

ARKEOLOJİ BİLİMLERİ DERGİSİ

TURKISH JOURNAL OF
ARCHAEOLOGICAL SCIENCES

2022

ISSN 2822-2164





ISSN 2822-2164

Editörler / Editors

Güneş Duru Mimar Sinan Fine Arts University, Turkey

Mihriban Özbaşaran Istanbul University, Turkey

Yardımcı Editörler / Associate Editors

Brenna Hassett University College London, United Kingdom

Melis Uzdurum Ondokuz Mayıs University, Turkey

Sera Yelözer Istanbul University, Turkey

Fatma Kalkan Koç University, Turkey

Yazı İşleri Müdürü / Managing Editor

Varlık İndere

AYRIBASIM / OFFPRINT

Yapım / Production

Zero Prodüksiyon Kitap-Yayın-Dağıtım San. Ltd. Şti.
Abdullah Sokak, No: 17, Taksim / Beyoğlu 34433 İstanbul - Türkiye
Tel: +90 (212) 244 7521 Fax: +90 (212) 244 3209
E.mail: info@zerobooksonline.com
www.zerobooksonline.com

Tasarım / Design
Adnan Elmasoğlu

Uygulama / Layout Design
Hülya Tokmak

Kapak Fotoğrafı / Cover Photo
Emrah Gökcan, Aşıklı Höyük



Danışma Kurulu / Advisory Board

Eşref Abay Ege University, Turkey

Murat Akar Hatay Mustafa Kemal University, Turkey

Benjamin S. Arbuckle University of North Carolina, USA

Levent Atıcı University of Nevada, USA

Meriç Bakiler Mimar Sinan Fine Arts University, Turkey

Marion Benz Free University of Berlin, Germany

Rozalia Christidou CNRS, France

Çiler Çilingiroğlu Ege University, Turkey

Nüzhet Dalfes Istanbul Technical University (emeritus), Turkey

Caroline Douché National Museum of Natural History - Paris, France

Yılmaz Selim Erdal Hacettepe University, Turkey

Burçin Erdoğu Akdeniz University, Turkey

Müge Ergun University of Oxford, UK

Metin Kartal Ankara University, Turkey

Nurcan Kayacan Istanbul University, Turkey

Moritz Kinzel German Archaeological Institute, Turkey

Elif Koparal Mimar Sinan Fine Arts University, Turkey

Ian Kuijt Notre Dame University, USA

Susan M. Mentzer University of Tübingen, Germany

Natalie Munro University of Connecticut, USA

Gökhan Mustafaoglu Ankara Hacı Bayram Veli University, Turkey

Rana Özbal Koç University, Turkey

Mehmet Somel Middle East Technical University, Turkey

Mary Stiner University of Arizona, USA

Georgia Tsartsidou Ephorate of Palaeoanthropology - Speleology, Greece



İçindekiler / Contents

- 1** **Rozalia Christidou**
Framing Research into the Neolithic Bone Flute from Aşıklı Höyük, Turkey
- 15** **Laurence Astruc, Alexia Decaix, Denis Guilbeau, Bertille Lyonnet, Farhad Guliyev**
Agricultural Practices at Mentesh Tepe (Kura Valley, Azerbaijan) during the Neolithic, Chalcolithic and Bronze Age: An Overview from Sickle Elements and Botanical Remains
- 52** **Benjamin Irvine**
Investigating a Subsistence Model of Staple Finance for the Late 4th to Early 2nd Millennium BCE of the Greater Near East
- 122** **Handan Üstündağ**
Boğazköy (Hattuša) İskelet Örneklerinde Biyolojik Stresin Etkilerinin Araştırılmasında Porotic Hyperostosis ve Sağkalım Analizinin Kullanılması
- 140** **Elif Koparal, Volkan Demirciler, Sam Turner**
Archaeology for Landscape Management and Planning: Historic Landscape Characterization of Urla (İzmir)
- 155** **Amaç ve Kapsam**
- 156** **Aims and Scope**
- 157** **Makale Gönderimi ve Yazım Kılavuzu**
- 162** **Submission and Style Guideline**

Framing Research into the Neolithic Bone Flute from Aşıklı Höyük, Turkey

Rozalia Christidou^a

Abstract

A worked shaft of a vulture ulna, classified as a flute from the Preceramic Neolithic settlement mound of Aşıklı Höyük in Central Anatolia, Turkey, is examined with regard to its morphological and shaping characteristics. Acoustic and high-power microwear analyses are pending. Generically, the term “flute” refers to an aerophone that produces one or more pitches. The Aşıklı Höyük specimen has a notched mouth hole and a side hole. It is unique among the bone artifacts collected from the site. The complex pattern incised on its surface and the arrangement of the elements of the pattern following flute anatomy underly the unusual character of the find. This flute probably represents a part of an originally longer, more complex device. The incised pattern appears to be truncated by a transverse break which followed grooving at one end of the artifact. The rough broken edge contrasts with the carefully worked opposite end and suggests recycling.

Keywords: Aşıklı Höyük, Central Anatolia, Neolithic aerophone, bone flute, vulture ulna

Özet

Orta Anadolu, Akeramik Neolitik Dönem yerleşmesi Aşıklı Höyük’te ortaya çıkarılan ve flüt ya da kaval olarak sınıflandırılan işlenmiş akbaba dirsek kemiği, bu çalışmada biçimsel özellikleri ve biçimlendirme süreci bağlamlarında incelenmiştir. Akustiğe ve yüksek ölçekli mikro iz analizine dayalı araştırmalar devam etmektedir. Genel anlamda “flüt” terimi, bir veya birden fazla perdeden oluşan üflemeli çalgıya karşılık gelir. Aşıklı Höyük örneğinin ağızlığı çentiklidir ve bir adet yan deliği vardır. Yerleşmenin diğer kemik buluntuları arasında tekildir. Onu farklı ve özgün kılan başlıca özellikler ise yüzeyine kazınmış karmaşık desenler ve bu desenlerin flütün anatomisini takip eden düzenidir. Söz konusu buluntu, olasılıkla daha uzun ve de karmaşık bir enstrümanın bir bölümünü temsil etmektedir. Bir uçtaki çizgi bezeme, oluk açma yöntemiyle enine bölünmesinin bir sonucu olarak kesintiye uğramış olmalıdır. Buluntunun pürüzlü kırık ucu, özenle biçimlendirilmiş diğer uç ile tezat oluşturur ve ikincil kullanımı işaret eder.

Anahtar Kelimeler: Aşıklı Höyük, Orta Anadolu, Neolitik üflemeli çalgı, kemik flüt, akbaba dirsek kemiği

^a Rozalia Christidou, Dr., UMR 5133-Archéorient, France.
rozalia.christidou@gmail.com ; <https://orcid.org/0000-0002-0829-5793>
Makale gönderim tarihi: 30.10.2021; Makale kabul tarihi: 2.12.2021

Introduction

The use of shafts—or portions thereof—of avian long bones as vertical, end-blown flutes is traced back to the Early Upper Paleolithic period (e.g., Buisson 1990; Conard and Malina 2008; Ibáñez et al. 2015). Archaeological and ethnological studies include numerous examples of aerophones made from long bones of birds and mammals, ivory, reeds, wood, and eventually also metal (e.g., Renaud 1926; Brade 1975; Lund 1981, 1985; Payne 1991; Zhang et al. 1999; Conard et al. 2004; Moreno-García et al. 2005; Hagel 2008; Küchelmann 2010). Clay flutes have existed since the Neolithic period (e.g., Cloduré-Tissot 2009, 26; Healy et al. 2010; Pomberger et al. 2018).

In the archaeological literature, “flute” is a term for any tube or vessel with one or more holes, used as a wind instrument (cf. Le Gonidec 2009, 18-19). Whistles and pan pipes belong to this class of artifact. An assemblage of seven long bone shafts, possibly from birds, with incised patterns on their surfaces, found in a 6th millennium cal. BCE burial of the Mariupol cemetery in Ukraine was classified as a syrinx, or pan pipes (Makarenko 1933, 43). Several single and double-piece specimens, mainly from large birds, from a 3rd millennium cal. BCE grave of the Ajvide cemetery on the island of Gotland, Sweden, could also be musical instruments (Mannermaa and Rainio 2013).

Typically, the manufacture of flutes from long bones involved the removal of one or both articular ends using grooving or a combination of grooving and snapping (see also Olsen 1979, 357-359, 1980, 43-44, 1984, 316-317, 342-344; Conard et al. 2009; García Benito et al. 2016). Rough, broken edges and natural protrusions on the outer surface of the bone shafts, for example, the ulnar papillae, or quill knobs, in the birds, were scraped and abraded until smooth. The wall of the medullary cavity was also abraded to remove natural internal relief like the ridges and struts in avian wing bones. Conical finger holes were perforated, and rough hole rims were abraded smooth. Other actions included the beveling and notching of the mouth hole, the opening of a window near this hole and surface decorations. In some cases, the natural form of the bone shaft was also modified to flatten the surface bearing the finger holes.

