

PLACE-MAKING AND SOCIAL SYSTEMS  
IN THE EARLY BRONZE AGE OF ANATOLIA:  
BADEMAĞACI HÖYÜK SETTLEMENT

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**PLACE-MAKING AND SOCIAL SYSTEMS  
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## ABSTRACT

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IN THE EARLY BRONZE AGE OF ANATOLIA:  
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By the third millennium BCE, the place-making processes in Anatolia included the widespread emergence of a settlement pattern defined by a radial plan of agglutinated houses facing a central courtyard. The material and architectural characteristics of these particular settlements over time and their distribution in the Anatolian region have been the subject of several studies, but only a few attempted to investigate the relationship between the settlement layout and the structure of social organisation which was altered during the Early Bronze Age of Anatolia.

The study aims to understand how the built environment functions in the emergence of the social structure, the nature of social organisation and the degree of social complexity in Bademağacı Höyük during the Early Bronze Age. To address the issue, an integrative approach is developed that combines Space Syntax Analysis together

with artefact distribution, investigation of architecture, estimation of population and archaeoastronomical analysis. Based on the archaeological remains, the results suggest that buildings were employed to establish and maintain a general sense of community and social norms by encouraging cohesiveness and pressuring cooperative interdependence. Their locations and types indicate vertical and horizontal social stratification with lower degrees of heterogeneity and inequality and social leadership-like authority. This study also proposes that the degree of social complexity of a given society should be measured based on the number of differentiated relationships individuals maintain in a society. To address differentiated relationships, the social organisation should be investigated using archaeologically measurable variables: heterogeneity and inequality within a given society.

**Keywords:** Early Bronze Age, Bademağacı, Space Syntax, Place-Making, Structure of Social System

## ÖZ

### ANADOLU ERKEN TUNÇ ÇAĞI'NDA MEKAN YARATIMI VE SOSYAL SİSTEMLER: BADEMAĞACI HÖYÜK YERLEŞİMİ

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M.Ö. üçüncü binyılda, Anadolu'da mekan yaratımı süreci, radyal bir plan üzerinde girişleri merkezi avluya bakan birbirine bitişik yapılardan oluşan yerleşim düzeninin yaygın olarak ortaya çıkışını da beraberinde getirmiştir. Bu yerleşim planına sahip mekanların, zaman içindeki kültürel ve mimari tipolojileri ve Anadolu'daki dağılımları birçok çalışmanın konusu olmuş, ancak yalnızca bir kaç yerleşim düzeni ile Erken Tunç Çağı ile değişen toplum yapısı arasındaki ilişkiyi incelemiştir.

Bu çalışma, Bademağacı yerleşim yerinde, mimari yapıların sosyal sistemin yapısının kendini ifade edişindeki rolü, sosyal sistemin yapısı ve sosyal karmaşıklık derecesini anlamayı amaçlamaktadır. Bu bağlamda, Mekan Dizilimi uygulaması, buluntu dağılımı, nüfus tahmini, mimarinin incelenmesi ve arkeoastromi analizleri bir araya getirilerek, konu bütüncül bir yaklaşımla incelenmiştir. Arkeolojik

verilerlerden yola çıkarak elde edilen sonuçlar, insan ve mimari yapılar arasındaki ilişkinin, sembolik ifadenin somutlaştırılmasının binalardan taşınabilir objelere dönüşmesiyle birlikte değiştiğini ve Erken Tunç Çağı II Bademağacı yerleşim yerinde yeni bir şekil aldığını göstermektedir. Mimari yapılar, bir arada olmayı zorunlu kılan ve karşılıklı işbirliğine dayalı ilişkiyi teşvik ederek, genel bir topluluk duygusu ile birlikte sosyal normların oluşturulması ve sürdürülmesinde işlevsel bir rol oynadığını ortaya koymaktadır. Binaların konumları ve türleri, düşük derecede ayrışıklığın ve eşitsizliğin görüldüğü, sosyal liderlik benzeri bir otoritenin olduğu, yatay ve dikey toplumsal tabakalaşmayı işaret etmektedir. Bu çalışma ayrıca, belirli bir toplumun sosyal karmaşıklık derecesinin, bireylerin bir toplumda sürdürdüğü farklılaşmış ilişkilerin sayısına göre ölçülmesi gerektiğini önermektedir. Farklılaşmış ilişkileri belirleyebilmek için, sosyal yapı arkeolojik olarak ölçülebilen, belirli bir toplumdaki ayrışıklık ve eşitsizlik değişkenleri üzerinden incelenmelidir.

**Anahtar Kelimeler:** Erken Tunç Çağı, Bademağacı, Mekan Dizilimi, Mekan Yaratımı, Sosyal Sistemin Yapısı



*To my Parents & my Brother*

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## CHAPTER 1

### INTRODUCTION

#### **The Anatolian Early Bronze Age, Social Complexity and Urbanism**

This study argues that settlements are socially constructed built settings within natural environments; ‘social’ refers to the range of human experiences. Thus, the spatial organisation of settlements not only reflects the nature of social structure and activities but also plays a significant role in maintaining and reproducing the social systems.

The Early Bronze Age societies of Anatolia underwent significant changes that reflect the sociopolitical transformations of the period and hence experienced a great variety of settlement layouts, including building plans. This diversity was a response to different social, economic and environmental factors that were influential in different regions of Anatolia.

The social system in the scope of the Anatolian Early Bronze Age is described through the concept of social complexity whose nature is determined by the presence or absence of authority. A settlement that includes one or more distinct buildings in terms of size and/or plan as well as location is often interpreted as displaying social complexity and buildings are taken as evidence to argue the existence of social hierarchy and ranking among the inhabitants.<sup>1</sup> Thus, whether it is a dwelling of an individual/group or a facility used by whole community, such contexts are often considered as evidence showing the presence of some degree of authority as

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<sup>1</sup> Wason 1994: 137-8; Steadman 2011a.

completing the construction tasks for communal/special buildings required management ability. The material assemblages in this distinct building are also another major indicator for identifying the existence of ranked status. They might include a higher quality and quantity of ceramics and/or trade materials.<sup>2</sup> Although it might imply an egalitarian redistributive system,<sup>3</sup> the existence of a central storage facility is also inferred as an implication of management ability, often associated with a single household having control of resources and being responsible for their distribution.<sup>4</sup>

The complexity of social systems has been generally investigated separately in respect to distinct data sets, including metallurgy, pottery style, exchange networks, pastoral and agricultural strategies, and settlement patterns. However, none of these, including typological classification, address the internal dynamics of social systems, draw a causal connection between the material culture and the changes, or explain in what way a society is complex. The lack of consensus among scholars on how to define the concept of social complexity and measure it in an archaeological context, becomes not only an obstacle to understanding the nature of the social systems but also a challenge in comparing sites across space and time.

The place-making process in prehistoric settlements is thought to be implying the process of sociopolitical transformation. Archaeologists, studying the Early Bronze Age Anatolia, often interpret alterations in social organisation and settlement layouts as indicative of burgeoning social complexity and trajectory towards urbanisation during the Early Bronze Age in Anatolia. The term urbanism is commonly defined by predetermined criteria on the demographic, typological and or functional attribution of a settlement.<sup>5</sup> This framework serves primarily to point out the origin of a city and

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<sup>2</sup> Bird and Smith 2005; Robb 1999; Gardner 2008; MacSweeney 2004; Steadman 2010.

<sup>3</sup> MacSweeney 2004.

<sup>4</sup> Bender 1990; Costin 1991; Steain 1996.

<sup>5</sup> E.g. Childe 1950: 3-7; Mumford 1961; Sjoberg 1960: 27-31; Davis 1955, Grave: 1970: 559-566.

facilitate comparison and evaluation of the urbanisation process across settlements. However, the division between urban and non-urban (rural), particularly during the Early Bronze Age of Anatolia, is not simple, but instead multifaceted and even debatable as to whether or not it need took place. Moreover, the urbanisation process that we see in Anatolia was somewhat different from what we see in Mesopotamia, likely influenced by regional diversity that led to distinct development processes in terms of both social systems and urbanisation. In Anatolia, the urbanisation process followed varying developmental stages in different regions and did not occur concurrently. Therefore, the definition, primarily addressing Mesopotamian settlements, is not sufficient. Consequently, the presupposition correlating increasing social complexity with urbanisation throughout the Early Bronze Age fails to provide a definitive assertion. Rather, it only describes a blurry social phenomenon. In this context, a critical review of diverse urbanisation theories is undertaken, favouring the utilisation of the term "degree of urbanisation" to juxtapose the place-making processes of the settlements mentioned in this study.

Moreover, social organisations are complex systems consisting of different units or different components. Determination of complexity is often either based on parameters (such as gender, age, ethnicity, wealth, power, religion and labour division) in a system, or the relationship between the parameters, or both in some cases.<sup>6</sup> Following Bergman and Beehner's argument,<sup>7</sup> this study proposes that the degree of social complexity of a given society should be measured based on the number of differentiated relationships individuals maintain within a society. These relationships encompass familial, economic, political, religious, or social connections, which can span both horizontally and vertically across the social stratification. To address differentiated relationships, the social organisation is investigated in relation to heterogeneity and inequality within the society through architecture, location of buildings, boundary control (free/restricted access into

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<sup>6</sup> McShea and Brandon 2010: 7.

<sup>7</sup> Bergman and Beehner 2015: 205.

different areas/buildings of the settlement), division of labour, and greater access to exotic goods (imported materials from other regions). Horizontal and vertical stratifications indicate the degree of heterogeneity. The relationship between these two axes of stratification determines the number of differentiated relationships. Inequality addresses how deep and unequal, the horizontal and vertical stratification is and defines the extent of wealth and power over access to material and social resources. The greater the inequality, the smaller the number of individuals who dominate any given society.

### **Aims, Scope and Structure of the Study**

The study area encompasses a corridor-like region located on the border between central and west Anatolia. This area includes the northwest edge of the Eskişehir plain, Kütayha, Burdur, Korkuteli and Elmalı. While the northern and southern boundaries of the study area are under the climatic impacts of the Black Sea, Aegean Sea, and Mediterranean Sea, respectively, it is worth noting that, in general, the study region predominantly displays climatic characteristics typical of Central Anatolia.

A significant number of sites displaying the radial settlement layout characterised by agglutinated structures with a standard plan facing a courtyard emerged in the Neolithic Period, and especially became the common characteristic layout of settlements in the northwest of Anatolia from the second quarter of the 6th millennium BCE. According to Karul, this preplanned settlement layout with structures typically of mud-brick along with impresso pottery, indicated a social system with the organisation of a workforce.<sup>8</sup>

The number of preplanned radial settlement layouts increased during the Early Bronze Age. The main subjects of the previous studies were the material and architectural characteristics of these particular sites and their spatial distributions

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<sup>8</sup> Karul 2022: 236 - 44.

across Anatolia throughout the time. Only a few, especially on Seyitömer and Demircihöyük, aimed to investigate the settlement pattern-social system relations during the EBA. In this respect, Bademağacı Höyük, having a preplanned settlement layout, stands out as an intriguing case to investigate the socio-economic transitions toward more complex societies. Because this distinctive settlement layout had a clear boundary, it is relatively easy to identify and understand the arrangement of buildings, paths and any other infrastructure, and to compare and contrast different aspects of settlements while exposing patterns in social structure and behaviours through systematic analysis.

This study asks:

- What is the role the built environment played in the emergence and reproduction of social organisation in Early Bronze Age Anatolia,
- What is the nature of the social organisation (the pattern of relationships between and among individuals, and its characteristics including demographic composition, leadership, structure and division of labour),
- Whether the Bademağacı settlement manifests characteristics indicative of social complexity? If so, in what ways?
- In which ways Bademağacı Höyük was similar and/or different than its contemporaries in terms of settlement layout and social complexity?

To address these issues an integrative approach is developed combining space syntax with artefact distribution analysis, architectural analysis, population estimation and archaeoastronomical analysis. By doing this, the aim is to measure heterogeneity and inequality, investigate the relationship between spatial configuration and social organisation, and identify the degree of social complexity.

The results of the analysis are compared and contrasted with other sites to better understand the human-built environment relationship, exclusively in the case of



radial settlement layouts and the social organisation of the given community, to argue whether there was a variation in the social structures of the different sites and to highlight the reasons for possible variations. In this respect, the proximity of site locations and theoretical and methodological study frames are taken into account in the selection of sites.

The societal transitions of Early Bronze Age Anatolia include increasing social complexity and developments toward urbanisation. The following chapter presents a literature review on the discussion on the concept of ‘urban’ and ‘urbanisation’, ‘social complexity’, and the theoretical framework of the study. The third chapter focuses on the Early Bronze Age of Anatolia and aims to provide a comprehensive overview of the period. The fourth chapter encompasses selected sites: Seyitömer, Demircihöyük, Hacılar Büyük Höyük and Karataş. These sites were either analysed through similar theoretic and methodological study frames or located nearby. Chapter five is devoted to Bademağacı Höyük. Close attention is given to the architectural traditions, burial traditions and artefact assemblages, as well as faunal remains.

The sixth chapter is on the methodology encompassing space syntax, estimating population and archaeoastronomy. Space syntax techniques are developed to meet the need for an analytical method to investigate socially constructed space. In this study, the space syntax analysis is applied to investigate the relationship between the social system and spatial organisation. The order between the buildings within the settlement layout and the degree of control as expressed by free/restricted access to all parts of the settlement reflect the degree of inequality among groups of people who occupied the buildings. The number of people living in a place is the simplest index of social structure and is often referred to as the primary criterion for social complexity. Therefore, it is aimed to recalculate the population of the settlement based on the digitised settlement plan. Archaeoastronomy questions how prehistoric societies perceived the sky and sky-related phenomena and how they conceptualised

their interest and knowledge in their culture. Archaeoastronomical analysis, also known as Skyscape analysis, is considered complementary to landscape analysis. Here it aims to clarify whether or not some important features of the settlement layout, such as the location of the Gates and central building complex are intentionally oriented towards certain celestial bodies hence reflecting beliefs of the time related perhaps to mythologies rather than decisions made related to social inequality.

Chapter seven is dedicated to analyses including data preparation and digitalisation, artefact distribution analysis, space syntax analyses, estimating population size, analysing different units of space, and archaeoastronomical analysis. To identify the function of buildings and measure heterogeneity and inequality, artefact distribution is investigated. The concentration of certain materials, especially exotic<sup>9</sup> goods or objects that express ritual (such as figurines), administrative authority (seals and bullae), wealth (storage and metal objects) and labour division (variety of tools) implies distinct groups and their positions within the settlement through their ability to access and own (or not own) certain goods. The architectural tradition of the settlement is also investigated as an indicator of the nature of the social system, and power/authority. The plan of buildings, their size and locations, possible monumentality, and the location of storage facilities are all expressions of equal or unequal access to material or social resources and accordingly express homogeneity/heterogeneity and equality/inequality in a society.

In chapter seven, the results of the analysis are discussed and compared with the selected sites. The last chapter includes a discussion on the concept of power and authority, a summary of the study, including the key points given together with the concluding thoughts on the main issue.

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<sup>9</sup> Within the contextual framework of the Early Bronze Age, the term "exotic" assumes a scholarly significance, denoting materials that are not indigenous but rather produced and derived from external regions. In this respect, "exotic" pertains to imported materials, thereby accentuating the prominence of materials originating beyond the confines of the investigated area, contributing to a nuanced understanding of interregional interactions and trade networks during this period.

## CHAPTER 2

### **THEORETICAL FOUNDATION AND FRAMEWORK: THE INTERPLAY OF PLACE-MAKING AND SOCIAL SYSTEMS**

From the beginning of the Early Bronze Age, archaeological material displayed substantial alterations that reflect new societal transitions and point to various developments toward more complex societies and the process of urbanisation. Thus, the relationship between the process of urbanisation and increasing social complexity is widely accepted for the Early Bronze Age of Anatolian archaeology. However, the archaeological narratives do not define nor address how to measure the degree of social complexity or urbanisation. Furthermore, urbanisation progressed differently across Anatolia, a vast geographic area, and should be approached with caution in the Early Bronze Age sites.

In this study, the social systems and the degree of social complexity will be investigated independently of the urbanisation process through the built environment perspective. To better evaluate whether there is a correlation between urbanisation and social complexity, the concept of urbanisation will be outlined in this chapter, and the urbanisation processes of the settlements will be re-evaluated in the discussion chapter, based on the inferences established here.

Another issue is that many archaeological narratives equate complexity with hierarchy and consider hierarchy as the primary mechanism driving social progress from an egalitarian to a complex society. This view assumes that social transformation is a linear and inevitable progress towards hierarchy. This rather

restrictive perspective ignores the variety of social systems. This chapter aims to define social systems and social complexity and address how to measure social complexity. At the end of the theoretical discussions, the theoretical framework of this study will be established based on the arguments and postulates provided within the chapter.

## **2.1. The Concept of Built Environment**

The earliest known empirical study of space goes back to the ancient Athenian philosophers of the Classical period. Even before the classical period, the ancient Greek poet Hesiod defined space, time and matter as notions of the physical world that were combined like an organic body in the “chaos”.<sup>10</sup> Socrates questioned the awareness of the concepts of space during the prenatal period.<sup>11</sup> Aristotle discussed the role of space in the everyday life.<sup>12</sup> He proclaimed that space has some influence and potency.<sup>13</sup> It was Epicurus who defined a generic space as an intangible substance. He recognised space from different perspectives and termed it accordingly.<sup>14</sup> When space is empty of all kinds of body is called “void”, when occupied by a body, is named “place”, and when bodies move through, is called “room”.

Since then, space was often considered a framework in which things exist. According to Gottfried W. Leibniz, space referred to the spatial relations between things.<sup>15</sup> He asserted that if nothing existed, there would be no space; and if nothing happened in terms of events or processes, there would be no time. Isaac Newton defined space as a distinct form of body and time passed uniformly and independently from what

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<sup>10</sup> Beichler 1981: 5.

<sup>11</sup> Millar 2008: 7.

<sup>12</sup> Casey 1997: 75.

<sup>13</sup> Machamer 1978: 378.

<sup>14</sup> Casey 1997: 83.

<sup>15</sup> Khamara 1993: 473.

happened in the world.<sup>16</sup> In contrast, Samuel Clarke believed the absoluteness of space.<sup>17</sup> He argued that if the universe was destroyed, space would be left behind.

Only in the 1960s, space began to be perceived as having a social dimension. Michel Foucault recognised space with its possible history.<sup>18</sup> By that time, space was considered neutral and unchangeable, however, the history that exists within space required variation.<sup>19</sup> Foucault identified space with a heterotopic status and heterotopias are linked to the sequence of times with imposed meanings related to space. Due to the heterotopias, the entrance and exit to space required a particular pattern of behaviour. Yi-Fu Tuan aimed to explore how people experienced space and how there emerged a sense of place by attachment.<sup>20</sup> He defined a place by its spatial and social attributions.

The concept of space has long been recognised as coexisting with the human body and serving as a source of social cues within a given society.<sup>21</sup> However, while space is inherently linked to social and cultural attributes, it is only the geometric properties that are treated as objective reality, while social attributions are deemed distortions. As a result, as well as graphical representation, the digital representation of space by assigning it a numerical value essentially reduces it to a single point, disregarding its complexity and multi-faceted nature.

In contrast, space is best understood as a location and context for bodily experience ,and it accommodates various perspectives and insights into social-spatial relations.<sup>22</sup> Its meaning is not solely determined by its physical dimensions but is

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<sup>16</sup> Foucault 1986: 26.

<sup>17</sup> Yakira 2012: 23.

<sup>18</sup> Foucault 1986: 22-7.

<sup>19</sup> Berquist 2002: 151.

<sup>20</sup> Tuan 1979: 387-427.

<sup>21</sup> Hall: 1966; Downs 1970 in Tuan 1979: 389; Lefebvre: 1979.

<sup>22</sup> Berquist 2002: 162.

also shaped by the cultural and social practices that take place within it. Thus, a comprehensive understanding of space requires recognition of its social and cultural dimensions, and the role it plays in shaping human behaviour and social interactions.

Human life is a process involving time and alteration of lands for a variety of reasons including practical, aesthetic and socio-economic needs as well as belief systems that may require constructing a place or preserving a certain area as a sacred place. However, building to create a space for a specific purpose is not merely unique to humans but also animals as well. Some species belonging to the Hymenoptera family, some birds, some species of fish, and primates are among the animals that built on and/or shape and modify their physical environment for varying purposes, including conserving their resources, expressing the desire to mate, laying eggs and providing a safe environment for the newborns to grow up, and sleeping.<sup>23</sup> Thus, it is not easy to draw a line between the blueprints of humans and animals to build and it is still a heated debate.

The relationship between humans and the built environment, which has emerged through and from a variety of processes including accommodation, adaptation, expression, representation, production and reproduction, has been conceptualised through different formulations across a range of academic disciplines. Within these different approaches, a range of theoretical frameworks has been developed to account for the various aspects of the human-built environment relationship.

For instance, in the scope of settlement archaeology studies, the built environment is investigated to derive insight into the economic, ecological and social aspects from the macro-scale analysis of regional settlement patterns to the micro-scale analysis of activity and spatial organisation of a single built area.<sup>24</sup> In the field of household archaeology, on the other hand, dwellings are the main focus considered to represent the smallest social unit, and studies are carried out such as activity analysis as well as

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<sup>23</sup> Dobraszczyk 2023; Hansell 2008.

<sup>24</sup> E.g. Chang 1968; Adams 1972 and 1981; Butzer 1976; Binford 1980 and 1983.

building forms to address the gender division of labour, class stratification and wealth distribution among the given society.<sup>25</sup> Social anthropology and ethnoarchaeology employ the built environment to address universal characteristics, if they ever exist, and aim to identify culturally specific patterns between built form and social organisation.<sup>26</sup>

Built environment-cognition studies characterise the relationship between space and cognition as dialectical and argue that the complexity of the spatial organisation, the division of space into separate categories, its density, and its association with specific artefacts influence our cognitive processes.<sup>27</sup> Some examples of these cognitive processes include, for instance, generating a cognitive map<sup>28</sup>, processing cultural messages<sup>29</sup>, remembering and forgetting<sup>30</sup>, forming spatial knowledge<sup>31</sup>, and forming identity<sup>32</sup>.

Archaeoastronomy is a multidisciplinary field that utilises a holistic approach, merging skyscape and landscape analysis. The study field investigates the spatial organisation of the built environment in terms of position, location, and architectural form, as well as the artefacts employed for recording or observing celestial movements. Researchers can infer the meaning and conceptualisation of celestial objects and phenomena. Through the spatial and symbolic patterning in archaeological remains, primarily built environments for prehistoric societies, these studies give insight into belief systems and practices related to celestial objects that

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<sup>25</sup> E.g. Feldman 1987; Hanson 1999; Kent 1990b; Tringham 1991; Blanton 1994.

<sup>26</sup> E.g. Geertz 1973 and 1983; Bourdieu 1979; Kramer 1979; King 1980; Hodder 1999 and 2012; Ingold 2000 and 2013.

<sup>27</sup> Harvey 2010.

<sup>28</sup> Heft 2012.

<sup>29</sup> Rapoport 1990.

<sup>30</sup> Kuijt 2008.

<sup>31</sup> Ingold 2004.

<sup>32</sup> Hauge 2007.

demands explicit spatial organisations of the built environment. Further information on archaeoastronomy will be given in the methodology section, together with the limitations of the studies.

The field of environmental behaviour studies encompasses a broad range of academic disciplines and focuses on investigating the complex relationships that exist between the built environment and human behaviour. This research aims to achieve various outcomes, including the development of more effective and sustainable building designs, as well as insights into how individuals and communities respond cognitively and behaviourally to spatial organisation. Studies take into account the broader social and cultural context within which the relationship is maintained. They examine the metaphoric and mnemonic function of the built environment as well as embodied symbolic expressions<sup>33</sup> and aim to understand how meaning is activated through rituals,<sup>34</sup> how the self, as a member of a particular social or economic group, is represented,<sup>35</sup> social and political roles that buildings played,<sup>36</sup> and how the spatial organisation is differentiated by gender in a domestic context.<sup>37</sup>

This study refers to the built environment as an abstract concept to describe human-made constructions, in the broader sense, any physical modification to the natural environment, ranging from hearths and burials to settlements. The growing recognition of the relationship between humans and the built environment necessitates analytical methods and theoretical frameworks for conducting objective research. However, the topic at hand pertains to the statements that describe the relationship between social systems and the built environment. Such statements often

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<sup>33</sup> E.g. Rapoport 1990; Pearson and Richards 2003.

<sup>34</sup> E.g. Moore 1996: 121-176.

<sup>35</sup> E.g. Duncan 1973 and 1976.

<sup>36</sup> Fisher 2009b.

<sup>37</sup> Erdener 1981; Kent 1984.



presume that social systems and the built environment possess equal existential properties. However, social systems manifest themselves through both tangible and intangible forms. The tangible manifestation can take many forms, including settlement plans, the infrastructure of buildings, art and artefacts.

Therefore, the assumption, that social systems and the built environment possess equal existential properties, is unjustified, because the domain of social systems encompasses a broad scope, whereas the built environment constitutes only a component of this domain, functioning as a subset therein. As a result, comprehending the nature of the relationships between these entities and the processes by which they may be translated into one another proves to be a complex inference. Nevertheless, topological descriptions of a system provide an objective narrative, thus inherently suitable for quantitative analysis.<sup>38</sup> To address the issue, space syntax and archaeoastronomical analysis are combined with artefact distribution analysis and population estimation to give insight into the social system of the Early Bronze Age Bademağacı through investigation of the built environment.

## **2.2. The Concept of Urban and Urbanisation**

The concepts of urban and urbanisation have drawn the attention of different fields of science including sociology, ethnography, anthropology, geography, economy, politics and more as well as archaeology during the last centuries. The understanding of these concepts has been changed with respect to the way they were defined, thus, there are no cross-cultural definitions of both urban and urbanism that have been ever agreed on. Even seeking a single explanation of the development process for all complex societies seems an unrealistic aim, since the explanation depends on the definition of what a city is, still a head-to-head debate.

During the early 19<sup>th</sup> century, sociologists and ethnographers classified existing pre-industrial societies based on hierarchical stages according to an evolutionary

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<sup>38</sup> Klüver and Schmidt 1999.

approach: savagery, barbarism, and civilisation. V. Gordon Childe aimed to identify these evolutionary stages following one another in archaeological contexts throughout the temporal sequence of ages. According to Childe, a city was a new economic stage that resulted from and symbolised progressive changes in both economic and social structures within a community. He referred to this transformation as the Urban Revolution, which was either caused by or accompanied by a significant increase in population.<sup>39</sup>

Childe argued that the evolutionary process towards the civilisation stage was complicated, but was etymologically connected to the concept of the city. According to him, the existence of writing was a more reliable indicator of this process in an archaeological context. Childe also pointed out that economic specialisation is an important factor in reaching the urbanisation stage. To compare and contrast the Old and New World's communities, he listed ten abstract criteria: size, division of labour, the existence of tax for surplus collected by an authority, monumental public buildings, the existence of a ruling class, the invention of the recording system and exacts, the invention of writing system or primitive mathematical science, artistic expressions, long-distance trade of raw materials, and specialists with mutually complementary functions.<sup>40</sup>

The theoretical and descriptive criteria used to identify the main components of premodern urbanism do not always match its material manifestation in archaeological contexts. It is because the social processes leading to urbanisation are not necessarily linear or inevitable. Archaeology often encounters social trajectories, patterns and choices that do not conform to these predetermined criteria or, conversely, sites that meet many criteria are not necessarily identified as urban centres.

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<sup>39</sup> Childe 1950: 3-17.

<sup>40</sup> Childe 1950: 3-17.

For instance, Jericho is one of the earliest permanent settlements, occupied from ca. 9000 BCE to the present day.<sup>41</sup> The PPNA site encompasses an area of ca. 4ha with round houses surrounded by a wall. The existence of obsidian objects on the site indicates long-distance trade with central and eastern Anatolia. The PPNB sequence of Jericho displays a change in the architectural form of the house which may indicate a change in social organisation. The evidence of secondary products of animals, agricultural prosperity leading to surpluses, increase in population, and specialisation of occupation meet some of Childe's criteria despite missing others.

Çayönü Tepesi is located on the north bank of Boğazçay, 60 km north of Diyarbakır. The site was occupied between ca. 8250-5000 BCE, during the PPNA and Middle Chalcolithic periods, and encompasses an area of 8000 m<sup>2</sup>. The existence of three among four communal buildings were identified as cult centres due to their distinctive architectural features and content. The excavation results show a change in site economy from food collection to food production over the 3000 year-occupation. Besides farming, animal husbandry and metallurgy were also part of these economic circulations during the Pre-Pottery Neolithic period of Çayönü.<sup>42</sup> The making of linen cloth at the domestic level indicates the craft of weaving. The existence of obsidian and sea shells used for decoration and tools also indicates long-distance trade. Whether the division of labour and specialisation were full-time or part-time is not known from the archaeological remains. Nevertheless, Çayönü Tepesi, like Jericho, meets some criteria while missing others.

Uruk, on the other hand, is identified as one the earliest cities by most of the archaeologists.<sup>43</sup> Protoliterate Period Uruk was the largest settlement of the region. Although cuneiform script was not developed at that time, the distinction of residential, administrative, and industrial locations and cemetery in the city layout,

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<sup>41</sup> Gates and Yılmaz 2011: 18-20.

<sup>42</sup> Özdoğan and Özdoğan 1999.

<sup>43</sup> Gates and Yılmaz 2011: 32-38; Van de Mierop 2006: 19-23.

the existence of monumental religious buildings, and division of labour meet Childe's criteria of a city.

While V. Gordon Childe used qualitative criteria to define urban settlements, Ruth Tringham took a quantitative approach by focusing on the degree of complexity in their social, economic, and political characteristics.<sup>44</sup> She viewed urbanism as a continuous process that involves changes in various interrelated factors, including ecology, technology, material culture, economy, social organisation, and political relationships.

David Grave also criticised the use of predefined, measurable physical features like density and size to identify urban settlements. He argued that it is difficult to establish a satisfying threshold for each case as well as the similarities in the layout and land-use.<sup>45</sup> Instead, he suggested that the threshold values for measurement and the degree of developments should better be determined based on the related region, and the function of a settlement should be the main determinant criterion. The function of a settlement might be economic, administrative, defensive, religious or a combination of one or two or all of these.

The distinction of settlements based on empirical criteria was also criticised by Michael G. Smith, who argued that urbanisation refers to certain social process, conditions or states of affair, individuals or social groups.<sup>46</sup> If sociological criteria were used to identify an urban unit, then, urbanisation refers to the development process of local population related to these criteria; if geographical criteria were used, then, urbanisation refers to the development of a settlement beyond these thresholds; and if demographic criteria were used, then, it refers to demographic expansion beyond the thresholds. Smith pointed out that attributes such as differentiation, mobility, secularisation, and contractuality are all linked and correlate

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<sup>44</sup> Tringham 1970.

<sup>45</sup> Grave 1970: 559-66.

<sup>46</sup> M. G. Smith 1970: 567-74.

with one another and distinguish urban form from rural. However, they could only be used to demonstrate the social complexity, but not to explain the urbanisation process. If social complexity is a condition for urbanisation, then attention should be given to the circumstances that promote this state to explain the process.

Robert McC. Adams prioritised the study of the process of early urban growth over the descriptive characteristics of urban settlements. Adams posited that early civilisations shared more similarities than differences, which pointed towards discernible patterns in human behaviour.<sup>47</sup> In his work, Adams endeavoured to illustrate the institutional forms and growth trends that differentiated urban settlements from non-urban ones. He maintained that the origins of urbanism can be traced back to the development of specialisation, which resulted from coordinated efforts across multiple ecological areas, and the establishment of long-distance trade networks for raw materials.

In summary, during the 1960s and 1970s, the New Archaeology movement and later Post-processual Archaeology regarded ancient cities as a reflection of social evolution and regional patterns stemming from the emergence of complex societies. Their overarching goal was to uncover the origin, form, and function of cities.<sup>48</sup> Urbanism was conceptualised as a complex phenomenon resulting from a range of factors, including demographic growth, economic, political, and technological developments. The definition of a city was based on a set of quantitative features, such as population size, economic complexity, and technological advancement. The function of a city was determined by analysing its place within the settlement hierarchy, its catchment areas, the diversity of its production and specialist activities, and its location within the regional trade network.

Recent archaeological investigations have utilised the analysis of plant and animal bones, as well as the sedimentation of coastal areas, to reveal new evidence of

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<sup>47</sup> Adams 1973: 1-37.

<sup>48</sup> Fisher and Creekmore 2014: 3.

significant environmental change and its impacts on ecosystems. This research has shed light on the relationship between environmental change and social systems, as the emergence of new environmental circumstances required collective action and led to changes in social systems. Frank Hole argued that dramatic change in environmental circumstance demanded the emergence of collective activities which resulted in changes in social systems.<sup>49</sup> He argued that urbanism was a response to these environmental circumstances.

Monica L. Smith defined a city as a novel social order that arises through the aggregation of diverse groups, which are controlled by both short-term and long-term collective benefits, and where social networks, economic activities, and political opportunities converge.<sup>50</sup> She argued that the success of cities is attributed to their social realm and interaction, and that ancient and modern cities alike were structured by a limited number of configurations that structured human action. Evidence from cities developed independently across the world, indicates that cities display similar urban forms in the organisation of space, the placement of symbolic architecture, and the development of neighbouring networks. Drawing on this argument, Smith proposes a set of fundamental principles, which are materialised in an archaeological context, to maintain the organisation of a city. These principles include social and physical boundaries, the existence of exotic goods as social markers, using networks to increase information transfer through long-distance trade, and the cognitive formulation of urban centres to develop more complex social behaviour. Smith emphasises that Childe's descriptive criteria, particularly those focusing on the economy, can aid in identifying and monitoring the degree of urbanisation.

According to George L. Cowgill, the establishment of permanent urban settlements characterised by a diversity of roles, experiences, identities, and attitudes, necessitated a minimum population size of several hundred individuals to support the

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<sup>49</sup> Hole 1994.

<sup>50</sup> Smith 2013: 1-36.

requisite levels of specialisation and sociopolitical power.<sup>51</sup> Accordingly, he defined a city as a centre of habitation that provided a range of specialised services and functions distinct from those found in rural areas. Cowgill categorised cities according to their primary roles as political, economic, or religious centres, each with varying degrees of influence over their surrounding regions. This approach enabled the identification of fundamental variables and facilitated a comparative analysis of cities across cultures.

Andrew T. Creekmore asserted that investigating the spatial interconnections of urban features may reveal important insights into the socioeconomic and political structures of a given society. In addition, urban plans can provide insights into the historical development of urbanisation, the distribution of people, institutions, and industries, as well as the role of central authorities in shaping these features. Examining the spatial layout of urban settlements provides insight into how various urban elements interact and contribute to the overall structure of the city, as well as how these elements reflect broader patterns of social systems and power dynamics.<sup>52</sup>

The postprocessual approach of the 1980s and 1990s was influenced by the theory of structuration, which focuses on the analysis of structure and agents. Anthony Giddens posited that social systems are active constitutions and sought to link them with the notion of human action.<sup>53</sup> According to the theory, human actions occur in a contextualised stream that includes the actions of others, as well as past memories and experiences, present statements, and future expectations. Structures are formed by rules and resources created by this stream, and structuration represents the conditions that control the continuity and reproduction of the system. Using practice theory, Pierre Bourdieu aimed to understand how human actions connect to

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<sup>51</sup> Cowgill 2004.

<sup>52</sup> Creemore 2014.

<sup>53</sup> Giddens 1984.

structures.<sup>54</sup> He argued that practice is the primary aspect of this connection and used three concepts to explain it: habitus, field, and capital. Habitus refers to the organised way of doing things in the social world, while field describes the space of this interactive social world, and capital refers to the meaning attributed to the objects existing in this field.

Recognition of human agency and the analysis of social life within its spatial diffusion enable us to understand cities and built environments as spatial contexts where people play an active role in social production and reproduction. A place is defined as a lived space that embodied meanings, identities, and memories continuously shape and are shaped through daily activities by inhabitants. From this perspective, cities are defined as the products and field of social life of the agents who inhabit and constantly experience through reproducing it.

Studies in this field aim to understand the meanings attributed to a place, how inhabitants identify themselves through the place, and the concept of the inhabitants' memories. This approach recognises the active role of individuals in shaping their built environment and emphasises the importance of subjective experiences and cultural meanings in understanding urban and spatial phenomena.

The urban culturalist perspective identified cities as places of and for local sentiments where individual and collective identity were built, and therefore gained meaning and value for people who lived near them as well as their inhabitants.<sup>55</sup> This approach aims to investigate the relationship between people and places, and how people experienced the place with meaning and value. In this context, the development of the built environment was a means to make sense of the world. By following the urban culturalist approach, Michael I. Borer argued that the cultural texture of a city is formed based on shared meanings and codes, which create a connection between inhabitants, their actions and traditional ceremonies. By

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<sup>54</sup> Bourdieu 1977.

<sup>55</sup> Borer 2006.



revealing the place attachment configuration, he aimed to understand the functional and attributed meaning of urban places.

Recognition of the emotional bond between person and place, the biographies of places and urban-place-related identities reveal the mutual relationship between people and their built environment. Socially constructed cities are not static settlements within a border. Instead, they are more fluid and extended over the social landscape that they are built on. The materiality of the cities was actively and constitutively constructed by its inhabitants.

Since Childe's Urban Revolution addressed the social transformation in prehistoric settlements in Mesopotamia and the Indus Valley, archaeological investigations and theoretical models often aim to understand the nature of the earliest cities. Even though predetermined criteria on the demographic, typological and or functional attribution of a settlement help to compare and evaluate the urbanisation process of settlements, the division between urban and non-urban (rural) is not a simple dichotomy, rather, it is a complex and continuing process influenced by various determining factors. Thus, we often encounter social trajectories and patterns that do not conform to these predetermined criteria or, conversely, sites that meet many criteria are not necessarily identified as urban centres.

Moreover, the urbanisation process that we see in Anatolia was roughly different from what we see in Mesopotamia, due to possibly the regional diversity that led to distinct development processes in terms of both social systems and urbanisation. Even in the context of the circular settlement plan, the distinction is great. The term *Kranzhügel* was first used by von Oppenheim to address particular sites, Tells Chuera, Tell Abu Shakhat, Tell Khanzir, Mabtuh Gharbi, Mabtuh Sharqi, al-Magher, Mu'azzar, and Khirbet Malhatcircular, which were characterised by its sub-circular geometry surrounded by two concentric walls and/or ramparts.<sup>56</sup> The term has recently been used to refer to a wide range of sites in a broader region in Northern

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<sup>56</sup> von Oppenheim 1901 in Smith 2020: 114.

Mesopotamia, including Tell Beydar<sup>57</sup>, Tell Al-Rawda<sup>58</sup>, Mari, Umm el-Marra,<sup>59</sup> Tell Musti and Tell Al-Rimah<sup>60</sup>, as well as Tell Mozan<sup>61</sup>.

However, these settlements vary greatly in terms of morphological typology, and temporal and spatial diffusions, thereby varying culturally.<sup>62</sup> Thus, the ambiguity arises by the fact that some sites, such as the Tell Mu'azzar is pentagonal and Tell Al-Magher is square in shape, do not represent the characteristic features determined by the term *Kranzhügel*.<sup>63</sup> Therefore, the term often receives criticism from scholars emphasising heterogeneity in terms of morphological typology including space management, and temporal and spatial variations that imply different developmental histories of the sites.<sup>64</sup>

Most of these sites have been investigated through remote sensing methods and do not provide adequate evidence to make a detailed comparison.<sup>65</sup> Yet, the social systems of east and west Syria during the Early Bronze Age display distinct variations. In the East, the manifestation of power was shaped by the management of agricultural products, while in the West, the emergence of the elite was raised through craft specialisation and long-distance trade.<sup>66</sup> Considering their size<sup>67</sup>, a

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<sup>57</sup> Lebeau 1990: 281-3; Casana and Herrmann 2010: 73, Figure 10.

<sup>58</sup> Castel 2020.

<sup>59</sup> Arbuckle and Hammer 2019: 416.

<sup>60</sup> Lyonnet 2001

<sup>61</sup> Crawford 2004: 122-34

<sup>62</sup> Castel 2020: 3-22; Smith 2022: 3.

<sup>63</sup> Moortgat-Correns 1972 in Smith 2022: 3.

<sup>64</sup> E.g. Akkermans and Schwartz 2003: 256-9; Meyer 2010: 22; Creekmore 2008: 342-3 and 2014, Smith 2022; Castel 2020; Butterlin 2020: 265-73.

<sup>65</sup> Only few of them such as Tell Chuera, Tell Beydar, Tell Mabtuh esh-Sharqi and Kharab Sayyar were excavated.

<sup>66</sup> Akkermans and Schwartz 2003: 211-32.

<sup>67</sup> E.g. Tell Chuera is 68 ha, Tell Khanzir 40 ha, Tell Matin 63 ha, Tell Abu Shakhat, and Tell Al-Rawda 16 ha.

dense infrastructure (in some cases display a network of concentric and radial streets<sup>68</sup>), the division between the Upper and Lower Towns with their respective fortification walls, and the existence of varying urban elements (in terms of public buildings, temples, dwellings, and workshops) all indicate more complex settlement development compared to the Anatolian contemporaneous.<sup>69</sup> Therefore in the scope of this study, the region in which the settlements are located has been narrowed down to Anatolia, whilst contemporaries, which were found in Syria and had similar characteristics in terms of the circular settlement plan, were not included.

Even within Anatolia, the urbanisation process followed varying developmental stages in different regions and did not occur concurrently. The issue here is that, even though scholars acknowledge this diversity,<sup>70</sup> the archaeological narrative, often seeking the earliest city formation, addresses the change in settlement patterns in Early Bronze Age Anatolia through the concept of urbanisation, without adjusting the term regionally. To better understand the developmental process, there is a need for a clear description and or definition and specification of its values, in ways that are archaeologically measurable. Otherwise, it would not be feasible to understand the nature of the urbanisation process that differs between the regions.

In this study, the degree of urbanisation of Early Bronze Age Bağdemağacı Höyük will be examined through various indicators, including the presence of dedicated areas for specific craftspeople, the production of prestige objects, the importation of exotic materials, population size, the existence of monumental<sup>71</sup> architecture, and the nature of the social system. These factors can provide insights into the degree of

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<sup>68</sup> E.g. Tell Chuera, Kharab Sayyar, Tell Al-Rawda and Tell Sh'airat.

<sup>69</sup> Castel and Peltenburg 2007; Meyer 2014; Castel 2020; Smith 2022.

<sup>70</sup> E.g. Çevik 2007; Özdoğan 2011; Yakar 2011b.

<sup>71</sup> In scope of this study, the term monumental refers to large-scale architectural and artistic works that reflect the complex societal structures and advanced engineering capabilities in the context of the Early Bronze Age of Anatolia. The term addresses the construction of imposing buildings, fortifications, and elaborate tombs, often designed to demonstrate power, religious devotion, or communal identity. In the scope of the period, monumental structures are distinguished by their size, durability, sophisticated techniques, and high level of craftsmanship used in their construction.

economic and social complexity, as well as the degree of centralisation and hierarchical organisation of the settlement. Moreover, whether there is a so-called presupposed correlation between urbanisation and social complexity will be evaluated by comparing the urbanisation processes of the settlements, mentioned in the study in the discussion chapter, based on the indicators highlighted here.

### **2.3. The Concept of Social Complexity**

The broad spectrum of traces left behind by humanity displays a dynamic process of social changes encompassing increasing complexity and catastrophic collapses. This change is often considered an evolvement through developmental processes. From the ethnographic perspective, this change addresses the development from an egalitarian community structure to a hierarchically stratified organisation.<sup>72</sup>

In the field of archaeology, typological classification helps to address distinct stages of developmental processes over time. This classification, however, compresses all aspects of the daily life of a society into a single metric, such as size, form, function and more. Social systems, on the other hand, are complex matrices of sub-systems, including beliefs, norms, status and rank, power, sentiments, sanctions and facilities.<sup>73</sup> Therefore, typological classification fails to address the internal dynamics of social systems, establish causal connections between the material culture and the changes, or explain in what way it is complex.

In the early 1970s, archaeologists were influenced by general systems theory and information theory. Flannery, for instance, defined the social structure as subsystems that are hierarchically organised and regulated, but he did not address what makes a society complex.<sup>74</sup> Wright and Johnson, on the other hand, attempted to measure

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<sup>72</sup> MacSweeney 2004: 53.

<sup>73</sup> Parsons 2017.

<sup>74</sup> Flannery 1972.

social complexity based on decision-making hierarchy.<sup>75</sup> Tainter broke down social structure into two dimensions: vertical and horizontal, and argued that the increase in complexity represents an increase in a vertical hierarchy.<sup>76</sup>

Various approaches, which emphasise different aspects of material culture, were developed to identify social complexity in an archaeological context. Wilk and Rathje linked the size of the house to social complexity in their investigation of the socio-economic organisation by analysing the household as a primary unit of society.<sup>77</sup> They identified four major categories to understand the household's function in society: production, distribution, transmission, and reproduction. To measure the degree of production, they specified different productive behaviours as linear and simultaneous depending on the performance of tasks. In this respect, they proposed that if the task is complex and simultaneously performed, then it needs larger space, in other words, larger households provide more space for varied economic activities.<sup>78</sup>

According to Wason, social rank is an index of social organisation. He developed models for each varying ranking society and used the notion of stratification to understand the nature of ranking.<sup>79</sup> Besides the size, he also emphasised energy-intensive tasks as another indicator to recognise social stratification. These energy-intensive tasks include mortuary practices, artefact distribution as well as architecture.

Kent also sought to develop a general model representing various social systems. According to Kent, architectural features are the primary proxy to measure the

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<sup>75</sup> Wright and Johnson 1975.

<sup>76</sup> Tainter 1977.

<sup>77</sup> Wilk and Rathje 1982: 617-39.

<sup>78</sup> Wilk and Rathje 1982: 632-3.

<sup>79</sup> Wason 1994.

degree of complexity.<sup>80</sup> She asserted that the organisation of space and the degree of partitioning and segmentation in a household correlate with the degree of social complexity. She argued that social complexity depended on the degrees of socio-political stratification, economic specialisation, and gender differentiation.

Amongst the approaches that define social complexity on material culture remains, some had particular focus on Anatolia. Steadman argued that, unlike flat settlements that could be expanded horizontally in terms of size and partitioning as a response to increasing social complexity, inhabitants of mound settlements had to look for alternative solutions for their needs for additional space in response to changes in socio-economic conditions.<sup>81</sup> According to her, growth in social complexity leads to an increase in wealth and social stratification, thereby bringing the need for privacy and territoriality. In the Anatolian peninsula, the solution was often building additional doorways and rooms. Besides the size and architectural partitioning, she also emphasised the importance of buildings' location in their social context, reflecting status and identity.<sup>82</sup> Steadman correlated the urbanisation process of EBA Anatolia to the emergence of complex societies.<sup>83</sup> But, she does not clarify the mechanism of social complexity. Instead, she indirectly linked social complexity to an increase in the variety of activities requiring additional and distinctive space and addressed megaron-type architecture as a solution to the need for privacy and territoriality sought in increasing social complexity in Anatolia.

In his comparative study of cultural change between Anatolia and Mesopotamia, Özdoğan acknowledged regional diversity both in terms of the nature and the developmental process of a social system without explicitly addressing its causes or in what ways it is complex. Instead, he asserted that the existence of particular

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<sup>80</sup> Kent 1990a: 127-41; 1991: 439-60.

<sup>81</sup> Steadman 2000.

<sup>82</sup> Steadman 2011a.

<sup>83</sup> Steadman 2011b.

material remains was the indicator of complex social systems.<sup>84</sup> According to Özdoğan, the changing social structure that led to urbanisation during the EBA had its distinct material assemblages and architectural features. In this perspective, he argued that Bademağacı, Küllüoba and Seyitömer represent new social systems in Anatolia.

The correlation between the process of urbanisation with the increasing social complexity is widely accepted for the EBA Anatolian archaeology. Çevik discussed the varying social systems of the EBA in Anatolia and addressed the subject through the concept of urbanisation.<sup>85</sup> She asserted that as well as the material remains, settlement patterns and layouts are the variables for understanding the state of urbanisation, thereby reflecting distinct social systems. Çevik proposed three settlement organisations for the EBA Anatolia: centralisation, urbanisation and rural. She considered social complexity a function of urbanisation. According to her, while southeastern Anatolia was experiencing greater social complexity, in eastern Anatolia, there was no evidence for social complexity. In her paper, Çevik did not offer a model for how these different urbanisation processes correspond to the social systems nor explain in which way they experienced complexity.

Sagona and Zimansky used the term *civilisation* to refer to the change in the social system during the EBA of Anatolia.<sup>86</sup> Apart from the settlement pattern and economy defining the state level of socio-political organisation of a given society, they also considered stratification between individuals and institutions and trade as well the change in pottery form and fabrics as other criteria implying development towards *civilisation*. Sagona and Zimansky used typological methodology to address the change in social systems, thereby distinguishing different social systems as if they

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<sup>84</sup> Özdoğan 2011.

<sup>85</sup> Çevik 2007.

<sup>86</sup> Sagona and Zimansky 2009: 174-8, 196-7.

had followed the same trajectory of change in material culture that leads to comparison.

On the other hand, besides the urbanisation process, Yakar considered primarily the social differentiation within the community to address the degree of social complexity and identify different social systems experienced during the EBA of Anatolia and discussed possible socio-political conditions responsible for this diversity.<sup>87</sup> Although he aimed to give cause-and-result relationships for the change toward more complex societies, he did not clearly address in what way society is complex and how complexity is measured.

Although architecture, unevenly distributed wealth and control over the surplus were considered fundamental elements for assessing the social complexity, animals also contributed to the economic activities of the communities and so played an important role in forming social systems. Arbuckle argued that animal husbandry, exclusively cattle breeding, had a significant contribution to agricultural systems and provided its distribution to local and regional markets during the EBA of Anatolia.<sup>88</sup> He discussed that due to cattle labour, large and complex political systems were able to develop. Cattle, as the most powerful, valuable, and thereby symbolically significant farm animal, were employed to manage social relationships in a competitive environment through feasting hosted by elites.

Some researchers emphasised the population size of any given social group as the defining parameter for social complexity. The anthropological approach suggests a direct causal relationship between the size of the group and the structure of its organisation.<sup>89</sup> The main principle behind this causal relationship is that human cognitive ability and social structures have limited capacities, thereby if a given group reaches a certain population threshold, neither the human brain nor the related

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<sup>87</sup> Yakar 2011b.

<sup>88</sup> Arbuckle 2014.

<sup>89</sup> MacSweeney 2004: 52.



social system will be able to cope with that situation. As a response, unless the group breaks into smaller units, the reorganisation of social structure is unavoidable.

Moreover, the collective decision-making process also has its limitations. Osborne and his colleagues demonstrate that when everyone has the right to voice their opinions, the decision-making process becomes less effective in larger groups.<sup>90</sup> Because as the number of participants increases, the impact of each participant's choice will decrease, thereby reducing the benefits of participation. This, in turn, can lead to lower attendance rates, meaning that people willing to attend are not representing the entire population. Those who are willing to participate have extreme views or strong beliefs. As a result, the individuals with extreme views have an outsized impact on the outcome in their favour, leading to the emergence of a subgroup - that is "elites"- who dominate the decision-making process.<sup>91</sup>

MacSweeney attempted to evaluate whether this suggested population threshold correlated with the emergence of stratified society during the EBA.<sup>92</sup> She argued that the existence of central storage facilities and the significant number of seals do not necessarily reflect differential access to resources. Instead, they might imply an egalitarian redistributive system. She suggested that monumental architecture that demanded a centrally organised labour force; greater inequality in the distribution of prestige goods; and craft specialisation as a response to the need to produce high-quality items could be considered primary criteria for the presence of a socially complex community.<sup>93</sup> Based on the vertical and horizontal differentiation that she identified as the archaeological footprint of social complexity, she investigated EBA Aegean sites and whether their social organisation corresponds to the proposed population threshold.

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<sup>90</sup> Osborne, Rosenthal and Turner 2000.

<sup>91</sup> Osborne, Rosenthal and Turner 2000: 929-30.

<sup>92</sup> MacSweeney 2004.

<sup>93</sup> MacSweeney 2004: 59.

MacSweeney's investigation results imply a strong correlation between the site size and social complexity. But, she also argued that the quality and scale of the building work, craft specialisation and unevenly distributed prestige goods are the indicators of social complexity. However, those criteria are actually the ones she predetermined to identify social complexity in the first place. Therefore, the correlation may not reflect the fact but instead represent self-verification.<sup>94</sup> MacSweeney concluded that the proposed population threshold correlates with the social complexity but is not necessarily the primary condition for its existence since there were examples where she observed no social complexity even though the site size was large enough. According to MacSweeney, another possible reason could be long-distance trade and thereby location of a site in relation to both local and long-distance trade routes could be a greater opportunity for the emerging socially complex societies.<sup>95</sup> Although MacSweeney identified primary indicators for social complexity, she did not delineate to what extent a site experienced social complexity compared to others.

McGuire criticised the typological approach attempting to understand the dynamic process of change, including the nature of the social organisation, in prehistoric societies and argued that this approach might specify and measure the materials but cannot draw a causal link between the variables and the change itself.<sup>96</sup> He suggested breaking down the concept of social complexity into variables: inequality and heterogeneity, which can be measured archaeologically. According to him, these two variables indicate the vertical and horizontal stratifications, and their interaction defines the nature of the social system. McGuire referred to heterogeneity to address different social groups within society while inequality to diverse access to material and social resources. In his model, he proposed burials and architecture as archaeological indicators to measure power, wealth, age, sex, ethnicity, and class stratification at different levels as individuals and groups.

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<sup>94</sup> MacSweeney 2004: 61.

<sup>95</sup> MacSweeney 2004: 61-2.

<sup>96</sup> McGuire 1983.

This study acknowledges the variety of social systems and does not consider the concept of the social system as a unitary phenomenon nor measurable in terms of types or categories as either chiefdom, state, complex or simple. Instead, following Bergman and Beehner's argument,<sup>97</sup> this study will propose that the degree of social complexity of a given society should be measured based on the number of horizontally and/or vertically differentiated relationships individuals maintain in a society. The concept is broken down into variables: inequality and heterogeneity to investigate "the differentiated relationship" by following McGuire's argument. By doing this, this study aims to measure vertical and horizontal stratification and define the nature of the social systems of the given sites. To investigate social systems, the study focuses on four primary archaeological footprints: architecture, spatial location and boundary control, artefacts indicating different economic activities, and evidence of greater access to exotic goods.

### **2.3. The Interrelation Between Social Systems and The Built Environment**

The relationship between social systems and the built environment has been a multidisciplinary subject of inquiry, encompassing fields such as architecture, anthropology, sociology, and archaeology. Scholars acknowledge that buildings and spaces are not solely utilitarian structures but also bear symbolic and cultural significance. Consequently, the arrangement and ordering of space can significantly affect human interaction, both within and beyond the built environment. By comprehending this interrelationship, one can glean insight into the social, economic, and political dynamics of societies.

According to Hiller and Hanson, the design of an object has a certain logic that is directly related to its particular purpose or range of purposes.<sup>98</sup> In fact, its style may have given an additional attribution to its function and slightly changed its meaning which has significance in its cultural context. In this respect, they address objects as

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<sup>97</sup> Bergman and Beehner 2015: 205.

<sup>98</sup> Hiller and Hanson 1989: 1-26.

having two aspects: functional and meaningful through which cultural identities are created and maintained. Buildings, additionally from the objects, are employed for ordering space. Therefore, unlike objects, they can transform any space through objects. This characteristic defines the relationship between humans and buildings. Hiller and Hanson argued that how space is ordered in buildings is related to how the relationship between people is ordered.

They developed a technique, called access analysis, based on the gamma analysis to investigate the pattern in the interaction of people with different social statuses. Underlying rules, and genotypes of patterns, manifest themselves in the delimitation of spatial units that permits or prevents particular relationships among the units while creating movement and encountering patterns among the inhabitants. Well-determined arrangements create highly accessible spaces in which social encounters are promoted, as well as private spaces with a higher degree of exclusion.

Humans, according to Giddens, are agents who are aware of conditions and consequences of their actions that are composed of reasons and motives through a continuous flow of conduct as does cognition.<sup>99</sup> He argued that in a social system, structural features are both medium and a result of the social practices in which agents and structures have a dualistic relationship. Based on this promise, he proposed that analysing the structuration of a social system infers the modes in which such a system emerged through knowledgeable activities of agents based on rules and resources in the diversity of action contexts, and these modes are produced and reproduced in interaction.

According to Rapoport, the interaction of people with their environment is an internal process formed through the meanings the environment has for them.<sup>100</sup> He suggested that meaning should be the essential concept in any research that aims to understand how the environment functions because meaning is an important aspect

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<sup>99</sup> Giddens 1984: 5-13, 25.

<sup>100</sup> Rapoport 1990: 11-34.

of function. He claimed that material culture is the physical expression of these stereotyped forms because it is the human mind to impose meaning on materials based on cognitive taxonomies, categories and schemata.

In archaeological studies, sites are perceived often as spaces with statically defined borders that can be identified and represented as points on a cartesian plane.<sup>101</sup> The site distribution map, for instance, is used to display these points, and settlement location is interpreted by taking account of its economic resources and land use based on the pattern analysis. Pattern analysis, generally speaking, seeks to recognise the organisation of the functionally associated materials with the landscape and resources.

The term "settlement" refers to a spatially and functionally distinct type of a site characterized by domestic activities and identified by a specific assemblage of diverse artefacts.<sup>102</sup> Like sites, settlements are often regarded as static defined bordered spaces indicating sedentism.<sup>103</sup> Interpretation of settlements is made based on such conceptual schemes that are thought to be empirical and measurable. These schemes are evaluated as units of analysis that are expected to form a system that can be analysed through a structuralist perspective.<sup>104</sup> The site, settlement and building are used as a term indicating different scales of a particular unit, and they are defined through the distribution of functionally distinct associations of artefacts, thus it is often assumed that they function to maximise the efficiency of economic and reproductive effort while having a single social meaning.

Space, on the other hand, is comprehended through sensory organs as a homogenous space of endless extension surrounding one's body.<sup>105</sup> This experiential space has a

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<sup>101</sup> Carman 1999: 20-9.

<sup>102</sup> Brück 1999: 52-75.

<sup>103</sup> Pollard 1999: 76-7.

<sup>104</sup> Hodder and Hutson 2003: 45-74.

<sup>105</sup> Thomas 1996: 85-6.

narrative and accretional quality, which imbues the space with a sense of place. The way in which humans inhabit space through sensory and inferential experience determines the qualities of place. Therefore, the place is a socially constructed environment that social refers to the variety of human experiences.

The body and its daily practice are inherently social, and every context and content of the actions of this daily life are all integrated along chains of social meaning.<sup>106</sup> People acquire an understanding of the world through social enculturation, and the place is an integral part of this world where they experience and respond to this social construction. The materiality of this construction is both active and constitutive. From this point of view, places can also be seen as having their biographies<sup>107</sup>, generated through mutual integration of human-built environment, another world, they have their narrative created through time. Moreover, the organisation of place not only reflects social structure and activity but also plays an essential role in generating them.<sup>108</sup>

The relationship between humans and their built environment is created and maintained based on the social construction of place.<sup>109</sup> Therefore, it is more appropriate to consider settlement as a part of an extensive and more fluid, than static-bordered, social landscape in which topographical features and animals integratedly create and maintain these chains of social meaning alongside humans. For instance, a höyük, which is a very common form of settlement in Anatolia, is interpreted as having an active role in displaying expressive components and in the creation and manipulation of ideological mechanisms.<sup>110</sup>

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<sup>106</sup> Tilley 1993: 20 in Hodder 2004: 26.

<sup>107</sup> Düring 2005: 3-29; Hodder and Pels 2010: 163-86; Ingold 1993: 152-74.

<sup>108</sup> Hodder 2004: 23-42.

<sup>109</sup> Brück and Goodman 1999: 1-19.

<sup>110</sup> Bailey 1999: 94-110; Kotsakis 1999: 66-76.

Social archaeology not only recognises places having an active role in the construction of social perception but whole material culture, and considers it as a subject as well as an object which is created by and creates, is maintained by and maintains, is transformed by and transforms.<sup>111</sup> The distribution of the associated group of artefacts indicates particular activities that were related to distinct kinds of social relationships. In this respect, the distribution of these activities in a settlement indicates the social constitution of a settlement.<sup>112</sup>

The interpretation of the material world based on its structural context only confirms its function and leads to an understanding as they were static systemic models. However, the material world has a dynamic process of change that manifest in the biographical narrative of each individual entity. From this perspective, a single place may have multiple functions and meanings to those who built, used, abandon, and reused it. Therefore, the meaning of a particular place is depended on its context which was socially organised. The concept of households, for instance, should better be perceived as living entities that have a use-life and biography, which are directly related to the inhabitants and their lives as well as their common ideology.<sup>113</sup> House form is interpreted as an expression of cultural identity, and households indicate the social construction of place as well as its use. The repeating houses are interpreted as one way of legitimation strategy for habitation and social continuity.

This study aims to investigate the social systems in the Early Bronze Age of Anatolia through the relationship between humans and their built environment. In this respect, this study has two main concepts: social systems and the built environment. The theoretical frameworks for these two main concepts are constructed on the basis of the arguments and postulates summarised below.

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<sup>111</sup> Bailey 1990: 19-48; Joy 2002: 44-132; Kopytoff 1986: 70-3.

<sup>112</sup> Hayden 1999: 112-28.

<sup>113</sup> Bailey 1990: 19-48; Goodman 1999: 145-59.

This study recognises that social systems vary greatly and defines social systems as complex sets of social relationships and institutions that organise and structure human behaviour in a particular society. Following Bergman and Beehner's argument, this study will propose that the degree of social complexity of a given society should be measured based on the number of horizontally and/or vertically differentiated relationships individuals maintain in a society. To investigate "the differentiated relationship", the concept is broken down into variables by following McGuire's argument as inequality and heterogeneity. By doing it, this study aims to measure vertical and horizontal stratification.

This study defines the built environment as a socially constructed place, physical modification to the natural environment ranging from hearths, burials and to settlements, that socially refer to the variety of human experiences. A place can have multiple functions and meanings to those who built, used, abandoned, and reused it. Therefore, the meaning of a particular place depends on its context, generated based on the association of particular artefacts indicating specific activities. In settlements, the distribution of these activities and associated artefacts is an expression of social organisation and may reflect the social relations of the inhabitants.

To investigate social systems through the built environment, the study focuses on four primary archaeological footprints: architecture, spatial location and boundary control, artefacts indicating different economic activities, and evidence of greater access to exotic goods. To address the issue, an integrative approach is developed combining Space Syntax with investigating artefact distribution and architecture, estimating population and archaeoastronomical analysis.

Then, the degree of urbanisation of the given settlement will be examined through various indicators, including the presence of dedicated areas for specific craftspeople, the production of prestige objects, the importation of exotic materials, population size, the existence of monumental architecture, and the nature of the social system. These factors can provide valuable insights into whether a correlation



exists between the degree of urbanisation and the degree of social complexity, as argued by scholars.

Furthermore, this study can contribute to the ongoing discourse on the nature of social systems during the Early Bronze Age. Overall, the investigation of social systems through the built environment is a challenging yet essential task that requires a rigorous and interdisciplinary approach. By employing methodologies from different field of study and examining multiple indicators, this study can provide a valuable contribution to the field of archaeology and shed light on the fundamental questions regarding the relationship between built environment and social complexity.

## CHAPTER 3

The socioeconomic and political organisation that was altered during the Early Bronze Age, varies across Anatolia. This chapter aims to provide a comprehensive overview of the Early Bronze Age of Anatolia, including the architectural traditions, burial traditions and subsistence economy. Previous studies will be discussed under separate subheadings and issues related to the Early Bronze Age will be emphasised at the end of the chapter. Within the scope of this study, the chronology of the Early Bronze Age is accepted as EBA I 3000-2600 BCE., EBA II 2600-2300 BCE, and EBA III 2300-2000 BCE, after Düring, and Steadman and McMahon.<sup>114</sup>

### THE EARLY BRONZE AGE OF ANATOLIA

Defining the spatial and temporal boundaries of Early Bronze Age Anatolia is challenging since neither the transition between the end of the Late Chalcolithic and the beginning of the Early Bronze Age could be clearly outlined, nor could the boundaries between the regions be drawn with the agreement of different authors.<sup>115</sup> Furthermore, although new and improved scientific methods have fundamentally changed archaeological practice, exclusively scientific dating methods, they are still

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<sup>114</sup> Düring 2011: 260; Steadman and McMahon 2011: 230.

<sup>115</sup> The boundaries between Western and Central Anatolia are not clearly defined, for instance Demircihöyük, Küllüoba and Harmanören are referred as located in either Western or Central Anatolia in different articles. For Demircihöyük see Fidan, Sarı and Türkteki (2015) and Massa (2014b), for Küllüoba see Fidan, Sarı and Türkteki (2015) and Efe and Türkteki (2005), and for Harmanören see Fidan, Sarı and Türkteki (2015) and Massa (2014b). The tripartite division of Early Bronze Age of Troy also differs in different articles Weninger and Easton (2014) and Mellink (1965a).

not regarded as indispensable parts of an excavation project due to the economic difficulty of accessing scientific methods,<sup>116</sup> on one hand, continuing traditional practices on the other, or due to the inherent nature of archaeological data.

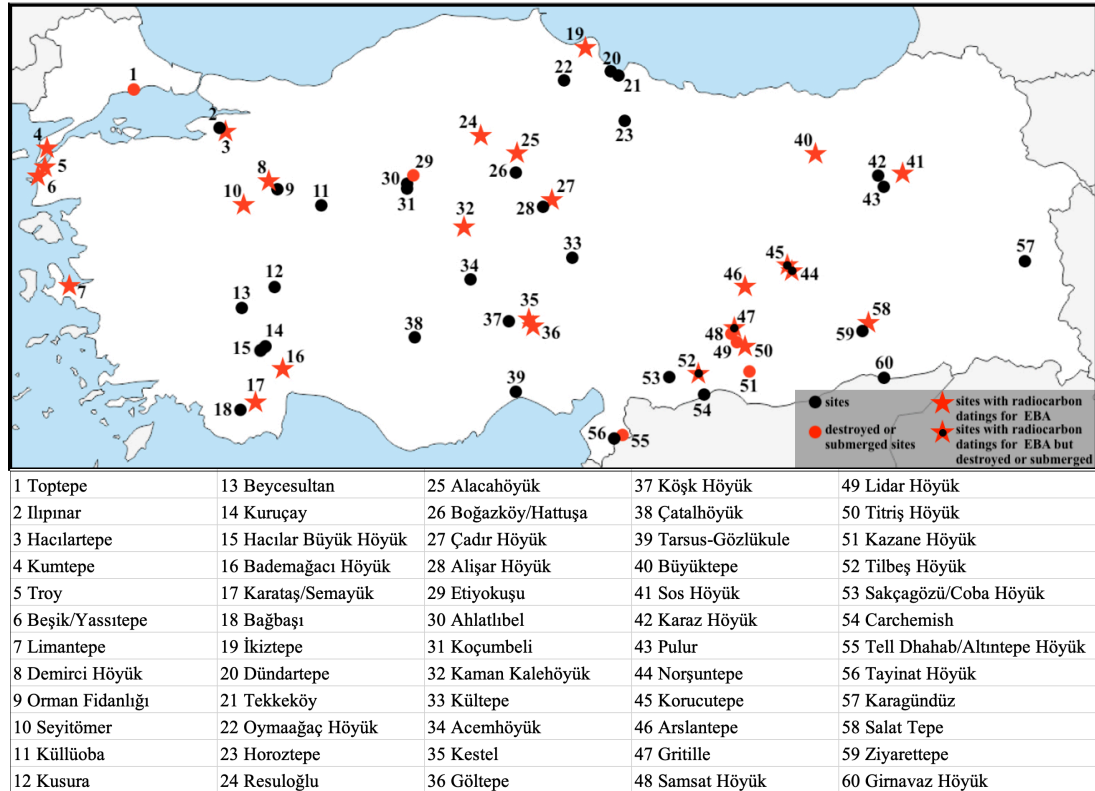


Figure 1: The map of Early Bronze Age sites

The term Early Bronze was used for the first time for Anatolian stratigraphic sequences by Carl W. Blegen,<sup>117</sup> and Hetty Goldman identified three sub-phases as EBA I,II and III based on the distinct material assemblages of Tarsus-Gözlükule.<sup>118</sup> The EBA I phase of Tarsus-Gözlükule displays parallel material culture with Syria and Western Anatolia. The beak-spouted jug, the characteristic pottery form of Western Anatolia, marked the beginning of the EBA sequence in Tarsus,<sup>119</sup> while the

<sup>116</sup> Killick 2015: 242-47.

<sup>117</sup> Blegen 1937.

<sup>118</sup> Goldman 1956.

<sup>119</sup> Goldman 1956: 92.

form was also observed at the beginning of the EBA Upper Mesopotamia.<sup>120</sup> Since then, this particular pottery form has been widely accepted as one of the key elements to determine the beginning of the EBA.

The Early Bronze Age Period refers to particular intervals by which cultures are labelled based on traditional terminologies that identify different technological aspects of cultural assemblages, often solely on lithic and pottery typologies.<sup>121</sup> Within the scope of the term, the EBA of Anatolia represents a period of increasing social complexity, the emergence of labour divisions and elites, the technical and industrial explosion of metal artefacts and formation of long-distance exchange networks.<sup>122</sup>

This identification, however, does not draw a picture that displays the subsistence economy and social systems of the societies.<sup>123</sup> And it cannot, not only because it lacks temporal and spatial flexibility but also because the texture of the EBA sites in Anatolia is not homogenous. Instead, it displays various forms of the development process and cultural inventories. Despite this cultural mosaic, the aim is often to correlate the EBA sequences of sites with each other, exclusively Troy, Tarsus, Alişar, Küllüoba, Beycesultan, and with the EBA sites of Syria and Mesopotamia, based on primarily their pottery assemblages.<sup>124</sup> Yet, the correlation of the EBA sequences of different sites to draw the chronology of Anatolia receives also critiques on the assumption of the existence of simultaneous and similar development processes in the cultural inventories over such a large area, Anatolia (783,56 km<sup>2</sup>).<sup>125</sup>

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<sup>120</sup> Efe 2021: 20.

<sup>121</sup> Yakar 2011a: 56-93.

<sup>122</sup> Bachhuber 2015; Düring 2011: 257-302; Efe 2007; Steadman 2011b: 229-50; Yakar 2011a: 69-74; Yakar 2011b: 345-476; Yener: 67-70; Sagona and Zimanski 2009:172-220; Şahoğlu 2005.

<sup>123</sup> Düring 2011: 257-8; Yakar 2011a: 68-9.

<sup>124</sup> Düring 2011: 260; Easton 1976: 165; Fidan et al. 2015: 83; Kouka 2013: 551; Mellaart 1957: 55-88; Steadman 2011bb:230; Yakar 1979: 57; 2011a: 70-1.

<sup>125</sup> Bachhuber 2014: 24-6; Bertram and Bertram 2021:21-5, 50-5, 69-76; Düring 2011: 258-61, 264; Efe 2021; Yakar 2011a: 68.

Moreover, this identification does not provide explanations for the reason and the nature of the cultural changes that occurred during the EBA. Therefore, the term EBA does not stand for a particular social system, economy or political state or explain what social complexity stands for as well as the nature of the elite and their degree of power/authority.

From the beginning of the 3rd millennium BCE, the archaeological material had undergone significant changes, that reflect the sociopolitical transformations and suggest various developments toward more complex societies.<sup>126</sup> These include the changes in settlement patterns and site layouts and increases in population density that indicates the development of urban communities; the emergence of stratified societies; the appearance of extramural cemeteries; development of metallurgy; long-distance trade networks; and different artefact assemblages.<sup>127</sup>

Unlike the Neolithisation that developed almost right after the sedentary way of life occurred along the Tigris-Euphrates rivers system in Mesopotamia, the development toward urbanisation and the emergence of stratified societies appeared relatively late, about a millennium later, in Anatolia.<sup>128</sup>

### **3.1. The Early Bronze Age I**

The archaeological narrative of the Anatolian region divides the Early Bronze Age into three main sub-phases in respect to different material manifestations. Although, the Early Bronze Age I shows similarities with the Late Chalcolithic, the main distinctive characteristics of the period are increasing size and number of settlements, so much that Yakar defined this period as the proto-urban period,<sup>129</sup> emergence of

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<sup>126</sup> Bachhuber 2014; Düring 2010: 257; Efe 2003b: 87-8; Sagona and Zimansky 2009: 172-4; Yakar 2011a:68-9.

<sup>127</sup> Bachhuber 2014; Çevik 2007: 131-40; Düring 2010: 257-99; Efe 2007: 47-64; Sagona and Zimansky 2009: 172-224; Steadman 2011b: 229-309; Stronach 1957: 89-125; Şahoğlu 2005: 339-61; Yakar 2011a: 68-74, 2011b: 436-76; Yener 2000: 67-70.

<sup>128</sup> Düring 2011: 297; Efe 2003a: 265-82.

<sup>129</sup> Yakar 1985 in Düring 2011: 264.

labour specialisation, increase in metal artefacts,<sup>130</sup> various regional ceramic traditions<sup>131</sup> and increasing importance of the textile industry as a secondary product of animal husbandry,<sup>132</sup> and long distance trade.<sup>133</sup> These facts indicate a clear change in the relationship between humans and their environment that precipitates the change in social structure and economic strategies.<sup>134</sup>

The regional ceramic traditions vary for the EBA I of Anatolia.<sup>135</sup> Except for the Mesopotamian influence in the southwest and Karaz influence in the east, some distinct regional traditions were also observed in west and central Anatolia. These regional pottery groups had relatively small zones and only very few of them continued during the EBA III.<sup>136</sup> One of the regional groups is the Troy-Yortan region in northwest Anatolia, including the Aegean sites of Thermi and Poliochni as well as Hacılarteppe near Bursa. The second group is that of the Beycesultan type sites in southwest Anatolia, including Liman Tepe and comprising Denizli, Uşak, Afyon, the south of Kütahya, and the Akşehir plain. The third group is the Phrygian-Bithynian region, comprising Demircihöyük, Upper Sakarya, Eskişehir, İznik and İnegöl plains. The fourth group is the Lycian-Pisidian regions, where very little information is known.<sup>137</sup> In central Anatolia, some of the Late Chalcolithic styles continued with minor changes and improvements and the continuation of the ceramic tradition implies that there were no significant changes in ethnocultural identity of the plateau during the transition from the 4th to 3rd millennium BCE<sup>138</sup> The ceramic

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<sup>130</sup> Lehner and Yener 2014: 529-57.

<sup>131</sup> Burney 1958: 175-209; Yakar 1985 in Düring 2011: 264.

<sup>132</sup> Sherratt 1983: 90-104; Schoop 2014: 421-46.

<sup>133</sup> Efe 2007; Şahoğlu 2005.

<sup>134</sup> Bachhuber 2011; Steadman 2011b; Massa 2014a; Schoop 2014.

<sup>135</sup> Efe 2003b; Düring 2011: 265; Yakar 2011b: 345-435.

<sup>136</sup> Efe 2003b: 88.

<sup>137</sup> Efe 2003b: 91.

<sup>138</sup> Düring 2011: 266; Yakar 2011b: 345-61.

traditions of the Black Sea region from the 4th and 3rd millennium BCE suggest that this region was a part of a larger group stretching from the Balkans to the Caucasus, as well as Marmara and Thrace.<sup>139</sup> In the eastern highlands, comprising Erzurum-Kars to Malatya-Elazığ regions, new forms of architecture and pottery styles, which were introduced by Transcaucasian-affiliated communities, appeared and replaced the regional traditions during the early 3rd millennium BCE.<sup>140</sup> The boundaries of the regional ceramic groups in the southwestern lowland are challenging for identifying distinct pottery groups during the EBA I.<sup>141</sup>

### **3.2. The Early Bronze Age II**

The Early Bronze Age II displays developmental transformations with the rise of more complex metal industries,<sup>142</sup> increasing long distance exchange networks,<sup>143</sup> the formation of the concept of prestige in material culture,<sup>144</sup> the development of fortified settlements and monumental architecture,<sup>145</sup> and the appearance of extramural cemeteries.<sup>146</sup> It is argued that the geological features of Anatolia may have had played a major role in the urbanisation and centralisation process of the sites and caused a dispersed rather than centralised settlement pattern.<sup>147</sup> The dynamics which influenced the economic strategies had also an impact on social

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<sup>139</sup> Yakar 2011b: 394-5.

<sup>140</sup> Yakar 2011b: 396 – 409. According to Palumbi, despite the difference in terms of socio-political organisation, the interaction between the Kura-Araxes culture and communities in Transcaucasus was more likely mutual, including the exchange of goods, trade, or seasonal movements associated with pastoral practice and began to emerge from the second half of the fourth millennium B.C.E. Palumbi 2003: 80 – 134.

<sup>141</sup> Yakar 2011b: 413-35.

<sup>142</sup> Lehner and Yener 2014: 529-57.

<sup>143</sup> Efe 2007; Şahoğlu 2005.

<sup>144</sup> Bachhuber 2011; Massa and Şahoğlu 2011; Lehner and Yener 2014; Massa 2014.

<sup>145</sup> Çevik 2007; Sagona and Zimansky 2009: 17-224; Düring 2011: 69-85.

<sup>146</sup> Massa and Şahoğlu 2011; Massa 2014b.

<sup>147</sup> Çevik 2007.

organisation and ideology.<sup>148</sup> The economic strategy, that had forced communal activity during the Neolithic and Chalcolithic Periods, gave place to individual labours,<sup>149</sup> and physical boundaries separating residents within the settlements as upper town and lower town, as well as from outsiders<sup>150</sup> clearly indicating social partitioning. The construction of monumental buildings and palaces, and metal assemblages in burial context<sup>151</sup> were considered materialised manifestations of the elites of the societies in a form that they legitimised their positions and their conception of value.<sup>152</sup>

In terms of material assemblages, the distinction between the EBA I and EBA II is not clear.<sup>153</sup> Despite the significant social, economic and political interactions between the eastern Aegean islands and the west costs of Anatolia, the regional ceramic tradition in the Troy-Yortan region continued during the EBA II.<sup>154</sup> The Phrygian-Bithynian region pottery traditions expanded to the eastern coastline of the Marmara region, İznik and İnegöl plains, as well as toward Altıntaş and Afyon. The group of Beycesultan type sites, on the other hand, dramatically changed in terms of ceramic traditions and the borders of the cultural zone, expanded toward Afyon, Kütahya, Isparta and Konya.<sup>155</sup> In the Pisidian-Lycian region, two pottery zones appeared: Burdur and Elmalı zones.<sup>156</sup> In Central Anatolia, localised form and style variation appeared during the EBA II, possibly due to the intra and inter regional

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<sup>148</sup> Frangipane 2009 et al: 5-29; Lehner and Yener 2014: 529-57; Schoop 2014: 421-46.

<sup>149</sup> Schoop 2014: 421-46.

