

# 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](mailto:info@zerobooksonline.com)  
[www.zerobooksonline.com](http://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 Erdoğan** 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 4<sup>th</sup> to Early 2<sup>nd</sup> 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

# Archaeology for Landscape Management and Planning: Historic Landscape Characterization of Urla (İzmir)

Elif Koparal<sup>a</sup>, Volkan Demirciler<sup>b</sup>, Sam Turner<sup>c</sup>

## Abstract

Historic Landscape Characterization (HLC) is a Geographic Information Systems (GIS) based approach useful for the management of landscapes. It is a detailed landscape analysis that makes use of spatial data including maps, remote sensing including aerial images and information for defining historic landscapes within the context of their deep history, dynamism and vulnerability. It was initially developed in Cornwall (UK) in the 1990s. Since then the method has been disseminated across Europe, and used in various regions of the Mediterranean to identify the deep history and dynamic nature of landscapes. In this article we share the preliminary results and our approach for HLC analysis executed for Urla region. Urla in İzmir district is a complex place with deep history where the pace of urbanization is high, with consequent negative impacts on the historic landscape. HLC analysis provides a spatial and diachronic method to define knowledge about the landscape and to generate strategies for its management and future planning.

**Keywords:** Historic Landscape Characterization (HLC), landscape archaeology, cultural landscapes, ancient terraces, Urla-İzmir

## Özet

Tarihsel Peyzaj Karakterizasyonu (HLC) Coğrafi Bilgi Sistemleri (CBS) tabanlı bir uygulama olup tarihi dokuya sahip alanlarda yönetim ve planlamada stratejilerin üretilmesine hizmet eden bir yaklaşım içerir. Kapsamlı bir peyzaj analizi olan HLC uygulamasında çeşitli harita,

a Elif Koparal, Assoc. Prof. Mimar Sinan Fine Arts University, Department of Archaeology, İstanbul. Senior Fellow 2021-2022 Koç University, Research Center for Anatolian Civilizations, İstanbul. elif.koparal@msgsu.edu.tr ; ekoparal21@ku.edu.tr ; <https://orcid.org/0000-0002-6850-8834>

b Volkan Demirciler, Assist. Prof. Çanakkale Onsekiz Mart University, Department of Archaeology, Çanakkale. volkandemirciler@comu.edu.tr ; <https://orcid.org/0000-0002-3469-208X>

c Sam Turner, Prof. Dr. Newcastle University, McCord Centre for Landscape, Newcastle University, UK. Sam.turner@newcastle.ac.uk ; <https://orcid.org/0000-0002-3257-0070>

Makale gönderim tarihi: 26.11.2021; Makale kabul tarihi: 5.01.2022

uydu görüntüsü, hava fotoğrafı ve bilgi kullanılarak hedeflenen alanın derin tarihi, değişim ve dönüşümü ve değişimi kaldırma kapasitesi tanımlanır. HLC ilk kez İngiltere’de Institute of Historic England (Tarihi İngiltere Enstitüsü) tarafından Cornwall’da uygulanmış ve daha sonra uygulamanın yaygınlaştırılması hedeflenmiştir. Akdeniz’de derin ve karmaşık bir yapıya sahip alanlarda ileriye dönük yönetim ve planlama stratejilerinin oluşturulmasında HLC analizleri önemli bir altlık sağlamaktadır. Burada, yine derin bir tarihe sahip olan, uzun vadeli ve gide-rek hızı artan kentleşmenin tarihi peyzaj üzerinde tahribat riski oluşturduğu Urla bölgesi için uyguladığımız HLC analizlerinin başlangıç aşamasındaki sonuçları ve çalışmanın belkemiğini oluşturan yaklaşımımız paylaşılmaktadır. HLC analizleri Urla ve benzeri karmaşık, dinamik ve tarihsel açıdan zengin bölgelerde yönetim ve planlamaya dönük doğru stratejilerin belirlenme-sinde önem taşıyan bir potansiyele sahiptir.

**Anahtar Kelimeler:** Tarihsel Peyzaj Karakterizasyonu, peyzaj arkeolojisi, kültürel çevre, antik teraslar, Urla-İzmir

Current approaches emphasize the constantly transforming and changing nature of landscapes (Turner and Crow 2010, 216). Historic Landscape Characterization (HLC) provides a novel approach for measuring and defining change in the historic landscape in all its aspects. Landscape is a complex and multidimensional concept, created through the entanglement of culture, materiality, nature, and experience (Ingold 2004; Forbes 2007, 18-49), explored through a wide range of disciplines including architecture, sociology, history, anthropology, ecology, and archaeology. Landscape studies in archaeology have a transdisciplinary nature which is also reflected by the methodologies applied. HLC is an innovative method that is borne out of theoretical approaches that regard landscape as a product of inseparable relationships between perception, society, and environment.

As a major research focus, landscape is still subject to debate in archaeology (Thomas and David 2010). The post-processual criticism of cartesian understanding of landscape infused the approaches with cultural, biographic, and experiential perspectives, which emphasize the subjective perception of landscape (Johnson 2007, 119-161). Together with intensive pedestrian survey (Cherry 1983), remote sensing and GIS-based modeling are key to the rapid systematic recording of historic landscapes and have great potential to respond to complex problems (Conolly 2010). Although the use of remote sensing technologies has sometimes been criticized for neglecting human aspects that requires a “slower” archaeology, the effectiveness and efficiency of using non-invasive technologies for recording is indisputable (Caraher 2016). Today a great percentage of the world’s landscape is impacted by human activities of late capitalism, and the rate of change is increasing in pace. Current understanding of landscape management and planning takes “change” as the basic quality of the landscapes and focuses on understanding the long-term evolution that is vital for a better future for landscapes. In many regions, the impacts of global processes like climate change, population growth, urbanization, and industrial

development mean the vulnerability of landscapes is a significant issue (Jansen et al. 2009). For this reason, HLC is a useful tool for mapping and modeling the evolution of landscapes and for simulating future scenarios. Archaeologists are responsible for designing research that records the remains of the past and the present (Ingold 2000, 208), but the engagement of archaeology with current and future ecological, social and political issues is central to contemporary archaeological approaches (Harrison 2016). Furthermore, maintaining a record of loss to underpin collective knowledge about the destructive impact of the incipient Anthropocene epoch is crucial to ethically-aware approaches in archaeology.

