the Victoria and Albert Museum (Accession No. 1007-1883), can be dated 1650-1700 AD, i.e., the Safavid period. Another piece (Table 3, No. 15), according to similar decorative examples (Fehervari, 2009: 82), is probably a product of Isfahan from the Safavid period.

Discussion and Analysis

Based on historical texts and archaeological evidence obtained from two excavation seasons at the historical citadel, as the most prominent

Table 3: Types of plain and painted glazed ceramics from the historical citadel of Dehdasht (Authors, 2024). ▼

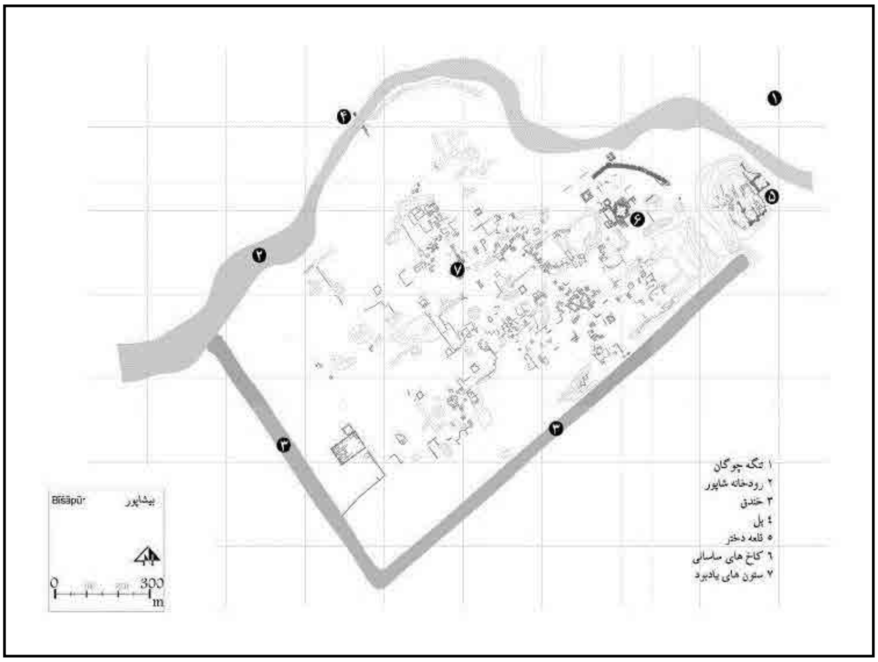
No.	Location Found		Type of Sherd, Paste Color, Temper, Surface Coating, Manufacturing Technique, Firing Quality, Decoration	Figure	Comparative Source / Dating	Comparative Source figure
	Trench	Context				
1	F	010	Rim attached to base, Buff, Fine sand, Turquoise glaze, Wheel-made, well-fired		Ataei, 2016: 228, Plate 23, No. 3	
2	J	002	Rim, Buff, Fine sand, Turquoise glaze, Wheel-made, Well-fired, No decoration		Morgan, 2005: 182	
3	F	010	Oil lamp body, White siliceous, Mineral, Blue-turquoise glaze, Wheel-made		Morgan, 2005: 163	
4	J	002	Base, Buff, White glaze, Wheel-made, Well-fired, Turquoise decoration under glaze		Comparable to Fitzwilliam Museum specimen No. C.681935	
5	F	001	Rim, Buff, White glaze, Wheel-made, wellf-red, Turquoise decoration under glaze			
6	F7	001	Base, Buff, Fine sand, Transparent glaze, Wheel-made, Well-fired, Incised decoration under glaze		Kiani, 1978: Image 77	
7	F	002	Rim, Buff, Green glaze, Wheel-made, Well-fired, Incised decoration under glaze		Amirhajloo & Sedighian, 2020: 166, Image 6, No. 11	
8	J	002	Body, Buff, Fine sand, White glaze, Wheel-made, Well-fired, Incised decoration on applied/relief band under glaze		Choubak, 2012: Image 37	
9	F	001	Body, Brown, Greenish-turquoise glaze, Wheel-made, Well-fired, Applied rope-like decoration		Ataei, 2016: Plate 32, Nos. 1-4	
10	B	001	Rim, Buff, Fine sand, Turquoise glaze, Wheel-made, Well-fired, Silhouette		Amirhajloo & Sedighian, 2020: 170, Image 7, No. 10	
11	J	002	Rim, Buff, Blue-turquoise glaze, Fine sand, Wheel-made, Well-fired, Black painting on glaze (overglaze)		Hemati Azandiani et al., 2017: 201, Image 17	
12	D	001	Base, White kaolinitic, Mineral, White glaze, Wheel-made, Well-fired, Blue Chinese-style motifs		Nemati, 2019: 43, Image 10	
13	J	002	Base, Buff, White glaze, Wheel-made, Well-fired, Blue motifs		Nemati, 2019: 39, Plate 12	