The identification of bone cylinders as sound-producers and musical instruments is not without problems since such fragments served various functions. For example, they were used as handles, containers or personal ornaments (e.g., Averbouh 1993; Barge-Mahieu et al. 1993; Genz 2003; Saliari and Draganits 2013; Ayalon 2018, 522-523). In addition, fragmentation and ambiguities surrounding the origins of bone modifications can constrain functional inferences (e.g., Chase and Nowell 1998; d’Errico et al. 1998; Turk et al. 2020). Overall, biases and limitations addressed in standard taphonomic and experimental artifact analyses also pertain to the study of possible music devices (cf. Lawson 1999). Since the late 1960s (see in particular Megaw 1968), there is also awareness of the cross- and interdisciplinary character of the research into these objects, which includes mathematics, musicology and organology.

The methodological considerations being outlined above are crucial to identifying ancient sounds and music playing instruments. A series of publications focus on early examples of these objects and provide criteria for modern human behavior and innovation (e.g., Brown et al. 2000; d’Errico et al. 2009; Morley 2006, 2013). Moreover, in recent years sound and music perception, production, and use have been integrated into a research of a wider scope, the archaeology of sound (see, e.g., Dauvois and Boutillon 1994; Scarre and Lawson 2006; Blake and Cross 2015).

Here we report the discovery of a locally unique bone tube classified as a flute in Level 4 of the Preceramic Neolithic mound site of Aşıklı Höyük in Central Anatolia (Figure 1). Such finds are extremely rare in Anatolia. Another flute, dated to the 7th millennium cal. BCE, has been reported from the Neolithic site of Bahçelievler, Bilecik Province, in Northwest Turkey¹. Level 4 of Aşıklı Höyük is older. It covers the years 8350-8050 cal. BCE (Quade et al. 2018) and represents a formative stage in the local subsistence system, early caprine management in particular (Stiner et al. 2014; Buitenhuis et al. 2018; Peters et al. 2018). Material culture evidence also highlights the early character of the archaeological assemblage of Level 4 (Astruc 2018; Yelözer and Christidou 2020). The bone tube comes from a midden deposit of the upper part of the level, excavated within the area of an earlier, abandoned structure, Building 6. The midden also contained a variety of unworked animal bones and obsidian and ground stone artifacts.

The tube displays a side hole midway between its ends, which are both open, and a notch at one end. It thus bears a strong resemblance to confirmed bone flutes. Its raw material is also consistent with these artifacts. The Aşıklı Höyük specimen was cut off the shaft of an ulna of a vulture, possibly a common griffon, or Eurasian griffon (*Gyps fulvus*), identification by M. C. Stiner (09.10.2010). In Level 4, the taphonomy of large bird bones varies with species. Some of these birds occur rarely, suggesting use of raw materials such as bones and feathers rather than food consumption (Stiner et al. 2014, 8405). The cylinder from the vulture ulna is an isolated occurrence. It was probably chosen as raw material for its straight, naturally hollow form. Bone density—high in the birds—could also have influenced its selection for a flute since this property of the bone is related to the quality of the tone of the sound produced. A study of the acoustic behavior and design of the Aşıklı Höyük bone tube would allow us to ascertain its use as a flute. The present paper provides a description of the morphological and shaping characteristics of the specimen, which are essential to the understanding of its structure. Use modifications observed in the field with a stereoscopic microscope at 20-40 diameters are also described. At the time of writing, it has not been possible to photograph the shaping and use marks on the object, which is kept, since its discovery in 2010, at the archaeological museum of Aksaray, Turkey.

¹ <https://arkeofili.com/bileikte-8-500-yillik-bir-muzik-aleti-bulundu/>

Description

To indicate the positions of the morphological and technological traits of the Aşıklı Höyük tubular flute, we use conventions and directional terms published in Le Gondec (2009, 18-19, Table 1). The side of the flute that bears one or more finger holes is called the face. It corresponds to the anterior side of the Aşıklı Höyük specimen. On the longitudinally blown flutes, the notching of the edge of the mouth hole facilitates sound production. This edge is called the proximal end of the flute. The opposite edge is its distal end. It is uncertain whether the functional orientation of the Aşıklı Höyük find coincides with its anatomical position.

Table 1. Metrical data on the flute from Aşıklı Höyük (measurements in millimetres).
Hole diameters vary; the values reported here are indicative.

Flute		
Total length		71.4
Outer diameter	Proximal	12.7 ^a / 12.8 ^b
	Central	12.4 ^a / 13.1 ^b
	Distal	12.5 ^a / 12.8 ^b
Inner diameter	Proximal	9 ^a / 9.5 ^b
	Distal	9.6 ^a / 10.2 ^b
Side hole		
Internal diameter		5.6 ^c / 5.1 ^d
External diameter		6.5 ^c / 5.6 ^d
Proximal notch		
Length		3
Width		3.2 ^e / 5.4 ^f
^a length from the face to the rear side of the flute; ^b length from the left to the right side of the flute; ^c along the length of the flute; ^d along the width of the flute; ^e outer edge of the notch; ^f inner edge of the notch		

The cylinder from which this artifact is made comes from the central part of the ulna. It is 71.4 mm long and its outer and inner diameters are nearly uniform (Table 1). The thickness of the bone wall, which has been worked and thinned, is 1.7 mm. This wall is perforated by a conical hole, which is located at nearly equal distances from the ends of the artifact: the length measured between the proximal external edge of the cone and the proximal edge of the flute is 32.3 mm; it is 30.4 mm between the cone's distal external edge and the flute's distal edge. The external and internal diameters of the cone show that the hole is slightly oval, with the major axis running in a proximal-distal direction. The notch in the proximal end represents about half of a similar hole which was truncated later, when the artifact was cut transversely by annular grooving and snapping. The groove, relatively shallow (depth: ≤ 1 mm), was incised using a stone

edge with a back-and-forth motion. Then, the bone was cracked along the groove. At the distal end, it was incised down to the medullary cavity. The cut surface, even and regular at this end, was not modified further. Sharp projections on the snapped proximal edge were removed with a grinding stone.

The perforation was made using a hand-held sharp stone tool and semi-circular strokes. It is oval and lopsided. Its wall and parts of its edge show overlapping striated facets indicative of shifts in the angles and lengths cut with the perforating tool (cf. Poulmarc'h et al. 2016, 963 with references). Similar facets are present within the notched area of the proximal edge of the flute. Despite the relatively short distance and the technical similarities between the hole and the notch, their midlines do not coincide.

The outer surface of the bone cylinder was scraped smooth. The natural prominences, or papillae, for feather attachment on the ulna were probably removed during this work. The medullary cavity was abraded longitudinally to eliminate natural relief, possibly using sand and a strap made from a flexible material such as leather or plant fibers. The abrasion striations have a dulled appearance.

A pattern composed of longitudinal, transverse, and oblique incisions was engraved on the scraped outer surface of the flute's body. To cut these marks, a stone edge was moved along the bone surface in the same way that it was employed on the ends of the artifact. Two longitudinal grooves were first created on its rear side (Figure 2). The distance between the two marks is about 8 mm. Then, a transverse groove was made on the flute's rear and left sides. Its distance from the proximal edge of the object is 3.1-3.8 mm. Sets of six, seven and eight parallel and subparallel oblique incisions were also shaped. They occur in a herringbone arrangement around the flute's circumference. In most of the cases, the ends of the incisions of adjacent sets intersect. Each set covers about one-quarter of the circumference of the object. The distances between the marks of a set vary between 3.7 and 8 mm. Overall, there has been little care to avoid asymmetries within a set. More importance was paid to the creation of rows of zigzags that run around the circumference of the tube. External incisions, that is, shallow, isolated, or grouped cut-marks indicating deviations of movements from the main incision path, are also visible. Lastly, the sets of oblique incisions were framed by a pair of annular grooves cut about 3 mm above the distal edge of the flute.

The central perforation, which is preserved intact on the face of the flute, interrupts an intersection of oblique incisions. It was made after these marks were shaped. The proximal annular grooving, which appears expedient when it is compared to the distal grooving, also followed the shaping of an oblique incision. It is likely that the shaping of the intact side hole and the proximal grooving and snapping represent reworking of an initially longer flute. The creation of the proximal notch exploited the existence of another, initially intact, side hole.

Differences observed in the amount of use polish and smoothing on the flute's surface may also be related to reworking. The scraping striations appear obliterated or severely worn down and polished over. The edges of the incisions on the corpus of the flute are also highly polished and rounded. The polish is associated with fine striations of varying directions and often microscopic pits, suggesting extended manipulation and use. The distal extremity of the flute and the proximal notch display macroscopic rounding of their ridges and angles and bright, macroscopic polish. By contrast, the relief created during the perforation of the central side hole and the proximal grooving and snapping is well preserved, although rounding and polish are developed on it.

Discussion

Severe wear in the form of macroscopic polish, rounding, and smoothing of surface features helps recognize intense and extended use of ancient artifacts including musical instruments. Such use wear as well as reworking traces are often observed on the personal items made of bone at Aşıklı Höyük (Yelözer and Christidou 2020; Christidou forthcoming). It is not unreasonable to assume that an exceptional object such as the worked ulna of a vulture was considered as a personal belonging and that its use-life was prolonged through reshaping (cf. Choyke 2009 with references). The expedient character of the proximal grooving and snapping may also indicate ownership and personal decision and experience. It is not possible to reconstruct the initial object, which would be longer, with more than one side holes, but the shaping of a conical hole suitable to function as a finger hole and the truncation of another, similar opening for the creation of the proximal notch reinforce the idea that the last modifications of the artifact were made by an experienced individual, aware of the function of the notch and the intact side hole and the functional properties of the bird bone.