Landscape characterization techniques were originally developed in the UK during the 1990s for the management and conservation of historic rural and urban landscapes (Fairclough et al. 1999; 2018). The method emphasizes the importance of knowledge about past landscapes for shaping future landscapes for the better (Fairclough et al. 2008). It is a GIS-based technique which makes use of cartographic and remote sensing data (e.g., aerial images) as well as historical and archaeological information as the basis for good management and planning. The method has been widely disseminated to underpin conservation of cultural landscapes over the last decade across the UK and parts of Europe. It is conducted in line with the spirit of the European Landscape Convention (ELC), which has been signed and ratified by 40 countries to date, including Turkey.

HLC has great potential in areas with archaeological heritage, deep histories, and dynamic landscapes where good management is urgent and necessary (Turner 2006). Recent landscape archaeology projects have explored the potential of HLC in the Mediterranean lately (e.g., Turner and Crow 2010, 219; Bolós et al. 2016). HLC studies from Silivri (Turner and Crow 2010), Boğsak (Varinlioğlu 2017) and Kaz Dağları (Şengür and Nurlu 2021) are pioneering cases in Turkey. The application of HLC on the Urla-Çeşme peninsula as part of KLASP (Klazomenai Survey Project) was initiated in collaboration with the McCord Centre for Landscape at Newcastle University (UK) sponsored by the British Council's Newton Fund from 2016 to 2018.

HLC underpins the management and conservation of historic landscapes by providing an interpretation of all sorts of historic features, processes and uses. The most basic objective of HLC is to classify the entire landscape with all its components across extensive areas (Rippon 2004; Turner and Crow 2010, 219). It provides a framework for measuring recent and past changes in landscape character in an extensive area. HLC is a subjective process of interpretation whose landscape "types" and "characteristics" may be based on particular archaeological case studies which have unpicked the entangled landscape patterns created by historic processes and biographies in specific places. A step beyond conventional inventories and databases, HLC does not solely include site information and spatial data in form of 'Points of Interest' but seeks to

represent the historic character of features that are grouped together and mapped in the form of polygons.

Our major motivation in using HLC in the Urla region is based upon our opinion that it is crucial to focus on the management and protection of all natural, historical and cultural aspects of landscapes in our archaeological research projects. Making use of technologies and innovative methods in remote sensing and GIS helps us to understand the complexity of landscapes and to measure the pace of change in particular areas and how those particular areas may tolerate that change. As a party to the European Landscape Convention, Turkey has committed to determining the characteristics of landscapes, analyzing the dynamics that transform them, and to formulating and implementing international policies that include the protection, management, and planning of landscapes (Council of Europe 2000). The convention is important as the first international treaty that deals with landscapes with all their aspects, including natural, rural, urban, sub-urban areas, lands, wetlands, and both inland waters and seas. It covers landscapes that stand out with their specific features as well as ordinary or degraded landscapes. Unfortunately, however, policies and strategies in line with this convention have not yet been developed in Turkey on a national scale.

One of the most conflicting developments that took place was the separation of conservation boards for cultural and natural heritage in 2011 by the statutory decree 648. Significant changes have also been made to the law no 2863, the law on the conservation of cultural and natural property that was published in July 1983. By this decree the management and preservation of natural heritage sites was entrusted to the Ministry of Environment and Urban Planning instead of the Ministry of Tourism and Culture. Following this, the boards of preservation were divided into two as “cultural” and “natural” heritage. This decision has been legitimized on the basis that board members were not knowledgeable about the natural environment but resulted in the questions over who would make the decisions for areas that include both natural and cultural heritage. The solution has been another statutory decree (no.644 article 13A) that entitled the the Ministry of Environment and Urban planning to the final decision about the protection of those “hybrid” places.

These law changes seriously conflict with the definition of landscape in the European Landscape Convention, which regards landscape it as a complex entity comprising all sorts of natural and cultural features. These changes also tend to facilitate neoliberal development activities that have resulted in significant negative impacts on the landscapes such as urbanization, quarrying, wind turbines, motorways, etc. By dividing the boards, their authority and agency in relation to the preservation of landscape dramatically decreased. Thus, sustainable and efficient conservation of landscapes by the government has become an issue of concern to civil stakeholders, for whom recording and defending such places has become as important as experiencing and understanding them.

The aim of this article is to outline the scope of the HLC analysis executed for the Urla region situated at the western tip of Anatolia, on the coast of İzmir. HLC work initiated in 2017 is part of a regional landscape survey project conducted in the Urla-Çeşme peninsula since 2006 (Figure1). This complex research area covers 1600 km<sup>2</sup> of land and is subject to high levels of land speculation, population growth and urbanization (Mosler 2009). Under these conditions, the preservation of historic landscapes is a difficult task that requires immediate solutions. Systematic archaeological surveys carried out in the peninsula since 2006 have recorded around 500 archaeological sites, and other types of landscape features such as tumuli, pavements, rock inscriptions, etc. dated from Late Neolithic period to Ottoman era (Koparal et al. 2017). The three districts of Urla, Çeşme, and Seferihisar on the peninsula are popular coastal touristic towns linked to İzmir. The peninsula is also a setting for four ancient Ionian poleis, namely Erythrai, Klazomenai, Teos, and Lebedos, which are significant in regard to the cultural and historical identity of the region. Long-term archaeological surveys ([www.klasp.net](http://www.klasp.net)) focus on recording the diachronic settlement history of the peninsula.

Fifteen years of work combining pedestrian surveys with geoarchaeological research, geophysics, remote sensing, and public activities have provided new insights into the deep genealogies of the peninsula. Engagement with the peninsula's landscape through long-term fieldwork has enabled us to appreciate it as a living entity which encompasses aspects of the past and provides the framework for the future. Keeping a record of our own experiences of the transformation of the landscape including aspects of destruction, loss, change, and local responses to them, has enabled us to compile a particular biography of the landscape. HLC also provides an efficient apparatus for presenting that biography. Over the last decade, the peninsula has been a theatre for the kind of familiar conflict of late capitalism where the government-sponsored expansion of urban activities is pitted against communities who often include newcomers who have settled in villages seeking a sustainable rural life (and who, in the context of gentrification, may be regarded as a potential problem). Although these communities of "new villagers" defend the rural character of the peninsula, it is a fact that this place has always been characterized by continuous urbanization with an increasing pace at least since the Archaic period, if not earlier.

