

**ASPECTS OF THE ANCIENT ECONOMY IN WEST-CENTRAL
TURKEY IN THE FIRST MILLENNIUM BC**

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ABSTRACT

ASPECTS OF THE ANCIENT SUBSISTENCE ECONOMY IN WEST-CENTRAL TURKEY IN THE FIRST MILLENNIUM BC

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The Iron Age sites, Gordion and Kalehöyük are studied in their environmental settings in the regional context of Central Anatolia to present an overview of ancient subsistence economy. The purpose of selecting two different sites is to determine the role of the physical differences of their environments on shaping the regulation of agricultural activities. This thesis attempts to correlate all lines of available environmental and subsistence data from excavations and surveys with the present day land use analysis and ethnographic researches. It is hoped that through a comparison of available data from these two sites that a better understanding of ancient agricultural systems can be determined. The results obtained from several sources indicate that the ecological variables are the basis of the subsistence economy and economic strategies of the ancient inhabitants of Gordion and Kalehöyük.

ÖZET

**M.Ö BİRİNCİ BİNDE
BATI ORTA ANADOLU'NUN ESKİ EKONOMİSİNE BİR BAKIŞ
Çonka, Sevil
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Ocak 2002**

Demir çağı yerleşimleri olan Gordion ve Kalehöyük'ün yerleşim alanları, buldukları İç Anadolu bölgesi içinde eski dönemin ekonomisini incelemek üzere, araştırılmıştır. İki farklı yerleşim yerini seçmenin amacı, buldukları çevrenin farklı fiziksel yapısının geçim kaynaklarına olan etkisini araştırmaktır. Bu tez, kazı ve yüzey araştırmalarından elde edilebilen sonuçları, bugünkü toprak kullanımını içeren analizlerle ve etnografik verilerle kıyaslamaya çalışmaktadır. Her iki yerleşim yerinden ele geçen verileri birbiriyle kıyaslamanın amacı, eski tarım sistemini daha iyi anlayabilmek içindir. Birçok kaynaktan elde edilen sonuçlara göre, Gordion ve Kalehöyük'te eski yerleşenlerin tarım faaliyetlerinin ekonomik stratejisini belirleyen temel nedenin ekolojik yapıdaki değişiklikler olduğu gözlenmiştir.

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areas

FIGURE 4.2 Contour map of Kalehöyük

LIST OF ABBREVIATIONS

<u>AA</u>	Archäologischer Anzeiger
<u>AJA</u>	American Journal of Archaeology
<u>AST</u>	Araştırma Sonuçları Toplantısı
<u>ANAT ST</u>	Anatolian Studies
<u>BAR</u>	British Archaeological Series
<u>BOTMECCIJ</u>	Bulletin of the Middle Eastern Culture Center in Japan
<u>CAH</u>	Cambridge Ancient History
<u>EIA</u>	Early Iron Age
<u>JFA</u>	Journal of Field Archaeology
<u>KST</u>	Kazı Sonuçları Toplantısı
<u>METU</u>	Middle East Technical University
<u>MLBA</u>	Middle of the Late Bronze Age
<u>RA</u>	Revue Archéologique

*In order to have an insight into past we need a compass star
“Archaeology “
It has to be our measure to orient
the multi-disciplinary researches, unless we are like a boat without a sail*

&

*If we keep walking in the same direction without looking around
we can never see
the different paths joining our road*

CHAPTER 1: INTRODUCTION

This thesis concerns the ancient subsistence economy in west-central Turkey in the first millennium BC. The study covers two ancient sites Gordion and Kalehöyük (see Fig1.1). Gordion is located on the right bank of the Sakarya (ancient Sangarius) river in the upper Sakarya basin, whereas Kalehöyük is situated in the bend of the lower Kızılırmak (ancient Halys) river, 150 kilometers east of Gordion. The sites have been selected because of the availability of their environmental and subsistence data which correlate with each other presumably. Although the sites show different quality and quantity of data, and are set in different zones of Central Anatolia, their interaction is significant to understand the economic changes and its dynamics in the region at large.

The question motivating this thesis is: How can we observe aspects of the ancient economy in a particular region during the Iron Age? The perplexing nature of the economy caused formulations of other specific questions, the answers to which might be considered, at most, only rough approximations to reality. Some of these further questions can be stated precisely as follows: Does the regional and environmental interpretation of the study areas help us to understand aspects of the ancient economy? Can we gain an insight into past land use potential observing the present environments of the sites? Do the archaeozoological and archaeobotanical remains provide any statements on the agricultural system of the sites? How can we set Gordion and Kalehöyük in a regional economic perspective? and why is their integration significant?