The stratigraphic context of the flute, which was recovered from a midden (cf. Introduction), reflects a common practice related to the treatment of personal items from Aşıklı Höyük. These objects were regularly deposited in dump areas, together with waste generated by daily activities, for example, animal bones and ordinary tools. This attitude is very characteristic of the oldest occupations, which include Level 4. Independently of the functions performed by the various manufactured objects and the meanings ascribed to them, at the end of their use-lives, they were treated in the same way as the debris usually associated with the habitation and the organization of the space by the local community. The deposition of personal possessions and more precisely ornaments made of bone and stone changed in Level 2, when these artifacts were taken out from circulation and the community sphere and buried with the dead.

With regard to typology, the existence of a single side hole and the notched proximal edge suggest a whistle (Clodoré-Tissot 2009, 28-34, Fig. 2). The conical shape and the diameter of

the side hole resemble to the finger holes perforated on Stone Age flutes (cf. Clodoré-Tissot 2009; García Benito et al. 2016, 214). It is larger than that of the Basque specimen, which has a diameter of about 3 mm (Ibáñez et al. 2015, 282).

The shaping of dot and line patterns on bone tools, including flutes, appears to have been an intermittent practice from the Palaeolithic period through historical times (e.g., Fages and Mourer-Chauviré 1983; Buisson 1990; Moreno-García et al. 2005). Incised patterns occur on bone tools and personal items in prehistoric sites in Anatolia and adjacent regions (e.g., Özkan 2002, 522; Badalyan et al. 2007, Fig. 6e; French 2010, Fig. 59.2, 5 and 6; Mărgărit et al. 2016, Fig. 20.1; Paul and Erdoğan 2017, Fig. 3). The history of choice of intersecting incisions forming zigzags and chevrons in Anatolia remains little documented (Azeri et al. forthcoming). The specimen from Level 4 of Aşıklı Höyük represents an early example. The arrangement of the marks observed on this specimen indicates a relatively elaborate composition, which also accords with flute anatomy. Specifically, the positions of the longitudinal and distal annular incisions indicate the proper orientation for shaping and using such an instrument. There is little doubt that the pattern was constructed specifically for this object.

The choice of the vulture bone must be discussed. Apart from the functional properties of the bone, mentioned above, the bird, the common griffon, could also have been invested with a symbolic value. It is known to have played later a role in the figurative representations of Çatalhöyük in Central Anatolia and, earlier, in various Eastern Anatolian and Middle Eastern sites (e.g., Helmer et al. 2004; Peters and Schmidt 2004; Gifford-Gonzalez 2007; Stordeur 2010). On the other hand, flutes are made from bone and other organic materials in the same cultural context (e.g., Hassan 1976, 56). At Aşıklı Höyük, the use and processing of plant materials in architecture and crafts is well documented (Astruc 2018; Tsartsidou 2018; Christidou forthcoming), while large birds occur rarely, and it is possible that the worked ulna bone here discussed was obtained by scavenging from a dead vulture. Therefore, one may wonder whether flutes were not rare at the site but made more often from reeds and wood. Since responses to sounds and music are culturally determined, the acoustic analysis of the Aşıklı Höyük find should include sonority comparisons between flutes made from bone and plant materials.

High-power microwear analysis can allow assessment of the handling wear and the manufacturing marks and, more specifically, the incisions made during the production and reworking of the flute. Thus, it would enhance our understanding of the perception and use of singular products and personal items at the site during the occupation of Level 4. Whether future research suggests that other organic flutes could have been used for the same purpose at the site, the behaviors so far recognized and associated with the production and maintenance of the bone specimen place it among the personal items from the site.

Acknowledgments

I cannot thank enough Laurence Astruc, Alice Choyke, Maria Ntinou and Georgia Tsartsidou for answering questions and criticizing text and concepts. Thanks also go out to two anonymous reviewers and the editor for providing useful and constructive comments, to Hazal Azeri for the Turkish translation and the reference to the flute from Bahçelievler and to Euripides Christides for grammatical corrections. Because the analysis of the Aşıklı Höyük flute is incomplete, I have hesitated to publish the data collected during the recording of the artifact in the field in 2010, but Mihriban Özbaşaran encouraged me to do so. This paper allowed me to become aware of the themes with which the find is associated and to frame further research. The study of the bone artifacts of Aşıklı Höyük is supported by the Istanbul University Research Fund and the UMR 5133 of CNRS/Université Lumière Lyon 2.

References

- Astruc, L. 2018. Obsidian Use During the Level 4 Occupations at Aşıklı Höyük. M. Özbaşaran, G. Duru, M. C. Stiner (Eds.), *The Early Settlement at Aşıklı Höyük. Essays in Honor of Ufuk Esin*, Istanbul: Zero Books/Ege Yayınları, 345-483.
- Averbouh, A. 1993. 4. Fiche Tubes et Étuais. J. Allain, A. Averbouh, H. Barge-Mahieu, C. Beldiman, D. Buisson, H. Camps-Fabrer, P. Cattelain, S.-Y. Choi, J. N. Nandris, M. Patou-Mathis, A. Peltier, N. Provenzano, D. Ramseyer (Eds.), *Fiches Typologiques de l'Industrie Osseuse Préhistorique. Cahier VI. Éléments Récepteurs*, Treignes: CEDARC, 99-113.
- Ayalon, E. 2018. Bone, Ivory, Antler, and Horn. O. Tsuf (Ed.), *Ancient Jaffa from the Persian to the Byzantine Period. Kaplan Excavations (1955-1981)*, The Jaffa Cultural Heritage Project Series Volume 3, Münster: Zaphon, 518-537.
- Azeri, H., Christidou, R., Mărgărit, M. forthcoming. The Use of Dot and Line Patterns on the Bone Tools from the Later Neolithic and Chalcolithic East Balkans. Essay Based on a Paper Presented at the 27th Annual Meeting of the European Association of Archaeologists.
- Badalyan, R., Lombard, P., Avetisyan, P., Chataigner, C., Chabot, J., Vila, E., Hovsepyan, R., Willcox, G., Pessin, H. 2007. The Excavation at Aratashen (Armenia). Preliminary Report. B. Lyonnet (Éd.), *Les Cultures du Caucase (VI^e-III^e Millénaires Avant Notre Ère). Leurs Relations avec le Proche-Orient*, Paris: Recherche sur les Civilisations, CNRS, 37-61.
- Barge-Mahieu, H., Camps-Fabrer, H., Choi, S.-Y. 1993. 3.3. Fiche Manches en Os à Insertion Longitudinale. J. Allain, A. Averbouh, H. Barge-Mahieu, C. Beldiman, D. Buisson, H. Camps-Fabrer, P. Cattelain, S.-Y. Choi, J. N. Nandris, M. Patou-Mathis, A. Peltier, N. Provenzano, D. Ramseyer (Eds.), *Fiches Typologiques de l'Industrie Osseuse Préhistorique. Cahier VI. Éléments Récepteurs*, Treignes: CEDARC, 59-68.
- Blake, E.C., Cross, I. 2015. The Acoustic and Auditory Contexts of Human Behavior. *Current Anthropology* 56(1), 81-103. <https://doi.org/10.1086/679445>
- Brade, C. 1975. *Die mittelalterlichen Kernspaltflöten Mittel- und Nordeuropas. Ein Beitrag zur Überlieferung prähistorischer und zur Typologie mittelalterlicher Kernspaltflöten*, Neumünster: K. Wachholtz.
- Brown, S., Merker, B., Wallin, N.L. 2000. An Introduction to Evolutionary Musicology. N. L. Wallin, B. Merker, S. Brown (Eds.), *The Origins of Music*, Cambridge MA, London: A Bradford Book, The MIT Press, 3-24.