However, urbanization has never previously been accompanied by such vigorous destruction of rural landscapes. The urban expansion is overpowering the 'palimpsest' of the past and diminishing its visibility which has a strong impact on the perception of the landscape. Whilst the remains of past landscapes and their legacy have the potential to provide significant economic benefits to the region through sustainable tourism, their conservation - particularly in the case of the rural heritage - is not being managed effectively. The ancient urban cores Erythrai, Klazomenai, Teos, and Lebedos are regarded as places of great value for demonstrating the

ancient legacy of the region with their monuments and architectural remains. However, these were not unique, isolated spots on the peninsula, but rather they were enmeshed in networks of villages, hamlets, forts, tumuli, farming areas, terraces, and rural shrines over the long term (Figure 2). Urban development is not a newly introduced process for Urla-Çeşme Peninsula. Fieldwork has recorded large quarries from antiquity which served to the building of monuments of urban cores, the poleis. Transporting large blocks for the construction of towns required newly paved roads; bridges and aqueducts were built over the frequently-changing watercourses to bring drinking water to newly founded settlements. One of the most relevant historical accounts suggests that Alexander the Great had the intention to open a big channel at the narrowest part of the peninsula to separate the area of Mimas (Plin.Nat.5.31; Paus. 2.1.5; Thuc. 8.34; Liotsakis 2017), which is reminiscent of contemporary projects that are hot topics of debate in Turkey. State-operated building activities, land division, population management, and even mega projects have been a major part of its landscape biography in Urla-Çeşme peninsula. Embracing the highly dynamic nature of the landscape in the region gives a deeper perspective on the vulnerability, fragility, and resilience of cultural landscapes of the past.

From this point of view, we are developing an HLC database for the whole peninsula. Taking a holistic approach to the management of the peninsula's historic landscape is crucial for protecting the natural resources and cultural legacies. A survey of archaeological sites from the Late Neolithic to Ottoman periods of the region are included in the GIS with the HLC alongside digital maps and aerial photographs (Figure 3). An integrated database such as this has the potential to provide benefits for the landscape management and planning, by, for example, by providing a basis for conservation master planning in the region, that could involve all stakeholders in discussion of recent changes or losses in landscape character.

In practice, HLC analysis presents specific characterizations of present landscapes providing interpretations of the temporal processes and landscape assemblages across the whole area. These interpretations are based largely on morphological characteristics such as the form of boundaries, the pattern of land divisions, or the character of terraces. In the Urla region, an understanding of landscape transformations from the remote past to the present is possible through HLC analysis. Since the remains of individual archaeological sites and do not fully reflect the historic characteristics at the landscape scale, the HLC approach makes an interpretation of the total area. Each polygon in the GIS dataset covers a discrete area (so polygons do not overlap geographically).

The initial steps in the HLC process consisted of five main stages:

### **1. Collection and analysis of spatial, historical, and archaeological data**

For the Urla region, topographic maps at scales of 1/100.000 and 1/25.000, cadastral maps at 1/5000, vertical aerial photographs of 1957, 1976, and 1995 and recent digital orthophotos provided the basic dataset, alongside the GIS database representing surface finds logged during archaeological surveys.

### **2. Identification of historic patterns / periodization**

Periodization is a challenging step in designing the HLC database. For Urla we used archaeological survey data to help inform the interpretation of historic patterns. In the study area such data extends back to as early as the Late Neolithic period. From that time onwards, major periods were chosen to represent characteristic episodes of the region's landscape history. This approach aimed to represent aspects of the whole chronology of the region (though in practice, it is often only possible to attempt a characterization for more recent times).

### **3. Determination of historic landscape character types**

HLC types are defined in advance of mapping using knowledge from archaeological and historical research to match recognizable patterns in the landscape to the historical processes and periods through which they were created and subsequently shaped. For the Urla region, eight broad HLC types were determined, each of which also includes subtypes (Figure 4) for a detailed characterization of the landscape.

### **4. Characterization**

Characteristic patterns of landscape morphology and land-use were interpreted to map patterns of HLC types (e.g., patterns of field and terrace boundaries, (including stone walls, vegetation – trees or scrubs–, hedges, fences, ditches, and earthworks); the distribution of specific types of vegetation; and elements of the transport network). Around 2.000 polygons were mapped using ESRI ArcGIS 10.3.1 software. The minimum size of each polygon was fixed at 1 hectare before the start of characterization; areas smaller than this were incorporated into a neighboring polygon.

### **5. Designing and linking Access database**

Data relating to each polygon including the landscape character types and other attributes, were recorded in an MS Access database.

An example of a characteristic landscape type (and one which we have particularly focused on) is “Terrace.” Terraces are remarkable components of the landscape in Urla but have been

neglected in the archaeological context. In many ways, they appear to epitomize complex political and economic past of the Aegean. In the Urla region and other coasts of Aegean, Anatolia, terraces are important features of the recent political history. In many places, terraces were abandoned after the 1920s and only a very low percentage of them have been used since then (Milioris 1965). Terraces are seen as linked to the Greek past and wine production, which was largely abandoned in the twentieth century after the population exchange of Anatolian Greeks and Greek Turks that took place in 1923 (Baykara 1980). In the last twenty years, however, terrace agriculture and wine production have become an extensive endeavor in a gentrified context. The Urla vineyard route, a wide network of wineries with newly-built vineyards, has become an important aspect of the contemporary landscape. Current orthophotos reveal newly built stepped terraces alongside the old and ancient ones. As one of the defining landscape character types in Urla, terraces have been crucial to our archaeological survey project from the beginning. For example, an estimation of land use and agricultural potential from the Archaic period suggested that terrace agriculture had a significant share in the rural economy (Koparal 2014).