<sup>150</sup> Düring 2011: 69-85.

<sup>151</sup> Bachhuber 2011: 158-174.

<sup>152</sup> Sagona and Zimansky 2009: 17-224.

<sup>153</sup> Düring 2011: 271; Steadman 2011b: 229.

<sup>154</sup> Efe 2003b: 91; Yakar 2011b: 362-387.

<sup>155</sup> Efe 2003b: 91.

<sup>156</sup> French 1969: 31, Figure 30a in Efe 2003b: 91.



interactions.<sup>157</sup> Two distinct regional ceramic traditions were observed in the Konya plain and Sivrihisar-Halys region.

### **3.3. The Early Bronze Age III**

The Early Bronze Age III displays temporal abandonment of some sites often accompanied by traces of destruction and fire.<sup>158</sup> The existence of abundant weaponry deposited in graves and the marks of weapon injuries on human bones suggest escalated warfare.<sup>159</sup> Climatic conditions, that are often claimed to have caused drought along the Near East, may have increased the competition for fertile lands.<sup>160</sup> Despite the fact that the number of settlements declined, there is a continuity of occupation and cultural traditions as well as increase in the size of settlements.<sup>161</sup>

Increasing long-distance trade paved the way for homogenous material culture over Anatolia during the EBA III.<sup>162</sup> Nevertheless, in western Anatolia, the major regional ceramic traditions were still recognisable. The intensifying interactions mutually influenced the regional ceramic traditions of Anatolia, Mesopotamia and neighbouring regions and their political strategies. Thus, it culminated in the emergence of commercial centres along the main trade routes and local rulers who controlled and managed the trade. This significant socio-economic development concurred with changes in architecture and settlement planning. The presence of upper town, fortified acropolis, and architectural structures in palace form were some examples of influential western architectural concepts, while the existence of the

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<sup>157</sup> Efe 2003b: 91; Yakar 2011b: 358-61.

<sup>158</sup> Düring 2011: 287-8.

<sup>159</sup> Erdal 2012: 1-21; Erdal and Erdal: 2012: 81-4; Massa 2016: 40; Selover 2020: 176-91.

<sup>160</sup> Massa 2014a: 101-23; 2016: 40.

<sup>161</sup> Düring 2011: 287-8; Massa 2016: 39-42.

<sup>162</sup> Efe 2003b: 92-4; Düring 2011: 287-90.

court, for instance, was eastern architectural features spread to the west of Anatolia through the intensifying interactions.

### 3.4. The EBA Architectural Traditions

The Early Bronze Age witnessed significant sociopolitical transformations toward more complex societies and the development of urbanisation. Besides the settlement patterns and site layouts, the architectural plan of the houses also changed in response to this transformation. Domestic architectures varied in terms of plan and construction techniques across Anatolia. This variety occurred due to social factors as well as environmental factors depending on the topography, climate and geological properties of regions.

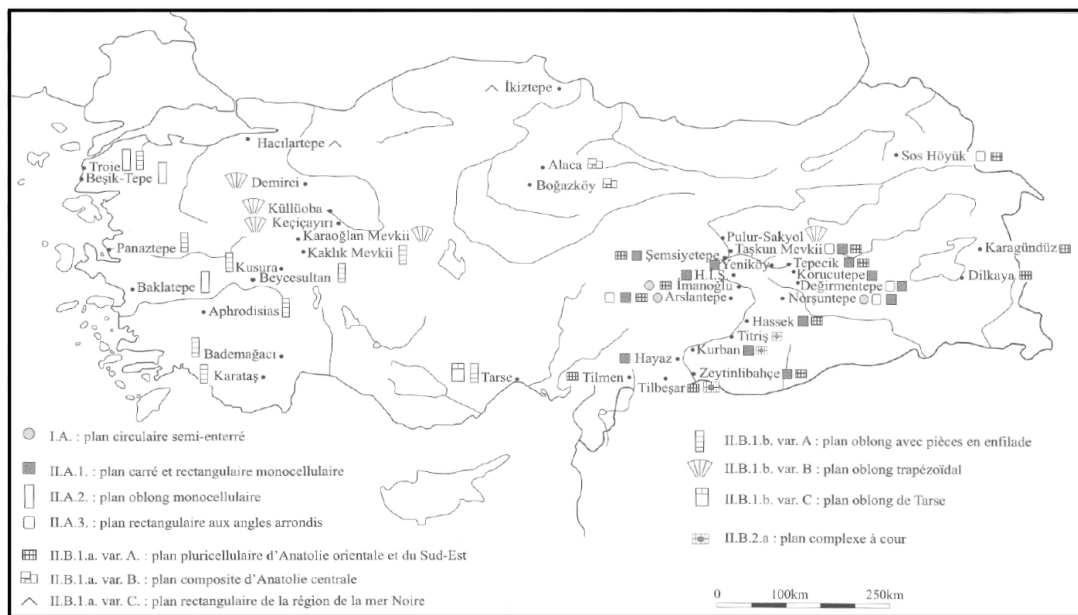


Figure 2: The map of different architectural traditions applied across Anatolia during the Early Bronze Age, after Perello 2011: 413.

#### Circular Plan Mono-cellular Buildings

This tradition was widely applied in the preceding periods but rarely observed in the EBA. Small size communities possibly used this building tradition. The examples

were mainly found in the Malatya region.<sup>163</sup> They were often built contemporaneously with rectangular buildings and used mostly for storage. The houses were constructed with mudbrick walls and had a flat or conical roof.<sup>164</sup> The size of the buildings varies from 5 m<sup>2</sup> to 22 m<sup>2</sup>, with an average of 12m<sup>2</sup>.<sup>165</sup> Based on archaeological and ethnographical comparisons, Perello suggested a small number of inhabitants, 2-3 individuals, and argued that a family might have lived in multiple buildings due to the limited space. Except for the examples found in İmamoğlu, these buildings are characterised by the absence of internal installations.

Inside the building, the space should have had inherently used for multiple purposes.<sup>166</sup> The fireplace was used for both heating and cooking. Storage was perhaps kept in a separate building dedicated to this purpose. However, none of the buildings had ever been identified as storage facilities. Due to their limited size, some activities, such as requiring light and additional space, might have been done nearby.

#### *Apsidal Plan Mono-cellular Buildings*

The number of apsidal plan buildings was small and mostly found in western Anatolia.<sup>167</sup> They were poorly preserved and thought to be the predecessors of the megaron-type buildings.

#### *Quadrangular Plan Mono-cellular Buildings*

This type of plan was observed mostly in east and southeast Anatolia but was later replaced by multi-cellular buildings in the southeast.<sup>168</sup> Except for Arslantepe and

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<sup>163</sup> Perello 2011: 92.

<sup>164</sup> Perello 2009: 112.

<sup>165</sup> Perello 2011: 93.

<sup>166</sup> Perello 2011: 94.

<sup>167</sup> Warner 1979: 138.

<sup>168</sup> Perello 2011: 97.

Kurban Höyük, this plan is applied mainly in village settlements.<sup>169</sup> These buildings had a simple plan varying morphologically from square to rectangular. The size of the buildings varies from 7 m<sup>2</sup> to 52 m<sup>2</sup>, with an average of 22 m<sup>2</sup>. They were built with brick walls either on a stone foundation or posed raw. In Yeniköy, the buildings were built with rammed earth walls on a stone foundation.<sup>170</sup> The roofs were constructed with wooden beams and branches covered with clay and might have been used as a terrace. There was no trace of a second floor.

It is more likely that inside the building was organised based on the axis of the building: benches arranged on one or more sides and a hearth in the centre. The standardised inner arrangement implies an absence of hierarchy and multifunctional use of space.<sup>171</sup> No storage area was identified in the buildings. Possibly a separate building was employed for storage. Thus, no trace of storage buildings or facilities around or near buildings suggests that this building was for community use.<sup>172</sup>

Hearths were often placed near the buildings and platforms, and jars were mostly stored against the exterior walls. A canopy was used to provide a semi-open private area.<sup>173</sup> The absence of a courtyard implies that the roof was also used for domestic activities.

#### *Quadrangular Plan Multi-cellular Buildings*

This type of plan was widespread throughout the Near East.<sup>174</sup> Based on the inner division, the plan is either simple or complex. Simple multi-cellular rectangular plans were found across Anatolia during the EBA. The inner arrangement varies and

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<sup>169</sup> Perello 2011: 101.

<sup>170</sup> Perello 2011: 98.

<sup>171</sup> Perello 2011: 99.

<sup>172</sup> Perello 2011: 100.

<sup>173</sup> Perello 2011: 100.

<sup>174</sup> Perello 2011: 108.

displays distinctive characteristic features depending on the region. Generally speaking, the plan with adjoining rooms was observed in western Anatolia and the plan with distributive parts was observed in central, northern, eastern and southeastern Anatolia. These two subtypes have also variations within themselves.<sup>175</sup>

The complex multi-cellular buildings appeared during the EBA III and they were only found in southeastern Anatolia.<sup>176</sup> This building plan was inspired by Mesopotamian architecture. Their form varies greatly, possibly to fit into the available space inside the dense urban layout. The size of the buildings varies from 59 m<sup>2</sup> to 263 m<sup>2</sup>, with an average of 152 m<sup>2</sup>. The walls were constructed with mud-brick on stone foundations with a flat roof on top. The floors were generally clay and sometimes covered with coating. Rooms were built around a court. The number of rooms is between 4 and 25, with an average of 13. The hearth was often placed in the court.

A large number of rooms implies a desire to organise the living area and activities. At least five distinct activities were identified: preparation culinary, cooking, crafts, storage and funerary function. Although there was no archaeological evidence to support it, possibly some places were used for sleeping and accepting guests.<sup>177</sup> The main living room was located at the back of the building, near the court. The court was also employed for multiple activities.

### *Settlement Layout*

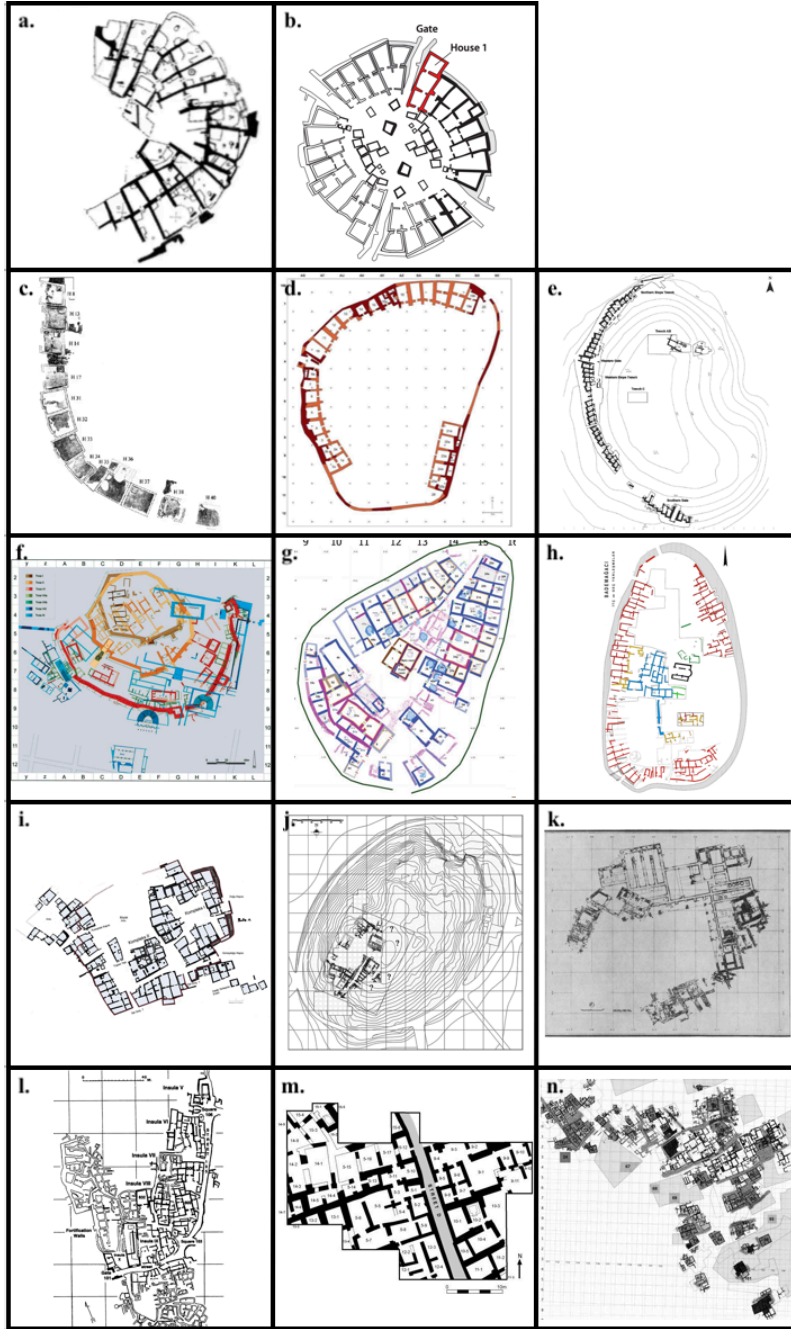
The diversity of settlement layout is greater in the EBA Anatolia. Based on their visible form, settlements can be grouped into two categories: höyük/mound sites and flat sites. The majority of EBA settlements that have been investigated are mound-type sites, with long durations of superimposed settlements. They are substantial

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<sup>175</sup> Perello 2011: 109.

<sup>176</sup> Perello 2011: 134-5.

<sup>177</sup> Perello 2011: 136.



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| a. Pulur, Özdoğan 2011, Fig.7.         | h. Bademağacı, Duru and Umurtak 2011c:31.                |
| b. Demircihöyük, Steadman 2011: 8.     | i. Küllüoba, Fidan 2012, Fig. 21.                        |
| c. Ilıpınar, Özdoğan 2011, Fig.1.      | j. Arslantepe, Frangipane 2018: 27.                      |
| d. Keçiçayırı, Fidan 2016: 90, Fig.6.  | k. Maşat Höyük, Özgüç 1980: 306.                         |
| e. Hacılar Büyük Höyük, Umurtak 2020.  | l. Poliochni, Cultraro 2007: 56.                         |
| f. Troia, Korfman 2001: 349.           | m. Titiş Höyük, Algaze and Matney 2011: 1003, Fig. 46.4. |
| g. Seyitömer, Harrison 2016, Fig. 5.2. | n. Kültepe, Hertel 2014: 29, Fig.3.                      |

Figure 3: Some examples of the Early Bronze Age settlement layouts across Anatolia.

mudbrick architectures dissolved throughout time since the earliest farming communities in the Neolithic Period.<sup>178</sup> According to Steadman, the transition toward more complex societies and urbanisation demanded a different adaptation process for those who lived in mound settlements than lived in flat settlements.<sup>179</sup>

The greater diversity of settlement layout is a result of different social, economic and environmental factors depending on the topography, climate and geological properties of regions. Çevik identified that some societies experienced the process of urbanisation, while others centralisation or ruralisation based on settlement pattern and settlement layout.<sup>180</sup>

The basic model for urbanisation suggests that intensive and organised agriculture offers redistribution of substance and emergence of other commodities leading to the emergence of a centralised system to control and manage the system by a specific class.<sup>181</sup> Densely inhabited large settlements with well-defined areas dedicated to workers, craftspeople and the elite, manufacturing prestige objects, importing exotic materials, developed metallurgy, and administration are the primary prerequisites for the urbanisation process. Over time, these urban centres would become increasingly complex city-states.

According to Özdoğan, this model did not reflect the transitions toward urbanisation that occurred across Anatolia during the EBA.<sup>182</sup> He argued that this model is developed to understand the process of urbanisation that occurred in Mesopotamia, however, the socio-economic systems in Anatolia are different than in Mesopotamia. Thus, it differs depending on the region. Özdoğan emphasised that comparing

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<sup>178</sup> Sherratt 1997: 276.

<sup>179</sup> Steadman 2000.

<sup>180</sup> Çevik 2007.

<sup>181</sup> Özdoğan 2011: 23.

<sup>182</sup> Özdoğan 2011.

Anatolia with Mesopotamia resulted in a misinterpretation of the development that occurred in Anatolia.

The general characteristics of Anatolian settlements are their size, shape and sparse population, absence of workshops or voluminous storage facilities, and absence of standardised record keeping.<sup>183</sup> Özdoğan asserted that producing raw materials, specialised craftspeople, existence of trades of exotic materials and raw materials, fortification systems and monumental gates were the primary factors indicating the presence of distinct social systems experiencing the process of urbanisation.

Although the settlement layouts differ across Anatolia, it is important to mention “*Anatolisches Siedlungsschema*”. The Anatolian Settlement is termed after the radial settlement layout with agglutinated buildings facing a central courtyard by Korfmann.<sup>184</sup> Inside, the buildings had different architectural plans. Preceding this radial settlement were Aşağı Pınar in the Neolithic Period,<sup>185</sup> Hacılar I in the Early Chalcolithic and Mersin Yümüktepe in the Middle Chalcolithic.<sup>186</sup> Erarslan argued that due to the changing sociopolitical and economic systems, this radial settlement layout altered into a linear form with a variation depending on the region and dynamically evolved across Anatolia.<sup>187</sup>

### **3.5. EBA Burial Traditions**

The Early Bronze Age witnessed a dramatic alteration in burial practices of the preceding period. Sites with extramural cemeteries began to appear while intramural burials continued but became increasingly infrequent. The burial tradition of EBA Anatolia can be grouped into three main categories in intra-and extramural contexts:

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<sup>183</sup> Özdoğan 2011: 24.

<sup>184</sup> Korfman 1983: 222 – 9.

<sup>185</sup> Özdoğan 2022: 287; Figure 3.

<sup>186</sup> Erarslan 2008: 183.

<sup>187</sup> Erarslan 2008: 185.



cist graves, simple inhumations and pithos burials.<sup>188</sup> Pottery, weapons, tools, and jewellery were common burial goods left for (or with) the deceased in all three types of graves. Adult burials seem to have a higher quantity and diversity of grave goods, nevertheless, in some cases, child burials could have been richer in terms of grave goods. However, the association between the grave good assemblages and sex and gender is not clear and varies depending on the regions (in Appendix I).

Although intramural child burials are not a common burial tradition of the EBA, there are several examples where child graves were contemporary with the houses. For instance, a child grave was found beneath the EBA house floor in the site of Kusura.<sup>189</sup> In Beycesultan, child burials in jars were the only intramural burials uncovered: one was found in the coarse-ware jar just beneath the outside floor, adjacent to the house wall from Level XXIX; two were found in coarse-ware vessels from Level XXII, but their locations in respect to a house are not clear since only an oven has been uncovered from this level; three more were uncovered in vessels, with small drinking-bowls as grave goods, among the ruins of Level XVIIb.<sup>190</sup> The site Ovabayındır is another example where several infant burials in jars were uncovered among the foundations of the houses.<sup>191</sup> The female-child burial found in an intramural jar burial, in Gavutepesi, is outstanding for its rich grave goods: 89-piece gold necklace, two gold bracelets, a pair of gold earplugs, a bronze bracelet, a marble idol and seal, and two beak-spouted jugs.<sup>192</sup>

Another uncommon burial tradition is uncovered in the Early Bronze Age II Ulucak cemetery. A significant number of the pithoi and jar graves were found empty. The

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<sup>188</sup> Selover and Durgun 2019: 273.

<sup>189</sup> Lamb 1937: 10.

<sup>190</sup> Lloyd and Mellaart 1962: 23, 26, 33.

<sup>191</sup> Akurgal 1958: 164.

<sup>192</sup> Meriç 1992: 356.

absence of body and no trace of disturbance in the graves implied that they were either symbolic graves or the bodies were destroyed by animals.<sup>193</sup>

### *Inhumation Burials*

The deceased was placed either in supine, half fetal or fetal position in a basic pit, filled with earth, in the ground without a grave marker.<sup>194</sup> In general, a grave contains only a single individual, but the Iasos Kıyıkışlacık cemetery and İkiztepe cemetery are examples where multiple inhumations were also uncovered.

### *Pithos Burials*

Their scale varies from 0.5 m to 2.0 m in height. The pithos often has a neck with a wide mouth, flat or pointed bottom, two or 4 handles, and sometimes has decorations on either its body or neck.<sup>195</sup> They are generally placed inclined towards the surface and the mouth was either closed with a large stone or another pot. In some cases, pithoi were left open or a covering material that could not last was used for closing. The pithos burial tradition is more common in western Anatolia.

### *Pot Burials*

Their scale is less than 0.5 m in length. Like pithos burials, the mouth was either closed with a large stone or another pot. The mouth of the pot is wide enough for a baby or child to fit inside. Examples of pot burials were found in Baklatepe, Kurura, Küçükhöyük, Aphrodisias and Yortan.<sup>196</sup>

### *Cist Burials*

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<sup>193</sup> Çilingiroğlu et al 2004: 54.

<sup>194</sup> Selover and Durgun 2019: 273.

<sup>195</sup> Uhri 2006: 247.

<sup>196</sup> Uhri 2006: 245-6.

The oval or rectangle shaped grave is surrounded by a row of stones or mud bricks, its floor is clean compacted soil, or in some cases stone paved. Their size varies, small for children and larger for adult and multiple burials.<sup>197</sup>

### *Chamber Tombs*

In terms of architectural appearance, the stone-built chamber tombs were similar to the stone cist burials. Although the cist graves were used often for individual burials, the chamber tombs were used for multiple burials of all sexes and ages, and thereby were rich in grave goods.<sup>198</sup> The earliest examples of the chamber tomb were identified in southeastern Anatolia during the Early Bronze Age.<sup>199</sup> There were built in the cemetery and/or in some cases inside the dwellings in the settlement. The stone-built chamber and rock-cut chamber tombs display similar burial customs and architectural features, but rock-cut chamber tombs were often found along the Middle Euphrates and possibly preferred due to the calcareous geography. There is no preferred orientation direction for their entrances.<sup>200</sup> The number of chamber tombs dated to the EBA are few compared to the other grave types. The increasing presence of the chamber tombs by the end of the EBA coincided with the process of urbanisation.

### *Burial Rituals*

Arguably the most prominent burial ritual was burying the deceased with the grave goods including personal ornaments and jewellery, tools, weapons and pottery, idols, animal and human figurines and possibly organic materials which have not survived. The material of grave goods could be clay, stone, metal, bone and grain. Only few studies investigate the relationship between the sex, age and grave goods. Although it

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<sup>197</sup> Yılmaz 2003: 64.

<sup>198</sup> Yılmaz 2003:75; 2006: 80.

<sup>199</sup> Yılmaz 2006: 71-90.

<sup>200</sup> Yılmaz 2006: 74.

is widely accepted that most of the graves are oriented in an east-west direction, this idea is nothing more than a generalisation. (Table) Thus, there is no statistical study done to support the argument.

Among the other domesticated animals of the EBA, cattle were outstanding for their values and often employed as symbols of divinity and power, thereby frequently used for symbolic purposes in mortuary rituals.<sup>201</sup> Animal bones, especially cattle heads and forelimbs left in or near the graves implied feasting activities related with burial rituals.<sup>202</sup> The presence of canine skeletal remains around graves, especially child graves suggests that dogs also played a role in the funerary rituals.<sup>203</sup>

In Çine Tepecik, a significant number of pottery fragments with animal figurines (such as a bull and a dog) and animal bones, including a complete dog skeleton and antlers, were identified in places near the pithoi burials. These assemblages imply ceremonial practices for the Early Bronze Age burials.<sup>204</sup> Barley and broad beans left on the graves, in offering areas plastered pits with ash were the remains of incense burned in the rituals associated in Gre Virike <sup>205</sup>

### **3.6. The EBA Subsistence Economy**

The Anatolian peninsula has complex geography that has direct impacts on the environmental conditions of regions (demonstrated in the following chapter) with differences in temperature, rainfall, the chemical structure of the soil, elevation and slope, thereby affecting the agricultural biodiversity that encompasses crops and animal breeds, their wild counterparts, and other species interacting with them to maintain the ecosystem.

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<sup>201</sup> Arbuckle 2014; Baykara 2019; Koşay 1944; Ökse 2017; Özyar 1999; Roodenberg 2003, 297-306; Roodenberg-Alpaslan Roodenberg 2008, 361-89.

<sup>202</sup> Koşay 1951; Özgüç 1948: 92; Yıldırım and Ediz 2008: 445.

<sup>203</sup> Alpaslan Roodenberg 2008: 351.

<sup>204</sup> Günel 2013: 38-2.

<sup>205</sup> Ökse 2002: 58-9, 60.

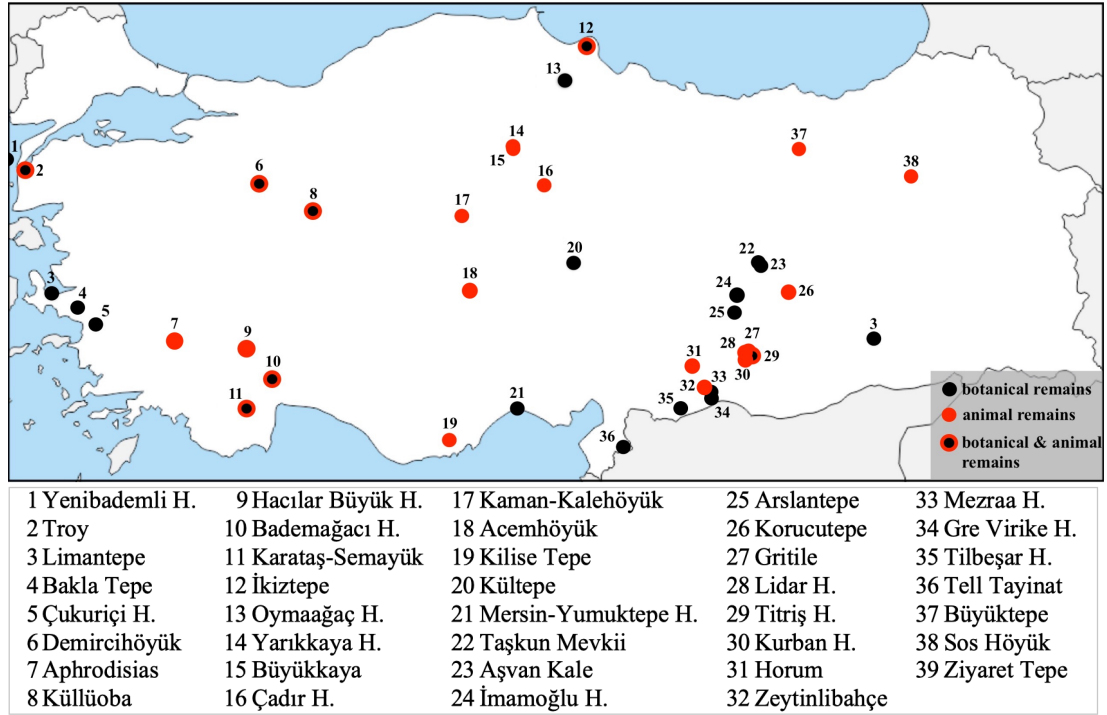


Figure 4: The map of sites with botanical and/or animal remains dated to Early Bronze Age.

The extensive research on botanical and faunal remains from archaeological sites has increased dramatically in the last two decades. The latest systematic literature review of archaeobotanical studies published to date for the Anatolian region demonstrates agricultural activities through qualitative comparison of corpi on a site-by-site basis from Epipaleolithic to Medieval periods and identifies regional agricultural strategies.<sup>206</sup> The calibrated dataset reveals that there were diachronic patterns in agricultural consumption. The first pattern is the consumption of domesticated fruit and nut trees for their wild relatives, which appeared in the Early Holocene. Following hackberry, almond and pistachio dominate the fruit assemblage in the Epipalaeolithic and Pre-Pottery Neolithic, the consumption of figs and grapes increased during the Chalcolithic. During the EBA, domesticated grape, fig and olive comprised the majority among the others. The variety of domesticated or cultivated

<sup>206</sup> Marston and Castellano 2021.

tree crops increased over time, and by the Roman period, at least 14 fruit and nut trees were domesticated/cultivated.

The second pattern is observed in the choice of cereal over time. The consumption of hulled wheats had been reduced and hulled barley began to be preferred during the Middle Chalcolithic, and free-threshing wheats during the Late Bronze Age.<sup>207</sup> Barley, emmer, einkorn and free-threshing wheat comprised the majority, respectively, among the other cereal taxa during the Early Bronze Age.

The third pattern represents oil and fibre cultivation indicating preference of some crops over others based on sites and time periods.<sup>208</sup> The number of oil and fibre crop samples are relatively small and there is no sample from the Roman Period. During the Epipalaeolithic and PP Neolithic the only sample is of Opium poppy found in Körtik Tepe. Between the PP Neolithic and Early Chalcolithic flaxweed was cultivated and only found in Çatalhöyük. *Camelina sativa* is observed in significant quantities from the Late Chalcolithic to the Iron Age and found in many sites. Safflower appeared during the Early Bronze Age and disappeared for some times and then began to be cultivated again during the Iron age till the end of the Hellenistic period. Sesame is also observed during the Middle Bronze Age and the Iron Age and then disappeared. The cultivation of cotton began during the Hellenistic Period and continued through the Medieval period. Flax is observed from the PP Neolithic through the Medieval period.

There is no diachronic pattern observed for the cultivation of pulses.<sup>209</sup> During the Early Bronze Age lentils, bitter vetch and common pea are observed all around the Anatolian region. Except for eastern Anatolia, grass pea was widely cultivated. Chickpea is observed in central, east and southeast Anatolia, while broad bean is observed in central, east and in the lake district regions.

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<sup>207</sup> Marston and Castellano 2021: 349.

<sup>208</sup> Marston and Castellano 2021: 344, Figure 26-4, 349.

<sup>209</sup> Marston and Castellano 2021: 346, Figure 26-9.

Animals were consumed not only for their meat, skins, bones, sinew and fat but also for their milk, wool, traction, transportation purposes and manure. The act of herding animals has societal implications in terms of social position and wealth.<sup>210</sup> Thus, products with storage potential, such as milk and wool, increase the value of the animals. Slaughtering of animals and their meat distribution based on culturally-specific strategies provide insight into the social structure.

The number of archaeozoological analyses about the Early Bronze Age of Anatolia is small. Sheep, goats, cattle and pigs were the primarily domesticated and herded animals in Anatolia since the Neolithic period.<sup>211</sup> Slaughter patterns of different species suggest changes in the animal management and represent different production purposes over times.<sup>212</sup>

Among the other domesticated animals of the EBA, cattle are the largest and strongest species, thereby playing an essential role in supporting agricultural systems and transportation of bulk commodities within local and regional markets and making centralised storage and redistribution possible.<sup>213</sup> Moreover, besides their economic function, cattle had symbolic meaning in ritual contexts and iconography, were employed as objects of sacrifice and also had a social role in structuring social systems.<sup>214</sup>

Faunal remains indicate an increase of an average of 10 percent of cattle remains over time from the Pre-Pottery Neolithic to Middle Bronze Age.<sup>215</sup> The management of cattle across Anatolia was not homogenous, but instead varied, possibly due to the environmental conditions and the nature of the social systems. Following the

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<sup>210</sup> Arbuckle 2012: 302-3.

<sup>211</sup> Buitenhuis 1997: 655-62.

<sup>212</sup> Arbuckle, Öztan and Gülçur 2009: 148-151.

<sup>213</sup> Arbucke 2012; 2014; Halstead and Isaakidou 2011; Sherratt 1981; 1983.

<sup>214</sup> Arbucke 2012; 2014; Collins 2002; 2010; Lev-Tov and McGeough 2007; Russell 1998; 2012: 52-143; Zuckerman 2007.

<sup>215</sup> Arbuckle 2014: 281-2.

collapse of political systems during the Late Bronze Age, the management of cattle dramatically decreased, and sheep and goats dominated the faunal assemblages. Nevertheless, due to their higher economic functions in terms of a greater amount of meat, strength and trainability, they were still the most valuable economic resources throughout the Bronze Age of Anatolia.<sup>216</sup> The cattle remains found in the Royal Burials at Alacahöyük represent the symbolic significance of cattle for the elites during the Early Bronze Age.<sup>217</sup>

In general, the slaughter pattern varies by sex and age based on the purposes of management of animals, whether the main aim was maximising the production of meat or antemortem products such as milk and fibre.<sup>218</sup> Data on mortality reveals that the management of sheep changed over time in central Anatolia.<sup>219</sup> Unlike sheep, goat management does not display significant change and suggests that antemortem products had been an essential purpose of the management strategies since the Neolithic. Moreover, since then, the main reason for herding sheep and goats has radically changed. While sheep were predominantly herded for meat production during the Pottery Neolithic and later for lamb and milk production, goats have been used for small-scale production of meat, milk and hair. In the Chalcolithic, mortality data suggests a year-delay in the slaughter of lambs for the benefits of milk and wool production, emphasising the emergence of more mobile and specialised animal management in central Anatolia. During the Bronze Age, sheep were used predominantly for their wool.<sup>220</sup>

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<sup>216</sup> Arbuckle 2014: 281-2.

<sup>217</sup> Arbuckle 2014; Koşay 1944; Özyar 1999.

<sup>218</sup> Arbuckle, Öztan and Gülçur 1999: 132-3.

<sup>219</sup> Arbuckle, Öztan and Gülçur 1999.

<sup>220</sup> Arbuckle, Öztan and Gülçur 1999: 150.



### 3.5. Archaeological Studies on the EBA

The earliest studies on Early Bronze Age Anatolia often focused on pottery distribution in space and time, and aimed to understand connections between different places and the degree of their relation, and the origin of particular object styles and forms. The widespread appearance of similar pottery styles and forms over a large geographical area cannot be denied. Archaeologists often interpreted this phenomenon as a cultural interaction, and even sometimes as a migration process.

According to Amiran there was a relationship between Palestine and Anatolia through the Kh. Kerak Ware in terms of both migration and ethnic movement.<sup>221</sup> She argued that the Kh. Kerak Ware was a new trend in Palestine, and it appeared suddenly without stylistic precursors or a local tradition which indicates an origin from somewhere else. She suggested Anatolia for the origin of the Kh. Kerak Ware, and discussed that the monochrome pottery appeared during the Chalcolithic Period and continued for the 3<sup>rd</sup> millennium BCE. Nevertheless, she could not distinguish the direction of this movement.

In 1956, Burney started an investigation of the Chalcolithic and Early Bronze Age of Eastern Anatolia through pottery decoration and forms.<sup>222</sup> He recorded more than 150 sites dated to the Chalcolithic, Bronze Age and Iron Age. Hand-made with black or dark grey burnished pottery attracted attention as a distinctive pottery style and form in Eastern Anatolia as well as in the Upper part of the Kura-Araxes region (or the early Transcaucasian) and around Lake Urmia. According to him, this pottery style had already appeared at Karaz, near Erzurum; at Pulus north Erzincan; and at the Trialeti district near Ardahan, Kars, Iğdır, Erivan and Nahcevan and Geoy Tepe near Lake Urmia. Following Hood's argument, he suggested that there was a

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<sup>221</sup> Amiran 1952: 89-103.

<sup>222</sup> Burney 1958: 157-209.

connection with the Amuq plain, Syria and Palestine through this pottery of eastern Anatolia.

Burney questioned the origin of the pottery style based on its appearance and its absence in space and time, but could not provide a clear answer due to the lack of adequate evidence. Nevertheless, he suggested that the rail rim, especially on large jars characterises the East Anatolian EBA I period in terms of shape and decoration. Based on the widespread unity of pottery style and decoration, Burney argued that the EBA I culture found in Eastern Anatolia, Georgia and Lake Urmia had the same origin and these regions had contact during the EBA, and thus, that the plain of Muş and the Van region stayed isolated until the beginning of the Urartian period which indicated the culture found in Eastern Anatolia must have had a different origin than Anatolia. According to him, the relief decoration that appeared in EBA II was a new development of a continuing cultural sequence. Burney developed a chart for relative chronology of the regions he investigated based on pottery style and form, and documented the description of each style and form in detail.

Stronach investigated certain metals, particularly daggers, spearheads, shaft-hole axes, halberds and crescentic axes, in terms of their typological developments in relation to their chronological and cultural division during the Early Bronze Age of Anatolia.<sup>223</sup> Since the earliest form of daggers is widespread whilst the distribution of the more advanced latter form was limited, he was able to determine regional variations in form between West and Central Anatolian metalwork. Thus, the influence from neighbouring Syria could also be traced, especially in Central Anatolia at about 2100 BC, while western Anatolia maintained indigenous forms. He classified 9 different types of daggers with one additional form; 5 types of spearhead the appearance of which follows a different process than daggers; 5 types of shaft-hole axes; 5 types of halberds with the earliest example probably influenced by Mesopotamia; and two types of crescentic axes with belated appearance influenced

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<sup>223</sup> Stronach 1957: 89-125.

from Mesopotamian and Syro-Palestinian forms. The study of Stronach does not provide us any information of the spatial distribution of these metals within the site where they were uncovered, nor give any indication of their possible other functions such as grave goods or social representation during ceremonies, besides their use as weapons.

The Early Bronze Age of western Anatolia began to be scientifically examined around the 1960s, and studies focused more on defining the characteristic features of the region.<sup>224</sup> Blegen and his colleagues divided the Early Bronze Age into three phases, and Anatolian chronology was compared with the chronology of Mesopotamia.<sup>225</sup> This terminology was applied to other excavations. In 1942, Bittel at Demircihöyük, and in 1957 Goetze, identified the existence of culturally different societies in Anatolia. Later, Mellaart and French investigated pottery groups and their distribution pattern.<sup>226</sup> All these earliest archaeological investigations provided a main ground for the chronology; related ceramic groups and metal industry as an assemblage; and identification of their distribution across the Anatolia plateau. Typological introduction of material remains provides a culturally specific, historic, situated sequence of archaeological data of the Early Bronze age of Anatolia.

With the emergence of the structuralist approach to archaeological study, the layout of the settlement became a promising subject in archaeological research. Korfmann termed *Anatolisches Siedlungsschema* after Demircihöyük for the radial settlement layout.<sup>227</sup> In order to categorise settlements in terms of the degree of change in the social and economic structures, a formalisation developed, which describes site types.<sup>228</sup> Çevik analysed the size range of settlement patterns at the Early Bronze Age

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<sup>224</sup> Fidan, Sarı and Türkteki 2015: 60-89.

<sup>225</sup> Blegen et. al. 1950 and Goldman 1956 in Fidan, Sarı and Türkteki 2015: 60.

<sup>226</sup> French 1969; Mellaart 1954; 1957.

<sup>227</sup> Korfmann 1983.

<sup>228</sup> Çevik 2007; Sagona and Zimansky 2009.

sites of Anatolia and linked them to the establishment of diverse social systems.<sup>229</sup> She asserted that Early Bronze Age societies across Anatolia experienced varying degrees of urbanisation and administrative centralisation while some remained rural. Çevik described centralisation as more of a vertical transition that can be recognised in material culture such as public buildings, fortress walls, and prestigious items that signify a ruling elite. Urbanisation, on the other hand, referred to a horizontal transformation in which all members of the society benefit from a centralised administration. She argued that the appearance of ruling elites was more likely a function of internal dynamics than the result of trade.

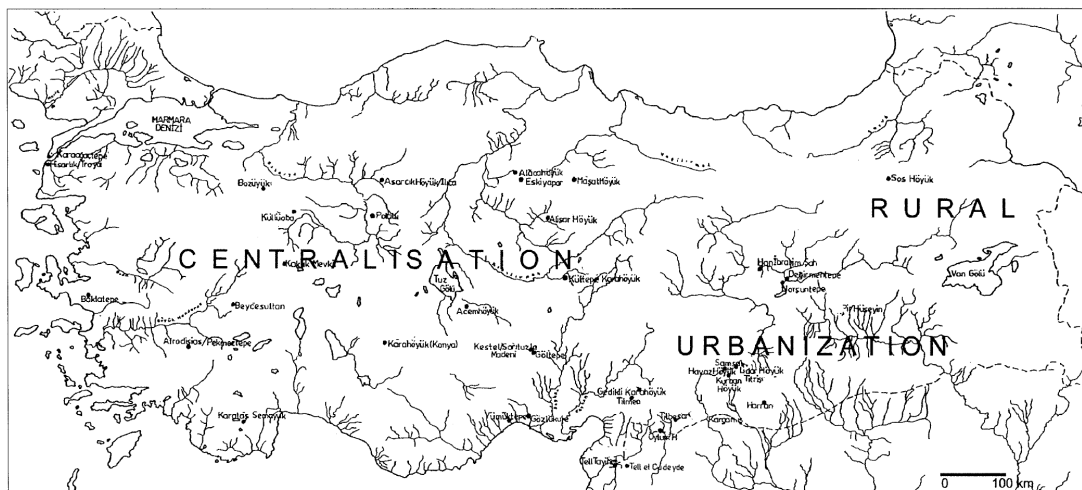


Figure 5: The map displaying different social systems across Anatolia, after Çevik 2007: 132, Figure 1.

In the 1980s, Efe suggested an inland network connection between Troy and Cilicia on cultural and economic relations based on the appearance of potter's wheel, metal industry, the boot-shaped stamp seal, and bone and marble idols.<sup>230</sup> He argued that the important changes which defined the characteristic features of the West Anatolian

<sup>229</sup> Çevik 2007.

<sup>230</sup> Efe 2007.

Early Bronze Age III are the result of a trade network with Mesopotamia. According to Efe, the emergence of ruling elites together with culturally and politically active centres occurred as a result of intensive trade. Bachhuber, on the other hand, interpreted trade as vehicle which increases the value of the metals in Anatolia due to the supply and demand relations with Syro-Mesopotamia, and he argued that metal depositions in the burial context are a socially contingent strategy of elite investment and they were used as a legitimization of their social power.<sup>231</sup>

Steadman analysed the organisation of domestic architecture of Anatolian mounds from a diachronic perspective, and argued that although there was limited space, inhabitants found alternate methods in order to perform complex tasks and used innovative architectural styles to create both maximum access and territorial boundaries.<sup>232</sup> According to her, megaron-type architecture is a social strategy to create privacy, boundary control and territoriality. Steadman attempted to understand social structure and ideology in relation to the built environment.

Schoop investigated social and economic implications of wool-production during the Chalcolithic period, and argued that, based on the architectural remains, there is only little evidence indicating social differentiation.<sup>233</sup> However, economic change in increasing mobile pastoralism and plough-assisted agriculture triggered change in social structure and ideology that became visible during the Early Bronze Age. Schoop suggested that there is a direct link between wool-based textile industry and social complexity. He demonstrated how gender roles changed toward pervasive economy and community-centred ideology turning into individual achievement.

Another examination of the Early Bronze Age sites, in a broader sense, was done based on the settlement layout by Erarslan.<sup>234</sup> According to Erarslan, the reason

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<sup>231</sup> Bachhuber 2011.

<sup>232</sup> Steadman 2011b.

<sup>233</sup> Schoop 2014.

<sup>234</sup> Erarslan 2008: 177-95.

behind the shift from radial to the linear arrangement was the social structure that became more cosmopolitan due to the expanding trade network.<sup>235</sup> She argued that the social growth in the Early Bronze Age was a single process of urbanisation that occurred across Anatolia and its roots went back to the early phases of the Chalcolithic.

Massa developed an analysis to understand social interaction in west and central Anatolia based on the potential rationales and mechanisms for exchange and how this exchange was influenced by the degree of social organisation.<sup>236</sup> Massa also investigated burial customs in Central Anatolia<sup>237</sup> and with Şahoğlu in Western Anatolia<sup>238</sup> in order to determine ritual practices performed within burial contexts, to understand the degree of social hierarchy, and gender differentiation based on the burial types, the presence of the grave goods, and position of the body. Demircihöyük- Sariket cemetery provides a clear horizontal differentiation based on age and sex, and vertical differences in respect to burial type and grave goods that indicate social differences. Although the sex differentiation was very clear in the burial context, Massa did not attempt to examine this sex differentiation in the domestic layout.

The place-making process in Early Bronze Age Anatolia involved the widespread appearance of a settlement pattern characterised by a radial design of agglutinated megaron dwellings facing a central courtyard. Although there has never been a consensus on cross-disciplinary definitions of the concepts of urban and urbanisation. A single explanation for the growth process for all complex societies appears to be an unachievable goal, as each society has its unique cultural background and environmental niche that narrated their past and formed their future.

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<sup>235</sup> Erarslan 2008: 180.

<sup>236</sup> Massa 2016.

<sup>237</sup> Massa 2014b.

<sup>238</sup> Massa and Şahoğlu 2011.

Therefore, the growth process of societies is not a Cartesian product rather multi-layered formation depending on its spatiality and temporality.

The environment-behaviour interrelation, particularly built environment, on the other hand has not been investigated in detail, nor the power strategies which managed the social and economic organisation. Only little evidence has been determined indicating cult activity in domestic context.<sup>239</sup> The concept of burial recently attracted attention and investigations provide important information on social structures, religious rituals<sup>240</sup> in burial context. Cosmological order, on the other hand, has not received any attention at all. However, orientation of the deceased's head toward the east-southeast direction, the side on which men's and women's bodies were laid in the burials, animal figurines and standards provide clues on their conceptualisation of the cosmos during the Early Bronze Age of Anatolia.<sup>241</sup>

### **3.6. Issues Related to the EBA**

Chronology and terminology are still the main issues in archaeological studies of the period and considerable debates are still going on due to the cross-cultural dating methods, relative ordering of sequences and lack of consensus on the degree of social complexity.<sup>242</sup> In addition to these issues, Anatolian topography that may have led to cultural regionalism<sup>243</sup> sets the stage for different degrees of these distinct transitions that emerged at different times and speeds. While Kurt Bittel addressed the existence of distinct EBA cultural groups,<sup>244</sup> David H. French referred to them as pottery zones.<sup>245</sup> According to Turan Efe, most of the cultural regions emerged according to

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<sup>239</sup> Takaoğlu 2000.

<sup>240</sup> Erdal 2002; Bachhuber 2011; Massa and Şahoğlu 2011; Massa 2014b.

<sup>241</sup> Bachhuber 2011; Massa 2014b.

<sup>242</sup> Mellaart 1957: 55-88; Çevik 2007; Sagona and Zimansky 2009: 172-224; During 2010: 257-99.

<sup>243</sup> Çevik 2007; Massa 2016.

<sup>244</sup> Bittel 1942 in Efe 2021: 20.

<sup>245</sup> French 1969.

their pottery zones.<sup>246</sup> Jar Yakar also identified different cultural regions based on pottery assemblages displaying cultural markers.<sup>247</sup>

The data set and complexity of social structure have been investigated through separate monographic research. This monographic research often focuses on a single particular theme such as metallurgy, pottery style, exchange networks, pastoral and agricultural strategies, settlement patterns, social structure and so on. Researchers often aim to investigate these particular sets of data that changed in space and time, and defined the degree of change. This research perspective, however, prevents the interrelation of different factors, which has led to the emergence of this rich data set and complex social structure, and impedes understanding of the emergence of so-called urbanisation.

For instance, social complexity and urbanisation are often measured through architectural features. Studies on prehistoric architecture treat buildings as a single unit that exists in isolation and provide descriptive information on the building plan, its size, construction techniques, and compares between sites. However, a building is a part of a system of built and natural environment, and a physical setting for social and economic activities.<sup>248</sup> Rather than existing as an isolated static unit, they have a use-life within a social context.

Another challenge is comparing data sets across space and time due to the lack of standardised terminologies.<sup>249</sup> Moreover, combining different type of remains into a single category results in a highly problematic conclusion and prevents further analysis that might reveal the distinctive use of different materials, objects or animals. For instance, sheep and goats had been herded for different purposes that changed over time. The variation in animal management indicates the complex and

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<sup>246</sup> Efe 2021: 22.

<sup>247</sup> Yakar 2011b.

<sup>248</sup> Ivanova 2013: 18-9.

<sup>249</sup> Marston and Castellano 2021: 341.



multifaceted nature of animal domestication and herding strategies. Combining them into a single category of “sheep/goat” is likely to produce a distorted result and oversimplify the complexity of animal management strategies, and ignores their contribution to social systems.<sup>250</sup>

Besides its visibility, by representing all periods, archaeological projects often excavate mound-type sites with a tendency toward vertical investigation that provides a suitable environment for research on multiple periods by different teams simultaneously. However, to draw a more concrete picture of the transition to urbanism and socially more complex societies, the number of large-sized settlement excavations with large horizontal exposures needs to increase. Otherwise, the spatial relations between buildings, the distinct architectural features, the boundary control, and the distribution of exchange material over the site cannot be adequately recognised. Therefore, neither the degree of heterogeneity and inequality, nor the degree of urbanisation can be properly determined for any given society.

Apart from how the data is gathered or whether it is fractioned or not, another major issue in the EBA archaeology of Anatolia is the lack of consensus among scholars on the concept of social complexity, in terms of defining the term and addressing how to measure complexity in the archaeological context. However, in the scope of the term, the EBA indeed represents a period that displays increasing social complexity in Anatolia. Unclear, implicit definition of social complexity results in underestimation of the varying nature of social organisation across Anatolia and over-generalisation of the sociopolitical transformations toward both more complex societies and urbanisation.

Furthermore, the degree of urbanisation of the EBA Anatolian settlements (which is obviously less intense and less clear than the contemporary settlements in Mesopotamia) need to be understood in more detail. In order to do so, there is a need for a clear description/definition and specification its values in a way that is

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<sup>250</sup> Arbuckle, Öztan and Gülçur 1999: 150.

archaeologically measurable. Otherwise, it would not be feasible to understand the nature of the urbanisation process that differs between the regions. At present, the sociopolitical transformation that took place during the EBA and is addressed through the process of urbanisation and the increasing social complexity only describes a blurry social phenomenon.

In this study, the aim is to clarify the concept of social complexity and urbanisation and understand the nature of social organisation of the settlement of Bademağacı by investigating artefact distribution, building plans, building size and spatial distribution of the buildings within settlement layout and boundary control. By so doing, the aim is to measure vertical and horizontal stratification depending on the degree of heterogeneity and inequality within the community, and give insight into the nature of social organisation and the degree of urbanisation.

A significant number of sites displaying the radial settlement layout characterised by agglutinated megara facing a courtyard emerged across Anatolia during the EBA. The preceding examples of this settlement layout are dated back to the Neolithic Period,<sup>251</sup> and continue through the Chalcolithic.<sup>252</sup> But their number increased during the EBA. The main subjects of the previous studies were the material and architectural characteristics of these settlements and their spatial distributions across the Anatolian region throughout the time. Only a few, especially those on Seyitömer<sup>253</sup> and Demircihöyük,<sup>254</sup> aimed to investigate the settlement pattern-social system relations during the EBA. In this respect, Bademağacı Höyük, with its pre-planned settlement layout, serves as a fascinating case to study for investigating the extent of the change and the nature of the social systems, altered during Early Bronze Age Anatolia.

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<sup>251</sup> Özdoğan 2016.

<sup>252</sup> Erarslan 2008.

<sup>253</sup> Harrison 2016.

<sup>254</sup> Durgun 2012.

## CHAPTER 4

To better understand the human-built environment relationship during the EBA in general, identify whether there is a variation in the social structures of the different sites and highlight the reasons for the specific variations, the results of the analysis will be compared and contrasted with other sites in the comparison section in the Discussion Chapter. Demircihöyük, Seyitömer, Karataş, Hacılar Büyük Höyük have been selected to compare and contrast results derived from the site of Bademağacı Höyük. The selection of these sites takes into consideration their geographical proximity, as well as the theoretical and methodological study frames employed in their respective studies.

In this chapter, attention is given to settlement layouts, architectural traditions, small finds, burial traditions, faunal remains, and social structures of the given sites. The data gathered herein are derived from published materials. It is noteworthy that except for Hacılar Büyük Höyük, the excavations at the selected sites have been completed. The excavation project at Hacılar Büyük Höyük, on the other hand, has been annually continued since 2011, therefore one might not yet expect to have conclusive results.

Of the sites, Demircihöyük, Seyitömer, and Hacılar Büyük Höyük display oval-shaped closed settlements characterised by agglutinated buildings. Additionally, Demircihöyük and Seyitömer yielded comprehensive insight into settlement layouts, whereas Hacılar Büyük Höyük, even though the majority of the central area is still unknown, has had its border delineated through excavation results and remote sensing research.

Architectural plans from all sites provide traditional architectural plans for each to be evaluated. Notably, Seyitömer lacks an analysis of faunal remains, providing information on divergent economic activities such as agriculture and animal husbandry. As well as architectural traditions, burial traditions are also archaeological indicators to measure power, wealth, age, sex, ethnicity, and class stratification at different levels among individuals and groups. Despite the dramatic increase in extramural cemeteries during the Early Bronze Age in Anatolia, only Demircihötük and Karataş provide rich data on burial tradition. Conversely, neither intramural nor extramural cemeteries are found associated with Seyitömer. Likewise, Hacılar Büyük Höyük has yet to yield any burial evidence.

## **THE EARLY BRONZE AGE SITES**

### **4.1. Demircihöyük**

The mound is located in the vicinity of Çukurhisar district at the northwestern edge of the Eskişehir plain. The site encompasses an area of 0.35ha, elevated 4-5m above the plain level and 855m above the sea level. The mound has a circular shape of about 80m diameter.

#### **1. Archaeological Survey and Excavations**

In 1936, Kurt Bittel did a survey of Demircihöyük during his journey in central Anatolia. In the following year, he excavated a limited area in the site with Stefan Schults. With the participation of Heinz Otto in 1938, the small finds were studied at the museum in Ankara.<sup>255</sup> Excavations resumed a few decades later in 1975 under the

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<sup>255</sup> Bittel and Otto 1939.

directorship of Manfred Korfmann and continued until 1978.<sup>256</sup> Salvage excavations were done at the necropolis of Demircihöyük-Sarıket, 250m west of the mound, under the directorship of Jürgen Seeher during the excavation seasons of 1990-1991.<sup>257</sup> The results derived from completed archaeological research, including the necropolis, were well published, providing comprehensive insight into settlement layouts, architectural traditions, small finds, burial traditions, faunal remains and population size.

## 2. Chronology

The four radiocarbon samples from the Phases H and E, and dendrochronology analysis reveal that the Early Bronze Age site of Demircihöyük had emerged at 3000 cal. BCE and was occupied until the mid-3<sup>rd</sup> millennium BCE.<sup>258</sup> The earliest phase began from the 8 m below the present level of the plain.<sup>259</sup> Moreover, the material remains found from the deep sounding trenches indicated the existence of the Late Chalcolithic, while as material retrieved from the surface deposits together with the trace of architectural features located outside the mound implied the possibility of earliest occupation, possibly dated to Neolithic period in or around the settlement.<sup>260</sup>

During the four excavation seasons, a continuous sequence of 17 building phases within a 7 m deposit had been uncovered and material culture continued without any major interruption throughout the Early Bronze Age.<sup>261</sup> (*Table 1*) Below Phase C, there was further occupation deposit 3.6m in thickness. There were three layers of

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<sup>256</sup> Korfmann 1976: 36-8; 1983.

<sup>257</sup> Seeher 1991: 163-75; 1992: 365-79; Seeher and Jansen 2000.

<sup>258</sup> Korfmann 1987: 1-13; Korfmann and Kromer 1993: 135-71; Yakar 2002: 449.

<sup>259</sup> Korfmann 1978: 16.

<sup>260</sup> Korfmann 1978: 17.

<sup>261</sup> Korfmann 1978: 16; 1979: 192.

conflagration in Phase E1, E2 and K. After the conflagration, possibly due to war, the site was rebuilt including the fortification walls during Phase E.<sup>262</sup>

MBA wheel-made ware in large quantities and crescent-shaped decorated loom-weights imply possible occupation during the MBA. There were some Hellenistic finds that had been uncovered together with EBA finds.

*Table 1: Demircihöyük radiocarbon dating chronology table, derived from Korfmann 1987: 12.*

<b>Cultural Period</b>	<b>Building Level</b>	<b>Date</b>
EBA II	Phase P	2550 B.C.
	Phase O	2575 B.C.
	Phase N	2600 B.C.
	Phase M	2620 B.C.
	Phase L	2640 B.C.
	Phase K2	2660 B.C.
	Phase K1	2625 B.C.
	Phase I	2705 B.C.
	Phase H	2730 B.C.
EBA I	Phase G	2751 B.C.
	Phase F3	2770 B.C.
	Phase F2	2790 B.C.
	Phase F1	2810 B.C.
	Phase E2	2830 B.C.
	Phase E1-2	2840 B.C.
	Phase E1	2850 B.C.
	Phase D	2900 B.C.
	Phase C	2950 B.C.

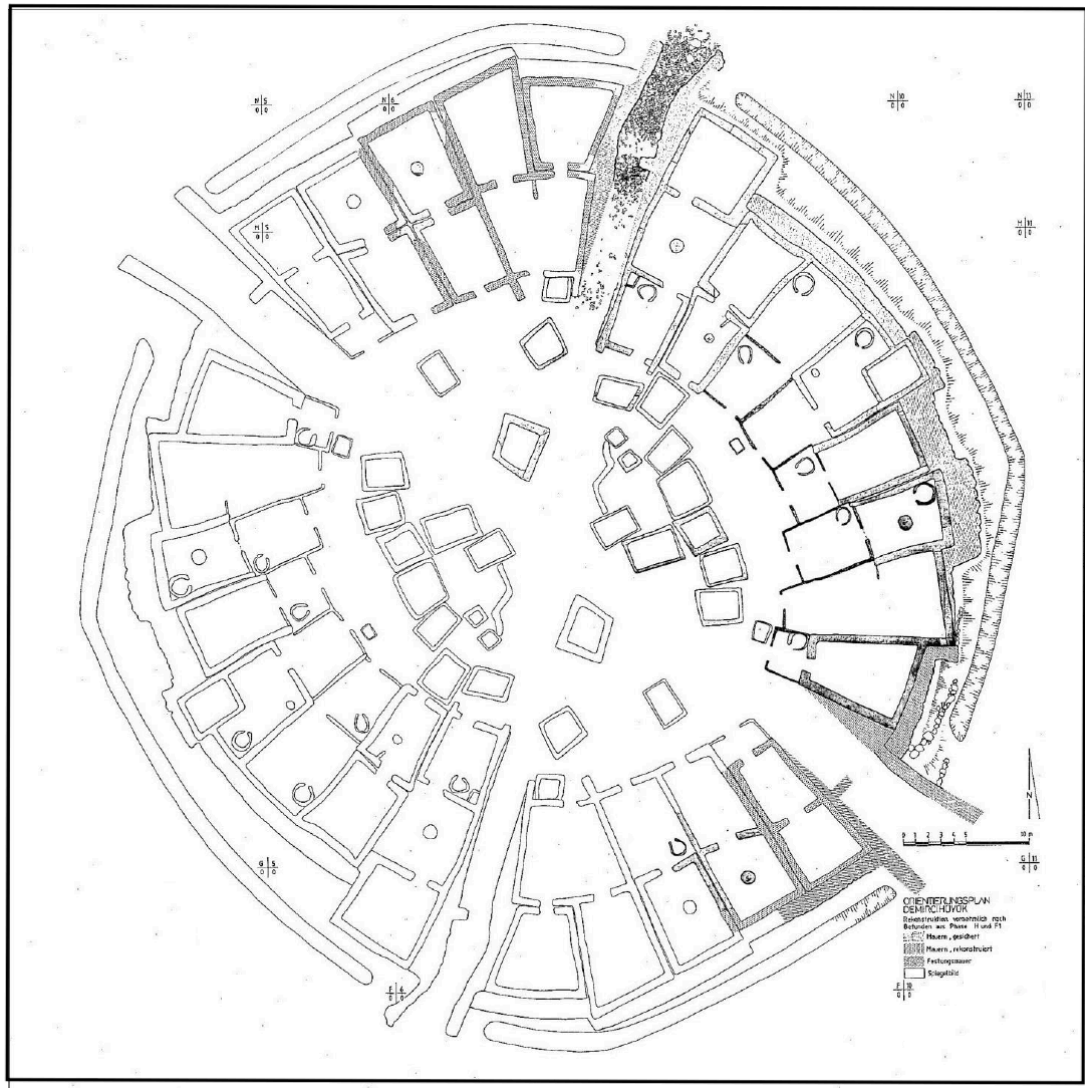
### 3. Settlement Layout and Architectural Traditions

The stone wall system, thought to be a fortification, in the shape of a horseshoe surrounded the settlement along the edge of the mound and it was preserved up to almost 4 m height.<sup>263</sup> It was possibly built during Phase E and maintained until Phase O/P. The foundation of the walls lies beneath the present plain level. The wall was pierced with two gates that were about 20 m long with a paved approach-way. The

<sup>262</sup> Korfmann 1979: 192.

<sup>263</sup> Korfmann 1977: 38; 1979: 192.

projection of these two gates towards the centre has an angle of about 90°. Korfmann suggested two more gates at the south and the west sides of the mound.<sup>264</sup> Within these walls, a round-shaped settlement emerged where agglutinated houses were facing a central courtyard. (*Figure 6*)



*Figure 6: Demircihöyük reconstruction plan of the settlement layout representing Phases F1 and H, modified from Korfmann 1983, Figure 343.*

<sup>264</sup> Korfmann 1979: 193.

According to Korfmann, the site consisted of 26 buildings, of which 13 were uncovered during the excavations, and the population of the village was established at approximately 130 people maximum.<sup>265</sup> Buildings were trapezoidal in plan with an average size of 50m<sup>2</sup> and their back walls started against the fortification wall. Different architectural traditions have been observed at the mound: rectangular wooden houses, two-storied mud-brick buildings, larger buildings with stone foundations as well as storage buildings mostly four-sided and lined with wooden boards. In Phase E, the method of construction of the most inner inside the building ring was a larger extent of wood that consisted of a line of posts packed on both sides with earth or mud while the outer ring had stone foundations with a mudbrick superstructure.<sup>266</sup> This construction tradition, however, was changed in Phase H, and possibly after the conflagration the inner buildings were rebuilt with stone.

Due to the mud-brick walls, the lifespan of a house could have been between 20-40 years and required constant reconstruction.<sup>267</sup> New houses were constructed above the mud-brick deposit of the previous ones. Over time, the land became sloped toward the centre where storage facilities and silos were placed in the deepest part of the centre.

In Phase K1, it appears that one building had three rooms with stone foundations with antae and wooden posts. During the following Phase K2, at least three houses were identified with similar construction techniques.<sup>268</sup> In the entrance to the buildings, there were the remains of wooden thresholds. In one case a hinge-stone with the marks of the turning of a door-post indicating the existence of a wooden

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<sup>265</sup> Korfman 2011: 214.

<sup>266</sup> Korfmann 1979: 193.

<sup>267</sup> Korfmann 2011: 214.

<sup>268</sup> Korfmann 1979: 193.



door. Based on the four superimposed layers that were found on one of the inner walls, white, green and pink coloured wash were used.<sup>269</sup>

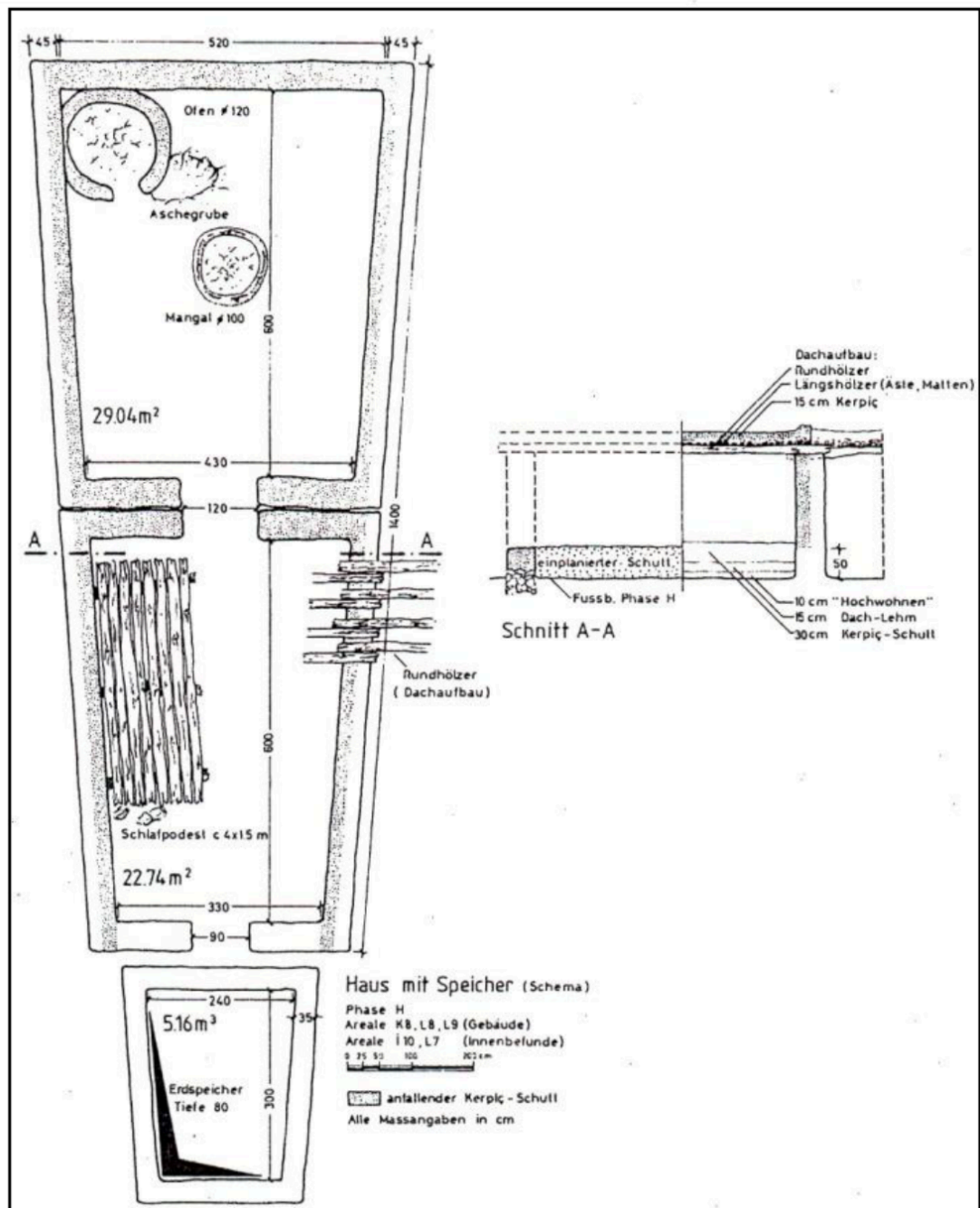


Figure 7: Demircihöyük standard house plan, after Korfmann 1983, Figure 352.

<sup>269</sup> Korfmann 1978: 17.

Buildings often consisted of two rooms: a front room and a back room.<sup>270</sup> The front rooms had an elevated-sleeping platform made of mudbrick. The back rooms had a domed oven, mostly placed in the left back corner of the room, with openings protected by two vertically placed slate-like slabs to close up the opening.<sup>271</sup> The floors of the ovens were raised with continuous use. In some rooms, there were circular plastered hearths located in the middle of the room or sometimes next to the domed oven, possibly used for heating. In front of the buildings, silos of 5m<sup>3</sup> were buried. (*Figure 7*)

#### **4. Small Finds**

Figurines were uncovered mostly from the upper phases.<sup>272</sup> More than 200 figurines were found. They were mostly made of clay, with the exception of four bone examples. With two exceptions, whole idols were found fragmented. They were all identified as representing females. Because fracture marks were old and only one single complete idol was found, Korfmann suggested that the idols were deliberately broken as a part of cultic/ritual activity.<sup>273</sup> The earliest examples were more realistic in terms of their forms including displaying some details such as bodily ornament and tattooing, footwear, hands laid over the breast, modelling of the spinal column and buttocks and in sitting posture with knees drawn up. The examples found from the later phases were mostly schematised with pudenda in the form of a large rectangle or triangle, and with bands crossed over the breast and the back. Some of them found from Phases L and M had faces like discs on a long neck resemble the examples from the western and southwestern Anatolia.<sup>274</sup>

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<sup>270</sup> Korfman 2011: 214.

<sup>271</sup> Korfmann 1979: 193.

<sup>272</sup> Korfmann 1976:37; 1978: 18.

<sup>273</sup> Korfmann 1976: 37.

<sup>274</sup> Korfmann 1976: 37.

A decorated askos in the form of a duck was another interesting find. A total of almost 200 clay animal figurines, the majority being oxen, were commonly uncovered from the site as well as two terracotta heads of Bezoar goats found from Phases L and M.<sup>275</sup>

Loom-weights, spinning whorls and brush handles of unbaked clay were other clay objects that were commonly uncovered from all the phases.<sup>276</sup> The pottery assemblages found at Demircihöyük were mostly red, brown and black polished ware of high quality.<sup>277</sup>

2 axes with several more axe fragments, 3 adzes, 2 hammers, 2 polishing or anvil stones are some other artefacts that were uncovered.<sup>278</sup> Some flint and obsidian artefacts were also uncovered from the mound.<sup>279</sup> The existence of an axe-mould and objects of copper or bronze indicate metal work at Demircihöyük.<sup>280</sup>

## **5. Faunal Remains**

Faunal remains indicate animal husbandry of ox, sheep, pig and goat, respectively as well as wild horses, and wild sheep and goat. Faunal remains included other mammals, birds, reptiles, amphibia and fish.<sup>281</sup> Botanic remains consisted of hazelnuts, blackberries and cornel cherries, flax, lentils, chick-peas, einkorn, emmer, naked wheat and barley.<sup>282</sup>

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<sup>275</sup> Korfmann 1976: 37; 2011: 215.

<sup>276</sup> Korfmann 1976: 37; 1979: 194.

<sup>277</sup> Korfmann 1976: 37.

<sup>278</sup> Korfmann 1976: 37; 1978: 18.

<sup>279</sup> Korfmann 1976: 37.

<sup>280</sup> Korfmann 1978: 18.

<sup>281</sup> Korfmann 1976: 38; 1978: 18.

<sup>282</sup> Korfmann 1976: 38.

## 6. Burial Traditions

The cemetery of Demircihüyük, also called Demircihöyük-Sarıket Necropolis, is located on a terrace 250 m southwest of the mound. More than 600 burials were uncovered from the cemetery. A total of 498 belong to the late phases of the Early Bronze Age, 79 Middle Bronze Age and 26 possibly Hellenistic graves were found. According to Seeher, during the early phases of the village, another had been used as a cemetery.<sup>283</sup> Excavations revealed three different grave types among the EBA graves: pithoi, earth graves, and stone cist graves.<sup>284</sup> There was no chronological difference between the different grave types. There was no pattern in terms of burial location, but the graves were oriented toward the southeast direction. In general, the dead were buried inside the pithoi whose mouths closed with a large stone. The condition of the skeletons varied. For some cases, a second container was used instead of a stone closure to fit the body inside the pithoi. The body was put in a fetal position and hands were usually placed in front of the head.

Besides the pithos graves, for some cases the deceased were also buried directly into the soil, possibly an organic material such as a blanket was used to cover the body.<sup>285</sup> For other cases, the body was surrounded by a row of stones. Three graves were covered with a flat stone as a stone cist grave.

The deceased were often buried with grave goods, mostly single items such as pottery or metal objects but not directly indicating any social status between the burials.<sup>286</sup> Nevertheless, it is noteworthy that the number of metal objects uncovered from the graves in the cemetery was far greater than found in the settlement. Needles and pediments, lead vessels, as well as copper/bronze artefacts like axes, square-shaped arrowheads, bracelets, rings, spline heads, earplugs and so on (which was

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<sup>283</sup> Seeher 1992: 366.

<sup>284</sup> Seeher 1991:163-6; 1992: 365-70.

<sup>285</sup> Seeher 1991: 165.

<sup>286</sup> Seeher 1992: 367.

found in a child grave), were some examples of the metal objects that were used as grave goods. Fragments of idols were also found in the few graves. Cattle skeletons were also found in pairs under or on top of the seven EBA burials. However, it was not clear whether these animals were buried for certain individuals, or they were sacrifices on behalf of the community.<sup>287</sup>

Based on the artefacts found in the settlement, the burial types and grave goods uncovered from the cemetery, Seeher emphasised the similarities of the materials found at the Küçükhöyük cemetery, 25km to the west of the Demircihöyük-Sarıket Necropolis and suggested that these two cemeteries were contemporary<sup>288</sup>.

According to the quantitative analysis done by Massa, there was some degree of variation in terms of age classes.<sup>289</sup> Stillborns and babies were buried under the floors of the houses without any grave goods or containers in the settlement rather than buried in the cemetery. Children (1-11 years old) were buried in small jars. Almost half of them had no archaeologically recognisable grave goods but otherwise rattles, feeding bottles, clay or marble figurines and jewellery were often used as grave goods. Juveniles (11-17 years old) were buried either in jars or in simple pits. Adults, especially elders were buried in stone cists, stone-lined pits or large pithoi with grave goods, silver or gold artefacts.<sup>290</sup> Males were placed on their right side and females on their left side. Weaponry and blades were associated grave goods for adult males, of whom 5 had weapon injuries. While there was no archaeologically recognisable object had been found which were associated with an adult female.

Some burials also displayed some degree of vertical hierarchy among the others in terms of distinctive burials (the largest stone cists or stone-lined pits) and cattle

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<sup>287</sup> Seeher 1992: 367.

<sup>288</sup> Seeher 1992: 368.

<sup>289</sup> Massa 2014b: 73-93.

<sup>290</sup> Massa 2014b: 90.

burials as possibly being part of some burial ceremony.<sup>291</sup> Even though cattle burials resembled funerary ceremonies of elites in central Anatolia, archaeological records of Demircihöyük did not indicate a significant social stratification. Besides the cattle burials, there were two other graves and some child burials which had rich grave goods and also indicated some degree of vertical hierarchy. The existence of tools such as weapons, hatchets, spindle whorls and copper needles in graves was interpreted as the representation of the social identity of the deceased associated with his/her occupation in life and also some degree of craft specialisation.<sup>292</sup>

## **7. Social Organisation**

The agglutinated houses facing the centre where storage facilities and silos were located indicate a strong communality. Although Korfmann suggested a ruling power, in Demircihöyük, who had control over the small farming communities found in the Eskişehir region and imposed the radial settlement plan for the site, Durgun asserted that the arrangement of the buildings and the presence of communal storage facilities indicate a decision-making strategy likely involving the entire community.<sup>293</sup> According to Duru, despite the similar settlement pattern and house plan, the sizes of the sites were different and for this reason, these two sites had possibly different social organisations.<sup>294</sup>

The existence of ovens, hearths and andirons in almost all houses was possibly due to indoor food preparation and consumption.<sup>295</sup> Thus, evidence for household level pottery production, knapping, spinning and weaving suggested self-sufficient households.<sup>296</sup> The fixed location of ovens and sleeping platforms in all the houses

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<sup>291</sup> Massa 2014b: 90; Seeher 1992: 367.

<sup>292</sup> Massa 2014b: 91.

<sup>293</sup> Durgun 2012: 26-7; Korfmann 1983: 244.

<sup>294</sup> Duru 2012: 29.

<sup>295</sup> Duru 2012: 31.

<sup>296</sup> Massa 2016: 99.

point out pre-planned inner installations done based on a certain set of rules. Korfmann argued that the three-roomed house might have belonged to a family with a higher status or had a different function due to its size.<sup>297</sup> Duru also emphasised the lack of significant difference in terms of small finds and inner installation between the three-roomed house and the two-roomed houses in the settlement and argued that the additional room was built to meet some functional or symbolic needs.<sup>298</sup> On the other hand, Massa asserted some degree of vertical hierarchy which was more likely based on the ages of the inhabitants and in some cases on their occupation by taking into consideration grave goods, and the existence of leaders, responsible for regulating the daily life of the community in the village.<sup>299</sup>

## **4.2. Seyitömer Höyük**

The mound is located in a Pliocene lake formation region within the reserve area of the Çelikler Seyitömer Electricity Generation Inc. at Seyitömer district, 25km to the northwest of Kütahya. It encompasses an area of 150m x 140m, 0,6 ha, and is elevated 23,4 m above the plain level.

### **1. Archaeological Survey and Excavations**

Excavations began in 1989 as a salvage project under the directorship of Nurullah Aydın on behalf of the Eskişehir Museum.<sup>300</sup> During the excavation seasons of 1990, 1991 and 1992, the salvage excavations were done under the directorship of Ahmet Topbaş, director of the Afyon Museum.<sup>301</sup> A decade later, in 2006, excavations started over as a joint salvage excavation project between the Dumlupınar University and the General Directorate of Turkish Coal Enterprise under the directorship of

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<sup>297</sup> Korfmann 1983: 243.

<sup>298</sup> Duru 2012: 31-2.

<sup>299</sup> Massa 2014b: 91.

<sup>300</sup> Aydın 1991: 191-204.

<sup>301</sup> Topbaş 1992: 11-34; 1993: 1-30; 1994: 297-310.

Nejat Bilgen and continued until 2014 in accordance with the protocol signed between the parties.<sup>302</sup>

While salvage excavations play a crucial role in rescuing archaeological information from imminent destruction, the inherent constraints, such as time pressure and limited resources, can restrict the scope and depth of data that can be derived. As a result, the variety of analysis on collected data may be more limited compared to data obtained through carefully planned and executed long-term projects. In the case of Seyitömer, there is no data on faunal remains that might have provided information on divergent economic activities such as agriculture and animal husbandry, as well as the burial tradition of the site that may provide insight into social stratification, if there was, based on at least age, gender and possibly occupation. Nevertheless, the results of completed archaeological research were well published and provided comprehensive information on the settlement layout, architectural tradition of the site, and social organisation that left archaeologically visible data within the site.

## **2. Chronology**

During the excavations five cultural layers were identified on the mound.<sup>303</sup> Roman Period architectural remains were found in the middle of the mound. The Hellenistic Period consisted of two phases, early and late, and they were one of the well preserved architectural remains. The Achaemenid Period consisted of two phases, early and late. There was no trace of the Late Bronze Age. The Middle Bronze Age consisted of three phases that all displayed irregular village plans surrounded by a fortification wall. During the excavations three phases were dated to the Early Bronze Age III, the existence of EBA II was confirmed only by the sounding.

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<sup>302</sup> Bilgen 2015b: 46.

<sup>303</sup> Bilgen 2015a.



Table 2: Seyitömer Höyük chronology table, derived from Bilgen 2013: 350 and 2015a: 8.

Cultural Period	Building Level	Date
Roman Period	I	255 – 363 AD
Hellenistic Period	II-A Late Phase	334 – 30 B.C.
	II-B Early Phase	
Achaemenid Period	III-A	400 – 334 B.C.
	III-B	500 – 400 B.C.
MBA	IV-A	1750 – 1700 B.C.
MBA	IV-B	1790 – 1750 B.C.
MBA	IV-C	2000 – 1900 B.C.
EBA III	V-A	2150 – 2000 B.C.
	V-B	2250 – 2150 B.C.
	V-C	2350 – 2250 B.C.
EBA II	V-D	

### 3. Settlement Layout and Architectural Traditions during the EBA

The excavations reveal that during the EBA III the site was demolished and re-established several times.<sup>304</sup> In Phase B, the site displayed a significantly well organised urban plan consisting of a megaron-planned sanctuary located in the centre of the village, the palace complex in the southwest section, and dwellings and workshops as well as storage facilities agglutinated along the western and northern sides.<sup>305</sup> Phase B ended with a conflagration affecting whole settlement. (*Figure 8*)

The sanctuary was built as a complex consisting of a megaron-like building with a courtyard in front and two rooms. In the main room, there was an oven with horn-like ridges placed in the middle of the room and beside the several forms of pottery found in situ, rhytons, which were used for libations during the rituals were uncovered.<sup>306</sup> (*Figure 9*)

The palace complex consisted of a front room with a size of 5.25x5m, a main room with a size of 8.3x9m, and storage rooms.<sup>307</sup> In total there were 18 or 19 directly or

<sup>304</sup> Bilgen 2015a: 119.