14	B	001	Rim, White kaolinitic, Mineral, White glaze, Wheel-made, Well-fired, Blue and black decoration under glaze		Victoria and Albert Museum, No. C.294B-1933	
15	F1	010	Base, White kaolinitic, Mineral, White glaze, Wheel-made, Well-fired, Grayish-blue geometric motifs		Victoria and Albert Museum, No. 2039-1910(accessed 2022)	
16	F1	010	Base, White kaolinitic, Mineral, White glaze, Wheel-made, Well-fired, Grayish-blue geometric motifs and brown stripe on rim		Victoria and Albert Museum, No. 1107-1883	

architectural monument of the city of Dehdasht, as well as the results of previous research, the history of this city's life from its formation to its collapse can be studied and analyzed in four chronological phases:

1) Sasanian Period: The Belad Shapur region held great importance for rulers during the Sasanian period, and this era represents a turning point in the history of this area. According to the narrative of the Karnamag-i Ardashir-i Papakan (224-241 CE), the mother of the founder of the Sasanian dynasty, Ardashir-i Papakan, was from the Bazrangi family in the northwestern parts of Fars and east of Belad Shapur (the habitat of the nomads of Kohgiluyeh and Belad Shapur in modern-day Boyer-Ahmad County) (Tabari, 1996, Vol. 2, 580). Perhaps one of the main reasons for Shapur I's attention to the development, prosperity, and construction of cities in the Belad Shapur region was his connection and attachment to the ancestral land of the Sasanians' maternal lineage. For the first time in the Safavid era, the author of "Riyaz al-Firdaws" attributed the foundation of the city of Dehdasht, along with the cities of Arjan, Zeydan, and Mahiruyan (Mahroban) in Kohgiluyeh, to Shapur I. It is said that upon his return from Nisibis in the spring, he laid out their plans in the Belad Shapur area, and shortly thereafter, master builders completed the cities in the best possible way (Hosseini Monshi, 2006: 98-99). A small number of ceramics from the Sasanian period have been found in the archaeological excavations of the city. The ceramic fragments from the Sasanian period found at the historical citadel (Table 2, Nos. 1-4) indicate that the initial phase of the Arg's formation can be considered contemporaneous with the Sasanian period. The closest parallel to the city of Dehdasht, where the citadel is located outside the urban spaces, is the city of Bishapur (Fig. 7). There, the governmental citadel, as the main center of the city and the seat of the court, is situated northeast of the city, on the heights of the slopes of Shapur Mountain, and is separated from the main residential area by a mud-brick

and stone fortress wall stretching 5440 meters (Sarfaraz & Teimouri, 2007: 98). This comparison holds if the construction of the citadel is indeed attributed to the Sasanian period.