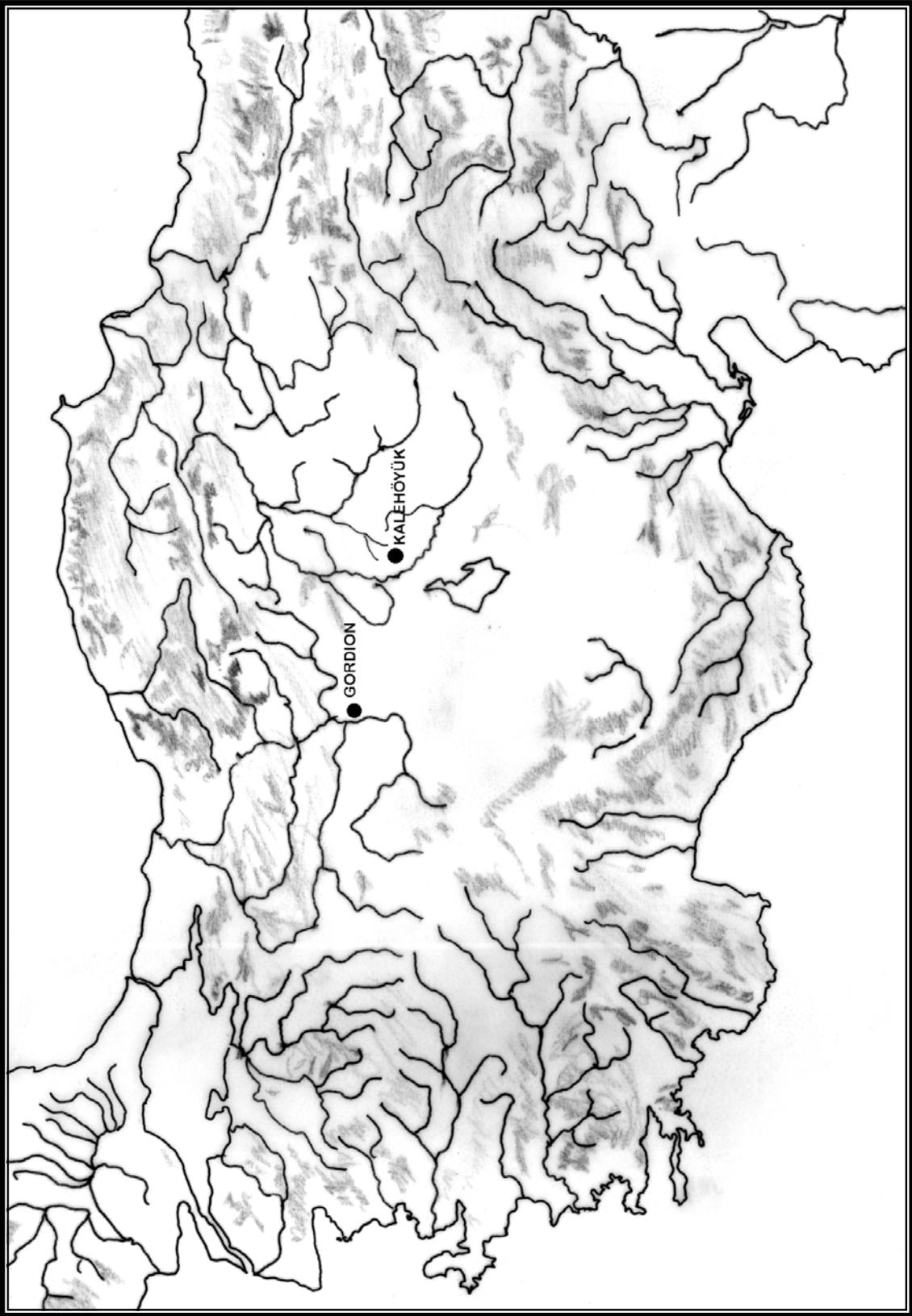


Fig 1.1 Map of the sites discussed in the text

Multi-disciplinary research and cooperation among specialists are critical to collect and incorporate environmental data to archaeological findings. The contribution of environmental data to an understanding of cultural history in a specific site or regional context can not be overemphasized. Therefore, the limitations of the available evidence related to the regional environment of the study areas will be discussed in general.