- Buisson, D. 1990. Les Flûtes Paléolithiques d'Isturitz (Pyrénées-Atlantiques). *Bulletin de la Société Préhistorique Française* 87(10-12), 420-433. <https://doi.org/10.3406/bspf.1990.9925>
- Buitenhuis, H., Peters, J., Pöllath, N., Stiner, M.C., Munro, N.D., Sarıtaş, Ö. 2018. The Faunal Remains from Levels 3 and 2 of Aşıklı Höyük. Evidence for Emerging Management Practices. M. Özbaşaran, G. Duru, M.C. Stiner (Eds.), *The Early Settlement at Aşıklı Höyük. Essays in Honor of Ufuk Esin*, Istanbul: Zero Books/Ege Yayınları, 281-325.
- Chase, P.G., Nowell, A. 1998. Taphonomy of a Suggested Middle Palaeolithic Bone Flute from Slovenia. *Current Anthropology* 39(4), 549-553. <https://www.doi.org/10.1086/204771>
- Choyke, A.M. 2009. Grandmother's Awl. Individual and Collective Memory through Material Culture. I. Barbiera, A.M. Choyke, J.A. Rasson (Eds.), *Materializing Memory. Archaeological Material Culture and the Semantics of the Past*, British Archaeological Reports International Series 1977, Oxford: Oxbow Books, 21-40.
- Christidou, R. forthcoming 2023. Bone Tool Use and Maintenance Patterns from Aşıklı Höyük (Central Anatolia, Turkey). *Paléorient*.
- Cloduré-Tissot, T. 2009. Fiche n° 2. Témoins Sonores du Néolithique et des Âges des Métaux. T. Cloduré-Tissot, M.-B. Le Gonidec, D. Ramseyer, C. Anderes (Éds.), *Industrie de l'Os Préhistorique. Cahier XII. Instruments Sonores du Néolithique à l'Aube de l'Antiquité*, Paris: Société Préhistorique Française, 23-65.
- Conard, N.J., Malina, M. 2008. New Evidence for the Origins of Music from the Caves of the Swabian Jura. A.A. Both, R. Eichmann, E. Hickmann, L.-C. Kohl (Eds.), *Challenges and Objectives in Music Archaeology. Papers from the 5th Symposium of the International Study Group on Music Archaeology at the Ethnological Museum, State Museums Berlin, 19-23 September 2006*, Orient-Archäologie 22, Studien zur Musikarchäologie VI, Rahden Westf.: Marie Leidorf, 13-22.
- Conard, N.J., Malina, M., Münzel, S.C. 2009. New Flutes Document the Earliest Musical Tradition in Southwestern Germany. *Nature* 460(7256), 737-740. <https://doi.org/10.1038/nature08169>
- Conard, N.J., Malina, M., Münzel, S.C., Seeberger, F. 2004. Eine Mammutelfenbeinflöte aus dem Aurignacien des Geissenklösterle. Neue Belege für eine musikalische Tradition im frühen Jungpaläolithikum auf der Schwäbische Alb. *Archäologisches Korrespondenzblatt* 34(4), 447-462.
- Dauvois, M., Boutillon, X. 1994. Caractérisation Acoustique des Grottes Ornées Paléolithiques et de Leurs Lithophones Naturels. C. Homo-Lechner, A. Bélis (Éds.), *La Pluridisciplinarité en Archéologie Musicale. IV^e Rencontres Internationales du Groupe d'Études sur l'Archéologie Musicale de l'ICTM, Saint-Germain-en-Laye, 8-12 octobre 1990*, Collection Recherche Musique et Danse 11-12, Paris: Maison des Sciences de l'Homme, 207-256.
- d'Errico, F., Vanhaeren, M., Henshilwood, C., Lawson, G., Maureille, B., Gambier, D., Tillier, A., Soressi, M., Van Niekerk, K. 2009. From the Origin of Language to the Diversification of Languages. What Can Archaeology and Palaeoanthropology Say? F. d'Errico, J.-M. Hombert (Eds.), *Becoming Eloquent. Advances in the Emergence of Language, Human Cognition, and Modern Cultures*, Amsterdam: John Benjamins Publishing, 13-68.
- d'Errico, F., Villa, P., Pinto Llona, A.C., Idarraga, R.R. 1998. A Middle Palaeolithic Origin of Music? Using Cave Bear Accumulations to Assess the Divje Babe I Bone 'Flute.' *Antiquity* 72(275), 65-79. <https://doi.org/10.1017/S0003598X00086282>
- Fages, G., Mourer-Chauviré, C. 1983. La Flûte en Os d'Oiseau de la Grotte Sépulcrale de Veyreau (Aveyron) et Inventaire des Flûtes Préhistoriques d'Europe. F. Poplin (Éd.), *La Faune et l'Homme Préhistorique. Dix Études en Hommage à Jean Bouchud*, Mémoire de la Société Préhistorique Française 16, Paris: Société Préhistorique Française, 95-103.

- French, D.H. 2010.** *Canhasan Sites 3. Canhasan I. The Small Find.* The British Institute at Ankara Monograph Series 32. London: British Institute at Ankara.
- García Benito, C., Alcolea Gracia, M., Mazo Pérez, C. 2016.** Reproduction of an Upper Palaeolithic Bird-Bone Pipe with Finger Holes from Isturitz. First Experiments. R. Eichmann, L.-C. Koch, F. Jianjun (Eds.), *Sound – Object – Culture – History. Papers from the 9th Symposium of the International Study Group on Music Archaeology at the Ethnological Museum, State Museums, Berlin, 9-12 September 2014*, Orient-Archäologie 37, Studien zur Musikarchäologie X, Rahden Westfl.: Marie Leidorf, 213-223.
- Genz, H. 2003.** *Ritzverzierte Knochenhülsen des dritten Jahrtausends im Ostmittelmeerraum. Eine Studie zu den frühen Kulturverbindungen zwischen Levante und Ägäis.* Abhandlungen des deutschen Palästina-Vereins Band 31. Wiesbaden: Harrassowitz.
- Gifford-Gonzalez, D. 2007.** On Beasts and Breasts. Another Reading of Women, Wildness and Danger at Çatalhöyük. *Archaeological Dialogues* 14(1), 91-111. <https://doi.org/10.1017/S1380203807002206>
- Hagel, S. 2008.** Re-evaluating the Pompeii Auloi. *Journal of Hellenic Studies* 128, 52-71. <https://doi.org/10.1017/S0075426900000057>
- Hassan, S.Q. 1976.** Les Instruments de Musique chez les Yezidis de l'Irak. *Yearbook of the International Folk Music Council* 8, 53-72. <https://doi.org/10.2307/767382>
- Healy, P.F., Dennett, C.L., Harris, M.H., Both, A.A. 2010.** A Musical Nature. Pre-Columbian Ceramic Flutes of Northeast Honduras. R. Eichmann, E. Hickmann, L.-C. Koch (Eds.), *Musical Perceptions, Past and Present. On Ethnographic Analogy in Music Archaeology. Papers of the 6th Symposium of the International Study Group on Music Archaeology at the Ethnological Museum, State Museums Berlin, 9-13 September 2008*, Orient-Archäologie 25, Studien zur Musikarchäologie VII, Rahden Westf.: Marie Leidorf, 189-212.
- Helmer, D., Gourichon, L., Stordeur, D. 2004.** À l'aube de la Domestication Animale. Imaginaire et Symbolisme Animal dans les Premières Sociétés Néolithiques du Nord du Proche-Orient. P. Bonte, A.-M. Brisebarre, D. Helmer, H. Sidi-Maamar (Éds.), *Domestications Animales. Dimensions Sociales et Symboliques. Hommages à Jacques Cauvin*, Villeurbanne, 21-23 novembre 2002, *Anthropozoologica* 39(1), 143-163.
- Ibáñez, J.J., Salas, J., Clemente-Conte, I., Soler, N. 2015.** Use and Sonority of a 23,000-Year-Old Bone Aerophone from Davant Pau Cave (NE of the Iberian Peninsula). *Current Anthropology* 56(2), 282-289. <https://doi.org/10.1086/680437>
- Küchelmann, H.C. 2010.** Highland Tunes in the Lowlands. A Medieval Vulture Bone Flute from Northern Germany. A. Legrand-Pineau, I. Sidéra, N. Buc, E. David, V. Scheinsohn (Eds.), *Ancient and Modern Bone Artefacts from America to Russia. Cultural, Technological and Functional Signature. Contributions from 6th International Conference Worked Bone Research Group – ICAZ, Paris, 26-31 August 2007*, British Archaeological Reports International Series 2136, Oxford: Archaeopress, 71-182.
- Lawson, G. 1999.** Getting to Grips with Music's Prehistory. Experimental Approaches to Function, Design, and Operational Wear in Excavated Musical Instruments. A. Harding (Ed.), *Experiment and Design. Archaeological Studies in Honour of John Coles*, Oxford: Oxbow Books, 133-138.
- Le Gondec, M.B. 2009.** Fiche n° 2. Univers Musical de l'Homme Préhistorique. T. Clodré-Tissot, M.-B. Le Gondec, D. Ramseyer, C. Anderes (Éds.), *Industrie de l'Os Préhistorique. Cahier XII. Instruments Sonores du Néolithique à l'Aube de l'Antiquité*, Paris: Société Préhistorique Française, 11-22.