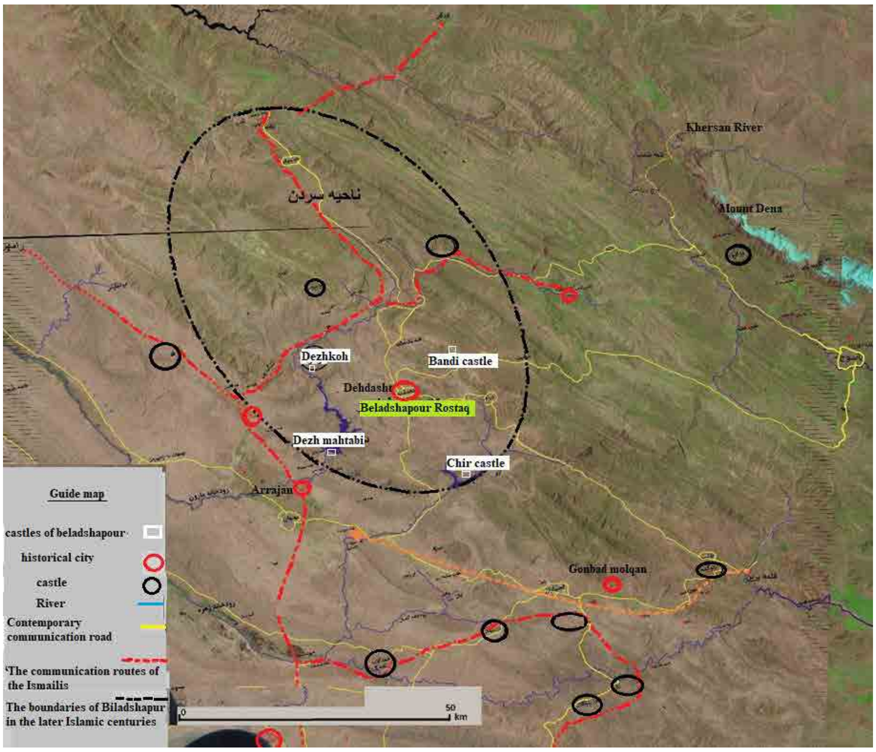
◀ **Fig. 7: Map of the city of Bishapur and the location of Qaleh Dokhtar (Shah Mohammadpour Salmani, 2014: 117).**

2) Early Islamic Centuries (1st century AH / 7th century CE to the end of the Buyid period): In the late 2nd century AH / 8th century CE, the political and social history of the northern part of the Arjan district (the mountainous region of Belad Shapur) is linked to the presence of the Kurds or nomads of this area, led by Giluyeh, the powerful ruler of the mountainous region of Kohgiluyeh. He came from lower Khomayegah near Salameh, gained status and prestige in his court, and after his death, managed to take control of affairs (Istakhri, 1989: 126). Giluyeh, in a war with the Al-e Dolaf dynasty, killed Ma'qel bin Isa but subsequently lost his own life in the conflict. After him, his sons Khalid, Hasan, and his grandson Mohammad, while striving to maintain their own and their family's position, played an important role in the political and social issues of that era by participating in the Abbasid caliphate's court (Siahpour, 2012). Archaeological surveys of the defensive fortresses of the historical district of Belad Shapur on four sides of the city of Dehdasht have shown that during the 3rd to 5th centuries AH / 9-11th centuries CE, the mentioned area held significant geopolitical importance (Sepidnameh et al., 2022). If we consider this rustaq as an agricultural district and present-day Dehdasht as the location of a dehqan (landlord/village head), then the historical citadel of Dehdasht

would certainly have been the seat of the ruler of this rustaq, responsible for administering the district. In this period, there is no clear reference to the city of Dehdasht in historical texts. Given the city's location on the communication route from Arjan to Isfahan, this city can be considered as the second waystation described by Moqaddasi, which he mentioned as a "village" (qaryeh) (Moqaddasi, 1982, Vol. 2: 673). It is possible that, considering the formation of the name Dehdasht from the two components "Deh" (village) and "Dasht" (plain), and the location of the qaryeh in the present-day plain, the name changed to Qaryat al-Dasht and then to Dehdasht. Therefore, the background of references to this city can be traced to some extent in texts from the 4th century AH / 10th century CE. A study of the decorative elements and inscriptions of the wooden door of Imamzadeh Hamzeh in Dehdasht (Fig. 8) showed that this wooden door was made in the late Buyid period, by order of the last Buyid ruler in the Fars region (Abu Mansur Fulad-Sutun, son of Abu Kalijar), between 440 and 448 AH / 1048-1056 CE. Inscriptions with Shiite themes are featured in four frames on the door (Tandaro et al., 2020). During the two excavation seasons at the citadel, a few types of ceramics from this era were found, including Brown ware with a buff-colored slip, Buff ware with incised decoration, Matte turquoise-splashed glazed ware, and pseudo-prehistoric painted ware. These findings suggest that, possibly contemporaneous with the life of the defensive fortresses surrounding the Dehdasht plain in the center of the historical rustaq of Belad Shapur (Sepidnameh et al., 2022; Image 9), the citadel of Dehdasht also served as the political seat of the region's ruler.