In the concluding chapter of this thesis, an attempt will be made to synthesize answers to these questions, by pulling together all lines of environmental and subsistence data from excavations and surveys. Thus, the information taken from the multi-disciplinary researches, based on the stratigraphic sequence of Gordion and Kalehöyük aims to provide a framework for an examination of the ancient economy. The “Economy” is a term used to describe a system for the management of resources and the production and maintenance of goods: it reveals variation from one society to another through time. In this respect, Gordion was chosen as a case study in its regional, environmental and historical context to reveal economic changes from one phase to another. Although, there is a deficiency of archaeological and historical evidence about the Phrygians' cultural, social and political life, the limited amount of data obtained from several sources will be used to understand the economy of both Gordion and Kalehöyük under the rule of the Phrygian state.

Methodology

This thesis is an attempt to use environmental data, to enhance archaeological materials, and to generate new questions for long-term interdisciplinary researches.

It is divided in five chapters. Following the introduction, chapter 2 provides information about the geographical and historical background of Central Anatolia, including general considerations on the exchange economy.

Chapter three concerns Gordion, first in the light of its environmental setting covering the land use information and geomorphological studies. Second, the archaeological evidence obtained from buildings, the pottery, archaeozoological and archaeobotanical remains are summarized following the stratigraphic sequence of the site. In addition, all the data are correlated by focusing on the subsistence economy of Gordion. Finally, the ethnoarchaeological data concerning the contemporary economy is used to interpret, in part, the ancient economy of the site.

The fourth chapter covers Kalehöyük and follows a similar plan as that for Gordion, in so far as data allow. At first, the site is observed with its surroundings in the regional context of the Middle Kızılırmak basin. Later, the accessible evidence from architecture, pottery and faunal remains are reviewed. Kalehöyük, similar to Gordion, reveals a continuous settlement starting from the Early Bronze Age through the Early Iron Age and Phrygian periods. The stratified study of its faunal remains from the Iron Age levels is significant in comparison to Gordion.

In chapter five, the data relevant to the questions mentioned in the introduction are reviewed and brought together to present an overview of the ancient subsistence economy.

CHAPTER 2: GEOGRAPHICAL AND HISTORICAL BACKGROUND

In this chapter, first, an attempt is given to describe the topography of Central Anatolia. Secondly, Gordion and Kalehöyük are set in their regional contexts, the upper Sakarya basin and the middle Kızılırmak basin, since visualizing natural features of the regions helps to recognize aspects of the economy, communication lines and settlement choices. Thirdly, a broad outline of settlement history, settlement system and communication networks in the Iron Age is given.

2.1 Geographical Setting

2.1.1 Central Anatolia

The study areas are located in west-central Turkey in the region of Central Anatolia, which is the second largest region of the country covering an area of 151,000 km² (19% of Turkey) (see fig 2.1). The region is surrounded by various high and low mountains, high plateaus, plains and valleys. It is roughly divided into four zones: the upper Sakarya basin in the west, the middle Kızılırmak basin in the north, the upper Kızılırmak basin stretching towards the east of the region, and the Konya plain in the south. The upper Kızılırmak river basin is the most mountainous area of the region. The mountains (Kızıl Dağ-3,025, Yıldız Dağı-2,552m and Çengelli Dağı-2,596m) extend parallel to each other in south-west and north-east directions, and they are separated by the Kızılırmak river forming a deep valley between them. The fourth zone, the Konya plain covers the Tuz gölü (the Salt Lake) basin and other river-basins. The general altitude of the region varies between 700 and 1,500 meters above