- Lund, C.S. 1981. The Archaeomusicology of Scandinavia. *World Archaeology* 12(3), 246-265. <https://doi.org/10.1080/00438243.1981.9979799>
- Lund, C.S. 1985. Bone Flutes in Västergötland, Sweden. Finds and Traditions. *Acta Musicologica* LVII(I), 9-25.
- Makarenko, M. Ya. 1933. *Maryuplskij mogilnik*. Kyiv: Vidavnicztvo VUAN.
- Mannermaa, K., Rainio, R. 2013. Tubular Bone Artefacts in Burial Context at Ajvide, Gotland c. 2500 cal BC. Are They Musical Instruments? A. Choyke, S. O'Connor (Eds.), *From These Bare Bones. Raw Materials and the Study of Worked Osseous Objects. Proceedings of the Raw Materials Session at the 11th ICAZ Conference, Paris, 2010*, Oxford: Oxbow Books, 140-153.
- Mărgărit, M., Ștefan, C.E., Dumitrașcu, V. 2016. The Exploitation of Animal Resources in Șoimuș-La Avicola (Ferma 2) Settlement (Romania). *Documenta Praehistorica* XLIII, 363-397. <https://doi.org/10.4312/dp.43.18>
- Megaw, J.V.S. 1968. Problems and Non-Problems in Palaeo-Organology. A Musical Miscellany. J.M. Coles, D.D.A. Simpson (Eds.), *Studies in Ancient Europe. Essays Presented to Stuart Piggott*, Leicester: Leicester University Press, 333-358.
- Moreno-García, M., Pimenta, C., Gros, M. 2005. Musical Vultures in the Iberian Peninsula. Sounds Through Their Wings. G. Grupe, J. Peters (Eds.), *Feathers, Grit and Symbolism. Birds and Humans in the Ancient Old and New Worlds. Proceedings of the 5th Meeting of the ICAZ Bird Working Group in Munich (26.7-28.7.2004)*, Documenta Archaeobiologiae 3, Rahden Westf.: Marie Leidorf, 329-347.
- Morley, I. 2006. *The Evolutionary Origins and Archaeology of Music*, Ph.D. dissertation, Cambridge University 2003.
- Morley, I. 2013. *The Prehistory of Music. Human Evolution, Archaeology, and the Origins of Musicality*. Oxford: Oxford University Press Scholarship Online. 10.1093/9780199234080.001.0001
- Olsen, S.L. 1979. A Study of Bone Artifacts from Grasshopper Pueblo, AZ P:14:1. *The Kiva* 44(4), 341-373. <https://doi.org/10.1080/00231940.1979.11757924>
- Olsen, S.L. 1980. Bone Artifacts from Kinishba Ruin. Their Manufacture and Use. *The Kiva* 46(1-2), 39-67. <https://doi.org/10.1080/00231940.1980.11757947>
- Olsen, S.L. 1984. *Analytical Approaches to the Manufacture and Use of Bone Artifacts in Prehistory*, Ph.D. dissertation, University of London.
- Özkan, S. 2002. Köşk Höyük Kemik Eserleri. *Anadolu Araştırmaları* XVI, 509-525.
- Paul, J.W., Erdoğan, B. 2017. An Examination of the Worked Bone and Antler Assemblage at Uğurlu (Gökçeada, Turkey). *Documenta Praehistorica* XLIV, 368-385. <https://doi.org/10.4312/dp.44.23>
- Payne, R.W. 1991. Bone flutes of the Anasazi. *The Kiva* 56(2), 165-177. <https://doi.org/10.1080/00231940.1991.11758163>
- Peters, J., Neuberger, F., Wiechmann, I., Zimmermann, M., Balasse, M., Pöllath, N. 2018. Shaping the Sheep. Human Management and Decision-Making at Aşıklı Höyük, Central Anatolia. M. Özbaşaran, G. Duru, M.C. Stiner (Eds.), *The Early Settlement at Aşıklı Höyük. Essays in Honor of Ufuk Esin*, Istanbul: Zero Books/Ege Yayınları, 325-345.
- Peters, J., Schmidt, K. 2004. Animals in the Symbolic World of Pre-Pottery Neolithic Göbekli Tepe, South-Eastern Turkey. A Preliminary Assessment. P. Bonte, A.-M. Brisebarre, D. Helmer, H. Sidi-Maamar (Éds.), *Domestications Animales. Dimensions Sociales et Symboliques. Hommages à Jacques Cauvin*, Villeurbanne, 21-23 novembre 2002, *Anthropozoologica* 39(1), 179-218.

- Pomberger, B.-M., Kotova, N., Stadler, P. 2018. Flutes of the First European Farmers. *Annalen des Naturhistorischen Museums in Wien, Serie A* 120, 453-470.
- Poulmarc'h, M., Christidou, R., Bălăşescu, A., Alarashi, H., Le Mort, F., Gasparyan, B., Chataigner, C. 2016. Dog Molars as Personal Ornaments in a Kura-Araxes Child Burial (Kalavan-1, Armenia). *Antiquity* 90(352), 953-972. <https://doi.org/10.15184/aqy.2016.132>
- Quade, J., Stiner, M.C., Copeland, A., Clark, A.E., Özbaşaran, M. 2018. Radiocarbon Dating of Aşıklı Höyük. M. Özbaşaran, G. Duru, M.C. Stiner (Eds.), *The Early Settlement at Aşıklı Höyük. Essays in Honor of Ufuk Esin*, Istanbul: Zero Books/Ege Yayınları, 43-56.
- Renaud, E.B. 1926. Flûtes Indiennes Préhistoriques du Sud-Ouest Américain. *Bulletin de la Société Préhistorique Française* 23(7-8), 168-178. <https://doi.org/10.3406/bspf.1926.5910>
- Saliari, K., Draganits, E. 2013. Early Bronze Age Bone Tubes from the Aegean. Archaeological Context, Use and Distribution. *Archeometriai Műhely* X/3, 179-192. <http://www.ace.hu/am/indexe.html>
- Scarre, C., Lawson, G. 2006. (Eds.) *Archaeoacoustics*. McDonald Institute Monographs. Oxford: Oxbow Books.
- Stiner, M.C., Buitenhuis, H., Duru, G., Kuhn, S.L., Mentzer, S.M., Munro, N.D., Pöllath, N., Quade, J., Tsartsidou, G., Özbaşaran, M. 2014. A Forager-Herder Trade-off, from Broad-Spectrum Hunting to Sheep Management at Aşıklı Höyük, Turkey. *Proceedings of the National Academy of Sciences* 111(23), 8404-8409. <https://doi.org/10.1073/pnas.1322723111>
- Stordeur, D. 2010. Domestication of Plants and Animals, Domestication of Symbols? D. Bolger, L. C. Maguire (Eds.), *Development of Pre-State Communities in the Ancient Near East. Studies in Honour of Edgar Peltenburg*, Themes from the Ancient Near East BANEPA Publication Series 2, Oxford: Oxbow Books, 123-130.
- Tsartsidou, G. 2018. The Microscopic Record of Aşıklı Höyük. Phytolith Analysis of Material from the 2012-2016 Field Seasons. M. Özbaşaran, G. Duru, M. C. Stiner (Eds.), *The Early Settlement at Aşıklı Höyük. Essays in Honor of Ufuk Esin*, Istanbul: Zero Books/Ege Yayınları, 147-189.
- Turk, M., Turk, I., Otte, M. 2020. The Neanderthal Musical Instrument from Divje Babe I Cave (Slovenia). A Critical Review of the Discussion. *Applied Sciences* 10(4), 1226. <https://doi.org/10.3390/app10041226>
- Yelözer, M., Christidou, R. 2020. The Foot of the Hare, the Tooth of the Deer and the Shell of the Mollusc. Neolithic Osseous Ornaments from Aşıklı Höyük (Central Anatolia, Turkey). M. Mărgărit, A. Boroneanţ (Eds.), *Beauty and the Eye of the Beholder. Personal Adornments Across the Millennia*, Targovişte: Cetacea de Scaun, 197-222.
- Zhang, J.Z., Harbottle, G., Wang, C., Kong, Z. 1999. Oldest Playable Musical Instruments Found at Jiahu Early Neolithic Site in China. *Nature* 401(6751), 366-368. <https://doi.org/10.1038/43865>