3) Middle Islamic Centuries: A prominent structure from the Middle Islamic centuries in the old city of Dehdasht is the Mausoleum of Imamzadeh Pir Ghazi, featuring a stepped dome and stucco honeycomb muqarnas decoration (Sepidnameh & Salehi Kakhki, 2014: 46). Archaeological evidence related to the habitation of Dehdasht during the Seljuk and Ilkhanid periods, found at the historical citadel of the city, includes turquoise silhouette, ware with applied decoration under the glaze, pseudo-prehistoric ware, and early types of blue and white ware. Historical developments contemporaneous with the Ilkhanid period are connected to the rise and consolidation of power by the Greater Atabegs of Luristan (ruled 550-827 AH / 1155-1424 AD). They began their rule in Kohgiluyeh by defeating and expelling the Shulans, with Abu Tahir assuming governance for two years (Hosseini Monshi, 2006: 238). Coin minting is one of the most important archaeological pieces of evidence indicating the significance of a region's political-administrative centers. The existence of a mint in Kohgiluyeh, evidenced by the discovery of a coin dated 757 AH

▲ **Fig. 8: The wooden door of Imamzadeh Hamzeh of Dehdasht from the Buyid period in the National Museum of Iran (Tandaro et al., 2020: 118).**



◀ **Fig. 9: The four defensive fortresses of Belad Shapur on a Landsat 2020 satellite image (Sepidnameh et al., 2022: 59).**

/ 1356 CE from this period, i.e., the Atabegs of Luristan period (Alaeddini, 2017: 181), indicates that Dehdasht, as the administrative-political center of Kohgiluyeh, must have held considerable geopolitical importance, although historical sources are silent regarding this status. Among the architectural works of Dehdasht from the middle centuries of the Islamic period, mention can be made of Pir Ghazi Mausoleum. Its stucco muqarnas work under the dome and the stepped exterior surface can be dated to the period of Atabegs of Luristan (550–827 AH / 1155-1424 CE) (Figs. 10-11). Furthermore, the date 706 AH / 1306-7 CE was inscribed in Thuluth script on the wooden surface of the door of this mausoleum building (Mousavinezhad Souq, 2006: 256).

4) Late Islamic Centuries: Although the name "Dehdasht" is not seen in historical sources prior to the Safavid era, the name "Kohgiluyeh" appears on surcharged coins from the Turkman Aq Qoyunlu period. Examples include the coins of Uzun Hasan bearing the Shiite slogan "La ilaha illa Allah Muhammad Rasul Allah Ali Wali Allah" (There is no god but Allah, Muhammad is the Messenger of Allah, Ali is the Friend of Allah) and the coins of Ya'qub Aq Qoyunlu dated 891 AH / 1486 CE (Fig. 12) with the slogan "Faman ya'mal mithqala dharratin khayran yarah" (So whoever does an atom's weight of good will see it). These indicate the activity of a mint in this region and underscore the political and administrative centrality of this city in southwestern Iran prior to the establishment of Safavid rule

Fig. 10: Exterior view of Imamzadeh Pir Ghazi; view from the northeast (Authors, 2024). ▶

Fig. 11: Muqarnas work under the dome of Imamzadeh Pir Ghazi (Authors, 2024). ▶

(Rayegani, 2017: 219-220; Masoudinia et al., 2021: 144). Logically, the location of this mint must have been in the administrative-political center of Kohgiluyeh, namely the city of Dehdasht, which served as the seat of the ruler and command headquarters (Hosseini Monshi, 2006; Afushteh'i Natanzi, 1994: 119).

◀ **Fig. 12: Coin of Sultan Ya'qub Aq Qoyunlu found at Imamzadeh Pir Ghazi Dehdasht (Javid, 2019: 47).**