Most of the steep hillsides on the peninsula are covered with terraces that are no longer in use. The types of terraces in Aegean have already been classified into six main types (Rackham and Moody 1996; Grove and Rackham 2001; Turner and Crow 2010) and four of those are adapted for our Urla HLC: Braided, Contour, False, and Step (Figure 5). Terraces might have a longer history of use in the Aegean than it was previously anticipated, and they may have been a significant component of the rural economy from prehistory to the twentieth century (Betancourt and Hope Simpson 1992; Forbes 2007). Recent work showed that agricultural terraces remain poorly investigated from an archaeological point of view due to the problems involved in dating them, which has significantly limited our understanding of past agricultural practices (Turner et al. 2020a). The application of Optically-Stimulated Luminescence profiling and dating (OSL-PD) applied to agricultural terraces across the Mediterranean from several different projects has clearly revealed that many terrace systems were in use during the Middle Ages (AD 1100-1600). So far, OSL-PD has focused on three areas at Urla where well preserved stone-faced terraces were found in proximity to ancient villages and farmsteads recorded by the pedestrian surveys, as well as villages abandoned in the last century (Turner et al. 2020b, 597-598).

HLC creates a flexible dataset for measuring and defining the changes in specific areas, including transformations, losses, and gains across various temporalities. Our Urla HLC project aims to cover the entire peninsula in order to facilitate inter-regional comparative work, make use of archaeological data for defining long-term changes by expanding the time-depth of the analysis, and provide a basis for the management and planning of the landscape. The dataset will be shared with local institutions and relevant NGOs in order to contribute to landscape

conservation. So far, the work is largely focused on the impact of modern urbanization in the cultural landscapes of the Urla region (Figure 6); it is hoped that it will help to envisage how the current urban sprawl may transform the cultural landscape and diminish the visibility and representation of past landscapes. Archaeological and historical remains of the past provide significant landscape values in this area, which is fast being absorbed by the developing urban pattern. Historic Landscape Characterization analysis gives us a perspective for improving our approaches and methods for a better approach to conservation, management, and planning across the peninsula.

HLC analysis for Urla region shows that the most rapid and dramatic shift in characters took place in the most recent several decades. As it may be followed in the maps presented here (Figure 6), the modern settlement areas expanded, particularly on the coastlines and wetlands. Wetlands where field systems have been known to exist since the antiquity on the basis of archaeological surveys are becoming a setting for modern exurbs. Industrial is a broad type which included factory, quarry, power plant, fish farm, commercial and organized industrial zone sub-types, and is the other character which expanded dramatically in the region. Finally, the terraces also increased, but this signifies the expansion of false terraces used either for recent modern landscaping or new wineries. Urla is one of the places where landscape characters continue to change in at a rapid pace, with the loss of some of them. HLC analysis gives us a perspective on the changing characters of Urla with a combination of various issues about the past, now, and future; it also gives us a medium to generate new methods and approaches to safekeep historic and natural landscapes that are valuable to the region and to characterize it. HLC analysis provides scope to understand how different types of historic landscapes have been sustained or diminished in long-term perspective and thus may help us explain the general trajectories of change in various contexts. For the case of Urla, the HLC database has the potential to answer questions about a landscape that is changing with increasing speed, the drivers that stimulate those changes, and to identify the key issues for the degradation of landscapes. (Figure 7) It is a useful tool for all stakeholders interested in issues related to environmental problems, cultural heritage, and the management of urban development.

## Acknowledgements

Historical Landscape Characterization studies for Urla region was initiated and carried out within the scope of the project funded by British Academy Newton Advanced Fellowship (AF160103- Unlocking the Ionian Landscape: Historic Landscapes of Urla, Assoc. Prof. Elif Koparal – Prof. Sam Turner, 2016-2019). HLC analysis for agricultural terraces supported by the project (Klazomenai Khorası Tarım Terasları ÇOMÜ – BAP Project Director: Assist. Prof. Dr. Volkan Demirciler, SBS.2018.2526). Dissemination of HLC practice and further analysis

supported by the projects (Urla Çeşme Yarımadası Kültürel Çevre Çalışmaları MSGSU-BAP 2019.33 Project Director: Assoc. Prof. Elif Koparal) and (Urla Çeşme Yarımadası Tarihsel Peyzaj Çalışmaları MSGSU-BAP 2021.13 Project Director: Assoc. Prof. Elif Koparal).

## References

- Baykara, T. 1980. XIX. Yüzyılda Urla Yarımadasındaki Nüfus Hareketleri, *Türkiye'nin Sosyal ve Ekonomik Tebliğleri 1071-1920*, Meteksan Ltd. Şti, Ankara.
- Betancourt, P., Hope Simpson, R. 1992. The Agricultural System of Bronze Age Pseira. *Cretan Studies* 3, 47-54.
- Bolós, J., Bonales J., Flórez, M., Martínez, A. 2016. Caracterització Històrica del Paisatge del Priorat-Montsant-Siurana. Tarragona: Diputació de Tarragona/Observatori del Paisatge. [http://www.catpaisatge.net/pahiscat/docs/CHPC\\_PRIORAT-MONTSANT-SIURANA.pdf](http://www.catpaisatge.net/pahiscat/docs/CHPC_PRIORAT-MONTSANT-SIURANA.pdf) [accessed: 24.12.2021].
- Caraher, W. 2016. Slow Archaeology: Technology, Efficiency, and Archaeological Work. E. W. Averett, D. Counts, J. M. Gordon (Eds.), *Mobilizing the Past for a Digital Future: The Potential of Digital Archaeology*. Grand Forks, ND: The Digital Press at the University of North Dakota, 421-442.
- Cherry, J.F. 1983. Frogs Around the Pond: Perspectives on Current Archaeological Survey Projects in the Mediterranean Region. D. Keller, D. Rupp (Eds.), *Archaeological Survey in the Mediterranean. British Archaeological Reports International Series* 155. Oxford: British Archaeological Reports, 1983.
- Conolly, J. 2010. Geographical Information Systems and Landscape Archaeology. J. Thomas, D. Bruno (Eds.) *Handbook of Landscape Archaeology*. World Archaeological Congress Research Handbooks in Archaeology Walnut Creek, CA. Left Coast, 583-595.
- Council of Europe 2000. European Landscape Convention. - European Treaty Series No. 176.
- Dictionary of Greek and Roman Geography (1854)* William Smith, LLD, Ed.
- Fairclough, G., Lambrick G., McNab, A. 1999. (Eds.) *Yesterday's World, Tomorrow's Landscape: The English Heritage Landscape Project 1992-94*. London: English Heritage.
- Fairclough, G.J., Harrison, R., Jameson, J.H., Schofield, J. 2008. (Eds.) *The Heritage Reader*. New York: Routledge.
- Fairclough, G., Sarlöv-Herlin, I., Swanwick, C. 2018. *Routledge Handbook of Landscape Character Assessment*.
- Forbes, H. 2007. *Meaning and Identity in a Greek Landscape: An Archaeological Ethnography*. Cambridge: Cambridge University Press.
- Grove, A., Rackham, O. 2001. *The Nature of Mediterranean Europe: An Ecological History*. New Haven (CT)/London: Yale University Press.
- Harrison, R. 2016. Archaeologies of Emergent Presents and Futures. *Historical Archaeology* 50(3), 165-180.
- Ingold, T. 2000. *The Perception of the Environment. Essays in Livelihood, Dwelling and Skill*. London: Routledge.
- Ingold, T. 2004. Culture on the Ground: The World Perceived Through the Feet. *Journal of Material Culture* 9(3), 315-340.