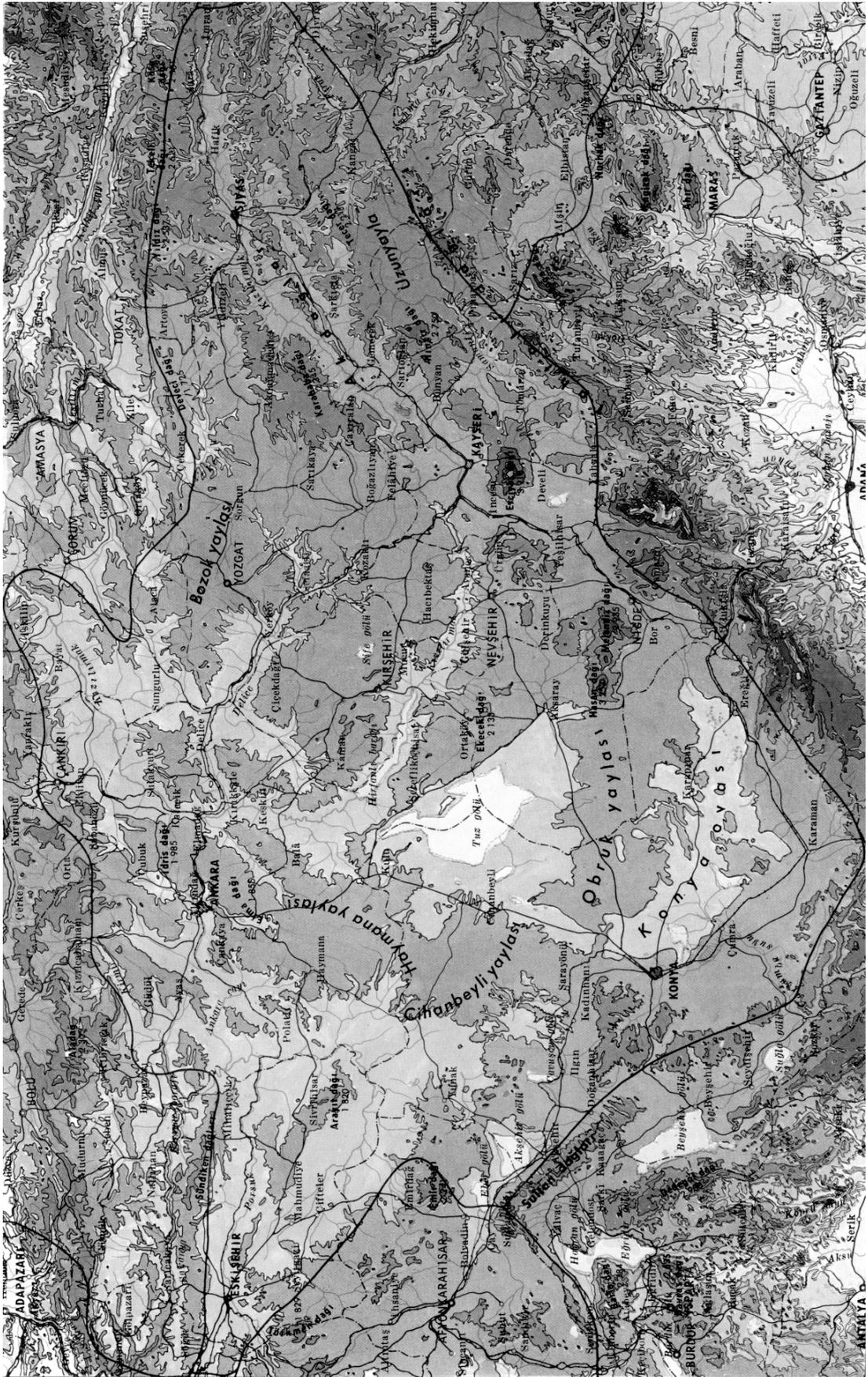


Fig 2.1 Map of Central Anatolia (from Grand Larousse Encyclopedique)

sea level. The differentiation in altitude causes climatic fluctuations in different zones. The water sources of the region are mainly the Sakarya and Kızılırmak rivers, which both flow into the Black Sea. The main lake of the region is the landlocked Tuz Gölü. It covers around 400 km², and is surrounded by plateaus and flat alluvial areas.

2.1.2 The Upper Sakarya Basin

The upper Sakarya basin in the region of Central Anatolia may be divided into six areas: The Eskişehir plain, Yazılıkaya plateau (plateau=*yayla*), Sakarya plain, Ankara plain, and the Cihanbeyli and Haymana plateaus (see Fig 2.2). In the west, Türkmen Dağı-1,829m (Yazılıkaya plateau), in the south, the Emir (2,241m) and Sultan mountains, in the east, the Cihanbeyli and Haymana plateaus, and in the north, the Sündiken (1,170m) and İdris mountains (1,985m) border the region. In order to see the whole area with its natural borders and communication lines, the Sakarya river basin is set into a circle 120 km in diameter on fig 2.2¹. The area extending from the mountains and plateaus forms a vast triangular plain surrounded with highlands and with the Sivrihisar mountains in the center. The plains formed of neogene lake sediments and river deposited alluvium, are known as the Eskişehir, Sakarya and Ankara plains. The altitude of the plains vary between 700m and 900m.