<sup>305</sup> Bilgen 2015a: 122-3.

<sup>306</sup> Bilgen 2015a: 125.

<sup>307</sup> Bilgen 2015a: 141.

indirectly connected rooms in this building complex.<sup>308</sup> (Figure 10) The two large megaron buildings were elite residences and also had a spacial function. Some rooms had a direct entrance from the street, some did not. There was no main entrance, but several to reach specific rooms. The walls of the main room were built with thicker

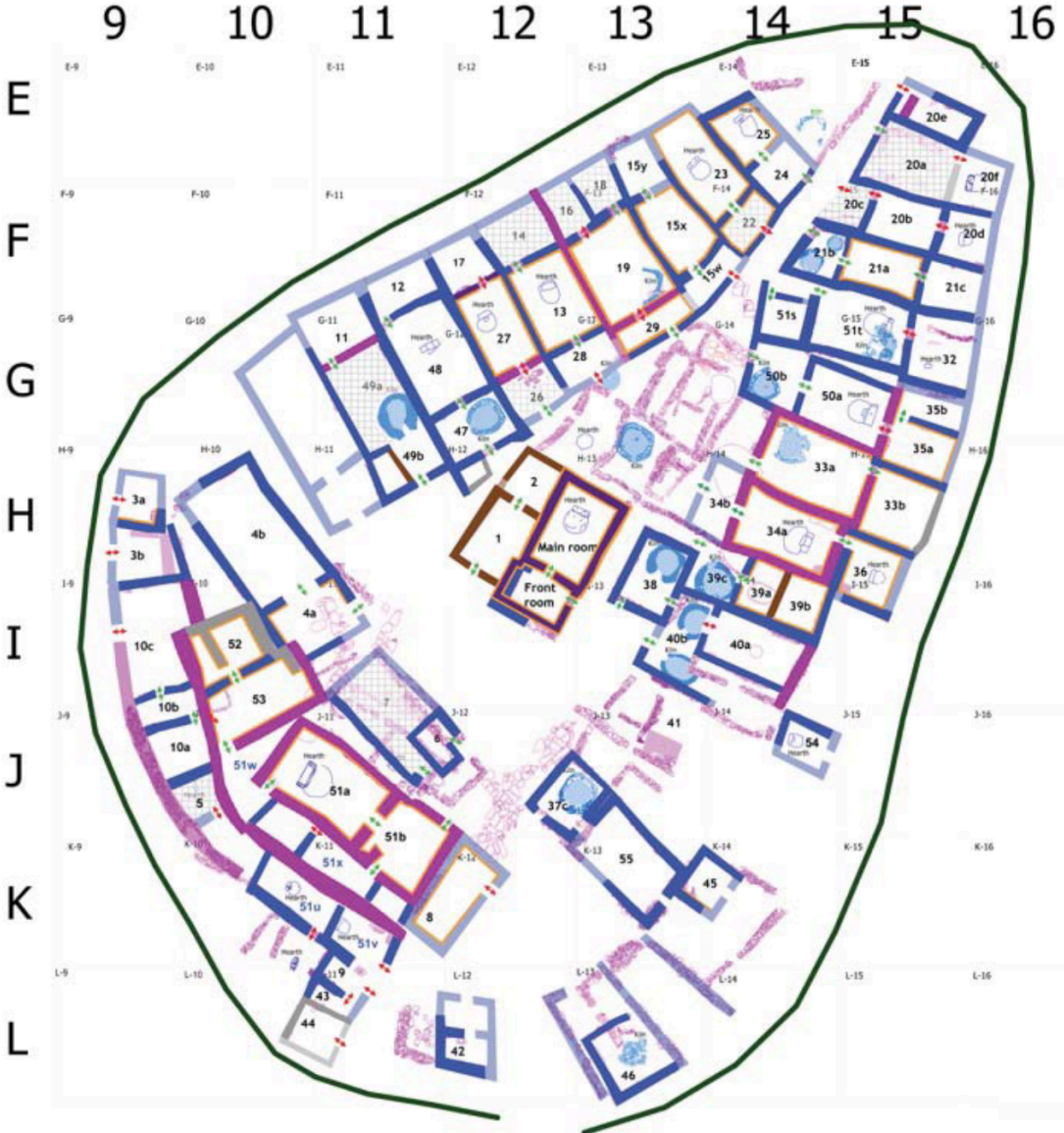


Figure 8: Seyitömer Höyük the EBA III Phase B settlement layout, modified from Harrison 2016, Figure 5.2.

<sup>308</sup> Harrison 2016: 228.

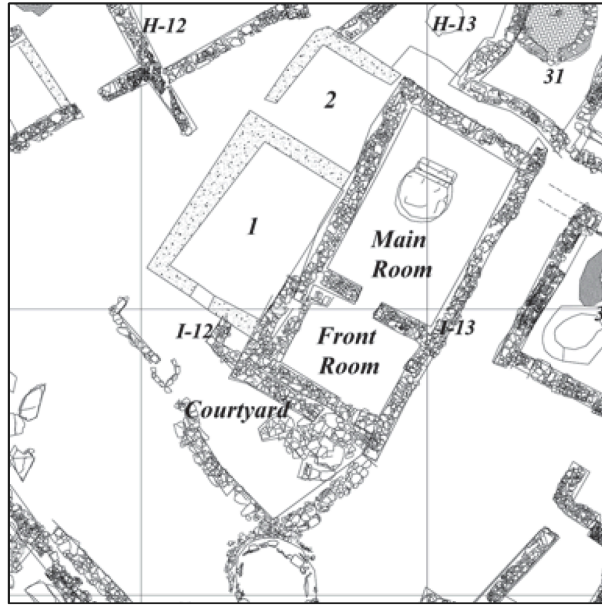


Figure 9: Seyitömer the EBA III, the plan of the Central Megaron Complex identified as sanctuary with two storage rooms (room no.1 and 2), after Harrison 2016, Figure 5.18



Figure 10: Seyitömer the EBA III, the plan of the Administrative Complex with two large megaron buildings and storage rooms. Red arrows indicate megaron buildings. Modified from Harrison 2016, Figure 5.25.

walls and there was an oven with horn-like ridges. The storage jars found in the storage rooms of this complex were the biggest compared to the other jars found in different locations at the site. Thus, metal objects like golden, silver and bronze hairpins, pendants and rosettes, as well as ten Akkadian cylinder seals from Mesopotamia indicate a ruling family lived in this complex.<sup>309</sup> Based on the remains uncovered from the palace complex, craft production, textile and pottery productions were the main activity.<sup>310</sup>

In the northwest section, eight agglutinated buildings were uncovered.<sup>311</sup> They all had a megaron plan with an anteroom leading into a larger main room. Six of the buildings had a third rear room in the back. The buildings were approximately 9m x 16 in size and had a paved stone floor. Room 14, Room 22 and Room 26 were identified as dwellings, while Room 16 and Room 18 were pottery workshops with two rear storage spaces. Room 19, on the other hand, was the only one with both a compressed soil floor and paved stone floor. (*Figure 11*) The rear rooms were often used for storage and found both in the dwellings and workshop buildings.<sup>312</sup> There was also an example where a front room was used as a storage room. In the northeast section, eight agglutinated buildings were uncovered and identified as dwellings and workshops.<sup>313</sup> Pottery buildings seemed to be placed side by side and constituted a pottery workshop complex. (*Figure 12*)

Phase A displayed an almost similar settlement layout with Phase B. After the conflagration, the mound was levelled and buildings were rebuilt on the burnt debris of buildings with similar architectural plan.<sup>314</sup> The sanctuary was maintained in the middle of the mound with a slight architectural difference, however, the

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<sup>309</sup> Bilgen 2015a: 142.

<sup>310</sup> Harrison 2016: 244.

<sup>311</sup> Harrison 2016: 185-6.

<sup>312</sup> Harrison 2016: 190.

<sup>313</sup> Harrison 2016: 256.

<sup>314</sup> Bilgen 2015a: 150.

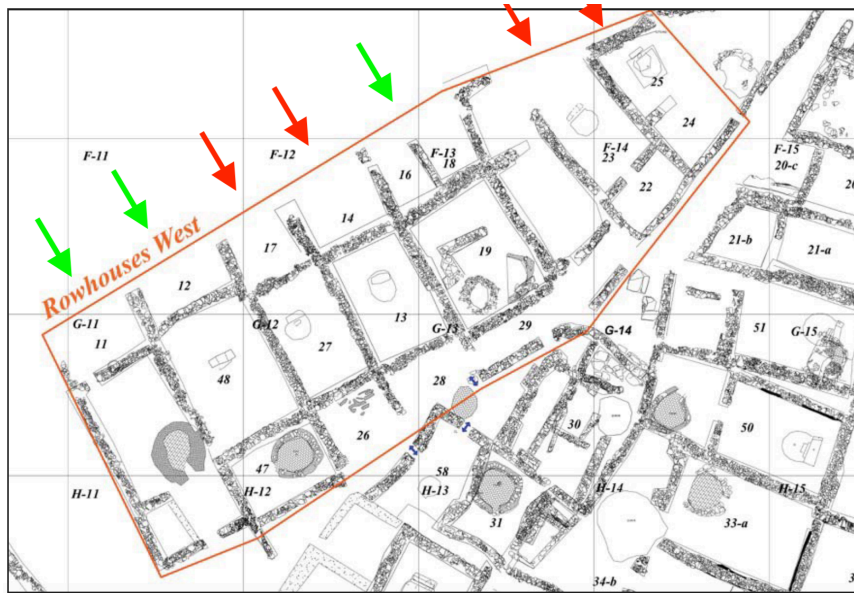


Figure 11: Seyitömer the EBA III, the northwest section. Red arrows indicate dwellings and green arrows pottery workshops, modified from Harrison 2016, Figure 5.7.

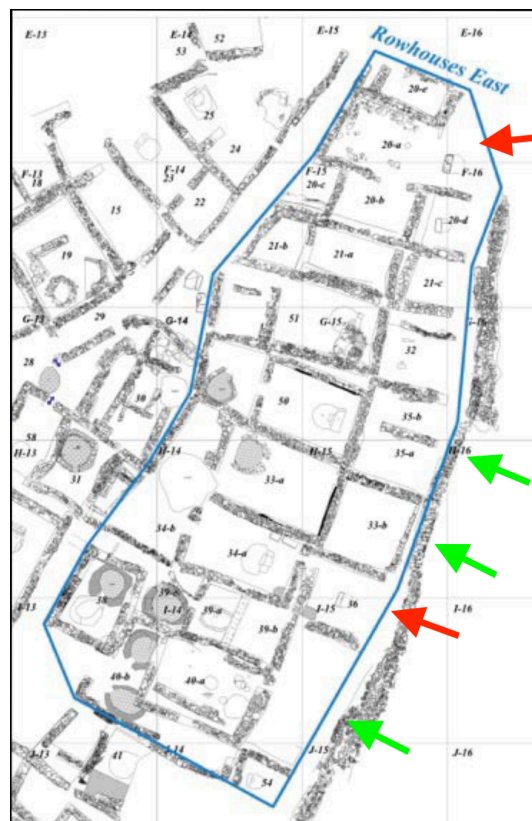


Figure 12: Seyitömer the EBA III, the northeast section. Red arrows indicate dwellings and green arrows pottery workshops. Modified from Harrison 2016, Figure 5.33.

Administrative Complex was demolished.<sup>315</sup> Phase A also ended in a conflagration which ended the EBA occupation on the mound. Phases A and B of the EBA of Seyitömer display similar material manifestations.

Stone, mudbrick, clay and wood were used as construction materials. Walls were often built by using rough stones and clay, and mudbrick was likely used for the upper sections of the wall. The floors of the buildings were made of compressed earth. The roof was flat and built by layers of reed and clay covering thick wooden beams crossing each other. In some buildings, the roof was supported with wooden poles.

Inside the buildings, there was often a platform placed adjacent to the wall or at the corners, possibly used as a sofa or a shelf.<sup>316</sup> The ovens were all of the same form (a round platform with horn-shaped ridges) and made of clay and stones on an elevated surface in the main room of the buildings. Many tripod cups were found in situ inside the ovens. Based on the existence of bull figurines found in the EBA phases of the settlement, Bilgen suggested that the horn-shaped ridges were representing bull horns that had possibly a sacred meaning for the protection of the place, and therefore ovens had a sacred function. Inside the buildings, there were some sections for storage but their number is smaller compared to MBA examples. During the EBA, they instead used jars and pithoi for storage.<sup>317</sup>

In some buildings, a large number of finds had been uncovered but no ovens or kilns have been found.<sup>318</sup> This suggested that these places were used as storage rooms and they either belonged to dwellings or were built separately. The kilns were uncovered in the places where there were thought to be pottery workshops due to the significant amount of vessels, cups, weights, spindle whorls found in them. Kilns were built by

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<sup>315</sup> Harrison 2016: 343.

<sup>316</sup> Bilgen 2015a: 153.

<sup>317</sup> Bilgen 2015a: 158.

<sup>318</sup> Bilgen 2015a: 159.



using rough stones in round-shaped and the insides and outsides were plastered with clay and the floors were paved with pebbles or sherds of pottery and plastered with clay to maintain the heat. The kilns were either found inside the workshops or outside and placed adjacent to a wall. In some cases, the buildings seemed to be built just for the kilns to maintain the heat. Some workshops were also used as storage facilities.

The existence of pottery moulds and pottery that were made by moulds, and the large numbers of pottery and vessels indicate that pottery making was the major economic activity in the EBA village of Seyitömer. Thus, they were possibly exported to other centres.<sup>319</sup>

#### **4. Small Finds**

Weights and spindle whorls were the majority of the small finds found in the EBA phases of the settlement.<sup>320</sup> The spindle whorls were either decorated by scraping or undecorated. Other small finds were idols and figurines that were made of clay or stone. As well as idols, animal figurines, especially representing bulls, zoomorphic rhytons, and long-necked spouted pitchers were possibly ritual objects and suggested the cult of the bull. Other clay objects included brushes, toys, miniature table and miniature bed.<sup>321</sup>

Various bone handles, handle tangs, pins, awls and spatulas had been uncovered. Stone axes, burnishing stones, blades, whetstones and pestles, beads, pendants, casting moulds, crushing and grinding stones and ceramic production moulds were among the stone objects found in the site.<sup>322</sup>

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<sup>319</sup> Bilgen 2015a: 162.

<sup>320</sup> Bilgen 2015a:187-8; 2015c: 272.

<sup>321</sup> Bilgen 2015c: 272.

<sup>322</sup> Bilgen 2015a: 178-85; 2015c: 272.

Metal objects were often bronze or lead and consisted of jewellery such as bracelets, earrings, rings, axes, and sharp objects and tools, various pins, nails, spearheads and some objects.<sup>323</sup> There were also examples made of gold and silver.

## **5. Social Organisation**

Harrison investigated the built environment to obtain a deeper understanding of the social construction of the EBA III Phase B Seyitömer Höyük by combining space syntax with different theoretical approaches. Her results revealed that there were four different communities inhabiting in the village.<sup>324</sup> These were non-elite, elite, pottery producers and ritual/symbolic communities.

The non-elite community shared common spatial features.<sup>325</sup> Their dwellings were built with shared party walls and created clusters in the so-called Rowhouses West and Rowhouses East and had similar inner installations. Megaron type buildings provided a different degree of segregations for the inhabitants: the front room as highly integrated, main room as semi-integrated and rear room which was used as a storage facility as segregated.<sup>326</sup> Thus, standardisation of building plan created a social interaction that was virtually identical throughout this community.

The elite community, on the other hand, legitimised their power and social status by using architectural features in terms of spatial location and architectural techniques as well as many prestige goods and items.<sup>327</sup> The dwellings of the elite community included additional spaces for an economic organisation involving a high number of storage spaces, luxury goods, long-distance trade and management of pottery production. The existence of offset entrances for some rooms provided spaces for

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<sup>323</sup> Bilgen 2015a: 176; 2015c: 272.

<sup>324</sup> Harrison 2016: 327-36.

<sup>325</sup> Harrison 2016: 328-9.

<sup>326</sup> Harrison 2016: 309-10.

<sup>327</sup> Harrison 2016: 330-2.



private occasions with social boundaries while some rooms provided public and highly visible spaces for communal interactions.

The pottery kilns and clay mixing areas were often clustered and not connected to residences.<sup>328</sup> This gave the impression that the community of potters had worked together on a communal level to produce pottery for both local use and trade.

The ritual community of the village located in the Central Megaron Complex that was built in the centre of the settlement.<sup>329</sup> This building complex was used for ritual activities, private and public occasions and gathering to create formalised, periodic social interaction as well as a sense of shared identity and belonging.

### **4.3. Karataş**

The mound is located in the Gölova plain, in the vicinity of Bozhöyük (Semayük) Village, 6 km east of Elmalı. The mound is 100 m in diameter, approximately 4 m high above the plain level and 1136 m above sea level. The exact limits of the village have not been determined, but based on the excavation results it was thought to have extended an area of 19.13 ha, and encompassing the necropolis which is larger than the settlement.

#### **1. Archaeological Survey and Excavations**

In 1947, Sinclair Hood visited the site during his survey of the Elmalı plain and reported it as a Bronze Age site.<sup>330</sup> Later, Mellaart revisited the site during his surface survey to identify pre-classical remains in southern Anatolia between 1951 to 1954.<sup>331</sup> The excavations were done under the directorship of Machteld J. Mellink

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<sup>328</sup> Harrison 2016: 332-3.

<sup>329</sup> Harrison 2016: 334-5.

<sup>330</sup> Mellaart 1954: 202.

<sup>331</sup> Mellaart 1954.

between 1963 to 1974.<sup>332</sup> The results of completed archaeological research were well published, and provided comprehensive insight into settlement layouts, the architectural traditions changed over time, small finds, faunal remains, burial traditions, and population size for Phase V and Phase VI.

## **2. Chronology**

During the excavations, six architectural phases expanding from EBA I to EBA III periods without interruption have been identified.<sup>333</sup> The relative chronology was derived from the remains found in the Central Mound. EBA I had three architectural layers, Phases I-III.<sup>334</sup> In the earliest phase, a large rectangular structure was surrounded by a courtyard with walls. This phase was ended by a minor conflagration. During Phase II, the settlement emerged based on the previous architectural plan and a major conflagration destroyed Phase II. During Phase III the settlement underwent larger constructions. The architectural remains found in the centre of the mound were eroded.

The early period of EBA II is represented by Phase IV.<sup>335</sup> During this period, the enclosure of the central building had been reconstructed constantly. The location of the entrance system changed during this reconstruction but always remained to the south or the southeast. The settlement was also extended beyond the ramparts, towards the south and southeastern sides of the slope.

Phase V was divided into three sub-phases based on the stratified deposits and grave goods.<sup>336</sup> The EBA III period was represented by Phase VI uncovered right beneath the 0.30-0.40 m below the mound surface and the remains were almost all eroded

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<sup>332</sup> Mellink 1965b; 1967; 1969; 1972; and 1974.

<sup>333</sup> Mellink 1984: 103 – 6.

<sup>334</sup> Mellink identified Phase III as dating to the EBA IIa. In this study, the chronology was adapted from Duru 2008 and Warner 1994.

<sup>335</sup> Warner 1994: 7.

<sup>336</sup> Warner 1994: 8.

from the mound but evidence indicated that the centre of the mound continued to be occupied. Due to contamination, radiocarbon dating was only applied to the samples found from the Central Complex of the village in Phase II.<sup>337</sup>

*Table 3: Karataş chronology table, derived from Warner 1994: 10.*

<b>Cultural Period</b>	<b>Building Level</b>
EBA III	Phase VI
EBA II-III transition	Phase V3
EBA II	Phase V1-2
EBA II	Phase IV
EBA I	Phases I-III

### **3. Architectural Traditions**

Excavation results indicate that the site had been expanded on all sides of the Central Complex. The areas used for habitation, domestic activities and burial were changed and even shifted over each other. Both children and adults had been buried outside but in close proximity of the dwelling areas. The largest cemetery areas were located in the south.

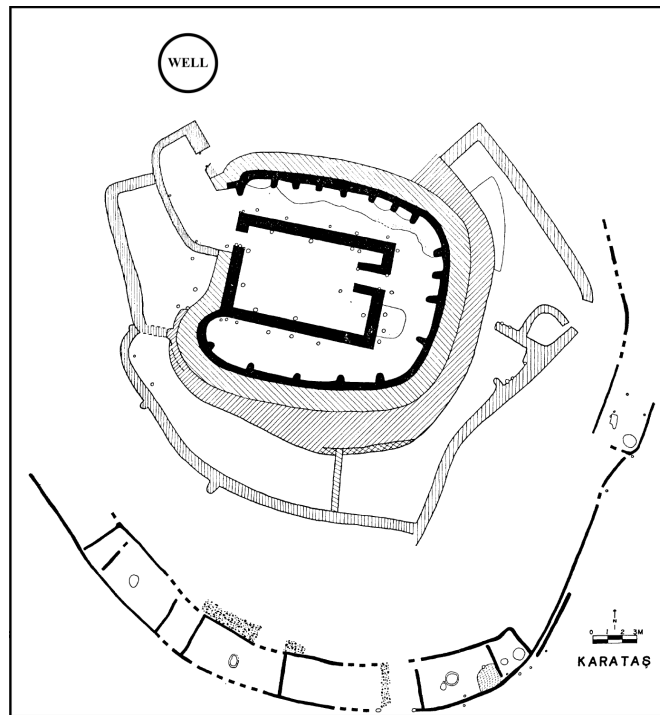
At the centre of the settlement, in the main mound, there was a large rectangular building with a lower floor for storage surrounded by a courtyard with walls that were backed by the addition of ramparts and by a series of outer courtyards. The complex was surrounded by a ring of fence buildings. Although only southwest and east sections were preserved, these buildings were possibly part of the complex and surrounding it completely.<sup>338</sup> (*Figure 13*) All of the rooms were constructed with wattle-and-daub on a row of posts, rectangular in shape approximately 8 x 3 m in size, and in some cases with a partition at one end. Each building had a round

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<sup>337</sup> Warner 1994: 10.

<sup>338</sup> Mellink 1974: 351.

fireplace in it. Excavations revealed that the Central Complex was built during Phase I, and underwent renovations over time and was occupied during all the phases.



*Figure 13: Karataş Phase I-II the Central Complex, modified from Mellink 1965b Ill.2 and 1974 Ill.1.*

The architectural traditions, in terms of building plan and construction technique, had been changed in the village throughout time (*Figure 14*). The settlement consisted of free-standing houses during all the phases.<sup>339</sup> The entrances of the buildings were possibly toward open working areas or streets. Based on the measurement charts of the houses of Karataş, it seems that most of the houses were directed toward the east (23 of 37). The plans of the houses could be grouped into two main categories as megaron and apsidal plans. There were also a few different forms of buildings that were possibly used for other purposes than dwellings. The size of the buildings varied from 6.25 to 13.55 m in length and from 3.50 to over 8.20 m in width.

<sup>339</sup> Warner 1994: 135 – 6, 169.

Most of the buildings had stone foundations varying from single to three-row stones.<sup>340</sup> Different construction techniques had been applied for the superstructure of the buildings. These were wattle-and-daub, pisé, a combination of wattle-and-daub, mudbrick or mud-slab construction and wooden walls. There was little

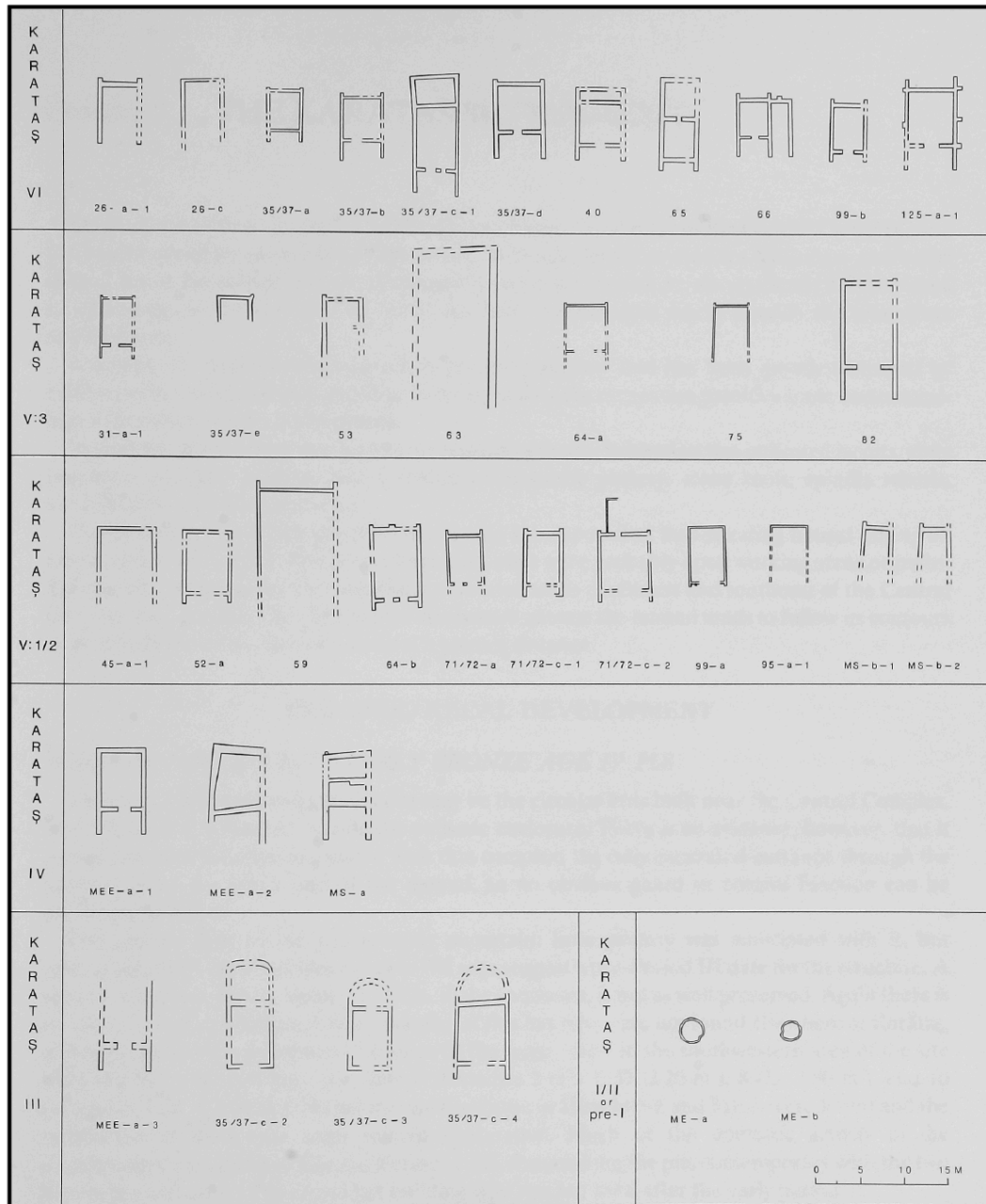


Figure 14: Karataş, the form of the buildings from Phase III to VI, after Warner 1994: 167, Figure 17.

<sup>340</sup> Warner 1994: 142 – 9.

evidence for the internal support for the roof, rather it seemed that the supports for the roof were placed adjacent to the walls, for some cases buildings had additional support for the ridgepole at thrust points.<sup>341</sup> The roof was made from crossbeams tied together and overlaid with clay. Then, it was covered by a layer of reeds and a clay coating was applied on top of it.

During the earliest phases of the village, Phases I-III, circular huts located near the Central Complex and apsidal plan buildings were uncovered.<sup>342</sup> The construction date for the huts was determined based on the pottery associated with them or stratigraphically. Their function was unclear. According to Warner, some of the large pits found in the southwest of the site could be the bases of such huts. No hearth was uncovered in these huts. After the EBA I period, the circular huts disappeared. Apsidal-plan buildings had a rectangular main room, front porch and apsidal rear room. The entrance of the building was through a centrally located door located in the front cross wall between the porch and the main room. Not all buildings had a porch at the front.

In EBA II, the megaron building plan began to appear. They were free-standing rectangular buildings often with one main room and a front porch entered axially on the short side.<sup>343</sup> The long walls ended in antae at the front and in rear antae at the back. The entrance of the buildings was through a centrally located door located in the front cross wall between the porch and the main room. Only the floors of the buildings uncovered from Phase IV were preserved.<sup>344</sup>

The main room was possibly used for sleeping, eating and other domestic activities.<sup>345</sup> Except for the two large ones, the size of the main rooms varied from

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<sup>341</sup> Warner 1994: 149 – 54.

<sup>342</sup> Warner 1994: 169.

<sup>343</sup> Warner 1994: 137.

<sup>344</sup> Warner 1994: 139.

<sup>345</sup> Warner 1994: 137.

3.05 x 4.15 to 5.35 x 8.90. There was one example for the square main room (in House 35/37-d, of 5 x 5 m). The inner installations were not preserved but for some cases, a semicircular stone-built hearth was uncovered in the middle of the main room. But the location of the hearths was not fixed and whether their original shape was circular was not clear.<sup>346</sup> A horseshoe-shaped hearth was also uncovered in one of the dwellings.<sup>347</sup> Besides the hearths, spit supports, andirons and pot stands were often uncovered throughout the village. Benches, platforms and low partition walls and bins were found in some of the main rooms.

In front of the buildings, there were roofed areas, a porch.<sup>348</sup> The deepness of the porch varied often between 1.20 and 2.40 m. Some buildings had a screened part in their porch to protect the working area. Several buildings had stone-built or plastered hearths found in their porch. Some hearths were also uncovered outside the buildings. In that case, braziers were used in the main room.<sup>349</sup>

Buildings often had a back-room entered through a central door in the rear wall of the main room. In some cases, there was no trace of a doorway. Instead, an additional storeroom was built at the top of the foundation stones, therefore, levelled above the floor level and the original rear wall left in situ with a doorway cut.<sup>350</sup> The large jars and pithoi were found in situ in some of the rear rooms and indicate that they were possibly used as a storage room. The storage rooms had no antae extending beyond the back wall. Only two buildings had an annex adjacent to the long wall.<sup>351</sup> They were long and narrow. Their entrances were outside, from the front. No vessels were found *in situ* but these additional rooms were possibly used for storage facilities.

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<sup>346</sup> Warner 1994: 139.

<sup>347</sup> Warner 1994: 185.

<sup>348</sup> Warner 1994: 137, 139.

<sup>349</sup> Warner 1994: 186.

<sup>350</sup> Warner 1994: 137-8.

<sup>351</sup> Warner 1994: 138.

There were also some architectural features that had different construction plans. For instance, a rectangular structure consisted of three parallel units.<sup>352</sup> Storage jars were found aligned in these units indicating that the building was used as a storage facility. Others, on the other hand, were not completely preserved and did not give insight into their plan or function.

The EBA II Phase IV was better preserved on the outer slopes of the mound.<sup>353</sup> Two large megara and several more buildings were built on the southeast slope. Fireplaces were also uncovered on slopes from Phase IV. It seemed that they were not associated with any buildings. Some of them were used for a long time period. On the southeast side of the main mound, there was an area that possibly functioned as a public place for periodic gatherings and the fireplaces might have been used for the preparation of food for special occasions. The dwellings located in the southwest and northwest were abandoned during this phase and habitation moved to the north of the mound. The area in the Trench 35/37 was used as a cemetery during Phase IV.

In Phase V, there was a complete transformation at the site. Occupation expanded significantly and habitation moved to the northwest, east and southeast of the mound.<sup>354</sup> The Main Cemetery, found south of the mound, indicated that the village population increased. The location of buildings became more dense and irregular. Some of them had several phases of reconstruction. Although the settlement was occupied uninterrupted, in Phase V3 such features as pottery and other objects began to change and by Phase VI these features became main characteristics. There were few ovens uncovered at Karataş and the earliest examples were found in the northeast side of the mound (in Trench MEE) from Phase V.<sup>355</sup> These ovens were

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<sup>352</sup> Warner 1994: 140.

<sup>353</sup> Warner 1994: 171.

<sup>354</sup> Warner 1994: 172.

<sup>355</sup> Warner 1994: 187.



possibly associated with the Central Mound. They were 2.00m in diameter and had semicircular coping and were domed.

The architectural remains identified as Phase VI were uncovered 0.30-0.40 m below the surface.<sup>356</sup> The locations of the preserved buildings suggests that the size of the EBA III village of Karataş maintained its size and may have expanded in some areas. Archaeological remains indicate that occupation continued in the southeastern area, thus, domestic activity had extended over the SE Cemetery. The houses, for instance, uncovered from the Trench 35/37, were built over the graves and interpreted as an increased need for living space during the EBA III (*Figure 15*).<sup>357</sup>

Households had their own storage.<sup>358</sup> During the earliest phases, large pits and silos with straight vertical walls were used. These storage facilities were uncovered in the southwest side of the village during Phases I-III. No pits were associated with Phase IV, but in Phase V pits were uncovered in dwellings at the western side of the settlement. Besides the pits, storage sheds were also used for storage beside the dwellings. These structures were built with different construction techniques than dwellings. Rows of large jars were placed in these sheds for storage. Over time, dwellings were constructed with a rear room and in some cases even additional rear antae for storage. In Phase VI, the number of pits significantly dropped and dwellings with rear rooms became common architectural features. In any case, some storage jars and vessels or pithoi fragments were also uncovered in the main room, some found beside the hearth.<sup>359</sup>

Circular stone platforms were uncovered in the domestic activity areas throughout the village.<sup>360</sup> The best preserved one was found in the Trench 35/37 between the

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<sup>356</sup> Warner 1994: 173-4.

<sup>357</sup> Warner 1994: 174.

<sup>358</sup> Warner 1994: 181-5.

<sup>359</sup> Warner 1994: 184-5.

<sup>360</sup> Warner 1994: 188.

houses. (Figure 15) This was a floor of tightly packed small stones that were surrounded by larger stones as a raised circular rim with 2.20 m in diameter. It was built above the previous platform. No superstructure was observed in any platform found at the settlement. The debris consisting of pottery, loom weights and stone tools was found close to one of the platforms, in other cases grinding stone fragments were found around or among the stones of the platforms.

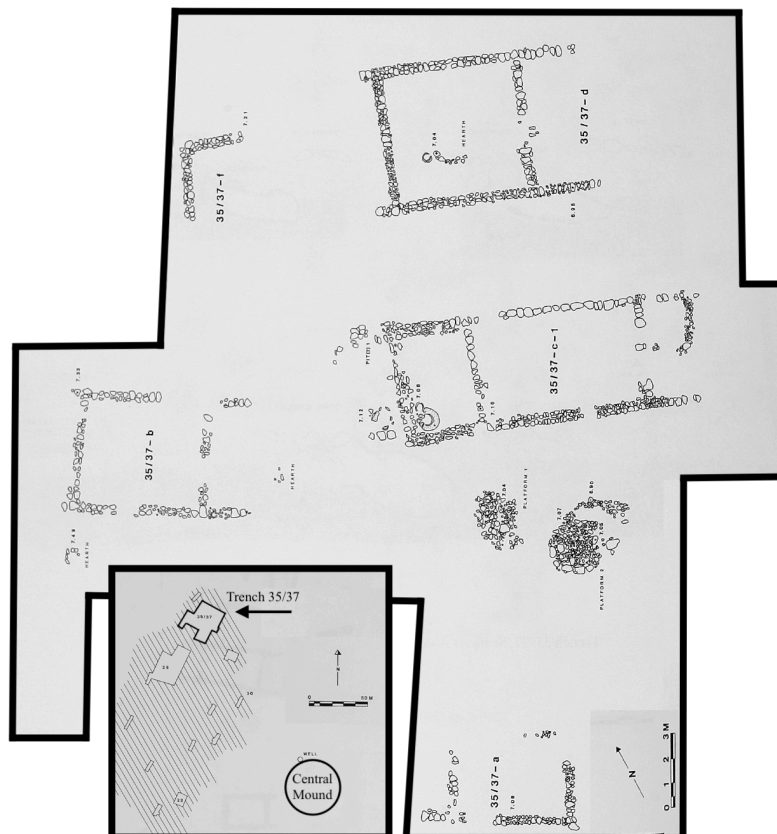


Figure 15: Karataş, the EBA III Phase VI and the building remains uncovered from Trench 35-37, adapted from Warner 1994, Pl.11 and Pl.24.

#### 4. Burial Traditions

During the excavations, about 600 burials were uncovered.<sup>361</sup> Pithoi were used for the burials. The size of the pithoi was related to the age of the deceased. Large pithoi

<sup>361</sup> Angel 1976: 385-91.

contained multiple burials as a family grave.<sup>362</sup> Pithoi were buried in regular spacing but small jars for child burials were placed in proximity to many pithoi. Large Pithoi were buried in a deeper level while small jars were buried at shallower depth.<sup>363</sup> The body was placed within the pithos with the head toward the east. Grave goods were put in it after the body was placed. Pottery was often put in front of the chest. The pithoi were filled with earth and closed with a stone. The stone circles which mark the burials were not always preserved.<sup>364</sup> All pithoi were hand-made. Strap-handled jars, lug-handled pithoi, jars for child burials are the different types used for burials.<sup>365</sup> Some jars were reused, in some cases, previous bodies were pushed to open space for the current body. The orientation of the pithoi varied from 90 to 140 degrees with a concentration between 110 and 120. This orientation preference was possibly determined by the direction of the sunrise.<sup>366</sup> Some pithoi were empty. Inhumation was not common at Karataş.<sup>367</sup> No grave goods were found within them.

A chamber-tomb, number 367, was an exception and distinguished among the other burials by its position and construction.<sup>368</sup> Its location seemed to be isolated and gave a privilege to the deceased buried within it. Its diameter is 6.5 m. made of stones marking the outer limits. The burial was found on the north side of the grave as the bones were packed together with the skull.<sup>369</sup> It seemed like the body was transferred from another grave. Wooden pots and boards were used in an earlier phase of construction. There were some postholes found in the tomb. It was filled with earth at some level. The condition and type of grave goods indicated that the tomb had

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<sup>362</sup> Angel 1976: 386; Wheeler 1973: 25.

<sup>363</sup> Wheeler 1973: 26-7.

<sup>364</sup> Mellink 1969: 319.

<sup>365</sup> Wheeler 1973: 36-42.

<sup>366</sup> Wheeler 1973: 45.

<sup>367</sup> Wheeler 1973: 53.

<sup>368</sup> Angel 1976: 386; Mellink 1969: 326; Wheeler 1973: 54-58.

<sup>369</sup> Mellink 1969: 325.

been robbed in ancient times and renovated. This exceptional burial possibly belonged to the chief of the village of Karataş.

Pottery, in a large range of shapes and decorations, was the most frequent grave good.<sup>370</sup> Bronze/copper, silver and gold objects were less common. Spindle whorls, dark terracotta beads and stone figurines were also given as grave goods. Only pottery was placed outside the graves.<sup>371</sup> Metal and stone objects were always placed inside the graves.<sup>372</sup> Ornaments were possibly attached to the deceased's clothing. Pins were usually found in the shoulder area and bracelets were sometimes found around the section of the arm. The grave goods were given based on the age and sex of the deceased.<sup>373</sup>

Adults were not buried with grave goods as often as children. Women were often buried with spindle-whorls, pins, bracelets, and spiral hair-rings.<sup>374</sup> Men were buried with weapons, tools and personal belongings.<sup>375</sup> The figurines had a standard type and were given only to children and it was noteworthy that the figurine's head was separated from its body.<sup>376</sup> Miniature pots and vessels, and metal beads were only found in child burials. Small spiral rings and bracelets of metal were also found in some child graves.<sup>377</sup> Female children were also buried with rings.<sup>378</sup>

## **5. Small Finds**

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<sup>370</sup> Wheeler 1973: 59.

<sup>371</sup> Wheeler 1973: 64.

<sup>372</sup> Wheeler 1973: 60.

<sup>373</sup> Wheeler 1973: 70-84.

<sup>374</sup> Angel 1976: 386.

<sup>375</sup> Wheeler 1973:62.

<sup>376</sup> Wheeler 1973: 63.

<sup>377</sup> Wheeler 1973: 75, 78-80.

<sup>378</sup> Angel 1976: 386.

Only one spindle whorl was found in the main mound from the Phases I-III, and numerous examples were uncovered throughout the village from the Phases V-VI.<sup>379</sup> During the life span of the village, the spindle whorls changed in terms of shape.<sup>380</sup> The ones found from the Phases I-V were usually truncated biconical or globular in profile. During the transitional Phase V3 some of the examples uncovered were flatter. In Phase VI, they were often thin and lentoid in shape.

Similar changes were also observed in the grinding stones, especially the upper handheld grinders and they were uncovered throughout the village from all phases.<sup>381</sup> In the early phases, the top was often irregular and roughly worked, and it had a loaf shape. During Phase VI, its shape became more standardised and had a smoothly worked curved top with a flat bottom.

Only one loom weight was found east of the mound (in the Trench MEE) and numerous were found throughout the village from the Phases V-VI. Stamp seals appeared by Phase IV and more uncovered from Phases V-VI.<sup>382</sup>

The number of metal objects was very limited in the village. A hair ring was uncovered in the main mound from Phases I-III.<sup>383</sup> Bracelets, pins and needles were uncovered on the east of the mound (in the Trench MEE), and many more were uncovered throughout the village from Phases V-VI.

## **6. Faunal Remains**

The economy of the village at Karataş was based on agriculture and animal husbandry.<sup>384</sup> Cattle, sheep, goats and pigs were domesticated, with respect to their

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<sup>379</sup> Warner 1994: 180.

<sup>380</sup> Warner 1994: 9.

<sup>381</sup> Warner 1994: 9, 180.

<sup>382</sup> Warner 1994: 180.

<sup>383</sup> Warner 1994: 180.

<sup>384</sup> Hesse and Perkins 1974: 149-60; Warner 1994: 179.

frequency. The numerical dominance of cattle was a little less during the EBA II. Sheep were double the number of goats during the EBA II. The number of pigs declined from EBA I to EBA II. The slaughtering pattern indicated that the sheep and goats were herded primarily for meat consumption while cattle were herded for secondary productions.<sup>385</sup> Thus, the existence of red deer also indicated hunting but its contribution to the economy was not clear.

Few botanical remains were uncovered. Analysis results indicated the cultivation of wheat.<sup>386</sup> However, the soil and climate of the region would also provide an adequate condition for the cultivation of barley.<sup>387</sup>

## **7. Social Structure**

Warner calculated the estimated population of the village for Phase V and VI based on the occupation area and the density of the best-preserved buildings at a given phase, and the average number of persons per household as 5 for Phase V and 4 for Phase VI (7.3 m<sup>2</sup> per person).<sup>388</sup> The calculations produced an estimation of populations of 460 for Phase V and 400 for Phase VI.

There was no direct evidence indicating specialised craft production in the village.<sup>389</sup> Nevertheless, the existence of a small number of metal objects and the large burial pithoi were likely some specialised craft productions.

The existence of stone platforms throughout the village and the large oven indicated that certain places were used for special occasions. There were two buildings with different architectural plans and construction techniques. According to Warner, these

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<sup>385</sup> Hesse and Perkins 1974: 157.

<sup>386</sup> Harrison 1986 in Warner 1994: 179-80.

<sup>387</sup> Warner 1994: 179.

<sup>388</sup> Warner 1994: 175-7.

<sup>389</sup> Warner 1994: 180.

two buildings were used as storage facilities.<sup>390</sup> House 63, where the small Kiosk was found, was also considered as a building with a different function than a dwelling, possibly for the storage of the large communal drink krater.

In the debris of the main building of the Central Complex, incised black and white pottery, brush-handles, many loom weights, spindle-whorls, terracotta geometric stamps seals, a bone needle, stone hammer, a saddle quern, and a lot of animal bones were found.<sup>391</sup> However, in the fence buildings, except domestic pottery like storage jars and cooking pots, no incised white pottery was found.<sup>392</sup> Although Warner identified the fence buildings as houses, Massa asserted that the identification of the buildings as houses is problematic since they were only 3 m<sup>2</sup> and had unique architecture compare to other EBA domestic buildings. He, instead, suggests identifying them as sweat lodges due to their size, semi-underground nature and the existence of benches and hearths.<sup>393</sup>

Eslick calculated the estimated population as 50 who inhabited the Central Complex during the early phases of the village.<sup>394</sup> The complex probably was a residence of the local chief and its fortification wall indicated limited access. The artefact remains found in the main building of the complex suggested textile production.<sup>395</sup> Later modification of the complex such as two parallel ditches dug in front of the gate and two decorated hearths that accompanied them seemed to have a symbolic function rather than defensive purpose. The platform and open fireplaces built during Phase IV indicated that the outer side of the complex kept being used for communal activities and possibly rituals. In Phase V, the paved ramp on the Central Complex

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<sup>390</sup> Warner 1994: 181.

<sup>391</sup> Eslick 1988: 34; Mellink 1965b: 249-50.

<sup>392</sup> Eslick 1988: 34.

<sup>393</sup> Massa 2016: 110.

<sup>394</sup> Eslick 1988: 35.

<sup>395</sup> Massa 2016: 111.

was used for grinding and baking activities. With its unique architectural form and archaeological remains both suggested a multifunctional complex that had served as a residence of the elites, a production centre, a place for gatherings for rituals with food consumption.

#### **4.4. Hacılar Büyük Höyük**

The mound type site is located in the vicinity of Hacılar Village, 27 km southwest of Burdur. The site is found 400-500 m north of Hacılar Höyük and encompasses an area of 280 m x 240 m in size. The height of the mound is 10 m above the river bed passing along the eastern slope and 3 m above the land from its west.<sup>396</sup>

##### **1. Archaeological Survey and Excavations**

The site was first mentioned as a large Early Bronze Age mound by J. Mellaart in his preliminary report on the excavation of Hacılar Höyük in 1958.<sup>397</sup> The site was later revisited by R. Duru and G. Umurtak in 1985. The excavation of Hacılar Büyük Höyük started under the directorship of Gülsün Umurtak and honorary director Refik Duru in 2011 in order to obtain detailed information on the prehistory of the Burdur region, exclusively on the EBA I Period.<sup>398</sup>

Ongoing archaeological excavations offer a dynamic process through which researchers gradually build a comprehensive understanding of a site. Making conclusive interpretations prematurely can risk oversimplification or misunderstanding of the complex archaeological contexts. The archaeological research at the site still continues annually, therefore, our knowledge of the architectural tradition, faunal remains, and population size may not exhibit temporal and spatial variations in terms of social practices, building styles, and artefact assemblages. Without a full excavation and analysis of all relevant contexts, it is

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<sup>396</sup> Umurtak and Duru 2012: 45.

<sup>397</sup> Mellaart 1958: 127.

<sup>398</sup> Umurtak and Duru 2012: 45; 2013: 3 – 4.



challenging to capture the complete spectrum of variability present at the site and can be inferred cautiously.

## 2. Chronology

C14 results of burnt grain found in the EBA I phase indicated that the settlement was established around 3010 – 2890 cal. BCE.<sup>399</sup> The main defence system of Hacilar Büyük Höyük was dated to the EBA I and some megara found in the centre of the mound thought to be built during the EBA II. The architectural remains of EBA I and EBA II displayed similar architectural traditions.<sup>400</sup> Excavations also revealed a thick and extensive layer of fire in the EBA II level in the Trench A-B found in the centre of the mound.<sup>401</sup>

*Table 4: the Cultural sequence and stratigraphy at Hacilar Büyük Höyük, after Umurtak 2020: 33.*

<b>Cultural Period</b>	<b>Building Level</b>
EBA III	?
EBA II	EBA II/1-3
EBA I	EBA I/1,2
Early Chalcolithic	?

## 3. Architectural Traditions

EBA I Phases had a unique settlement layout among the EBA I sites of Anatolia (*Figure 16*).<sup>402</sup> A large sawtooth-like wall surrounded the settlement along the western side of the settlement. A series of rectangular rooms were built adjacent to the inner side of the wall. At the northern end of the sawtooth-like wall, a so-called

<sup>399</sup> Umurtak and Duru 2012: 47.

<sup>400</sup> Umurtak and Duru 2017: 30-2.

<sup>401</sup> Umurtak and Duru 2017: 32.

<sup>402</sup> Umurtak and Duru 2013: 8.

Retaining Wall consisting of a single row of a very large stone foundations, which is thought to have been built to protect the village from flotation, was built and filled with earth.<sup>403</sup> This system was thought to be a fortification system and has been suggested to demand a pre-planned organisation for its construction.<sup>404</sup> According to the excavators, the construction of such a complex defence system was the work of highly experienced building experts, or architects, and would have needed some kind

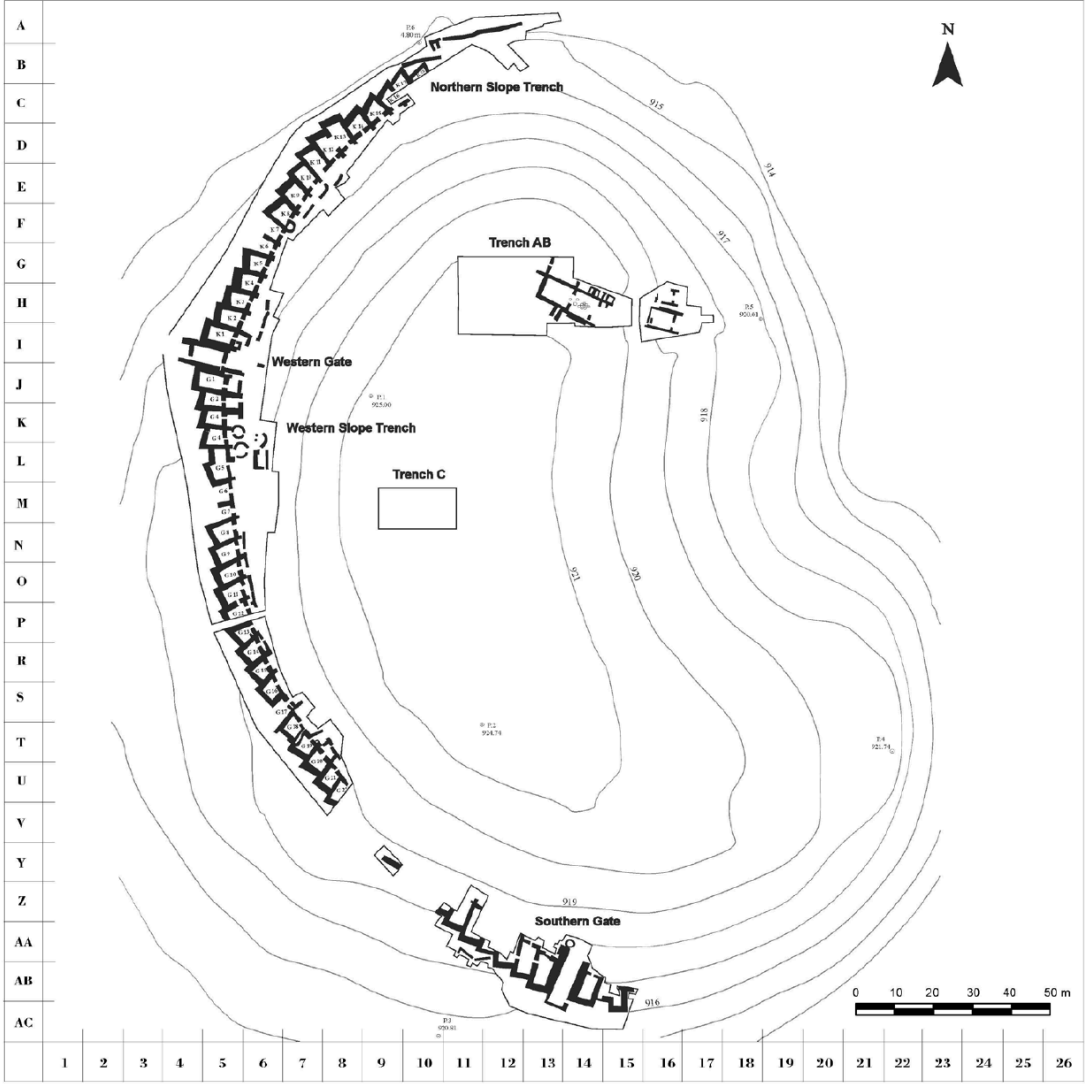


Figure 16: Hacilar Büyük Höyük EBA I settlement plan, modified from Umurtak 2021, Figure 3.

<sup>403</sup> Umurtak and Duru 2018: 41; Umurtak 2020: 40.

<sup>404</sup> Umurtak and Duru 2013: 9.

of measurement system to design such a plan and construct it, based on its accuracy.<sup>405</sup> Umurtak also suggested that such a well-developed defence system that required great effort and time must have been served to protect inhabitants and indicated potential threats from outside.

Two gates have been uncovered within this fortification system. The one found in the western side, named as the Western Gate, had a plan like a domestic building.<sup>406</sup> It was built between the two rectangular buildings and consisted of a room 4 m in width and 8.70 m in length and two antae extending from its back and front entrances. The access into the village was provided by a narrow passage cut in a wall built at the front side. During the later phase, another wall was built to narrow down the passage at the back facing the village.

The second gate was found on the south of the mound, named the Southern Gate.<sup>407</sup> The gate had also a plan like a domestic building. It was built between the two rectangular buildings which were larger than the ones uncovered adjacent to the Northern Gate. The largest one, found on the western side, was 7.90 x 3.90 m in size. The room that formed the gate is approximately 4 m in width and 15.20 in length. The access into the village was provided by a narrow passage cut in a thin wall built at the front side. The side walls were significantly thicker compared to the front wall, of 1.5 m in thickness. According to Umurtak, the gates might have had roofs without the use of wooden support and similar roof construction may have been applied to the casemates beside the gates.<sup>408</sup>

Umurtak asserted that there may have been a third city gate, possibly at the eastern part of the defence system and suggested that some of the casemates had open back walls which were intentionally left unclosed to provide entrances for inhabitants into

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<sup>405</sup> Umurtak 2020: 44.

<sup>406</sup> Umurtak 2021: 35.

<sup>407</sup> Umurtak 2021: 35.

<sup>408</sup> Umurtak 2021: 35.

the village.<sup>409</sup> However, this suggestion contradicts the idea suggested also by the excavators that inhabitants had aimed to have a strong defensive system based on the entrances narrowed down by additional walls.<sup>410</sup> Because those unclosed back walls of some casemates prevent full control over the entrances and make it difficult to track the passenger traffic.

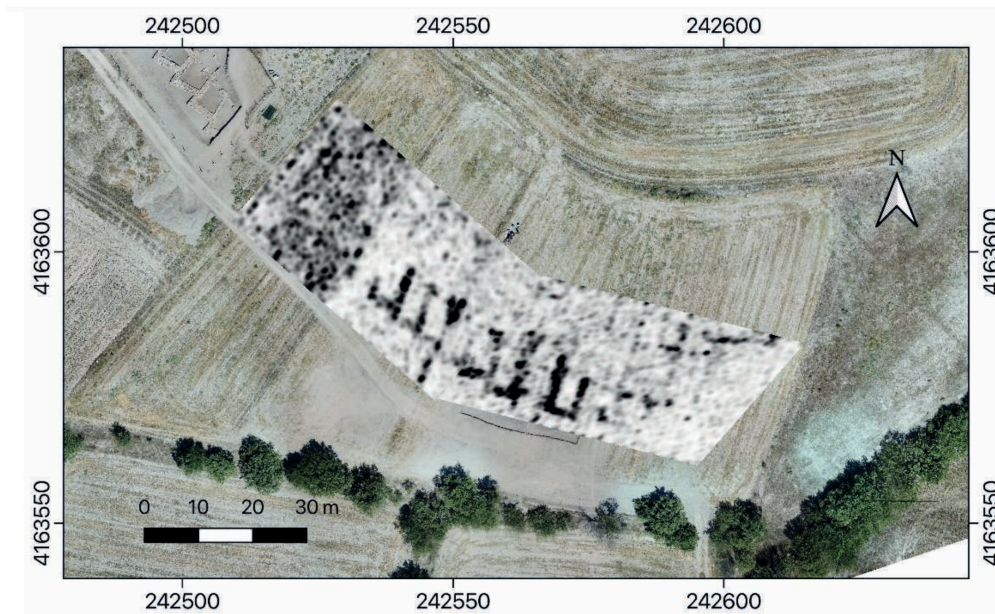


Figure 17: GPR results of the mound revealing wall constructions in the unexcavated area, after Özdoğru et al 2021: 247.

The so-called casemates resembled a megaron in plan with their ante wall varying in size from 0.8 – 1 m. Each building had a courtyard. The outer walls of the buildings, that formed the defensive system, were about 1.50 – 1.60 m in width and inner walls 1.10 – 1.50 m in width. The size of the casemates varied from 18 m<sup>2</sup> to 42,18 m<sup>2</sup>. The doors were cut in the short wall, 1.10 – 1.20 m in width and opened toward the centre. Some buildings had pivot stone uncovered *in situ* at the entrance that suggested a wooden door wing that opened inward. In other buildings, the entrance

<sup>409</sup> Umurtak 2020: 42-3.

<sup>410</sup> Umurtak 2020: 44.

was through a threshold with stone slabs or irregular stones. There is no information about the building floor.<sup>411</sup> Excavators suggested a flat roof construction made from wooden beams, branches and soil but none of the 49 casemates uncovered so far had a stone base for a wooden pillar to support the roofs.<sup>412</sup> Geophysical results revealed that casemate walls continued along the mound boundary (*Figure 17*).<sup>413</sup>

Some buildings had a horseshoe-shaped hearth in the middle and/or a mudbrick platform on top of a stone foundation for placing earthenware jars on it that were found either adjacent to the south wall behind the door or in courtyards.<sup>414</sup> Grinding stones along with burnt grains on the floor were common remains found in most of the casemates.<sup>415</sup> The existence of all types of daily used pottery, stone and terracotta seals, baked clay and stone idols, pubis made from pebbles, metal needles and metal cutters indicate daily activities that were done within the casemates. Thus, the earthenware jars and large pots often contained burnt grain and fruit as well as large jugs, plates and bowls, strengthening the idea that these casemate buildings were used as residences.<sup>416</sup>

In most of the casemates, the large storage jars were placed in the corner near the door and the ones found in the courtyard were buried into the floor and surrounded by small stones.<sup>417</sup> Small and large plates, bowls and jugs were uncovered *in situ* in the proximity of the storage jars found in the courtyard.<sup>418</sup> A narrow stone wall

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<sup>411</sup> Umurtak 2021: 37.

<sup>412</sup> Umurtak 2021: 39.

<sup>413</sup> Özdoğru et al 2021: 247.

<sup>414</sup> Umurtak 2021: 39.

<sup>415</sup> Umurtak 2020: 43.

<sup>416</sup> Umurtak 2020: 43.

<sup>417</sup> Umurtak 2021: 41.

<sup>418</sup> Umurtak 2021: 41.

passed through the courtyards of the buildings as if marked the border between the defence system and the inner side of the village.<sup>419</sup>



Figure 18: the two round shaped structures and steles uncovered in front of the casemates G4 and G5, modified from Umurtak 2020.

Two round-shaped structures with a stone foundation around 40 cm in height and 40 cm in width were found in front of the casemates G4 and G5. These structures had two walls cut on the east-west axis and their east side there were also two upright stones, 90 and 50 cm in height. (Figure 18) Despite the fact that there was no relief or any symbolic expression depicted on them, excavators suggested that they were steles and had no connection with the defence system.<sup>420</sup>

<sup>419</sup> Umurtak 2021: 37.

<sup>420</sup> Umurtak 2020: 40.

In the casemate G8, a flat stone was uncovered in an upright position parallel to the rear wall.<sup>421</sup> The size of the stele is 1.25m in width, 0.85m in height and 0.25m in thickness. There was no additional object found that was related to the stele.

In the middle of the mound (in the AB Trench), a large multi-roomed structure 4.5 x 8.6 m in size was uncovered.<sup>422</sup> Five small cells, of 1.8-1.9 x 1.6-2.1 m in size with stone foundations 15-20 cm in width, aligned along the wall of the megaron-like room of the multi-roomed structure and eight large jars were found *in situ* in the courtyard.<sup>423</sup> The function of these cells is unclear.

A megaron of 5.6 x 8.5 m in size, and another are other buildings uncovered in the middle of the mound.<sup>424</sup> According to excavators, the smaller one resembles the Western Gate in terms of its plan and could have been an entrance into the acropolis where administrative and religious buildings were. However, neither an inner wall nor an administrative or a religious building has been uncovered. Therefore, there is no evidence to support the function of the building as an entrance.

#### **4. Small Finds**

Various types of pottery that were used for daily activities were found in the casemates. Five ware groups were identified and display similarities to the ware groups found from EBA I Yassihöyük, Late Chalcolithic and EBA II Kuruçay, Bağbaşı, Late Chalcolithic and EBA I Beycesultan and EBA I-II Bademağacı Höyük.<sup>425</sup>

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<sup>421</sup> Umurtak 2021: 39.

<sup>422</sup> Umurtak and Duru 2017: 29 – 30; Umurtak 2020: 34.

<sup>423</sup> Umurtak 2021: 34.

<sup>424</sup> Umurtak 2020: 34.

<sup>425</sup> Umurtak 2021: 41-4.

Idols were made from baked clay, marble or stones found from the river in pubis models.<sup>426</sup> The number of idols found from both in the multi-roomed buildings and megara in the central section and from the buildings of the defence system was not high.

There were two types of seals identified: the large and very intricate ones each of them different, and relatively smaller ones with a simple pattern in their plain stamp surface.<sup>427</sup> They were either made from baked clay or stone. Other stone finds were grinding stones, mortars and pestles, hand axes and flint blades and flint cores for blades. The chipped stone assemblages might have been used as harvesting equipment.<sup>428</sup> Other clay objects were baked clay beads, spindle whorls, loom weights, swastika decorated oven leg.<sup>429</sup>

A total of 13 metal objects were uncovered so far and they were pins, bracelets, piercers, daggers and spatulas.<sup>430</sup> Handles shaped from deer antlers, bone pins and awls were other artefacts uncovered from the buildings that formed the defence system, courtyards and communal areas at Hacilar Büyük Höyük.<sup>431</sup>

## **5. Faunal Remains**

Bitter vetch (*Vicia ervilia*) was the most common sample among the botanical remains found in the storage jars.<sup>432</sup> Despite being toxic, the seeds soaked in water could have been consumed by humans, otherwise, it is often used as fodder.<sup>433</sup> Lentil and chickpea were found in some concentration while pea and grass pea were

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<sup>426</sup> Umurtak 2021: 45.

<sup>427</sup> Umurtak 2021: 45-6.

<sup>428</sup> Umurtak 2021: 45-46, 51.

<sup>429</sup> Umurtak 2021: 47.

<sup>430</sup> Umurtak 2021: 45.

<sup>431</sup> Umurtak 2021: 45, 48.

<sup>432</sup> De Cupere et al 2017: 6.

<sup>433</sup> Umurtak 2021: 51.



uncovered in small numbers. Barley and Einkorn were cereal crops found in several storage units. Following them, emmer and free threshing wheat were also uncovered in some concentrations. Almond (*Amygdalus/Prunus*), pistachio (*terebinth*) and grape were fruits found in some concentration. Besides cereal crops, pulses and fruits, flax was also collected in some concentrations. The presence of brassicaceae, almonds, terebinths and other wild food plants were thought to indicate continuity of Neolithic tradition.<sup>434</sup>

Domesticated animal remains consisted of the sheep/goats, cattle, and pigs, respectively.<sup>435</sup> During the EBA I sheep/goat was the most common bone sample among the faunal assemblages, while during the EBA II the number of sheep/goat was reduced and cattle was increased and gave an almost equal number of samples. The number of bone samples of pigs was reduced during the EBA II.<sup>436</sup> Slaughter patterns indicate that during the EBA herding strategy had been changed and sheep, goats and cattle were kept well into maturity suggesting they had been kept for secondary production such as milk, fleece and meat, while pigs were herded for meat consumption.<sup>437</sup> There were also numerous bones belonging to one breed of dogs found around the walls. No trace of butchery was observed on the uncovered dogs' bones. Zoological remains also included wild animal remains such as fallow deer (*Dama dama*), red deer (*Cervus elaphus*), wild hare (*Lepus europaeus*), fox (*Vulpes vulpes*) and wild cats (*Felis silvestris*).

## **6. Social Structure**

The estimated population was suggested as 300-500 inhabitants for the uncovered casemate defence system without including the central area by assuming an average

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<sup>434</sup> De Cupere et al 2017: 10.

<sup>435</sup> Umurtak 2021: 51.

<sup>436</sup> De Cupere et al 2017: 8.

<sup>437</sup> De Cupere et al 2017: 10.

of 2-3 adults and 3-4 children per each unit composing the system.<sup>438</sup> Based on this, the total population is thought to have been highly dense. The archaeological remains uncovered within these units did not imply military use of space, instead they displayed evidence for daily activities. Casemates (G6, G7, G17, K6 and K7) without back walls were thought to be used as village gates unless they were demolished and left unrepaired.<sup>439</sup>

#### **4.6. Topographic and Climatic Environment of the Sites**

Societies, as social systems, and the natural systems in which they live, interact, develop, and have a significant impact on one another.<sup>440</sup> Different forms of social structure could be defined according to their socio-ecological patterns. That requires taking into account both social organisation and environmental conditions at the same time.<sup>441</sup> Ecological factors also have an impact on human behaviour.<sup>442</sup> Topographic and climatic conditions of the settlements in which they were located are also investigated. By doing this, it is aimed to rule out the effects of ecological factors in the human-environment systems and focus on human-built environment relationship.

The site of Demircihöyük is located at the northwest edge of the Eskişehir plain. This region is surrounded by natural borders of the Bozdağ and Sündiken Mountains from the north, Central Asia Valley from the east, Emirdağ from the south and Türkmen Mountain from the west. (*Figure 19*)

The Eskişehir region is rich in water resources in terms of rivers and ground waters. (*Figure 20-21*) The site Demircihöyük is located on a low and moderately productive

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<sup>438</sup> Umurtak 2021: 52.

<sup>439</sup> Umurtak 2021: 52.

<sup>440</sup> Fisher-Kowalski 2015: 254-62.

<sup>441</sup> Sieferle 1997 in Fisher-Kowalski 2015: 259.

<sup>442</sup> Dove 1992: 231-53.

aquifer zone but it is also close to the highly productive porous aquifers region which provides ground water resources. (Figure 21)

The vegetation of the Eskişehir region is the Central Anatolian steppes, North and West Anatolia forests. On the southern slopes of the Sündiken Mountains toward the Porsuk Valley, after 1000 meters, oak bushes and then red oak appears. Türkmenbaba and Eşekli Türkmen Hill on the Sündiken Mountains and Sakarya Valley of the Bozdağ, after 1300 meters black pines and red pines grow. Around Taştepe and Mihaliççık yellow pines grow. Around Yapıldak, high oaks among the pine forests are seen. In the southern side of the Eskişehir plateau and Çiftler Plain, there is no forest seen, instead steppe plants grow. The vegetation of the Sarısu Porsuk Valley consists of thyme, mallow, and oregano. The vegetation along the edges of Porsuk and Keskin streams consists of willows, poplars, black alders, and groves.(Figure 23)

Although a few districts of Eskişehir are under the climatic impacts of The Black Sea and Aegean Sea, the region displays characteristic features of the Central Anatolian region. (Figure 24-28) It has a rough continental climate and the temperature between day and night is significantly different. Based on the current climatic maps, Demircihöyük is located in a drought zone with semi-arid steppe climate. Most precipitation falls in the spring.

Seyitömer Höyük is located on a coal bed in the vicinity of Kütahya. This region is formed by mountains and plains between them: Yeşil Mountain in the north, Türkmen and Vellice Mountains in the east, Yellice, Gümüş, Şaphane and Murad Mountains in the south and Eğrigöz Mountain and Akdağ in the west. (Figure 19) Gediz, Simav, Örencik and the Kütahya Plains are covered with alluvium. Besides that, there are the Köprüören and Tavşanlı Plains in the northwest and Altıntaş and Aslanapa plains in the southwest of the region.

Kütahya and its surroundings are connected to the Marmara, Black Sea and Aegean seas in terms of river basins. (Figure 20) The waters of the Kirmasti, Kocasu and

Simav streams flow through the region and reach the Marmara Sea, The Porsuk stream to the Black Sea and The Gediz River to the Aegean Sea.<sup>443</sup> The region encompasses ground types with different degrees of aquifers, from highly productive porous aquifers to non-aquiferous rocks. (*Figure 21*) The site of Seyitömer is located in a region where aquifers are low and moderately productive porous that provides adequate groundwater.

The vegetation of Kütahya resembles features of the Central Anatolia, Aegean and Marmara regions.<sup>444</sup> (*Figure 23*) The main vegetation of the region is forest including black pine, scrub and red pine, respectively. With the Black Sea climatic impact, *Fagus orientalis*, *Castanea sativa*, *Quercus dshorochensis*, *Corylus avellana*, *Tilia tomentosa*, *Carpinus betus*, *Populus tremula* and Yellow Pine – above the 1500-1600 meters – also grow in the northern region of Kütahya. Where the weather is under the climatic impact of the Marmara and Aegean, Red Pine, *Quercus libani* and *Pistacia terebinthus* are seen as well as some scrubs like *Phillyrea latifolia*, *Juniperus oxycedrus* and *Cistrus laurifolius*.

Kütahya displays transition features between the cold climate of Central Anatolia and the warm climate of the Marmara and Aegean.<sup>445</sup> The eastern part of the region is open to Central Anatolia and affected by its continental climate, while the western part is less cold due to the impact of the sea along the valleys open to the Marmara and Aegean seas. The region is semi-moist in general, relatively warm in winter and hot and dry in summer. (*Figure 24-28*)

Hacılar Büyük Höyük sites are found in the vicinity of Burdur. The region is located in the interior of the Taurus Mountains and it appears as a wavy plateau. (*Figure 19*) The region has three main geographical features: the mountains surrounding the territory and the plains within them, high plateaus in the south and southeast and

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<sup>443</sup> Avcı 2012: 31-3.

<sup>444</sup> Dönmez 1974: 40-4.

<sup>445</sup> Dönmez 1974: 35-40.

rugged plateau in the base plain in the southwest. 60,6 of the region is mountainous, 2,7 percent is plateau, 19 percent is plain and 17,6 of the land is plateau. The territory of the province includes tectonic and karst depression areas.<sup>446</sup> Therefore, the basins of depressions filled with water, valleys, caves dens are common features of this territory.

Most of the mountains that give the region a rugged structure are the extension of the West Taurus Mountains. Boncuk Mountains, Elmalı Mountain, Beydağları and Katrancık Mountains are in the south, Kurucak and Dedegöl mountains in the east, Karakuş Mountains in the north, and Acıgöl and Eşeler mountains in the west. The plains are formed between the mountains and separated by narrowed and deep mountain passes which were formed by the filling of old closed basins. They are old lake beds.<sup>447</sup>

The Burdur region encompasses the ground types with different degree of aquifers from locally aquiferous rocks, porous, or fissured to inland water and highly productive porous aquifers. (*Figure 22*) Besides the Dalaman and Aksu streams, rivers do not reach the sea, instead some flow into lakes and some end in dolines. Burdur Lake is one of the largest lakes in Anatolia and beside the Salda lake there are many karst origin lakes found in the region.<sup>448</sup> (*Figure 20*) Hacılar Büyük Höyük is located on the locally aquiferous rocks in the close vicinity of the Burdur Lake. (*Figure 22*)

The main vegetation formation of the Burdur province is maquis. Due to the existence of many small lakes, ponds and streams, vegetation changes from place to place in the surrounding of these water sources.<sup>449</sup> (*Figure 23*) The province is widely covered with juniper forest. The vegetation of the Çavdır region is mainly

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<sup>446</sup> Anonymous 1996: 3-4.

<sup>447</sup> Anonymous 1996: 4.

<sup>448</sup> Anonymous 1996: 5.

<sup>449</sup> Özçelik et al 2014: 22.

Red Pine, as the height increases Black Pine also appears as well as Red Pine. In the south where the ground is mostly limestone, red Pine and Taurus fir tree are found together. Like Yeşilova and Altınyayla in places where the relative humidity is high, after the Red Pine forest, the oak forest dominates the vegetation. The south of the Altınyayla, the main vegetation is Cedar and in the higher parts of the mountain Juniper forest is also seen. Around the village of Burdur, Juniper forest is seen. There is a small Liquidamber orientalis forest around Kızıllı village. The southern part of the province has a typical Mediterranean climate as well as Mediterranean vegetation of Juniper forest and scrub as a dominant vegetation. The scrub vegetation includes scented Juniper, Black Juniper, Olea europeaa, Phillyrea latifolia, Myrus communis, Alnus glutinosa, Platanus orientalis and many more.<sup>450</sup>

Burdur displays a climate between semi-arid to humid. (*Figure 24-28*) Due to the high mountains that separate the region from the Mediterranean climate, the continental climate also affects the province: summers are hot and dry and winters are relatively warm.

Karataş is located in the Elmalı Plain in Antalya province. The general topography of the Antalya province is formed by the Mediterranean Sea cutting by steep slopes in the south and the Taurus Mountains extending parallel to it in the north.<sup>451</sup> (*Figure 19*) Akdağ, Tahtalı and Geyik Mountains are found in the southeast of the region, Bey mountains, Alaca and Susuz Mountains in the southwest. Boğaçayı, Döşemealtı, Kurşunlu, Varsak and Aksu are the plain found in the centre; Sedre and Alara plains in the southeast; Elmalı, Finike-Kumluca, Eynif, Demre, Kasaba, Kumluova, Ovacı, Korkuteli, Manavgat, Serik and Bucak-Aktaş-Karataş plains in the southwest.

The province of Antalya encompasses the ground types with different degrees of aquifers from inland water and highly productive porous aquifers to practically non-

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<sup>450</sup> Özçelik et al 2014: 22.

<sup>451</sup> Anonymous 2011: 30.

aquiferous rocks. (*Figure 22*) The region is rich in water resources. Düden, Aksu, Manavgat, Eşen-Karaçay, Finike-Karasu, Başgöz, Alakır, Salur Pınarı, Kırgözler, Köprüçay, Dim and Alara are some of the streams of the region.<sup>452</sup> (*Figure 20*) The province is also rich in term of underground water resources.

The main vegetation formation of the region is Red Pine and scrub as a typical Mediterranean vegetation, respectively.<sup>453</sup> (*Figure 23*) Lebanon Cedar forest growing at altitudes above 1200 meters are found in Elmalı, Çıglıkara and Çamkuyu regions. Taurus abies in the center; cypress in the Manavgat National Park; Nut Pine in the center as well as in Alanya; chestnut in the north of the Antalya; Anatolian sweetgum in Manavgat; Cedar, Fir, Larch and Oak forest together around Akseki; and the maquis vegetation dominated by species such as Kermes Oak, Sandalwood, Thuja Oak, Maple Cut, Laurel, Locust Horn, Olive, Oleander began to appear from the sea level up to 700-800 meters altitudes in Antalya.

The climate of Antalya province is the Mediterranean climate, hot and dry in summers and warm and rainy in winters. In general, it is in the mild sea and warm sea climate types. In the inner parts, cold and semi-continental climate is observed. (*Figure 24-28*)

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<sup>452</sup> Anonymous 2011: 51-3.

<sup>453</sup> Anonymous 2011: 122.

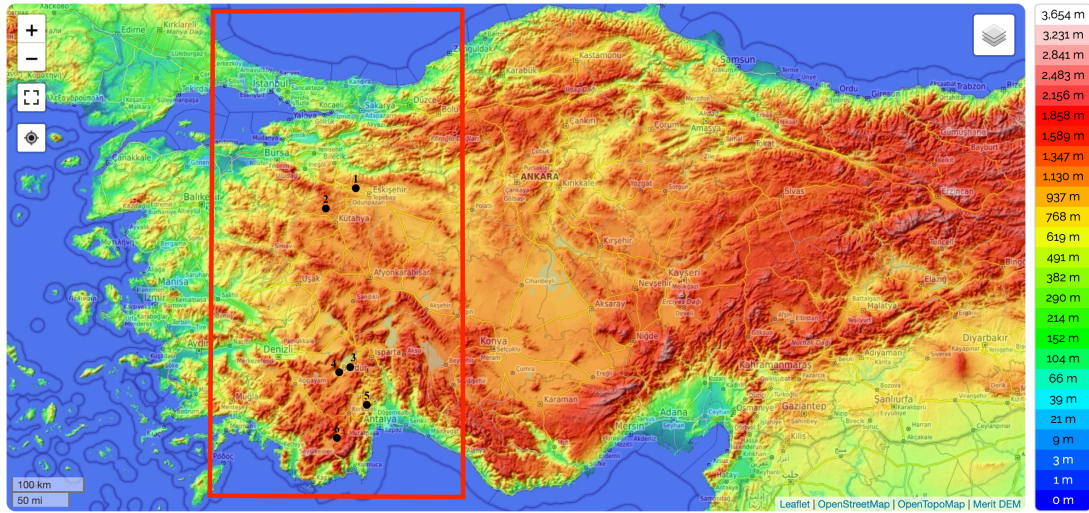


Figure 19: Topographic map of Turkey. 1.Demircihöyük, 2.Seyitömer, 3.Kuruçay, 4.Hacılar Büyük Höyük, 5.Bademağacı, 6.Karataş, generated from <https://en-gb.topographic-map.com/maps/dzu/Turkey/>.