- Jansen, J., Losvik, M., Roche, P. 2009. Vulnerability and resilience of cultural landscapes. K. Krzywinski, M. O'Connell, H. Küster (Eds.) *Cultural Landscapes in Europe. Fields of Demeter Haunts of Pan*, Aschenbeck Media UG, Cultural Landscapes in Europe. Fields of Demeter - Haunts of Pan, 55-66.
- Johnson, M. 2007. *Ideas of Landscape*. Malden, MA: Oxford: Blackwell Pub.
- Koparal, E. 2014. Land Use and Agricultural Potential in Klazomenian Khora/ Klazomenai Khora'sında Arazi Kullanımı ve Tarımsal Potansiyel. B. Erciyas, E. Sökmen (Eds.) *Arkeolojide Bölgesel Çalışmalar, Yerleşim Arkeolojisi Serisi IV/ Settlement Archaeology Series IV*, İstanbul: Ege Yayınları, 125-145.
- Koparal, E., Ersoy, Y.E., Massa, M., Demirciler, V. 2017. Sampling the Ionian Landscapes: An Overview of Archaeological Surveys at Clazomenae and Teian Chora, S. Steadman, G. McMahon (Eds.) *Archaeology of Anatolia* Vol. II, 2017, Cambridge Scholars Publishing, 400-425.
- Liotsakis, V. 2017. *Redeeming Thucydides' Book Viii: Narrative Artistry in the Account of the Ionian War*. Trends in Classics; Supplementary Volumes, Volume 48. Berlin: De Gruyter.  
<https://doi.org/10.1515/9783110533071-fm>
- Milioris, N.E. 1965. *Vourla in Asia Minor*. Vol. II. Athens, Smyniote Union.
- Mosler, S. 2009. Aspects of Archaeological Heritage in the Cultural Landscapes of Western Anatolia. *International Journal of Heritage Studies* 15(1), 24-43.  
<http://dx.doi.org/10.1080/13527250902746054>
- Rackham, O., Moody, J. 1996. *The Making of the Cretan Landscape*. Manchester: Manchester University Press.
- Rippon, S. 2004. *Historic Landscape Analysis: Deciphering the Countryside*. York: Council for British Archaeology.
- Şengür, Ş., Nurlu, E. 2021. Historic Landscape Characterization in Protected Areas; A Case Study Kazdağı National Park, *JAS* 27 (1), 106-113. <https://doi.org/10.15832/ankutbd.592920>
- Thomas, J., David, B. 2010. World Archaeological Congress (2010) *Handbook of Landscape Archaeology*. 1<sup>st</sup> pbk. edn. Walnut Creek, Calif.: Left Coast (World Archaeological Congress Research Handbooks in Archaeology).
- Turner, S. 2006. Historic Landscape Characterisation: A Landscape Archaeology for Research, Management and Planning. *Landscape Research* 31(4), 385-398.
- Turner, S., Crow, J. 2010. Unlocking Historic Landscapes in the Eastern Mediterranean: Two Pilot Studies Using Historic Landscape Characterisation, *Antiquity*, 84(323), Cambridge University Press, 216-229.
- Turner, S., Kinnaird, T., Varinlioğlu, G., Şerifoğlu, T.E., Koparal, E., Demirciler, V., Dimitris, A., Ødegård, K. Crow, J., Jackson, M., Bolòs, J., Sánchez-Pardo, J., Carrer, F., Sanderson, D., Turner, A. 2020a. Agricultural Terraces in the Mediterranean: Medieval Intensification Revealed by OSL Profiling and Dating. *Antiquity* 95(381), 773-790. <https://doi.org/10.15184/aqy.2020.187>
- Turner, S., Kinnaird, T., Koparal, E., Lekakis, S., Sevara, C. 2020b. Landscape Archaeology, Sustainability and the Necessity of Change, *World Archaeology*, 52/4, 589-606.  
<https://doi.org/10.1080/00438243.2021.1932565>
- Varinlioğlu, G. 2017. Bogsak Archaeological Survey (BOGA) 2016, *ANMED* 15, 133-140.