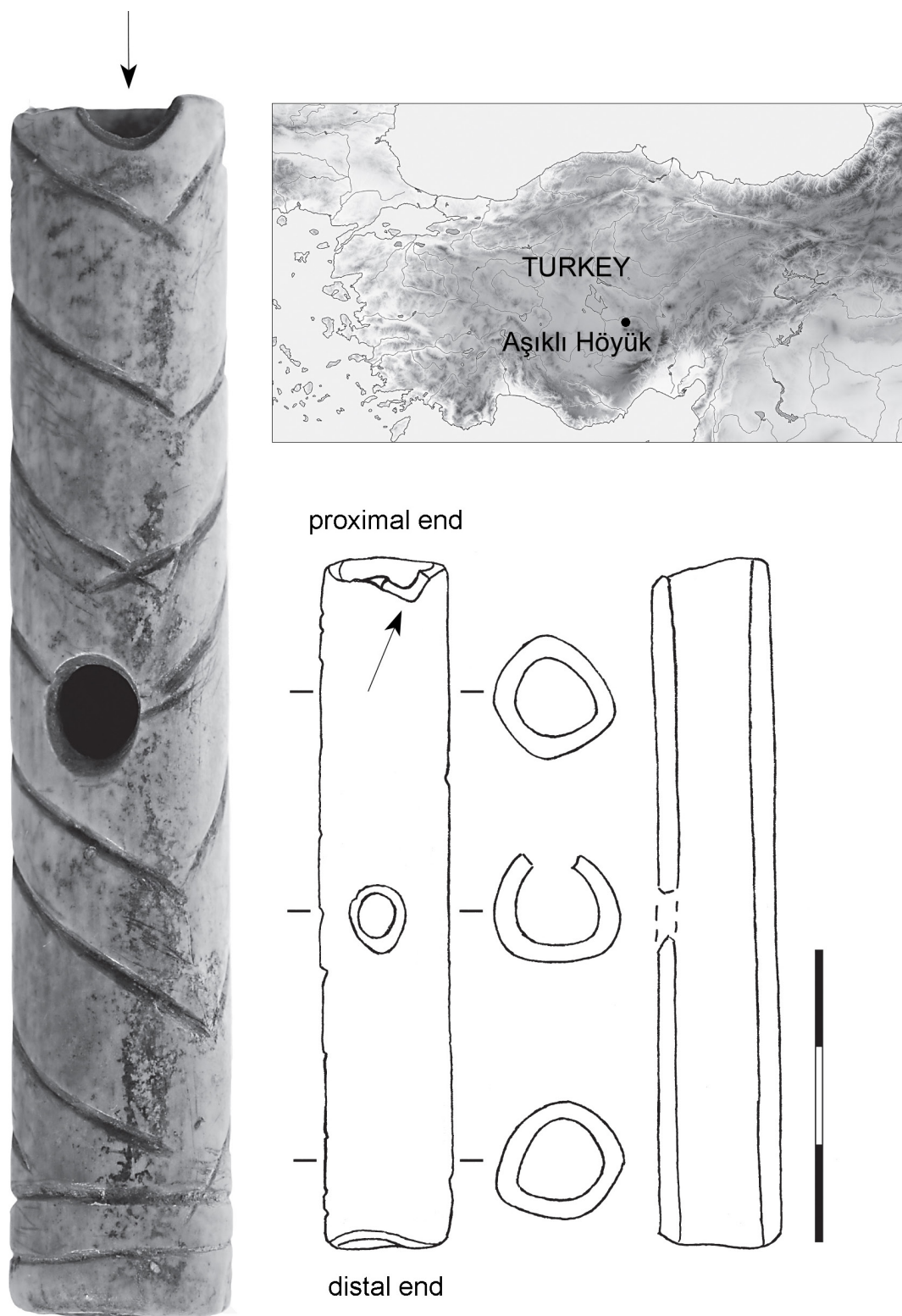


Figure 1. (a) The location of Aşıklı Höyük in Turkey; (b) contour drawings of the bone flute, face and right views (scale: 3 mm); (c) flute slightly turned toward the right side to show the proximal notch (Aşıklı Höyük Excavations Archive). The arrows indicate the notch.

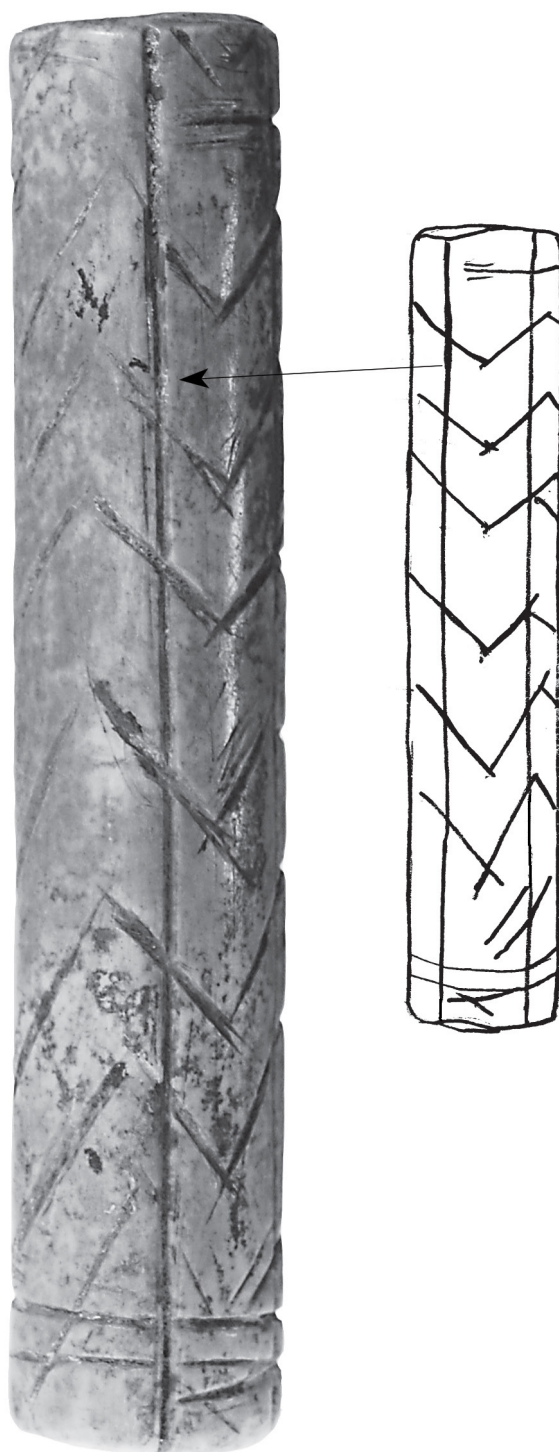


Figure 2. The rear side of flute sketched (right), not presented to scale. The photograph (Aşıklı Höyük Excavations Archive) shows the longitudinal groove near the right side of the artifact.



Amaç ve Kapsam

Arkeoloji bir süredir geçmişin yorumlanmasında teknoloji ve doğa bilimleri, mühendislik ve bilgisayar teknolojileri ile yoğun iş birliği içinde yeni bir anlayışa evrilmektedir. Üniversiteler, ilgili kurum ya da enstitülerde yeni açılmakta olan “Arkeoloji Bilimleri” bölümleri ve programları, geleneksel anlayışı terk ederek değişen yeni bilim iklimine adapte olmaya çalışmaktadır. Bilimsel analizlerden elde edilen sonuçların arkeolojik bağlam ile birlikte ele alınması, arkeolojik materyallerin, yerleşmelerin ve çevrenin yorumlanmasında yeni bakış açıları doğurmaktadır.

Türkiye’de de doğa bilimleri ile iş birliği içindeki çalışmaların olduğu kazı ve araştırma projelerinin sayısı her geçen gün artmakta, yeni uzmanlar yetişmektedir. Bu nedenle Arkeoloji Bilimleri Dergisi, Türkiye’de arkeolojinin bu yeni ivmenin bir parçası olmasına ve arkeoloji içindeki arkeobotanik, arkeozooloji, alet teknolojileri, tarihlendirme, mikromorfoloji, biyoarkeoloji, jeokimyasal ve spektroskopik analizler, Coğrafi Bilgi Sistemleri, iklim ve çevre modellemeleri gibi uzmanlık alanlarının çeşitlenerek yaygınlaşmasına katkı sağlamayı amaçlamaktadır. Derginin ana çizgisi arkeolojik yorumlamaya katkı sağlayan yeni anlayışlara, disiplinlerarası yaklaşımlara, yeni metot ve kuram önerilerine, analiz sonuçlarına öncelik vermek olarak planlanmıştır.

Arkeoloji Bilimleri Dergisi uluslararası hakemli bir dergidir. Dergi, Ege Yayınları tarafından çevrimiçi olarak yayınlanmaktadır. Kazı raporlarına, tasnif ve tanıma dayalı çalışmalara, buluntu katalogları ve özgün olmayan derleme yazılarına öncelik verilmeyecektir.



Aims and Scope

Archaeology is being transformed by the integration of innovative methodologies and scientific analyses into archaeological research. With the establishment of new departments, institutes, and programs focusing on “Archaeological Sciences”, archaeology has moved beyond the traditional approaches of the discipline. When placed within their archaeological context, studies can provide novel insights and new interpretive perspectives to the study of archaeological materials, settlements and landscapes.

In Turkey, the number of interdisciplinary excavation and research projects incorporating scientific techniques is on the rise. A growing number of researchers are being trained in a broad range of scientific fields including but not limited to archaeobotany, archaeozoology, tool technologies, dating methods, micromorphology, bioarchaeology, geochemical and spectroscopic analysis, Geographical Information Systems, and climate and environmental modeling. The Turkish Journal of Archaeological Sciences aims to situate Turkish archaeology within this new paradigm and to diversify and disseminate scientific research in archaeology. New methods, analytical techniques and interdisciplinary initiatives that contribute to archaeological interpretations and theoretical perspectives fall within the scope of the journal. The Turkish Journal of Archaeological Sciences is an international peer-reviewed journal. The journal is published online by Ege Yayınları in Turkey. Excavation reports and manuscripts focusing on the description, classification, and cataloging of finds do not fall within the scope of the journal.



Makale Gönderimi ve Yazım Kılavuzu

* *Please see below for English*

Makale Kabul Kriterleri

Makalelerin konu aldığı çalışmalar, Arkeoloji Bilimleri Dergisi'nin amaçları ve kapsamı ile uyumlu olmalıdır (bkz.: Amaç ve Kapsam).

Makaleler Türkçe veya İngilizce olarak yazılmalıdır. Makalelerin yayın diline çevirisi yazar(lar)ın sorumluluğundadır. Eğer yazar(lar) makale dilinde akıcı değilse, metin gönderilmeden önce anadili Türkçe ya da İngilizce olan kişilerce kontrol edilmelidir.

Her makaleye 200 kelimeyi aşmayacak uzunlukta Türkçe ve İngilizce yazılmış özet ve beş anahtar kelime eklenmelidir. Özete referans eklenmemelidir.

Yazarın Türkçesi veya İngilizcesi akıcı değilse, özet ve anahtar kelimelerin Türkçe veya İngilizce çevirisi editör kurulu tarafından üstlenilebilir.

Metin, figürler ve diğer dosyalar wetransfer veya e-posta yoluyla **archaeologicalsciences@gmail.com** adresine gönderilmelidir.

Makale Kontrol Listesi

Lütfen makalenizin aşağıdaki bilgileri içerdiğinden emin olun:

- Yazarlar (yazarların adı-soyadı ve iletişim bilgileri buradaki sırayla makale başlığının hemen altında paylaşılmalıdır)
- Çalışılan kurum (varsa)
- E.mail adresi
- ORCID ID

Makalenin içermesi gerekenler:

- Başlık
- Özet (Türkçe ve İngilizce)
- Anahtar kelimeler
- Metin
- Kaynakça
- Figürler
- Tablolar

Bilimsel Standartlar ve Etik

- Gönderilen yazılar başka bir yerde yayınlanmamış veya yayınlanmak üzere farklı bir yere gönderilmemiş olmalıdır.
- Makaleler özgün ve bilimsel standartlara uygun olmalıdır.