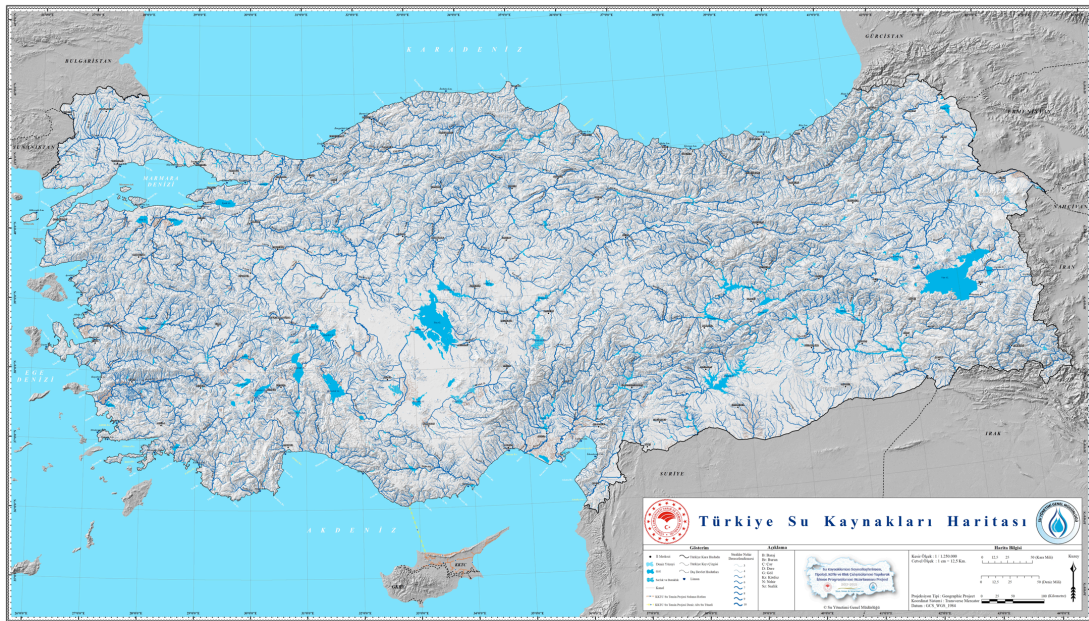


Figure 20: water resource map of Turkey, derived from the website of Ministry of Agriculture and Forestry Water Management General Directorate.



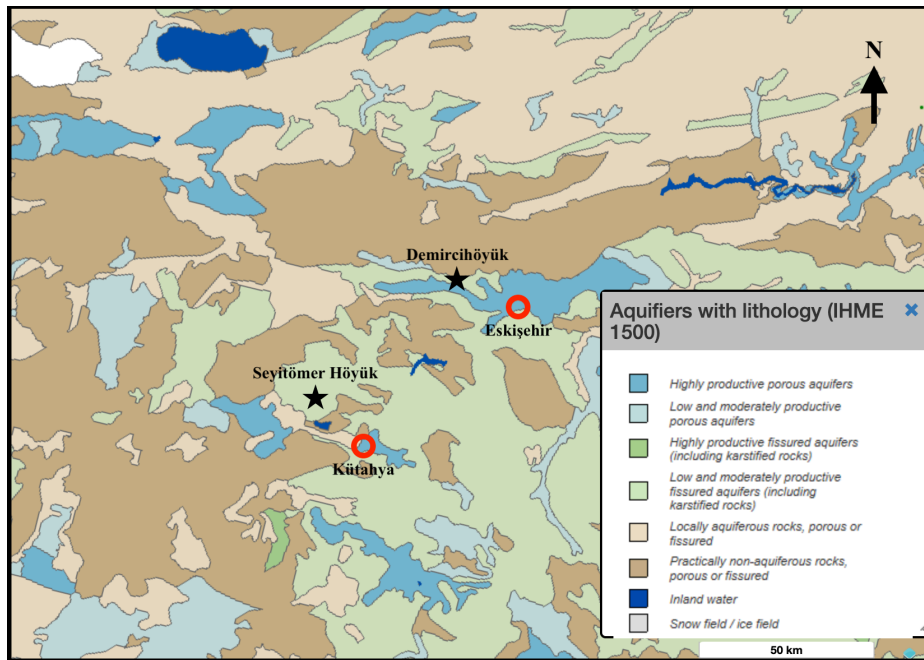


Figure 21: Hydrogeological map of Eskişehir and Kütahya regions, generated from <http://www.europe-geology.eu/groundwater/groundwater-map/hydrogeological-map-of-europe/>

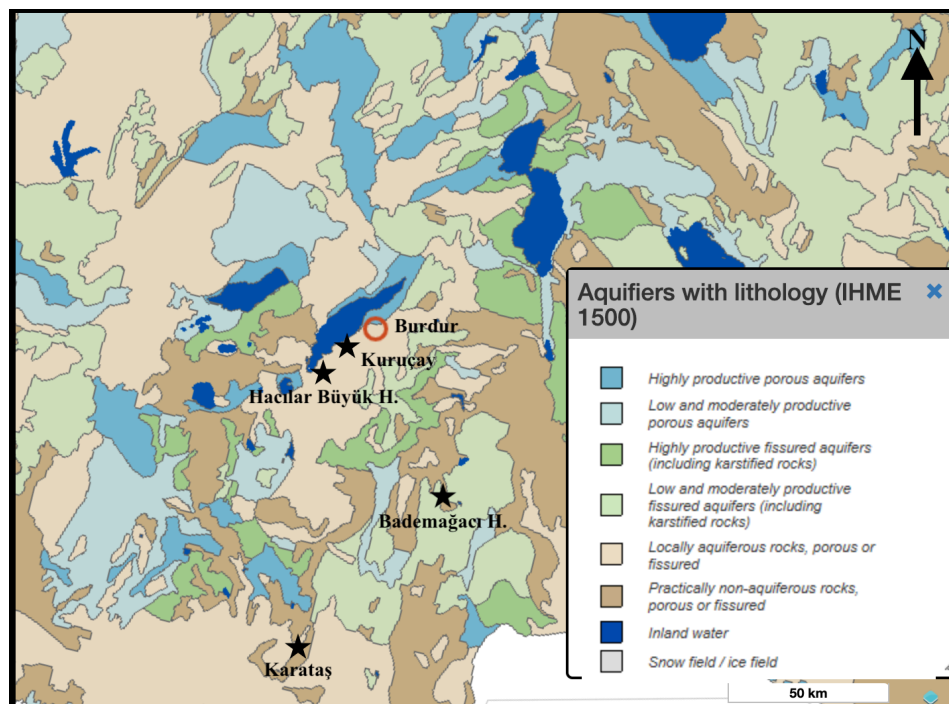
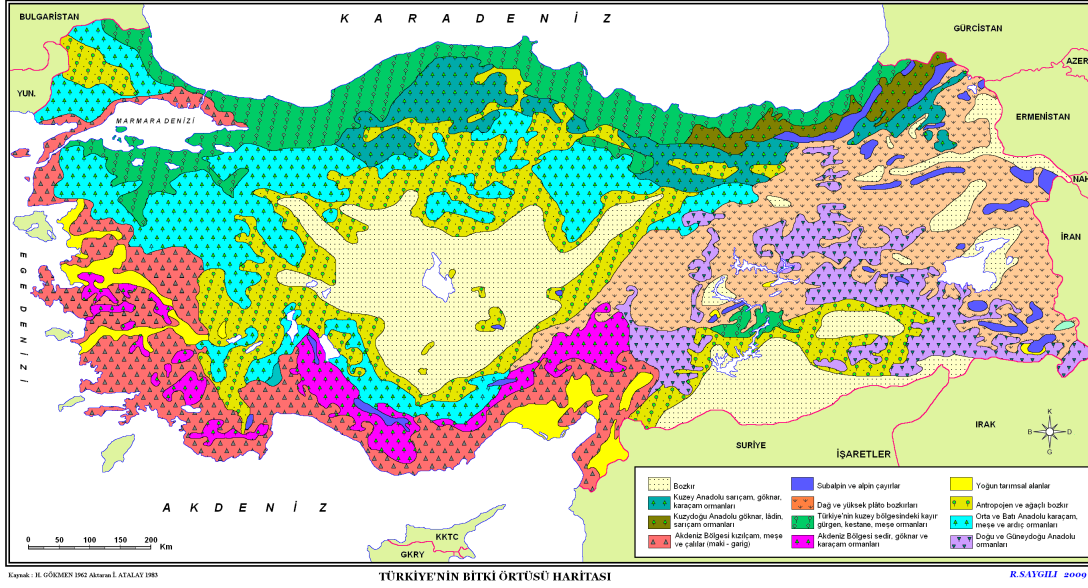


Figure 22: Hydrogeological map of Burdur and Elmalı regions, generated from <http://www.europe-geology.eu/groundwater/groundwater-map/hydrogeological-map-of-europe/>



Karak. : H. GÖKMEZ 1982 Akdenizli ATALAY 1983

TÜRKİYE'NİN BİTKİ ÖRTÜSÜ HARİTASI

R.SAYGILI 2009

Figure 23: Vegetation map of Turkey, derived from <http://cografyaharita.com/haritalarim/2dturkiyenin-bitki-ortusu-haritasi3.png>

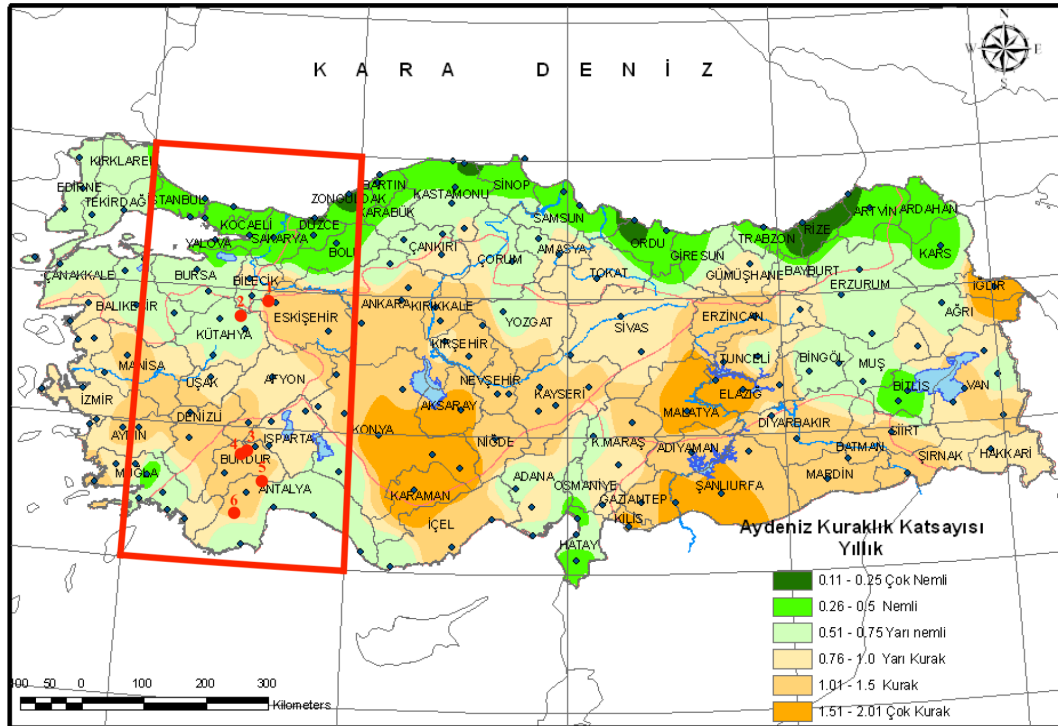


Figure 24: Aydeniz annual drought coefficient map of Turkey. .Demircihöyük 2.Seyitömer 3. Kuruçay 4.Hacılar Büyük Höyük 5.Bademağacı Höyük 6.Karataş, modified from the Website of Meteorology General Directorate, <https://www.mgm.gov.tr/iklim/iklim-siniflandirmalari.aspx>.

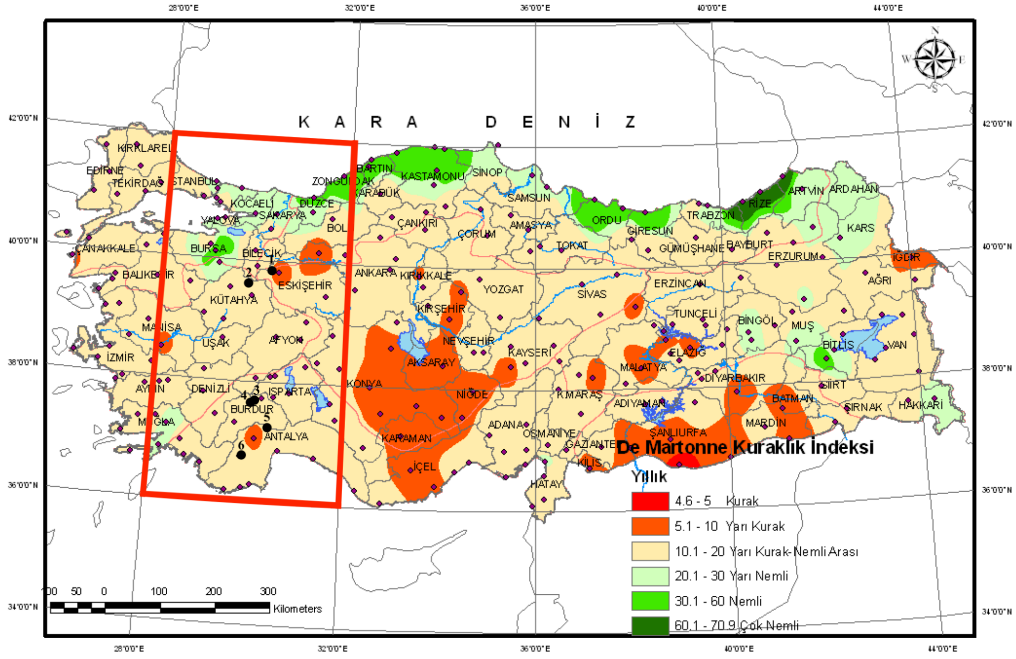


Figure 25: De Martonne drought index map of Turkey. 1.Demircihöyük 2.Seyitömer 3. Kuruçay 4.Hacılar Büyük Höyük 5.Bademağacı Höyük 6.Karataş, modified from the Website of Meteorology General Directorate, <https://www.mgm.gov.tr/iklim/iklim-siniflandirmalari.aspx>.

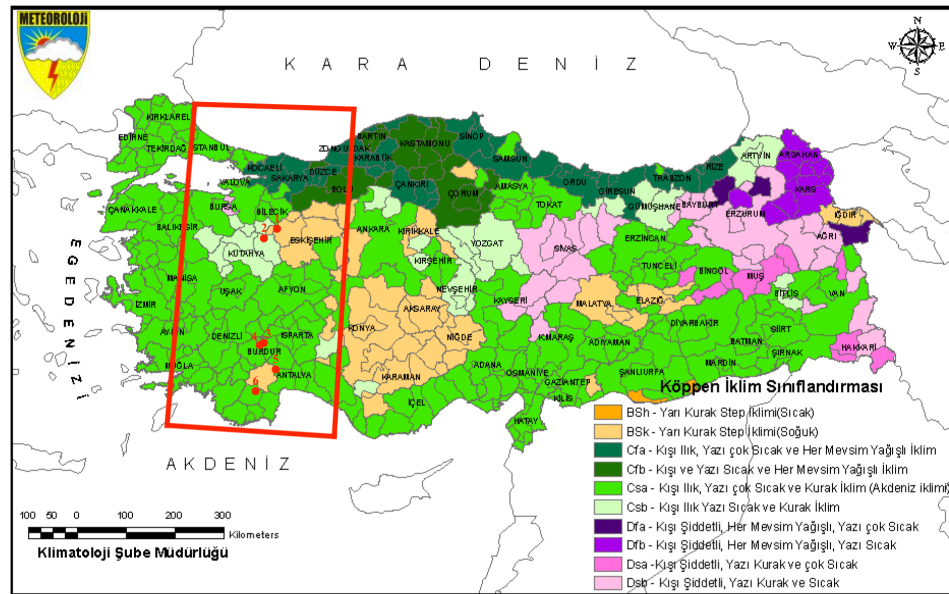


Figure 26: Köppen climate classification map of Turkey. 1.Demircihöyük 2.Seyitömer 3. Kuruçay 4.Hacılar Büyük Höyük 5.Bademağacı Höyük 6.Karataş, modified from the Website of Meteorology General Directorate, <https://www.mgm.gov.tr/iklim/iklim-siniflandirmalari.aspx>.

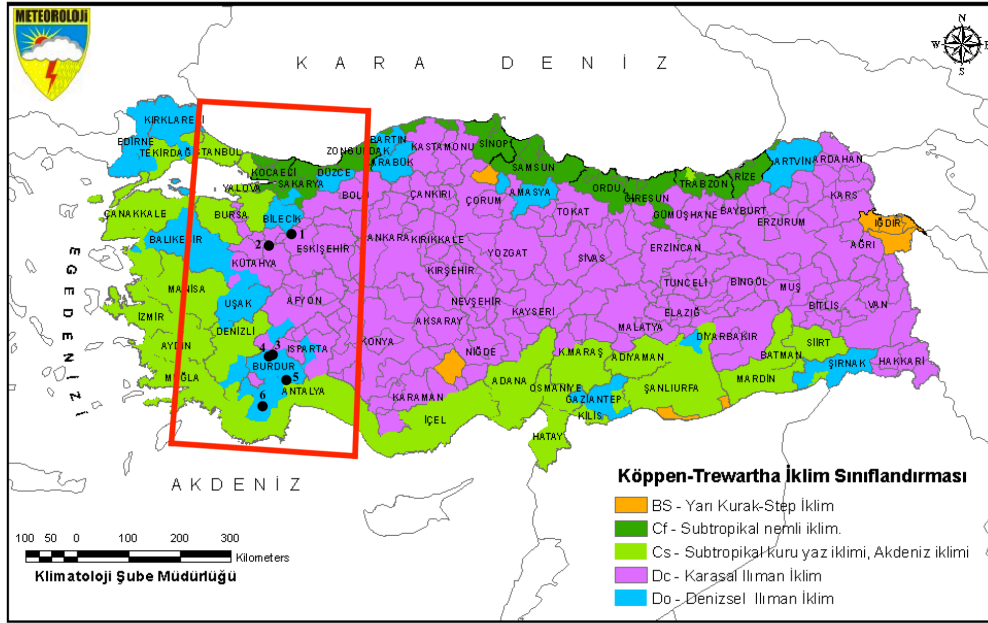


Figure 27: Köppen-Trewartha climate classification map of Turkey. 1.Demircihöyük 2.Seyitömer 3. Kuruçay 4.Hacılar Büyük Höyük 5.Bademağacı Höyük 6.Karataş, modified from the Website of Meteorology General Directorate, <https://www.mgm.gov.tr/iklim/iklim-siniflandirmalari.aspx>.

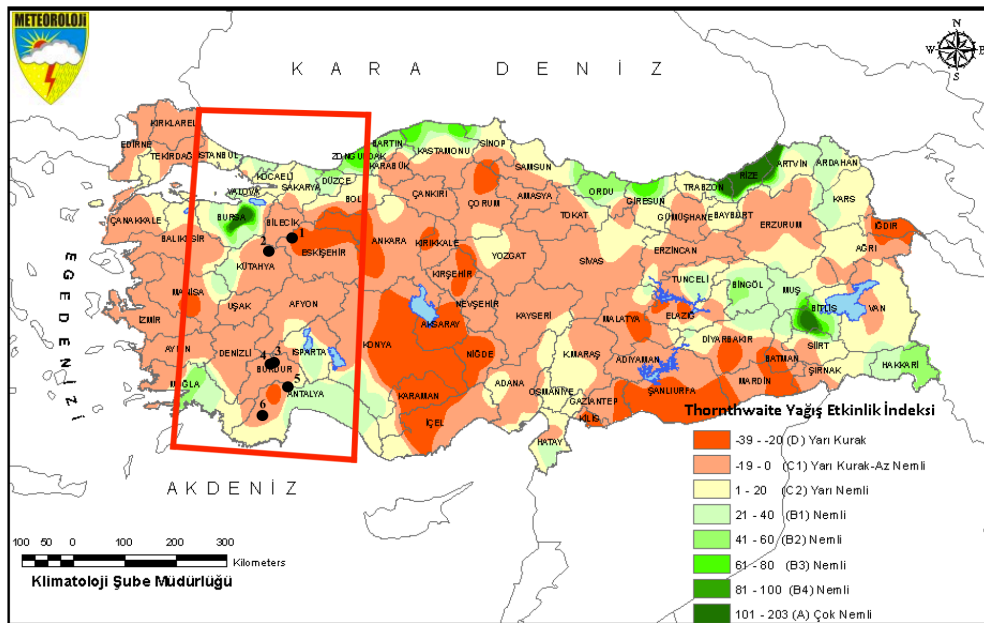


Figure 28: Thornthwaite precipitation efficiency index map of Turkey. 1.Demircihöyük 2.Seyitömer 3. Kuruçay 4.Hacılar Büyük Höyük 5.Bademağacı Höyük 6.Karataş, modified from the Website of Meteorology General Directorate, <https://www.mgm.gov.tr/iklim/iklim-siniflandirmalari.aspx>.

## CHAPTER 5

Bademağacı Höyük, with settlement layout, implying a pre-planned spatial organisation stands out as an intriguing case to understand the socio-economic transitions toward more complex societies and the process of urbanisation during the Early Bronze Age. To measure vertical and horizontal stratification, and understand the nature of the social organisation, attention is given to the architectural traditions, artefacts, burial traditions, and faunal remains. This chapter aims to provide detailed information about the site based on the publications, and all definitions and interpretations in this section belong to the excavators. The author will discuss her arguments in the Discussion Chapter.

### BADEMAĞACI HÖYÜK

The mound is located on a small plain, and old lake or a swamp bed, surrounded by mountains, 2.5 km north of the town Bademağacı, in the southern border of the Lake District region of Burdur (37°13'23.33"N 30°29'53.42"E). The site encompasses an area of 1.59 ha and has an altitude of 7 m above the plain level, 9 m above the bedrock and 585 m above the sea level. The mound has an oval shape of about 210 m X 120 m.<sup>454</sup>

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<sup>454</sup> Duru 1994: 69-70; 2019: 8.

## 5.1. Archaeological Surveys and Excavations

In 1958, James Mellaart visited the site during his survey of the Konya Plain. In 1961, he mentioned it in his article where he described the materials found during this survey.<sup>455</sup> He referred to it as Kızılkaya Höyük, found on the main road from Burdur to Antalya and identified the site as a village based on its size. Mellaart argued that the site differs from the other eastern group in terms of the archaeological materials in that it resembles more western contemporaneous cultures and suggested that the site was possibly an ancestor for Hacılar.

According to Refik Duru the site of Kızılkaya Höyük mentioned in Mellaart's article is Bademağacı Höyük.<sup>456</sup> Based on his personal contact with David French, the description of Kızılkaya Höyük in Ian Todd's book,<sup>457</sup> and his survey trips, Duru was able to confirm Kızılkaya Höyük as Bademağacı Höyük.

The excavations continued annually since 1993 under the direction of Refik Duru, and later under the direction of Gülsün Umurtak as assistant director from 1999 to 2010. By the end of 2010, an area of 12000 m<sup>2</sup>, the excavated area corresponded to almost %65 of 18000 m<sup>2</sup> the total surface of the site.<sup>458</sup> During the excavations, at the two trenches DA1 and DA2, and depth of -9.20m and -8.90m respectively, the virgin soil was reached where there was no longer any trace of human activities to be found.

## 5.2. Chronology

Two main cultural sequences hold the traces of intensive occupation at Bademağacı

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<sup>455</sup> Mellaart 1961: 159-60.

<sup>456</sup> Duru and Umurtak 2019: 2.

<sup>457</sup> Todd 1980.

<sup>458</sup> Duru and Umurtak 2019: 8.

Höyük.<sup>459</sup> The first and earliest is the Early Neolithic Phase that started from the virgin soil and reached up to 7m of debris, and the Late Neolithic Phase. The second is the Early Bronze Age II and -for a short time period- Middle Bronze Age. Besides these two main cultural sequences, there are some archaeological remains which indicate different cultural sequences without any architectural remains. The Early Chalcolithic, the Late Chalcolithic and the Early Bronze Age I are among those cultural sequences that were represented only by small finds and ceramic remains. Whether the site was occupied as a camp site, or the architectural remains of these sequences did not survive until today is yet unclear. Nevertheless, these sequences are included in the cultural sequences and stratigraphy of Bademağacı. The latest stratigraphic sequence is represented only by a small church/chapel dated to the 1<sup>st</sup> millennium AD, the Early Christian Period. (*Table 5*)

### **5.3. Architectural Traditions of the Neolithic**

Excavation results reveal that the earliest occupation emerged and was concentrated more in the north side of the höyük.<sup>460</sup> From the Early Neolithic to the later phases, the centre of the settlement is thought to be located around the northwest side of the site. Dwellings were often built free standing and placed randomly to provide open spaces and streets. Silo and storage facilities were placed in these open spaces and in some cases, they were found inside the dwellings. There are no orientation preferences for the entrance of the dwellings.

According to the excavators, the Early Neolithic I settlement was not based on a specific plan and it resembles more a simple village.<sup>461</sup> Although there is no information derived on the dwelling plan, it is thought that walls were made of wattle-and-daub without any stone or mudbrick foundation. The only architectural

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<sup>459</sup> Duru and Umurtak 2019: 8-9.

<sup>460</sup> Duru and Umurtak 2019: 25-9.

<sup>461</sup> Duru and Umurtak 2019: 28.



Table 5: Cultural sequence and stratigraphy at Bademağacı, adapted from Duru and Umurtak 2019: 9,15-29, 131.

Cultural Period	Building Level	Date	Depth from Höyük surface
Early Christian	Church/Chapel	1st millenium AD	0 m
Middle Bronze Age	MBA 1		
Early Bronze Age III	EBA III/1		
Early Bronze Age II	EBA II/1		
Early Bronze Age II	EBA II/2		
Early Bronze Age II	EBA II/3	2700 cal.B.C.	
Early Bronze Age I			
Late Chalcolithic			
Early Chalcolithic			-4.04 m, -6.20 m
Late Neolithic	LN 1		-20 — -25 cm
Late Neolithic	LN 2		-60 cm
Early Neolithic II	EN II/1	6230 - 6100 cal.B.C.	-20 — -25 cm, -60cm
Early Neolithic II	EN II/2		
Early Neolithic II	EN II/3	6450 - 6250 cal.B.C.	
Early Neolithic II	EN II/3A	6450 - 6400 cal.B.C.	
Early Neolithic II	EN II/4	6420 - 6260 cal.B.C.	-6.30 m
Early Neolithic II	EN II/4A	6400 - 6260 cal.B.C.	
Early Neolithic II	EN II/4B		-6.60 m
Early Neolithic I	EN I/1		
Early Neolithic I	EN I/2		
Early Neolithic I	EN I/3		
Early Neolithic I	EN I/4		
Early Neolithic I	EN I/5		-6.60 m
Early Neolithic I	EN I/6		-7.60 m
Early Neolithic I	EN I/7		-8.20 m
Early Neolithic I	EN I/8	7030 - 6710 cal.B.C.	-8.42 m
Early Neolithic I	EN I/9		-9 m — -8.80 m



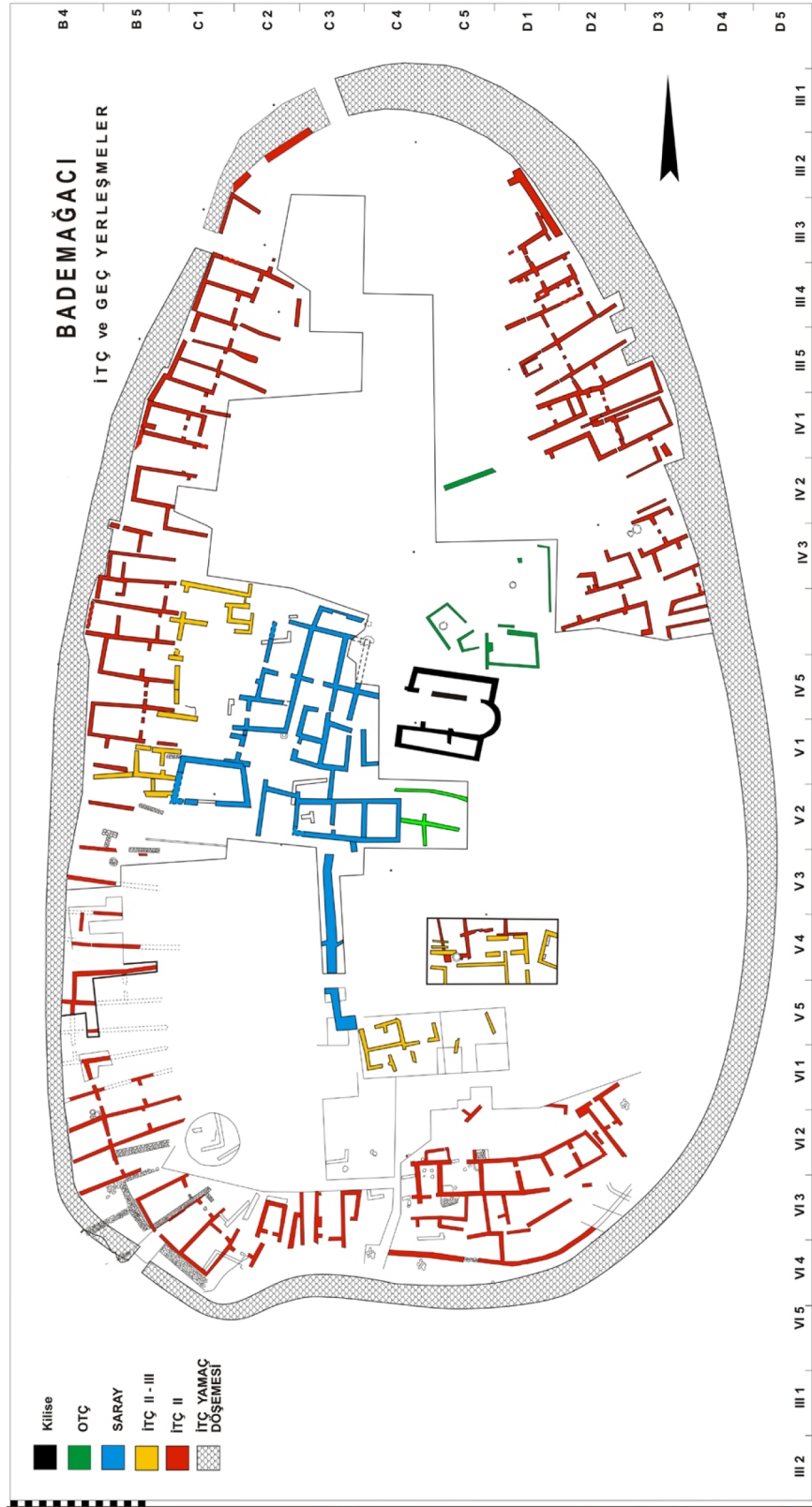


Figure 29: Bademağacı Early Bronze Age II Settlement plan, after Duru and Umurtak 2011c:31

remains found for the EN I/9-5 are extremely hard terrazzo floors of dwellings. The floors were often coloured in red. The building levels were determined based on remains of floors and the pottery.

The Early Neolithic II settlement layout, architectural tradition and finds give the impression that the inhabitants moved from a small village society to a town society with some degree of organisation.<sup>462</sup> In addition to agriculture and animal husbandry, different occupations and craftspeople are also identified for each building level of the Early Neolithic II. According to excavators, the society was governed based on such rules in order to live in harmony.<sup>463</sup>

The general architectural tradition of dwelling is single room (one exception of two-roomed) rectangular in shape.<sup>464</sup> (*Figure 29*) Stone foundations were not been used from EN II/4B to EN II/2, but started to be used from EN II/1 as a single row stone for the foundation of walls. The walls were often built using rectangular prism shaped plano convex mudbricks or mud plaster added layer by layer. The inner walls were plastered, then whitewashed. In one building the wall had red painted decoration on the whitewashed surface. The corners of the walls were rounded. There is no information about the construction of roofs, but based on the burnt wood charcoal found among the debris inside the buildings it is thought to have been a flat roof made from tree branches that were covered by mud and clay layer to make them waterproof. Wood material was also used to support the roof and for door sills. The doors were placed in the middle of the long wall, with a single exception.

The inner installations of buildings were almost similar for all dwellings: the plastered flat floors were made from a compressed clay; round or horseshoe shaped ovens were placed in the middle of the long wall opposite the entrance; a section for food preparation with hearths, grinding stones and *in situ* pots; and in some cases a

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<sup>462</sup> Duru and Umurtak 2019: 26-7.

<sup>463</sup> Duru and Umurtak 2019: 27.

<sup>464</sup> Duru and Umurtak 2019: 26-7.

20-25 cm high raised clay platform placed at the corner of the house for sitting and sleeping purposes. The houses were built in a way that provided open spaces and streets. Silo and storage facilities were often placed in these open spaces and for some cases inside the houses.

The Late Neolithic 2 and 1 settlements were investigated in very limited areas, therefore the architectural traditions of these building levels are not known well. Nevertheless, uncovered architectural remains indicate an increase in building size and display different architectural traditions compared to the Early Neolithic II.<sup>465</sup> Unfortunately, no architectural remains have been found dated to the Early Chalcolithic Period and the only evidence is derived from the pottery found in the mixed accumulated layers on the höyük surface.

#### **5.4. Architectural Traditions of the Early Bronze Age**

The Early Bronze Age II settlement was established on top of fire debris that ended the Neolithic phases.<sup>466</sup> The occupation began around 2800 BCE, continued till around 2000 BCE and created approximately 4.5-5m of habitation debris.<sup>467</sup> Excavation results display an uninterrupted settlement sequence in the process of continuous remodelling through repairs and additions during the EAB II 2 and 3.<sup>468</sup> Buildings were primarily constructed around the Neolithic remains concentrated in the centre of the mound.<sup>469</sup> (*Figure 29*) The construction of buildings, in terms of their architectural plans and their locations, leads to the idea that it had been designed based on a radial plan. According to excavators, Duru and Umurtak, the settlement layout of the EBA II was constructed based on a pre-planned design.<sup>470</sup>

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<sup>465</sup> Duru and Umurtak 2019: 28-9.

<sup>466</sup> Duru 1997: 152.

<sup>467</sup> Duru and Umurtak 2015: 75.

<sup>468</sup> Duru 2000: 205.

<sup>469</sup> Duru and Umurtak 2002: 237-41; 2008: 255-60.

<sup>470</sup> Duru and Umurtak 2005: 437-40

The existence of a designated plan was interpreted as evidence of a strong authority.<sup>471</sup>

The whole settlement was surrounded by a stone-pavement 3-8 m in width along the slope.<sup>472</sup> (*Figure 30*) Small to large stones were randomly placed giving the impression that the surface was not intended to be flattened. At some spots, two different sequences were found, indicating it was built during two different phases. This pavement was possibly a barrier protecting houses against flooding and were repaired constantly. On the north side of the settlement, two town gates were found, one built earlier than the other. The gates, exclusively, were reconstructed many times, and their locations had been changed during the repairs.<sup>473</sup> The buildings with blind back walls were constructed side by side along the stone pavement and created a wall-like structure to limit entrance into the village.<sup>474</sup> Only two of the houses do not have back walls that make them function as propylaea on the east and west sides of the site.

Beside these propylon-like houses, in the north section three gates were observed. According to excavators, the gates were used for the entry of the animals into the town.<sup>475</sup> The gate KG1 is 4m wide, well bordered on both sides by row of stones and its floor is made of packed soil.<sup>476</sup> (*Figure 31*) The gate KG2 is a relatively small simple passage well bordered on both sides by rows of stones. The gate KG3 is between KG1 and KG2 beneath the stone glacier, possibly used during the early period of the occupation. It is also a simple passage, 2m wide. In this section, there is also a 1m thick stone foundation along the glacier, thought to be a fortification wall to protect the animals that were kept in the open space that was left empty for this

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<sup>471</sup> Duru and Umurtak 2007: 187-91.

<sup>472</sup> Duru 2000: 200-1.

<sup>473</sup> Duru and Umurtak 2006: 639-46.

<sup>474</sup> Duru and Umurtak 2015: 76.

<sup>475</sup> Duru and Umurtak 2010: 438-45.

<sup>476</sup> Duru and Umurtak 2008c: 202-3.

purpose.<sup>477</sup> The megaron no.4 at the east, and no.30 at the west were the secondary gates for the entrance into the town because these megara do not have back walls.<sup>478</sup>



*Figure 30: Stone pavement of the northwest section of the höyük, after Duru 2000: 239, Plate 26/2.*



*Figure 31:KGI entrance to the site, picture taken from north-south direction, after Duru and Umurtak 2006:14 Figure 3.*

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<sup>477</sup> Duru and Umurtak 2008c: 213.

<sup>478</sup> Duru and Umurtak 2010: 438-45; 2011: 115-21.

According to Duru and Umurtak, the centre and the south sections of the höyük were important zones with complex planning dated to the EBA II/3 building level.<sup>479</sup> The constructions built one on top of another indicate regular destruction and rebuilding processes. This region was possibly faced with threats more often, and required more protection. The building plans at the south region differed from the rest.<sup>480</sup> In the southeast section, rectangular rooms were built side by side like in line, of which only one has an entrance facing north, and a fortification-like wall that seems to have existed between the stone-paved border of the settlement and this line of rooms. The southwest section seems to be strategically important, and the institutions of the town were possibly located in this region, a suggestion based on the existence of the strong and well-arranged constructions.<sup>481</sup> The buildings are in trapezoidal plan due to the shape of the mound. One of the houses has a door directly opening to the outside of the town at the west corner of the back wall, and a window, 70 cm higher above the ground, placed at the middle of the wall beside the door. The front of the door was not paved with stones, instead, 1,5 m width walls were built both sides of the door. Excavators suggest that this structure was the main entrance to the village despite its small size.<sup>482</sup>

In the centre of the site, a building complex, consists of 17 rooms connected to each other through doors, was found and named after Multiple-Room Building 1.<sup>483</sup> Some rooms seem to have had inner connections that made them appeared as they may have belonged to more than one building. Duru and Umurtak thought that this building complex extended beneath the church and possibly had 10 more rooms.<sup>484</sup> Excavation results suggest the complex has phases indicating multiple reconstruction

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<sup>479</sup> Duru and Umurtak 2011b: 11-2.

<sup>480</sup> Duru and Umurtak 2009: 261-8.

<sup>481</sup> Duru and Umurtak 2010: 438-45; 2011: 115-21; 2011b:11.

<sup>482</sup> Duru and Umurtak 2010b: 21.

<sup>483</sup> Duru and Umurtak 2008: 255-60.

<sup>484</sup> Duru and Umurtak 2015: 76.

over time during the transition period between EBA II-3 to EBA II-2.<sup>485</sup> According to the excavators, the Multiple-Room Building 1 might have functioned as both an administrative centre and the residence for the most powerful families in the village.<sup>486</sup> In two rooms which belong to the complex, several pots and jars of varying sizes in one, and 25 vessels -presumably intentionally placed together- in another were uncovered. There are many wall-like remains found in the space between this complex and the megara. These architectural features could have belonged either to megara or be part of a gateway.

At the centre there is a thick wall made from large stones in grid square V 4-5/C, another one on top of the megara was found along the western slop in grid squares V5-VI2/B 5-4, and others were found at the southern section running parallel to each other outward from the mound. Their function is not yet known but they were built in the last phases of the EBA II, possibly during the transition period between EBA II to EBA III.<sup>487</sup> The existence of a large number of complete pots, in which significant numbers of bronze items, silver pins, a silver bow and a golden ear plug were found *in situ* in front of the thick wall which was built above the building which was thought to be another gate to the village make it difficult to interpret the function of these constructions.

On the eastern and western sides of the site, the megaron structures were built side by side along the stone-pavement. Duru and Umurtak assert that these megaron structures with small plan differences were the dwellings of the inhabitants of the village.<sup>488</sup> Where the curve make a sharp turn along the pavement, the shape of the buildings took a trapezoid shape to fit into the line defined by the pavement.<sup>489</sup>

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<sup>485</sup> Duru and Umurtak 2007: 187-91; 2008b:17-8; 2009b: 16; 2011: 115-21.

<sup>486</sup> Duru and Umurtak 2008b:17-9; 2011b: 11.

<sup>487</sup> Duru and Umurtak 2009b: 18; 2011b: 10, 12.

<sup>488</sup> Duru and Umurtak 2015: 75.

<sup>489</sup> Duru and Umurtak 2005: 437-40.

(Figure 29) In general, the remains found at the west side are better preserved, and well-arranged compared to the ones found at the east side of the settlement. Each megaron building has a door entrance in its short side facing the centre of the mound. During the EBA II-2, the additional ante walls were built to the megara towards to the centre at both sides.<sup>490</sup> Buildings have often one living room (cella) immediately after passing the entrance. Some, on the other hand, have two rooms connected by a door at the back wall of the cella. Almost every building has a stone-paved backyard adjacent to its back wall that were often blind walls. This tradition had been applied during the EBA II-1 and 2.<sup>491</sup> According to the excavation results, the buildings which completed their life span underwent repairs while maintained their traditional construction plan. There were no portable objects or architectural features indicating inner installation in these megaron buildings. However, in some of the buildings, a significant number of pots, and portable objects indicating the storage facilities of the buildings have been found.<sup>492</sup>

The foundations of buildings were made with two rows of stone and their thickness varies between 30-40 cm.<sup>493</sup> In some cases, the foundations were made with 6-7 row stone foundations reaching 70-80 cm height from the ground.<sup>494</sup> Some buildings even have walls with different thicknesses.<sup>495</sup> In some cases the stone foundation was built carefully but in others not. There is no trace of the mudbrick wall rising on the stone foundation. There is no indication of abundant use of wood and no information about the construction of the roof. No traces of floors were found in some buildings, on the other hand, in some buildings it was observed that the fire areas had different layers one on top of the other.

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<sup>490</sup> Duru and Umurtak 2005: 437-40.

<sup>491</sup> Duru and Umurtak 2010: 438-45; 2010b: 20-1.

<sup>492</sup> Duru and Umurtak 2011: 115-21.

<sup>493</sup> Duru 1996: 788-89.

<sup>494</sup> Duru 2000: 195.

<sup>495</sup> Duru 2000: 195.



There are 9 circle-like architectural features made from a single row of stones that were found in the north, centre and south sections.<sup>496</sup> The diameters of these circles vary between 1 to 2m. Only one of them had a burial in the centre. In the meantime, most of the pithos burials found in the south section were surrounded by similar circle-like single rows of stones. Therefore, these circle-like architectural features might have functioned as grave markers. Also, some of the pithos burials had a small beak-spouted jar as a grave good.<sup>497</sup> In one room (?), 35 pottery pieces of different forms were found.<sup>498</sup> Some of the pots were of a higher quality than the others found in the EBA II phases.

The number of EBA II houses uncovered is 60 and possibly 40 more houses existed in the unexcavated area.<sup>499</sup> Including Multi-Roomed Building with 17 rooms, it is estimated that there are 140 houses in total at the EBAILI village in Bademağacı Höyük. Assuming that 6-7 people lived in each house, a total of 800 people lived in the village.<sup>500</sup> The EBA II occupation possibly lasted for a few centuries, perhaps for 8-10 generations. The village was the local principality centre and had control over the surrounding region.

According to Duru and Umurtak, the Early Bronze Age III village was demolished around 2100 BCE and the höyük had been occupied for a while during the Middle

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<sup>496</sup> Duru and Umurtak 2011b: 13.

<sup>497</sup> Duru and Umurtak 2010b: 23.

<sup>498</sup> Duru and Umurtak 2010b: 23.

<sup>499</sup> Duru and Umurtak 2015: 77-8.

<sup>500</sup> Duru and Umurtak 2015: 77-8. The excavators postulated the presence of 6-7 inhabitants per house in the absence of explicit justification. Moreover, in their latest publication, the excavators revised their earlier hypothesis. They posited that more than 50 houses have yet to be uncovered, with an additional potential 30 structures situated in the unexcavated area. When considering Multi-Room Building consisting of 25 rooms, the revised total of houses in Bademağacı was set at 120. The estimated population was recalculated to a minimum of 700 people, grounded in the assumption of 6-7 individuals per household. Furthermore, The revised inference indicated that the EBA II village endured for at least two generations. Umurtak and Çongur 2021: 4-6.

Bronze Age.<sup>501</sup> Despite the existence of Middle Bronze Age pottery at the site, no architectural remains dated to the MBA have been found.<sup>502</sup>

### **5.5. The Burial Tradition of Early Bronze Age Bademağacı**

The burial tradition in EBA II Bademağacı show similarities with the general tradition found in different regions of Anatolia (*in Appendix I*).<sup>503</sup> The deceased was placed into a large pithos which was closed with a flat stone, and then the pithos was put into a pit at a slight angle. Usually, bowls were put next to the deceased as grave goods. A total of 30 graves were found either in the streets or empty spaces outside of the houses and in some cases, they were placed beneath the house floor. Nevertheless, this number is extremely small compared to the number of inhabitants, but a cemetery has not yet been found around the höyük.

### **5.6. Early Bronze Age II Finds**

#### **1. Pottery**

Previous studies are two master's theses written on Early Bronze Age pottery of Bademağacı Höyük done under the supervision of Gülsün Umurtak.<sup>504</sup> In these studies, the assemblages of the Early Bronze Age II pottery were categorised based on their material, paste, surface treatment, firing process and production technologies, and ware groups were compared with other settlements located in the Burdur region to understand the degree of interactions through pottery.

Generally speaking, the assemblages of Early Bronze Age II pottery could be grouped into three ware groups based on its pastes: red slipped ware, black-grey slipped ware and brownish dark grey burnished. Red slipped ware group is the most

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<sup>501</sup> Duru and Umurtak 2015: 77.

<sup>502</sup> Duru and Umurtak 2008b: 16.

<sup>503</sup> Duru and Umurtak 2015: 78.

<sup>504</sup> Çongur 2018; Üstün 2004.

common ware group in Bademağacı with a paste differing from orange, reddish-buff, very light brown and different shades of these colours.<sup>505</sup> They are often of well refined paste with plant, mineral or little mica temper. In some cases, black, grey, greyish-black, light brown or orange core is visible in the paste. The most prominent feature of the red slip ware is that their inner and outer surfaces were slipped either in red, orange or shades of these colours. They have scratch, relief, spinneret and incised decoration as well as point, incrusté, swastika, impressed or painted decorations. They are either handmade or wheel made, and some are good quality while others of poor quality were used as kitchen or storage containers. Plates, bowls, pots, round and beak rimmed jugs are common forms of red-slipped ware group.<sup>506</sup>

The black-grey slipped ware group is often made of well refined paste with plant and fine mineral temper.<sup>507</sup> The colours of the paste are dark grey, grey, and very dark brown. In some cases, dark grey and black cores are visible in the paste. They are generally well fired, and their surface is well polished and slipped in black, grey or shades of these colours. Nevertheless, some of them were poorly fired and have grit and plant tempered paste. They have scratch, incrusté, incised, relief and spinneret decorations as well as point and nail decoration. Plates, bowls, pots and spouted jugs are common forms of the black-grey ware group. Like the red-slipped ware group, this ware group also contains samples of good and poor quality.

The brownish dark grey ware group is represented by a very small number of examples. They have well refined brownish dark grey paste with fine and medium sized mineral temper.<sup>508</sup> The technique used for making this ware group is rare: first thin edges were formed and inner side were completed, and then the outer surfaces

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<sup>505</sup> Çongur 2018: 11-2, 15-6; Üstün 2004: 10-1.

<sup>506</sup> Çongur 2018: 11-2, 15-6; Üstün 2004: 10-1.

<sup>507</sup> Çongur 2018: 12-7; Üstün 2004: 10.

<sup>508</sup> Çongur 2018: 18-9; Umurtak 1998: 1-12; Üstün 2004: 10-1.

were treated. The most prominent feature of this group of ware is well burnished shining internal and external surfaces. They are not well fired. Colour differences and stains occurred on the surfaces due to the poor firing. The thick slip is the same colour as the paste, brownish-dark grey or shades of it. Bead and incised decoration are common surface treatments. The most common form of this ware group is the bowl with an S profile, and there is a single pottery with a flat-rimmed bowl. According to Umurtak, the brownish Dark grey burnished ware group might have been one of the first local pottery productions, possibly its origin went back to earlier phases.<sup>509</sup>

Studies reveal that there was a common pottery production tradition in the Burdur region during the Early Bronze Age II that indicates direct and/or indirect relationships between different centres, but also shows local differences based on the centres due to the local environmental conditions.<sup>510</sup> These centres around Burdur are Karataş-Semayük, Kuruçay, Hacılar Büyük Höyük, İncidere Höyük, Üzümlübel, Çayırılık Höyük, Küçükalan, Gedikyapı, İlyas II Höyük, Kayalı II Höyük, Yusufça, Akça I and Büğdüz Höyük.<sup>511</sup> There are also other centres showing a similar pottery production tradition round the Isparta region such as Altınoluk, Kurusarı, Ayvalı Höyük, Ağıl Höyük, Akçipa Höyük, Çiçek Pınar Höyük, Dedemçam Höyük, Kozluçay Höyük, Taşlı Höyük, Kızıl Höyük, Şarpınar, Terziler and Çamharman.

The pottery tradition of EBA II Bademağacı also shows some similarities with distant proxies either in terms of form or decoration. These centres are Beycesultan, Kusura, Kaklık Mevkii, Karaoğlan Mevkii, Afrodisyas-Pekmeztepe, Iasos, Damlıboğaz, Küllüoba, Demircihöyük, Höyüktepe, Çiledir Höyük, Yortan,

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<sup>509</sup> Umurtak 1998: 7-8. Ware A, a grey coloured ware group of Neolithic pottery of Bademağacı Höyük that had been produced from the first settlement period determined at Bademağacı up to the Early Chalcolithic while gradually improved and became more diverse. But the proportion of this ware group decreased. Duru and Umurtak 2019: 33.

<sup>510</sup> Çongur 2018:214; Duru 2008:164.

<sup>511</sup> Çongur 2018; Üstün 2006.

Limantepe, Ulucak, Troya, Kumtepe, Poliochni, Thermi, and other centres from Central Anatolia are Alişar, Alacahöyük, Gözlükule and Mersin-Yumuktepe.<sup>512</sup>

## **2. Idols**

A significant number of idols were uncovered at Bademağacı. They have simple stylised human form and represent Mother Goddess.<sup>513</sup> Some of them have line decorations on their breasts.<sup>514</sup> Among them, one is in three-dimensional.<sup>515</sup> They were made of baked clay.<sup>516</sup> A flat marble idol was also found.<sup>517</sup> The idols found at Bademağacı Höyük represent the traditional idol style of the Burdur region.<sup>518</sup> According to the excavators, on some of the idols, they aimed to show the clothes of the Mother Goddess.<sup>519</sup>

## **3. Seals**

More than 120 seals were found in the EBA II phases of the site.<sup>520</sup> Seals have round, oval foot-shaped, triangular or square stamp surfaces. They often have a conical handle pierced for passing a string through.<sup>521</sup> Except for two examples, the surfaces of the stamps have geometric motifs or line-like decorations, dividing the surface into four sections like a cross. The seals were made either from stone or clay. There

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<sup>512</sup> Çongur 2018; Üstün 2006.

<sup>513</sup> Duru and Umurtak 2010b: 24; 2015: 77.

<sup>514</sup> Duru and Umurtak 2008c: 208.

<sup>515</sup> Duru and Umurtak 2008b: 19.

<sup>516</sup> Duru and Umurtak 2009b: 20.

<sup>517</sup> Duru and Umurtak 2009b: 20.

<sup>518</sup> Duru and Umurtak 2004b: 534.

<sup>519</sup> Duru and Umurtak 2015: 77.

<sup>520</sup> Duru and Umurtak 2010b: 24.

<sup>521</sup> Duru and Umurtak 2007b: 2008b: 19; 2009: 20; 2010: 24; 2011b: 14; Umurtak 2009: 3.

is also an example of a bronze seal with a square stamp surface and long thick stem.<sup>522</sup>

A lead stamp seal was also found in the debris soil from a mixed context with other finds which mainly belonged to the MBA. The material used and the motif on the stamp surface resemble the example found Alişar Level 12.<sup>523</sup> According to Umurtak, the high number of seals with similar surface motifs found in the different regions that are quite far apart from each other indicates that seals were not a personal or regional symbol, but instead that they had a universal meaning as an astral symbol. She argues that they could have been used on communal goods as well as being used as an amulet. At Bademağacı seals with similar surface motifs had been used since the EBA II/3 phases.<sup>524</sup>

The most common motif depicted on seals is a cross motif. It has a simple appearance and has been widely used in an extensive region. Umurtak asserts that it may have represented an ideographic or phonetic value.<sup>525</sup> This motif – a cross in a circle – also displays similarity with the seals found on the neck section of a burial pithos at Karataş-Semayük.<sup>526</sup> Machteld J. Mellink defined this motif as filling decoration on some contemporary seals and spindle whorls. Umurtak argues that the existence of similar symbols on both a seal and a burial pithos may indicate a common meaning related to death and even to the afterlife.<sup>527</sup>

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<sup>522</sup> Duru and Umurtak 2008c: 209.

<sup>523</sup> Umurtak 2002: 159-69. For detailed reading about the lead stamp found at Alişar Level 12 see von der Osten 1937.

<sup>524</sup> Umurtak wrote this article in 2002 but the stratigraphy of höyük is changed since that time. Therefore it is unknown if the layer that this lead seal was found in 2000 is still named after EBA II/3.

<sup>525</sup> Umurtak 2009: 5.

<sup>526</sup> For detailed information on the examples found at Karataş-Semahöyük see Mellink 1967, 1969 and 1972.

<sup>527</sup> Umurtak 2009: 5.

#### **4. Disk-Shaped Plaques**

Three small clay disk-shaped plaques with surface marks were uncovered, two from an area near to the storage room containing a large number of jars and pithoi in Multi-Roomed Building 2 (?) and the other from the Deep Trench 2.<sup>528</sup> Their diameters vary 2.4-3.8cm and thickness 1-1.2cm. Based on the classical Anatolian EBA chronological system and 14C dating results, they are dated to around 2600/2500 BCE.<sup>529</sup>

According to Umurtak, these three clay plaques were used to record the numbers of countable objects or animals. Due to the lack of symbolic representation for each number, numerical value may have been recorded as fingernail impression in a way that each fingernail impression could either refer to a single object or a unit. Umurtak suggests that because of the inherit nature of the plaques, the numerical value marked on them had been intended to be valid for a long time period, so then the objects represented by the marks should not have been consumed in a short time.<sup>530</sup> The fact that two of them were found in a storage room with a significant number of jars and pithoi strengthens this argument.

#### **5. Bulla**

A bulla bearing a seal impression was found in one of the rooms in Multi-Roomed Building 2 where the rooms were almost empty.<sup>531</sup> Even though the origin of the bulla is not yet known, Umurtak asserts that it could have been stamped in the settlement. Based on its surface marks, it is thought to have been applied to a piece of cloth that covers the mouth of a pithos or a large storage jar, or to a wood tablet. On the other hand, bullae with a seal stamp were not merely used for the security of

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<sup>528</sup> Umurtak 2009: 1-10.

<sup>529</sup> Umurtak 2009: 4.

<sup>530</sup> Umurtak 2009: 3.

<sup>531</sup> Umurtak 2010: 19-27.

the goods transported but also used for locking/closing the doors of rooms or used as a part of recording process of incoming-outgoing materials under the control of an administrative system. Therefore, Umurtak points out that along with the significant amount of seals and numerical tablets, this bulla is the indication of the existence of a pre-literate system of marking which was developed under an administrative system established in Bademağacı Höyük.<sup>532</sup>

## 6. Other Clay Objects

A large number of spindle whorls or loom weights, large beads and plain or decorated oven supports or pot stands, one rattle with handle were found.<sup>533</sup> Another group of clay objects are the brushes with triangular profiles.<sup>534</sup> A bird like clay object<sup>535</sup> and plug/stopper like clay object<sup>536</sup> were also found. A miniature table with a round top and three legs decorated with lines and a miniature container were other clay objects found at Bademağacı.<sup>537</sup>

## 7. Stone Objects

A group of limestone objects was found at the northwest section of the Trench A.<sup>538</sup> They are approximately 300 pieces in shape of drop, slightly tapered on one side and rounded on the other. Their diameters and thickness vary between 4.5-13.4, and 0.7-0.9cm respectively. They were all found together and their function is not yet known. Besides them, the number of stone and bone tools and items found at the site is not very high.<sup>539</sup>

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<sup>532</sup> Umurtak 2010: 22-3.

<sup>533</sup> Duru 200b: 589; Duru and Umurtak 2009: 20; 2011b: 14.

<sup>534</sup> Duru and Umurtak 2009b: 20; 2010b: 24.

<sup>535</sup> Duru and Umurtak 2007b: 10.

<sup>536</sup> Duru and Umurtak 2008c: 208.

<sup>537</sup> Duru and Umurtak 2004b: 534.

<sup>538</sup> Duru 2000b: 589.

<sup>539</sup> Duru and Umurtak 2015: 77.



## 8. Metal Objects

A significant amount of metal objects were uncovered together in two very large jars found *in situ* in a room outside the house (thought to be the town gate) at the south section of the höyük (the Main Gate) and possibly related with the thick, large stone walls built during the later phases of the EBA II.<sup>540</sup> A cluster of metal objects was also found in one of the large storage jars and consist of a bronze spearhead, a bronze hand axe, and two silver pins with decorated large heads. A golden ear plug is another metal object found in the other large jar. Besides these, within two jars, a cluster of metal objects which were stuck to each other in the form of an ingot lump was found on the floor. The metal finds consist of beads, a pin with a head and a bronze seal. Half of a silver bowl or a plate made from a fine sheet of silver less than 1mm thick were also found on the floor of the same area. A well-preserved dagger of copper or bronze and some pins, exclusively one with a large spherical head, were found.<sup>541</sup>

### 5.7. Faunal Remains

Most of the faunal remains were collected from the ENII period and many bone objects used as tool or decorative items were found in this phase. The majority of mammalian fauna consists of sheep and goats (51%), cattle (23%) and pig (17%).<sup>542</sup> (*Tab. 6*) Faunal remains show that herding and breeding of domestic flock was carried out by the first inhabitants of Bademağacı Höyük. Based on the postcranial bones size, sheep and goats were domestic, but wild sheep and goat bones were also found. During the Early Neolithic II 40% of the caprines were killed off at the age of 4 years, and 30% were killed off before 2 years old. A similar slaughter pattern continues during the Late Neolithic and Early Chalcolithic Periods.<sup>543</sup> Sheep (65%)

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<sup>540</sup> Duru and Umurtak 2010b: 24-5; 2011b: 14.

<sup>541</sup> Duru and Umurtak 2009b: 20.

<sup>542</sup> De Cupere et al. 2008: 367-405.

<sup>543</sup> De Cupere et al. 2008: 375, 385-6.

are predominant during the Early Neolithic but the proportion of goat (50%) increased during the Late Neolithic and continued to increase during the Early Bronze Age II. The slaughtering patterns of sheep and goats indicate that they may have been kept for secondary products, particularly dairy products. These herding strategies were maintained during the Early Bronze Age II.

Table 6: Taxonomic composition of the mammalian remains from all periods, after De Cupere et al 2008: 377, Table 5.

	Level				
	EN I	EN II	EN	LN-ECh	EBA II
European hare, <i>Lepus europaeus</i>	9	27	.	1	2
Lesser mole rat, <i>Spalax leucodon</i>	.	.	.	.	1
Rodentia indet.	.	4	.	.	.
Wild cat, <i>Felis silvestris</i>	.	3+2?	.	.	.
Brown bear, <i>Ursus arctos</i>	.	2	.	.	.
Red fox, <i>Vulpes vulpes</i>	3	12	.	7	2
Roe deer, <i>Capreolus capreolus</i>	12	60	.	.	5
Fallow deer, <i>Dama dama</i>	15	116	3	15	9
Red deer, <i>Cervus elaphus</i>	4	17	1	2	6
Cervidae indet.	5	7	.	3	2
Antler	5	54	4	9	33
Dog, <i>Canis lupus</i> f. familiaris	23	47	.	1	6
Canidae indet.	8	8	.	.	.
Wild boar/domestic pig, <i>Sus scrofa</i> / <i>Sus scrofa</i> f. domestica	316	807	18	91	27
Wild goat/domestic goat, <i>Capra aegagrus</i> / <i>Capra aegagrus</i> f. hircus	39	186	9	26	18
Wild sheep/domestic sheep, <i>Ovis ammon</i> / <i>Ovis ammon</i> f. aries	80	283	9	24	18
Goat/sheep, <i>Capra/Ovis</i>	732	2023	28	193	70
Cattle, <i>Bos primigenius</i> f. taurus	341	899	58	278	135
Total identified	1600	4552	130	671	334
Unidentified mammals	1954	2742	14	82	61

Based on the size differences and the slaughtering pattern, pigs were domesticated but there are also examples of wild boar.<sup>544</sup> Pigs were killed before 2 years of age. The number of pig bones decreases from EN to EBA II. During the EBA II they

<sup>544</sup> De Cupere et al. 2008: 373-5, 385.

represent less than 10% of the assemblage. Pigs and cattle were kept for meat production during the Early Neolithic.

Cattle remains were few in number compared to sheep and goats. During the EN both young and adult cattle were slaughtered.<sup>545</sup> Based on their osteometric data, they were domestic and females were more abundant than males. There was a change in herd management during the Late Neolithic. Cattle herding was increased and there was a shift from meat production to dairy practice while there was less interest in sheep. During the Late Neolithic and Early Chalcolithic cattle were killed off at very young ages around 6 months. This kill-pattern indicates the early weaning of calves to make cow's milk available for human consumption. The importance of cattle increased during the Late Chalcolithic. On the other hand, during the Early Bronze Age II the animals were kept until old age. This may indicate that milk production lost its importance and the need for meat or animal power may have been increased. Due to the changing environmental conditions, there was a reduction in the size of cattle and sheep from Early Neolithic to the Early Bronze Age.

Cattle and sheep remains are almost all domesticated.<sup>546</sup> Faunal remains show that from the Early Neolithic hunting played a minor role in the subsistence of the site. Cervids (8%), some wild goats and boars were hunted, probably in the surrounding region. Especially wild goats and boars must have been common in the mountains surrounding the plain.

## **5.8. Plant Remains**

The finds of grain/seed/fruit concentrations and other hand-recovered finds including 22 samples from the Early Neolithic 1-4A, 1 from the Chalcolithic and 6 samples from the Early Bronze Age II/2-3 were analysed.<sup>547</sup> (*Table 7*)

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<sup>545</sup> De Cupere et al. 2008: 380-1, 385-6.

<sup>546</sup> De Cupere et al. 2008: 383.

<sup>547</sup> Fairbairn 2019: 233-42.

The *einkorn wheat* grains were the main sample component with three distinctive types.<sup>548</sup> Neolithic samples consist of wild and domestic without any distinctive form difference. Similar samples were also found at Höyücek. Early Bronze Age II samples lack the wild form and the majority is narrow form. *Emmer wheat* grains and chaff were found in an oven fill with many specimens together in the ENII phase.<sup>549</sup> *Free-threshing / naked wheat* with a distinctive round form and wrinkled surface is one of the common wheat grains. Similar form was also identified at Höyücek, Ilıpınar, Canhasan III. Even though *cultivated barley* was widely found since the Neolithic, the sample number is very small in Bademağacı and found only at the Early Neolithic I phases.<sup>550</sup>

Legumes were represented in large numbers. Especially, the Neolithic sample was dominated by legumes.<sup>551</sup> *Lentil* was the dominant legume from Neolithic to Early Bronze Age II. *Chickpea* was also represented by large numbers as well as *bitter vetch* and *pea*. *Grasspea* was also found but it was relatively less abundant compared to other legumes at Bademağacı.

Oak acorns and pear/apple fruits seem to be harvested regularly during the Neolithic. Two grape seeds and wild pear were found in the Early Bronze Age II and one cherry was found in the Neolithic.<sup>552</sup> Terebinth was also found in small numbers from the Neolithic phase. Weed seeds were found in limited quantities from Neolithic and Early Bronze Age II phases.

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<sup>548</sup> Fairbairn 2019: 234.

<sup>549</sup> Fairbairn 2019: 234.

<sup>550</sup> Fairbairn 2019: 236.

<sup>551</sup> Fairbairn 2019: 236.

<sup>552</sup> Fairbairn 2019: 236.



## CHAPTER 6

An integrative approach is developed to understand the nature of social organisation and the degree of urbanisation at the Early Bronze Age settlement of Bademağacı Höyük. In addition to the existence of economically differentiated social strata, leaders or elites might have sought and needed legitimation of their position in the community by participating in power/authority-related activities, which left archaeologically traceable material remains.<sup>553</sup> Such distinct material remains display specific patterns of visible distributed traces such as greater accumulation of local fine wares, greater access to exotic materials, having control over the surplus, as well as distinct architectural features. These architectural features encompass specific construction techniques, greater size, higher inner elaboration of buildings well as a preferred spatial location and position for the building and greater attention given to maintaining territorial boundaries.<sup>554</sup>

In this respect, artefact distribution, investigation of architecture, estimating population, space syntax and archaeoastronomical analysis will be employed to identify the function of buildings and measure inequality and heterogeneity, investigate the relationship between the social system and spatial organisation of the site, and determine whether the spatial configuration was associated to any celestial phenomena. Artefact distribution will be examined simply by marking on the plan of Bademağacı the artefacts found in each location and asking whether or not particular types of artefacts are associated with certain building locations within the settlement. In this chapter, the methodology of the space syntax analysis, estimating population

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<sup>553</sup> Bird and Smith 2005; Boone 2000; Gardner 2008; Robb 1999; Steadman 2011.

<sup>554</sup> Costin 1991: 1-56; Helms, 1992: 160-3; Steadman 2010; 2011; Wason 1994: 139-43.

and archaeoastronomical analysis will be provided and its limitation when applied to an archaeological data will be discussed.

## METHODOLOGY

### 6.1. Space Syntax

#### 1. Introduction

Space syntax is a set of techniques and theories for analysing spatial configuration based on topological descriptions in order to examine how spatial layout of buildings and cities influences economic, social and environmental aspect of societies. This graph-based technique was developed by architects Bill Hillier and Julienne Hanson with the aim to find a quantitative way to study space.<sup>555</sup> They argued that space is not only a by-product of some social and environmental factors, instead it is intrinsic to human activity. Thus, it is space that creates the relations between the function and the social meaning of buildings. Buildings create and order space, and the way the space is ordered gives insights to the way the relations between people are ordered.<sup>556</sup>

In order to examine the configurational properties of space, Hillier and Hanson determined a series of postulates as the basic principles of urban space and its social logic.<sup>557</sup> These postulates first describe the system units and label them; consider settlements as a bi-polar system and sequence in a way that one pole represents the domain of the inhabitants whereas the other represents the domain of the outlanders;

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<sup>555</sup> Hillier 2014: 19-48; Hillier and Hanson 1989: 1-25.

<sup>556</sup> Hillier and Hanson 1989: 1-2.

<sup>557</sup> Hillier and Hanson 1989: 95-7.

and asserts different syntactic descriptions of the properties of the system units to determine the degree of relations between these two poles quantitatively within it. By doing this, space can be described through a set of syntactic terms providing schematic representation of the space and calculation of the numerical relationship between the inhabitants and outsiders in it.

The space syntax technique includes axial line analysis, convex isovist analysis and convex spatial analysis (access analysis). These analyses address three basic concepts of space and each investigates it through a different layer of spatial structuring that co-exist within the same plan and reveals its different functional potentials.<sup>558</sup> Generally speaking, an application of space syntax consists of four main steps: representations of space, analysis of spatial relations, creating spatial models to infer, and establishing theories about the relations between spatial configurations and social structures.<sup>559</sup>

A number of investigations applying space syntax techniques have been done on prehistoric sites in the Anatolian region. In her paper, Marion Cutting focused on issues of applying space syntax techniques to archaeological data, and discusses her investigation on the site of Hacilar.<sup>560</sup> She examined two different levels: Neolithic Level VI and Chalcolithic Level IIA. Cutting applied access analysis to the most complete building of Hacilar Level VI. The result displays a simple configuration with a high degree of permeability. However, due to the fragmented data of Level VI, the reconstruction of the settlement access pattern could not be derived. On the other hand, with a bounded settlement layout in which buildings had clear ground-floor entrances Hacilar Level IIA provides sufficient data to apply access analysis. The results show that Level IIA was a defensive settlement where buildings were deeply embedded within it. Individual buildings of Level IIA have a low permeability.

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<sup>558</sup> Hillier 2007: 116 and 2014: 19-48.

<sup>559</sup> Hillier and Hanson 1989: 82-142.

<sup>560</sup> Cutting 2003.



Cutting avoided reconstructing the missing data and emphasises the danger of creating a misleading access graph from amended ambiguous archaeological data. She suggested using access analysis as a tool to think with and argues that the technique requires a minimum level of data with clear architectural borders such as walls and doors. According to Cutting, settlement layout should better be complete and individual buildings should be examined by taking account of the whole system rather than isolated constructions.

Guzin Eren also applied access analysis and measured depth values to compare and contrast Middle Bronze Age palaces: Sarıkaya Palace at Acmhöyük, Palace Q at Tell Mardikh and the Warshama Palace at Kültepe.<sup>561</sup> Her aim was to understand the physical operation of trade. Eren reconstructed the damaged parts of the palaces and their doorways, and analysed both the reconstructed and original data to reveal the degree of difference between the results. Then, she derived a hypothetical model for circulation to apply to Warshama Palace where there is no archaeological trace of doorways. Results of original data and constructed data are slightly different in terms of the symmetry/asymmetry and nondistributed/distributed degrees of a structure. According to Eren, even though she made small changes in terms of adding rooms, portico and courtyards to reconstruct palaces, the graph of reconstructed structure display different pattern of structure than the original data and change its degree of symmetry and distributedness.

Based on the relevant results, Eren argued that there is a difference in the circulation patterns, the functional division and the privacy concern of the palaces due to the fact that each palace had been constructed for a different purpose of trade operation. She identified Sarıkaya Palace as an administrative building, whereas Palace Q is a palatial complex. By applying access analysis to the model for the Warshama Palace, she reached the conclusion that the internal structure of a building and the movement within it are highly dependent on the location of doorways.

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<sup>561</sup> Eren 2010.

James Osborne applied visibility graph and viewshed isovist analyses to two important gates found at the Phrygian city on Kerkenes Dağ.<sup>562</sup> With Geoffrey Summers, they investigated the association between visibility and monuments and how inhabitants of the Iron Age city had perceived these two monumental entrances and cultic installations within them through analysing the arrangement of space and the symbolic content of the imagery. Analysis results suggest that the life-sized statue of a goddess and a pair of sphinxes carved in deep relief and a semi-iconic idol on a step monument that were placed at the Cappadocia Gate had a purpose of control and frame the act of entering the city rather than exiting it. Although cultic installations in the Monumental Entrance are too complicated to give a clear insight into their symbolic expressions, it is presumed that the gate might have been used only by the ruling elite. Osborne and Summers suggest a concept of symmetry that integrates with the architectural construction of these two monumental entrances and an intended distinction between insiders and outsiders that was given by using both the form of the structures and the inner installations with cultic monuments.

The research mentioned above shows that applying one or two space syntax techniques to a single building reveals limited information yet provides both schematic representations and quantitative results that can be compared and contrasted with other examples. The effectiveness of the techniques and their promise to give insight on the social structure can only be ensured if existing data provide a minimum level of information to represent whole settlement layout and the borders between units of space are well defined by walls and partitions. Only then, culturally variable spatial patterns related to the idea of function can be derived from space syntax techniques.

The research done on Seyitömer gives a good example of the effectiveness of space syntax techniques. In her Ph.D thesis, Laura Harrison combines these techniques with nonverbal communication and urban spatial arrangement and reads the results

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<sup>562</sup> Osborne and Summers 2014.

from an anthropological perspective for Phase B, the Early Bronze Age settlement of Seyitömer.<sup>563</sup> Results show that there is distinction between elite and non-elite residences and this distinction displays some degree of personalisation that reflects horizontal differentiation. She identifies four different types of community identity in Phase B: non-elite communities, elite communities, pottery production communities and ritual communities. These different communities influenced the organisation plan of the settlement on the basis of spatial clustering of neighbourhoods. Harrison argues that power was maintained by controlling the pedestrian movement in the settlement and by using special function rooms that signal a clear border between the public and private spaces in the elite residence.

Harrison used different theoretical approaches to derive a theoretical framework for her study and combined multiple methods to obtain a deeper understanding of complexity of social interaction in space. By doing it, she could identify the context of action and the operation of social mechanisms. Therefore, her results give a deeper insight on the social structure of the Early Bronze Age settlement of Seyitömer. The results of Harrison will be discussed in detail to compare and contrast them with the results of this study in following chapters.

## **2. Syntactic Analysis of The Settlement**

Space syntax considers a settlement as a bi-polar system in which one pole is a primary cell or building and the other pole is the world outside the settlement.<sup>564</sup> It recognises two different relationships: those among the inhabitants and those between inhabitants and outlanders. The structure of space is then considered as a function of these two relationships. In other words, the structure of space is seen as means of controlling the interaction between these two domains.

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<sup>563</sup> Harrison 2016.

<sup>564</sup> Hillier et. al 1987: 217-31; Hillier and Hanson 1989: 82-142.

Settlements, providing economic, social, cultural and environmental resources primarily to its inhabitants and to its visitors, consist of buildings linked by space.<sup>565</sup> These buildings such as dwellings, workshops, public buildings and so on are the basic spatial units termed as closed elements, and streets, alleys, squares and so on are open elements that create together a continuous system.<sup>566</sup> This system is formed by a combination of these two elements. The form of this system is termed as a global pattern and each settlement has its spatial individuality.

The main object of analysis is the configured space that can be as small as the floor plan of only one building or as large as the layout of a whole settlement. The aim is to describe this configured space in an abstract format based on its topology. Topology deals with the notion of continuity and provides definitions for continuity of space.<sup>567</sup> It reveals how elements of space relate spatially to each other. Thus, the same space can have different topologies. Through the identification of different topological properties,<sup>568</sup> a settlement can be turned into a topological space in which continuity can be expressed in terms of open and closed sets where each property can be represented as notions on a graph or as numbers to calculate the syntactic relations between elements. Numbers, however, are considered as two different notions: one, as introducing the different types of syntactic relations, and the second, the quality of space related with a particular relation.<sup>569</sup>

Abstraction of space begins with simplifying 3D space into a 2D floor plan.<sup>570</sup> In general, the main concern is with identifying the permanent boundaries such as walls and/or any inner installations that are non-portable including ceiling height or

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<sup>565</sup> Hillier 2007: 111.

<sup>566</sup> Hillier et al. 1987: 220.

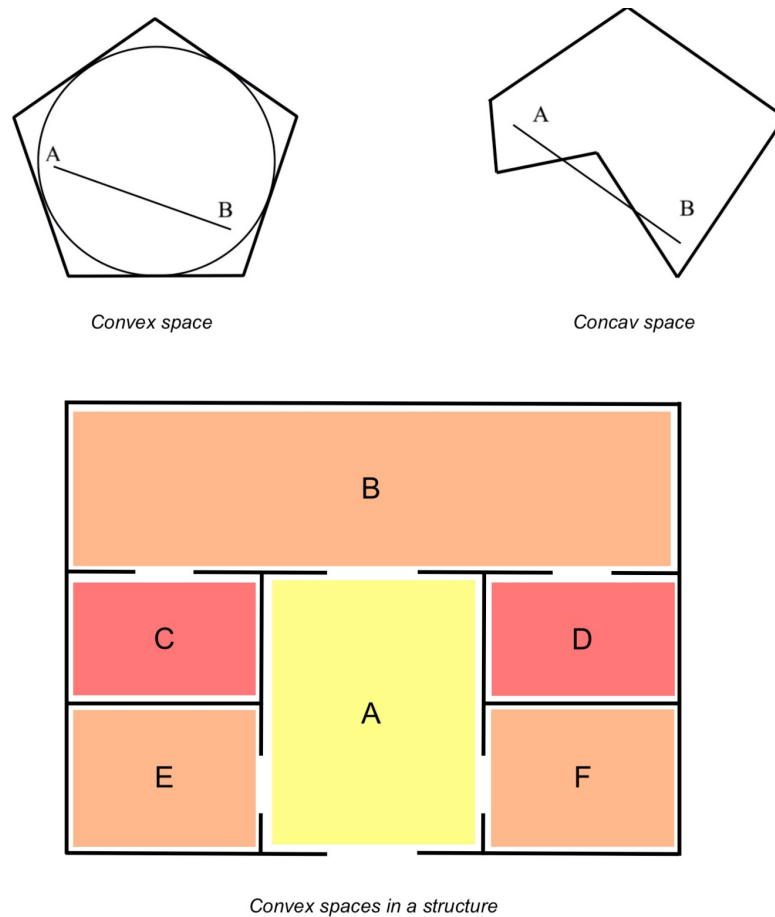
<sup>567</sup> Bredon 2013: 1-2.

<sup>568</sup> Hillier et al. 1976: 147-85. For further reading on topological properties of space see Han 2016: 2475-87.

<sup>569</sup> Hillier and Hanson 1989: 88-9.

<sup>570</sup> Behbahani, Nu and Ostwald 2014: 638-94.

levelled floor. By dividing space into a number of *convex spaces*, in which no line between any two points in the space cross the perimeter, (*Figure 32*) the largest and fewest in number, a *convex map* is generated. The convex map, which represents the convex organisation of the system converts 3D space into 2D.



*Figure 32: Convex and concav spaces, modified from Hiller and Hanson. 1989: 98.*

The movement of a person can be represented by a line and when more than one person is involved they create a space in a way that one sees the other. This has an irregular yet well-defined shape and it is called the convex isovist.<sup>571</sup> The movement of people changes the shape of this space and their spatial experience of it. A convex space tells you where you are in the system and it merely extends to the points

<sup>571</sup> Hillier 2007: 115.

visible and accessible, therefore, it is local.<sup>572</sup> However, an *axial line* is more global since it displays the extension of an organisation linearly as long as there is at least one point visible and accessible. An axial line, therefore, tells you your options of movement. In this respect, the term axuality refers to the notion of maximum global extension of such a system linearly and it is relatively more important for the strangers while they are moving within the system, while the term convexity refers to the notion of maximum local extension of the system in 2D and it is more associated with the inhabitants who are already in a particular space in the system.

A graph is used in order to display simplified space through an objective representation which makes syntactic relations that form spatial patterns identifiable and investigable.<sup>573</sup> In the graph, circles represent the space, and lines connecting to the circles represent their relations. A node refers to spaces related with each other in the graph. A graph which displays the main root of the system aligned through a chosen node is called a *justified graph (j-graph)*. Different nodes produce different layouts which reflect different points of view based on being in a different space in the system. The number of choices one can do for moving from one space to another and the number of spaces one has to pass through spaces, have social implications.

Beside the intrinsic properties of space like shape and size, configurational properties, extrinsic properties of space that give insight to how particular spaces integrate with others are revealed by creating a set of j-graphs. Each graph defines another point of view from a starting point where the whole system can be experienced. Hillier argued that the main properties of space are not intrinsic but rather extrinsic since using the graph one can calculate such variables associated with social interactions.<sup>574</sup> The shallowness or deepness of the layout indicates that the node is either integrated which means one does not need to pass through many other

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<sup>572</sup> Hillier et al. 1987: 222-4.

<sup>573</sup> Hillier 2014: 19-22.

<sup>574</sup> Hillier 2014: 19-22.

nodes, or segregated which means one should pass through many intervening nodes to reach its destination. The available choice of path is also another important fact related to these properties of space. (Table 8)

Table 8: The definition of individual spaces in a surrounding context in term of configurational properties based on the relation between movement and occupation. The integration and segregation in a system are created through combination of different space types. Adapted from Hillier 2014: 24.