With the establishment of the Safavid state, the country was divided into several provinces (eyalats). Among these provinces was Kohgiluyeh, with Dehdasht as its center, which was formed in the area of modern-day Behbahan, replacing the former province of Arjan. The formation of the independent province of Kohgiluyeh, in turn, led to the development and progress of the city of Dehdasht in the Belad Shapur region (Rowshanfikr, 2001: 28). Given that the primary holders of power in the Safavid state were the Qizilbash Turks, the administration of this province was entrusted to them from the very beginning of the Safavid state's establishment. The chieftains of this tribe held the reins of affairs until 1005 AH / 1596-7 CE (for a study of the political history of Belad Shapur and Kohgiluyeh in the Safavid period, see: Taghavi Moghadam, 1998: 49; Zakipour, 2010). The rebellion of Qalandar Shah, or the False Shah Ismail, in the years 986-992 AH / 1578-1584 CE (Afushteh'i Natanzi, 1994: 117), the Afghan incursion into Kohgiluyeh and the city of Dehdasht in 1135 AH / 1722-3 CE, the rebellion of Safi Mirza in 1140 AH / 1727-8 CE (Astarabadi, 2003: 443; Jazayeri-Shooshtari, 2008: 478), and the attack on the city by the Chahar Bonicheh Lurs of Kohgiluyeh and its plunder in 1200 AH / 1785-6 CE during the Zand period were among the most significant causes of the collapse of its economic prosperity and the loss of its political-administrative centrality. The author of Farsnameh-ye Naseri, during the Qajar period, writes regarding the importance of the city of Dehdasht and its trans-regional exchanges in the Safavid era: "In the Safavid era, given that this city was located midway on the communication route connecting the cities of Shiraz and Isfahan with Arjan, Behbahan, Shooshtar, and ports such as Mahroban and Janabeh (Genaveh) on the Persian Gulf coast, caravans would bring goods from India and Europe (Farangestan) to Dehdasht and transport them to surrounding areas for trade" (Hosseini Fasaei, 2003: 1488). This communication route connecting the coastal ports of the Persian Gulf and Arjan to Isfahan had been important from the early Islamic centuries until the end of the Seljuk period. The chain of caravanserais, bridges, paved roads, and road surveillance fortresses (Sepidnameh, 2021) indicates the role of this route in the sustainable economic development of Belad Shapur and economic interactions with other regions. Regarding the collapse of trade in Dehdasht after the Safavid era, Hosseini Fasaei writes: “During the turmoil of the Zand dynasty, the Chahar Bonicheh Lurs of Kohgiluyeh plundered this prosperous town, dispersed its inhabitants, and because they [the inhabitants] had business and trade dealings in [other] cities, each person settled in a city according to their circumstances” (Hosseini Fasaei, 2003: 1488).

Among the events related to the structure of the historical citadel of Dehdasht, mention can be made of the construction of a fortress of exceptional solidity by Qalandar (the False Ismail Mirza) in 991 AH / 1583 CE (Shamlu, 1996, Vol. 1: 110-111; Eskandar Monshi, 2011, Vol. 1: 200) and the collapse of a part of the fortress wall following a heavy rain, which occurred just before Qalandar’s defeat at the hands of the Afshar warriors and Ommat Khan Bayglarbeygi (E’temad al-Saltaneh, 1984, Vol. 2: 872). The author of Riyaz al-Firdaws mentions the repair and fortification of the Dehdasht fortress after the killing of Khalil Khan Afshar, prior to the confrontation between the forces of Eskandar Khan Afshar (Khalil Khan’s nephew) and Ommat Khan Zulqadr (Hosseini Monshi, 2006: 418). Eventually, the aforementioned forces placed ladders against the fortress wall from all sides and entered the fortress. Not finding Qalandar, they brought a builder who had constructed Qalandar’s buildings. He showed them an underground house, then they found Qalandar and killed him (Ibid: 420). Therefore, based on historical sources from the Safavid and Qajar periods, firstly, the fortress or citadel of Dehdasht was repaired to the highest degree of solidity, and secondly, a part of the wall collapsed during this period (Hosseini Monshi, 2006: 418; E’temad al-Saltaneh, 1984, Vol. 2: 872). According to archaeological evidence, in Trench F1, a section of the wall was completely destroyed down to its foundation, but no trace of it was seen within a half-meter radius. Excavation in Trench F4 fully revealed this section. Based on historical sources (E’temad al-Saltaneh, 1984, Vol. 2: 872), this section is likely the same part that collapsed during the battle between Eskandar Khan Afshar and Qalandar due to heavy rainfall and other factors, the details of which regarding the building’s structure are not fully known.