A circle of 60 km in radius is drawn inside the former in order to illustrate the interaction of Gordion with its local environments. The highlands, and the lowlands lying along the rivers and their tributaries shape the physical character of the region. The "catchment analysis" of ClaudioVita-Finzi is used here to understand the time-

¹ The irregular line in the figure draws the borders of the Upper Sakarya Basin separating it from the other geographical zones of Central Anatolia. On the map are also indicated the known Phrygian sites and rock-sanctuaries



Fig 2.2

distance factors in the movements of the inhabitants of Gordion and illustrates access to natural sources². The radius of the catchment is derived from studies of modern mobile economies, where short-range transhumance movements may cover a distance of up to 50-60 km, and the long ones require extended travels.³ Gordion is located

² The catchment analysis deals with the points and areas of origin of all the various contents of archaeological sites; (Vita-Finzi 1978:25-26) the concept of catchment originated by analogy with the area drained by a river or with the zones from which schools are intended to draw their pupils

³ Jarman and et al. 1982, 45

almost in the center of the Upper Sakarya basin, and transhumance might have been practiced in the area of 60 km in radius as it is practiced today. In the west and south-west of the area, the Sivrihisar mountain ranges (lying towards Pessinus), in the south, the Günyüzü mountain range (ancient Dindymos), in the east, the Haymana plateau, and in the north, the surroundings of Ayaş and Beypazarı provide pasture lands for the flocks of the lowland inhabitants.

The economy of the Sakarya basin has depended throughout its history on agriculture. The intensively cultivated lands in this basin have been built up through several millennia from the silt deposited by the Porsuk, Sakarya and Ankara rivers. The arable lands are chiefly suited for cereal crops, and the remainder for animal grazing.

The Porsuk, Sakarya and Ankara rivers and their tributaries bound each plain and act as natural communication lines between them. This helps to visualize the transhumance lines, migration routes and the networks of the Iron Age inhabitants. As it is evident on fig 2.1, the roads following the river courses connect Gordion easily to all directions. Ancient people might have used more or less the same networks since prehistoric times.⁴

2.1.3 The Middle Kızılırmak Basin

The Middle Kızılırmak basin covering the bend of the river extends from Çankırı (in the north) towards the Taurus mountains. The volcanic mountain ranges (Erciyes Dağı-3,917m and Hasan Dağı-3,268m) and high plateaus stretch along its southern border. The altitude of the plains in the bend of the Kızılırmak river ranges

⁴ See Garstang for the ancient trade routes during the Hittite Empire

between 1,000 and 1,200 meters and the low mountains scattered in the bend culminate at over 1,500m.

Kalehöyük is also set in a circle of 60 km in radius (see Fig 2.3).

Transhumance movements might have occurred between the highlands and lowlands of the area. As is shown on figure 2.3, the site is located in the lower bend of the Kızılırmak river which is the dominant feature of the region. The bend can be considered as the natural border with the Upper Sakarya basin. The Kızılırmak river has a very important function in shaping the region like the Sakarya river. It drains the region with its joined tributaries. It springs from mount Kızıldağ at the north-eastern border of Central Anatolia (110 km south of Giresun), flows through Sivas, and then continues towards Kayseri. It flows in a northward direction 25 km to the west of Kalehöyük

It deposits its sediments along floodplains, and forms lands available for cultivation. Since, it has many tributaries, most of them form routes for travel, transport and trade. In addition, since ancient times, most of the settlements have been placed close to its tributaries which flow through them and supply water to the region. The natural communication lines and defensive position of the high lands set this river basin in a very important strategic location between Europe and Asia, and the Black Sea and Mediterranean coasts. Moreover, it has remained as a very good source of clay and minerals since prehistoric times.