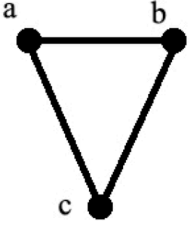
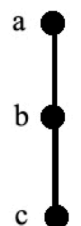
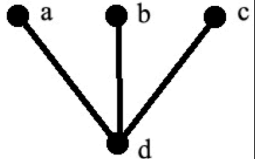
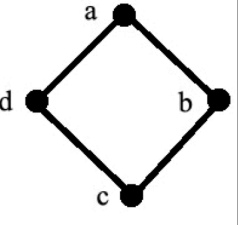
(1)	Space is a dead end	It offers no potential for movement and it is rather suitable for occupation	It is used to create integration
(2)	Space is on the way to a dead end, therefore one has to return through the same way	It controls movement to a (1) space or a dead end complex in form of occupancy, and the returning the same way is rather modest than being problematic	It is used to create segregation
(3)	Space is at least 2-connected and lies on at least one ring and there is one alternative way back	The form of occupation offers a movement where continuous circulation through spaces without repetition is possible	It is used to create segregation
(4)	Space is more than 2-connected, lies on at least two rings and has more than one alternative way back	The form of occupation endeavours the movement from other spaces on to itself, suitable for a communal space	It is used to create integration

The integration degree of a space is an important measure of configurational properties and integration analysis reveals certain order among the spaces where they have different functions. For instance, a gathering space is often more integrated than a private space.<sup>575</sup> The *integration value* of a space is calculated by first generating j-graph of the space as it is the root, and assigning a *depth value* to each space from beginning to the end. The depth value is a notion of how accessible the space is, and it gives insight into the interaction between inhabitants and visitors. Then, by summing the values, the *mean depth (MD)* of the system can be calculated from that space. Total depth is the mathematical measure of closeness. A value below 1 indicates an integrating structure, a value above 1 indicates a segregating structure. The means of these values reveal the degree of integration of the system as a whole in terms of normalisation of the value in order to compare different spaces.

<sup>575</sup> Hillier 2007: 25-27; Hillier 2014: 22.

By using j-graph, such syntactic properties can also be derived in order to describe the relation between two spaces. The description is determined in terms of its degree of symmetry-asymmetry and distributedness-nondistributedness.<sup>576</sup> For instance, if the relation of space a to space b is the same as the relation of space b to space a, the relation is called *symmetric*. If not, the relation is called *asymmetric* and this type of relation always involves some degree of depth since it requires a third space to go from one space to another. In order to compare different relations in a building *relative asymmetry (RA)* of each space is calculated and *real relative asymmetry (RRA)* is calculated to compare between different buildings. If there is only one route from space a to space b, the relation is called *nondistributed*. In contrast, if there is more than one independent route the relation is called *distributed* and this type of relation gives insight into the notion of boundary and likewise insight into control. (Table 9)

Table 9: The relation of space with respect to whole configuration, adapted from Hillier and Hanson 1989:94

The relation of space	symmetric	asymmetric	<u>nondistributed</u>	distributed
Figure of example				
explanation	The relation of a and b is symmetrical, as well as the relations of both with c.	The relations of a, b and c with respect to each other is not the same since from c one must pass through b to reach a, but not from c to b.	From d there is only one route to reach either a, b or c. The relation is symmetrical and <u>nondistributed</u> from the point of view of d.	There is more than one route from c to a. The relation is distributed and asymmetrical from the point of view of c.

<sup>576</sup> Hillier and Hanson 1989: 94, 96.



$$\text{Relative asymmetry} = 2 (\text{MD} - 1) / (n - 2)$$

MD is the mean depth, the sum of the depth value for each of the n spaces

n is the number of the spaces in the configuration

The degree of control is calculated for each space based on its immediate neighbours.<sup>577</sup> Each space has a specific number of neighbours, as a one unit of value among the neighbours. The *control value* of space is the 1/n, in other words, each space is partitioning n with its neighbours. A control value greater than 1 will indicate a strong control, below 1 will indicate a weak control. This configurational property is a local measure, on the other hand, the integration value is a global measure.

The *choice value* of space defines the mathematical betweenness.<sup>578</sup> The path which is considered as an origin with respect to each other space that is considered a destination has a value of 1, then each space gets a fraction based on how many choices there are at that level, and the process continues for each levels until the fractions sum again to 1 at the destination. In order to compare different spaces based on their choice value, they can be normalised by expressing each as a proportion of the total choice value in the system. The numerical features of spaces can also be displayed by colours assigned to numbers.

These representations and relational concepts of space provide quantitative and objective analysis of different patterns. Defining each space based on its surrounding context in respect to its relations to other spaces provides culturally variable spatial pattern related to the idea of function. A conclusion can be drawn from the axial organisation of the system, in general, as shallowness from a building entrance, from outside the system, and from the distribution of the integration core insight about the arrangement principles of the spaces as to facilitate and to control the movement

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<sup>577</sup> Hillier and Hanson 1989: 109.

<sup>578</sup> Hillier 2014: 23.

through the system. The integration core, where is the most integrated space in the system, is an important property related to how the settlement has emerged and its morphological type depends on the social structure.<sup>579</sup>

### **3. Limitations**

Space syntax techniques were developed by architects for architects in order to find a way to study space in architecture.<sup>580</sup> The aim was to perform such tasks as generating spatial organisations united with each other to form more complex structures that work coherently while representing notions or ideologies. When applied to archaeological data, space syntax inherently has theoretical, methodological and epistemological limitations and, therefore, receives strong criticisms.

In order to solve the problem, Hillier and Hanson used a reductionist approach but they were accused of underestimating the complexity of human nature. The critics often targeted the theoretical frame of the techniques and claimed that these techniques were ignoring symbolic meanings and provided insufficient information on society.<sup>581</sup> Space is described through movement and interaction.<sup>582</sup> The relationship between society and space is derived from the pattern of order that the configurational nature of space embodied.<sup>583</sup> Then, it is the function of space that reveals information on social structure.<sup>584</sup> In this respect, the description of space does not take into account the meaning of space. Analysis results are descriptions of the system through a certain set of syntactic relations in terms of its degree of symmetry-asymmetry, and distributedness-nondistributedness. However, these

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<sup>579</sup> Hillier et al. 1987: 227-9.

<sup>580</sup> Hillier and Hanson 1989.

<sup>581</sup> Lawrance 1987: 48, 52-3 and 1990; Leach 1978: 379; Hodder and Hutson 1986: 49-50; Parker Pearson and Richard 1997: 26-7.

<sup>582</sup> Hillier 2014.

<sup>583</sup> Hillier and Hanson 1989: 82-3.

<sup>584</sup> Hillier et al. 1987: 227-9.

syntactic relations do not clearly point to particular social norms. Instead, they identify possible movement.

The postulates perceive settlements as a bi-polar system in which poles correspond with inhabitants at one point and visitors at the other point. The continuity of the system is broken down by defined solid borders like walls and doors. Vinicius Netto argues that the theoretical framework of the space syntax does not define nor explain what the city actually is.<sup>585</sup> The morphology of the city has three main aspects: its growth, densification and expansion. Whether a city is defined as social entities or social processes, it has temporalities. In this respect, space syntax ignores its temporalities and treats the city as a static configuration of social choice.

Khadiga Osman and Mamoun Suliman underscore cultural differences in using open spaces which affect the calculation of the syntactic relations.<sup>586</sup> They point out that in non-western societies like Islamic and Middle-Eastern societies, the courtyards, even though an open space, are used as a part of the functional extension of house. The issue occurs due to over generalisation of space use based on the floor plan. In order to discuss the ambiguity, Osman and Suliman use ethnographical examples from three different regions: the Berber of north Africa, the Bari of the Amazon forest, and the Betsilo of Madagascar.<sup>587</sup> The dwellings of those three regions have no internal physical division so then the whole space is of one open unit. Their graphical representation displays the same morphology and one could infer this similarity as a reflection of similarity in cultural norms. However, in reality ethnographic studies show that each of these cultures has different inner installations and so different cultural regulation among its members.

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<sup>585</sup> Netto 2015.

<sup>586</sup> Osman and Suliman 1994: 189-204.

<sup>587</sup> For a detailed reading for the Berber of north Africa see Bourdieu 1973 and 1977; the Bari of the Amazon forest see Jaulin 1971; and the Betsilo of Madagascar see Kus and Raharijaona 1990.

The definition of units of space, such as a building or a room, may vary from region to region and period to period. Thus, representation of units ignores all the other variations of spatial connections like visual, auditory and olfactory as well as inner installations and the physical nature of both the unit itself and the connection between them.<sup>588</sup> The efficiency of a spatial layout is not determined only by the physical efficiency, but also by psychological efficiency influenced by visual, auditory and olfactory factors as well as by the possible existence of particular artefacts with special meaning.<sup>589</sup> Therefore, artefacts, which play an important role in social interaction, are also not taken into account either in describing the space or in calculating the syntactic relations.<sup>590</sup> The real challenge is to infer the morphologic pattern and relate it to social factors without taking into account how space had been perceived and experienced.

Nevertheless, space syntax techniques are highly flexible and promising adaptations. The theoretical issues are often overcome by combining techniques with other theories.<sup>591</sup> Kevin Fisher investigates the Late Bronze Age site of Enkomi, in eastern Cyprus, to understand how the new built environment transformed sociopolitical organisation and power relationships by changing how people interacted.<sup>592</sup> He integrates space syntax techniques with Rapoport's nonverbal communication approach to take into account of the meaning in the built environment.<sup>593</sup> Fisher asserts that both fixed-feature and semi-fixed feature elements play important roles in the creation of contexts of interaction. He modified the calculation by giving elaboration scale the to physical features of the space – block size, arrangement of courses and the presence of labor-intensive elaboration, doorways and so on. By

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<sup>588</sup> Bafna 2003; Fisher 2009a; Osman and Suliman 1994: 189-204.

<sup>589</sup> Montello 2007: 2.

<sup>590</sup> Boast 1987: 452-4.

<sup>591</sup> Example for the modification of space syntax technics see Benech 2007.

<sup>592</sup> Fisher 2009a: 439-57.

<sup>593</sup> Rapoport 1988 and 1990.

doing so, Fisher generated an access graph by altering the representation scheme and assigning a different form to each. This modification allowed Fisher to measure interaction potentials of both movement and encounter in a building. Thus, he could identify the types of social interaction that could possibly occur in a particular space.

Verhoeven's research provides another example for the modification of techniques. He applied space syntax techniques by using artefact distribution patterns at the Neolithic site of Tell Sabi Abyad, Syria.<sup>594</sup> The results revealed that there was a difference in the use of space between the early and later settlements. Tightly clustered regular buildings gave place to more spaciouly structured settlement layout. These alterations in settlement organisation and layout were accompanied with the changes in material culture. According to Verhoeven, these dramatic changes were the reflection of a shift from autonomous social groups to more open societies which maintained interregional contacts through the exchange of both goods and ideas.

The application of techniques becomes more complicated in an archaeological study since it requires clear boundaries for configurational features - walls and partitions. The nature of archaeological data is not always suitable for applying space syntax analysis. For example, if a building had an upper story and information on it is missing, calculations will produce different results than they should be. In contrast, when the information produces a large access graph, then it becomes more abstract and complicated.

Foster and Cutting provided examples for archaeological application of access analysis where they discuss how insufficient data may affect the results.<sup>595</sup> They applied access analysis to both insufficient data and proper data and demonstrated the differences between the results by comparing them. Foster suggested breaking down the data by dividing it into distributed and non-distributed subsystems when

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<sup>594</sup> Verhoeven 1999 in Cutting 2003: 18.

<sup>595</sup> Cutting 2003; Foster 1989.

dealing with a larger access map to avoid having an abstract and complicated graph. On the other hand, Cutting underscores that techniques require a minimum level of information about connected spaces where divisions were made by walls and partitions.

The use of space syntax increases in a variety of research areas including archaeology, criminology, information technology, urban and human geography, anthropology and cognitive science. A number of works have modified the space syntax to overcome theoretical, methodological and epistemological limits of the techniques based on their research questions. Especially archaeological studies aiming to understand social structures of prehistoric societies in which no written evidence existed developed the theoretical and methodological frameworks of space syntax by combining it with ethnographic studies, agent-based modeling, GIS-based built environment measures and so on. For some cases, material remains provide additional information so that graphic representation can be modified to embody more information in a graph.

Nevertheless, the essential attention should be given to architectural remains itself. Without adequate information, neither modified theoretical framework nor improved graphic representation would provide comprehensive inferences. As asserted, it is better to think of space syntax techniques as a tool to study built environment, compare numerical values of individual spaces with each other, and infer based on comparisons.

## **6.2. Estimating Population Size**

### **1. Introduction**

Analysis results emphasise significant size for open space within the settlement. Excavators suggested 800 individuals for the population size based on the assumption that there might have been possibly 40 more buildings in the unexcavated area and assumed that all buildings were dwellings. However, both

excavation and my analysis results indicate that not all buildings were used as dwellings, instead, some were used as storage facilities. Thus, the number of the additional buildings, that are placed along the slope in the unexcavated area, is 15. Therefore, population size needs to be calculated based on current data.

Scholars often acknowledge the interplay between societal scale and complexity in human society. For instance, according to Lewis Binford, population density was a main factor for the Neolithic and the Urban Revolutions defined by Gordon Childe.<sup>596</sup> Ember defined the development of a political system through its scope and differentiation as governmental regulation and measured it through two different units: the number of different types of political institutions, and the community size.<sup>597</sup> Supporting Naroll's argument, he suggested an allometric growth rate of the complexity of social systems.<sup>598</sup> Johnson termed this interplay between the population size and political complexity as scalar stress.<sup>599</sup> West and his colleagues linked this size-complexity relation to functionality and suggested that the Dunbar number, proposing a number of individuals for maintaining stable social relationships, was a result of internal dynamics of social systems producing optimal information transmission through the collective social behaviour.<sup>600</sup>

Feinman also recognised the size-complexity relation and its connection with human cognitive ability and processing information capacity and argued that there was a third part within this interrelation, which was a different mode of integration involving elements of agency and actions.<sup>601</sup> He defined complexity as the functionally differentiated social units and argued that the interrelation between the size and complexity may vary in groups that operate collectively as opposed to

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<sup>596</sup> Binford 1968 in Renfrew 2009: 281.

<sup>597</sup> Ember 1963: 232-3.

<sup>598</sup> Ember 1963: 244. Naroll's argument see Naroll 1956.

<sup>599</sup> Johnson 1982.

<sup>600</sup> West et al. 2020.

<sup>601</sup> Feinman 2011.

autocratically. According to Feinman, in relatively smaller groups where face-to-face communication is high, in the existence of such events demanding participation with high interaction, the extended household organisation may tolerate the need for a hierarchy as group size increases.

Archaeological demography uses a broad spectrum of data derived from the traces of human activities and material remains to give an insight on the relationship among inhabitants, social organisation, belief systems, architectural, technologic and economic practices of a society.<sup>602</sup> The main principle of the concept of archaeological demography relies on the assumptions that there is a continuity between processes and causative mechanisms that occurred in the past, thus they are observable in the present, and can be formulated.<sup>603</sup>

Today, the demographic texture of a society is used for a wide variety of purposes from modelling life tables<sup>604</sup> to generating digital simulation models for the long-term dynamics of human society and the transition from a hunter-gatherer society to a stratified society,<sup>605</sup> as well as to incorporate women into archaeological narratives of the past society through gender archaeology.<sup>606</sup>

## **2. Analysis Method**

To understand the structure and social dynamics, it is essential to estimate the population size from demographic data. In the general run of estimating prehistoric populations, archaeological data can be grouped as: human skeletal remains, artefact assemblages related to food consumption processes, food remains, ceramic density, architectural features, settlement size, the ecological potential. In archaeological

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<sup>602</sup> Chamberlain 2009: 275-6; Stephen and Sear 2020: 2; Whitelaw 2001: 15-37.

<sup>603</sup> French and Chamberlain 2021: 2.

<sup>604</sup> Howell 1976: 25-40.

<sup>605</sup> Chliaoutakis and Chalkiadakis 2016: 1072-116.

<sup>606</sup> French 2019: 141-57.



demography, population size is often calculated by a formula developed from ethnographic and historical studies on populations. (*in Appendix II*) displays studies which take into account different variables used for estimating prehistoric population size.

Cook and Treganza examined four archaeological sites based on the assumption that there is a functional relationship between the surface area of a site and population. They used ethnographic data of sixteen Yurok villages to generate a graph in order to develop a formula.<sup>607</sup> However, this formula works well only if there are uniform economic and social conditions.<sup>608</sup> Thus, De Roche counter-argued that the average number of people per residence varies greatly from one settlement to another and often shows an inverse ratio between the settlement size and the number of people per house.

Raoul Naroll suggested using the total roofed-floor area for the calculation. Unlike De Roche, he assumed the occupation zone of a person is static and the population size could be calculated based on the roofed-floor area as 1 person per 10m<sup>2</sup>.<sup>609</sup> Polly Wiessner criticised Naroll for not taking into account of different settlement types, especially hunter-gatherers.<sup>610</sup> She suggested flexible independent variables should change based on settlement type for the formula.

Todd Whitelaw asserted that there is not a simple relationship between people and space they occupied nor a formula to make a calculation to estimate population size for each culture.<sup>611</sup> He emphasised that space as a social product emerges from culture specific symbolic and functional demands as well as social concerns, he thereby suggested region-specific formula taking into account variations in

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<sup>607</sup> Cook and Treganza 1950: 231-3.

<sup>608</sup> De Roche 1983: 187-92.

<sup>609</sup> Naroll 1962: 587-9.

<sup>610</sup> Wiessner 1974: 343-50.

<sup>611</sup> Whitelaw 2001: 15-37.

architectural features within communities. Charles Kolb and his colleagues reevaluated more than 50 ethnographic studies and displayed that formula using the total roofed-floor area did not always produce accurate results due to the fact that in a multiple roomed dwelling each room may have a different function.<sup>612</sup> Thus, the mean family size differs from site to site. They argued that a projection for estimating population from ethnographic data works well only in its close proximity and among the sites having a similar degree of socio-economic conditions.

Some researchers include ecological potentials of a region as other parameters which have impact on population size. For instance, Fekri Hassan indicated the variety of resources and its dispersion, seasonal availability, short-term fluctuations as important parameters for the population size and growth rate.<sup>613</sup> According to him, population size and growth rate are not standardised features of a demographic texture of a society, instead they are results of culture-specific norms. He argued that even in cases when the living conditions began to drop, a population that reached an optimum size could manage to integrate themselves into the new social and economic changes that cause it. Hassan thought that there is an optimum carrying capacity for a population and estimated population size based on a standardised life table and the number of residences in respect to this optimum carrying capacity.

Based on the skeletal remains, Lawrence Angel created a population composition based on sex and age by comparing samples with his large database collected from different regions all around the world.<sup>614</sup> Angel preferred not to rely on any model life table, nor a modern life table since it does not reflect true bio-ecological conditions affecting a single generation or the one derived from ancient cemetery data due to the false assumptions that they were all contemporary and represented whole demographic features of a population. Thus, he thought that calculation of life

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<sup>612</sup> Kolb et al 1985: 581-99.

<sup>613</sup> Hassan 1978: 49-103.

<sup>614</sup> Angel 1969: 427-37.

expectancy is not realistic. Instead, he used a data-derived approach and calculated population size based on fecundity and length of generation estimated from the birth rate, death rate and infant death rate.

Wheat and his colleagues recovered significant numbers of bison bones of nearly 200 animals of both sexes and of all ages from an ancient arroyo found in the Olsen-Chubbuck site.<sup>615</sup> Bones were found either in groups of units (58 units in total) or non-articulated (more than 4000 pieces) places among the so-called bone bed. They evaluated historical and ethnographical documents on the different butchering processes among the Indian tribes living in close proximity to the region in order to configure a general butchering process including the processing of meat as fresh and dried and its consumption times. Based on the butchering process and the number of dogs thought to have lived at the site, they calculated an approximate number of people living in the village.

Another interesting method to estimate population size was developed by Christy Turney and Laurel Lofgren from the volumetric ratio of the vessels used for food consumption.<sup>616</sup> They argued that there is a relation between the cooking jar capacity and household size. Turney and Lofgren first create diagrams; one displaying the mean volume over time and another displaying the frequencies for different vessel types including cooking jars, serving bowls and ladles belonging to the Western Pueblo and historic Hopi Indians. By taking into account these graphics, they proposed that for an average serving of 692 cc, a jar of 8000 cc or larger could have been used for eleven or more people. Over time as the mean cooking jar capacity increased the serving bowl stayed constant and they inferred it as the indication of increasing household size. Based on the ethnographic studies on family and household size, they calculate the range of mean family size for all ethnographic villages and compared their results to evaluate the accuracy of their argument.

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<sup>615</sup> Wheat et al 1972: 1-180.

<sup>616</sup> Turner and Lofgren 1966: 117-32.

### 3. Limitations

Due to scientific and technological developments, current researchers can develop more complex formulas along with a wide variety of data sets in order to understand the demographic texture of a society and to estimate prehistoric populations. For instance, radiocarbon dating reduces the issue of uncertain contemporaneity.<sup>617</sup> Manipulating data in a digital environment helps to develop ethno-environmental models with more proxies and to visualise data to better interpret results.<sup>618</sup> Furthermore, it is possible to employ different simulation scenarios recognising more parameters that influence the human habitat and demographic texture of society.<sup>619</sup>

However, demographic data is often incomplete, inadequate and/or unreliable due to the inherent nature of archaeological data, where the various variables associated with population size within formulae exhibit varying degrees of visibility within the archaeological record.<sup>620</sup> Thus, the issue of contemporaneity and sampling of these variables makes the calculation disputable.<sup>621</sup> For instance, earlier populations were often mobile and their traces of activities were less recognisable, so then, they were poorly represented in archaeological data. Unfortunately, neither advanced computer software nor methodologies developed through cross-disciplinary studies would be able to overcome the vulnerability of remains against time. Thus, the results of quantified scientific methods should not be considered as a proven testimony.

Furthermore, the assumed functional relationship between specific areas—such as the surface area of the site or the total roofed floor area—and population size does not consistently align with findings derived from ethnographic studies. Additionally, these formulae exhibit effectiveness primarily within contexts characterised by

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<sup>617</sup> Williams 2013.

<sup>618</sup> Schmidt et al 2021.

<sup>619</sup> Chliaoutakis and Chalkiadakis 2016.

<sup>620</sup> Chamberlain 2009: 276.

<sup>621</sup> Schacht 1981: 131-2.

uniform economic and social conditions. Thus, the presupposition of a static occupation area per person proves problematic, as the use of space is not only culture-specific but also contingent upon regionally and temporally variable functional demands. This nuanced interplay underscores the complexities of population estimation within archaeological contexts.

How inhabitants use different task-related spaces at the individual and social level might also vary based on sex, age and status. The personal space, including workspace, shared workspace, and formal and informal social interaction might all vary from household to household or at the regional scale. The identification of the maximum capacity of a building also correlates with the inner configuration and segmentation of the structure.

In this study, the primary objective is to provide an approximate numerical value that allows for meaningful comparisons between the settlements mentioned. It is important to note that this computation is only a preliminary estimate and further research is still possible. Even though it is beneficial to use different types of data and methods to compare the results with historical and ethnographical data, in this study, it is only the architectural features that provide suitable material to calculate the population of the site. The calculation will be done based on the average living room size, derived from the buildings which were identified as dwellings and from the additional buildings assumed to have existed in the unexcavated area.

### **6.3. Archaeoastronomy**

#### **1. Introduction**

The interest in celestial phenomena in prehistoric societies has fascinated researchers and academics. The earliest investigations of archaeological materials from an astronomical perspective date back to the late 1600s and early 1700s. But it took two centuries to develop methodologies and another century to define its theoretical

frame for, today, the multi-disciplinary study field widely named as archaeoastronomy.

Although Stonehenge became very popular among astronomers, archaeologists were often skeptical about the results and criticised astronomers for ignoring archaeological contexts and for lack of accuracy of their results as well as anthropological information.<sup>622</sup> This divergence between astronomers and archaeologists forced astronomers to improve their methodologies and develop better perspectives to deal with archaeological materials.

Archaeoastronomy emerged as a multi-disciplinary field around the late 1960s and the 1970s and followed different development patterns in Europe and America. American researchers, working within a culturally informed discipline, used the term Brown Archaeoastronomy to describe the studies in which alignment is not the primary focus, instead, it concerns a much broader range of evidence from humanities and social science disciplines such as history, cultural anthropology, ethnography, history of religions, and so on.<sup>623</sup> In 1978, the Center for Archaeoastronomy was founded at the University of Maryland to promote the academic development of archaeoastronomy and ethnoastronomy around the world.<sup>624</sup> Europeans, on the other hand, used the term Green Archaeoastronomy and were concerned more with developing procedures including determining criteria for data selection, field work methodology and statistical analysis to verify their hypothesis.<sup>625</sup>

This distinction has disappeared over time and the term archaeoastronomy has become widely used all over the world. The studies seek to explain the questions of how people have perceived, conceptualised and used celestial phenomena, and aims

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<sup>622</sup> E.g. See Atkinson 1966: 212-6.

<sup>623</sup> Ruggles 2005: 52.

<sup>624</sup> The Center for Archaeoastronomy, <http://terpconnect.umd.edu/~tlaloc/archastro/>.

<sup>625</sup> Ruggles 2005: 169.

to understand what was the role of the sky in their culture.<sup>626</sup> Even though spatial patterning and monumental constructions seem to be the main objectives, the study also focuses on artefacts, iconography, inscriptions, historical documentation, written resources and actions related to celestial phenomena, and encompasses other social fields like archaeology, anthropology, ethnology and mythology together with astronomy.<sup>627</sup>

Some scholars were concerned that the term archaeoastronomy may be misleading due to the word astronomy being reminiscent of modern Western astronomy rather than the interest in the sky in ancient cultures. In respect to this concern, Clive Ruggles proposed the term cultural astronomy in 1993.<sup>628</sup> Cultural astronomy or astronomy in culture focuses on the relationship between human beings and the sky, and analyses material remains within cultural context.<sup>629</sup> In 1992 in Strasbourg, the Société Européenne pour L'Astronomie dans la Culture (SEAC, European Society for Astronomy in Culture) was established to promote interdisciplinary astronomical practice in its cultural context.<sup>630</sup> Following the European association, in 1996 in the U.S., the International Society for Archaeoastronomy and Astronomy in Culture (ISAAC) was founded with the help of the Center for Archaeoastronomy.<sup>631</sup>

Recently, a new theoretical perspective, skyscape archaeology, was proposed to avoid the modern prejudgment introduced by the word astronomy and to overcome terminological and conceptual issues discussed since 1970s.<sup>632</sup> The concept was proposed by Jan Harding and his colleagues where they discussed the close

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<sup>626</sup> Ruggles 2005: 19.

<sup>627</sup> Ruggles 2005: 20 and 2011: 1.

<sup>628</sup> Ruggles and Saunders 1993: 1-32.

<sup>629</sup> Carlson et al. 1999: 3-21.

<sup>630</sup> SEAC, Société Européenne pour L'Astronomie dans la Culture , <http://www.archeoastronomy.org/>.

<sup>631</sup> ISAAC the International Society for Archaeoastronomy and Astronomy in Culture, <https://www.archaeoastronomy.org/>.

<sup>632</sup> See Silva and Campion 2015.

relationship between the skyscape and life cycles that were anchored through the monuments at the Neolithic Thornborough monument complex in Yorkshire's North Riding, in the U.K.<sup>633</sup> Following Harding, Fabio Silva argued that like the landscape, the sky is a natural phenomenon which is open to such control over it so then it was turned into a cultural skyscape through human agency for particular strategies.<sup>634</sup> Skyscape extends the concept of landscape upwards and links the celestial phenomena with beliefs and practices.

Until recently, human beings could have experienced a star-studded sky that inspired science as well as literature, art, philosophy and religion. The view of sunsets, twilights, starry nights, meteors, comets, lightening, eclipses and more have mesmerised human beings. The temperature, vegetation, and river flow rates fluctuate according to seasonal rhythms, whereas tides are influenced by the gravitational force of the moon. All these phenomena are interconnected with the cyclical movements of celestial bodies. Therefore, to have control over the landscape, one needs to materialise the time so then it can be turned into a system of homogenous internals that provide time tracking.<sup>635</sup> Dependence on natural phenomena, the need for navigation on land and on sea and the need for tracking time are main motivations behind the interest in the sky.

## **2. Archaeological Data**

The archaeological material that embodied celestial aspects could be grouped into four categories: fixed structures; portable objects and symbolic expressions; written, and oral sources.<sup>636</sup> Some structures were associated with particular celestial objects in terms of either their architectural design or in their inner installations that point to a related direction in the sky. Well known prehistoric examples include Stonehenge

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<sup>633</sup> Harding et al. 2006: 28-53.

<sup>634</sup> Silvia 2015: 1-7.

<sup>635</sup> Raevsky 1998: 299-300.

<sup>636</sup> Cotte and Ruggles 2010: 1-12; Ruggles 2015a: 353-72.



(England) with the placement of stones in the circle that creates a symmetry axis deliberately aligned to the two solstices,<sup>637</sup> and Newgrange (Ireland), the Neolithic burial tombs, with an entrance allowing the winter solstice sunrise light pass through the chamber and reach at the end of the tomb.<sup>638</sup>

An antler plaque from Abri Blanchard (France), dated back to about 32,000 B.P., was used as a calendar.<sup>639</sup> A set of notches marked at the edges of the plaque was claimed to reflect azimuth and zenith positions of the Moon with its different shape of phases in the sky. Another example of a portable object is the bone disk from Mas D'Azil Ariège (France). The bone disk with a hole in the centre and pattern of marks on the periphery was suggested to have been used as a sun dial by allowing the tracking of the shadow.<sup>640</sup>

Babylonian astronomical diaries, *Enuma Anu Enlil* and *MUL.Apin*, are written examples of astronomical observations.<sup>641</sup> *Diaries* contains information on celestial bodies as well as weather, river level, historical events and price, the statement about the money and goods. In the texts, most of the constellations were identified as heraldic animals and divine figures. The *Enuma Anu Enlil* tablets contain a series of omens referring to celestial phenomena and associate them with the behaviours of divinities in order to predict the political and economic statements of the kingdom.<sup>642</sup> *MUL.Apin*, on the other hand, contain descriptions of recurring celestial phenomena including factual statements (the names of stars or constellations), the dates on which celestial phenomena occur, the intervals between the synodic phenomena of the celestial bodies, and duration of their visibilities, and the length of night.<sup>643</sup>

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<sup>637</sup> Magli 2016: 125-36.

<sup>638</sup> Bhatnagar and Livingston 2005: 18-20.

<sup>639</sup> Jégues-Wolkiewiez 2005: 43-62.

<sup>640</sup> Jégues-Wolkiewiez 2012: 1-3, 8-9.

<sup>641</sup> Neugebauer 1947: 37-43; North 2008: 36-66; Sachs and Hunger 1988.

<sup>642</sup> Rochberg 1996: 475-6.

<sup>643</sup> Hunger and Steele 2018.

### 3. Analysis Method

Archaeoastronomical analysis methods can be grouped into three categories: orientation analysis, light-shadow effect, and symbolic representations and artefacts related to celestial phenomena. Orientation analysis seeks a spatial pattern concerning a particular celestial phenomenon through the direction and/or location of the structures. The intended direction could be either over the horizon or on the horizon.<sup>644</sup> Light-shadow analysis aims to detect light-shadow interaction based on the changing light direction of the Sun during day and year.<sup>645</sup> Built environment and natural features could have been intentionally designed and used to spot the lunar rays on a particular surface during certain times of the year. Interpretation of the light-shadow phenomenon is a difficult process due to the physical state of the archaeological material. Thus, it requires additional evidence to support the idea that it was not coincidental but intentional.

Identifying symbolic representation or artefacts as being associated with celestial phenomena also requires additional evidence to support the related association. For instance, the Nebra Disc with golden depictions attracts many researchers' attention. There is a heated discussion going on about its symbolic meaning. The figures on the disc were identified as representing the sun, the moon and stars and it is suggested that the disc was used as a tool to make a solar observation.<sup>646</sup> For some scholars, the disk represents the main celestial objects in the sky and it possibly served as a ritual object during a ceremony.<sup>647</sup> Others argued that the depiction on the disc represents the rainbow that was believed to connect the sky and the earth in the Old Scandinavian beliefs.<sup>648</sup>

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<sup>644</sup> For further reading Ruggles 2015b.

<sup>645</sup> For further reading McCluskey 2015.

<sup>646</sup> Meller 2003 in Pásztor and Roslund 2007: 269 ; Schlosser 2002 and 2004 in Pásztor and Roslund 2007.

<sup>647</sup> Pásztor 2015: 1349-56; Pásztor and Roslund 2007.

<sup>648</sup> Davidson 1988: 171 in Pásztor and Roslund 2007: 271; Kristiansen 2010: 431-7.

## **Positional Astronomy**

In a starry night there are about 15 thousand stars visible to the naked eye, but only a few thousands can be easily seen because most of them fall near the limits of visibility. We often tend to remember only some patterns of bright ones, asterisms or constellations that refer to the specific regions on the sky. For an observer, all objects appear to be on a spherical surface called the celestial sphere.

The apparent motion of everything in the sky is due to the rotation of the Earth with an axis tilted by  $23.5^\circ$  with respect to the Sun's orbital plane. The daily sky motion resembles the turning sky as if celestial bodies are tracing out arcs around the celestial pole. This apparent movement is counter-clockwise when one looks towards the North Pole and clockwise when one looks towards the South Pole. The main daily events of a celestial body are rise, movement across the sky and across the observer's meridian, and set. Based on the latitude of an observer, the diurnal arcs of the celestial objects change. For instance, at the equator all stars rise on the horizon and move westward across the sky in semi-circles spending half the time above the horizon and half below. At the North and South Poles, stars move in circles between the poles and horizon and do not rise or set. These stars are called circumpolar stars.

### **- Coordinate Systems**

For astronomical positioning, it is assumed that the observer is always on the northern hemisphere.<sup>649</sup> A coordinate system is developed based on some fixed reference plane that passes through the centre of a unit sphere, the celestial sphere, and divides it into two equal hemispheres along a great circle. The position of an object on a unit sphere is determined by giving two angles. In archaeoastronomical studies, the horizontal system and equatorial system are mostly used.<sup>650</sup>

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<sup>649</sup> Karttunen et al. 2017:11-2.

<sup>650</sup> Ruggles 2015a: 460.

The horizontal system is based on the observer's point of view with a reference tangent plane of the Earth that passes through the observer and the horizon where it intersects the celestial sphere.<sup>651</sup> The highest point just above the observer is called the *zenith* and directly below is the *nadir*. They are the poles of the related horizon. Circles from zenith to the nadir that intersect the horizon perpendicularly are *verticals*. The circle that passes through north zenith and south is called *meridian* and the observer's meridian is the *celestial meridian*. The coordinates are altitude and azimuth. The *altitude* ( $a$ , elevation), which is measured up from the horizon toward the zenith along the a vertical passing through the object and the *azimuth* ( $A$ ), which is measured from the North point east-ward to the vertical of the object. (Figure 33)

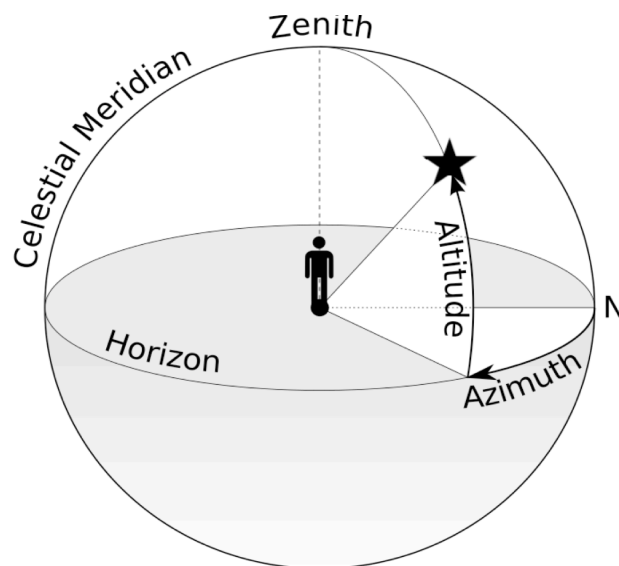


Figure 33: the horizontal coordinate system uses the observer's local horizon for the plane.

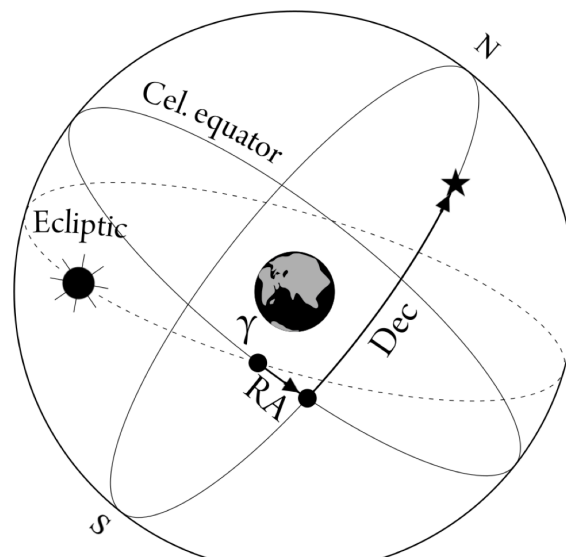
As a celestial object rises in the east, reaches its highest point on the celestial meridian and sets in the west, the coordinates altitude and azimuth changes by time. The coordinates of the same star at the same moment differ based on the location of

<sup>651</sup> Karttunen et al. 2017: 16-7.

the observer. Therefore, this locally framed coordinate system is merely used to determine the rise and set time of a celestial object.

Due to the fact that the direction of the rotation axis of the Earth and the equatorial plane remains relatively constant, they provide a suitable reference point for the equatorial coordinate system that is framed from the centre of Earth (geocentric) and so it is independent from the observer's location and observation time.<sup>652</sup> Therefore, it is widely used to specify the positions of a celestial object.

The intersection between the celestial sphere and the equatorial plane is the equator of the system. The North and South poles of the system are where the extension of the Earth's rotation axis intersect the celestial sphere.



*Figure 34: the equatorial coordinate system is widely used to determine the positions of the celestial objects.*

One of the coordinates is the angular degree of a celestial object from equatorial plane and it is called the **declination** ( $\delta$ ). It is positive to the North and negative to the South. The constellation Aries is considered as a fixed point called the vernal

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<sup>652</sup> Karttunen et al. 2017: 17-20.

equinox and the second coordinate, the *right ascension* ( $\alpha$  or *R.A.*), specifies the angle from the vernal equinox to the object along the equator measured counter-clock-wise. Both declination and right ascension are independent measurements from the location of the observer on the earth and not affected by the rotation of Earth. (Figure 34)

For archaeoastronomical studies, declination of a celestial object is very important because it gives the position of the object in the sky in the past.<sup>653</sup> This also helps to compare different orientation analysis results which are derived from different site locations on the Earth. The two coordinate systems are transformed from one to another by using a spherical trigonometry.

The declination of a celestial object based on a position (altitude and latitude) of an observer can be found by using a formula:

$$\sin \delta = \sin a \sin \lambda + \cos a \cos A \cos \lambda$$

$$\text{declination} = \arcsin \delta$$

$\delta$ : declination of a celestial object

A: azimuth of the celestial object

a: altitude of the observer

$\lambda$ : latitude of the observer

#### - Perturbations of Coordinates

Even though the position of a celestial object stays constant on the celestial sphere, its coordinates change due to several reasons.<sup>654</sup> Precession is the slow turning of the orientation of the rotation of the Earth's axis due to the gravitational forces of the Sun and Moon on Earth's equatorial bulge. The Earth's axis is not constant, it wobbles slightly. Today, it is inclined by 23°30', called obliquity, currently diminishing of 48"

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<sup>653</sup> Magli 2016: 5.

<sup>654</sup> Karttunen et al. 2017: 22-7.

per century and varies between  $25^\circ$  and  $22^\circ$ .<sup>655</sup> As a result vernal equinox moves 50.2 arc-seconds/year – a complete round is of 25800 years- along the ecliptic<sup>656</sup> and so the coordinates of a celestial body do and slightly shift its position. Most of the astronomical maps and catalogs use a specified moment in time, epoch, as a reference point like the noon of January 1, 2000.

Another factor that effects coordinates is nutation. It refers to perturbation caused by the Moon due to its orbit that is inclined with respect to the ecliptic. Nutation has 18.6 years of cycle and it changes ecliptic longitudes and obliquity of the ecliptic. The coordinates of a nearby celestial object also change due to the parallax. When the distant object is observed from different points, it is seen in different directions. The degree of parallax depends on the distance of the observer from the object. As the Earth revolves around the Sun, the apparent positions of the nearby stars seem displaced. Due to the radius of the Earth's orbit. This phenomenon called annual parallax. Diurnal parallax occurs due the daily rotation of the Earth and depends also on the latitude of the observer.

Aberration is another phenomenon that causes the apparent displacement of celestial objects due to the fact that velocity of the observer affects the true positions of the objects because of the finite speed of light. The orbital motion of the Earth is 21", and the diurnal aberration is about 0.3".

The lights of celestial objects are refracted by the atmosphere and depend on the atmospheric conditions along the line of sight, the altitudes of objects appear higher above the horizon than their true positions. The degree of refraction is higher right above the horizon and lower at the zenith of the observer, and it depends on atmospheric pressure and temperature which change the density of the air. For

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<sup>655</sup> Magli 2016: 3.

<sup>656</sup> Fukushima 2003: 494-534.

archaeoastronomical analysis a standardised formula is developed based on average conditions.<sup>657</sup>

In astronomical catalogues and maps, the positions of celestial objects are given as mean places so that the effects of parallax, aberration and nutation are removed. The effects of diurnal aberration and refraction on the other hand depend on the location of the observer. There are some annually published catalogues for the positions of the specific reference stars that are corrected for precession, nutation, parallax and annual aberration.<sup>658</sup>

#### - Measurements and Analysis

A structure or any other construction complexes could have embodied a function or meaning related to the celestial object through its size and/or shape, construction material, its acoustic features, its position in relation to settlement plan and/or surrounding landscape. To analyse whether the occupants of an archaeological site were ever interested in the sky and the celestial objects, data should ideally be investigated within two different scales: investigation of the site based on the whole site plan within the surrounding environment, and investigation of selected structures by themselves. The term orientation refers to the measured direction of a structure's façade or axis with respect to the local meridian. The term aligned refers to the cases where the direction of a structure is an intentioned preference toward a target. Orientation analysis aims to identify possible astronomical intention through orientation direction towards the horizon where a celestial object rises or sets during the specific time of the year. Even though vertical observation alignment is not common all over the world, it is better to keep in mind the possibility. Nevertheless, for the prehistoric archaeological remains of which only the foundation of the construction could be uncovered, it is almost impossible to make any suggestions for observation of a celestial object right up in the sky.

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<sup>657</sup> Scheafer 2000: 125-6.

<sup>658</sup> Varaksina et al 2015.



A field survey is important to take the related measurements for an archaeoastronomical investigation. This would help to develop a culturally relevant framework as well as to better understand the position of the structure and its relation with the whole settlement within its surrounding environment. In all cases, the spatial data elements should be identified, recorded and processed to obtain high quality data. Data required by this analysis are geographical coordinates and elevation of selected structures, the azimuths of the selected structures and the city gates, and horizon profile that reveals topographical features of the surrounding environment.

The mean axis of a structure is determined through the best-fit back and front lines and the azimuth is measured from the true North to the monument's axis. Several arc minutes accuracy is acceptable.<sup>659</sup> The minimum altitude value for horizontal observation over the horizon is identified by taking into account the surrounding environment. The declination is calculated based on the latitude of the structure and the minimum altitude value (horizon altitude).

The accuracy of measurements is very important to produce credible outcomes. GNSS satellite based navigation system, Gyro Station techniques and Geodetic techniques are useful for positioning, mapping and navigation process. GPS, total station, hand-held compass and clinometer are instruments that could be used for determining the position of the structure and its mean axis.

In order to take into account landscape and visibility, the “heywhatsthat” web page<sup>660</sup> or Google Earth program could be used. “heywhatsthat” computes an interactive horizon profile, displays 360° of the Earth’s surface from the chosen point and creates its visibility cloak. Based on the azimuth chosen on the interactive horizon profile, the web site generates a vertical elevation profile. Google Earth provides a virtual globe by using satellite images. It allows examination of visibility lines,

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<sup>659</sup> Prendergast 2015: 339.

<sup>660</sup> Heywhatsthat web page <https://www.heywhatsthat.com/faq.html>.

calculation of the distance and azimuth between different points, and generates an elevation profile between two points.

An astronomy software or digital planetarium could be used to reconstruct the ancient sky simulation. These computer programs take into account the atmospheric effects and allow simulation of all celestial phenomena based on the chosen time and location. Some digital planetarium programs also provide options to integrate digital images of the site with the sky simulation.

To compare analysis results with other study results orientation diagrams, azimuth and declination histograms could be used as graphical tools. An orientation diagram helps to visualise different orientation directions of chosen structures. A histogram is a graphical tool that is often used to display the relative frequencies of the statistical results.

#### **4. Limitations**

Archaeoastronomy emerged as a multi-disciplinary field to understand prehistorical astronomical practices and knowledge in Europe and America around the late 1960s. Green and Brown Archaeoastronomy, respectively, followed different developmental processes with different study concerns. Today, the discipline recognises that there had been a relationship between societies and the sky and materialisation of this relationship is considered as a cultural product. Researchers infer the meaning and conceptualisation of celestial objects and phenomena through the spatial and symbolic patterning in archaeological remains. Thus, the debates between Green and Brown Archaeology still exist both in discussing current issues in archaeoastronomy and in theoretical and methodological practices in the field.

In this study, the architectural remains of the structures were only stone foundations not more than 30-40 cm high. Therefore, the condition of the structures only allowed horizontal orientation analysis. The entrance of the selected constructions has been examined to understand whether the axis of the construction was aligned toward any

celestial bodies. In this respect, the azimuth has been measured for each construction. Then, by using a website horizon profiles are generated to determine the horizon height for calculation of the each declination value. Declination will be calculated based on the related horizon height and latitude. Regardless of their locations, buildings with the same declination values are pointed in the same direction in the sky. Therefore, declination value is an important parameter for investigating the orientation patterns among the sites located in different regions. A software program, Stellarium, has been used to determine whether the declinations of the gates match with a potential celestial object. The Sun's path diagram has been generated to estimate the rising and setting position of the sun. An orientation diagram has been created to compare the results with those from other sites. Like the declination value, it is widely used as another tool for comparing archaeoastronomical analysis results.

### **6.3. Discussion**

The human-built environment relationship has never been static but dynamic in terms of the sphere of influence, the frequency of interactions and activities fostered. The monumental architecture of the Pre-Pottery Neolithic was often adorned with anthropomorphic and/or zoomorphic sculptures and enriched with stone cups and bowls, shaft straighteners, decorative plaquettes.<sup>661</sup> The construction work of these monumental structures may have necessitated the close cooperation of several groups of hunter-gatherers. Archaeological evidence suggests that these groups belonged to a single cultic community.<sup>662</sup> For some sites, the maintenance of the structures was a series of activities repeated regularly.<sup>663</sup> These monumental architectures were served for communal ritual activities, while symbolic expressions used for decoration are

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<sup>661</sup> Detailed information see Mazurowski and Jamous 2000; Özkaya and San 2007; Rosenberg and Redding 2000; Stordeur and Abbas 2002.

<sup>662</sup> Notroff, Dietrich and Schmidt 2016: 73.

<sup>663</sup> Dietrich and Dietrich 2019; Dietrich et al 2012.

thought to represent the different groups.<sup>664</sup> The monumental architecture of the Pre-Pottery Neolithic lasted for millennia over a wide region in Upper Mesopotamia.

During the Pottery Neolithic period, the human-built environment relationship changed its texture and shifted into domestic buildings with complex internal installations and elaborate architectural features.<sup>665</sup> Belief systems and ritual activities embodied symbolic expressions and they were conceptualised by the relationship between the dwellings of living and their dead, which was materialised through plastered human skulls, animal bones or reliefs, human and animal figurines, ceramics and inner decoration of the buildings.<sup>666</sup> For instance, skull cult practices, the earliest examples associated with architecture going back to the PPN,<sup>667</sup> became common practice suggesting multiple intentions and motivations. The practice linked the living with their deceased within the confines of their houses.<sup>668</sup> These social practices left highly visible material assemblages.

Repetitive practices, including building the house itself in the same location, were highly structured and symbolic. Based on the archaeological remains, households operated as an institutionalised units and buildings not only housed the living and their deceased but also played an important role to create place-bound identities and memories through manipulating ancestral imagery.<sup>669</sup>

During the Chalcolithic period, the human-built environment relationship appeared to diverge on the Anatolian plateau.<sup>670</sup> The architectural features of the buildings, as

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<sup>664</sup> Detailed information see Mazurowski and Jamous 2000; Özkaya and San 2007; Rosenberg and Redding 2000; Stordeur and Abbes 2002.

<sup>665</sup> Notroff, Dietrich and Schmidt 2016: 73.

<sup>666</sup> E.g. Atakuman 2015; Düring 2005; Hodder and Pels 2010; Verhoeven 2002; Voigt 2002; Watkins 2006.

<sup>667</sup> Dietrich and Dietrich 2019; Dietrich et al 2012.

<sup>668</sup> Notroff, Dietrich and Schmidt 2016: 73.

<sup>669</sup> E.g. Baird et al 2016; Hodder and Cessford 2004; Kuijt 2001; Özbaşaran 2012.

<sup>670</sup> Yıldırım and Steadman 2021: 370-93.

well as practices performed within them, displayed varying characteristics at the different sites. The materialisation of symbolic expressions changed its context from buildings to portable objects, including figurines, stamps, and ceramics.<sup>671</sup> Nevertheless, some practices such as infant and child burials in walls and under floors, continued during the Chalcolithic. This shift was not only indicating the change in social structure but also the change in the relationship between people and buildings and its role in the management of social relations.

The economic strategy, that had forced communal activity during the Neolithic and Chalcolithic Periods, gave place to individual labours,<sup>672</sup> and, physical boundaries separating residents within the settlements such as upper town and lower town, as well as from outsiders<sup>673</sup> clearly indicates stratification in social organisation during the Early Bronze Age. In this respect, the Early Bronze Age I differs from the Late Chalcolithic in terms of the emergence of labour specialisation, increase in metal artefacts,<sup>674</sup> various regional ceramic traditions<sup>675</sup> and increasing importance of the textile industry as a secondary product of animal husbandry,<sup>676</sup> and long distant trade.<sup>677</sup> The appearance of megaron and apsidal plan houses were interpreted as an ideal response of inhabitants who seek privacy, boundary controls and territorial strategy in their settlement.<sup>678</sup>

During the Early Bronze Age II, the concept of prestige reflected in material culture stands out in terms of the rise of more complex metal industries<sup>679</sup> and the

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<sup>671</sup> E.g. Erdoğan 2009; Yıldırım and Steadman 2021: 370-93.

<sup>672</sup> Schoop 2014: 421-46.

<sup>673</sup> Düring 2011: 69-85.

<sup>674</sup> Lehner and Yener 2014: 529-57.

<sup>675</sup> Burney 1958: 175-209; Yakar 1985 in Düring 2011: 264.

<sup>676</sup> Sherratt 1983: 90-104; Schoop 2014: 421-46.

<sup>677</sup> Efe 2007; Şahoğlu 2005.

<sup>678</sup> Warner 1979: 133-47; Steadman 2000: 164-99.

<sup>679</sup> Lehner and Yener 2014: 529-57.

construction of monumental buildings and palaces<sup>680</sup> were considered materialised manifestations of the elites of the societies in a form that legitimised their positions and their conception of value.<sup>681</sup>

Except for Karataş, the sites mentioned in this study had a pre-planned site plan with some degree of standardised architectural form, rather than sites that grew spontaneously. This indicates deliberate planning and organisation, suggesting the presence of a governing entity or collective intent that established these arrangements to achieve specific objectives. Such planning necessitated organising elements according to social norms and needs of the period. In this respect, space syntax analysis meets the need to decode the order and/or relationship that formed the village.

Space syntax recognises two different relationships. They are those among the inhabitants and those between inhabitants and outsiders, and the organisation of space is viewed as a mechanism for regulating the interactions between these two domains. The analysis measures inequality and heterogeneity in terms of accessibility, visibility, deepness and control values. The analysis results will address where people are, how they move and how they experience the space, and give numerical values of individual spaces to indicate the degree of relationships between these different spaces with respect to the whole configuration. The aim is to gain insight into the form and role of buildings in maintaining territorial strategy, boundary controls and canonical communication of the inhabitants of the EBA II of Bademağacı Höyük.

Archaeoastronomical analysis is applied to investigate whether or not in the planning and layout of the settlement other factors apart from the ones that will be investigated through access analysis, population estimation and artefact distribution were taken into consideration. There can be many such miscellaneous factors, but I have isolated

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<sup>680</sup> Çevik 2007; Sagona and Zimansky 2009: 172-224; Düring 2011: 69-85.

<sup>681</sup> Sagona and Zimansky 2009: 172-224.

two of them which I believe can be fundamental for the specific study of the EBA. One is related to beliefs and rituals which we have already seen were important since the Neolithic. The second is time estimation, a vital observation for agriculture which constituted the economic basis of EBA society. More specifically, by applying archaeoastronomical analysis, the aim is to investigate possible relationships between the built environment and celestial objects that might give information about the practice of beliefs and rituals related to celestial phenomena as well as a calendar system to track time. For example, agricultural activities require careful planning both for planting and harvesting as well as managing how to consume the resources until the next harvest. At the same time, beliefs are often associated with celestial objects. In this respect, buildings could either play a symbolic or a functional role in linking the belief system and calendar system to the celestial object. But, any positive outcome without additional evidence will not be considered as a definitive conclusion.

The distribution of artefacts aims to reveal the location of different types of artefacts and their quantities in each location to see if there were specific concentrations at various places in the settlement. If such concentrations were found, an interpretation of these is made in relation to whether or not they indicate any particular social or economic roles of the inhabitants of the specific places, hence hitting elements of heterogeneity or inequality amongst the inhabitants.

## CHAPTER 7

### ANALYSIS

#### 7.1. Data Preparation

In order to run space syntax analysis, a digitised EBA II settlement building layout is needed. In total, eleven maps, which were published over the course of excavations that continued annually from 1993 to 2010, were used to create a contemporaneous building layout in the light of related excavation reports.<sup>682</sup> The latest version of EBA II settlement layout which was published in 2011 was used as a base map for digitalisation process.<sup>683</sup> (*Figure 29*) The names given to the buildings differ from those defined for the architectural structures at the time of excavation. Naming of the buildings was done after the analysis results, therefore in some cases buildings which were identified as two different buildings in the excavation report may have been defined as a single building in this study.

In 1993, the excavations started in the two trenches in the grid squares of C5-D3/IV1 (named as trench A) and C5-DI/V4 (named as trench B) in the north section and the south section respectively.<sup>684</sup> In the grid squares of C5/IV1, no architectural remains, small findings or ceramics dated to the EBA II were found.<sup>685</sup> In the grid squares of C4-5/IV1, the architectural remains display three different phases. In the grid squares

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<sup>682</sup> Duru 2000a: Plate 8; 2000b: Plate 8; 2002: Plate 35; 2004b: Plate 35, Plate 49; Duru and Umurtak 2008b: 17, Fig.3; 2008c: Plate 29, Plate 30, Plate 31; 2009b: 17, Plan1; 2011b: 9, Fig.1.

<sup>683</sup> Duru and Umurtak 2011b: 9, Fig.1.

<sup>684</sup> Duru 1996: 786-90.

<sup>685</sup> Duru 1996: 786.



of C5-DI/V4, the walls of the EBA buildings were built with relatively large stones and the architectural remains display three different phases.<sup>686</sup>

In 1994, excavation continued in the grid squares of C5-D3/IV1 and the trenches were enlarged toward the east section, D3-4/IV1.<sup>687</sup> Excavators identified five different architectural phases. The earliest building has a stone foundation built of relatively small stones, while the buildings of the latest phases were built using relatively medium size stones.<sup>688</sup>

In 1995-1996, excavations continued in the grid squares of C5-D4/IV1 and the trenches were enlarged towards the north C5/III3-5 and the south D2/IV2.<sup>689</sup> At the end of the excavation seasons of 1996, cultural sequences and stratigraphy of the höyük were identified. Based on this identification, EBA was divided as EBA I with two building phases (4<sup>th</sup> Building Level and 5<sup>th</sup> Building Level) and EBA II with three architectural phases (1<sup>st</sup> Building Level, 2<sup>nd</sup> Building Level and 3<sup>rd</sup> Building Level).

During the 1997-1998 excavation seasons, it was understood that the two building phases, 4<sup>th</sup> Building Level and 5<sup>th</sup> Building Level, do not show any relation with the architectural features of the later phases,<sup>690</sup> in the following year publications of these phases were identified as Late Neolithic phases.<sup>691</sup> Moreover, it became more clear that there was no distinct separation between the 2<sup>nd</sup> Building Level and 3<sup>rd</sup> Building Level, instead these two phases were related with each other organically, in

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<sup>686</sup> Duru 1996: 789.

<sup>687</sup> Duru 1997a: 149-58.

<sup>688</sup> Duru 1997a: 152.

<sup>689</sup> Duru 1997b.

<sup>690</sup> Duru 2000a: 205.

<sup>691</sup> Duru 2004b: 522; Duru and Umurtak 2019, Plate 21/1-2.

other words, the reconstruction was continued without interruption.<sup>692</sup> At the end of the 1998 excavation season, in the grid squares of C5-D1/IV1-III1, the area in front of the megara, there were no EBA architectural features or ceramic assemblages, instead, Late Neolithic and Early Chalcolithic phases began to appear from just 5-10 cm below the surface of the höyük.<sup>693</sup>

The settlement layout of the EBAlI phases was better understood during the excavation seasons of 2004, 2005 and 2006.<sup>694</sup> It became clear that the earliest phases of the EBAlI settlement display almost symmetrical layouts at the east and west sides of the höyük. According to excavators, the EBAlI/3 settlement was planned in advance by inhabitants who established the site when the höyük was an uninhabited empty mound. The layout gave the impression that the structures had been built at once within certain rules. Thus, it seemed that the rules had been followed for a long time period.

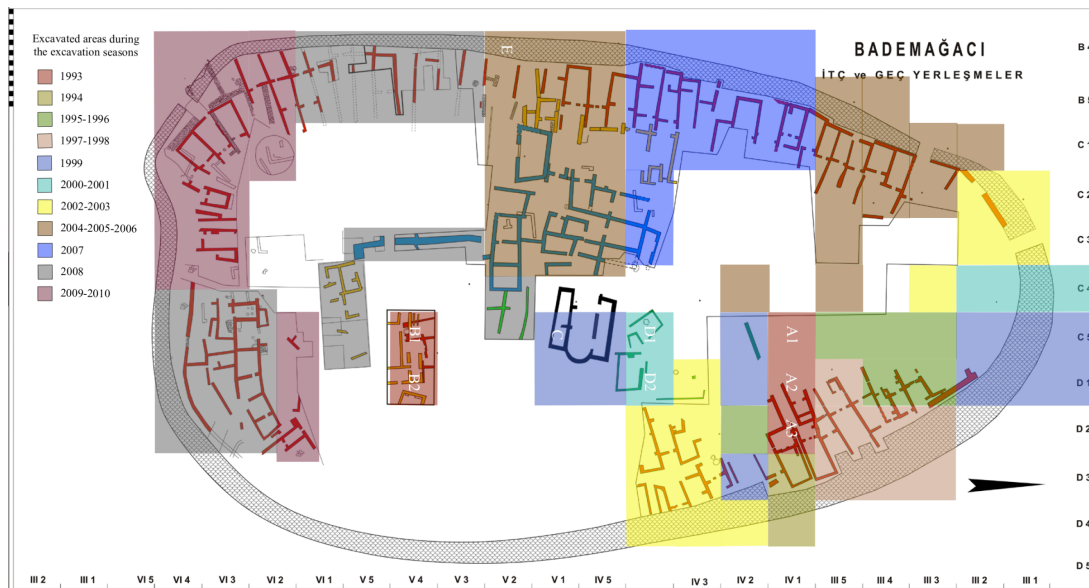


Figure 35: *Bademağacı* excavation progresses over the years, adapted from Duru and Umurtak 2011c:31

<sup>692</sup> Duru 2000a: 205.

<sup>693</sup> Duru 2000a: 207.

<sup>694</sup> Duru and Umurtak 2008c: 210.

**Building 68** was considered as two separate buildings called Megaron 1 and Megaron 2 by the excavators and dated to the 3<sup>rd</sup> Building Level. According to reports, they had been built separately and buildings were later renovated, especially their antae.<sup>695</sup> The reconstruction sequences of the ante walls of Megaron 1 were so complicated that it was difficult to follow the sequences.<sup>696</sup> The two small architectural features right in front of these two megara were also considered as separate buildings, as Buildings 4 and 3, despite the fact that they displayed similar construction techniques and dated to the 2<sup>nd</sup> BL.<sup>697</sup> In the following years' excavation reports, Building 4 was called Megaron 11 and the narrow space between Building 4 and 3 was identified as a corridor to enter to the buildings.<sup>698</sup>

**Building 70**, named Megaron 3, was uncovered during the 1997 excavation season and considered as a megaron with two inner rooms and it was observed that the building had been repaired many times, which made it difficult to understand its plan.<sup>699</sup> During the 1999 excavation season, excavators aimed to reach the back wall but they couldn't find it and assumed that this construction was used as a gate.<sup>700</sup> However, this assumption had been made before they discovered the village gates where they observed clear cuts in the glacier to open a passageway into the settlement.<sup>701</sup> Here on the other hand, they did not observe any unusual pavement features suggesting a passageway. Thus, inside the building, there was a round shaped stone pavement found which is almost similar to the one found in Megaron 1. Therefore, by taking into account that the existence of inner divisions that lead them

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<sup>695</sup> Duru 1997: 719-20.

<sup>696</sup> Duru 2000a: 206.

<sup>697</sup> Duru 1997: 719-20.

<sup>698</sup> Duru 2000a: 198.

<sup>699</sup> Duru 2000a: 196.

<sup>700</sup> Duru 2000b: 587.

<sup>701</sup> Duru and Umurtak 2008c: 213.

to first identify the building as a megaron and the lack of passageway mark in the glacier, it is reasonable to consider this construction as a building.

**Building 71**, named Megaron 4 in the reports, was another building uncovered during the 1997 and 1998 excavation seasons.<sup>702</sup> This building has additional architectural features, a hook-shaped thin wall, within its northern ante wall and round-shape small stone pavement within antes. Like the other megaron buildings, especially like Megaron 1, this building had been also through many reconstruction processes, some additional extensions were even done 1m above the older stone foundations and the reconstruction sequences of the ante walls were also so complicated that it was difficult to follow the order of construction sequences.<sup>703</sup> Like Megaron 3, this building was also later considered as a gate after the 1999 excavation season since excavators could not find the back wall.<sup>704</sup> This assumption also had been expressed before they discovered the village gates where they observed clear cuts in the glacier to open a passageway into the settlement.<sup>705</sup> Thus, it was later argued that the building was not the main gate but probably used as a secondary gate.<sup>706</sup> However, like Megaron 3, here also we see a round shaped stone-pavement in the ante of the building that we see inside Megaron 1 as well as a hook-shaped thin wall found in its ante, and inner division suggesting the entrance into a room. Moreover, there is no unusual feature observed in the glacier suggesting a passageway right in front of the construction. In this respect, it is reasonable to consider this construction as a building.

**Building 72**, named Megaron 6 in the reports, was uncovered during the 1997-1998 excavation seasons.<sup>707</sup> It was considered as a building with an inner room in the

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<sup>702</sup> Duru 2000a: 196-7.

<sup>703</sup> Duru 2000a: 206.

<sup>704</sup> Duru 2000b: 587.

<sup>705</sup> Duru and Umurtak 2008c: 213.

<sup>706</sup> Duru and Umurtak 2010b: 21.

<sup>707</sup> Duru 2000a: 198.

shape of a trapeze. In the empty space between the glacier and Building 72 and Building 73, 7 pieces of metal objects were found stuck together including 2 pins, an arrow head, a hair ring, a slim chisel, a drill and a piece of flat plaque.<sup>708</sup>

**Building 73** was considered as two different buildings as (Megaron 7 and Megaron 8) with plans considered as gates.<sup>709</sup> However, they both had been through many repairs and had door entrances that display similar architectural features found in the other megara identified as buildings. The east side of Megaron 7 was also documented as highly destroyed and the fact that the back wall of the building was not found may have been the result of the destruction rather than the indication that the structure was used as a passageway. Thus, the glacier does not show any passageway which we observe for the four village gates uncovered during the later excavation seasons and the glacier itself does not have a smooth surface to make walking on it easy, instead, it has a surface of randomly laid stones.<sup>710</sup> In this respect, the identification of a passageway with Megaron 7 and 8 seems problematic and need a re-consideration.

**Building 74**, named Megaron 9, is the last of the megara built side by side along the glacier.<sup>711</sup> The foundation of the northern wall of the building was built with unusually large stones. This wall was identified as a part of a fortification wall. Although walls of similar thickness were found in the northern section during the excavations carried out in the following years, it was quite doubtful whether they were part of a defensive wall. Instead, it was later thought that these walls were built to protect animals that were kept in the open space.<sup>712</sup>

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<sup>708</sup> Duru 2000a: 202-3.

<sup>709</sup> Duru 2000a: 198.

<sup>710</sup> Duru 2000a: 199.

<sup>711</sup> Duru 2000a: 198.

<sup>712</sup> Duru and Umurtak 2008c: 213.

**Building 67**, named Building/space 10, was uncovered during the 1998 excavation season. The place where the building was found was mentioned as difficult to excavate.<sup>713</sup> The plan of the structure was not clearly identified. A burial of 8-10-year-old child placed in a large pithos was found 80 cm beneath the stone construction of the building. The burial was displayed in the form of a pithos on the map published in the excavation reports of 1997 and 1998.<sup>714</sup>

**Building 69**, was named building 4 during the earliest excavation reports<sup>715</sup> and later identified as Megaron 11, and was considered as a megaron with multiple rooms.<sup>716</sup> The excavation report emphasised that the southern ante wall of **Building 70**, additional constructions of the ante walls of **Building 71** and a part of the northern wall of **Building 72** seem to have been constructed around the same time.

**Building 61** named building 15; **Building 65** named building 16; and **Building 64** named building 17 were identified as separate megaron type buildings dated to the EBAlI/2 and 3 phases.<sup>717</sup> According to the excavation report, they resembled architectural features found in the grid squares of D1-D3/ IV1-III3.

**Building 62** named Building 14; **Building 63** named building 13; and **Building 66** named 12 were also identified as separate megaron like buildings dated to the EBAlI/3 phase and they resembled similar architectural features found in the grid squares of D1-D3/ IV1-III3.<sup>718</sup> A burial was found in a pithos right under the larger of the two stone-circle architectural features adjacent to the northern ante wall of **Building 66**.<sup>719</sup> This burial was dated to the EBA II.

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<sup>713</sup> Duru 2000a: 198.

<sup>714</sup> Duru 2000a, Plate 18.

<sup>715</sup> Duru 1997: 719-20.

<sup>716</sup> Duru 2000a: 199.

<sup>717</sup> Duru 2004b: 533.

<sup>718</sup> Duru 2004b: 533.

<sup>719</sup> Duru and Umurtak 2008c: 207.

The northern section, the grid square of C3-C5/III1-5, was excavated from 1995 to 2003 and the only architectural features were dated to Early Neolithic phases and no ceramics or small finds were found within the debris removed 20-25cm above the Early Neolithic phases.<sup>720</sup> The lack of small finds dated to the EBA suggest that this space was intentionally left empty. According to excavators, this space was used to keep the animals together and the thick walls, which were found along the glacier at this spot were possibly protecting the animals from outside danger.<sup>721</sup>

The northern gates were uncovered during the 2004 excavation season.<sup>722</sup> In the grid of C1/III3, the glacier had a 4m wide opening of which both sides were bordered with well-lined stone rows and the soil was compressed. The second gate, KG2, was uncovered in the grid of C3/III1 and displays exactly the same features as KG1. Excavators removed a part of the glacier between the KG1 and KG2 and discovered a 2m wide open space between the 80cm wide walls built adjacent to the glacier.<sup>723</sup> This bordered space was also identified as a gate and named KG3. Remains suggested that KG3 was built earlier than the other two. Excavators assumed that the entrance to the village was through a possible inner door.

The buildings found at the northwest section, were all dated to the EBAlI/3 and they underwent some reconstructions during their use over time and their antae were extended towards the centre of the mound.<sup>724</sup> **Building 1**, named building 20 and building 21; **Building 2** named building 22 and building 23; and **Building 3** named building 24 and building 25 were identified as megaron and there were no architectural features dated to the later phases of the EBA found in front of these buildings as was observed in the northeast section of the höyük.

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<sup>720</sup> Duru 1997a; 1997b; 2000a; 2000b; 2002: 571; 2004b.

<sup>721</sup> Duru and Umurtak 2008c: 214-5.

<sup>722</sup> Duru and Umurtak 2008c: 202-3.

<sup>723</sup> Duru and Umurtak 2008c: 202-3.

<sup>724</sup> Duru and Umurtak 2008c: 203-4.

**Building 11** named 29, and **Building 13** named 31 displayed exactly the same architectural features with **Building 68**.<sup>725</sup> In the plan, where the settlement layout was displayed in general, a pithos, like the one found in **Building 66**, was drawn right in front of **Building 13** but in the text only the one found in **Building 66** was mentioned.<sup>726</sup>

**Building 12** named building 30 was considered as a gate since the back wall was not found. Thus, it was later argued that the building was not one of the main gates, but probably used as a secondary gate.<sup>727</sup> But as we see above, here there was not a pathway cleared in the glacier suggesting an entrance into the village and the form of the entrance from the centre of the höyük displays exactly the same architectural features as the other megara. In the three plans published in 2008, Plate 29, Plate 30 and Plate 31, some pieces of wall were drawn at the back side of **Building 12** however, in another plan this small wall piece was not represented.<sup>728</sup> Therefore, it is prejudgmental to identify this building as a gate when we do not have any indication to support the identification.

The architectural features in the grid squares of B4-C3/IV5-V2, also called trench E, were considered complicated since multiple architectural phases were uncovered in close proximity.<sup>729</sup> In the east side of the trench E, a very dense stone debris was found in the deposit up to 1.5m below the surface. Right below this debris, architectural features were found and dated to the latest phases of the höyük, possibly representing the transition phase from EBA II to EBA III. 50-70cm beneath these architectural features, the building foundations of the previous phases were

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<sup>725</sup> Duru and Umurtak 2008c: 205.

<sup>726</sup> Duru and Umurtak 2008c, Plate 29.

<sup>727</sup> Duru and Umurtak 2010b: 21.

<sup>728</sup> For Plates 29-31 see Duru and Umurtak 2008, and for the other plan Duru and Umurtak 2008b: 17, Fig.3.

<sup>729</sup> Duru and Umurtak 2008c: 205.



uncovered.<sup>730</sup> These architectural remains suggest *a building complex* that extended under the remains of the church. The rooms seem to be connected with each other through inner doors and the ceramic remains, which were found *in situ* in one of the rooms, suggest that Multi-Room Building 1 was dated to EBA II. Unfortunately, it was impossible to suggest whether or not all the rooms found in this spot belonged to one building complex since some rooms were grouped together and have inner connections.<sup>731</sup> In some of its rooms, a significant number of ceramics were found *in situ*. A stone stele was also uncovered in this complex but there is no information given in the excavation reports.<sup>732</sup>

In the space between the end of the architectural plan of this building complex and the beginning of the megaron, two thick-walled structures with completely different characteristics from those uncovered at close proximity were found.<sup>733</sup> Some part of one of the structures was built on the tip of the ante of *Building 13*. Thus, similar building construction techniques were also detected in the middle of the trench E and those were built above the ones which were built at the same time as the megaron. Therefore, these thick-walled structures are thought to be built during the later phases. These structures were, later, considered as representing the transition phases from the EBAII to the EBAlII.<sup>734</sup>

*Buildings 14-27* were almost all uncovered and identified as megaron buildings dated to the EBAII/1-2.<sup>735</sup> Some of the megaron had a single room while some had two rooms.

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<sup>730</sup> Duru and Umurtak 2008c: 206.

<sup>731</sup> Duru and Umurtak 20008b: 17.

<sup>732</sup> Umurtak 2021: 39.

<sup>733</sup> Duru and Umurtak 2008c: 206.

<sup>734</sup> Duru and Umurtak 20008b: 18.

<sup>735</sup> Duru and Umurtak 2009b; 2010b: 20-1.

The structures named as Multi-Room building 2, found in the grid squares of C4-D1/VII-4, displayed similar architectural plans to those found in *Multi-Room Building 1*, instead of megaron like plans, here at the most southern section a row of rooms was uncovered (*Buildings 34-39*).<sup>736</sup> Thus, in the far south of this row of rooms, there were also some spaces surrounded by walls (*Buildings 40-44*) but their plan was not clear. According to excavators, during the pre-planning construction process of the village, special attention had been given to the southern section of the höyük.

*Building 29* displayed different characteristic features in its architectural plan.<sup>737</sup> A door had been opened on the west corner of the back wall and this wall was fine-built and preserved up to 1m in height. On the same wall there was also a space at 70cm high from the ground identified as a window. There were also additional thick-walled structures where the back door opens to the south. According to the excavators, these walls were undoubtedly fortification walls, and this building was the main gate of the village. Excavators also emphasised that the door at the back wall and the window were later closed to prevent passage. In the following year, on the other hand, it was understood that these thick-walled structures were built as parallel to each other toward the outside of the glacier after the destruction of all megaron-like buildings.<sup>738</sup> In one of the places within these walls, a significant number of vessels were found *in situ*. In one of the vessels and in the debris which filled the rooms, a large number of bronze objects, silver pins, a silver bowl and a golden ear plug were found.<sup>739</sup> However, the ceramics and metal objects were dated to the EBaII.

In *Building 30*, a significant number of metal objects were found in two very large vessels.<sup>740</sup> They were an ear plug made from a golden plaque, a silver plate and two

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<sup>736</sup> Duru and Umurtak 2009b: 19.

<sup>737</sup> Duru and Umurtak 2010b: 21.

<sup>738</sup> Duru and Umurtak 2011b: 12.

<sup>739</sup> Duru and Umurtak 2011b: 12.

<sup>740</sup> Duru and Umurtak 2010b: 24-5.

silver pins, a bronze or copper pin with head and a drill, and an arrow head and a hand axe.

The latest phases of EBaII were identified often in the centre of the mound and represented by walls built with very thick and coarse stones.<sup>741</sup> Unfortunately, none of these architectural features gives a clear structure plan. In the following years' excavations, it became clear that these thick-walled structures represented the transition phase from the EBaII to the EBaIII.<sup>742</sup> The structures found in the grid squares of C4-5/V5-VI1 were also dated to the transition phases.

The architectural features in the grid square of C5-D1/IV4 were dated to the latest architectural phases of the höyük as the Middle Bronze Age.<sup>743</sup> However, during the following years' excavations these architectural features were considered as representing the transition phase from the EBaII to EBaIII.<sup>744</sup> According to excavators, even though some ceramic remains dated to the MBA were found in this spot, no building remains dated to the MBA were found.

In the grid squares of C3/V3-5, there was a thick-walled structure oriented at north-south direction found and dated to the last phases of the EBaII.<sup>745</sup> Similar buildings were also observed in the grid squares of C3-4/V5-VI2 and B4-5/V5-VI2. According to excavators, it became clear that during the end of the EBaII phases the centre of the höyük especially south of the Church was densely occupied.

***Stone-circle architectural features*** were first uncovered during the 1999 excavation season and identified as silos.<sup>746</sup> In the map published in the excavation report of

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<sup>741</sup> Duru 2004b: 533.

<sup>742</sup> Duru and Umurtak 2008b: 18; 2009: 18.

<sup>743</sup> Duru 2002: 562-3; 2004b: 520-1, 535.

<sup>744</sup> Duru and Umurtak 2008b: 16.

<sup>745</sup> Duru and Umurtak 2011b: 10-1.

<sup>746</sup> Duru 2000b: 588, Plate 8 and 11/1.

1999 as Plate 8, they were represented by bold circles. The first two of them were found about 3m south of the 3.5m long thick wall in the grid square of C5/IV2.<sup>747</sup> There were no additional architectural features found related with this wall. Another stone-circle architectural feature was found in the grid square of C5-D1/IV4 and identified as possible storage facilities.<sup>748</sup> During the excavation seasons of 2002-2003, two other stone-circle architectural features were also found in **Building 66** and drawn on the map but not mentioned in the text.<sup>749</sup> However, in the following publication, it was revealed that in the largest circle a skeleton was found within a pithos buried in an E-W direction with the mouth facing east.<sup>750</sup> A small beak-spouted jug was also placed right beside the head of the deceased as a grave good. Other four stone-circle architectural features were drawn on a plan representing Middle Bronze Age remains (which were later considered as representing the transition phase from the EBA II to the EBA III)<sup>751</sup> and the Church, but they were not mentioned in the text.<sup>752</sup> Another stone-circle architectural feature was found during the last excavation season and although the excavation was deepened by about 1m, no finds were reported.<sup>753</sup>

During the excavation season of 2009, new burials dated to the different phases of the EBA II were found but their locations were not given or displayed on the map.<sup>754</sup> In the following year's excavation report, it was mentioned that since the 2007

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<sup>747</sup> In the excavation report, the grid square where they were found was given as C5-D1/III-1, however, in the map the place where they point out is empty instead the two architectural features were drawn in the grid square of C5/IV2 coherent with the description given in the text. See for the text Duru 2000b:588 and for drawing Plate 8.

<sup>748</sup> Duru 2002: 562-3.

<sup>749</sup> Duru 2004b, Plate 35.

<sup>750</sup> Duru and Umurtak 2008c: 207.

<sup>751</sup> Duru and Umurtak 2008b: 16.

<sup>752</sup> Duru 2004b: Plate 49.

<sup>753</sup> Duru and Umurtak 2011b: 13.