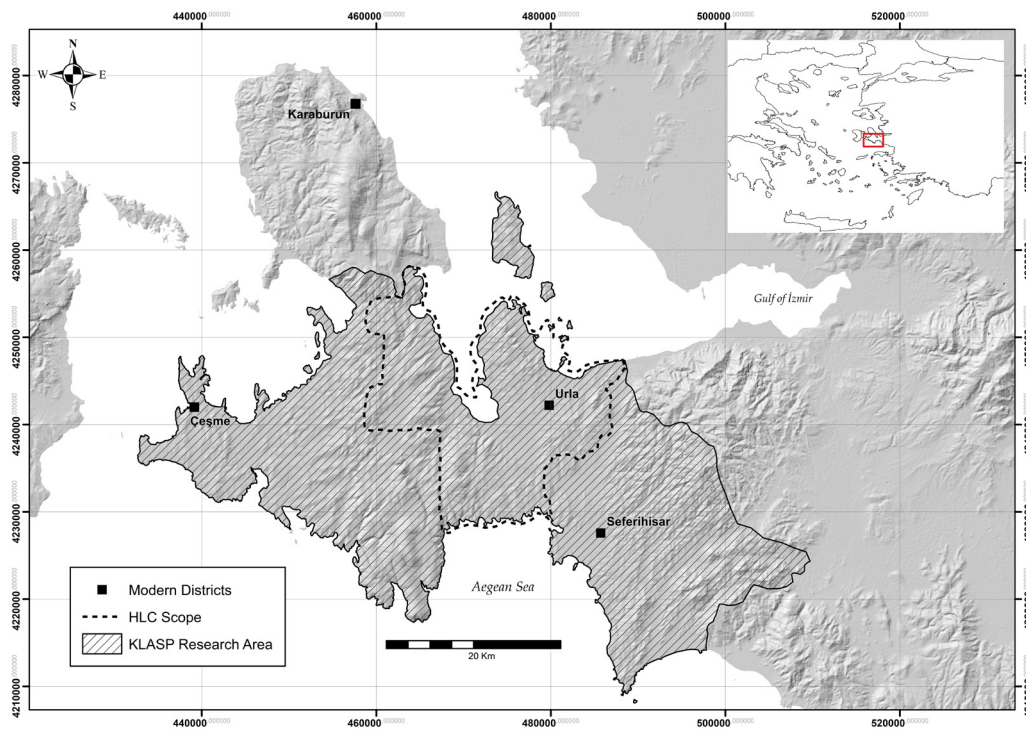


Figure 1. Map showing the research area on the peninsula where Çeşme, Urla and Seferihisar districts are located, HLC analysis discussed in this article only covers Urla region.

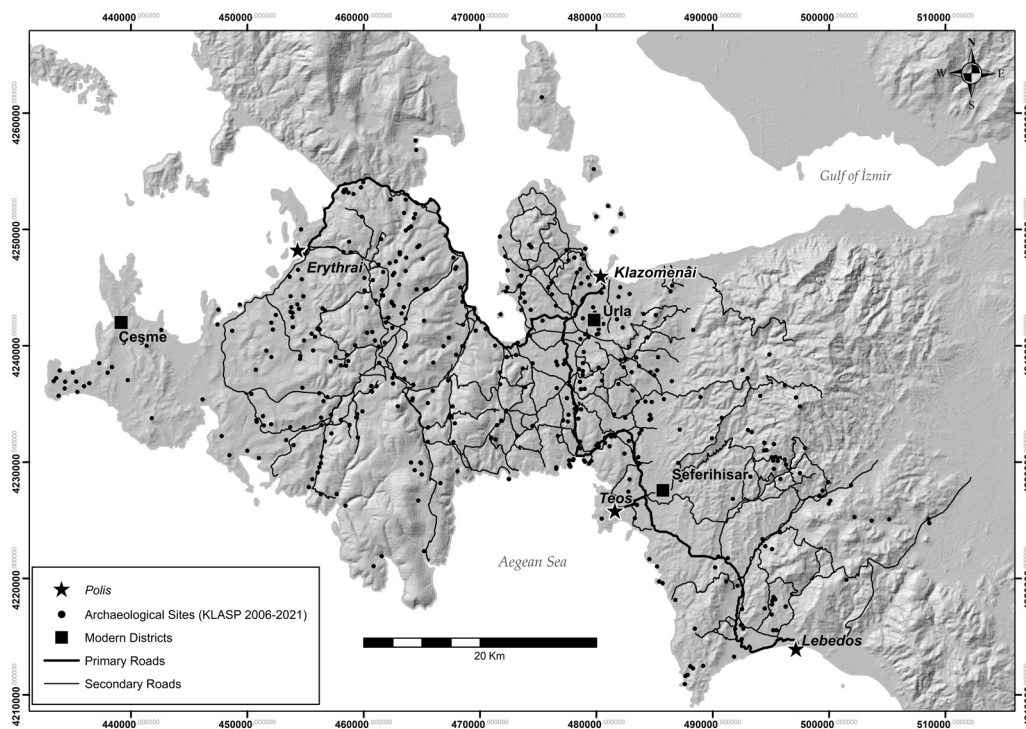


Figure 2. Map showing the points of interest (archaeological sites) and possible ancient routes network suggested on the basis of cost-path analysis executed in GIS environment (ESRI ArcGIS 10.3.1).