During the reign of Nader Shah Afshar (1148-1160 AH / 1736-1747 AD), Mohammad Khan Gashtasibi, upon assuming the position of Kalantar (chief magistrate/headman) of the Belad Shapur and Dehdasht district and the supervisorship (zabeti) of all the Chahar Bonicheh Jaki tribes, built a magnificent house in Dehdasht and lived there for years with grandeur and pomp (Bavar, 2012: 158). Given this situation, the city of Dehdasht was presumably re-inhabited once again after the Safavid period, because the exercise of his power, like that of other Khans, and his residence in this city necessitated the presence of guards, cavalrymen, and his nearby subjects/ tenants.

During the Qajar period, particularly in the era of Fath-Ali Shah and Mohammad Shah, efforts were made to revitalize Dehdasht. In 1281 AH / 1864-5 CE, when the governorship was assigned to Ehtesham al-Dowleh Soltan Morad Mirza, through his efforts, by 1285 AH / 1868-9 CE, nearly five hundred households had settled in Dehdasht, initiating trade, and several caravans transported goods to Isfahan (Hosseini Fasaei, 1999: 1488). Regarding the environment and economy of the Kohgiluyeh region (centered on Dehdasht) and its commercial connections with other areas, Hosseini Fasaei writes: “And in the Ron district, the seed of the mahlab tree (a type of ornamental and medicinal tree, whose fruit is smaller and finer than the mountain almond and has a fragrant kernel) is abundant, and thousands of manns [a unit of weight] of it are exported to India” (Hosseini Fasaei, 2003: 1469). Demorgny also mentions the wild almond, a fruit of particular commercial importance exported to India (Demorgny, 1996: 39). In 1291 AH / 1874-5 CE, when Ehtesham al-Dowleh was again appointed governor of Kohgiluyeh and Behbahan, he found the town of Dehdasht in ruins and endeavored to rebuild it (Ibid). This indicates that after the sacking of the city of Dehdasht in 1200 AH / 1785-6 CE, the city was plundered and abandoned by the nomads of the region at least once more.

Conclusion

Following the completion of two excavation seasons and soundings in the outer areas of the towers and rampart, it was determined that the citadel dates back to at least the early Islamic centuries, having been destroyed and subsequently rebuilt at least three times during this span. This significant finding can be examined through archaeological evidence, including architectural remains and portable finds such as ceramics, alongside a comparison with written historical sources concerning the city of Dehdasht and its historical district (Belad Shapur). Archaeological finds from the pre-Islamic era are limited to four fragments of fine red and gray ceramics. Consequently, the formation of the citadel cannot be definitively attributed to the pre-Islamic period, and we must await the results of future excavations.

Nevertheless, the earliest Islamic-era ceramic fragments can be attributed to the 3rd and 4th centuries AH / 9–10th centuries CE (pseudo-prehistoric ware, buff ware with incised decoration, and simple buff ware coated with slip). This period coincides with the construction of defensive fortresses around the Dehdasht plain and the rule of Giluyeh and his descendants over the rustaq of Belad Shapur, with the city and citadel of Dehdasht located at its heart. The second period discernible based on ceramic types is the Middle Islamic centuries, specifically the Seljuk-Ilkhanid era (6–8th centuries AH / 12–14th centuries CE), to which turquoise silhouette ware, ware with applied decoration under the glaze, ware with incised decoration under the glaze (sgraffito), and early examples of blue-and-white ware can be attributed. Blue-and-white ware is characteristic of the third period, namely the Safavid to Qajar eras, regarding whose developments we are clearly informed based on written historical sources such as Riyaz al-Firdaws al-Khani. Considering the historical trajectory of the construction and reconstruction of the citadel, it is probable that this structure initially served as the residence of a dehqan (landlord) or the ruler of the rustaq of Belad Shapur. The positioning of defensive fortresses around the Dehdasht plain and other road surveillance castles indicates their security and defensive dependence on the citadel. The main factor in the decline of Dehdasht and the effective revolts affecting the city's security during the Safavid period and after was the neglect of these defensive fortresses, which had been inhabited during the 3rd to 6th centuries AH / 9–12th centuries CE; fortresses that were likely established during the rule of Giluyeh and his descendants in this mountainous area. Archaeological evidence, such as the ceramics recovered from the citadel of Dehdasht, indicates that this city engaged in trans-regional exchanges with various regions of Iran (with cities like Mashhad and Kerman being the provenances of some types of blue-and-white ware) as well as with distant countries such as China, India, and Europe (Chinese blue-and-white ware types and the export of mahlab seeds and almonds to India). According to the Farsnameh-ye Naseri, the city of Dehdasht in the Safavid era was one of the distribution centers for imported goods from India and Europe (Farangestan) to the surrounding region of Dehdasht and possibly other areas of Iran. However, the author of the Farsnameh does not mention the import of goods from China or export to that country. It is expected that with the continuation of research and excavation at the historical citadel of the city of Dehdasht, even more valuable information regarding the life of the city of Dehdasht will be obtained.