<sup>754</sup> Duru and Umurtak 2010b: 23.

excavation season there were many pithoi found in the southern section of the höyük and most of them surrounded by a stone-circle row.<sup>755</sup>

Based on the published data, including maps, the layout of the settlement was digitised, excluding architectural features including buildings and wall constructions not dated to the EBA II phases. Then, the missing part of the settlement is reconstructed based on the excavation reports to create a relatively contemporaneous complete building layout of EBA II. (Figure 36)

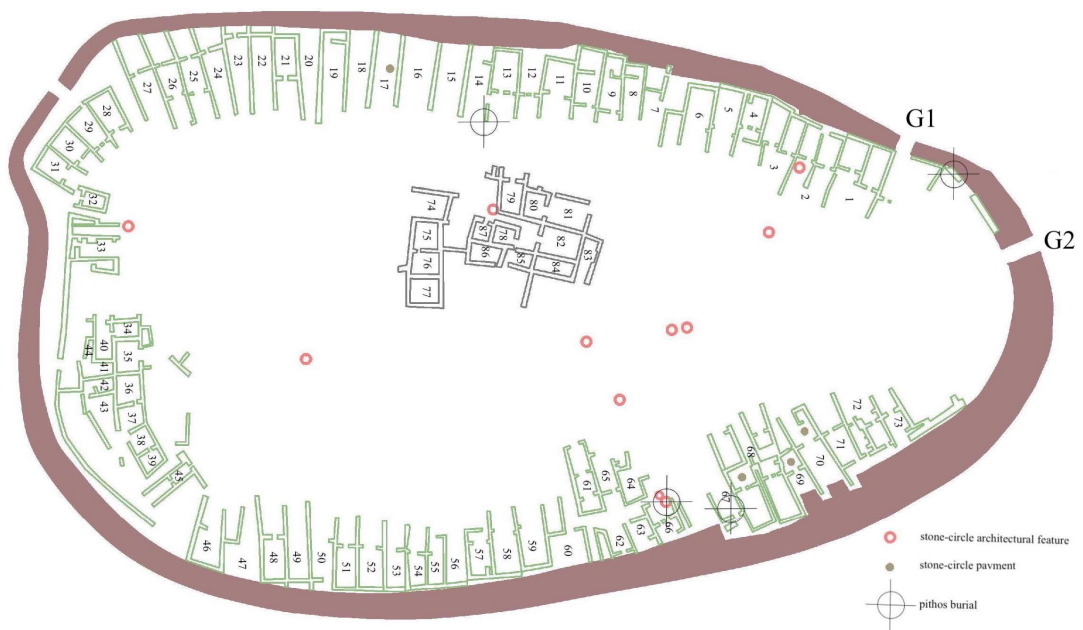


Figure 36: Bademağacı EBA II digitised settlement layout

## 7.2. Artefacts and Architecture

In order to understand the building functions, economy and regional relations, small finds, animal and plant remains, and ceramic assemblages have been closely examined and explained in detail chapter 5. Artefact distribution is represented to

<sup>755</sup> Duru and Umurtak 2011b: 13.

some degree by a map based on the excavation reports. (*Figure 37* and related *Table 10*) By so doing, it became possible to determine that storage facilities some of the buildings and rooms were used as storage facilities. However, in the excavation reports, neither the exact locations of artefacts and the specific coordinates of where they have been uncovered nor their context were mentioned. Therefore, the map displaying artefact distribution does not pin point the exact locations of each artefact but instead delineates the boundaries of the areas where they were discovered. Consequently, it is not possible to suggest a detailed and precise pattern for artefact assemblages. Nonetheless, the map provides valuable insights into the general distribution of artefacts across the settlement.

The artefact distribution map indicates that figurines, loom weights, seals and metal objects were found almost uniformly across the entire settlement. Two animal figurines, on the contrary, were only uncovered from dwellings found in the northeast region. One of them was later published with the Neolithic animal figurines,<sup>756</sup> the other one was found in Building 68.

There are five miniature objects: a miniature bottle, a miniature cup, a rattle and two unknown objects. They were all uncovered from different regions in the settlement. The number of axes is also low and only one of them is metal, and they were uncovered in different locations. There is only one metal seal and it was found in grid square of C5-D1/IV2 where a significant number of stone plate objects were uncovered.

It is not possible to establish a burial tradition pattern based on the location of pithoi burials. Because even though there is sufficient data, their locations have not been indicated on the map. But at least four of the 30 graves were drawn on the maps and their place indicates close proximity to wall remains or buildings. The stone-circle architectural features were found either inside the dwellings or in open spaces and their locations do not suggest any pattern for their placement.

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<sup>756</sup> Duru and Umurtak 2019, Plate 122-8.

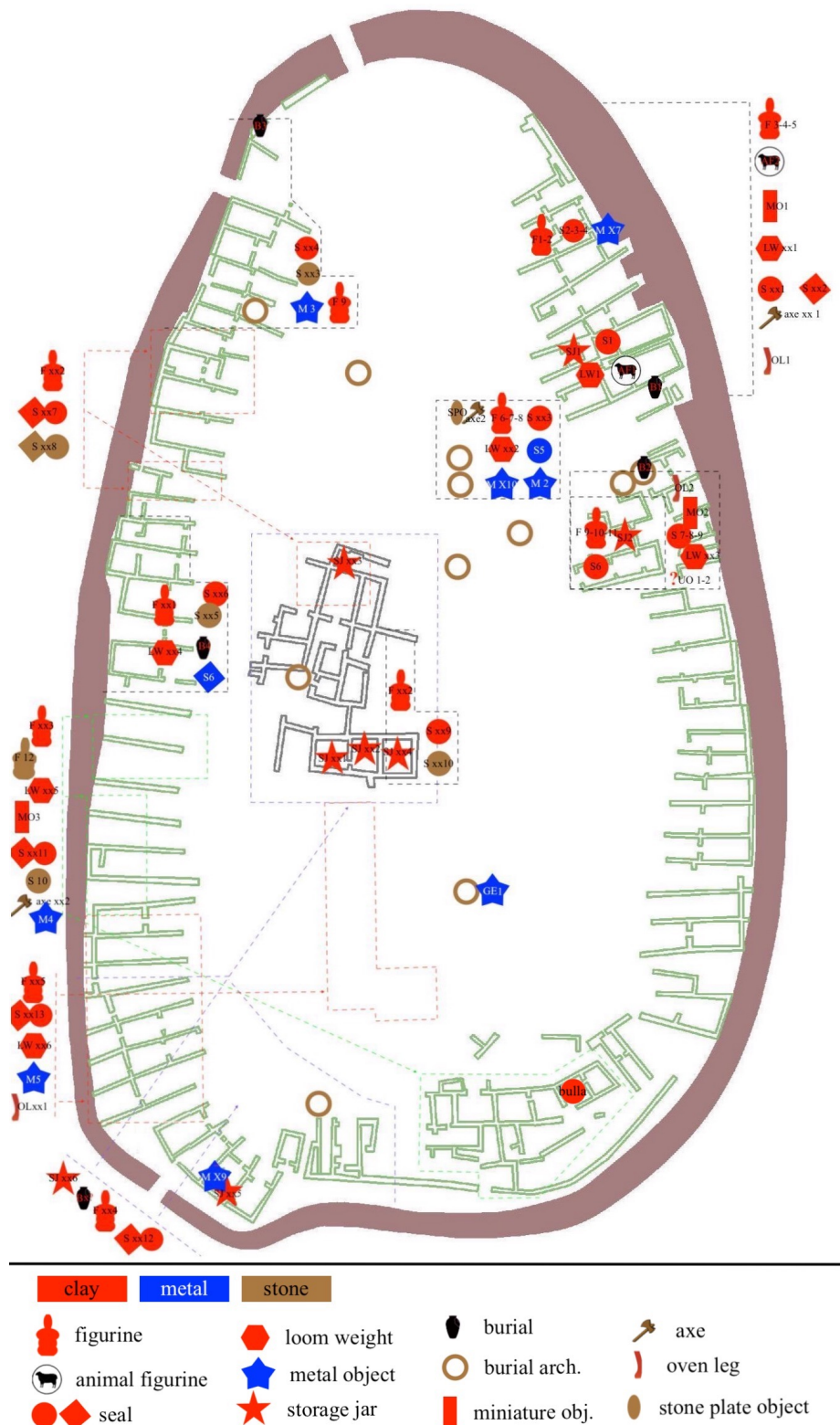


Figure 37: The map representing the distribution of EBA II artefacts over the settlement of Bademağacı. The location of an artefact is not always mentioned in the excavation reports, in that case the artefact is displayed outside the settlement border but its possible location is marked by a dotted line.

Table 10: Bademağacı references for the artefact distribution of map.

Artifact distribution at Bademağacı Höyük				
icon	Lable	findspots	reference	note
red star	SJ1	B69	Bell. LX-229-1996 p.789	
blue fat star	GE1	Trench B1	Bell. LX-229-1996 p.793	not related with a burial
brown circle	BA1	Trench B1	Bell. LX-229-1996 p.805	
black animal	AF1	B68	Bell. LXI-230-1997 p.156	1 of the animal figurines was later dated to Neolithic
pentagon	LW1	B68	Bell. LXI-230-1997 p.155-6	
red circle	S1	B68	Bell. LXI-230-1997 p.156	
red figurine	F1-2	B73	Bell. LXI-232-1997 p. 723	
red circle	S2-3-4	B73	Bell. LXI-232-1997 p. 723	conical handle-round seals
pithos	B1	B67	Bell. LXIV-239-2000 p. 201	80cm beneath the foundations, belonged to an 8-10 year-old kid was found withn a pithos 75-80 heigh and closed with plat.
red figurine	F3	#	Bell. LXIV-239-2000 p. 202	
black animal	AF2	#	Bell. LXIV-239-2000 p. 202	
miniature object	MO1	#	Bell. LXIV-239-2000 p. 202	miniature bottle
pentagon	LW xx1	#	Bell. LXIV-239-2000 p. 202	
red circle	Sxx1	#	Bell. LXIV-239-2000 p. 202	
Stone axe	Axe xx1	#	Bell. LXIV-239-2000 p. 202	
blue fat star	M X7	#	Bell. LXIV-239-2000 p. 202	2 nidle, 1 arrow head, 1 hair ring, 1 chisel, 1 drill, 1 plate
Stone plate objects	SPO	C5-IV2	Bell. LXIV-240-2000 p. 588-9	300 pieces of stone 4.5-13.4 cm in diametre, 0.7-0.9 cm in thickness and in shape of a hearth
Stone axe	axe2	C5-IV2	Bell. LXIV-240-2000 p. 589	found with 300 stone plate objects
red figurine	F4-5	#	Bell. LXIV-240-2000 p. 589	
oven leg	OL1	#	Bell. LXIV-240-2000 p. 589	
red figurine	F 6-7-8	C5;D1/IV4	Bell. LXVI-246-2002 p. 564	
Metal Seal	S 5	C5;D1/IV4	Bell. LXVI-246-2002 p. 564	
Metal objects	M X10	C5;D1/IV4	Bell. LXVI-246-2002 p. 564	Bronze pins
pentagon	LW xx2	C5;D1/IV4	Bell. LXVI-246-2002 p. 564	
red circle	S xx2	C5;D1/IV4	Bell. LXVI-246-2002 p. 564	
red figurine	F 9-10-11	D2/IV3-4	Bell. LXVIII-252-2004 p. 534	
red circle	S 6	D2/IV3-4	Bell. LXVIII-252-2004 p. 534-5	
oven leg	OL 2	D2-3/IV3-4	Bell. LXVIII-252-2004 p. 534	described as table with flat floor and three legs which have decoration on their surfacings looking outside
red circle	S 7-8-9	D2-3/IV3-4	Bell. LXVIII-252-2004 p. 534	



Table 10: Bademağacı references for the artefact distribution of map (continue\_2)

? unknown object	UO 1-2	D2-3/IV3-4	Bell. LXVIII-252-2004 p. 534	miniature cup
Miniature object	MO2	D2-3/IV3-4	Bell. LXVIII-252-2004 p. 534	
pentagon	LW xx3	D2-3/IV3-4	Bell. LXVIII-252-2004 p. 534	
Metal objects	M 2	C5;D1/IV4	Bell. LXVIII-252-2004 p. 535	two copper pins righ beneath the M X10 in the DA2 trench
red star	SJ2	B65	Bell. LXVIII-252-2004 p. 533	
pithos	B2	B66	KST-2 2005 p. 439-40	
red figurine	F9	#	KST-2 2005 p. 440	
Metal objects	M 3	#	ANMED 2005 p. 15	1 coppre pin
brown circle	S xx3	#	ANMED 2005 p. 15	6 oval shaped seals
red circle	S xx4	#	KST-2 2005 p. 440	5 clay oval shaped selas
figurine red	F xx1	B5-C1/V1-IV3	KST-I 2006 p. 644	
pentagon	LW xx4	B5-C1/V1-IV3	KST-I 2006 p. 644	
red circle	S xx5	B5-C1/V1-IV3	KST-I 2006 p. 644	
brown circle	S xx6	B5-C1/V1-IV3	KST-I 2006 p. 644	
blue square	S 6	B5-C1/V1-IV3	KST-I 2006 p. 644	
pithos	B2	C2/III2	KST-2 2005 p 441 Plan:2	
pithos	B2	B13	Bell. LXXII-263-2008 Levha 29	
red star	SJ xx1	B75	Bell. LXXII-263-2008 p.206	
red star	SJ xx2	B76	Bell. LXXII-263-2008 p.206	
red star	SJ xx3	Building Complex	KST-I 2008 p. 259	
red figurine	F xx2	#	KST-I 2008 p. 259-60	number is not given
red circle	S xx7	#	KST-I 2008 p. 260	
brown circle	S xx8	#	KST-I 2008 p. 260	30 pieces of seals made from clay and stone
red circle	S xx9	#	ANMED 2008 p.19	
brown circle	S xx10	#	ANMED 2008 p.19	30 pieces of seals made from clay and stone
red figurine	F xx2	#	ANMED 2008 p.19	
red star	SJ xx4	possibl. B77	ANMED 2008 p.18	
red figurine	F xx3	#	KST-3 2009 p. 266	
brown figurine	F12	#	KST-3 2009 p. 266	flat marble figurine
pentagon	LW xx5	#	KST-3 2009 p. 266	
Miniature object	MO 3	#	KST-3 2009 p. 266	çingirak
Stone axe	axe xx2	#	KST-3 2009 p. 266	
Metal objects	M 4	#	KST-3 2009 p. 266	

Table 10: Bademağacı references for the artefact distribution of map (continue\_3)

Metal objects	MX9	right out side of the B 29	ANMED 2010 p. 24	golden earring, silver plate, 2 silver pins, copper/bronze headed pin, driller, arrow head, hand axe
red star	SJ xx6	#	KST-3 2010 p. 441-2	
red star	SJ xx5	right out side of the B 29	ANMED 2010 p. 24	35 pieces found together
pithos	Bx?	#	KST-3 2010 p. 441	no info about the place or number of burials is given
red figurine	F xx4	#	KST-3 2010 p. 442	
red circle	S xx12	#	KST-3 2010 p. 442	
red figurine	F xx5	#	KST-2 2011 p. 119	
red circle	S xx13	#	KST-2 2011 p. 120	20 piece of seals including disc shaped unique one
pentagon	LW xx6	#	KST-2 2011 p. 120	
Metal objects	M 5	#	KST-2 2011 p. 120	2 small rings
oven leg	OL xx1	#	KST-2 2011 p. 120	the numbers is not given

Architectural remains reveal uninterrupted settlement sequences throughout the EBA II 2 and 3 with repairs and additions over time. However, the construction technique is similar hence distinguishing between various building types based on function remains elusive. Instead, the presence of a substantial quantity of ceramics discovered cohesively in situ stands as the sole indication of certain buildings serving as storage facilities.

The megaron-like buildings were constructed side by side sharing a common wall along the slope paved by irregular stones to create a protection against flooding. The construction technique applied to the buildings seems similar across the village and indicates no differentiation in status but any changes are due to different time period. Buildings were erected above a stone foundation with two rows of stone, or with 6-7 rows of stone in some cases that belong to the transition phase between the EBA II to the EBA III. Buildings often had walls different in thickness and this possibly indicates that each wall was constructed and/or reconstructed at different times.

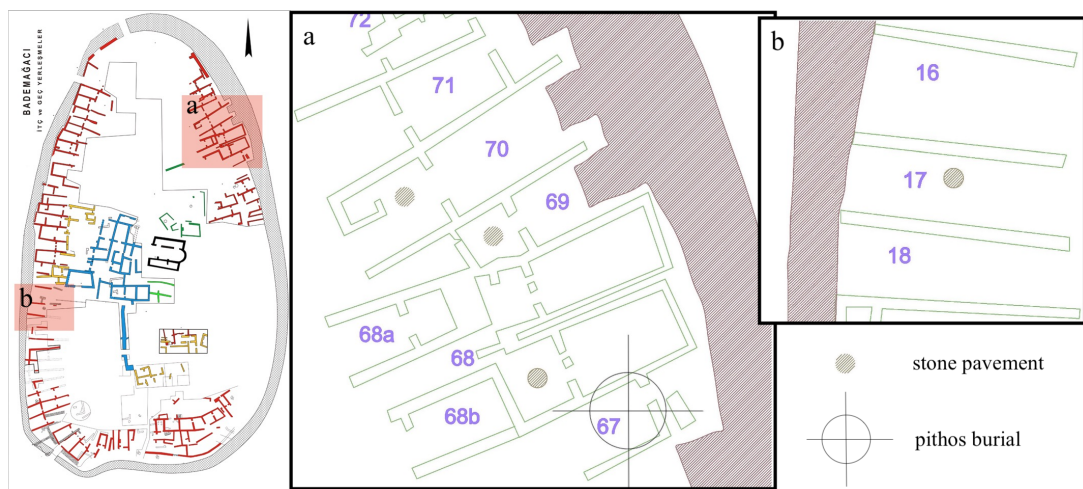


Figure 38: the buildings where the round shaped stone pavement had been found.

The only inner installation feature that had been found is the stone pavement of round shape. There are only four which had been represented in the maps published

in 2000 and 2011.<sup>757</sup> Even though the number of these pavements is not high enough to make any assumption about their location pattern, at least three of them were placed right in front of the entrance to the main room for the Building 68, 69 and 70. (Figure 38) The situation in Building 17 is puzzling since only two walls remained and the round shaped stone pavement was located in the middle of the these two walls. There is no information about the context of this stone pavement or whether any artefact was ever found beneath it. But their well-formed shape and location are noteworthy.

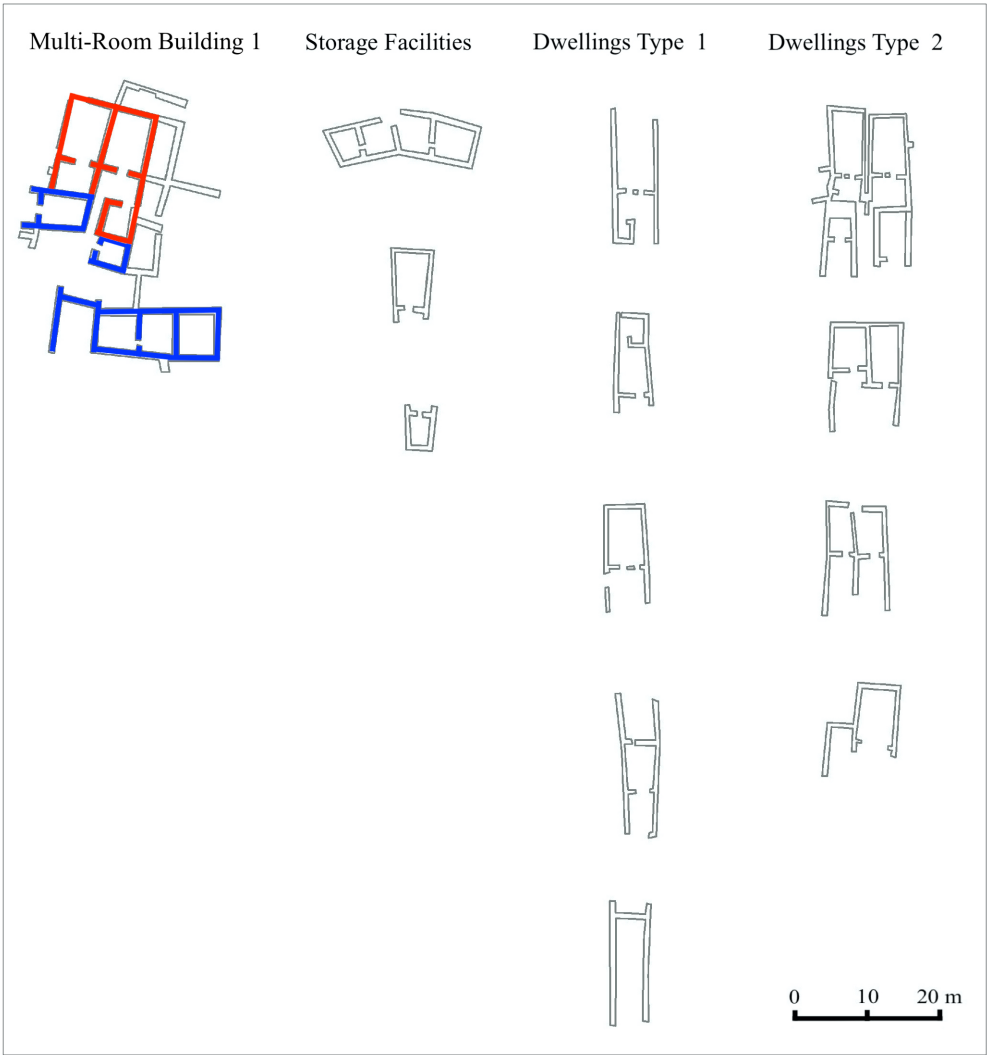


Figure 39: The Building types categorised based on their plan and the artefacts found within them.

<sup>757</sup> Duru 2000: Plate 18; Duru and Umurtak 2011c: 31.

There is no additional information about the construction materials of the wall and roof found. Buildings merely differ in terms of their plan. Based on their plan and the artefact assemblages found within them, I separated the buildings into four categories: Multi-Room Building 1, storage facilities, dwellings type 1, and dwellings type 2. (*Figure 39*)

Multi-Room Building 1 (MRB1) is the building complex in the centre of the settlement and consists of rooms, some grouped and having inner connections. Multi-Room Building 2 (MRB2) is the building complex found in the most southern section and unlike MRB1 there are no megaron-like buildings. Rather, MRB2

consists of rooms in a row Buildings 34-39 and Buildings 40-44. They are considered as storage facilities according to their plan, size and artefacts found within them.

Even though they had similar architectural plans, some buildings differed in terms of their size. According to the size and finds within the buildings, the function is inferred here. Some ceramic assemblages indicating storage properties of the place were found in such buildings, for instance, in Building 30 were a significant number of metal objects found in the two large vessels; in Multi-Room Building 2 at the south section, a significant number of vessels and bronze objects were found and in the Building 38 the bulla was found.<sup>758</sup> Considering that the other megaron-like buildings had been uncovered almost empty, it is noteworthy that there were ceramic assemblages in these buildings, and found in significant numbers. Therefore, Buildings 28-32 and 34-39 were labelled as storage facilities.

With close examination, it is observed that some megara were built in a way that rooms were aligned in a row and they are labelled as dwelling type 1. On the other hand, some of them, labelled as dwelling type 2, were built with two cellae and share

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<sup>758</sup> The rooms of Multi-Room Building 2 were almost all, except one of them, uncovered empty.

a common open space within the two ante walls. In Building 68, classified as dwelling type 2, an animal figurines was found.

Multi-Room Building 1 consisted of megaron-like buildings (dwelling type 1) and storage facility-like rooms. (Figure 39 and Figure 40) It is noteworthy that, in this respect, there is no building grouping seen in Multi-Room Building 2, instead, single type buildings were constructed side by side in a row. The existence of different building types used in the two building complexes suggests that these were used for different purposes in general.

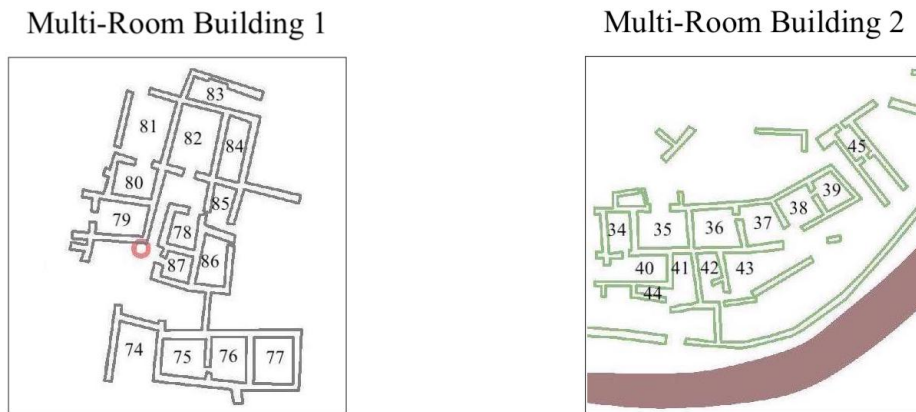


Figure 40: Different construction plans of Multi-Room Building 1 and Multi-Room Building 2

### 7.3. Space Syntax Data Analysis

DepthMapX is the open source software used to perform a set of space syntax analysis.<sup>759</sup> This program only opens graphic files, therefore, an Autocad drawing of the Bademağacı EBA II settlement plan was exported in dxf format and imported to the program.

<sup>759</sup> Downloaded from <https://github.com/SpaceGroupUCL/depthmapX/releases/tag/v0.8.0>.

In order to perform the analysis the grid was set at 0.5 for an approximate human (0,75-1 metre) scale grid spacing and for higher resolution. Then, the map was filled and some spaces needed manual intervention. The inter-visibility graph was generated (*Figure 41a*). In the graph, the points were coloured according to how many other points are visible from them. The colour range runs from blue indicating low visibility to red indicating high visibility. In the graph, besides its colour, each point has a connectivity value. Based on the inter-visibility graph a table displaying the connectivity of a building is created (*Table 11*). The connectivity value of a building is measured as the average value of a main room, in cases where the building has two rooms, connectivity is measured as the average of the two rooms. The connectivity of storage rooms is measured and displayed separately in the table.

Once the visibility graph was generated, the step depth graph for each village gate was created (*Figure 42*). These graphs illustrate the number of steps it would take from a selected location to any other location based on its visibility starting from step 1 which is seen directly, step 2 and so on visualised through colours from blue to red.

Step depth for all locations is also calculated, based on the visibility relationship by running visibility graph analysis (*Figure 41b*). The graph illustrates integration of all locations according to the degree of how deep each location is relative to all others. A location that is highly integrated is coloured in red while a location that is poorly integrated is coloured blue indicating its deepness.

An isovist graphic which displays the potential fields of view visible to the observer from each gate in different colours was also created with fields of view of 360 degrees based on the inter-visibility (*Figure 43*). Points right in front of the gates were chosen. The isovist field helps to visualise the view of observer based on its position, the direction headed and built environment that causes visual obstacles. By choosing the location of gates, the aim was to derive a 2D view of the village.

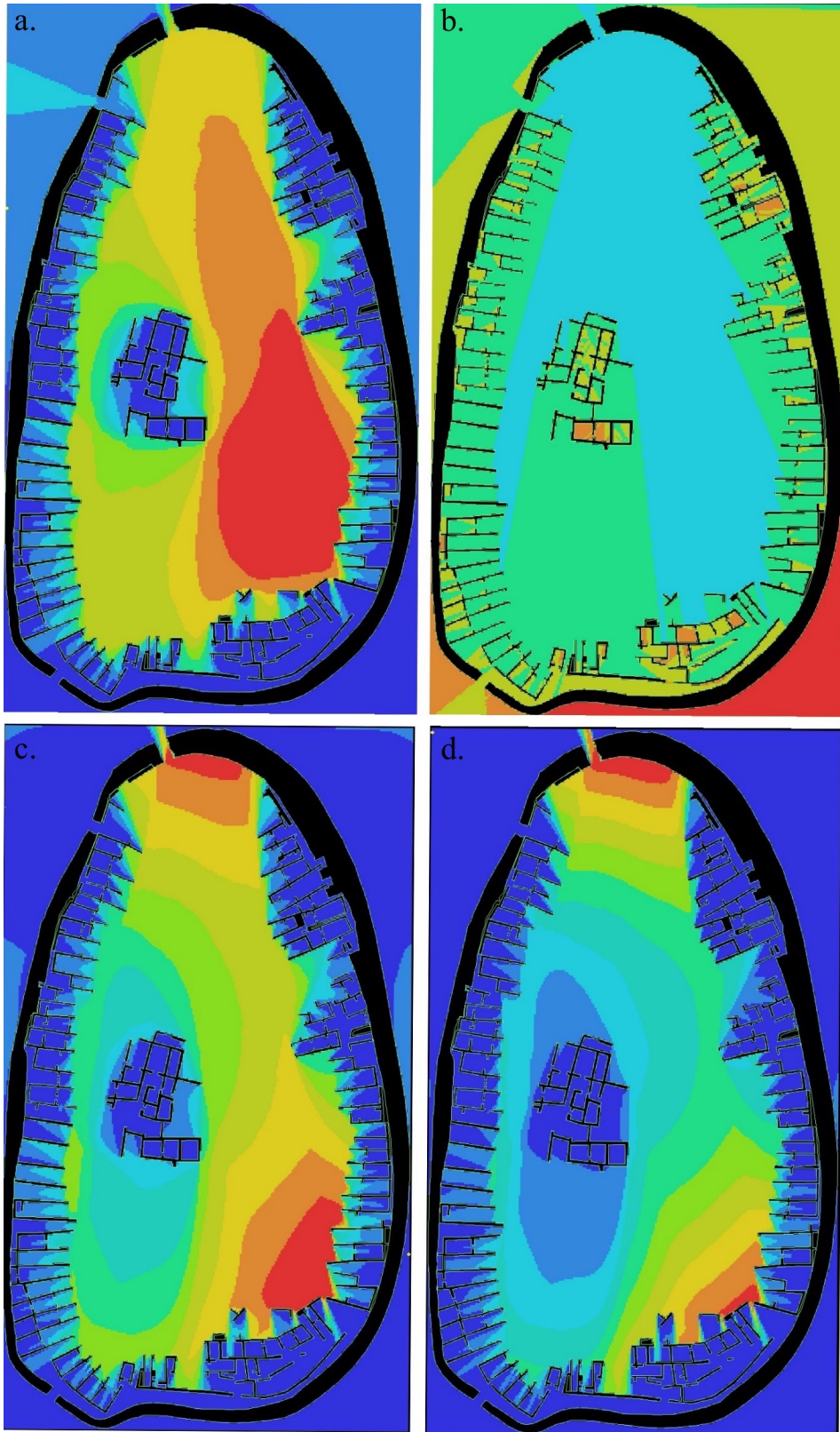


Figure 41: a. inter-visibility graph b. visual setp depth graph  
c. point first movement graph d. point second movement graph



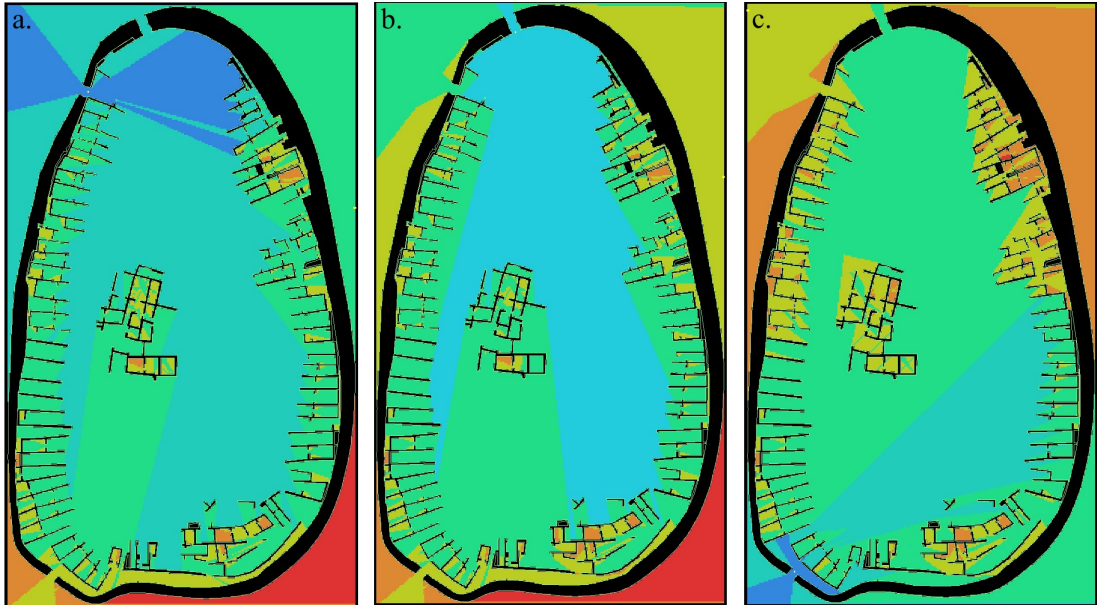


Figure 42: The step depth graphs illustrating the number of steps it would take from G1 (a), G2 (b) and G3 (c) to any other locations within the settlement based on its visibility starting from step 1 that are seen directly, step 2 and so on visualised through colours blue to red in respect.

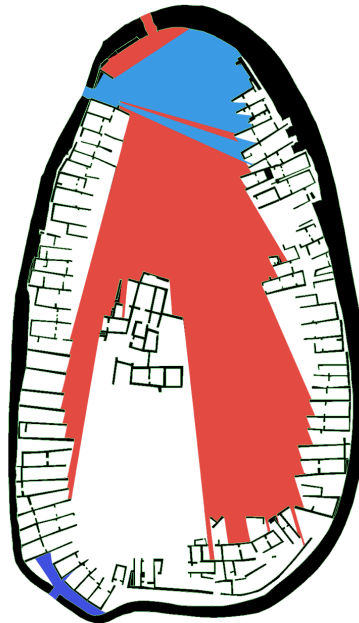


Figure 43: Isovist graph displaying a set of all points visible from gates with respect to the settlement layout. Blue represents all points visible from G1, red represents from G2 and purple from G3.

For each building type a justified graph was created (Figure 44). Except for Multi-Room Building 1, the graphs were created from the entrance. Since MRB1 may have had multiple entrances and the main entrance remains elusive, its graph is created for each cardinal directions.



Figure 44: The justified graphs created for different building types: from the village centre for the dwellings and storage facilities, from the cardinal directions for the Building Complex.

A convex map, in which space is divided into a number of convex spaces by aiming the largest and fewest in number, was created manually. Then, convex spaces

connected to each other were linked to run the convex graph analysis (*Figure 45*). The integration (P-value) graph displays the integration value of each location as a normalised distance measured from the selected point to all other spaces; The Relative Asymmetry (RA) graph displays the deepness of the point within a system; Real Relative Asymmetry (RRA) displays values calculated by dividing the RA by the D-value to provide comparison spaces in different sizes; and Mean Depth of each building are measured (*Table 11*).

Space Syntax investigates relationships from two perspectives: those among the inhabitants and their relationship with foreigners. The stone pavement surrounding the settlement and the houses constructed side by side along it stood as a physical boundary providing limited interaction between the inhabitants of the site and the outside world for the village. The inter-visibility graph displays the connectivity degree of each location which measures the number of immediate neighbours directly connected to it (*Figure 41a*). The connectivity graph, in contrast, shows that the settlement layout creates high connectivity. For pedestrians, whether an inhabitant or an outsider, it is easy both to recognise his/her position within the settlement and to get an overall idea of the layout of the village. This contradicts with the idea of providing limited access to foreigners. Therefore, this boundary is not to protect from any outside danger, rather to create the group structure in which inhabitants were interdependent within a village having high connectivity as well as to function as a barrier for flooding.

With respect to their degree of connectivity, the visibility graph also displays that G2 has higher connectivity, implying being more dominant and having higher strategic value compared to the other two passageways, G1 and G2. By taking into account the results derived from the step depth graph, connectivity graphs, and the isovist graphs I suggest that G2 was the main gate into the EBA II village of Bademağacı instead of G3 as excavators previously suggested (*Figure 41, 42 and 43*).

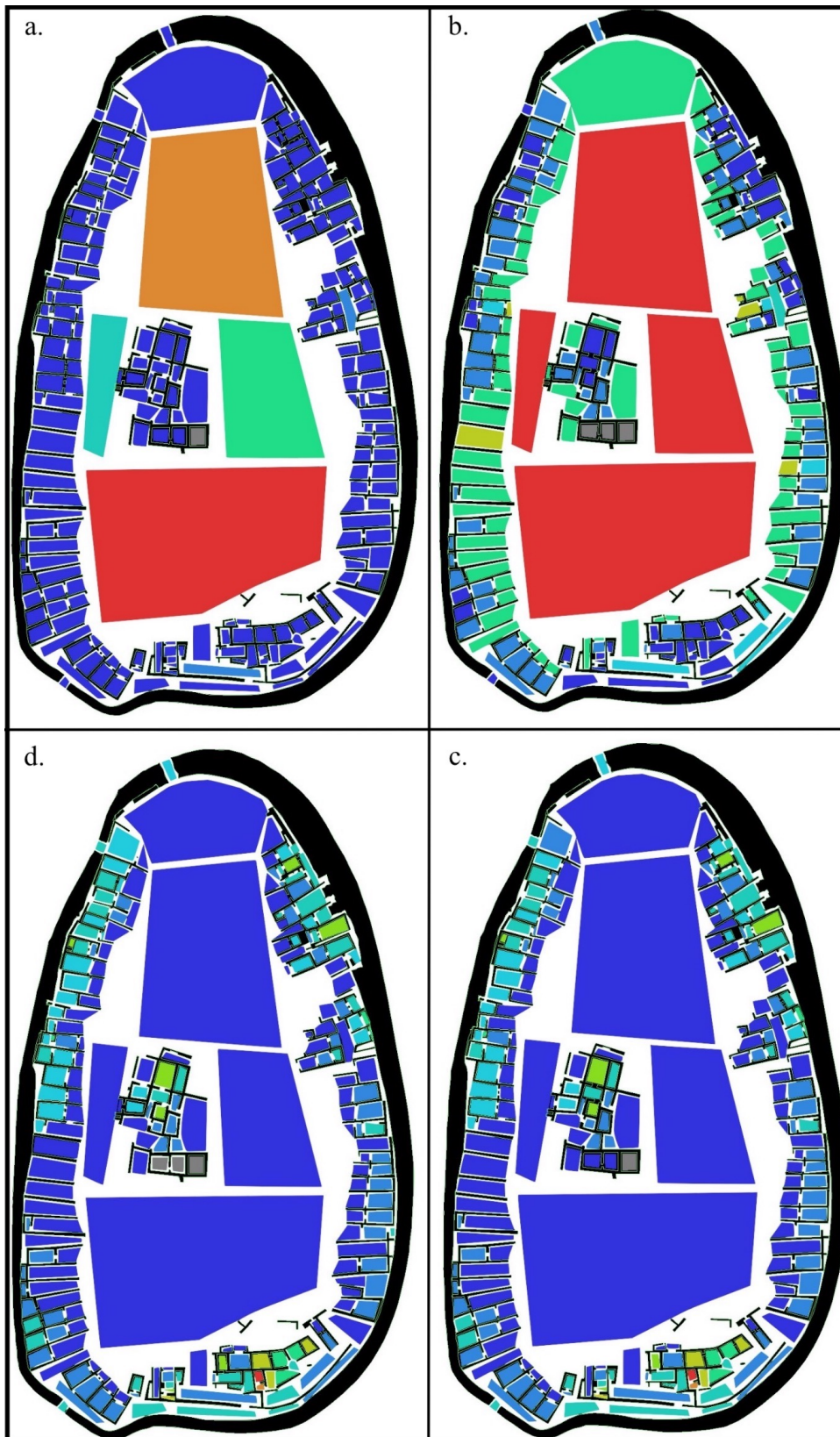


Figure 45: a. spatial connectivity graph b. spatial integration graph  
c. relative asymmetry graph d. mean depth graph

The highest visibility, marked in red on the visibility graph (*Figure 41a*), is located in the southwest of the village center, directly in front of MRB2. Unlike the typical village dwellings, this building complex comprises two rows of small rooms constructed side by side, exhibiting a complex architectural plan with a wall built along its southern side. The bulla was discovered in one of these rooms, specifically in Building 38. Despite being situated in a highly visible area of the village, the convex graph analysis reveals that MRB2 also exhibits the greatest depth. Pedestrians, both locals and visitors, could easily see the building complex, but accessing it proved challenging. Consequently, the discovery of the bulla in Building 42, which has the highest mean depth score (*Figure 41d and Table 13*), underscores the strategic placement of valuable items in areas that were visible yet difficult to reach, highlighting the nuanced spatial organization within the settlement.

To see if the circumstances vary depending on which gate was used to enter the village, spatial step depth was generated from each gate. (*Figure 46*). The analysis reveals that Multi-Room Building 2 consistently exhibits the greatest depth, even surpassing Multi-Room Building 1, which excavators identified as the seat of authority, irrespective of the entry point. This finding, along with the artefacts discovered within the vicinity, underscores the strategic significance of Multi-Room Building 2. Furthermore, the graphic (*Figure 45a*) demonstrates that almost all buildings, with the exception of Multi-Room Building 2, maintain a relatively uniform distance from the main room in Multi-Room Building 1. Conversely, Multi-Room Building 2 shows lower spatial connectivity with the buildings situated in the northeast and northwest sections of the village, as well as with Multi-Room Building 1 (*Figure 47b*). This spatial analysis highlights the distinct and deliberate organization within the settlement, emphasizing the unique positioning and importance of Multi-Room Building 2.

Despite the architectural differences between Multi-Room Building 1 and Multi-Room Building 2, comparing their structural connectivity is informative.



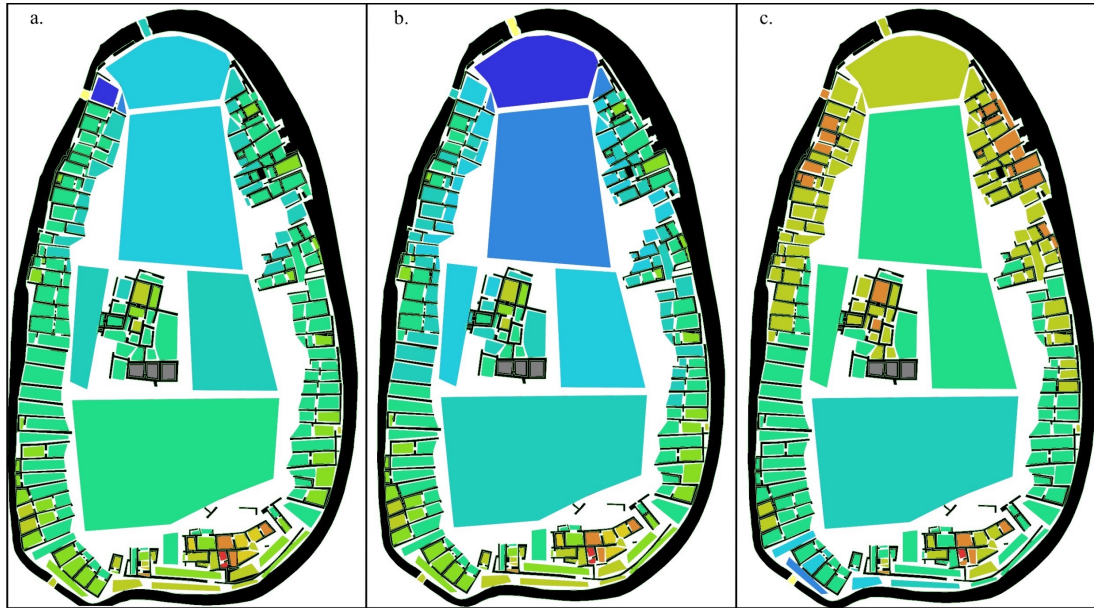


Figure 46: The spatial step depth graphs illustrating the number of steps it would take from G1 (a), G2 (b) and G3 (c) to any other location within the settlement based on the spatial distance in steps. From purple to red represents closeness to distance.

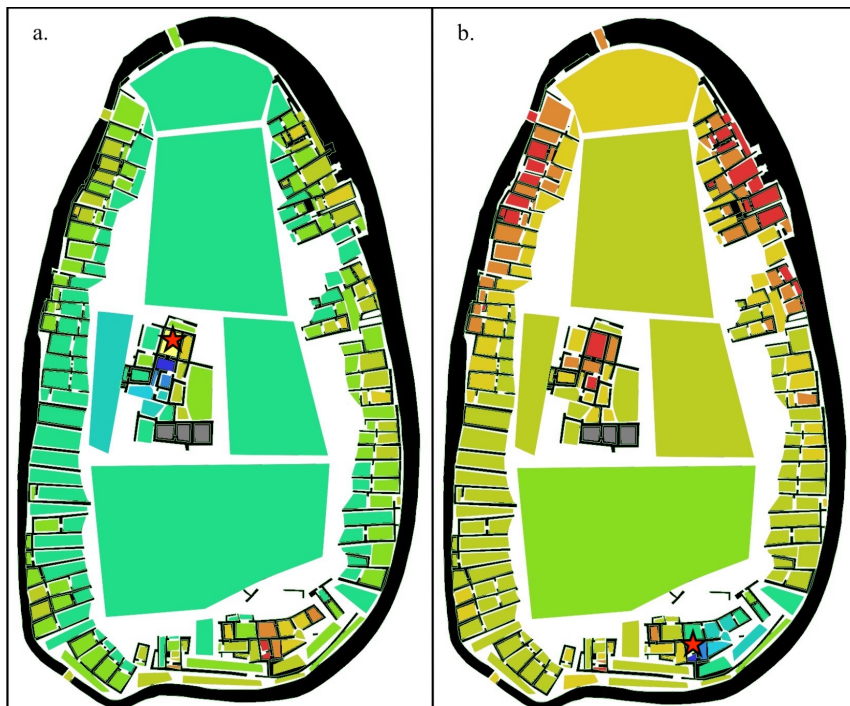
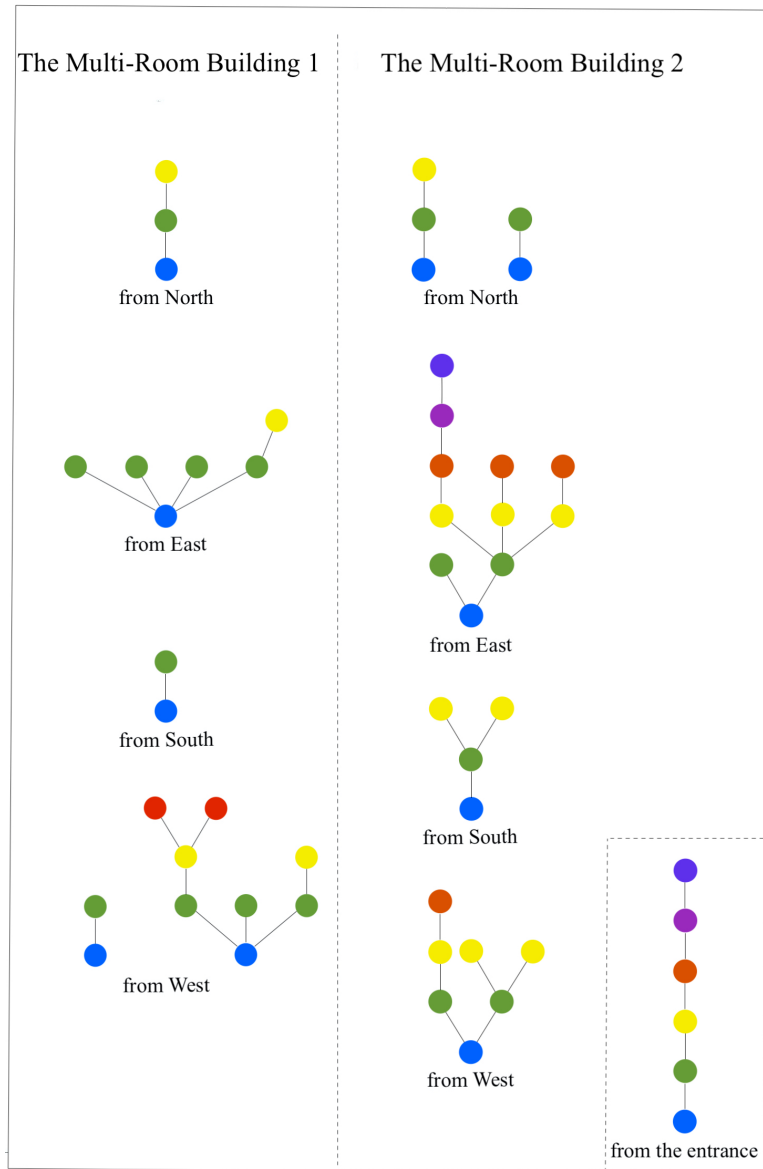


Figure 47: a.the spatial step depth graph from the Building 82 in Multi-Room Building 1  
b.the spatial step depth graph from the Building 42 in Multi-Room Building 2



*Figure 48: The justified graphs for Multi-Room Building 1 and Multi-Room Building 2 from the main cardinal directions.*

Consequently, a j-graph was generated for Multi-Room Building 2, analogous to the one created for Multi-Room Building 1 (Figure 48). The analysis of these graphs reveals no structural similarity between the two complexes; however, it does suggest possible main entrance directions. Based on the structural pathways of the rooms and the revealed architectural plans, it is inferred that the primary entrance for Multi-

Room Building 1 is likely from the west, whereas the main entrance for Multi-Room Building 2 is from the east.

Based on space syntax analysis and archaeological evidence, Multi-Room Building 2 was possibly used as a storage facility. This building, however, had no connection with Multi-Room Building 1 or the buildings located on the northern side of the village. Instead, its position, which exhibits the highest connectivity within the village, suggests it was used for communal storage.

Multi-Room Building 1, as previously mentioned, comprises megaron-like structures and rooms resembling storage facilities (*Figure 39*). The architectural plan reveals at least two, and possibly three, identifiable megaron-like buildings. The entrances to the storage rooms are either external or internal. These observations suggest that multiple households, possibly related, resided within this building complex. Its central location within the village implies that this complex may have held significant status for its inhabitants.

Assuming G2 was the primary entrance to the village and the main entrance to Multi-Room Building 1 was from the west, it can be inferred that the building's position and architectural design were not intended to control village access but to provide a degree of privacy. Therefore, the fact that some storage rooms have external entrances suggests that the need for privacy was not for the residents themselves but rather to prevent outsiders from directly seeing the main entrance when entering the village from any gate.

Excavators suggested that the northern section of the village, devoid of architectural remains or even small finds, was likely used for keeping animals. Evidence from animal and plant remains indicates the presence of animal husbandry and harvesting, with hunting playing a minor role in the village's subsistence. According to the Ministry of Agriculture and Forestry, the annual fodder requirement for a bovine



Table 11: The numeric values of the Space Syntax analysis results. VC: visual connectivity, I: integration, RA: relative asymmetry, RRA: real relative asymmetry, MD: mean depth, C: control

Locations	VC	i (p-value)	RA	RRA	MD	C	Locations	VC	i (p-value)	RA	RRA	MD	C	Locations	VC	i (p-value)	RA	RRA	MD	C
G1	6229	1,06	#	#	5,94	#	bid. no.25	5159	1,34	#	#	4,89	0,5	bid. no.59 str	7821	1,79	1	3	0,93	1
G2	17946	1,33	#	#	4,96	#	bid. no.25 str	1205	1,07	1	4,74	5,88	1	bid. no.60	478	1,83	#	#	3,88	1
G3	833	1,08	#	#	5,79	#	bid. no.26	3261	1,34	#	#	4,89	0,5	bid. no.61	605	1,34	#	#	4,89	0,5
bid. no.1 a	1604	1,32	1	3	4,95	1	bid. no.26 str	337	1,07	1	4,74	5,88	1	bid. no.61 str	461	1,07	1	4,74	5,89	1
bid. no.1 b	1209	1,06	1	3	5,93	1	bid. no.27	9253	1,79	#	#	3,91	0,5	bid. no.62	417	1,21	#	#	5,33	0,2
bid. no.2 a	1564	1,06	1	2,84	5,93	1	bid. no.27 str	1375	1,34	#	#	4,91	1	bid. no.62 str	166	0,98	#	#	6,33	1
bid. no.2 b	1323	1,06	1	2,84	5,93	1	bid. no.28	3652	1,34	#	#	4,84	1	bid. no.63	254	1,21	#	#	5,33	0,5
bid. no.3 a	1684	1,32	1	3	4,95	1	bid. no.29	3619	1,36	#	#	4,84	1	bid. no.63 str	244	0,98	#	#	6,33	1
bid. no.3 b	1973	1,06	1	3	5,93	1	bid. no.30	2548	1,36	#	#	4,91	1	bid. no.64	5941	1,75	#	#	3,99	1
bid. no.4	660	1,06	1	4,74	5,92	1	bid. no.31	2428	1,35	#	#	4,88	1	bid. no.65	6593	2,14	#	#	3,45	0,5
bid. no.5	5275	1,32	#	#	4,97	1	bid. no.32	90	1,09	#	#	5,79	1	bid. no.65 str	671	1,55	#	#	4,38	0,5
bid. no.6	6564	1,32	1	3	4,97	1	bid. no.33	8800	av. 1,03	#	#	av. 6,33	1	bid. no.66	7663	1,34	#	#	4,9	0,5
bid. no.6 str	8587	1,75	1	3	3,98	1	bid. no.34	63	0,9	1	4,74	6,8	1	bid. no.66 str	943	1,07	#	#	5,9	1
bid. no.7	7446	1,76	#	#	3,96	0,5	bid. no.35	3514	1,34	#	#	4,91	1	bid. no.67	6982	1,76	#	#	3,98	0,5
bid. no.7 str.	302	1,32	#	#	4,96	1	bid. no.36	101	0,79	0,7	2,25	7,59	1	bid. no.68 a	356	0,88	0,7	2	6,9	1
bid. no.8	6151	1,76	#	#	3,97	0,5	bid. no.37	190	0,93	0,5	1,46	6,59	0,5	bid. no.68 b	154	1,06	0,9	2,58	5,93	1
bid. no.8 str	847	1,32	#	#	4,97	1	bid. no.38	120	0,93	0,5	1,46	6,59	0,5	bid. no.68 str a	av. 7340	av. 1,54	#	#	av. 4,48	0,75
bid. no.9	2051	1,52	0,3	1	4,44	0,5	bid. no.39	55	0,79	0,7	2,25	7,59	1	bid. no.68 str b	5331	1,54	#	#	4,48	0,75
bid. no.9 str	457	av. 1,07	av. 0,6	av. 2	av. 5,92	0,75	bid. no.40	514	1,09	#	#	5,8	0,5	bid. no.69	92	1,06	1	4,74	5,95	1
bid. no.10	803	1,33	#	#	4,94	0,5	bid. no.41	96	1,1	#	#	5,75	0,5	bid. no.70	1674	1,06	0,6	2	5,94	1
bid. no.10 str	129	1,06	1	4,74	5,94	1	bid. no.42	42	0,61	0,8	2,7	9,53	1	bid. no.71	1717	1,34	#	#	4,91	0,5
bid. no.11	1183	1,32	#	#	4,96	1	bid. no.43	273	av. 0,88	av. 0,4	1,18	av. 7,06	0,5	bid. no.71 str	526	1,08	1	4,74	5,86	1
bid. no.12	295	1,32	#	#	4,96	1	bid. no.44	37	1,1	#	#	5,75	1	bid. no.72 a	1807	0,9	0,4	1,18	6,83	0,5
bid. no.13	479	1,32	#	#	4,96	1	bid. no.45	2228	1,83	#	#	3,86	0,5	bid. no.72 b	799	1,08	0,4	1,18	5,88	0,5
bid. no.14	2941	1,76	#	#	3,97	0,5	bid. no.46	4229	1,34	1	1,18	4,91	1	bid. no.72 str	404	1,08	0,4	1,18	5,86	0,5
bid. no.14 str	492	1,32	#	#	4,96	1	bid. no.46 str	10726	1,79	1	1,18	3,92	1	bid. no.73	1917	1,32	#	#	4,96	0,5
bid. no.15	4424	1,76	#	#	3,98	1	bid. no.47	2277	1,34	#	#	4,91	1	bid. no.74	8554	1,79	#	#	3,92	1
bid. no.16	8064	2,12	#	#	3,47	1	bid. no.48	2479	1,34	#	#	4,91	1	bid. no.75	100	NA	#	#	1	1
bid. no.17	8968	1,79	#	#	3,92	1	bid. no.49	9307	1,79	#	#	3,92	1	bid. no.76	94	NA	#	#	1	1
bid. no.18	8098	1,79	#	#	3,92	1	bid. no.50	7231	1,34	#	#	4,89	0,5	bid. no.77	98	NA	#	#	NA	#
bid. no.19	8663	1,79	#	#	3,91	0,5	bid. no.50 str	2554	1,07	#	#	5,88	1	bid. no.78	83	0,89	0,6	1,78	6,87	1
bid. no.19 str	1799	1,34	#	#	4,92	1	bid. no.51	2738	1,34	#	#	4,91	1	bid. no.79	342	1,32	#	#	4,97	1
bid. no.20	4616	1,79	#	#	3,92	1	bid. no.52	4882	1,53	#	#	4,42	1	bid. no.80	843	1,32	#	#	4,98	1
bid. no.21	2356	1,34	#	#	4,91	1	bid. no.53	2720	1,34	#	#	4,91	1	bid. no.81	3114	1,76	#	#	3,98	0,5
bid. no.22	9027	1,79	#	#	3,91	0,5	bid. no.54	1778	1,34	#	#	4,91	1	bid. no.82	186	0,89	0,6	1,77	6,87	1
bid. no.22 str	23	1,34	#	#	4,91	1	bid. no.55	1551	1,34	1	4,74	4,91	1	bid. no.83	2847	1,79	#	#	3,93	1
bid. no.23	6130	1,79	#	#	3,91	0,5	bid. no.56	8720	1,77	#	#	3,94	1	bid. no.84	75	1,07	0,8	2,37	5,88	1
bid. no.23 str	543	1,34	#	#	4,91	1	bid. no.57	469	1,07	1	4,74	5,89	1	bid. no.85	914	1,35	0,3	0,95	4,88	0,5
bid. no.24	7680	1,79	#	#	3,91	0,5	bid. no.58	3558	1,34	#	#	4,91	1	bid. no.86	238	1,35	0,7	1,89	4,89	1
bid. no.24 str	859	1,34	#	#	4,91	1	bid. no.59	4516	1,34	#	3	4,91	1	bid. no.87	100	1,33	0,5	1,57	4,92	1

DTI MRBI Communal storage facilities artificial buildings

animal is calculated at 4.5 tons,<sup>760</sup> which corresponds to approximately 7 tons of corn silage and 1.5 tons of hay. Consequently, each animal would need at least 2.5 decares of irrigated land or 5 decares of dry land for fodder production. Additional space would be necessary to store sufficient fodder for the winter months, suggesting that the unoccupied area in the northern section might have been used for this purpose.

Temperature also affects animals by causing heat stress. In the Burdur region, the lowest temperature is -1.7 degrees Celsius, the highest is 29.4 degrees Celsius, and the average temperature is around 22.4 degrees Celsius. This temperature range is generally within limits that prevent animals from experiencing heat stress. However, during the winter, animals may have needed to be housed in enclosed spaces. Given this information, the Type 2 dwellings located near the area where farming animals and their fodder are believed to have been kept may have belonged to households responsible for these animals. These households likely required additional spaces to accommodate their livestock, particularly during the colder months.

#### **7.4. Estimating The Population of Bademağacı Höyük<sup>761</sup>**

Excavation results reveal that there is an uninterrupted settlement sequence that was in the process of continuous remodelling through repairs and additions during the EBA II 2 and 3.<sup>762</sup> The dwellings of the inhabitants were megaron buildings constructed side by side along the stone-pavement.<sup>763</sup> The plans of the buildings are

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<sup>760</sup> <https://www.tarimorman.gov.tr/HAYGEM/Belgeler/Hayvancılık/Büyükbaş%20Hayvancılık/2017%20Yılı/Büyükbaş%20Hayvan%20Yetiştiriciliği.pdf>. In consideration of contemporary zoological data, it is acknowledged that modern bovines exhibit a greater size in comparison to their prehistoric counterparts. The calculations presented herein are based on contemporary bovine size, serving merely as a heuristic tool to offer insights into the feasible requirements for fodder and spatial accommodations in a prehistoric village setting. This methodological approach aims to provide a contextual framework for estimating possible husbandry needs in ancient agricultural communities.

<sup>761</sup> Recognizing the acknowledged correlation between societal scale and complexity, it is imperative to underscore that the primary objective herein is to generate an approximate numerical value conducive to facilitating meaningful comparisons between settlements. It is crucial to emphasize that this calculation serves as a rudimentary estimate, and the prospect of conducting more intricate and comprehensive investigations remains open for future scholarly endeavours.

<sup>762</sup> Duru 2000: 205.

<sup>763</sup> Duru and Umurtak 2015: 75.

often similar with slight differences. According to Duru and Umurtak, the living room (cella) is the one right after passing the entrance and the additional ante walls were built to the megaron towards to the centre during the EBA II 2.<sup>764</sup> There were no portable objects or immovable property indicating inner installation in these megaron buildings.

Some dwellings have two living rooms without any storage room at their back end which rests on the stone-pavement. Some buildings, on the other hand, show no trace of inner division indicating a separate living room. These buildings might have been used for another purpose than dwellings. Others contain a significant amount of pottery indicating that they were used as storage facilities. Based on the excavated dwellings, the average living room size is 26,47 m<sup>2</sup> with a standard deviation of 8,48 (Bessel's correction).

A total of 30 graves of the EBA II were found in the streets and empty spaces outside of the houses and in some cases, they were placed beneath the house floor (their exact locations are not mentioned) whilst no cemetery is yet found around the höyük.<sup>765</sup> Unfortunately, this number is extremely small to reconstruct mortality profiles of the EBA inhabitants of Bademağacı. Faunal remains are also not sufficient to reconstruct the ecological potential of the surrounding area. Nevertheless, the höyük is located on fertile agricultural land that probably provided a wide variety of edible wild and domesticated vegetables and animals.

Although it is preferable to use various methods, incorporating different archaeological data that can be compared with historical and ethnographic records to calculate the carrying capacity based on the ecological and cultural conditions of the EBA II village, only the architectural features offer a reliable proxy for estimating the population size.

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<sup>764</sup> Duru and Umurtak 2005: 437-40.

<sup>765</sup> Duru and Umurtak 2015: 78.

Estimating the population size of Bademağacı Höyük is done based on the average living room size. In this study, buildings with a living room are considered as dwellings and are taken into account for estimating the population size as well as additional buildings assumed to have existed in the unexcavated area. The plans for these additional buildings are drawn based on the existing ones along the stone pavement. The average living room size is 26,47 m<sup>2</sup> and it is assumed that this provides space for 5-7 persons to inhabit.<sup>766</sup> (Figure 49) Assuming that there were approximately 55 dwellings and the population size was calculated as an average of 330 individuals as a maximum estimation using the full capacity of houses.

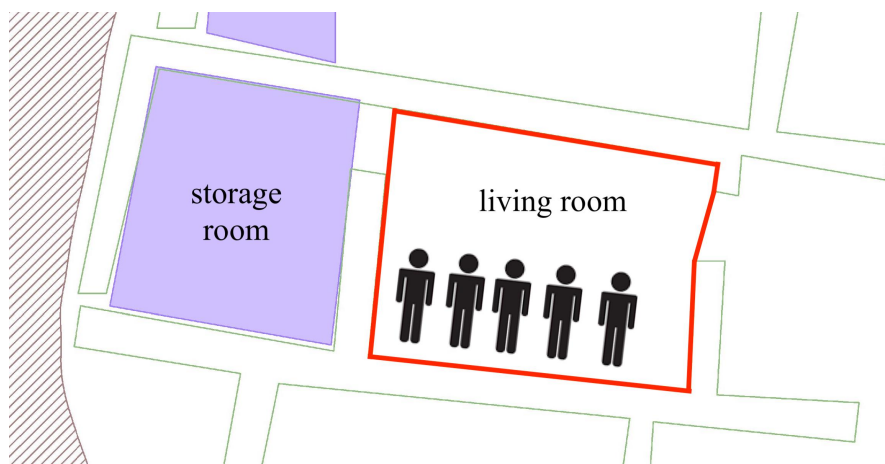


Figure 49: Drawing shows the dwelling with 26 m<sup>2</sup> living room and human figures 170cm in height

The estimated population size is almost half of the one estimated by Duru and Umurtak. They assumed that all uncovered 60 building were dwellings and possibly 40 more houses existed in the unexcavated area.<sup>767</sup> Including Multi-Roomed Building with 17 rooms, it is estimated that there are 140 houses in total at the EBAll

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<sup>766</sup> This result correlates with the ethnographical studies suggesting an average of 5-7 individuals per family. Roche 1983: 187-92; and Kolb et al: 1985: 581-99.

<sup>767</sup> Duru and Umurtak 2015: 77-8.

village in Bademağacı Höyük. Assuming that 6-7 people lived in each house, they suggested that a total of 800 people lived in the village.<sup>768</sup>

## 7.5. Built Environment

Estimation of population size and space syntax analysis indicate that the population density is lower compared to Demircihöyük and Seyitömer (which will be discussed in the discussion chapter). Here, the aim is to visually display the ratio of built area and open space, and dwelling area and storage facilities. In order to create graphics, the size of each building including the building itself, its living space (cella), and its storage space -if there was one- is measured. (*Table 12*) The average sizes for each building type are calculated only based on the uncovered data in order to avoid sampling error. The standard deviation is calculated as 8,48. The population density of Bademağacı at any one time is 0,02 people per m<sup>2</sup>.

It is noteworthy that the buildings labelled as storage facilities have only one room after short ante walls, however, buildings labelled as dwellings have either two rooms, of which one was used as storage room, and/or have relatively long ante walls. The ratios both of total dwelling area to common used storage facilities and of Multi-Room Building 1 area to its storage facilities are very similar as can be seen by the size of the slices in both graphics (*Figure 50a. and 50b.*). This similarity indicates a fair share of subsistence between the other inhabitants and the people who lived in Multi-Room Building 1. Thus, the average living room sizes of the megaron-like rooms (the Building 81,82 and 84) within the complex is 28,88 m<sup>2</sup> which is relatively similar to the average living room size of the dwelling type 1, 24,82 m<sup>2</sup> (*Table 14*). This indicates that there is no privilege given to Multi-Room Building 1 in terms of room size and architectural planning.

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<sup>768</sup> According to the most recent publication, there are more than 50 uncovered houses and possibly another 30 in the unexcavated area. The total number of houses is 120 when the Palace structure with 25 rooms is included. The population of Bademağacı is estimated to be at least 700 people based on a household of 6-7 people. The EBA II village survived for at least two generations. Umurtak and Çongur 2021: 4-6.

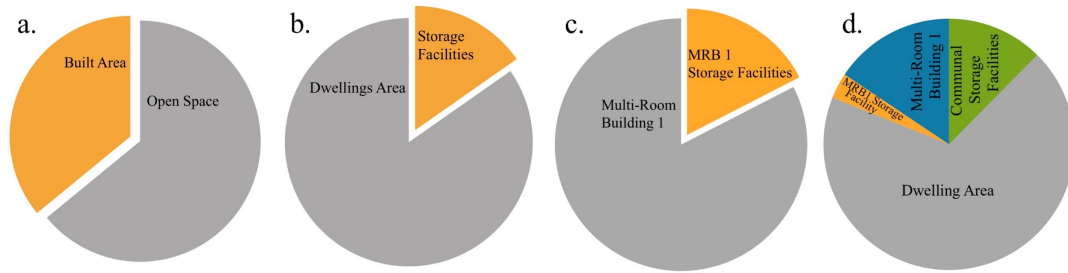


Figure 50: a. The ratio of built area to open space within the glacier in Bademağacı, b. The ratio of total dwelling area to the total area of communal storage facilities, c. The ratio of Multi-Room Building 1 built area to the total area of its storage facility, d. The ratio of the Building complex, its storage facility, the total dwelling area and the communal storage facilities

Table 12: Bademağacı the sizes of the building area, roofed area and living room area.

Bld. no.	Bld. area	Roofed area	Living/Main room a.	Bld. no.	Bld. area	Roofed area	Living/Main room a.	Bld. no.	Bld. area	Roofed area	Living/Main room a.
1	117,50	66,00	52,69	35	24,31	24,31	24,31	68	206,26	176,78	75,86
2	106,35	41,26	39,51	36	22,98	22,98	22,98	69	59,25	42,10	15,54
3	85,49	50,48	50,48	37	19,21	19,21	19,21	70	83,71	50,93	50,93
4	51,82	31,47	21,50	38	16,30	16,30	16,30	71	75,84	37,50	26,47
5	55,49	35,13	35,13	39	11,56	11,56	11,56	72	66,42	37,22	26,96
6	77,92	53,33	33,67	40	18,84	18,84	18,84	73	36,80	20,08	14,11
7	47,41	28,30	17,43	41	15,56	15,56	15,56	74	31,00	31,00	31,00
8	35,61	35,61	26,15	42	13,89	13,89	13,89	75	22,76	22,76	22,76
9	44,31	36,16	22,87	43	28,56	28,56	28,56	76	20,83	20,83	20,83
10	57,60	43,48	26,08	44	4,27	4,25	4,27	77	24,70	24,70	24,70
11	56,48	32,30	32,30	45	20,70	20,70	20,70	78	11,86	30,41	#
12	50,80	31,85	31,85	46	75,68	50,00	#	79	28,69	21,02	21,02
13	61,00	34,19	34,19	46	75,13	46,10	30,48	80	17,29	17,29	17,29
14	58,73	58,73	43,95	47	62,42	39,49	39,49	81	36,93	36,93	36,93
15	66,77	#	#	48	59,85	29,72	29,72	82	59,98	37,07	37,07
16	81,03	#	#	49	62,51	36,78	27,89	83	18,68	18,68	18,68
17	61,24	#	#	50	62,74	35,07	26,84	84	18,36	18,36	18,36
18	63,24	63,24	63,24	51	47,90	28,07	28,07	85	11,67	11,67	11,67
19	66,12	57,71	57,71	52	58,58	32,80	32,80	86	16,61	16,61	16,61
20	53,36	#	#	53	43,56	23,87	23,87	87	9,83	9,83	9,83
21	60,15	27,30	27,30	54	36,75	18,39	18,39				
22	62,93	38,06	29,71	55	28,18	16,36	16,36				
23	57,43	42,78	30,51	56	34,90	26,57	26,57				
24	66,81	48,66	24,37	57	33,77	33,77	21,66				
25	71,59	48,53	24,65	58	54,50	35,44	35,50				
26	71,03	50,25	22,54	59	77,45	51,25	34,51				
27	75,57	59,51	27,93	60	44,41	44,41	44,41				
28	38,53	28,28	28,28	61	44,26	24,81	13,62				
29	42,44	31,32	31,32	62	21,19	16,94	16,94				
30	36,78	25,97	25,97	63	24,69	24,69	15,35				
31	34,27	21,55	21,55	64	19,90	19,90	19,90				
32	13,70	9,90	9,90	65	41,68	34,61	24,11				
33	32,27	26,60	26,60	66	32,04	32,04	15,38				
34	12,50	12,50	12,50	67	23,43	23,43	23,43				

<span style="display: inline-block; width: 10px; height: 10px; background-color: #e0e0e0; border: 1px solid black;"></span>	DT1	<span style="display: inline-block; width: 10px; height: 10px; background-color: #f0e0e0; border: 1px solid black;"></span>	Communal storage facilities
<span style="display: inline-block; width: 10px; height: 10px; background-color: #ffff00; border: 1px solid black;"></span>	DT2	<span style="display: inline-block; width: 10px; height: 10px; background-color: #90ee90; border: 1px solid black;"></span>	artificial buildings
<span style="display: inline-block; width: 10px; height: 10px; background-color: #add8e6; border: 1px solid black;"></span>	MRB1		

DT1 av. building size	= 54,78	m <sup>2</sup>
DT2 av. building size	= 116,40	m <sup>2</sup>
DT1 av. living room size	= 24,82	m <sup>2</sup>
DT2 av. living room size	= 49,10	m <sup>2</sup>
C. storage facility av. building size	= 22,59	m <sup>2</sup>
MRB1 av. storage room size	= 17,14	m <sup>2</sup>
MRB1 av. living room size	= 28,88	m <sup>2</sup>

## 7.6. Archaeoastronomical Analysis

An archaeoastronomical analysis was conducted to determine whether celestial objects influenced the spatial configuration during the EBA II period at Bademağacı. The architectural remains at the site, primarily foundations no more than 30-40 cm

tall, were only suitable for horizontal orientation analysis. Due to this limitation, the architectural plan of Multi-Room Building 1 did not provide a clear understanding of the overall building layout or the location of the main entrance. Moreover, the settlement design indicates that the buildings were not oriented in a specific celestial direction, but rather towards the village centre, based on their positions within the settlement layout. Consequently, the analysis was applied exclusively to the three village gates.

First, the aim was to understand whether the axis of the gates should be measured from the höyük centre or from the alignment of the passageway based on the glacier pavement (*Figure 51*). The middle point of the settlement was determined by drawing a circle surrounding the whole mound including the stone pavement. Then, the lines from centre to the gates are drawn. The alignment of the passageways, and the angle of these lines are compared and it is observed that the position of the gates relative to the höyük centre are not suitable for direct observation of horizon through the entrances. Therefore, the alignments of the passageways are taken into account for the analysis.

The azimuth was measured for each village gate based on their axis of passageways. Then, horizon profiles for each gate were generated using a website<sup>769</sup> where the horizon height is measured in order to calculate the declination degree of each gate (*Figure 52*). Declination of each gate was calculated based on the related horizon height and latitude (*Table 13*). Declination values are crucial for comparing results with other sites. The same declination values indicate that buildings are oriented toward the same celestial point, regardless of their geographical locations. This will serve as a fundamental criterion for analyzing orientation patterns in settlements of the same culture but situated in different regions.

A software program, Stellarium, that shows a realistic sky view based on the specific location, was used to determine whether the declinations of the gates match with a

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<sup>769</sup> <http://www.heywhatsthat.com/>

potential celestial object. However, analysis produced no meaningful result, implying that the inhabitants of EBA II village of Bademağacı did not orient their village entrances toward any celestial object's rising and setting positions on the horizon.

The Sun's path diagram was generated to estimate the rising and setting position of the sun (*Figure 53*). An orientation diagram was created representing each gate's orientation directions to compare the results with those from other sites. (*Figure 54*). Like the declination value, it is widely used as another tool for comparing archaeoastronomical analysis results.





Figure 51: Red arrows indicate the angles from the center of the höyük and blue arrows indicate the angle of the passages based on its plan

#### Bademağacı Höyük Horizon Profile

latitude 37.221667 N longitude 30.498333 E  
 elevation 2579 ft above sea level (23 ft above ground)  
<https://www.heywhatsthat.com/?view=BBPL5XFG>

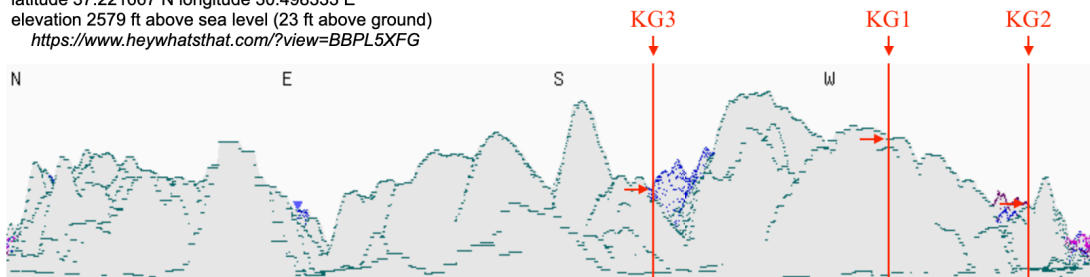


Figure 52: Bademağacı horizon profile generated by "www.heywhatsthat.com" website. The minimum horizon height (minimum altitude) for each gate is determined based on their azimuth value

Table 13: The azimuth, angular height for the horizon (altitude) and calculated declination values for each gate

	azimuth	altitude	app. declination
KG1	292	4° 41' 24"	+20 10 58
KG2	338	2° 21' 0"	+49 26 13
KG3	214	3° 3' 36"	-39 0 45

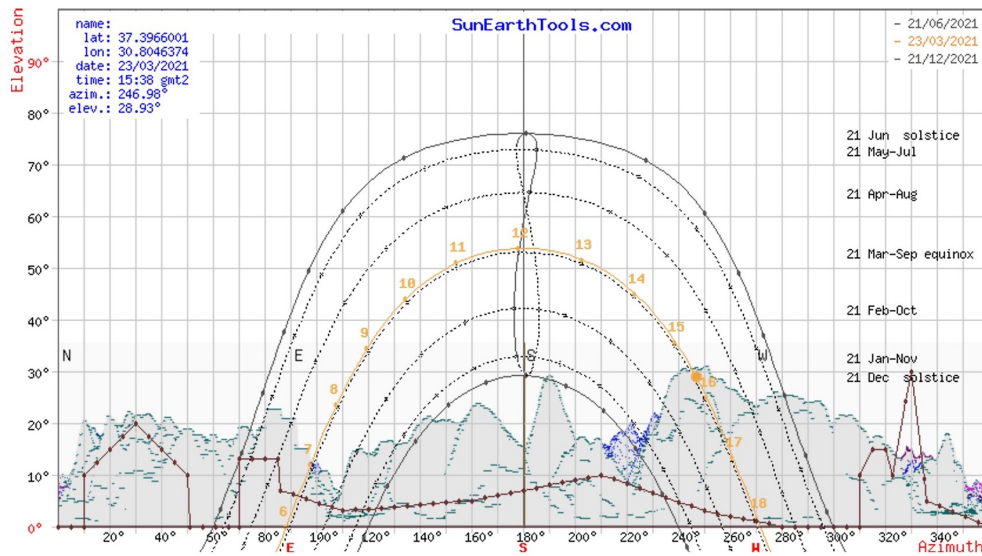


Figure 53: The sun's path diagram derived from "SunEarthTools.com" website

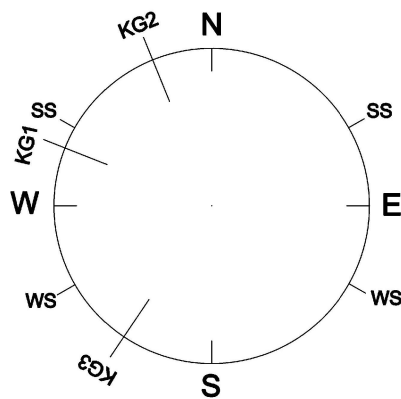


Figure 54: Orientation diagram of the village entrances, KG1, KG2 and KG3 at Bademağacı Höyük

## CHAPTER 8

### RESULTS AND REGIONAL COMPARISON

#### 8.1. Results of Analyses

The focuses of this study are to reveal the role buildings played in the manifestation of the social system, understand its nature, and determine the degree of social complexity in the Early Bronze Age society of Bademağacı Höyük. The issue is conceptualised from the environment-behaviour perspective recognising a systematic interrelationship between the built environment and the patterns of human behaviour. Following Brück and Goodman, this study recognises the relationship between human beings and the built environment as it is created and maintained based on the social construction of place.<sup>770</sup>

By adapting Bergman and Beehner's argument, this study will propose that the degree of social complexity of a given society should be measured based on the number of differentiated, horizontally and/ or vertically, relationships individuals maintain in a society. To investigate "the differentiated relationship", the concept is broken down into variables by following McGuire's argument as inequality and heterogeneity, and depending on them the social organisation is investigated through architecture, spatial location of buildings, boundary control (free/ restricted access into different areas/buildings of the settlement), different economic activities, and greater access to exotic goods.

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<sup>770</sup> Brück and Goodman 1999: 1 – 19.