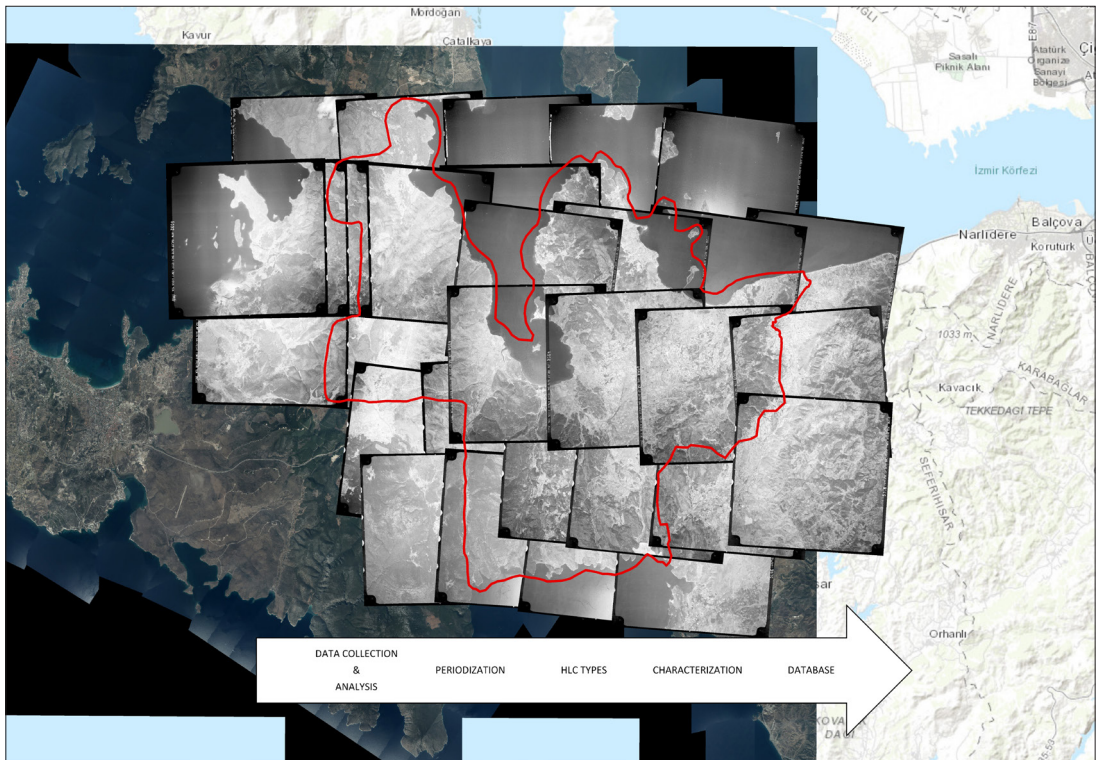


Figure 3. Main steps of HLC analysis for Urla region: Three sets of aerial images from 1957,1976,1995 purchased from General Command of Cartography in Turkey. Aerial images are rectified to create the GIS layers to be used together with layers of orto-photo, topographic maps, archaeological survey data.

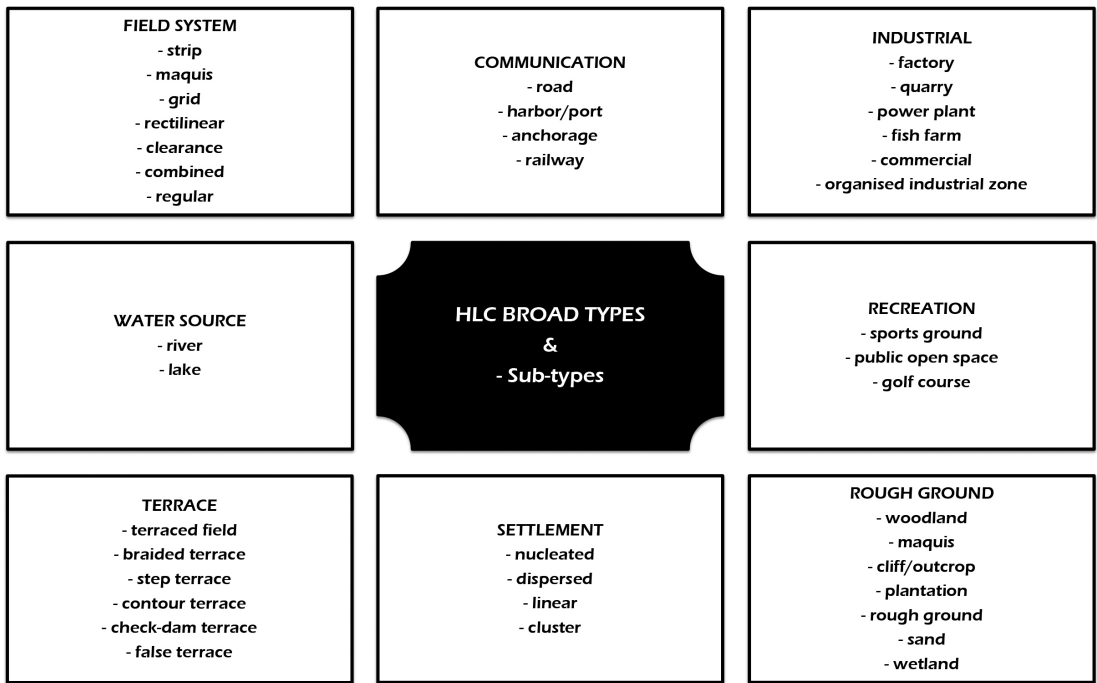


Figure 4. Eight broad types (Field Systems, Water Source, Terrace, Communication, Settlement, Industrial, Recreation, Rough Ground) defined for Urla region with sub-types used for HLC analysis of the region.

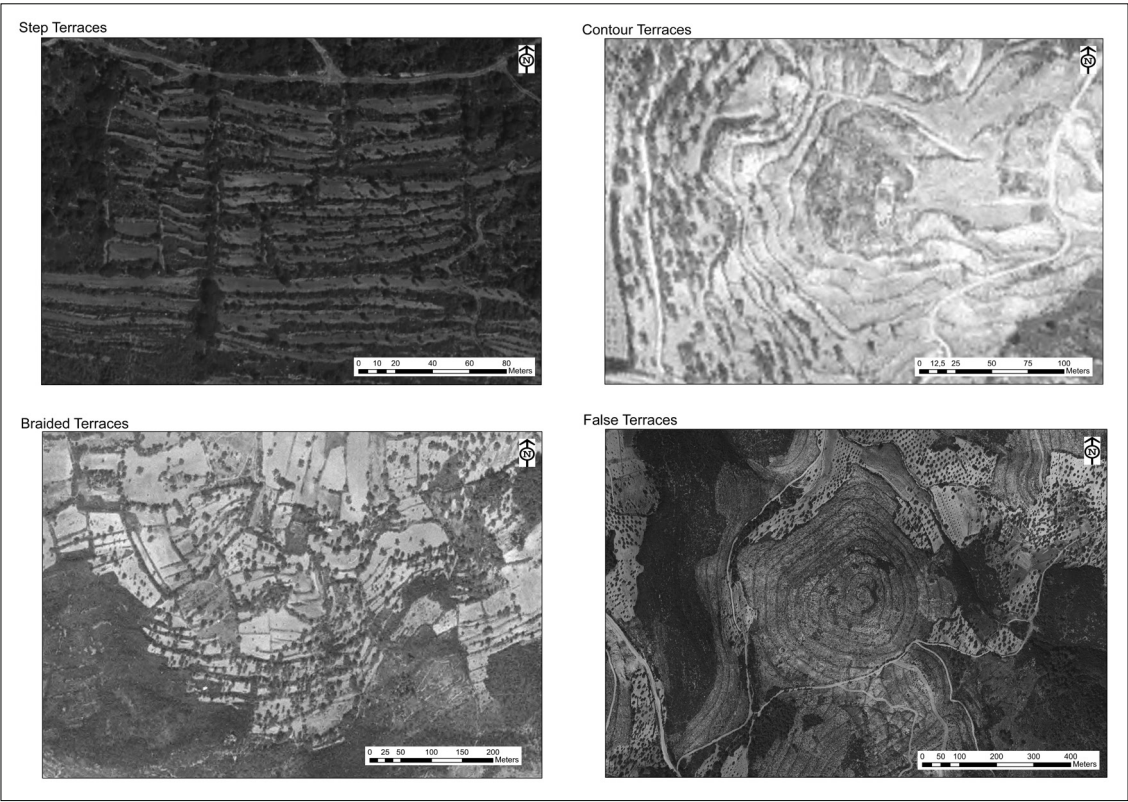


Figure 5. Examples of main terrace types used for HLC analysis in Urla region (Step Terrace 1976; Braided Terrace 1995; Contour Terrace 1957; False Terrace 1995).