- Makalelerde cinsiyetçi, ırkçı veya kültürel ayırım yapmayan, kapsayıcı bir dil kullanılmalıdır (“insanoğlu” yerine “insan”; “bilim adamı” yerine “bilim insanı” gibi).

Yazım Kuralları

Metin ve Başlıkların Yazımı

- Times New Roman karakterinde yazılan metin 12 punto büyüklüğünde, iki yana yaslı ve tek satır aralıklı yazılmalıdır. Makale word formatında gönderilmelidir.
- Yabancı ve eski dillerdeki kelimeler *italik* olmalıdır.
- Başlık ve alt başlıklar **bold** yazılmalıdır.
- Başlıklar numaralandırılmamalı, italik yapılmamalı, altları çizilmemelidir.
- Başlık ve alt başlıklarda yalnızca her kelimenin ilk harfi büyük olmalıdır.

Referans Yazımı

Ayrıca bkz.: Metin içi Atıflar ve Kaynakça Yazımı

- Referanslar metin içinde (Yazar yıl, sayfa numarası) şeklinde verilmelidir.
- Referanslar için dipnot ve son not kullanımından kaçınılmalıdır. Bir konuda not düşme amacıyla gerektiği taktirde dipnot tercih edilmelidir.
- Dipnotlar Times New Roman karakterinde, 10 punto büyüklüğünde, iki yana yaslı, tek satır aralıklı yazılmalı ve her sayfa sonuna süreklilik izleyecek şekilde eklenmelidir.

Şekiller ve Tablolar

- Makalenin altına şekiller ve tablolar için bir başlık listesi eklenmelidir. Görsellerde gerektiği takdirde kaynak belirtilmelidir. Her şekil ve tabloya metin içerisinde gönderme yapılmalıdır (Şekil 1 veya Tablo 1).
- Görseller Word dokümanının içerisine yerleştirilmemeli, jpg veya tiff formatında, ayrı olarak gönderilmelidir.
- Görüntü çözünürlüğü basılması istenen boyutta ve 300 dpi'nin üzerinde olmalıdır.
- Görseller Photoshop ve benzeri programlar ile müdahale edilmeden olabildiğince ham haliyle gönderilmelidir.
- Excel'de hazırlanmış tablolar ve grafikler var ise mutlaka bunların PDF ve Excel dokümanları gönderilmelidir.

Tarihlerin ve Sayıların Yazımı

- MÖ ve MS kısaltmalarını harflerin arasına nokta koymadan kullanınız (örn.: M.Ö. yerine MÖ).
- “Bin yıl” ya da “bin yıl” yerine “... binyıl” kullanınız (örn.: MÖ 9. binyıl).
- “Yüzyıl”, “yüz yıl” ya da “yy” yerine “yüzyıl” kullanınız (örn.: MÖ 7. yüzyıl).
- Beş veya daha fazla basamaklı tarihler için sondan sayarak üçlü gruplara ayırmak suretiyle sayı gruplarının arasına nokta koyunuz (örn.: MÖ 10.500)
- Dört veya daha az basamaklı tarihlerde nokta kullanmayınız (örn.: MÖ 8700).
- 0-10 arasındaki sayıları rakamla değil yazıyla yazınız (örn.: “8 kez yenilenmiş taban” yerine “sekiz kez yenilenmiş taban”).

Noktalama ve İşaret Kullanımı

- Ara cümleleri lütfen iki çizgi ile ayırınız (—). Çizgi öncesi ve sonrasında boşluk bırakmayınız.
- Sayfa numaraları, tarih ve yer aralıklarını lütfen tek çizgi (-) ile ayırınız: 1989-2006; İstanbul-Kütahya.

Kısaltmaların Yazımı

- Sık kullanılan bazı kısaltmalar için bkz.:

Yaklaşık:	yak.	Circa:	ca.
Bakınız:	bkz.	Kalibre:	kal.
Örneğin:	örn.	ve diğerleri:	vd.

Özel Fontlar

- Makalede özel bir font kullanıldıysa (Yunanca, Arapça, hiyeroglif vb.) bu font ve orijinal metnin PDF versiyonu da gönderilen dosyalar içerisine eklenmelidir.

Metin içi Atıflar ve Kaynakça Yazımı

- Her makale, metin içerisinde atıf yapılmış çalışmalardan oluşan ve “Kaynakça” olarak başlıklandırılan bir referans listesi içermelidir. Lütfen metin içerisinde bulunan her referansın kaynakçaya da eklendiğinden emin olun.
- Metin içerisindeki alıntılar doğrudan yapılabilir: ‘...Esin (1995)’in belirtmiş olduğu gibi’ ya da parantez içerisinde verilebilir: ‘analiz sonuçları gösteriyor ki ... (Esin 1995).’
- Aynı parantez içerisindeki referanslar yayın yılına göre sıralanmalı ve “;” ile ayrılmalıdır: ‘... (Dinçol ve Kantman 1969; Esin 1995; Özbal vd. 2004).’
- Aynı yazarın farklı yıllara ait eserlerine yapılan atıflarda yazarın soyadı bir kere kullanılmalı ve eser yılları “,” ile ayrılmalıdır: ‘... (Peterson 2002, 2010).’
- Aynı yazar(lar)ın aynı yıl içerisindeki birden fazla yayınına referans verileceği durumlarda yayın yılının yanına harfler ‘a’, ‘b’, ‘c’ gibi alfabetik olarak koyulmalıdır.
- Tek yazarlı kaynakları, aynı yazar adıyla başlayan çok yazarlı kaynaklardan önce yazınız.
- Aynı yazar adıyla başlayan fakat farklı eş yazarlara sahip kaynakları ikinci yazarın soyadına göre alfabetik sıralayınız.
- Aynı yazara ait birden fazla tek yazarlı kaynak olması durumunda kaynakları yıllara göre sıralayınız.
- Dergi makaleleri için doi bilgisi varsa kaynakçada mutlaka belirtiniz.

Aşağıda, farklı kaynakların metin içerisinde ve kaynakçada nasıl yazılacağına dair örnekler bulabilirsiniz.

Tek yazarlı dergi makaleleri, kitap içi bölümler ve kitaplar

Metin içerisinde:

Yazarın soyadı ve yayın yılı (Esin 1995).

Sayfa sayısı bilgisi verilecekse:

Yazarın soyadı ve yayın yılı, sayfa sayısı (Esin 1995, 140).

Dergi makalesi:

Bickle, P. 2020. Thinking Gender Differently: New Approaches to Identity Difference in the Central European Neolithic. *Cambridge Archaeological Journal* 30(2), 201-218. <https://doi.org/10.1017/S0959774319000453>

Kitap içi bölüm:

Esin, U. 1995. Aşıklı Höyük ve Radyo-Aktif Karbon Ölçümleri. A. Erkanal, H. Erkanal, H. Hüryılmaz, A. T. Ökse (Eds.), *İ. Metin Akyurt - Bahattin Devam Anı Kitabı. Eski Yakın Doğu Kültürleri Üzerine İncelemeler*, İstanbul: Arkeoloji ve Sanat Yayınları, 135-146.

Kitap:

Peterson, J. 2002. *Sexual Revolutions: Gender and Labor at the Dawn of Agriculture*. Walnut Creek, CA: AltaMira Press.

İki yazarlı dergi makaleleri, kitap içi bölümler ve kitaplar

Metin içerisinde:

Her iki yazarın soyadı ve yayın yılı (Dinçol ve Kantman 1969, 56).

Dergi makalesi:

Pearson, J., Meskell, L. 2015. Isotopes and Images: Fleshing out Bodies at Çatalhöyük. *Journal of Archaeological Method and Theory* 22, 461-482. <https://doi.org/10.1007/s10816-013-9184-5>

Kitap içi bölüm:

Özkaya, V., San, O. 2007. Körtik Tepe: Bulgular Işığında Kültürel Doku Üzerine İlk Gözlemler. M. Özdoğan, N. Başgelen (Eds.), *Türkiye’de Neolitik Dönem. Yeni Kazılar, Yeni Bulgular*, İstanbul: Arkeoloji ve Sanat Yayınları, 21-36.

Kitap:

Dinçol, A. M., Kantman, S. 1969. *Analitik Arkeoloji, Denemeler*. Anadolu Araştırmaları III, Özel sayı, İstanbul: Edebiyat Fakültesi Basımevi.

Üç ve daha çok yazarlı dergi makaleleri ve kitap içi bölümler

Metin içerisinde:

İlk yazarın soyadı, “vd.” ve yayın yılı (Özbal vd. 2004).

Dergi makalesi:

Özbal, R., Gerritsen, F., Diebold, B., Healey, E., Aydın, N., Loyet, M., Nardulli, F., Reese, D., Ekstrom, H., Sholts, S., Mekel-Bobrov, N., Lahn, B. 2004. Tell Kurdu Excavations 2001. *Anatolica* 30, 37-107.