The investigation of architecture, encompassing consideration of building size, plan and location, aims to identify whether there was a similarity or dissimilarity among the structures within the settlement. To understand the connection between the social system and spatial organisation of the site, Space Syntax Analysis, visually displaying the relationship between the buildings based on their configuration within the settlement and or their plan, was applied to measure inequality and heterogeneity in terms of accessibility, visibility, deepness and control values. To investigate whether this spatial configuration was associated with any celestial phenomena, archaeoastronomical analysis was applied.

Recognising that population size is often regarded as the simplest index of social structure and referred to as the primary criterion for social complexity, this study also included estimation of the settlement population. Furthermore, analysis of the artefact distribution was undertaken to give insight into whether there is an accumulation of artefact assemblages that might signify specific activity or ranked status within the society.

Although the artefact distribution map does not pinpoint the exact location of each artefact, it does display the limits of the place where they were uncovered (*Figure 37*). The map elucidates that figurines, loom weights, seals and metal objects were uncovered from all over the settlement. Based on the analysis, the result suggests household-based production and consumption with a lower degree of inequality. In other words, there was no accumulation of artefact assemblages that might signify specific activity or ranked status within the inhabitants of EBA Bademağacı Höyük.

While the construction technique gives no clue to identify different building types concerning their function, the result of artefact analysis gives insight into identifying the function of some buildings. Despite the existence of large jars and vessels, there was no recognisable place for pottery production, as well as the presence of a significant number of metal objects, there was no trace of metalworking either at the site. (*Table 10*)

A total of 30 graves were uncovered and only four of them were marked on the maps published. Although the stone-circle architectural feature was identified as a burial mark, pithoi have not been uncovered under every stone-circle architectural feature. Neither the total number of stone-circle features nor how many had pithoi beneath is clear. This ambiguity raises doubts about the identification of the stone-circle architectural feature as a burial mark, especially since one of them was identified as a possible storage facility. Therefore, it is not possible to suggest a pattern for the place of pithoi burials based on known data. Nevertheless, it is noteworthy that the four pithoi with burials were located adjacent to buildings. The locations of burials indicate that their distribution spread over a wide area, rather than pointing out a distinctive place that may symbolise status.

Based on their plan and the artefact assemblages found within them, buildings are categorised into four groups: Multi-Room Building 1, storage facilities, dwelling type 1, and dwelling type 2. (*Figure 39*) Multi-Room Building 1 consists of megaron-like buildings and storage facility. Multi-Room Building 2, on the other hand, consisted of side by side rooms that display similar architectural and functional features of storage rooms and it is therefore described as a “storage facility”.

The investigation of the built environment reveals that the position of the dwellings, as being side by side with an entrance facing to the central court, create cohesiveness causing group members to remain in the group based on the combined commitment of each household to the group. Cohesiveness refers to both positive and negative impacts on individuals that remain in a group where people interact sometimes cooperatively but sometimes competitively. Many factors determine whether people interact cooperatively or competitively. Reward structure shaped by the nature of the social interdependence among group members either leads to competitive or cooperative interdependence. Building dwellings side by side and the different construction sequences of the walls of buildings limits the space while it demands a reciprocal concession and strong collaboration with neighbouring dwellings that

increases cooperative interdependence. These strengthen the bonds among village inhabitants and create a general sense of community.

Relatively wide entrances and lack of threshold marks that would create a boundary between interior and exterior of the dwellings, increase interaction and so communications. Cooperation is highest when communication is required. The size of the living rooms is almost similar, except for dwelling type II, which will be discussed later for its possible reason. Sharing a similar size of the living room makes compromise easier and so reinforces cooperation and results in an even more significant compromise and quick agreement.

The inner division of the dwellings into two rooms is more likely to have a functional meaning. The arrangement of the rooms creates different degrees of separation. The lack of remains indicating inner division within the living room can be read as providing little separation within the dwelling. Excavation results suggests that the back rooms were used as a storage room. This indicates the concept of ownership and personal values. Personal values are also one of the important factors which influence individual's behaviours orienting towards either cooperation or competition. In this case, similar size of dwellings and common storage facilities indicate that the strategies of Bademağacı inhabitants in interacting with each other is cooperative. Unfortunately, there is no information how the interior of the buildings was used.

Despite the fact that the location of Multi-Room Building 1 indicates a strategic importance, possibly in terms of higher status among the other buildings, by taking into consideration the architectural plan of the rooms in Multi-Room building 1, and the similar ratio of the building area and storage facilities, it is suggested that the higher status previously suggested for the households who lived in Multi-Room Building 1 is a social leadership-like authority which focuses on the emotional and interpersonal aspects of social interaction, rather than task leadership-like authority who controls, direct and organises the society in carrying out a specific task. In other

words, the households that lived in Multi-Room Building 1 were ritual or moral leaders rather than a wealth based elite.

Event though the living room size of dwelling type 1 is almost double the size of type 2, the average size of the all buildings of dwelling type 1 and type 2 is the same. This indicates that there is no privilege given to the households of dwelling type 2 in terms of building size, instead the architectural plan differs. If we agree that the households living in dwelling type 2 were livestock raising people, then this difference was possibly due to the functional need to obtain additional space for the animals, rather than symbolic to represent higher status.

In a broader sense, space syntax techniques promise two primary outcomes: a schematic representation of space displaying the different degrees of relationship between spaces and syntactic terms with numerical values for quantitative analysis to conduct an objective investigation. The techniques are also suitable for adaptation. Fisher, for instance, modified the calculation by giving elaboration scale to physical features of the space. This modification allowed him to measure interaction potentials of both movement and encounter in a building as well as identify the types of social interaction that might occur in a given location. Harrison, on the other hand, altered the access graph by displaying different architectural features and different activity areas. In this approach, she was able to identify change both in the use of space and in architectural traditions over time.

In this study, however, there were no hearth or oven found and the only inner installation feature uncovered inside four buildings is the round-shaped stone pavement. Besides the stone foundations that varied in thickness from one side to the other, there was no information on the floor, the wall construction, the usage of wood or the roof construction. Only little is known about architectural techniques, and it gives no pattern to identify any possibly privileged residences, instead, it elucidates the different time sequences for the repair of a building's walls. On the other hand, the varying wall thickness of a building may also suggest that they were not built

contemporaneously, but rather over time as the population increased. Since the locations of artefacts were poorly published, it is not possible to alter the justified graph either.

Due to the fragmented nature of data, space syntax has theoretical, methodological and epistemological limits when it is applied to an archaeological study. The application of techniques requires clear starting and finishing configurational features. Missing information will produce different results than it should be if complete. Moreover, critics often highlight that space is described through movement and interaction, while the pattern of order that the configurational character of the space embodied influences the dialectical relationships of the human-built environment. The function and the meaning of space, on the other hand, reveal information about social structure. In this study, these limitations were addressed initially by reducing the missing information and taking into account the nature of activities performed in each unit of space through the material representations of those activities. To associate space with particular activities, artefact distributions are investigated. The result of the space syntax analyses reveals that some identifications and/or definitions made by excavators need to be re-evaluated. It also enables interpretation of the finds from a holistic approach. Consequently, a more coherent narrative about the EBA II settlement of Bademağacı became possible.

To run space syntax analysis, a digitised EBA II settlement building layout was generated in the light of the published data including maps. (*Figure 36*) In the digitised plan, some buildings, wall constructions and architectural features that were not dated to the EBA II phases were removed and some artificial ones were constructed based on the excavation reports to create a relatively contemporaneous complete building layout of the EBA II Phase of the site. Even though publications have been carefully browsed more than once, they do not provide all the information required to comprehend building sequences or locate finds and samples in their



context. For the necessary information, the head of the excavation was contacted, but no result was obtained. The reason for the missing data is both the lack of data in the first place and poorly published data. Therefore, the accuracy of digitised settlement layout, as well as the artefact distribution map, are treated with caution. The plans and positions of the uncovered buildings are dealt with by placing buildings on the digitised map as they may have been on the basis of the excavated buildings's plans and locations. By doing this, the aim was to follow the architectural traditions of the village during the EBA II and generate a reliable settlement layout that reflects the spatial distribution of the buildings at one point in time.

In the scope of space syntax analysis, axial line analyses (*Figure 41* and *42*), convex isovist analysis (*Figure 43*) and convex spatial analyses (*Figure 45, 46* and *47*) were applied, justified graphs were constructed (*Figure 44* and *48*), and the numeric value table created (*Table 11*). The use of graphics to visualise calculations demonstrates that they are efficient for analysing large amounts of data and straightforwardly displaying the ordered relationships between spaces. The numeric values of related analysis, on the other hand, are difficult to fathom at first glance. For instance, it is difficult to evaluate the visual connectivity scores since a mind can only compare a limited amount of information at once. Therefore, *Table 13* is employed to outline maximum and minimum points, while the graphics are used for comparisons to wider regions or the entire site.

When the isovist graphs, connectivity graphs, and step depth graphs are consulted together, it appears that G2 was the main gate into the settlement rather than G3, as the excavators suggested. (*Figure 41, 42* and *43*) Random placement of stones of various sizes rather than well-placed stones, a gentle slope instead of a steep slope, and 2m and 4m wide open entrances without additional architectural features that provided closure for protection merely indicate that the pavement surrounding the site, as well as the layout of the agglutinated buildings, functioned as a barrier for flooding. The number of arrow heads was too low to suggest warfare, and the same is

the number of axes is also a few and only one of them is metal. (*Table 10*) Moreover, since the burials are not examined, it is not clear whether there were any traces of violence in the burials. Therefore, Duru and Umurtak's identification of the site layout having a fortification function was not made on the basis of any evidence but an assumption that appears to be incorrect. The shallow wall construction built in the northern section was used possibly to keep the animals within the settlement, and I would argue that it ensured the continuity of the form that gives the impression of a closed system in which no dwellings were uncovered. This closed system of agglutinated dwellings with entrances facing the central court served to create unity among the group members.

The space syntax analysis and archaeological remains indicate that Multi-Room Building 2 was possibly used as storage facilities and with its connectivity degree with the village suggest that it was used for communal storage. Multi-Room Building 1, on the other hand, was possibly used as a dwelling by at least two but possibly three households who had higher status among the inhabitants. The existence of a stele in this complex indicates some degree of religious activity. Based on their positions and architectural form, the dwelling type 2 might have been used by households who were responsible for the farming animals. The two animal figurines uncovered from the dwellings identified as type 2 also supports this suggestion.

Unlike the excavators who suggested that a dominant ruler or elite class who lived in Multi-Room Building 1 and had control over the surrounding regions, I would argue that the households living in the building complex were spiritual or moral leaders because no indications of wealth are revealed by the architecture (*Figure 39* and *Table 12*). Instead, the architectural features and the ratio of the building complex/storage facility and the total dwelling area/communal storage facilities are proportionally equal (*Figure 50*). The spatial depth graph implies a lower connection with communal storage facilities. Moreover, artefact distribution does not claim otherwise. (*Figure 37* and *Table 10*) Therefore, I propose that the higher status

previously suggested for these households is a social leadership-based authority, exercised by possibly ritual or moral leaders. I would define this type of leadership as someone who persuades people to cooperate in the achievement of a common objective rather than using power for his/her own household's benefits.

The population size, occupation area and the size of the storage areas are considered essential indicators of a social organisation. Completing the settlement layout by adhering to the architectural tradition of the village also allows for more reliable population calculation for the village. Although Umurtak and Duru proposed another 30 buildings in the unexcavated area, only 15 buildings can fit in it. They also assumed that all buildings were houses. Assuming 6-7 people living in each, a total number of 120 houses produced at least a number of 700 people. However, the results of my analyses reveal that some buildings were used as storage facilities. When storage facilities are excluded, a total of approximately 55 dwellings produces an average population of 330 people based on a household of 5-7 individuals.

Calculating the average sizes of different spaces and creating related graphics allow for a more accurate interpretation of the results of space syntax analyses and strengthen the arguments. (*Table 12, Figure 50*) It was – in particular, helpful in understanding that the inhabitants and the people living in Multi-Room Building 1 shared a fair share of subsistence and identifying the type of leadership that existed in the village.

Societies often conceived and ordered space in a similar way to how they perceived the sky.<sup>771</sup> The built environment was employed also as medium for power, belief systems, ceremonial rituals, daily activities and symbolic expressions related to celestial objects.<sup>772</sup> Archaeoastronomical analysis was applied to determine whether the human-built environment relationship ever had a celestial component. The analysis was only applicable to the village entrances. Results imply that the

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<sup>771</sup> López 2015: 341-52.

<sup>772</sup> Iwaniszewski 2005: 11-6; 2011: 30-7; Krupp 2015: 67-91; McCluskey 2008: 264.

inhabitants of EBA II village of Bademağacı did not orient their village entrances toward any celestial object's rising and setting positions on the horizon. Considering the preference for an orientation toward the southeast in Demircihöyük-Sarıket, further analysis could have been performed on the pithoi found within the village. It is not possible, though, because necessary information was not published. The orientation diagram was created so that the results can be compared to those of other settlements if necessary in the future (*Figure 54*).

The shift from the buildings to portable objects that embodied symbolic expressions, seemed to continue during the Early Bronze Age. Figurines, for instance, were employed in a variety of settings depending on their material.<sup>773</sup> Clay figurines were associated with status-related issues at the domestic and community level. While stone, metal and bone figurines were uncovered often within burial context that suggests mimicking the life cycle, ancestry and social continuity by their nature of raw material. Metal figurines, in this respect, were additionally related to economic and ideological control over religious issues with a concern of public display.

The association of stone, metal and bone figurines with ancestry and continuity seems reasonable because they were uncovered often from burial contexts. While clay figurines with status issues in daily life seem problematic, since the association was done based on its domestic contexts. Considering the previous utilisation of clay for skull plastering during the domestic rituals that served as a memorialisation and erasure of identity within the community,<sup>774</sup> the presence of clay figurines within domestic and community level contexts might suggest the continuation of memorialisation and erasure of identity within the community, but through different media, figurines in this case, and clay plays the key component that was referred to in the plastering of the skull. Interestingly, the majority of clay figurines found at the

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<sup>773</sup> Atakuman 2017: 85-108.

<sup>774</sup> Kuijt 2008: 171-97.

sites of Koçumbeli and Demircihöyük were broken at the neck.<sup>775</sup> In this perspective, this action could potentially refer to the secondary burial ritual, in which the skeletons of the deceased were removed from one location and buried in another. Secondary mortuary rituals were performed at the community level, involving multiple households while bearing social, political and personal meanings.<sup>776</sup> In any case, further research is necessary to support or refute this theory.

In Bademağacı, neither the total number of idols nor their conditions, whether completed or broken at the neck, are clear. Nevertheless, we know through the publications that a few of them were broken at the neck, and there was one stone figurine uncovered in the settlement. (*Table 10*) However, it is difficult to make any suggestion on their function or meaning without their social context.

Besides the pottery, metal objects including containers, tools or weapons, ornaments, earplugs and so on, were also uncovered from burial contexts at many sites (*in Appendix I*). These finds suggest the embodiment of symbolic expression used during the burial ceremony through metal objects, as well as pottery. In Bademağacı, bowls were put in the pithoi as grave goods. On the other hand, metal objects, including spearheads, hand axes, pins, earplugs and a seal, were uncovered often *in situ* in the large jars from all over the settlement.

Another important find, which was uncovered within the EBA burial context is animal bones, especially cattle. Animals, in general, are important components of ritual activities, and so their remains were often uncovered in ritual-related contexts. Since the Neolithic, cattle had been found in a variety of contexts: as feasting remains in building deposits filled before or during construction, as inner decoration of houses, as the remains of ceremonies in the ritual waste, as grave goods in burials, as abandonment deposits, after the occupation is completed and in post-retrieval pit

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<sup>775</sup> Atakuman 2017: 90-1.

<sup>776</sup> Kuijt 2008: 175.

deposits.<sup>777</sup> The symbolic expression of cattle depended on its context. Its presence in a deposit was interpreted as a commemorative meaning linking the ceremony and the house in some way parallel to the skull cult. While using animal parts as architectural installations was interpreted as trophies and the display and the respectful treatment of hunted animals. In Bademağacı, the killing pattern of animals suggested that they were used for their meat or animal power. The context of animal remains is unclear. Although there were some examples, such as Alacahöyük, Demircihöyük-Sarıket and Ilıpınar, where animal remains were uncovered either within the burials or nearby,<sup>778</sup> in Bademağacı there was no evidence found from the burial context.

Anthropomorphic horse-shoe shaped hearths, on the other hand, served for fire-related domestic rituals in northeast Anatolia during the Early Bronze Age.<sup>779</sup> The significant number of horned objects for consecration was often related with the anthropomorphic horse-shoe shaped hearths and used possibly in household-level rituals. In the site of Pular, fragmented idols were also found with hearths.<sup>780</sup>

Lack of hearths in the dwellings, lack of ovens, and lack of any evidence of metalworking suggest that some activities, such as pottery-making and metalworking, were possibly carried out beyond the site boundary. While others, particularly cereal storage and cereal processing, animal penning and textile production, were carried out in the village. The presence of some activities and the absence of others may also suggest that the site was occupied seasonally and other activities took place elsewhere. Scholars have highlighted the diverse interactions between mobile pastoralists and settled communities, particularly urban centres, while archaeologists emphasise the intricate economic relationships between these

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<sup>777</sup> Russell et al 2009: 103-25.

<sup>778</sup> Arbuckle 2014: 277-9; Durgun 2017: 11-27; Massa 2014: 73-93.

<sup>779</sup> Takaoğlu 2000: 11-6.

<sup>780</sup> Takaoğlu 2000: 13.

two distinct communities. However, our understanding of the interactions between these two distinct communities in the EBA Anatolian landscape remains limited. Göltepe, on the other hand, provides evidence of the seasonal occupation of an EBA village, consisting of workshops and craft quarters associated with mining activities and habitation units.<sup>781</sup> Archaeological data indicates that the site was closely related to metal production and featured unique architectural characteristics compared to other excavated sites in Anatolia. Yet, neither the site plan nor the building plan should be regarded as a precedent for seasonally occupied sites. Yener 2021: 195-200. If this was the case, calculating population, identifying the demography and determining the structure of the social organisation became even more complicated.

In conclusion, the result of the analyses reveals that some identifications and definitions made by the excavators need to be re-evaluated:

- The main entrance into the city is G2
- Household-based production and consumption and a lower degree of inequality
- Multi-Room Building 2 was used possibly as a communal storage facility with the community managing it rather than a single household having legitimacy over it.
- Multi-Room Building 1 was possibly used as dwellings by at least two or three households who were possibly ritual or moral leaders. The existence of a stele in this complex indicates some degree of religious activity. Although the location of the MRB1 indicates strategic importance, when we look at the architectural plan of the rooms, the similar ratio of the building area and storage facilities, and the spatial depth graphs that imply a lower connection with communal storage facilities, I propose that the higher status previously suggested for the households is a social leadership-based authority, exercised by possibly ritual or moral leaders. This type of leadership is more likely someone who persuades people to cooperate

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<sup>781</sup> Yener 2021: 195-200.

in the achievement of a common objective rather than using power for his/her own household's benefits.

- Dwelling type 2 might have been used by households who were breeding animals.
- Buildings played a functional role in establishing and maintaining a general sense of community and social norms by demanding cohesiveness and promoting cooperative interdependence. The difference between DT1 and DT2 was possibly due to the functional need to obtain additional space for the animals, rather than symbolic to represent higher status. Their types indicate horizontal social stratifications, while the location of Multi-Room Building 1, with the existence of a stele, indicates vertical stratification.
- The estimated population is 330 people, within the limits of the population threshold, and might not urge distinct sub-groups within the community.
- The presence of some activities, the absence of others, and the fact that no burial site has yet been found near the settlement may also suggest that the site was occupied for a certain period of time (this may also imply that some households held their activities elsewhere at certain times of the year) with certain activities taking place elsewhere. However, to support or refute the argument, further research is needed. If this was the case, calculating the population, identifying the demography and determining the structure of the social organisation become even more complicated.

## **8.2. Comparison**

In this section, to better understand the structure of the human-built environment relationship during the EBA in general, identify whether there is a variation in this structure and highlight the reasons for the specific variations, results are compared and contrasted with other sites. The sites were either analysed through similar



theoretical and methodological study frameworks, such as Seyitömer and Demircihöyük or located nearby, such as Hacilar Büyük Höyük and Karataş.

*Table 14: Chronology of the sites mentioned in the text. White and black portioning is used for imprecise dating*

Date	Cultural Period	Bademağacı H.	Demircihöyük	Seyitömer H.	Karataş	Hacilar Büyük H.
1500 B.C.						
	MBA					
2000 B.C.						
	EBA III					
2300 B.C.						
	EBA II					
2700 B.C.						
	EBA I					
3000 B.C.						
	Late Chal.					
4250 B.C.						
	Middle Chal.					
5500 B.C.						
	Early Chal.					
6000 B.C.						
	Neolithic					
7500 B.C.						

Social organisations respond differently to different natural environmental conditions that alter human behaviour.<sup>782</sup> Their ability to cope with and adapt to any external stress influences their socio-ecological patterns and their ability to sustain a stable social organisation is pivotal. Therefore, to comprehend the human-environment relationship it is necessary to address social diversity as well as values and power.<sup>783</sup> To eliminate the influence of natural environmental factors on the human-environment system from the equation and focus on the human-built environment relationship, the topographic and climatic parameters of the sites are also compared and contrasted.

<sup>782</sup> Dove 1992: 231-53.

<sup>783</sup> Fabinyi, Evans and Foale 2014: 28.

From a very general perspective, the topographical features of the sites mentioned in this study display a similar picture. Except for Karataş, where only the Central Complex was built on a mound, the sites were all settled on mounds rising in a plain surrounded by mountains, in a region rich in water sources and vegetation that support agriculture, animal husbandry and hunting for the local villagers. Kütahya and Antalya provinces are rich in water sources and vegetation. Although there is no information on the faunal remains of Seyitömer, it would not be wrong to assume that they had a similar subsistence economy with possible variations related to local species. The climatic parameters at the sites could only be projected based on today's conditions. The location of Demircihöyük is under the impact of continental climate, while Seyitömer is exposed to both Central Anatolia and Marmara and Aegean regions climatic conditions. Bademağacı and Hacılar Büyük Höyük are under the impact of varied climatic conditions from semi-arid to humid due to the mountains that prevent the warm Mediterranean climate from reaching the interior parts of the region. Karataş, on the other hand, is under the impact of the Mediterranean climate.

The management of space and built environment on a mound differed from that on a plain.<sup>784</sup> Mounds served as spatial and temporal boundaries for the organisation of the built environment and the activities. They have embodied the remains of previous generations. They have inherently symbolic, as well as expressive, meanings as monumental built environment. As a result, they conducted different forms of relationship between humans and their built environment. The EBA II settlement of Bademağacı was established around the Neolithic remains of the previous occupation after about 3400 years of interruption and continued for about 400 years without interruption.<sup>785</sup> The debris of the EBA II occupation is about 4,5-5 m.

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<sup>784</sup> Bailey 1999: 110-27; Steadman 2000: 164-99.

<sup>785</sup> Duru and Umurtak suggested 800 years of occupation in their previous publication (Duru and Umurtak 2015: 75), later, Umurtak suggested 400 years in the most recent publication (Umurtak and Çongur 2021: 4-6) without giving any information on why the date was changed.

Based on the sounding results, the earliest occupation in the village of Demircihöyük went back to the Neolithic but it is not clear whether it was uninterrupted or not. In any case, the Early Bronze Age I occupation began around cal. 3000 BCE and continued without interruption for almost 400 years that resulted in 7m of debris of occupation with 20-40-year-lifespan of the dwellings.

The sounding results only reveal the existence of EBA II in Seyitömer and during the EBA III, the village was demolished and re-established several times and lasted about 650 years till the end of the MBA without interruption.<sup>786</sup> Unfortunately, there is no information on the occupation debris of EBA III for the village Seyitömer. There is no information on whether there was earliest occupation phase existed in Karataş before the EBA I. In Hacilar Büyük Höyük too, the existence of previous occupation phases is not known yet.

Except for Karataş, the general characteristic of the sites is agglutinated dwellings built based on a pre-planned model on a mound. It is worth emphasising that a mound type site imposes neither a pre-planned settlement layout nor agglutinated dwellings since there are examples of otherwise such as the EBA II site of Küllüoba,<sup>787</sup> Kanlıgeçit<sup>788</sup> and Titriş Höyük<sup>789</sup>. The agglutinated dwellings create cohesiveness, which causes group members to remain in the group based on the commitment of each household to the group, and demands a reciprocal concession and strong collaboration with neighbouring dwellings that increases cooperative interdependence. These strengthen the bonds among village inhabitants and create a general sense of community. Thus, the entrances of dwellings facing the central court

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<sup>786</sup> Bilgen 2015a.

<sup>787</sup> Efe and Ay-Efe 2007: 265, Fig. 6.

<sup>788</sup> Özdoğan 2006: 576, Res.1.

<sup>789</sup> Algaze and Matney 2011: 993-9.

enhance a social impact that influences individuals' behaviour depending on their number, strength and immediacy.<sup>790</sup>

Morality, for instance, refers to the norms of an individual's characteristic behaviours that direct one's action.<sup>791</sup> Moral norms differ from society to society and guide individuals how to interact in society that they lived together.<sup>792</sup> Furthermore, shared moral norms allow individuals to have self-projection on who she/he is and define a distinct social identity.<sup>793</sup> Due to fact that morality is crucial for a distinct social identity, acting in a way that the in-group defines as morally right is an essential way to gain respect inside the group.<sup>794</sup> Therefore, the social impact generated by the settlement layout allowed inhabitants both to monitor each other's actions and create a group-level observation. However, the population density of the village Bademağacı is very low, of 0,02 person per m<sup>2</sup>. This lower population density reduces the social impact. Placing the ritual or moral leaders in the centre of the court strengthen this social impact and provided leaders with control over the village to direct and organise the inhabitants in carrying out specific tasks.

Bademağacı Höyük, as well as the other sites mentioned in this study, all fall into the region that Çevik identified as a centralised social system on the map. (*Figure 5*) Artefact distribution analysis reveals that like other artefacts metal objects as prestigious items were distributed across the settlement (*Figure 37*). This merely indicates the fact that wealth was not a privilege but a shared status among the inhabitants of Bademağacı. The analysis result, on the other hand, underscores communal storage facilities. In this regard, Bademağacı does not meet any criteria that Çevik identifies for centralisation. The spread of metal objects as well as other

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<sup>790</sup> Taylor et al. 2006: 303-4.

<sup>791</sup> Beauchamp 2001: 3-31 ; Brandt and Reyna 2011: 428-46.

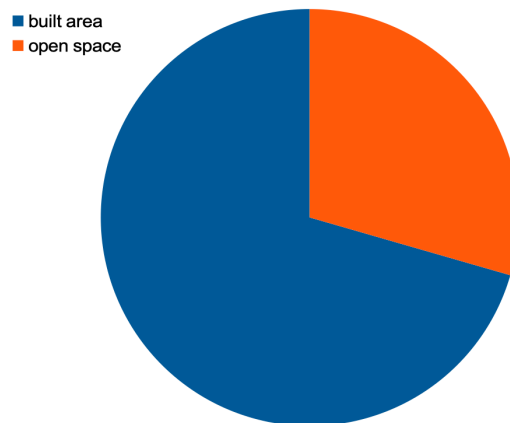
<sup>792</sup> De Waal 1996: 166-82; Rai and Fiske 2011: 57-75; Sachdeva et al 2011: 161-76.

<sup>793</sup> Ellemers and Van den Bos 2012: 878-89; Haidt 2008: 65-72.

<sup>794</sup> Ellemers et al 2013: 160-93.

items randomly and widely in the settlement, agglutinated dwellings which are of an almost similar size (except the northern section, which for this reason is discussed in the previous section) and communal storage facilities indicate that all members of society had access to wealth and shared relatively more egalitarian distribution of artefacts and space. From Çevik's perspective, this indicates some degree of urbanisation.

The round-shaped settlement formed by agglutinated houses facing the courtyard of Demircihöyük consisted of 26 buildings and the estimated population of the village was a maximum of 130 people.<sup>795</sup> The size of the settlement is 0,35 ha and compared to Bademağacı, the ratio of open space to the built area in the village is very low (*Figure 55* and *Figure 50a.*). The open space found in the centre of the village was not suitable for public occasions due to the slope toward the centre, and the storage facilities and silos that were placed in the deepest part of the centre. Nevertheless, it provides a 360° view of the village and so results in significantly high social impacts.



*Figure 55: Demircihöyük the ratio of built area and open space where they sunk storage bins into the ground*

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<sup>795</sup> Korfmann 2011: 214.

Although Korfmann claimed that there was a ruling power over the small farming communities of the Eskişehir region that imposed the settlement layout upon the inhabitants of Demircihöyük village,<sup>796</sup> the spatial arrangement of the site and communal storage facilities, according to Durgun, implies a decision-making strategy that was likely governed by the entire community.<sup>797</sup> In Phase K1, only one building had three rooms and was built using different construction techniques from the others. During the following phase K2, at least three buildings with these specific construction techniques were observed. The quantitative analysis of the burial context done by Massa implies some degree of stratification in respect to the age classes.<sup>798</sup> With the existence of distinctive buildings, Massa suggested some degree of a vertical hierarchy, possibly in terms of local leaders of the community who had regulated the daily life of the inhabitants of Demircihöyük.<sup>799</sup>

The size of the group is the simplest index of social complexity and the ability to form a small number of deeply bonded relationships is critical for large groups in order to sustain their stability and coherence over time.<sup>800</sup> There is an optimal limitation of group size to balance the benefits of group-living against the costs. In a group where individuals are forced to live nearby and distancing is not a solution for any aggression within the group, it creates costs. If the tensions are not resolved, the groups will split apart and the benefits of living within a group will disappear.<sup>801</sup> Based on the studies, the group size of around 150 is an average for an active face-to-face interaction that consists of an affinity group of 50, the sympathy group of 12-15, and the closest group of 5 (often family members). This series of grouping

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<sup>796</sup> Korfmann 1983: 222.

<sup>797</sup> Durgun 2012: 26-7.

<sup>798</sup> Massa 2014b: 73-93.

<sup>799</sup> Massa 2014: 91.

<sup>800</sup> Dunbar and Sutcliffe 2012: 103-4.

<sup>801</sup> Dunbar and Sutcliffe 2012: 104.

levels have a ratio close to multiples 3, 5, 15, 50, 150, 500 and so on.<sup>802</sup> According to Kosse, due to the limited capacity for the long-term memory, a maximum of 500 individuals is the cognitive limit for a local community.<sup>803</sup> In a society where the population larger than this threshold, the cognitive stress is so high that it urges changes in social organisation.

In case of any aggression or making decisions, a few members of the group play leading roles for the coalitions in groups when the population is lower than this threshold. However, Osborne and his colleagues revealed that increase in population results in decrease in individual's impact on the decision-making process.<sup>804</sup> Thereby, individuals in a larger community are less likely to be willing to be the part of this process. Moreover, individuals with extreme opinions have greater impact than moderates. Therefore, in such a community where the population is beyond the threshold, the emergence of a sub-group that dominates the decision-making process occurred.<sup>805</sup>

From this perspective, the estimated population number of 130 is within the limits of the average group size with active face-to-face interactions. The three-roomed buildings might have belonged to the group members who were trusted the most for making decisions on behalf of the rest or solving the in-group aggressions.

Despite the radial site layout that resembles the site of Bademağacı, Seyitömer had significantly different building layouts that had been formed based on different construction techniques used and their functions. The dwellings of non-elite communities had houses that shared common spatial features, while workshops were located in clusters and used at a communal level to produce pottery for both local use and trade. The elite community, on the other hand, legitimised their power and social

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<sup>802</sup> Dunbar and Sutcliffe 2012: 105.

<sup>803</sup> Kosse 1990: 279.

<sup>804</sup> Osborne, Rosenthal and Turner 2000.

<sup>805</sup> Osborne et al 2000: 929-30.

status through different architectural features in terms of location and building techniques and finally, the ritual community was located at the centre of the site.<sup>806</sup> In this respect, the society of Seyitömer displays both vertical and horizontal hierarchy.

The site of Seyitömer occupies an area of 0,6 ha which is half the size of Bademağacı. (*Figure 56*) Thus, unlike Bademağacı (*Figure 50a.*), Seyitömer did not have a wide-open space but rather narrow streets surrounding the central building complex and a small open area in front of the Administrative Complex. The angle for an individual to see neighbourhoods is very narrow which results in lower social impact. The social impact, however, depended on number, strength and immediacy of the observers, which are lower for Seyitömer. On the other hand, the Administrative Complex (*Figure 10*) had a relatively wider field of view over the settlement, and possibly its management power and dominance over the inhabitants was stronger and compensated for the lower social impact caused by the lower visibility between the houses.

Based on the buildings uncovered in the EBA III Phase B, the population of the village of Seyitömer could be assumed around 170.<sup>807</sup> This is close to the estimated population of the village Demircihöyük. The density of occupation area for Seyitömer is 0,03 person per m<sup>2</sup>, and it is lower compared to Demircihöyük with 0,04 persons per m<sup>2</sup>, and higher to Bademağacı with 0,02 persons per m<sup>2</sup>.

Although a relatively small area of the site Hacılar Büyük Höyük has been uncovered, the population was suggested as 300-500 inhabitants occupying an area

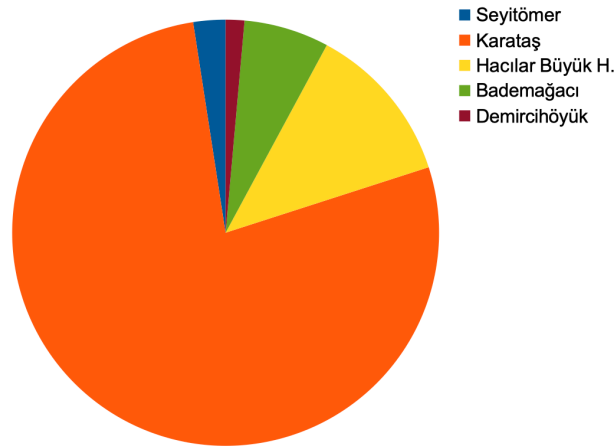
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<sup>806</sup> Harrison 2016: 328-35.

<sup>807</sup> Recognising the acknowledged correlation between societal scale and complexity, in cases where population size has not been explicitly assessed by excavators, the population size is calculated as the product of the average living area and the number of dwellings. It is imperative to underscore that the primary objective herein is to generate an approximate numerical value conducive to facilitating meaningful comparisons between settlements. This calculation serves as a rudimentary estimate, and the prospect of conducting more intricate and comprehensive investigations remains open for future scholarly endeavours.



of 3ha.<sup>808</sup> Despite the significant difference between the casemates forming the defence system and megaron-like buildings found in the centre in terms of architectural features and size, the artefact assemblages found so far show homogenous distribution among the excavated area. I believe it is too early to discuss the social structure of this village community.



*Figure 56: The ratio of settlement's size mentioned in the text.*

In the site Bademağacı, buildings often had various wall thicknesses indicating different construction or repair times for each and the existence of some degree of variation in inner divisions of the dwellings suggest a relatively flexible construction policy compared to Hacılar Büyük Höyük which enables decision-making on a household basis whenever it was necessary even though the construction technique demands a reciprocal concession and strong collaboration with neighbouring dwellings. In Hacılar Büyük Höyük, on the other hand, the alignment of casemates seems relatively more precisely designed and demands more strict construction and settlement layout policy.

Including the necropolis, the village Karataş is thought to extend all around the Central complex over an area of 19,13ha occupied by 460 inhabitants during the

<sup>808</sup> Umurtak 2021: 52.

Early Bronze Age II.<sup>809</sup> Even though the density is much lower, of 0,002 inhabitants per m<sup>2</sup>, the areas used for habitations, domestic activities and burials were changed and even shifted over each other. This suggests an organic village growth rather than a pre-planned settlement layout. The site had been occupied from EBA I to EBA III without interruption.

The architectural traditions in the village were altered with time in terms of building plans and construction techniques (*Figure 14*). Apart from the Central Complex, excavation results indicate uniformity in terms of architectural features and finds suggesting any social or occupational distinction.<sup>810</sup> The artefact distribution over the village and the existence of the back rooms of the dwellings where the large jars and pithoi were found suggest the household-based production and consumption. Thus, over time, some dwellings even had additional rear antae for their storage.

The settlement consisted of free-standing houses with entrances toward open working areas or streets during all the phases. These free-standing buildings gave independence to the households for maintaining and repair of the house. Although most of the buildings were oriented toward the east,<sup>811</sup> since the deviation is not clear it is difficult to suggest a preferred direction for buildings' position. Different construction techniques applied for the upper part of the buildings and irregular locations of the buildings suggest a very flexible, even non-existent settlement layout policy. The irregular locations among the village also reduced the active face-to-face interaction between inhabitants and so decreases the social impact dramatically.

The circular stone platforms in the domestic areas which were possibly used for special occasions were uncovered from different locations in the village. The best-preserved one was built over the previous platform. Their multiple locations over a

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<sup>809</sup> Warner 1994: 175-7.

<sup>810</sup> Warner 1994: 179.

<sup>811</sup> Warner 1994: 136, Chart 4.



complex. Their size, semi-underground nature, and the existence of benches and a round fireplace within each suggest that these fence buildings were sweat lodges.<sup>813</sup> Only one spindle whorl, one loom weight and a hair ring were uncovered in the Central Complex from Phases I-III. Although the number of metal objects found was limited, many more examples of spindle whorls and loom weights were uncovered throughout the village.

According to Warner, the relationship between the Central Complex and the village remained without any change throughout the lifespan of the settlement.<sup>814</sup> Elsick identified the complex as a residence of elites and calculated its population as 50. Following Massa's identification of fence buildings as sweat lodges, the population might have been lower if the complex had ever been used as a residence. Based on the architectural form and archaeological remains, Warner asserted that the Central Complex had multiple functions: a residence of elites, a production centre, and a gathering area for rituals where foods were cooked and consumed.<sup>815</sup>

Within the 600 burials uncovered during the excavations, only one of them was a significant chamber tomb.<sup>816</sup> The size of the pithoi was related to age of the deceased and the large ones contained multiple burials as a family grave. The grave goods, on the other hand, were given based on age and sex. This indicates that the burial tradition did not display a vertical hierarchy. If the Central Complex had been used as a residence of elites, considering its existence from the EBA I to the EBA III, it must have served for more than one generation of elites. Therefore, elites either did not carry their status when they died and were buried as ordinary inhabitants or were buried somewhere else unknown.

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<sup>813</sup> Massa 2016: 110.

<sup>814</sup> Warner 1994: 178.

<sup>815</sup> Warner 1994: 169-73.

<sup>816</sup> Angel 1976: 386; Mellink 1969: 326; Wheeler 1973: 54-8.

Except for its unique location and architectural form, there was no evidence suggesting the complex as a residence. The dwellings of the villages, on the other hand, shared some common features such as the hearths, spit supports and andirons in their main room, and some even had benches, platforms and low partition walls. Except for the lower floor which was used for storage, there was no indication that the building shared any common *domestic* features like the rest of the dwellings (Figure 57). The fence buildings, on the other hand, had benches and a round fireplace within each but compared to the dwellings uncovered in the village, their size is smaller (Figure 58). Archaeologists often associate relatively larger size dwellings as a residence of the elite not vice versa.

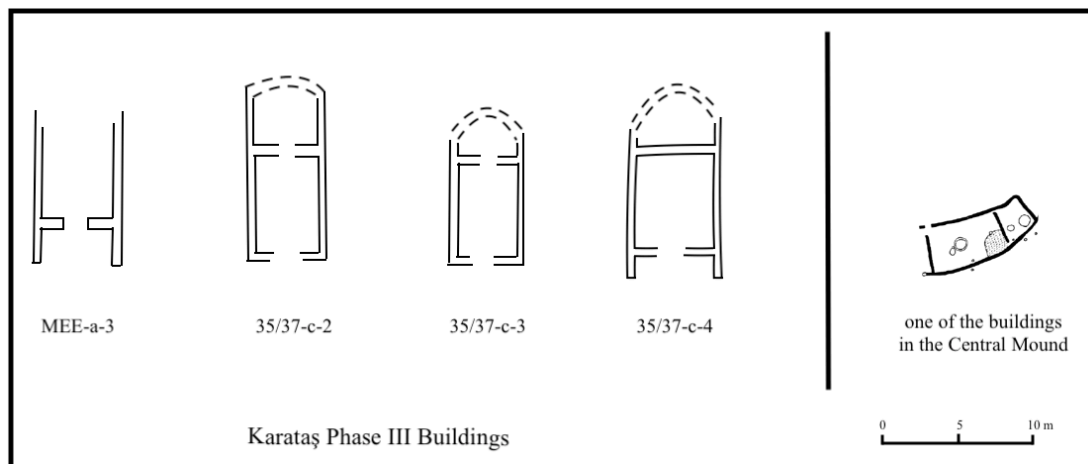


Figure 58: Karataş Phase III buildings uncovered from the trenches MEE and 35/37 and in the Central Mound. The chart is generated based on the comparative Chart of Karataş from Warner 1994: 167, Fig. 17 and map of The Central Complex Phase II, after Eslick 1988: 34.

Neither burial traditions nor architectural traditions directly point to the existence of elites living in the Central Complex, instead, it brings the possibility that rather than being a residence, the complex might have been used as a gathering place for specific activities or occasions by certain inhabitants of the village and the walls surrounding the complex might have had the function to give a monumental appearance to it. The architectural features and archaeological remains of the Central

Complex indicate grinding and baking activities, possibly rituals, at the communal level. The participants who had been part of these special events that occurred in the complex, could be the representatives of the smaller groups forming the village community. The complex, with its monumental appearance as well as its large platform and open fireplaces in front of it provide a visually powerful and meaningful location for the community in which the issues of village life were negotiated.

The increasing social complexity is often considered a process that progressed with increasing community size and even as a result of it.<sup>817</sup> Moreover, it is widely accepted that the emergence of urbanisation demanded the presence of powerful elites and social stratification. Different patterns of growth depended on the material and economic characteristics of society. In this regard, the transition in the material and spatial structuring of settlement was a consequence of society's increasing complexity which demanded more space and utilised that space for various tasks.<sup>818</sup> Ecologic potential, the degree of control, degree of stratification and the degree of surplus management are assigned as an index to identify and compare the degree of social complexity.<sup>819</sup>

If we accept Çevik's argument that there is a relationship between the site size and the degree of urbanisation, we would expect to find a highly complex society in Karataş when compared to the other sites mentioned in this study. However, there is little evidence suggesting horizontal stratification, such as craft specialisation. While vertical hierarchy is identified based on only the unique architectural feature and pottery assemblages uncovered in the Central Mound which is debatable. Seyitömer, on the contrary, was smaller in size but displayed both vertical and horizontal stratifications at the same time.

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<sup>817</sup> Fletcher 1995: 189.

<sup>818</sup> Steadman 2000: 164.

<sup>819</sup> Johnson 1982: 389-421.

Despite the difference with the basic model for urbanisation suggested for the Mesopotamian sites, Özdoğan argued that compared to the Neolithic and Chalcolithic villages, there were significant transformations that occurred in the EBA sites in terms of texture, plan and symbolic meaning of the settlements.<sup>820</sup> Thereby, he addressed this transformation as the process of urbanisation and defined it based on the production of raw materials, specialised craftspeople, the existence of trade in exotic materials and raw materials, fortification systems and monumental gates.<sup>821</sup>

In the scope of this study, the degree of urbanisation of any given settlement is investigated based on the presence of defined areas, which were dedicated to specific craftspeople, manufacturing prestige objects, importing exotic materials, population, monumental architecture and nature of the social organisation. The investigation can be summarised as follows:

In the EBA settlement of Bademağacı Höyük, there were no areas identified to indicate different craftspeople or monumental architectural features. Except for economic activities related to animal management, cereal production and textiles, there were no traces of metal production facilities for prestige objects. There was also no trace of long-distance trade of exotic materials. Furthermore, the population of the village is under the limits of the population threshold for the need for the emergence of a sub-group (for vertical social stratification) within the community. Moreover, the horizontal and vertical social stratifications had lower degrees of heterogeneity and inequality with social leadership-like authority. Although the construction of the village was pre-planned, it is not possible to confirm that urbanisation started to take place at the EBA village of Bademağacı Höyük.

Despite the rich metal finds from the Demircihöyük-Sarıket cemetery, Demircihöyük does not meet any of the criteria mentioned above. Therefore, it is impossible to

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<sup>820</sup> Özdoğan 2006; 2011.

<sup>821</sup> Özdoğan 2011: 24.

confirm that urbanisation started to take place at for the EBA settlement of Demircihöyük.

The EBA III Phase B settlement of Seyitömer, however, displays some characteristic features implying some degree of urbanisation. There are defined areas for pottery production, and the social organisation had, relatively, higher degrees of heterogeneity and inequality based on the existence of four different communities inhabiting in the village with a high boundary control, and concentration of prestige goods and items in the Administrative building.

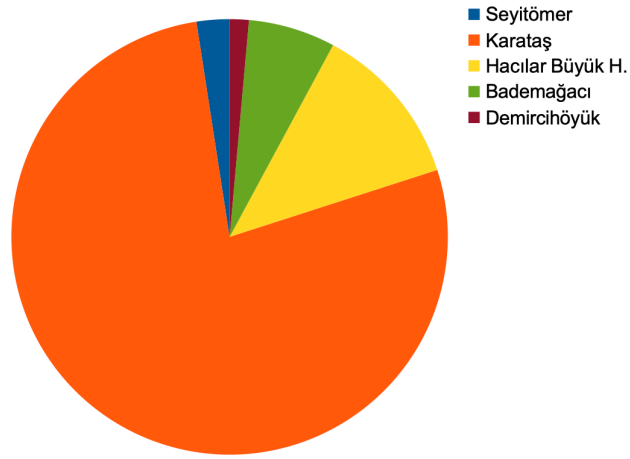
The EBA settlement of Karataş was an organically developing village. However, there was no direct evidence indicating specialised craft production in the village or manufacturing prestige objects, thus the number of metal object was also very small. Despite its significant size and monumental architecture located in the central mound, the social organisation of the village had lower degrees of heterogeneity and inequality. Therefore, it is impossible to confirm that there is evidence of urbanisation for the EBA village of Karataş.

As a result of compare and contrast, neither the density of occupation area nor the size of the settlement correlates with the degree of social complexity of the villages. What does is the number of differentiated relationships individuals maintain in a society. The relationship between the horizontal and vertical stratifications helps to determine the number of differentiated relationships, thereby addressing the social complexity of any given society. This point of evaluation includes the degree of control, degree of stratifications and the degree of surplus management, and investigates them through the concept of relationship.

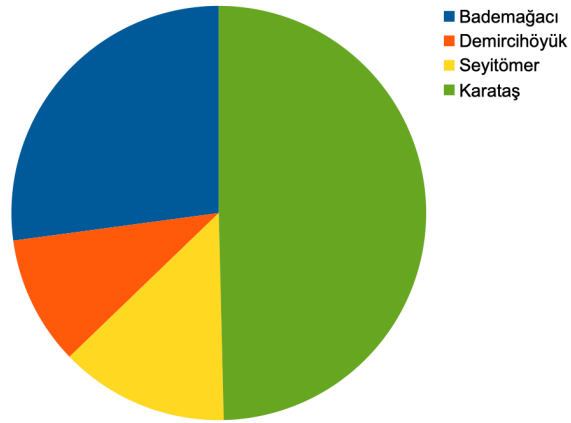


Table 15: Comparison of the sites mentioned, the places highlighted in yellow show similarities and the places highlighted in orange show differences, implying social complexity.

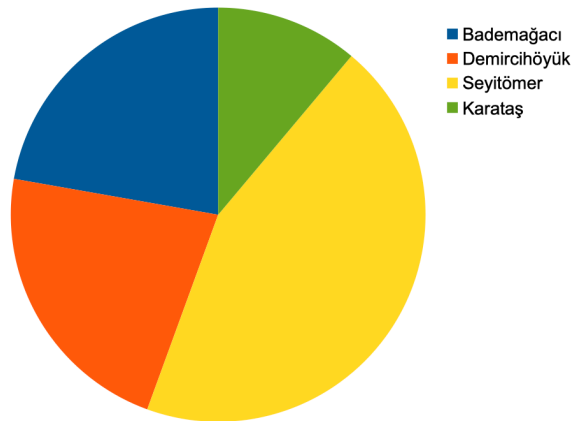
	Bademağacı H.	Demircihöyük	Seyitömer H.	Karataş	Hacılar Büyük H.
Settlement layout	Oval shaped closed settlement by agglutinated buildings with building complex in the centre	circle shaped closed settlement by agglutinated buildings with storage facilities at the central courtyard	oval shaped closed settlement by agglutinated buildings with the Megaron Complex in the centre and the Administrative Complex at the south-west zone	The exact limits of the village was not determined but encompasses the necropolis and the Central Complex located on the mound.	Oval shaped, possibly closed settlement by agglutinated buildings forming an unique fortification walls
Settlement area	1,59 ha	0,35 ha	0,6 ha	~ 19.13	3 ha
estimated population	350	130	170	640	300 – 500
standardised buildings	yes	yes	yes	at some degree with modifications	yes
craft specialisation	No – household based production	No – household based production	yes, pottery production workshop	no	not yet known
difference in burial tradition	yes, pithos buried within the settlement	yes, based on age	no information	based on age and sex	not yet known
social stratification	vertical and horizontal agriculture, animal breeding and hunting	Possibly vertical animal breeding and hunting	vertical and horizontal	no	not yet known
Faunal remains	vertical and horizontal agriculture, animal breeding and hunting	vertical and horizontal agriculture, animal breeding and hunting	vertical and horizontal agriculture, animal breeding and hunting	agriculture and animal breeding	agriculture, animal breeding and hunting



1. Graphic displays sites size



2. Graphic displays population size



3. Graphic displays relative degree of social complexity of the sites

Figure 59: Graphical representations of the site comparisons.

Table 16: Comparison of the sites mentioned for the degree of urbanisation based on the presence of dedicated areas for specific craftsmen, the production of prestige objects, the importation of exotic materials, population size, the existence of monumental architecture, and the nature of the social system

indicators for the degree of urbanisation	Bademağacı H.	Demircihöyük	Seyitömer H.	Karataş	Hacılar Büyük H.
dedicated areas for different economic activities	✓	x	✓	x	
the production of prestige objects	x	x	x	x	not known
exotic materials	x	x	x	?	not known
monumental architecture	x	x	x	✓	x
population size	350	130	170	640	300 – 500

## CHAPTER 9

### DISCUSSION AND CONCLUSION

#### 9.1. Power and Authority

Is it possible to identify the degree and forms the elite had and whether it was related to power or authority?

Power and authority are phenomena that have been analysed empirically or normatively from a number of different perspectives. They are inherently social, need actors and have dual nature in which both parties are passively or actively involved. Some scholars associated these concepts with an actor who acts towards a group of people, so they focused on the actions, its media as a tool and its impacts on a group. Some focused on a group and associated the concepts through the actions or reactions of groups towards an actor or institution. Whether they are active or passive actions is still a matter of debate.

Leach emphasised the difference between the understanding of the western mind and the status of individuals given by the community.<sup>822</sup> In order to understand the form of leadership, he broke down the concept of authority into different categories in which the individual plays different roles and identified the degree of his/her power in a particular situation that is associated with a specific category. He saw authority as an action done by the individuals who seek political advantage and analysed the relationship between the chief and the community.

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<sup>822</sup> Leach 1964: 183-95.

Weber considered authority as a legitimation of domination where domination refers to the likelihood that a specific group of people will follow a command, while power is the capability of an actor to carry out his own will in the face of opposition.<sup>823</sup> Baumgartner and his colleagues used authority and power as one single concept and divided it as behavioural control focusing on skills, strategies and resources and relational control that affects the long-term structuring of social process and its outcomes.<sup>824</sup> The relationship between an individual and a group was shaped based on the situation rather than the situation was shaped as a result of the relationship.

Pitkin and separately Morris defined power as the ability of an individual to act.<sup>825</sup> Dahl and Pansardi focused on the action and how the action is directed at the group. Dahl described power as A acts over B to do a thing that B would not otherwise do.<sup>826</sup> According to Pansardi, power to refers to an individual's ability and power over refers to social relations.<sup>827</sup> Allen, on the other hand, referred to power over as the ability of an actor over others to act in a particular way, power to as a cause others to submit to one's will and power with as capacity to pursue others.<sup>828</sup>

Earle described authority as the right and responsibility to lead, power as an action over others despite their unwillingness and control as the ability to limit who has access to the resources that are the media through which power is manifested.<sup>829</sup> According to him, the form of the political system was based on the ability of the leader to control the sources of power. The sources of power widely vary and their nature and the way in which they were structured affect the long-term social dynamics.

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<sup>823</sup> Weber 1978: 53, 215.

<sup>824</sup> Baumgartner et al 1975: 49-78.

<sup>825</sup> Pitkin 1972: 276-7; Morris 2002: 13.

<sup>826</sup> Dahl 1957: 201-15.

<sup>827</sup> Pansardi 2012: 73-89.

<sup>828</sup> Allen 1998: 21-40.

<sup>829</sup> Earle 1997: 1-14.

The concepts of power and authority are difficult to identify because they can take on different meanings and manifestations that depend on the social context. They are often interconnected with other social phenomena and they are not static but rather dynamic and change over time. Thus, the perception and interpretation of them can vary among individuals and groups. Power and authority are psychological phenomena as well as the degree of willingness or obedience which is not clear even for an individual themselves. Identifying social concepts is like defining a shape lighted from different angles by looking at its shadow. The shape of the shadow changes as the angle of the light hitting it changes. In the scope of this study, I consider authority and power as they are internalised, situation-dependent abstracts that vary spatially and temporally. In this respect, the focus is given to the relationships between leaders or institutions and society manifested through the built environment without identifying whether it was authority or power.

Within the agglutinated houses that shaped the settlement form of Demircihöyük, only one in Phase K1 and three in Phase K2 differed in terms of construction techniques and building size. The burial tradition displayed some degree of vertical hierarchy in terms of grave goods.<sup>830</sup> Although it was not clear whether they were associated with the burials or sacrificed on behalf of the community, the existence of cattle skeletons in pairs under or top of the seven EBA burials indicates a specific action occurred in limited frequency. Both architectural and burial traditions suggest that some individuals had different positions in society. Each dwelling had its storage silo buried in front of them and in the centre, there were storage facilities and silos. The distinctive houses were spatially ordered as like other dwellings and they were slightly larger, possibly either for more storage or for larger gathering areas. In a matter of material manifestation, whatever the daily life rules were, it was likely that they were followed by the whole community including these exclusive individuals.

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<sup>830</sup> Massa 2014b: 90; Seeher 1992: 367.

In the site of Bademağacı, the spatial layout of the buildings displays two-ranked ordering building positions: the ones along the circle and the ones in the centre. Pithoi graves found in the settlement indicate some degree of exclusiveness given to individuals. Both architectural and burial traditions suggest that some individuals had different positions in society. Regardless of their rank, houses had their own storage rooms. The storage facility of the central buildings was fairly proportioned with the communal storage facilities. Like Demircihöyük, in Bademağacı whatever the daily life norms were, the entire community, including these exclusive individuals, followed them.

In Seyitömer, due to the settlement layout, spatial ordering had two dimensions: one was created by the field of view and the other by the location. Based on the location, the privilege was given to the central building complex but its living quarters size is slightly smaller than other dwellings. Based on the field of view the privilege belongs to the Administrative Complex but its size is not dramatically larger compared to other dwellings. Size, in this respect, is not an indicator for pointing to the privileged ones but it still matters when the sizes of the central complex and the Administrative Complex are compared. The household of the Administrative Complex demanded more space than the central complex. Like Demircihöyük and Bademağacı, in Seyitömer each building had its storage area but there were no communal storage facilities. Instead, the Administrative Complex had a group of storage facilities that were built behind it which provided control over the resources. There were most likely three different household-level roles, one defined for non-elite community, one for spiritual community and one for elite community.

In the site of Karataş, neither burial nor architectural traditions directly point to the existence of elites. Each building had its storage room or additional building associated with it. There were three different degrees of ritual activities: one is suggested based on the presence of semicircular stone-built hearth found in the middle of the main room in the dwellings - household-level; one taking place on a

small platform in the area between the houses, addressing the people who lived nearby or were blood-related; and other taking place at the Central Complex which was built on an elevated location and had a monumental appearance, that symbolic embodiment was strengthened by fireplaces, and addressed to a much large audience/participant group. Food preparation and consumption were parts of feasting that played an important role in the emergence of social hierarchies and the negotiation of power and identities.<sup>831</sup> In a place where there were no vertical or horizontal hierarchies identified, the feasting was likely for the negotiation of smaller groups who lived in the village.

In conclusion, focusing on the relationships between leaders or institutions and society sheds some light on the nature of social organisation without getting bogged down in the terminology. Except for Demircihöyük, all of these sites mentioned in this study suffer from the terminology – *centralised authority*, that has become ingrained in them. However, close examination through analysing architectural traditions, burial traditions and artefact distribution reveals that each site had a unique structure of the social organisation in which the relationships between the privileged ones and others varied. Except for Karataş, buildings were employed as a medium to spatially locate the privileged inhabitants in the village, while also serving a functional role in establishing and maintaining a general sense of community and social norms by demanding cohesiveness and promoting cooperative interdependence. In Karataş, on the other hand, rituals took place at domestic, small group and communal levels were still the primary means of establishing and maintaining a sense of belonging and social norms. And the Central Complex was employed for the embodiment of symbolic expressions by having a monumental appearance strengthened with large platforms and open fireplaces that were built on the mound. Results also suggest that increasing population size does not impose an increase in social complexity, instead the number of differentiated relationships

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<sup>831</sup> Bray 2003: 1-13; Dietler 2011: 179-94; Deitler and Hayden 2010.



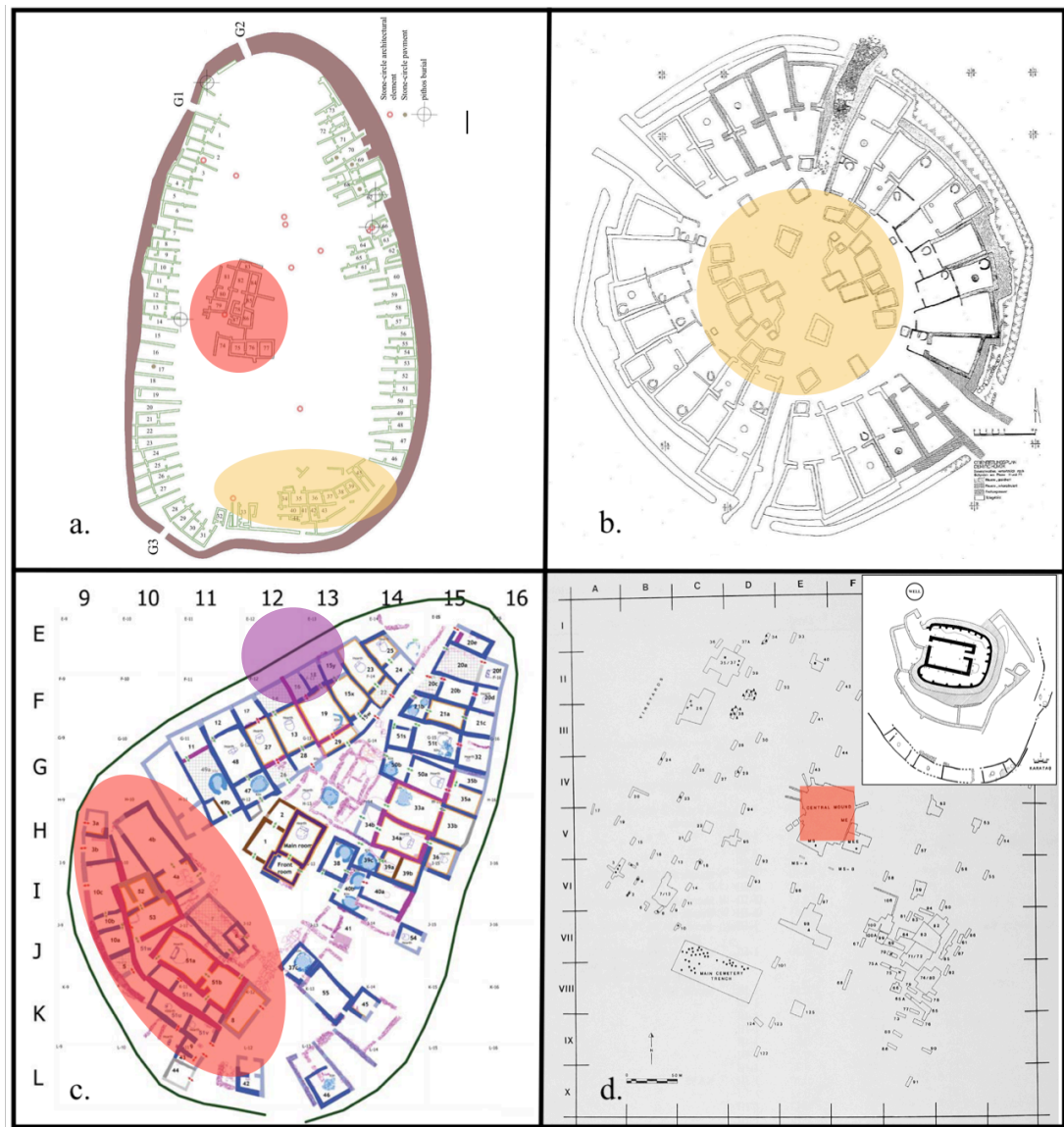


Figure 60: The socially distinct areas: yellow for social places, red for greater status, and purple for religious activities

- Based on the spatial configurations of the buildings in Bademağacı Höyük, there was a single pattern followed by the whole community.
- In Demircihöyük, there was a single pattern followed by the whole community.
- In Seyitömer, there were three distinct behaviour patterns followed by non-elites, by the spiritual community, and by the elite community
- In Karataş, there were three distinct levels of rituals: the domestic level in the dwellings, the neighbourhood level between the houses with a limited participant/audience, and the communal level in the Central Complex.

individuals maintain in a society can be used as a main criterion for identifying the degree of social complexity. In this context, “differentiated” refers to interactions between different vertical and horizontal ranking statuses that left distinctive material tracks in archaeological data. By doing this, it is feasible to counteract such biases caused by terminology that leaves little room for flexibility. Social issues, on the other hand, have no sharp lines, rather they are spatially and temporally altered phenomena.

## **9.2. Conclusion**

The Early Bronze Age refers to the period in which the relationships of people with their environments changed their forms and media. Changes in settlement patterns and site layout, the appearance of extramural cemeteries, new forms of ritual traditions, the development of metallurgy, and long-distance trade networks were general characteristic features that reflected the sociopolitical changes of that time. The social system in the context of the Early Bronze Age is described through the concept of social complexity, thought also accompanying the development of urbanisation.

However, there is lack of consensus among scholars both on the concept of social complexity and urbanisation. Moreover, social complexity has been generally investigated separately in respect to distinct data sets, including metallurgy, pottery style, exchange networks, pastoral and agricultural strategies, and settlement patterns. However, these investigations, including typological classification, often fall short of addressing the internal dynamics of social systems, establishing causal links between the material culture and the societal changes, or explain in what way a society is complex.

The concept of urbanism is typically outlined by predetermined criteria concerning the demographic, typological, and functional attributes of settlements, initially tailored to investigate Mesopotamian settlements. However, the urbanisation process

observed in Anatolia differs markedly from its Mesopotamian contemporaries, manifesting distinct developmental trajectories across different regions and lacking synchronicity. As a result, the assumption linking increasing social complexity with urbanisation throughout the Early Bronze Age fails to offer a conclusive assertion, portraying instead an ambiguous social phenomenon.

In this study, the aim was to clarify the concept of social complexity and urbanisation and understand the nature of social organisation of the settlement of Bademağacı by investigating artefact distribution, building plans, building size and spatial distribution of the buildings within settlement layout and boundary control. By so doing, the aim was to measure vertical and horizontal stratification depending on the degree of heterogeneity and inequality within the community, and give insight the nature of social organisation and the degree of urbanisation.

By the third millennium BCE, the place-making processes in Anatolia included the widespread emergence of a settlement layout defined by a radial plan of agglutinated megaron houses facing a central courtyard. The cultural and architectural typologies of these settlements over time and their distribution in Anatolia have been the subject of several previous investigations. Only a few studies, particularly on Seyitömer and Demircihöyük, attempted to investigate the relationship between this settlement layout and the structure of the social organisation that was altered throughout the Early Bronze Age of Anatolia.

These pre-planned settlement layouts with some degree of standardised architectural tradition imply that there was a mind behind these plans. A mind that decided and made arrangements in advance to achieve a specific goal. The arrangement requires putting things into proper order or into a relationship based on the social norms and needs of that time. In this context, with a pre-planned settlement layout, Bademağacı Höyük stands out as an intriguing case to study for understanding the extent of this sociopolitical transformation and the nature of the social systems of the EBA of Anatolia.

This doctoral dissertation argued that settlements are socially constructed built environments within their natural environment, and social refers to the variety of human experience. By this token, there is an interrelated relationship between the spatial organisation of the settlement and the social structure of a given society. In this study it is proposed that the degree of social complexity of a given society should be measured based on the number of differentiated relationship individuals maintain in a society. The “differentiated relationship” is addressed by investigating heterogeneity and inequality within the society.

This study asked what is the role building played in the manifestation of social organisation in the Early Bronze Age settlement of Bademağacı Höyük, what is the nature of this social organisation, and what is the degree of social complexity.

To understand whether there is a variation in the social structure of the different sites and highlight the reason for the specific variations, results of the analysis was compared and contrasted with other sites that either displayed similar radial settlement layout or located nearby.

Space syntax techniques are employed to meet the need to understand the order and/or relationship that formed the village. When applied to an archaeological investigation, space syntax has theoretical, methodological and epistemological limitations due to the fragmented nature of data. These limitations were addressed initially by reducing the missing information and identifying activities performed in each unit of space through the distribution analysis of the artefacts. The results reveal that some identifications and definitions made by excavators need to be re-evaluated. The population size, occupation density, the ratio of dwellings and storage facilities are all considered essential indicators of social organisation, therefore included in the interpretation of the result derived from the space syntax. Consequently, a more coherent narrative about the EBA II village of Bademağacı became possible.

The built environment could have been employed also as medium for power, belief systems, daily activities and symbolic expressions related to celestial phenomena. Therefore, archaeoastronomical analysis was applied to clarify whether or not some important features of the settlement layout, such as the location of the Gates and central building complex are intentionally oriented towards certain celestial bodies. Results imply that there is no connection with any celestial object that can be used to justify that in the planning of the settlement beliefs related to the sky were not taken into account perhaps even they did not exist in the ideology of Bademağacı people. The orientation diagram was created so that the results can be compared to those of other settlements if necessary in the future.

The results of analyses are compared and contrasted with those of Seyitömer, Demircihöyük, Hacılar Büyük Höyük and Karataş. Ecological potential, the degree of control, degree of surplus management, degree of stratification and the sizes of settlement and population were assigned often as an index to identify and compare the degree of social complexity. However, neither the size of settlement nor the population correlates with the degree of social complexity of the villages studied. Moreover, it is often impossible to identify the degree of control and the degree of surplus management.

However, when “the number of differentiated relationships” that individuals maintained in a society is employed for main criteria to determine the degree of social complexity, one can compare different societies based on archaeologically measurable variables: heterogeneity and inequality.

In light of my analyses, in contrast to previous arguments, renewed viewpoints have emerged about the social systems of the Early Bronze Age societies. In conclusion, the embodiment of symbolic expressions changed its form from buildings to portable objects and consequently, it altered the human-built environment relationship during the Early Bronze Age. Based on the archaeological remains, the results of analyses lead to the conclusion that each site had a unique structure of the social organisation

in which the relationships between the privileged ones and others varied. Except for Karataş, buildings were employed as a medium to spatially locate the privileged inhabitants in the village, while also serving a functional role in establishing and maintaining a general sense of community and social norms by demanding cohesiveness and promoting cooperative interdependence. In Karataş, in contrast to previous arguments suggesting the existence of elites, I argued that rituals took place at domestic, small group and communal levels and were still the primary means of establishing and maintaining a sense of belonging and social norms. The Central Complex was employed for the embodiment of symbolic expressions by having a monumental appearance strengthened with large platforms and open fireplaces built on the mound. Thus, the complex might have been used as a gathering place for specific activities or occasions, for instance for feasting that played an important role in the emergence of social hierarchies and the negotiation of power and identities in a place where there were no vertical or horizontal hierarchies identified.

In the site of Bademağacı, the result of the analyses reveals that some identifications and definitions made by the excavators need to be re-evaluated. I argued that buildings are categorized into four groups based on their plan and the artefact assemblages found within them: Multi-Room Building (1); communal storage facilities; dwelling type 1; and dwelling type 2. In contrast to previous arguments suggesting the existence of an authority, elites, lived in Multi-Room Building (1), I proposed the presence of a social leadership like authority, in other words, ritual or moral leaders who focus on the emotional and interpersonal aspects of social interaction and persuades people to cooperate in the achievement of a common objective rather than using power for his/her own household's benefits. I also argued that Multi-Room Building 2 was used possibly as a communal storage facility with the community managing it rather than a single household having legitimacy over it. And, Dwelling type 2 might have been used by households who were breeding animals.

Contrary to the estimations suggested by Umurtak and Duru, my analysis presents a more grounded approach to estimating the population. While Umurtak and Duru suggested the existence of 30 buildings in an unexcavated area, my findings indicate that only 15 buildings could feasibly occupy the space. Additionally, their assumption that all buildings served as residences overlook the possibility of other functions, such as storage facilities. By excluding these non-residential structures from consideration, my analysis suggests a total of approximately 55 dwellings, accommodating an average population of 330 individuals based on household sizes ranging from 5 to 7 persons.

Lack of hearths in the dwellings suggests that they may have been used portable hearths or braziers for cooking activities and heating of the building. Lack of ovens and lack of any evidence of metalworking suggest that some activities, such as pottery-making and metalworking, were possibly carried out beyond the site boundary. While others, particularly cereal production, animal management and textile production, were carried out in the village. The presence of some activities, the absence of others, and the fact that no burial site has yet been found near the settlement may also suggest that the site was occupied for a certain period of time (this may also imply that some households held their activities elsewhere at certain times of the year) with certain activities taking place elsewhere. However, to support or refute the argument, further research is needed. If this was the case, calculating the population, identifying the demography and determining the structure of the social organisation become even more complicated.

In the course of addressing the research questions of this doctoral dissertation, a few interesting topics appeared as potential subjects for further research. For instance, it will be noteworthy to expand the study area to northeastern Anatolia so as to examine whether the results would bring some new patterns of ritual traditions of Early Bronze Age Anatolia. The domestic rituals were more visible in the northeastern sites, and their context and artefact association might be helpful to

determine what remained perhaps unnoticed at first glance at the central and southwestern Anatolia. Other questions that would contribute to our understanding of the situation include: What role the natural environment played in the nature of social structure? Was the decrease in population size during the Chalcolithic and Early Bronze Age a response to external stresses that demanded quick reactions to cope with and adapt to changing circumstances? So then, is there any limitation in terms of population size or nature of social structure which is evolutionary more resilient to the natural catastrophe?

At the stage of collecting data for this research, I encountered some challenges that I believe are worth mentioning. The excavation of Bademağacı was completed in 2010. I believe that at some point excavation reports should be open to researchers who are willing to use the data for their research interest. Furthermore, the publication of excavations should be standardised, including at least the location of finds, their context and associated artefacts within it, the number of finds, and more data, to serve for further investigation.



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## APPENDIX I

### *Early Bronze Age sites and its burial traditions in Anatolia.*

Region	Site Name	Period	Location	Body position	Burial direct.	Grave type	Grave goods	Internal analysis of graves	Reference
W	Bozcaada-Tenedos	EBA I	extramural	supine, fetal position, half fetal position	N-S	simple inhumation, stone cist	pots, pots with lids, spindle whorls, bone needles, oyster shells, spiral headed bronze needle	There is no detailed investigation based on sex, gender and grave goods relations. The number of graves is few to make a conclusion on burial customs. There is no detailed investigation based on sex, gender and grave goods relations. females lay on their left side and males on their right. Big jars were used for multiple burials. 1-3 individuals. It seems pot sherd graves were used for infants.	Sevinc, 1994: 314; 1995: 113-4.
W	Ilımar-Hacılar-tepe	EBA	extramural	fetal position	S-N, SE-NW, SW-NE, NW-SE, NE-SW	pithos, sherd burials and pit burials	jug, pot, small cup, small jug, bowl, spindle whirl, stone axe, bone pin, pins, bovine mandible and dog skeleton		Alpaslan Roodenberg 2002: 91-107; 2008: 347-369
W	Küçük Höyük Cemetery	EBA I-II	extramural	fetal position	SE-NW, NW-SE, E-W	pithos, jar graves and stone cist grave	beak-spouted jugs, bowls and miniature vessels, spindle whorls, bronze and gold diadems, and bronze, silver lead rings, copper, bronze, lead and silver jewels and ornaments.	There is no detailed investigation based on sex, gender and grave goods relations.	Gürkan and Seether 1991: 39-96.
W	Babaköy cemetery	EBA	extramural	supine, fetal position	E-W	pithos and stone cist grave	pottery, beak-spouted jugs, jugs, clay and marble idol, spindle whorl and small amount of metalware: bracelet, needle, knife, perforated ax and arrowhead.	There is no detailed investigation based on sex, gender and grave goods relations. Some pithos were used for multiple burials.	Hüryılmaz 1997: 510; Kökten 1949: 812-4; Özgüç 1944: 53-70.
W	Ovabayındır Cemetery	EBA II-III	extramural	-	-	pithos	beak-spouted jugs, bowls, miniature vessels, bone spoon, stone ax, handle-hole ax, spindle whorl, metal axes, miniature bronze knife (possibly used as an instrument), gold earplugs	There is no detailed investigation based on sex, gender and grave goods relations due to lack of data.	Akurgal 1958; Bitter 1955; Duru 1972: 124; Kamil 1980: 10; Stronach 1957: 89-94.
W	Yortan Cemetery	EBA I-III	extramural	fetal position	E-W	pithos and jar graves and stone cist grave	beak-spouted jugs, vessels, double-handled tankards, depas, spindle whorls, marble idols, cork-headed pins made of copper and bronze, spears, handles	There is no detailed investigation based on sex, gender and grave goods relations.	Özgülç 1944, 53-70; Kamil 1980.
W	Ahladı Tepecik	EBA I-II	extramural	-	W-E	pithos and jar graves and stone cist grave	Horn-like jugs, globular jugs, vessels, miniature decorated jug, bowls, tankard, a cylindrical pendant, a copper dragger	There is no detailed investigation based on sex, gender and grave goods relations.	Hanfmann and Mitten 1967, 77-78; Mitten and Yügrüm 1969: 127.
W	Eski Balıkhane	EBA I	extramural	flexed positions	W-E, N-S	pithos and vessels for infant burials	beak-spouted jugs, jugs, bowl, miniature bowls, vessels, a clam shell, schist figurine, miniature tripod vase, a copper/bronze dagger, a silver ram pendant, pairs of gold earplugs	There is no detailed investigation based on sex, gender and grave goods relations.	Mitten and Yügrüm 1971: 191-195.
W	Bakla Tepe Cemetery	EBA I-II-III	extramural and intramural	fetal position	NE-SW, E-W	simple inhumation, pithos, jar and stone cist grave	beak-spouted jugs, bowls, anthropomorph vessel, depas and tankard type vessels, pyxis type vessels, small dagger, small jug, clay and metal spindle whorls, copper/bronze necklace, decorated silver bracelet, metal amulet, silver bracelet, a silver necklace, a pair of silver earrings, silver amulet, metal drill, metal ring, and in all graves burnt wheat grains remains	There is no detailed investigation based on sex, gender and grave goods relations. All adult graves are in E-W direction. Grave types are not dependent on the social and economic structure. However, the richest burial gifts were found in simple earthen burials. Carbonized wheat grains were found inside all the graves.	Erkanal and Özkan 1998: 407, 410-2; 1999: 340-1; 2000: 264-7.



Early Bronze Age sites and its burial traditions in Anatolia (continue\_2).

Region	Site Name	Period	Location	Body position	Burial direct.	Grave type	Grave goods	Internal analysis of graves	Reference
W	Boyalık Cemetery	EBA II	extramural	fetal position	-	pthos, rock-cut chamber tomb, dome-roofed chamber tomb, pit grave	beak-spouted jugs, pyxis type vessels, bowls, spindle whorls, lean ram figurine (possibly used as necklace), obsidian blade, bronze earrings.	There is no detailed investigation based on sex, gender and grave goods relations. Tombs were employed for multiple burials.	Şahoğlu, Vural and Karatungut 2009.
W	Metropolis	EBA I-II	extramural	fetal position	W-E, E-W	pthos and stone cist grave	beak-spouted jugs, miniature jug, double handle vase, bronze needle	There is no detailed investigation based on sex, gender and grave goods relations.	Meriç 1982: 43-47.
W	Ulucak Cemetery	EBA II	extramural	fetal position	SE-NW	pthos and jar graves	Grave goods, especially metal objects, were few in numbers. Jugs, miniature jugs, a spindle whorl, a pair of silver rings (ring or earrings)	There is no detailed investigation based on sex, gender and grave goods relations. A significant number of graves were empty suggesting that they were either symbolic graves or bodies may have been destroyed by animals.	Derin and Özkan 1999; Çilingiroğlu et al. 2004: 54-6.
W	Çine Tepecik	EBA III	extramural	Half fetal position, fetal position	E-W, W-E, SW-NE, N-S	simple inhumation, pthos and jar graves	beak-spouted jug, handled cup, figurine heads and bodies, schematic idols, animal figurines, a seashell bead, lead rings, animal bones	There is no detailed investigation based on sex, gender and grave goods relations. Infants were buried in jars while adults were buried either in pithoi or as simple inhumation.	Günel 2012: 26-7; 2013: 380-2; 2014: 114-6.
W	Iasos Kıvılcıklık Cemetery	EBA II	extramural and intramural	fetal position	no preferred orientation	simple inhumation and stone cist grave	beak-spouted jug, jug, pottery, miniature pots and vessels, spindle whorls, flint tools, marble vessel, stone beads, seashell ornaments, bronze and stone axe, metal piercing, silver, bronze and lead bracelets, spiral bronze earrings.	There is no detailed investigation based on sex, gender and grave goods relations. Some of the graves were employed for multiple burials, from 1-4 individuals. The number of infant burials were only 4 among the 96 burials.	Pecorella 1984: 11-41, 80-1; Uhri 2006: 159-68; Wheeler 1974: 418-9.
W	Kaklık Mevkii Cemetery	EBA II-III	extramural	supine, fetal position.	E-W, SE-NW, N-S	EBA II: pthos and cist graves EBA III: simple inhumation, pseudo-chamber tombs, and one cremation burials in a tripod cooking pot.	beak-spouted jugs, miniature vessel cups, bowls, tankards, depas, depas, small bottle, three-handled cooking pot, loop Tripod with handle, figurines, marble idols, copper/bronze razors, toggle pins of copper/bronze, copper/bronze miniature ladder	There is no detailed investigation based on sex, gender and grave goods relations.	Topbaş, Efe and İlaslı 1998: 33-8.
N	İkiztepe Cemetery	EBA II-III	extramural and intramural	supine	SE-NW, S-N	simple inhumation	jugs, bowls, clay miniature vessels, spiral wires, clay rattle, decorative plaques, bone hooks, bone pierces, bone idols, stone idols, clay idols, frit necklaces, shell necklaces, stone necklace beads, metal weapons (spearblades, daggers, arrowheads), metal tools and jewelry, arsenic copper symbolic objects	Grave goods were distributed differently depending on age and gender. Individuals over 50 years old had rich grave goods in terms of both the number and the variety of materials. There is a high correlation between the weapons and idols. Some graves were employed for multiple burials, from 2-3.	Bligt 2002: 2005; Doğan 2006.
N	Horoztepe	EBA III	extramural	fetal position	E-W, N-S	simple inhumation	a wide variety of pots, bowls and cups, orchard base, spindle whorl, mirror, kirmen, sun discs, four spearhead-like weapons pointed handles, chisels, stretchers, heads of articles such as beds, thrones and chairs, staff-cane heads, a staff head with four birds perched on its head, a knife head, a bracelet/circle, a plate/plate, stamp seal/ object, necklace, gold grain of necklace.	There is no detailed investigation based on sex, gender and grave goods relations.	Özgeçici and Akok 1958.