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The Authors, while observing publication ethics in referencing, declare the absence of conflict of interest.

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روند تکوین و افول شهر قدیم دهدشت: هم‌سنجی متون تاریخی با پژوهش‌های باستان‌شناختی ارگ تاریخی

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چکیده

ارگ یک شهر، نه‌تنها به‌عنوان یک مرکز دفاعی و حکومتی مطرح است، بلکه بخش قابل‌توجهی از تاریخ سیاسی، فرهنگی و اجتماعی یک شهر را نیز روایت می‌کند. ارگ‌ها به‌عنوان نماد حکومتی، همواره نقشی تأثیرگذار در تعاملات فرهنگی و تجاری داشته‌اند. با توجه به این‌که یکی از عناصر مهم کالبدی شهرهای تاریخی را اَرگ به‌عنوان بخش حاکم‌نشین هر شهر تشکیل می‌دهد، شناخت پیشینهٔ شکل‌گیری و بنیان شهرها و نقش آن‌ها در حیات سیاسی-اداری و اجتماعی هر منطقه در گرو شناخت عنصر کالبدی یاد شده است. تحلیل تاریخی شکل‌گیری، رونق و افول شهر قدیم دهدشت و مطالعهٔ جنبه‌های گوناگون معماری و اهمیت یافته‌های باستان‌شناختی ارگ تاریخی این شهر، انجام این پژوهش را ضروری ساخته است. طی سال‌های ۱۳۹۹ و ۱۴۰۱، دو فصل کاوش و پی‌گردی ارگ تاریخی دهدشت با هدف خواناسازی برج و باروی آن انجام شد که افزون‌بر بقایای معماری، قطعات بسیار اندک سفال‌های دوران تاریخی و گونه‌های متنوعی از سفال‌های دوران اسلامی یافت شد. پژوهش حاضر در صدد پاسخ به دو پرسش در ارتباط با تاریخ شکل‌گیری، رونق و فروپاشی شهر و ارگ دهدشت است؛ این پرسش‌ها عبارتنداز: ۱) براساس منابع مکتوب تاریخی و هم‌سنجی با یافته‌های باستان‌شناختی، اَرگ تاریخی دهدشت به‌عنوان مهم‌ترین عنصر کالبدی این شهر، مربوط به چه دوره‌ای بوده و روند شکل‌گیری، گسترش و ویرانی آن چگونه بوده است؟ ۲) براساس یافته‌های باستان‌شناختی حاصل از کاوش در ارگ بافت تاریخی دهدشت، و نیز مطالعهٔ متون کُهن، برهم‌کنش‌های فرهنگی و اقتصادی رستاق بلادشاپور به مرکزیت دهدشت در منطقهٔ کوه‌گیلویه با مناطق دیگر چگونه بوده است؟روش گردآوری اطلاعات این پژوهش میدانی-اسنادی و روش پژوهش توصیفی-تحلیلی و تاریخی-تحلیلی است. مطالعهٔ بقایای معماری و یافته‌های باستان‌شناختی ازجمله سفال‌ها نشان می‌دهد ارگ تاریخی، دست‌کم از سدهٔ چهارم هجری‌قمری مسکون بوده و تا اواسط دورهٔ قاجار، حداقل سه‌بار بازسازی شده است. منابع تاریخی و شواهد باستان‌شناختی مانند یافته‌های سفالی نشان می‌دهد که این شهر مبادلات فرامنطقه‌ای با مناطق مختلف ایران، مانند: اصفهان، مشهد، کرمان و حتی کشورهای دوردست مانند: چین، هند و اروپا داشته است.

کلیدواژگان: بافت قدیم دهدشت، اَرگ تاریخی، کاوش باستان‌شناختی، متون تاریخی.

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Contents

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