Kitap içi bölüm:

Pearson, J., Meskell, L., Nakamura, C., Larsen, C. S. 2015. Reconciling the Body: Signifying Flesh, Maturity, and Age at Çatalhöyük. I. Hodder, A. Marciniak (Eds.), *Assembling Çatalhöyük*, Leeds: Maney Publishing, 75-86.

Editörlü kitaplar

Metin içerisinde:

Yazar(lar)ın soyadı ve yayın yılı (Akkermans ve Schwartz 2003).

Akkermans, P. M. M. G., Schwartz, G. M. 2003. (Eds.) *The Archaeology of Syria. From Complex Hunter-Gatherers to Early Urban Societies (c. 16.000-300 BC)*. Cambridge: Cambridge University Press.

Web kaynağı:

Soyad, Ad. Web Sayfasının Başlığı. Web Sitesinin Adı. Yayınlayan kurum (varsa), yayın tarihi. Erişim tarihi. URL.



Submission and Style Guideline

Submission Criteria for Articles

The content of the manuscripts should meet the aims and scope of the Turkish Journal of Archaeological Sciences (cf. Aims and Scope).

Manuscripts may be written in Turkish or English. The translation of articles into English is the responsibility of the author(s). If the author(s) are not fluent in the language in which the article is written, they must ensure that the text is reviewed, ideally by a native speaker, prior to submission.

Each manuscript should include a Turkish and an English abstract of up to 200 words and five keywords in both Turkish and English. Citations should not be included in the abstract.

If the author(s) are not fluent in the language of the manuscript, a translation of the abstract and the keywords may be provided by the editorial board.

Manuscripts, figures, and other files should be sent via wetransfer or e-mail to archaeologicalsciences@gmail.com

Submission Checklist

Each article must contain the following:

- Authors (please provide the name-last name and contact details of each author under the main title of the manuscript)
- Affiliation (where applicable)
- E-mail address
- ORCID ID

The manuscript should contain:

- Title
- Abstract (in English and Turkish)
- Keywords
- Text
- References
- Figures (when applicable)
- Tables (when applicable)

Scientific Standards and Ethics

- Submitted manuscripts should include original research that has not been previously published or submitted for publication elsewhere.
- The manuscripts should meet scientific standards.
- Manuscripts should use inclusive language that is free from bias based on sex, race or ethnicity, etc. (e.g., “he or she” or “his/her/their” instead of “he” or “his”) and avoid terms that imply stereotypes (e.g., “humankind” instead of “mankind”).

Style Guide

Manuscript Formatting

- Manuscripts should be written in Times New Roman 12-point font, justified and single-spaced. Please submit the manuscript as a word document.
- Words in foreign and ancient languages should be *italicized*.
- Titles and subtitles should appear in **bold**.
- Titles and subtitles should not be numbered, italicized, or underlined.
- Only the first letter of each word in titles and subtitles should be capitalized.

References

Cf.: In-Text Citations and References

- In-text citations should appear inside parenthesis (Author year, page number).
- Footnotes and endnotes should not be used for references. Comments should be included in footnotes rather than endnotes.
- The footnotes should be written in Times New Roman 10-point font, justified and single-spaced, and should be continuous at the bottom of each page.

Figures and Tables

- Please provide a caption list for figures and tables following the references. Provide credits where applicable. Each figure and table should be referenced in the text (Figure 1, or Table 1), but please do not include figures in the text document.
- Each figure should be submitted separately as a jpg or tiff file.
- Images should be submitted in the dimensions in which they should appear in the published text and their resolution must be over 300 dpi.
- Please avoid editing the figures in Photoshop or similar programs but send the raw version of the figures if possible.
- Tables and graphs prepared in Excel should be sent as both PDF and Excel documents.

Dates and Numbers

- Please use BCE/CE and please avoid using dots without dots (i.e., BCE instead of BC or B.C.).
- Please use a dot for numbers and dates with 5 or more digits (i.e., 10.500 BCE).
- Please avoid using dots for numbers and dates with 4 or less digits (i.e., 8700 BCE).
- Please spell out whole numbers from 0 to 10 (e.g., “the floor was renewed eight times” instead of “the floor was renewed 8 times”).

Punctuation

- Please prefer em dashes (—) for parenthetical sentences: “Children were buried with various items, the adolescents—individuals between the ages of 12-19—had the most variety in terms of grave goods.”
- Please prefer an en dash (-) between page numbers, years, and places: 1989-2006; İstanbul-Kütahya.

Abbreviations

- Commonly used abbreviations:

Approximately:	approx.	Figure:	Fig.
Confer:	cf.	<i>Id est:</i>	i.e.,
Circa:	ca.	<i>Exempli gratia:</i>	e.g.,
Calibrated:	cal.		

Special Fonts

- If a special font must be used in the text (e.g., Greek or Arabic alphabet or hieroglyphs), the text in the special font and the original manuscript should be sent in separate PDF files.

In-Text Citations and References

- Each article should contain a list of references in a section titled “References” at the end of the text. Please ensure that all papers cited in the text are listed in the bibliography.
- Citations in the text may be made directly, e.g., ‘as shown by Esin (1995) ...’ or in parenthesis, e.g., ‘research suggests ... (Esin 1995)’.
- References within the same parenthesis should be arranged chronologically and separated with a “;”, e.g., ‘... (Dinçol and Kantman 1969; Esin 1995; Özbal et al. 2004).’
- In references to the studies by the same author from different years, please use the last name of the author once, followed by the years of the cited studies, each separated by a “,”, e.g., ‘... (Peterson 2002, 2010).
- More than one reference from the same author(s) in the same year must be identified by the letters ‘a’, ‘b’, ‘c’ placed after the year of publication.
- When dealing with multiple papers from the same author, single authored ones should be written before the studies with multiple authors.
- When dealing with papers where the first author is the same, followed by different second (or third, and so on) authors, the papers should be listed alphabetically based on the last name of the second author.
- When dealing with multiple single-authored papers of the same author, the papers should be listed chronologically.
- Please provide the doi numbers of journal articles.

Below, you may find examples for in-text citations and references.

Single-authored journal articles, book chapters, and books

In-text:

Last name and publication year (Esin 1995).

If the page number is indicated:

Last name and publication year, page number (Esin 1995, 140).

Journal article:

Bickle, P. 2020. Thinking Gender Differently: New Approaches to Identity Difference in the Central European Neolithic. *Cambridge Archaeological Journal* 30(2), 201-218. <https://doi.org/10.1017/S0959774319000453>

Book chapter:

Esin, U. 1995. Aşıklı Höyük ve Radyo-Aktif Karbon Ölçümleri. A. Erkanal, H. Erkanal, H. Hüryılmaz, A. T. Ökse (Eds.), *İ. Metin Akyurt - Bahattin Devam Anı Kitabı. Eski Yakın Doğu Kültürleri Üzerine İncelemeler*, İstanbul: Arkeoloji ve Sanat Yayınları, 135-146.

Book:

Peterson, J. 2002. Sexual Revolutions: *Gender and Labor at the Dawn of Agriculture*. Walnut Creek, CA: AltaMira Press.

Journal articles, book chapters, and books with two authors

In-text:

Last names of both authors and publication year (Dinçol and Kantman 1969, 56).

Journal article:

Pearson, J., Meskell, L. 2015. Isotopes and Images: Fleshing out Bodies at Çatalhöyük. *Journal of Archaeological Method and Theory* 22, 461-482.
<https://doi.org/10.1007/s10816-013-9184-5>

Book chapter:

Özkaya, V., San, O. 2007. Körtik Tepe: Bulgular Işığında Kültürel Doku Üzerine İlk Gözlemler. M. Özdoğan, N. Başgelen (Ed.), *Türkiye’de Neolitik Dönem. Yeni Kazılar, Yeni Bulgular*, İstanbul: Arkeoloji ve Sanat Yayınları, 21-36.

Book:

Dinçol, A. M., Kantman, S. 1969. *Analitik Arkeoloji, Denemeler*. Anadolu Araştırmaları III, Özel sayı, İstanbul: Edebiyat Fakültesi Basımevi.

Journal articles and book chapters with three or more authors

In-text:

Last name of the first author followed by “et al.” and the publication year (Özbal et al. 2004).

Journal article:

Özbal, R., Gerritsen, F., Diebold, B., Healey, E., Aydın, N., Loyet, M., Nardulli, F., Reese, D., Ekstrom, H., Sholts, S., Mekel-Bobrov, N., Lahn, B. 2004. Tell Kurdu Excavations 2001. *Anatolica* 30, 37-107.

Book chapter:

Pearson, J., Meskell, L., Nakamura, C., Larsen, C. S. 2015. Reconciling the Body: Signifying Flesh, Maturity, and Age at Çatalhöyük. I. Hodder, A. Marciniak (Eds.), *Assembling Çatalhöyük*, Leeds: Maney Publishing, 75-86.

Edited books

In-text:

Last name(s) of the author(s) and publication year (Akkermans and Schwartz 2003).

Akkermans, P. M. M. G., Schwartz, G. M. 2003. (Eds.) *The Archaeology of Syria. From Complex Hunter-Gatherers to Early Urban Societies (c. 16.000-300 BC)*. Cambridge: Cambridge University Press.

Web source:

Last name, Initial of the first name. Title of the web page. Title of the website. Institution (where applicable), publication date. Access date. URL.