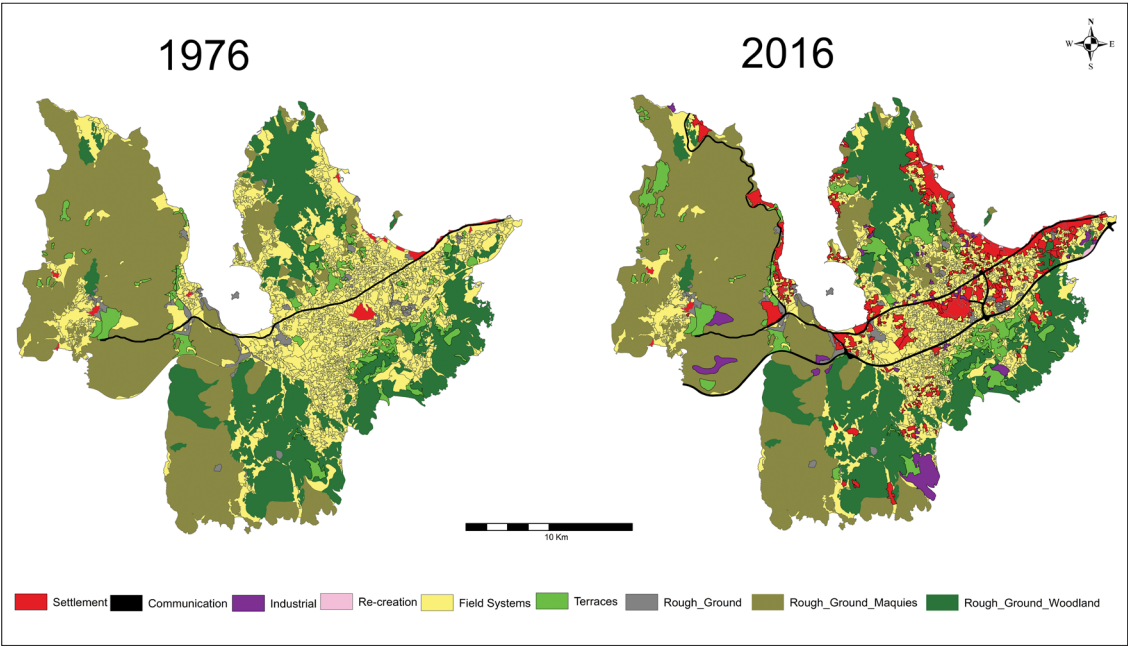


Figure 6. HLC maps of Urla region showing the change from 1976 to 2016 in Urla region which defines the most rapid change in its long history.

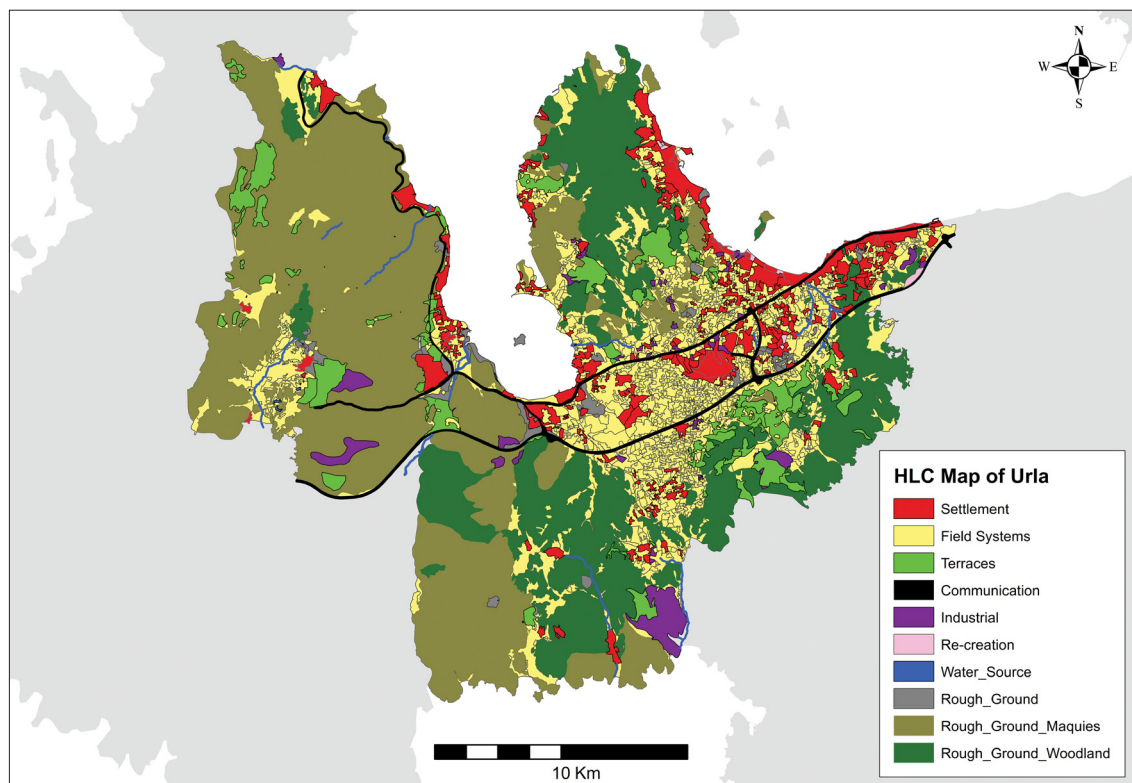


Figure 7. Historic Landscape Character Types Map of Urla region showing the current characters.



## 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](mailto: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.