Early Bronze Age sites and its burial traditions in Anatolia (continue\_3).

Region	Site Name	Period	Location	Body position	Burial direct.	Grave type	Grave goods	Internal analysis of graves	Reference
C	Demircihöyük-Sanket Cemetery	EBA II	extramural	fetal position	SE-NW	simple inhumation, pithos, jar and stone cist grave	beak-spouted jug and bowls; single handle tankards; basket with spout; pot with handle; female figurine; figurine body fragments; stone figurines; spindle whorls; beef bones; diadems made of gold, silver, bronze and copper; needles made of bronze, silver and copper; bronze bracelets; a bronze flat axe; razor blades; spatula; gold, bronze, carnel and mountain crystal beads; bronze pins and rings; and gold earplugs.	Grave goods were distributed differently depending on age and gender (further information is given in the following section).	Secher 1992; 1993; 2000; Massa 2014b.
C	Balıbağı Cemetery	EBA I	extramural	fetal position	NW-SE (for cist graves), N-S (for jars)	simple inhumations, jar and limestone cist graves	beak-spouted jugs; pots; teapots; spindle whorls; marble idols; bronze and silver needles in various forms; weapons, necklace, pair of earrings, hair rings; spearheads; bronze disc; bronze bracelets; bronze buttons; agate, gold, silver and various colored stone beads; two silver penezes; amorphous pieces of gold; silver plate; and animal teeth.	There is no detailed investigation based on sex, gender and grave goods relations. The body were laid on its right side, ceramic grave goods were often placed on the abdomen, metal objects were often found in their respective locations.	Suel 1989; 1991; and 1992.
C	Salur Höyük Cemetery	EBA III	extramural	half-fetal and fetal position	W-E, SW-NE, NW-SE, SE-NW, S-N	simple inhumation covered with stones and jar graves	Very few grave goods were found: bowls, round metal pin, copper/arsenic needle with decorated head, hexagonal pyramid head needle, copper/arsenic blade, and black stone bead.	There is no detailed investigation based on sex, gender and grave goods relations. In all graves, the deceased' heads were positioned in the west, facing south.	İbiş and Durmuş 2010.
C	Alaca Höyük Cemetery	EBA III	extramural and intramural	fetal position	W-E	pithos and chamber tombs	Burials were rich in grave goods. Some grave goods are terracotta bowls and pots; bowls; spindle whorl; stone necklace beads; agate ornament pieces; bone idols; gold, silver, bronze and electrum pins; silver and copper bowls and vessels; silver, bronze and copper sun discs; various gold jewelry; gold crown or wreath belt; bronze and copper hooks; bronze wedges and pike ends; gold trowels and knives; seal-shaped beads; copper and gold idols; copper drills and bells.	Limited anthropological data for detailed investigation based on sex, gender and grave goods relations.	Ank 1937a; 1937b; Kansu 1937; Koşay 1951; 1966; 1973.

Early Bronze Age sites and its burial traditions in Anatolia (continue\_4).

Region	Site Name	Period	Location	Body position	Burial direct.	Grave type	Grave goods	Internal analysis of graves	Reference
C	Resuloğlu Cemetery	EBA II-III	extramural	fetal position	E-W, SE-NW, NE-SW, W-E, N-S	simple inhumation, pithos, jar, stone cist grave mudbrick cist grave	vessels; cup; mug; spindle whorl; weights; agate, frit, tiles, made from azomite (the mineral arsenic), amethyst, bronze, insect shell and seashell bead necklaces; frit necklace with agate pendant; alabaster idol; flint and bone tools; bronze staff/knob head; bronze axes, daggers and weapons; round, sphere, oval, conical, pyramid, pear-shaped and double ball-headed needles; gold or bronze round and ball-headed pins; vase-headed, threaded and ungrooved, ball or flat ball-headed pins; copper sewing needle; bronze and silver earrings; stamp seal form earrings; solid and gold plated earrings on silver; and gold and bronze earplugs; gold, silver; copper; bronze; electrum necklace beads; silver disc-shaped necklaces; course-shaped bronze pendants; bronze hook and loop neck collars, bracelets, hair rings, anklets; bronze single-handled vessel, bowl, cloth ornament, swastikas in the form of thin plates.	Inside the jars, the heads of the dead are positioned towards the bottom of the jar and their feet towards the mouth. Traces of different fabrics on jewelry and weapons implied that bodies were buried with clothes. Intact cattle heads and forelimb bones left on or near the graves also implied feasting as a burial ritual.	Yıldırım 2006; Yıldırım and Ediz 2005; 2006; 2007; 2008; Yıldırım and İpek 2010; and 2011.
C	Kestel	EBA III	extramural	-	-	inhumation, pithos, stone cist grave, and rock-cut chamber tombs	Terra-cotta bowls and pots, copper-based pin, a hematite weight, small amounts of antler, and an oven.	There is no detailed investigation based on sex, gender and grave goods relations.	Yener 1994; 1997; 2000: 95-8.
S	Gavur Evi Tepesi	EBA II	extramural	fetal position	E-W and SE-NW	pithos	jugs, miniature jug, bowls, jar, and pitcher fragments.	poorly preserved human remains.	Vandam et al. 2013: 244-8.
S	Hamanoören-Göndürle Cemetery	EBA II-III	extramural	fetal position	E-W, SE-NW	Simple inhumation, pithos, cist stone grave	beak-spouted jugs, jugs, bowl, stone axes, spindle whorls, limestone disc idols, metal remains were made of bronze including pins, rings, earrings, bracelets, and plates. beak-spouted jugs, spouted miniature jugs, jugs, miniature pottery, vase, bowl, mug, miniature askos, stone ax with hole in handle, staff heads, marble idols, stone earplugs, bronze daggers, chisels, bronze razors spatulas, perforated and solid, with and without head, gold, silver, bronze/copper needles, gold, silver and bronze beads, diadem piece, silver and bronze beads, bronze, silver and copper bracelets, gold earplugs, bronze/copper necklace or armband, rings, earrings, silver object.	There is no detailed investigation based on sex, gender and grave goods relations.	Özsaıt 1997; 1998; 1999; 2000; 2002; 2003; 2004; 2005; 2006; 2007.
S	Karataş-Semayük Cemetery	EBA I-II	intended to extramural but became intramural due to occupation expansion	fetal position	E-W	pithos and one chamber-tomb		Ceramic grave goods were placed outside the graves while metal and stone objects were found inside the graves. The grave goods were given based on the age and sex of the deceased (detailed information given in the following section).	Angel 1976; Mellink 1969; Wheeler 1973.

Early Bronze Age sites and its burial traditions in Anatolia (continue\_5).

Region	Site Name	Period	Location	Body position	Burial direct.	Grave type	Grave goods	Internal analysis of graves	Reference
SE	Arslantepe	EBA I	intramural	fetal position	no preferred orientation	simple pits and one cist grave	a few numbers of pot sherds and animal bones were unearthed pithoi/jar, bowls, jars (plain or spouted), bottles or flasks, and plain and corrugated goblets, Syrian bottles, bronze or copper toggle pins, bracelets, torques, rings, gold frontlet, silver pins, silver beads, ivory or shell seals. CT: bowls, glasses, tripod jars, round/ ring-bottomed/egg-bodied Syrian bottles, pointed-bottomed conical goblets.	Two were fetus, three were 6-10 year-old children, two young adult males were identified. An adult male were identified in the cist grave with more than 75 grave goods including weapons (spear heads, swords, daggers), working tools (axes, chisel, gouges, knife), ornaments (pins, quadruple spiral pins, ring, hair spirals, diadem, bracelets, necklaces), bowls made of arsenical copper alloy, gold and silver, pottery, and four adolescents.	Erdal 2013; Frangipane et al. 2001.
SE	Oylum Höyük	EBA	-	-	-	Simple inhumation, pithos, jar, and one rock cut tomb	Fruit stands; various jars, bowl and cup forms; variety types of metal pins, spear heads, blades and tangs; metal axes; daggers and various beads; cylindrical amulets; frit cylindrical beads; various size and forms beads; baked clay human and animal figurines; a limestone and a cornelian cylinder seal. CT: Main tomb: a bronze spear head, an agate bead, 3 toggle pins, asilver hair-roundle, a tanged triangular arrowhead, shells and 66 ceramic vessels. CT-attached chambers; pottery sherds and animal bones with sherds of a pot, ash and charcoals. Other grave goods: small vessels, a rattle, two toy oxcart wheels, a bath tub, bronze needles; gold leaf; and beads, animal bones, barley and broad beans.	There is no detailed investigation based on sex, gender and grave goods relations.	Özgen 1989; 1990 Özgen and Carter 1991.
SE	Birecik Cemetery	EBA I-II	extramural	-	NW-SE	jar and stone cist grave	CT: Main tomb: a bronze spear head, an agate bead, 3 toggle pins, asilver hair-roundle, a tanged triangular arrowhead, shells and 66 ceramic vessels. CT-attached chambers; pottery sherds and animal bones with sherds of a pot, ash and charcoals. Other grave goods: small vessels, a rattle, two toy oxcart wheels, a bath tub, bronze needles; gold leaf; and beads, animal bones, barley and broad beans.	There is no detailed investigation based on sex, gender and grave goods relations. Jar graves were employed often for child burials.	Sertok and Ergeç 1999.
SE	Gre Virike Cemetery	EBA III	extramural	-	-	simple inhumation, jar and stone cist grave, and chamber tomb complex	Jars were used for infant burials with grave goods including frit beads, copper/bronze pins and small ceramic vessels. Other grave goods are bowls, a broken pedestalled goblet, the mandible of a donkey (or onager), champagne cups, small jars, frit beads and ornamental pins.	There is no detailed investigation based on sex, gender and grave goods relations.	Ökse 2002; 2005; Ökse and Bureçak 2001; 2002.
SE	Hacınebi Tepe Cemetery	EBA I	extramural	-	NE-SW	simple inhumation, jar and stone cist grave	Jars were used for infant burials with grave goods including frit beads, copper/bronze pins and small ceramic vessels. Other grave goods are bowls, a broken pedestalled goblet, the mandible of a donkey (or onager), champagne cups, small jars, frit beads and ornamental pins.	Some burials had been robbed.	Stein 1998: 183-5



## APPENDIX II

### *Some studies on Estimating population for prehistoric sites*

Estimation of population					
Source	method	variables	formula	data set	
S.F. Cook & A.E. Treganza, 1950: 231-3	relationship between surface area and population by linear interpolation	population and site total surface area	$\log \text{ population} = \text{constant} \times \log \text{ area}$	4 archaeological sites in Central California, 16 Yurok ethnological villages	
J.C. Russell, 1958: 46-7, 52-3	estimating from the number of houses with an assumption of the average number of family members per house	house, average number of family members	Population = the number of house x 3.8 (average family size)	European villages from different centuries	
Raoul Naroll, 1962: 587-9	allometric relationship between population and floor area	total area under roof of dwellings	population = floor area $10^{-1} \text{ m}^2$	the largest settlement of 18 societies: 6 from North America and Oceania, 3 from South America, 2 from Africa, 1 from Eurasia	
C.G. Turner & L. Lofgren, 1966: 117-32	relationship between population and household size derived from the ratio of ceramic assemblages	servicing bowls, cooking jars, ladles Cooking jar and serving bowl volumetric capacity give insight about the household size	Estimating the means of bowl, ladle and jar capacities and their frequencies household size = mean cooking jar cap. / mean bowl cap. Population = household size x hearth numbers of living room numbers an average serving of 691 cc, a jar of 8000 cc or larger for 11 or more people	Archaeological sites from Anasazi culture area in Arizonal ethnographical sites from living, Western Pueblo Indians and living Hopi Indians in Black Mesa	
J. Lawrence Angel, 1969: 427-37	relationship between population and fecundity and length of generation	fecundity was estimated from the pelvic bony changes resulting from childbirth more than 3, estimate of survivors per generation indicate population growth, generation length related with average female age at marriage + $\frac{1}{2}$ average child bearing period	Population = birth average x household x the number of houses average is estimated from female life span and live infants per years household is estimated from children-parents and older adults	series of prehistoric and ancient groups in the Eastern Mediterranean, Paleolithic sample by Ferembach from Morocco, a Medieval sample from Hungary by Acsadi and Nemeskéri	
Steven LeBlanch, 1971: 210-1	Relationship between the amount of living-floor space and population	the living-floor area (beside the roofed area used for social or storage purposes, and so on)	population = living floor area $10^{-1} \text{ m}^2$	Leipua'i on Manono Island, Fasio'otai on Upoua Island, Hasanabad in Iran, Wachipaeri village of the Hacienda Keros, Kosnipata District and Paucantambo in Peru	
J.B. Wheat, H.E. Malde, & E.B. Leopold, 1972: 1-180	relationship between population and meat consumption	animal bones, the length of time to butchering, the lengths of time to consume the fresh and dried meat, the number of dogs that consumed the meat	men could butcher 5 to 12 animals per day, the amount of eaten fresh meat $\frac{2}{3}$ of the kill) and dried meat ( $\frac{1}{3}$ of the kill) give insight to people consumed it.	the Olsen-Chubbuck archaeological site,	
R. E. Blanton, 1972: 1317-26	relationship between population and the size, density of site and social stratification	settlement size including rural peripheries, artifacts types (indicating social stratigraphy) and ceramic densities	increased status differentiation coupled with population growth	settlements in the Ixtapalapa region from 1150 B.C. to 1520 AD	
Polly Wiessner, 1974: 343-50	relationship between the total settlement area and population, especially for Paleolithic sites	settlement type affects the size of the settlement and so the population	Area = a x population <sup>b</sup> the a-value = $-0.23 \pm 0.68$ the b-value: 1 for camps, 2 for village and 3 for urban area	16 (King Bushment Settlements, in the Kalahari desert	
Felri A. Hassan, 1978: 49-103	the density, population size and population growth are depended both on cultural norms and environmental conditions	population pressure, population increase, optimum carrying capacity, site size and density	A population at an optimum size began to accept and integrate social and economic changes when their living conditions started to decrease.	ethnographic and archaeological data from the different regions of the world	
R. M. Schacht, 1981: 119-40	population depended more the settlement size than the environment or settlement types	the constant-density (use the total area of all settlements as an index of relative population size)	Population = b + cA = 85 + 107.55A b is a threshold at the lower limit of settlement size (85 for the Middle Eastern villages) A is the settlement area c is the linear regression from comparable recent settlements (107.55)	185 settlement from different regions in the middle East, ranging in size and type	

Some studies on Estimating population for prehistoric sites (continue\_2).

Estimation of population					
Source	method	variables	formula	data set	
Carol Kramer, 1982, 663-75	the correlation between compound area and the number of inhabitants and their economic rank and there is a change both in relation among household and in relationship within household in terms of inner interaction	room numbers and by pes , house size and site size	each room may have had different function, only living room (the biggest and well decorated) was perceived as house). there is a high variation in the size of houses 42m <sup>2</sup> to 1300m <sup>2</sup> depended on the economic conditions of the household. Some houses had more of fewer cooking facilities that it was expected in respect to their inhabitants numbers. Houses sometimes changed hands or form.	ethnographic Kurds village in western Iran	
C.D. De Roche, 1983, 187-92	The correlation between the extent of occupation areas and population size for the regions where similar climatic and cultural conditions existed	household and settlement size	There is no apparent relationship between the density and the function of the settlements. The average number of people per household varied from 3.5 for some settlements to 9.5 for others with an overall average of 5.972.	ethnographic villages in the Mexica Central Highlands during the 1940 and 1970	
C.C. Kolb et al, 1985: 581-599	the relationship between household size and the function of different inner space with the number of nuclear family members	household composition and number, size, and function of rooms	the average of 5.5 individuals per family unit, the dwelling area average of 6,12 m <sup>2</sup> per person	ethnographic village in various Mesoamerican regions	
Todd Whiteclaw, 2001: 15-37	no simple relationship between people and the space they occupied instead the factors influencing population depended on cultural norms and it changed over time.	variation in households in a community, spatial boundaries and its change over time and residential density	culture specific data, regions specific formulae, recognition of the differences among the households and their density	Neopalatial Cretan sites	
Andrew Chamberlain, 2009: 275-86	human population have both the capacity to increase rapidly when the environmental conditions are beneficial, and the potential to recover quickly after a significant drop in population size	the size of dwellings and settlement, environmental conditions, quantities of artifacts, carrying capacity and maximum population size	different methods using different data types can be used to make a calibration and comparison with the historical and ethnographical data, which provide a carrying capacity for particular combinations of cultural and environmental conditions, so then the maximum population size can be calculated for a site investigated	no data was used	
Marco Poreic, 2011: 223-32	relationship between the population dynamics and the house accumulation dynamics	population growth, accumulation of house, household size, the average use-life of a house, carrying capacity	human population follows a logistic growth and the number of household depends on household size. The average household size is ratio of the house floor area / the floor area per person (7m <sup>2</sup> /person). If the settlement size unknown, another contemporary settlement size can be projected proportionally to estimate the site size. Each parameters are calculated with different combination of them by using the main equation. The models that fit to the observed number of accumulated houses is used to estimate population size. $I_{total} = \int_{t_0=0}^t I_t dt + I_t =$ $= \left[ \frac{K}{rt} \left( \frac{K - P_0 + e^{rt}}{P_0} \right) - \ln \left( \frac{K - P_t + 1}{K - P_0} \right) \right] + \frac{K}{1 + \left( \frac{K - P_0}{P_0} \right) e^{-rt}}$	3 Neolithic sites of Vinca Culture	
A. Chircoutakis & G. Chalkiadakis, 2016, 1072-116	relationship between population size and agricultural production	land suitability , elevation,	there is a hyperbolic relation between the population size and agricultural production quantity $R_t (P) = \alpha t \left( \frac{2\mu - 4\mu_{max} P^2 + 4\mu_{max} - 3\mu}{P_{max}^2} P + \mu \right)$	The EAB Minoan Settlements in Crete	

## B. CURRICULUM VITAE

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### EDUCATION

- 2024                      **Ph.D.** in Settlement Archaeology, Middle East  
Technical University  
Grade: 3.86/4.00 (CGPA)
- Fall/2019                **Erasmus Student** in Paris 1 Panthéon-Sorbonne  
University
- 2016                      **M.Sc.** in Settlement Archaeology, Middle East  
Technical University  
Master's Thesis: "Orientations of Monumental  
Architectural Remains at Kerkenes Dağ"  
Final Grade: 3.57/4.00 (CGPA)
- Spring/2014            **Erasmus Student** in Groningen Institute of  
Archaeology at the Groningen University, Netherland
- Spring / 2008           **Special Student** at Social Psychology, Middle East  
Technical University

2006                            **Bachelor of Science** in the Department of Astronomy  
and Space Science, Ankara University  
Final Grade: 76.40/100.00 (CGPA)

2000                            **High School Degree** Ankara Private Tevfik Fikret High  
School  
Studied Science in French

#### **AWARDS**

2016 - 2017                    Academic Year METU Graduate Course Performance  
Award

2015 - 2016                    Academic Year METU Thesis of The Year Award

#### **COMPUTER SKILLS**

**Program Languages :**        VBasic, MySQL, HTML, PHP

**Operating System :**         MS Windows

**Software Programs :**        MS Office (Excel macro, Word, PowerPoint, Access),  
Adobe Photoshop, Adobe Fireworks, Adobe  
Dreamweaver, Adobe Illustrator, Adobe Flash, Adobe  
InDesign, SPSS, TNT (GIS Application), ArcGIS,  
RockWare (GIS Application)

**Enterprise Solutions :**        Adobe Connect Pro

**Tools :**                        Nivo, Total Station

#### **PROJECTS AND FIELD WORKS**

2023 ANAMED Project        Linking Anatolian Past Project at ANAMED  
I work as a geospecialist conducting spatial analyses



	and data manager.
2019 Excavation Season	Çadır Höyük Archaeological Project I worked as a team member at the trench and the laboratory
2018 Excavation Season	Çadır Höyük Archaeological Project I worked as a team member at the trench and the laboratory
2017 Field Practice	Engaging local communities in heritage management through Archaeological Ethnography in Gonies, Crete. The Heritage Management Organization Summer Field School Program I participated as student and worked at the field as an active participant observer
2016 TÜBİTAK Project	TÜBİTAK Society-Science Projects (115B180), TAÇDAM-METU I worked as a team member as an instructor
2015 Excavation Season	Crustumerium “the People and the State” Archaeological Project, in Rome, Italy I worked as a team member at the trench
2015 TÜBİTAK Project	TÜBİTAK Society-Science Projects (115B180), TAÇDAM-METU I worked as a team member as an instructor
2014 Excavation Season	Crustumerium “the People and the State” Archaeological Project, in Rome, Italy I worked as a team member at the trench
2011 Excavation Season	Liman Tepe Underwater Archaeological Excavation in Urla I worked as a trench supervisor, and at the laboratory
2010 Excavation Season	Komana Archaeological Research Project in Tokat

2003 - 2005 I worked as a team member at the trench  
Ankara University Kreiken Observatory in Ankara  
I made settings of the alignment of the telescope for  
stellar observation, and checked the results from  
computer

#### **ORGANISATIONS**

2018 **ICAZ** (International Conference of Archeozoology)  
I worked as an organisation team member for the  
conference

2018 **VII. Settlement Archaeology Graduate Symposium**  
I was the chairman of the symposium committee

2017 **Objects and Memories**, Exhibition of The Heritage  
Management Organization Summer Field School  
Program  
I worked as an organisation team member, and the  
result of my field work was displayed at the exhibition

#### **CONFERENCE PRESENTATIONS AND POSTERS**

2023 **The 29th EAA Conference 2023**, Belfast, Northern  
Ireland  
“The Early Bronze Age of Anatolia: The Issue of Social  
Complexity”

2023 **ASOR Annual Meeting 2014**, Chicago, USA, Poster  
presentation  
“The Issue of Social Complexity in the Early Bronze  
Age Anatolia Through Built Environment Behaviour  
Perspective”

- 2022 **The 13th International Space Syntax Symposium,**  
Bergen, Norway  
“The Interrelationship Between Humans and Their  
Built Environment in the Early Bronze Age of  
Bademağacı Höyük, Burdur, Turkey”
- 2019 **The 27th SEAC Conference in In EAA Conference**  
**2019,** Bern, Switzerland  
“Orientation Analysis of The Monumental Architectural  
Remains at Phrygian Site at Kerkenes, Turkey”
- 2018 **VII. Settlement Archaeology Graduate Symposium:**  
**Adaptation and Resistance,** Ankara, Turkey  
“Archaeoastronomy as an Interdisciplinary Study Area  
within Archaeology”
- 2017 **SOPA Conference** (Congreso Internacional de  
Socialización del Patrimonio en el Medio Rural),  
Yucatan, Mexico  
“Engaging the Local Community in Heritage  
Management through Archaeological Ethnography”
- 2016 **The National Astronomy Conferences,** Erzurum,  
Turkey  
“Archaeoastronomy and Analyzing a Case Study”

#### **PUBLICATIONS AND BOOKS**

- 2022 Alpay, A. I. The Interrelation Between Humans and  
Their Built Environment in The Early Bronze Age of  
Bademağacı Höyük, Turkey. In *Proceedings of the 13th  
Space Syntax Symposium.*
- 2021 Alpay, A. I. Orientation Analysis of the Monumental  
Architectural Remains at Phrygian Site Kerkenes,

- Turkey. In *Proceedings of the 27th the SEAC Conference, 2019.*
- 2020 Alpay, A. I. Archaeoastronomy as an Interdisciplinary Study Area within Archaeology. In Alpay, A. I., & Erciyas, B. (Eds.) *Proceedings of the Adaptation and Resistance. Settlement Archaeology Symposium Series VII, Symposium Proceedings VI.*
- 2020 Alpay, A. I., & Erciyas, B. (Eds.) *Proceedings of the Adaptation and Resistance. Settlement Archaeology Symposium Series VII, Symposium Proceedings VI.*
- 2019 Stefanou, E., Murphy, C., Mendez, A., Islam, R., Alpay, A. I., Miranda, M., Kandanolean, M. Engaging the Local Community in Heritage Management through Archaeological Ethnography. In Walid, S. (Ed.) *Proceedings of SOPA Conference, 2017.*

#### **WORK EXPERIENCE**

- 05/2013 - 06/2015 **Haker** – Ankara (Distributor of world's leading cosmetic and fragrance brands)  
Creative Manager
- 12/2009 - 12/2012 **Cafe D'Ali Kaş** – Antalya  
Manager
- 02/2007 - 11/2009 **Atlantik Ltd. Şti** (Adobe Partners, provides Adobe products and solutions, and product training) – Ankara  
Instructor & Consultant

## C. TURKISH SUMMARY / TÜRKÇE ÖZET

M.Ö. üçüncü binyılda, Anadolu'nun Erken Tunç Çağı toplulukları, dönemin sosyopolitik dönüşümlerini yansıtan önemli değişimler geçirmiştir. Bu değişimler buluntular, bina planları ve yerleşim yerlerinin planlarını kapsamakta ve buldukları sosyal, ekonomik ve çevresel faktörlere göre çeşitlilik göstermektedir. Bu çeşitlilik içinde, radyal bir plan üzerinde girişleri merkeze bakan, birbirine bitişik yapılardan oluşan yerleşim düzeni dikkatleri çekmektedir. Bu yerleşim planına sahip mekanların, zaman içindeki kültürel ve mimari tipolojileri ve Anadolu'daki dağılımları birçok çalışmanın konusu olmuş, ancak yalnızca bir kaç yerleşim düzeni ile Erken Tunç Çağı ile değişen toplum yapısı arasındaki ilişkiyi incelemiştir.

Bu çalışmada, sosyal karmaşıklık ve kentleşme kavramını netleştirmek ve Bademağacı İTÇ II yerleşiminin sosyal organizasyonunun doğasını anlamak amaçlanmıştır. Bu amaçla, yerleşim düzeni ve sınır kontrolü, buluntu dağılımı, yapı planları, yapı büyüklüğü ve bina dağılımının mekansal olarak incelenmesiyle dikey ve yatay tabakalaşma ölçülmüş ve topluluk içindeki ayrışıklığın ve eşitsizliğin derecesine bağlı olarak sosyal organizasyonun doğası ve kentleşme derecesine ışık tutulmuştur. Bu çalışma, İTÇ II Bademağacı Höyük yerleşiminde binaların sosyal organizasyonun tezahüründe oynadığı rolü, bu sosyal organizasyonun doğasını ve sosyal karmaşıklık derecesini sorgulamıştır.

Çalışma, yerleşimlerin doğal çevre içinde sosyal olarak inşa edilmiş yapı ortamlar olduğunu savunmaktadır; burada kullanılan 'sosyal' kelimesi insan deneyimlerinin çeşitliliğini vurgulamaktadır. Çalışmanın konusu, yapı çevre ile insan davranış kalıpları arasında sistematik ve karşılıklı bir ilişki olduğunu kabul eden çevre-davranış perspektifi üzerinden kavramsallaştırılmıştır. Yerleşimlerin mekânsal

organizasyonu yalnızca sosyal yapının doğasını yansıtmakla kalmamakta, aynı zamanda sosyal sistemlerin oluşturulmasında ve sürdürülmesinde önemli bir rol oynar. Bu bağlamda yapılan çalışma, Bademağacı yerleşim yerinde, mimari yapıların sosyal sistemin yapısının kendini ifade edişindeki rolü, sosyal sistemin yapısı ve sosyal karmaşıklık derecesini anlamayı amaçlamaktadır. Bunun için mekan dizilimi uygulaması, buluntu dağılımı, nüfus tahmini, mimarinin incelenmesi ve arkeoastronik analizleri bir araya getirilerek, konu bütüncül bir yaklaşımla incelenmiştir.

Mekan dizilimi analiz, yerleşim yeri içindeki konfigürasyonu ve yapıların planları üzerinden birbirleriyle kurdukları ilişkilerin görselleştirilmesini sağlayarak yorumlanmalarını kolaylaştırmaktadır. Bu bağlamda eşitsizlik ve ayrışıklık, erişilebilirlik, görünürlük, derinlik ve kontrol değerleri üzerinden ölçülmüştür. Buluntu dağılımı analizi, belirli bir faaliyete ya da hiyerarşiye karşılık gelen buluntu gruplarını belirleyebilmek amacıyla yapılmıştır. Mimarinin bina boyutu, planı ve konumuna göre incelenmesi, yerleşim içindeki binalar arasında benzerlik ya da farklılık olup olmadığının belirlenmesine yardımcı olmuştur. Akademisyenler genellikle insan toplumunda toplumsal ölçek ve karmaşıklık arasındaki bir ilişki olduğunu vurgulamaktadırlar. Nüfus büyüklüğü genellikle sosyal yapının en basit endeksi olarak kabul edilir ve sosyal karmaşıklık için birincil kriter olarak adlandırılır, bu nedenle yerleşim yerlerinin nüfusu da hesaplanmıştır. Doğa olaylarına bağımlılık, karada ve denizde yön tayin edebilmek, zamanı takip etmek ve kimi zaman da tanrılardan gelecek mesajları anlamlandırabilmek için gök isimleri gözlemlenmiştir. Bu bağlamda yerleşim yeri planının herhangi bir gök ismini gözlemlenmek üzerine olup olmadığının anlaşılabilmesi için arkeoastronik analiz uygulanmıştır. Yapılan analizlerin sonuçları Demircihöyük, Seyitömer Höyük, Karataş ve Hacılar Büyük Höyük'te gerçekleştirilen kazılar ve ilgili yerleşim yerleri üzerine yapılan arkeolojik araştırmaların sonuçlarıyla karşılaştırılmıştır.

Anadolu Erken Tunç Çağı sosyal yapısı, bir otoritenin mevcut olup olmaması üzerinden değerlendirilen sosyal karmaşıklık kavramı üzerinden ele alınmaktadır. Bir yerleşim yerinde sosyal hiyerarşinin var olduğu savı, gerek lokasyonu gerekse diğerlerine göre farklılık gösteren büyüklüğü ya da mimari planı bulunan binaların varlığı üzerinden tartışılmaktadır. Çünkü bu tür bir yapının inşasının ancak belli bir düzeyde otorite tarafından organize edilebileceği varsayılmaktadır.

Nitelik ve nicelik bakımından farklılık gösteren buluntu grupları ile farklı bir bölgeden gelen buluntular da hiyerarşik bir yapının varlığını destekler nitelikteki arkeolojik verilerdendir. Her ne kadar eşitlikçi bir yeniden dağıtım sistemi anlamına da gelse, merkezi bir depolama tesisinin varlığı, genellikle tek bir hanenin kaynakları kontrol etmesi ve dağıtımından sorumlu olmasıyla ilişkilendirilen yönetim becerisinin bir göstergesi olarak da yorumlanmaktadır.

Sosyal sistemlerin karmaşıklığı genellikle metalurji, çanak çömlek stili, ticaret ağları ya da pastoral ve tarımsal stratejiler ve yerleşim alanı örgüsü gibi farklı veri setleri ayrı ayrı ele alınarak incelenmiştir. Ancak tipolojik sınıflandırma da dahil olmak üzere, bu tür çalışmalar hem sosyal sistemlerin iç dinamikleri konusunda bir fikir vermediği gibi, maddi kültür ile değişimler arasında nedensel bir bağlantı kurulmasını da sağlamamakta veya bir toplumun hangi bağlamda karmaşık olduğu konusunda da bilgi vermemektedir. Sosyal karmaşıklık kavramının Anadolu Erken Tunç Çağı için net bir tanımı olmadığı gibi, arkeolojik veri bakımından da ölçeklendirilebilir bir karşılığı da yoktur. Bu nedenle zaman ve mekân bakımından farklılık gösteren yerleşim yerlerinin birbirleriyle karşılaştırılması da güçleşmektedir.

Tarih öncesi döneme ait yerleşim alanlarındaki mekan oluşumu süreci, döneme ait sosyopolitik değişimlere ışık tutmaktadır. Anadolu Erken Tunç Çağı'nı inceleyen arkeologlar, sosyal örgütlenme ve yerleşim düzenindeki değişiklikleri sıklıkla gelişen sosyal karmaşıklığın ve kentleşmeye doğru gidişin bir göstergesi olarak yorumlamaktadır. Kentleşme terimi genellikle demografik, tipolojik ve / veya işlevsel atıflara ilişkin önceden belirlenmiş kriterlerle tanımlanmaktadır. Bu çerçevede,

öncelikle bir kentin kökenine işaret etmeye ve kentleşme sürecinin yerleşimler arasında karşılaştırılmasını ve değerlendirilmesini kolaylaştırmaya hizmet etmektedir. Bununla birlikte, kentsel ve kentsel olmayan (kırsal) arasındaki ayrım, özellikle Anadolu'nun Erken Tunç Çağı göz önüne alındığında net değil, aksine çok yönlü ve hatta gerçekleşip gerçekleşmediği tartışmalı bir olgudur.

Dahası, Anadolu'da gördüğümüz kentleşme süreci Mezopotamya'da gördüğümüzden daha farklı bir süreç izlemekte, muhtemelen de hem sosyal sistemler hem de kentselleşme süreci bölgesel çeşitlilikten etkilenmiş ve bu nedenle de kendi içinde de eş zamanlı olmadığı gibi farklılık göstermektedir. Bu nedenle, öncelikle Mezopotamya yerleşim yerleri göz önünde bulundurularak yapılan kentleşme tanımı Anadolu'da bulunan çağdaşlarını incelemek için doğru bir perspektif sağlamamaktadır. Bu bağlamda, çalışmanın teorik çerçevesi oluşturulurken çeşitli kentleşme teorilerinin eleştirel bir incelemesi yapılmış ve metin içinde geçen yerleşim yerlerinin değerlendirilmesi yapılırken “kentleşme derecesi” terimi kullanılmıştır. Bu tanımlama belirli zanaatkarlar için farklı alanların kullanımı, prestij göstergesi olan nesnelere üretimi, farklı bölgelerde üretilen buluntuların varlığı, nüfusun büyüklüğü, anıtsal mimarinin varlığı ve sosyal sistemin doğası birer gösterge olarak değerlendirmeye alınmıştır. Bu faktörler merkezleşme derecesi ve yerleşim yerinin hiyerarşik organizasyonunun yanı sıra ekonomik ve sosyal karmaşıklık konusunda da aydınlatıcı olmaktadır. Dahası, arkeologlar tarafından ön görüldüğü gibi sosyal karmaşıklık ve kentleşme arasında herhangi bir korelasyon olup olmadığı da bu çalışma kapsamında incelenmiştir.

Bunun yanı sıra sosyal sistemler farklı birimlerden oluşmaktadır ve karmaşıklığın belirlenebilmesi sistem içindeki bileşenlerin birbirleriyle olan ilişkisinden de etkilenmektedir. Bergman ve Beehner'in argümanına dayanan bu çalışma, belirli bir toplumun sosyal karmaşıklık derecesinin, bireylerin toplum içinde sürdürdükleri farklılaşmış ilişkilerin sayısına bağlı olarak ölçülmesi gerektiğini önermektedir. Bu ilişkiler, sosyal tabakalaşma boyunca hem yatay hem de dikey olarak yayılabilen



ailevi, ekonomik, siyasi, dini veya sosyal bağlantıları kapsamaktadır. Farklılaşmış ilişkileri ele almak için sosyal örgütlenme, mimari, binaların konumu, sınır kontrolü (yerleşimin farklı alanlarına/binalarına serbest/kısıtlı erişim), iş bölümü ve egzotik mallara (diğer bölgelerden ithal edilen malzemeler) daha fazla erişim gibi faktörler göz önünde bulundurularak, toplum içindeki ayrıışıklık ve eşitsizlik ilişkisi incelenmiştir.

Çalışma alanı, Orta ve Batı Anadolu rasında, Eskişehir ovasının kuzey-batı kenarı, Kütahya, Burdur, Korkuteli ve Elmalı'yı kapsayan koridora benzetebileceğimiz bir bölgeyi kapsamaktadır. Çalışma lanının kuzey ve güney sınırları sırasıyla Karadeniz, Ege Denizi ve Akdeniz'in iklimsel etkileri altında olsa da, genel olarak İç Anadolu'ya özgü karasal iklim özelliklerini göstermektedir. Sosyal sistemler olarak toplumlar ve içinde yaşadıkları doğal sistem birbirleriyle etkileşime girer, gelişir ve birbirleri üzerinde önemli bir etkiye sahiptir. Farklı toplumsal yapı biçimleri, sosyo-ekolojik örüntülerine göre tanımlanabilir. Bu da hem sosyal örgütlenmeyi hem de çevresel koşulları aynı anda dikkate almayı gerektirir. Çünkü ekolojik faktörlerin de insan davranışları üzerinde etkisi vardır. Bu nedenler de yerleşim yerlerinin içinde buldukları topografik ve iklimsel koşullar da göz önünde bulundurulmuştur. Bu sayede, insan-çevre sistemlerindeki ekolojik faktörlerin etkilerinin ekarte edilmesi ve sadece insan-yapılı çevre ilişkisine odaklanması amaçlanmıştır.

İlk Tunç Çağı'ndaki insan-yapılı çevre ilişkisini daha iyi anlamak ve farklı yerleşim yerlerindeki sosyal yapıları daha iyi irdeleyebilmek, Bademağacı Höyük'ten elde edilen sonuçlar diğer yerleşim yerleriyle karşılaştırılmıştır. Burada yerleşim yerlerinin seçiminde, coğrafi yakınlıkların yanısıra, ilgili çalışmalarda kullanılan teorik ve metodolojik çalışma çerçeveleri dikkate alınmıştır. Hem Anadolu Erken Tunç Çağı hem de seçilen yerleşim yerleri hakkında genel bilgi verilirken, yerleşim yeri planı, mimari gelenekleri, küçük ölçekli buluntular, gömü gelenekleri, faunal kalıntılar ve söz konusu yerlerin sosyal yapıları üzerine durulmuştur. Burada bir araya getirilmiş tüm veriler, yayınlanmış materyallerden elde edilmiştir.

Hacılar Büyük Höyük dışında, diğer yerleşim yerlerindeki arkeolojik kazılar tamamlanmıştır. Hacılar Büyük Höyük'teki kazı projesi ise 2011'den bu yana her sene devam etmektedir, bu nedenle çalışmalar üzerine yapılan yorumlar kesinleşmiş argümanlar değildir ve ilerleyen yıllarda elde gerçekleştirilecek araştırmalar neticesinde yeniden değerlendirilmeleri gerekliliği doğacaktır. Yerleşim yerlerinden Demircihöyük, Seyitömer ve Hacılar Büyük Höyük oval biçimli kapalı yerleşim planına sahiptirler ve bu plan içinde binalar birbirlerine bitişik olarak inşa edilmiştir. Buna ek olarak, Demircihöyük ve Seyitömer yerleşim düzenleri hakkında kapsamlı bilgiler verirken, Hacılar Büyük Höyük, merkezi alanın büyük kısmı henüz ortaya çıkartılmadığından, elimizdeki veriler oldukça sınırlıdır. Mimari plan göz önüne alındığında tüm yerleşim yerlerinden ilgili alanın geleneksel mimari planları hakkında genel bir fikre sahip olmak mümkün iken, tarım ve hayvancılık ile ilgili bilgiler, Demircihöyük, Karataş ve Hacılar Büyük Höyük'ten gelmektedir. Mimari geleneklerin yanı sıra ölü gömme gelenekleri de bireyler ve gruplar arasında farklılaşmayı gösteren arkeolojik veri sağlamaktadır. Her ne kadar Anadolu Tunç Çağı'nda mezarlıklar yerleşim yerleri dışına alınmış ve genel olarak sosyal yapı hakkında araştırmacılara zengin veriler sağlasada sadece Demircihöyük ve Karataş yerleşim yerlerine ait ölü gömme gelenekleri hakkında yeterli bilgi elde edilmiştir. Buna karşı Seyitömer ile ilişkilendirilmiş ne intramural ne de extramural mezarlıklara rastlanmamıştır. Aynı şekilde, Hacılar Büyük Höyük'te de bu zamana kadar yapılan kazı çalışmalarında henüz herhangi bir gömü izine rastlanmamıştır.

Bademağacı Höyük, Burdur Göller Yöresi Bölgesi'nin güney sınırında, Bağdemağacı kasabasının 2,5 km kuzeyinde, dağlarla çevrili küçük bir düzlük üzerinde bulunmaktadır. Höyük tipi bir yerleşim yeri 1, 59 hektarlık bir alanı kaplamakta ve ova seviyesinden 7m, ana kayadan ise 9m, deniz seviyesinden ise 585 m yüksekliktedir. Höyük yaklaşık 210 m X 120 m boyutlarında oval bir şekle sahiptir. Höyük, 1958'de James Mellaart tarafından Konya bölgesine yaptığı ziyaretler sırasında ziyaret edilmiş ve 1961 yılında yayınladığı makalesinde Kızılkaya Höyük olarak adlandırılmıştır. Mellaart yaptığı yayında, burasının bir köy

olduğunu ve arkeolojik materyale bakıldığında doğuda bulunan çağdaşlarıyla kıyaslandığında farklılık gösterdiğini ancak bunun yerine daha batıdaki çağdaş kültürlerle benzerliklerinin olduğunu savunmuş ve yerleşimin Hacılar için öncül olabileceğini öne sürmüştür.

Arkeolojik kazılar 1993'te Refik Duru tarafından başlatılmış ve daha sonra Gülsün Umurtak başkanlığında 2010'a kadar devam etmiştir. Neredeyse 20 yıla yakın süren kazı çalışmaları sonucunda höyük yüzeyinin yaklaşık %65'i kazılmıştır. Yerleşim, höyük yamacı boyunca uzanan 3-8 m genişliğinde bir taş döşeme ile çevrelenmiştir. İTÇ II dönemine ait olduğu düşünülen 3 giriş kapısı ortaya çıkarılmıştır. İTÇ II yerleşimi neolitik kalıntıların çevresinde, M.Ö. 2800 civarında başlamış, M.Ö. 2000 civarına kadar devam etmiş ve yaklaşık 4,5-5 metre kalınlığında yerleşim kalıntısı oluşturmuştur. Kazı sonuçları, İTÇ II 2 ve 3 sırasında sürekli onarım ve eklemelerle kesintisiz bir yerleşim dizisini göstermektedir.

Binaların mimari planları ve konumları açısından inşası, yerleşimin radyal bir plana göre tasarlandığı fikrini ortaya koymaktadır. Duru ve Umurtak, İTÇ II dönemi yerleşim düzeninin önceden planlanmış bir tasarıma dayandığını belirtmişlerdir. Belirlenmiş bir planın varlığı ve kazılarda sırasında ortaya çıkarılan çok sayıda mühürün varlığına dayanarak, burada güçlü bir otoritenin varlığını öne sürmüşlerdir. Birbirine bitişik olarak inşa edilen binaların, yerleşim yerine girişi engelleyen duvar benzeri bir koruma oluşturduğu düşünülmektedir. Karmaşık mimari planları açısından iki farklı yapı tespit edilmiştir. Bunlardan ilki merkezde yer alan ve Çok Odalı Bina 1 olarak adlandırılan yapı, birbirine kapılarla bağlı 17 odadan oluşmaktadır. Bazı odalar iç bağlantılara sahip olup, birden fazla binaya aitmiş gibi görünmektedir. Duru ve Umurtak, bu yapı kompleksinin kilisenin altına kadar devam ettiğini ve muhtemelen 10 ek oda daha bulunduğunu düşünmektedirler. Kazı sonuçları, EBA II-3 ile EBA II-2 geçiş dönemi boyunca yinelenen inşa aşamalarının olduğunu göstermektedir. Duru ve Umurtak'a göre, Çok Odalı Bina 1, köyün en güçlü ailelerinin ikametgâhı ve idari bina olarak kullanılmış olması muhtemeldir.

Kompleksin iki odasında, biri orta ve büyük boyutlu kaplar ve kavanozlar, diğeri ise muhtemelen kasıtlı olarak bir araya getirilmiş 25 kap bulunan eser grubu ortaya çıkarılmıştır. Bir diğeri bina kompleksi ise yerleşim yerinin güneyinde ortaya çıkartılmış ve Çok Odalı Bina 2 olarak adlandırılmıştır. Buradaki oadalar görece daha küçüktür ve yerleşim yerinin diğeri yapılarıyla karşılaştırıldıklarında farklılık göstermektedir.

EBA II dönemine ait ortaya çıkarılan ev sayısı 60 olup, kazılmamış alanda muhtemelen 40 ev daha bulunduğunu düşünen Duru ve Umurtak'a göre, 17 odalı Çok Odalı Bina da dahil olmak üzere, Bademağacı Höyüğü'ndeki İTÇ II yerleşim yerinde toplamda 140 ev bulunmaktadır. Her evde 6-7 kişinin yaşadığını varsayarak, köyde toplamda yaklaşık 800 kişinin yaşadığını öne sürmüşlerdir. Ayrıca, İTÇ II yerleşiminin birkaç yüzyıl, muhtemelen 8-10 nesil boyunca devam ettiği düşünülmektedir. Duru ve Umurtak'a göre, yerleşim yeri yerel yönetim merkezidir ve çevresindeki bölge üzerinde kontrol sahibidir.

Alanın Kkuzey bölümü boş bırakılmış olup, muhtemelen hayvan barındırmak için kullanılmıştır. Evler, farklı kalınlıklarda duvarlara sahip olup, bu durum her birinin farklı inşa veya onarım zamanlarını gösterir. Yerleşim yerinin inşa gelenekleri, yapıların işlevlerine göre farklı tiplerini belirlemeye dair bir ipucu vermemektedir. Zemin, duvar inşa tekniği, ahşap kullanımı veya çatı yapısı hakkında herhangi bir bilgi bulunmamaktadır. Binalarda taşınabilir buluntu ortaya çıkartılmamıştır ve binaların iç bölmelerinin olduğuna dair ait herhangi mimari buluntuya rastlanmamıştır. Duru ve Umurtak'a göre, Erken Tunç Çağı III yerleşimi M.Ö. 2100 civarında yıkılmış ve yerleşim yeri Orta Tunç Çağı boyunca bir süre daha iskan edilmiştir. Orta Tunç Çağı'na ait seramiklerin varlığına rağmen, bu döneme ait herhangi bir mimari kalıntı bulunamamıştır.

İTÇ II Bademağacı'ndaki gömü geleneği, Anadolu'nun farklı bölgelerinde bulunan geleneklerle benzerlik göstermektedir. Ölen kişi, büyük bir pithosun içine yerleştirilip düz bir taşla kapatıldıktan sonra hafif bir açıyla bir çukurun içine

konulmuştur. Genellikle, ölüye mezar hediyesi olarak kaseler bırakılmıştır. Evlerin dışındaki sokaklarda ve boş alanlarda toplam 30 mezar bulunmuş, bazı durumlarda ise evlerin zeminlerinin altına yerleştirilmiştir. Bununla birlikte, bu sayı yerleşim yerindeki nüfusa kıyasla son derece küçüktür ve höyük çevresinde bugüne kadar yapılan çalışmalarda mezarlık bulunamamıştır.

Yapılan çalışmalar, İTÇ II boyunca Burdur bölgesinde ortak bir seramik üretim geleneği olduğunu ve bunun farklı merkezler arasında doğrudan ve/veya dolaylı ilişkiler olduğunu ortaya koymaktadır. Ancak, yerel çevresel koşullar nedeniyle bu merkezlerde yerel farklılıklar da gözlenmiştir. Burdur çevresindeki bu merkezler arasında Karataş-Semayük, Kuruçay, Hacılar Büyük Höyük, İncidere Höyük, Üzümlübel, Çayırılık Höyük, Küçükalan, Gedikyapı, İlyas II Höyük, Kayalı II Höyük, Yusufça, Akça I ve Bügdüz Höyük bulunmaktadır.

Bademağacı'nda önemli sayıda idol ortaya çıkarılmıştır. Bu idoller, basit ve stilize edilmiş insan formunda olup Ana Tanrıça'yı temsil etmektedir. Bazılarının göğüslerinde çizgili süslemeler bulunmaktadır. Bunlardan biri üç boyutludur. İdoller pişmiş topraktan yapılmıştır. Ayrıca, düz bir mermer idol de bulunmuştur. Bademağacı Höyüğü'nde bulunan idoller, Burdur bölgesinin geleneksel idol tarzını yansıtmaktadır. Duru ve Umurtak'a göre, bazı idollerde Ana Tanrıça'nın giysilerini göstermek amaçlanmıştır.

Bademağacı İTÇ II evrelerinde yuvarlak, kare, üçgen veya oval ayak şeklinde mühür yüzeylerine sahip, ip geçirmek için delikli konik saplı 120'den fazla mühür bulunmuştur. İki örnek dışında, mühürlerin yüzeyi genellikle iki çapraz çizgiyle dört bölüme ayrılmış ve geometrik motifler veya çizgi benzeri süslemelerle doldurulmuştur. Mühürler taş veya kil malzemedan yapılmıştır. Ayrıca, kare mühür yüzeyine ve uzun kalın sapına sahip bir bronz mühür örneği de vardır. Karışık bir bağlamda, diğer buluntularla birlikte, ağırlıklı olarak Orta Tunç Çağı'na ait olan kalıntı toprağında bir kurşun mühür de bulunmuştur.

Depolama odası yakınındaki çok sayıda kavanoz ve pithoi içeren Çok Odalı Bina 2'de ve Trench 2'den, yüzeyi işaretlenmiş üç küçük kil disk şeklinde plaka bulundu. Klasik Anadolu İTÇ kronolojik sistemi ve 14C tarihlleme sonuçlarına dayanarak, bunların M.Ö. 2600/2500 civarında tarihlendiği düşünülmektedir. Umurtak'a göre, bu üç kil plaka, sayılabilir nesnelere veya hayvanların sayısını kaydetmek için kullanılmıştır. Her bir sayı için sembolik bir temsil olmaması nedeniyle, sayısal değer her bir tırnak izine bir nesne veya birim olarak işaretlenebilir şekilde kaydedilmiş olabilir. Umurtak, plakaların miras niteliğinden dolayı üzerlerinde işaretlenen sayısal değerlerin uzun bir süre boyunca geçerli olması amaçlandığını, bu nedenle de işaretlenen nesnelere kısa bir süre içinde tüketilmemiş olması gerektiğini öne sürmektedir. Bunlardan ikisinin önemli sayıda kavanoz ve pithoi bulunan bir depolama odasında bulunması, bu argümanı güçlendirmektedir.

Bir çok odası boş olarak ortaya çıkartılan, Çok Odalı Bina 2'deki odalardan birinde mühür izi taşıyan bir bulla bulunmuştur. Bullanın kökeni henüz bilinmemekle birlikte, Umurtak, bunun yerleşim yerinde damgalanmış olabileceğini iddia etmektedir. Yüzey işaretlerine dayanarak, bir pithos veya büyük bir depo kavanozunun ağzını kaplayan bir parça kumaşa veya bir ahşap tablete uygulandığı düşünülmektedir. Diğer yandan, mühür damgalı bullalar yalnızca taşınan malların güvenliği için kullanılmamış, aynı zamanda odaların kapılarını kapatmak/kilitlemek veya bir idari sistem kontrolünde gelen-giden malzemelerin kaydını tutma sürecinin bir parçası olarak da kullanılmıştır. Bu nedenle, Umurtak, önemli miktarda mühür ve sayısal olduğu düşünülen tabletlerle birlikte, bu bullanın Bademağacı Höyük'ünde kurulan bir idari sistem altında geliştirilen bir ön-alfabe işaretleme sistemine işaret ettiğini iddia etmektedir.

Bademağacı'da çok sayıda iğne ağırlığı veya dokuma ağırlığı, büyük boncuklar ve düz veya süslü fırın destekleri veya tencere ayakları, saplı bir çingirak dahil olmak üzere küçük kil buluntu ortaya çıkartmıştır. Diğer bir grup kil obje ise üçgen profilli fırçalardır. Kuş benzeri bir kil obje ve tıpa/bung benzeri kil obje de bulunmuştur. Üç

bacaklı ve çizgilerle süslenmiş yuvarlak üstü olan minyatür bir masa ile bir minyatür kap başka kil objelerdir.

Trench A'nın kuzeybatı kesiminde bir grup kireçtaşı obje ortaya çıkartılmıştır. Bunlar, damla şeklinde yaklaşık 300 parçadan oluşur ve bir tarafı hafifçe daralmış, diğer tarafı ise yuvarlaktır. Çapları ve kalınlıkları sırasıyla 4.5 ile 13.4 arasında ve 0.7 ile 0.9 cm arasında değişmektedir. Hepsi bir arada bulunmuş ve işlevleri henüz bilinmemektedir. Onların dışında, sitede bulunan taş ve kemik araç ve gereçlerin sayısı çok yüksek değildir.

Höyüğün güney kesiminde (Ana Kapı olduğu düşünülen mimari yapı içinde), ev dışında bir odada *in situ* konumunda iki büyük kavanozda çok miktarda metal obje bulunmuş ve bu objelerin muhtemelen İTÇ II'nin son evrelerinde yapılan kalın, büyük taş duvarlarla ilişkilendirdiği düşünülmektedir. Ayrıca, büyük bir depolama kavanozunun içinde bir metal obje grubu bulunmuş ve bunlar bir bronz mızrak ucu, bir bronz el baltası ve süslü büyük başlı iki gümüş iğneden oluşmaktadır. Bir altın kulak tıkaçı da diğer büyük kavanozda bulunan başka bir metal objedir. Bunların yanı sıra, iki kavanozun içinde, birbirine yapışmış bir kalıp parçası şeklinde bir araya gelen metal obje grubu, zeminde bulunmuştur. Metal buluntular boncuklar, bir başlı iğne ve bir bronz mühürden oluşmaktadır. Aynı alandaki zeminde, ince bir gümüş levhadan yapılmış yarısı korunmuş bir gümüş kase veya tabak da bulundu. Bunların dışında, bakır veya bronzdan iyi korunmuş bir hançer ve özellikle büyük bir küresel başlığa sahip iğneler de yapılan kazı çalışmaları sonucu gün yüzüne çıkarılmıştır.

Yapılan faunal analiz çalışmaları yerleşim yerinde hayvancılık yapıldığını göstermektedir. Koyun, keçi, sığır ve domuz yerleşim yerinde yetiştirildikleri düşünülmektedir. Bunun yanısıra vahşi koyun, keçi ve domuz kalıntılarıyla birlikte av hayvanlarının kalıntılarına da rastlanmıştır. Buğday, çavdar, saman, mercimek, nohut, bezelye, çiğdem, armut, elma ile birlikte yabani meyve ve ot tohumu kalıntıları bulunmuştur.

Mekan dizilimi analizi yapabilmek için dijitalleştirilmiş bir İTÇ II yerleşim yeri ve bina planlarına ihtiyaç duyulmaktadır. 1993'ten 2010'a kadar her yıl devam eden kazılar süresince yayınlanan toplam on bir harita, ilgili kazı raporları ışığında çağdaş bir bina düzeni oluşturmak için kullanılmıştır. 2011'de yayınlanan İTÇ II yerleşim düzeninin en son hali, dijitalleştirme sürecinin temel haritası olarak kullanılmıştır. Haritaları içeren yayınlanmış veriler ışığında, İTÇ II evrelerine tarihlenmemiş olan binalar, duvar yapıları ve mimari özellikler yapılan çizimden çıkarılmıştır. Ardından, yerleşimin henüz kazılmadan kalan kısmı, kazı raporlarına dayanarak, İTÇ II'nin nispeten çağdaş ve tamamlanmış bina planlaması göz önünde bulundurularak, mevcut bina yapılarının kopyaları çıkarılmak sureti ile kazılmamış alana yerleştirilmişlerdir.

Bina fonksiyonlarını, ekonomiyi ve bölgesel ilişkileri anlamak için, küçük buluntular, hayvan ve bitki kalıntıları ve seramik koleksiyonları, detaylı olarak incelenmiştir. Buluntu dağılımı, kazı raporlarına dayalı olarak oluşturulan bir harita ile belirli bir derecede temsil edilmiştir. Bu sayede, bazı binalar ve odalar depolama tesisleri olarak etiketlenmiştir. Ancak, kazı raporlarında ne buluntuların tam konumu ne de buluntuların konteksleri belirtilmemiştir. Bu nedenle, buluntu dağılım haritası her bir buluntu için kesin konumları vermemekte, ancak buldukları yerlerin sınırlarını göstermektedir. Bu vesileyle, buluntu koleksiyonlarının detaylı ve kesin bir desenini önermek mümkün değildir. Bununla birlikte, harita, yerleşim alanı üzerinde buluntu dağılımının genel konumu hakkında bazı fikirler vermektedir. Buluntu analizi ev temellinde üretim ve tüketime işaret etmekte ve düşük bir eşitsizlik derecesini ima etmektedir. Sadece iki hayvan figürünün ortaya çıkarılmış ve bunlar biri ev hanesinin içinde yerleşimin kuzey kesimde bulunmuştur. Analiz sayesinde bazı binalar ve odalar depolama tesisleri olarak tanımlanabilmiştir. Bulunan 30 pithos mezardan sadece dört tanesi harita üzerinde gösterilmiştir. Bunlar duvar kalıntıları veya binalara yakınlarında ortaya çıkarılmıştır. Bu nedenle Bademağacı Höyük pithos mezar geleneği konusunda bir genelleme yapmak mümkün değildir.



Planlarına, boyutlarına ve içlerinde bulunan eserlerine dayanarak, binalar dört gruba ayrılmıştır. Çok Odalı Bina 1, megaton benzeri binalar ve depo tesisi benzeri odalardan oluşmuş görünmektedir. Çok Odalı Bina 2, yan yana sıralı olarak inşa edilmiş tek tip binalardan oluşmuş olup odalar depo tesisi olarak kullanılmıştır. Konut Tipi 1, odaların sırayla dizildiği binaları ifade eder. Yalnızca kuzey kesiminde ortaya çıkarılan bazı binalar, ortak bir açık alanı paylaşan ve iki hücreli tek birim olarak kullanılan yapılar olarak inşa edilmiş olup, Konut Tipi 2 olarak adlandırılmıştır.

Kazı çalışmaları, kuzey kesiminin hayvanları barındırmak için kullanıldığını ve hayvan kalıntılarının hayvancılık yapıldığını gösterdiğini öne sürmektedir. Hayvan yetiştirmek, kışın hayvanları içeride tutmak ve yemleri kuru tutmak için ek alan gerektirdiğinden, Konut Tipi 2'nin hayvancılık yapan ve hayvanları için ek alana ihtiyaç duyan hanelere ait olduğunu argümanını öneriyorum.

Çok Odalı Bina 1'in megaron benzeri binalar ve depo tesisi benzeri odalardan oluştuğu görülmektedir. Bu bağlamda, Çok Odalı Bina 2'de herhangi bir bina gruplaması olmadığı, bunun yerine tek tip binaların yan yana sıralı olarak inşa edildiği dikkate değerdir. İki bina kompleksinde kullanılan farklı bina planlarının varlığı, bunların genel olarak farklı amaçlar için kullanıldığını düşündürmektedir.

Büyük seramik kaplar ve önemli miktarda metal obje bulunmasına rağmen, yerleşim yerinde çömlek üretimi veya metal işçiliğine dair tanınabilir yerler yoktur. Konutlarda ocakların olmaması, fırınların yokluğu ve metal işçiliğine dair herhangi bir kanıtın bulunmaması, çömlek yapımı ve metal işçiliği gibi bazı faaliyetlerin muhtemelen yerleşim yerinin sınırları dışında gerçekleştirildiğini düşündürmektedir. Buna karşılık, tahıl üretimi, hayvan yönetimi ve tekstil gibi diğer faaliyetler yerleşim yerinin içinde yürütülmüştür. Bazı faaliyetlerin varlığı ve diğerlerinin yokluğu, burasının belirli dönemlerde (mevsimsel ya da bazı hane halkının yılın belirli zamanlarında başka bir yerde ikamet etmesi) kullanıldığı ve diğer faaliyetlerin başka yerlerde gerçekleştiğini de ima edebilir.

Yine binaların mimari yapılarına baktığımızda, girişi höyüğün merkezine bakan yapışık evler, birbirini sürekli izleyen bir topluluk hissi yarattığını görmekteyiz. Buradan yola çıkarak, yerleşim yerinin mimari geleneklerinin haneler arasında işbirliğine dayalı bir etkileşimi gerektiren bir topluluk olduğunu söyleyebiliriz. Kazı sonuçları, arka odaların depo odası olarak kullanıldığını göstermektedir. Her evde bireysel bir depo odasının bulunması, mülkiyet kavramını ve kişisel değerleri işaret etmektedir. Yaşam alanları içinde bölünmeyi gösteren mimari kalıntıların olmaması ev içinde farklı aktiviteler için özel olarak ayrılmış alanların olmadığını düşündürmektedir.

Her ne kadar konut büyüklüğü ile nüfus arasındaki ilişki her zaman net olmayıp sosyo-ekonomik faktörlere bağlı olarak değişebilse de, toplumsal ölçek ve karmaşıklık arasındaki kabul edilmiş ilişkiyi dikkate alarak, burada birincil amacın, yerleşimler arasında anlamlı karşılaştırmalar yapmayı kolaylaştıracak yaklaşık bir sayısal değer üretmek olduğunu vurgulamak gerekmektedir. Bu hesaplamanın kaba bir tahmin niteliğinde olduğu ve gelecekte daha karmaşık ve kapsamlı araştırmaların yapılması olasılığının açık olduğu önemle belirtilmelidir. Bademağacı Höyüğü'ndeki nüfus büyüklüğünü hesaplaması mimari yapıların alanları üzerinden yapılmıştır.

Duru ve Umurtak, kazılmamış alanda 30 bina daha olduğunu ve her birinde 6-7 kişinin yaşadığını varsayarak, toplamda 120 evin en az 700 kişilik bir nüfus oluşturduğunu öne sürmüştür. Ancak bu çalışmadan ben kazılmış ve konut olarak tanımlanan binalara dayanarak ortalama bir yaşam odası büyüklüğünü hesapladım ve bunun 5-7 kişinin yaşaması için yeterli alan sağladığını varsaydım. Kazılmamış alana sığan 15 bina ve depo alanlarını hariç tutarak, toplamda yaklaşık 55 konut ortalama 350 kişilik bir nüfus üretmektedir. Bu sayı, nüfus eşiği sınırları içindedir ve topluluk içinde farklı bir alt grup oluşumunu zorunlu kılmayabilir.

Mekan dizilimi analizleri kapsamında EİTÇ II yerleşim planına eksen çizgisi analizleri, konveks izovist analizi ve konveks mekansal analizler uygulanmıştır. Her bina tipi için doğrulanmış grafikler oluşturulmuş ve iki bina kompleksi arasındaki

karşılaştırmaları kolaylaştırmak amacıyla grafikler girişlerinden itibaren çizilmiştir. Bina komplekslerinin ana girişlerinin belirsizliği nedeniyle, her olası ana yön için grafikler oluşturulmuştur.

Konutların mimari planları, farklı düzeylerde mahremiyet sağlayan işlevsel tasarımlar göstermektedir ve genellikle en yüksek mahremiyet seviyesine sahip alanlarda depolama odaları konumlandırılmıştır. Grafik analizi, Çok Odalı Bina 1 için ana girişin batı yönünden, Çok Odalı Bina 2 içinse doğu yönünden gerçekleştiğinde binaların en dipteki odalarına ulaşımın sağlanabileceği gözlenmektedir.

İç görünürlük grafiği, yerleşim içinde yüksek bağlanabilirlik göstermekte ve bu da yaya dostu bir çevre olduğunu ortaya koymaktadır. Hem sakinler hem de yabancılar istedikleri yerlere kolayca ulaşabilirler. Yerleşim yeri girişleri geniş olup girişi kapatmak ya da korumak için yapılmış herhangi bir mimari yapıda bulunmamakla birlikte, kuzeydeki taş örgü üzerinden yürüyerek bile erişim sağlanabilir, bu da ne höyüğü çeviren taş örgünün ne de yerleşim düzeninin yabancıların erişimini sınırlamak üzere tasarlanmadığını göstermektedir. Güneybatı bölgesi, özellikle ÇOB2'nin önünde, görünürlük en yüksek seviyededir.

İzovist grafiği, yerleşim yerinin ana girişinin büyük olasılıkla Kapı 2'den (K2) olduğunu göstermektedir. Her kapıdan oluşturulan mekansal adım derinliği grafiklerinde, ÇOB2'nin, yerleşim yeri içinde yüksek görünürlüğe sahip olmasına rağmen, en büyük derinliğe sahip olduğu görülmektedir. Kapı veya depolama kavanozları için mühürleme aracı olarak kullanıldığı düşünülen bir bullanın, ÇOB2'nin en derin kısmında bulunması da bu alanın depolama olarak kullanıldığını destekler niteliktedir.

Mekansal adım derinliği grafiği, ÇOB2'nin kuzeydeki binalar ve ÇOB1 ile daha düşük mekansal bağlantıya sahip olduğunu göstermektedir. Arkeolojik kanıtlarla birlikte en yüksek bağlanabilirliğe sahip stratejik konumu göz önüne alındığında,

ÇOB2'nin büyük olasılıkla ortak depolama alanı olarak işlev gördüğü düşünülmektedir. K2'nin yerleşim yerinin ana girişi ve ÇOB1'in ana girişinin batıdan olduğunu varsayarsak, analiz sonuçları ÇOB1'in ÇOB2 veya yerleşim yeri geneli dikkate alındığında herhangi bir kontrol sağlama amacı içinde bulunmadığı görülmektedir.

Bunların dışında, inşa edilmiş alan ve açık alan oranını, konut alanını ve depolama tesislerinin bir birlerine olan oranları da hesaplanmıştır. Grafikleri oluşturabilmek için her binanın kendisi, yaşam alanı (cella) ve depolama alanı olarak ölçüldü. Grafikler, yerleşimciler ve ÇOB1'de yaşayanların ihtiyaçları göz önüne alındığında benzer bir dağılım olduğunu göstermektedir. Bir başka deyişle, mimari plan ve büyüklük bakımından ÇOB1 yapısı herhangi bir ayrıcalığa sahip değildir.

Her ne kadar ÇOB1'in konumu nedeniyle stratejik bir öneme sahip olduğu düşünülse de odaların mimari planına baktığımızda, bina alanı ve depolama tesislerinin benzer oranı ile birlikte ortak depolama tesisleri ile arasında çok düşük bir bağlantıyı ima eden mekansal derinlik grafiklerini de göz önüne aldığımızda, Duru ve Umurtak tarafından önerilen güçlü bir otoritenin, zenginlik temelli bir elitizm değil, sosyal liderlik gibi bir modeli daha iyi yansıttığı görülmektedir. Bu modele göre, ÇOB1 hanesi muhtemelen ritüel lideri olmalıdır.

Konut Tip 2'nin yaşam alanı neredeyse Tip 1'in iki katı olmasına rağmen, her iki bina türünde ortalama büyüklükleri aynıdır. Bu, KT2 hane halklarına bina büyüklüğü açısından ayrıcalık tanınmadığını, bunun yerine mimari planın farklı olduğunu göstermektedir. Eğer KT2'de yaşayan hane halklarının hayvan yetiştiriciliğinden sorumlu olduğu fikrini kabul edersek, bu farkın muhtemelen hayvanlar için ekstra alan elde etme ihtiyacından kaynaklandığını, daha yüksek statüyü temsil etmek için sembolik bir anlam içermediğini düşünebiliriz.

Arkeolojik kalıntılar yalnızca yatay yönelim analizi için uygun olup, yerleşim yerine giriş için kullanılan üç kapıya uygulanmıştır. Sonuçlar, herhangi bir göksel nesne ile

bağlantı olmadığını göstermektedir. Ancak başka yerleşim yerleri ile karşılaştırma yapılabilmesi için deklinasyon değerleri grafik üzerinde gösterilmiştir.

Analizlerin sonucu, Duru ve Umurtak tarafından yapılan bazı saptamaların ve tanımlamaların yeniden değerlendirilmesi gerektiğini ortaya koymaktadır. Bunlar:

- Yerleşim yerinin ana giriş G2'dir.
- ÇOB2 muhtemelen yerleşim yerinin ortak depolama alanı olarak kullanılmıştır.
- ÇOB1 muhtemelen en az iki veya üç hane tarafından kullanılmıştır, bunlar muhtemelen ritüel liderlerdir. Bu tür bir liderlik, insanları ortak bir amaç için işbirliği yapmaya ikna eden biri olarak tanımlamak mümkündür. Yapı komplekstinde bulunan dikilitaşın varlığı, belirli bir dinî faaliyet derecesini de göstermektedir. ÇOB1'in konumu stratejik önem gösterse de, odaların mimari planına, bina alanı ve depolama alanı arasındaki benzer oranlara ve ortak depolama tesisleriyle olan düşük bir ilişkisini gösteren mekânsal derinlik grafiklerine baktığımızda, daha önceden ileri sürülen yüksek statünün, sosyal liderlik tabanlı bir yetki olduğunu öneririm. Bu tür bir liderlik, kendi hanesi çıkarları yerine yerleşim yerinde yaşayan toplumun ortak bir amaç için işbirliği sağlamasına yönelik bir statüye sahip olmaya karşılık gelmektedir.
- Konut Tipi 2, hayvan yetiştiren ev halkları tarafından kullanılmış olabilir.
- Tahmini nüfus 350 kişidir, bu, topluluk içinde farklı bir alt grubun ortaya çıkmasını gerektirecek eşik değerinin altında kalmaktadır.
- Bazı etkinliklerin varlığı ve diğerlerine ait herhangi bir arkeolojik verinin olmaması, ayrıca yerleşim yerinin yakında henüz bir mezar alanının bulunamamış olması, bu yerleşim yerinin belirli dönemlerde (mevsimsel ya da bazı hane halkının yılın belirli zamanlarında başka bir yerde ikamet etmesi gibi) kullanıldığı ve diğer faaliyetlerin başka bir yerde gerçekleştiğini de düşündürebilir. Ancak, bu iddiayı desteklemek veya çürütmek için daha fazla araştırmaya ihtiyaç vardır. Eğer durum

böyleyse, nüfusun hesaplanması, demografinin belirlenmesi ve sosyal organizasyon yapısının belirlenmesi daha da karmaşık hale gelmektedir.

İTÇ II Bademağacı Höyük yerleşiminde binaların sosyal organizasyonun tezahüründe, bir arada olmayı zorunlu kılan ve karşılıklı işbirliğine dayalı ilişkiyi teşvik ederek, genel bir topluluk duygusu ile birlikte sosyal normların oluşturulması ve sürdürülmesinde işlevsel bir rol oynadığını söyleyebiliriz. Binaların konumları ve türleri, düşük derecede ayrışıklığın ve eşitsizliğin görüldüğü, sosyal liderlik benzeri bir otoritenin olduğu, çok katmanlı olmayan yatay ve dikey toplumsal tabakalaşmayı işaret etmektedir. Burada yaşayan insanlar arasında refahın ve geçim kaynaklarının adil bir şekilde paylaşılması, benzer bina boyutları ve mimari planlama homojenlik sağlar ve rekabeti azaltır. Topluluk içinde belirgin alt grupları n oluşmasını sağlayacak bir büyüklükte nüfus olmadığı görülmektedir. Ortak depolama olanaklarının varlığı, ortak hedeflere yönelik harekete geçilmesini teşvik eder ve aynı şekilde topluluk duygusunu pekiştirici niteliktedir. Ortak bir hedefin başarılması için insanları ikna eden sosyal liderlik tabanlı bir otoritenin de, iç baskıyı azaltmak ve dış baskılara karşı daha iyi kararlar almayı sağlamak amacıyla ortaya çıkmış olduğu düşünülebilir.

Yapılan analizlerin sonuçlarını Demircihöyük, Seyitömer Höyük, Karataş ve Hacılar Büyük Höyük ile karşılaştırabilmek için her bir yerleşim yerinin yerleşim planı, yerleşim büyüklüğü, nüfus büyüklüğü, mimari geleneği, gömü geleneği, küçük buluntular, faunal kalıntılar ve sosyal sistem bilgileri incelenmiş ve ayrıca topografik ve iklimsel çevreleri de dikkate alınmıştır. Burada genel bir tablo çıkarma istersek, Karataş hariç, sitelerin hepsi bir dereceye kadar standartlaştırılmış bir bina planına sahip önceden planlanmış yerleşim yerleri olduklarını söylemek mümkündür. Demircihöyük, Seyitömer ve Bademağacı, ilk bakışta birbirine bitişik inşa edilmiş yapılar açısından benzer bir yerleşim düzenlemelerine sahip gibi görünse de, hepsinin farklı yerleşim planları olduğunu görmekteyiz. Sadece Seyitömer'de zanaat uzmanlığı görülmektedir. Gömü geleneğine baktığımızda, Bademağacı'nda, yerleşim

yerinde pithoi gömülerin varlığı, köyün bazı sakinlerine özel önem verildiğini ima etmektedir. Demircihöyük'te, mezar hediyeleri yaşa göre değişmektedir. Burada bulunan yedi adet hayvan gömüsü her ne kadar belirli bir bireyle ilişkilendirilememiş olsa da, yine de yerleşim yerinde bazı bireylere ayrıcalıklı davranıldığını söylemek mümkündür. Karataş'ta ise ölü gömme geleneklerine bakıldığında mezar hediyelerinin niteliği ve niceliği yaşa göre farklılık göstermektedir. 600 gömüt arasında sadece bir tanesi farklılık göstermektedir. Yerleşim yerlerini sosyal tabakalaşma açısından değerlendirdiğimizde, Bademağacı'nda dikey ve yatay olarak gözlemlenen görece düşük derecede ayrışıklık ve eşitsizlik görülmektedir. Demircihöyük'te muhtemelen sadece dikey bir katmanlaşma görülmektedir ancak ayrışıklık ve eşitsizlik derecesi oldukça düşüktür. Seyitömer'de sosyal katmanlaşma hem dikey hem de yatay olarak gözlemlenebilmektedir ve diğer yerleşim yerleriyle kıyaslandığında ayrışıklık ve eşitsizlik derecesi görece yüksektir. Karataş'ta herhangi bir sosyal tabakalaşma bulunmamaktadır.

Yapılan arkeolojik araştırmaların bir çoğunda ekolojik potansiyel, kontrol derecesi, tarım fazlası ürünlerin yönetimi, sosyal tabakalaşma ve yerleşim büyüklüğü ile nüfus büyüklüğü, sosyal karmaşıklık derecesini belirlemek ve karşılaştırmak için genellikle bir endeks olarak atanmıştır. Ancak, incelenen yerleşim yerlerine baktığımızda ne yerleşim yerinin büyüklüğü ne de nüfus, sosyal karmaşıklık derecesi ile korelasyon göstermemektedir. Bunun yanı sıra kentselleşme derecesine baktığımızda, ne yerleşim yeri büyüklüğüyle ne de nüfus yoğunluğu ile arasında bir korelasyon bulunmamaktadır. Sadece belirli faaliyetler için ayrılmış alanların varlığı ise yerleşim yerinin kentselleşme sürecinde olduğunu belirlemek için tek başına yeterli bir kriter değildir.

Ayrıca, kontrol derecesi ve tarım fazlası ürünlerin yönetimini tanımlayabilmek, İTÇ arkeolojik verileri göz önünde bulundurulduğunda, oldukça zordur. Bununla birlikte, bireylerin bir toplumda sürdüğü "farklı ilişkilerin sayısı" sosyal karmaşıklık derecesini belirlemek için ana kriter olarak kullanıldığında, farklı toplumları

ayrışıklık ve eşitsizlik bağlamında arkeolojik veriler ışığında ölçülebilir değişkenlere dayalı olarak karşılaştırmak mümkün olmuştur.

Bu çalışmada aynı zamanda otorite ve güç kavramları da ele alınmış ve Anadolu İTÇ arkeolojik malzemenin yola çıkarak bu iki kavram arasındaki farkı ayırt etmenin oldukça güç olduğu tartışılmıştır. Ancak bir toplum içinde ayrıcalıklı olanlar ile diğer sakinler arasındaki ilişkileri anlamının mümkün olduğu düşünülmektedir. Yapılı çevre ile insan davranış kalıpları arasındaki karşılıklı ilişkiyi kabul eden argümana dayanarak, ayrıcalıklı olanlar ile diğer sakinler arasındaki ilişkiyi mekansal konfigürasyon bağlamında değerlendirmek mümkündür.

Mimari geleneklerin, gömü geleneklerinin ve buluntu dağılımının detaylı bir şekilde incelenmesi, her bir yerleşim alanının, ayrıcalıklı bireyler ile diğerleri arasındaki ilişkilerin değişkenlik gösterdiği benzersiz bir sosyal örgütlenme yapısına sahip olduğunu ortaya koymaktadır. Karataş hariç, binalar, yerleşim yerlerinde ayrıcalıklı sakinleri mekansal olarak konumlandırmak için bir araç olarak kullanılmış ve aynı zamanda bir birine bağlı yaşamayı zorunda kılmış ve işbirlikçi etkileşimi teşvik ederek içinde bulunduğu topluma karşı aidiyet duygusunun gelişmesini pekiştirmiş ve sosyal normları kurmak ve sürdürmek için işlevsel bir rol üstlenmiştir. Öte yandan, Karataş'ta, ev düzeyinde, küçük grup ve topluluk düzeylerinde gerçekleşen ritüeller, aidiyet duygusunu ve sosyal normları kurmanın ve sürdürmenin birincil aracı olmaya devam etmiştir. Merkezi Kompleks ise büyük platformlar ve höyük üzerinde inşa edilen açık ocaklarla güçlendirilmiş anıtsal görünümü ile sembolik ifadelerin somutlaştırılması için kullanılmıştır. Sonuçlar ayrıca, artan nüfus büyüklüğünün sosyal karmaşıklığı artırmadığını, bunun yerine bireylerin toplumda sürdürdüğü farklılaştırılmış ilişkilerin sayısının sosyal karmaşıklık derecesini belirlemek için ana kriter olarak kullanılabileceğini göstermektedir.



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