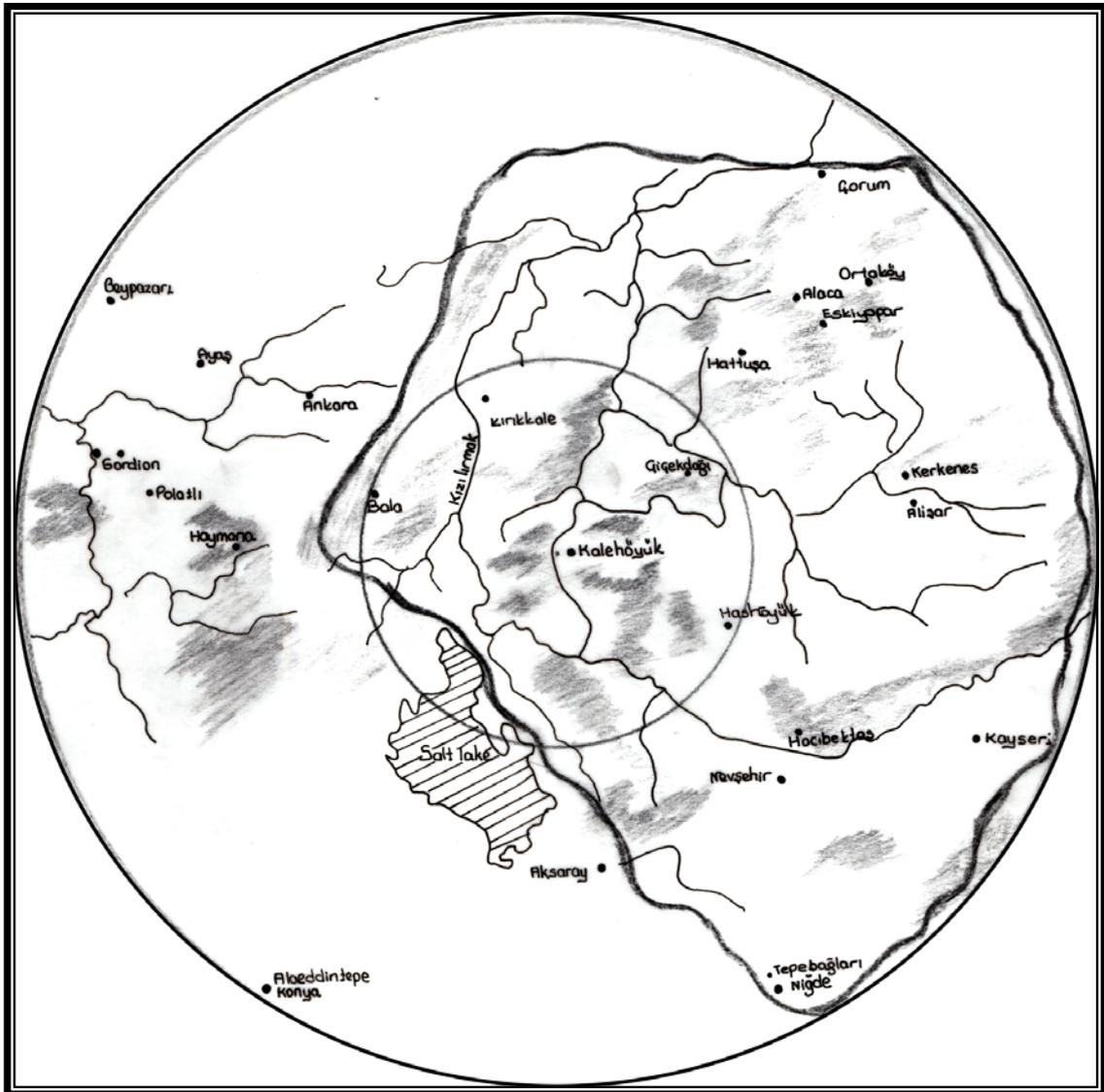


Fig 2.3

2.1.4 Present Climate and Vegetation

In Central Anatolia, a continental climate prevails with long hot summers and cold rainy winters. The differences in the altitudes of the plains, plateaus and

mountains create different quantities of annual rainfalls which vary between 160-480 mm.⁵ The indicator for this type of climate in inner Central Anatolia is the “Irano-Turanian” plant cover, dominated by varied treeless steppe vegetation. The typical Central Anatolian steppe is mostly covered by *Stipa-Bromus* steppe (grass steppe), and the areas under the impact of intensive grazing are covered by *Artemisia* steppe, which is rich in thorns (see Fig 2.4).⁶

Zohary defined inner Central Anatolian vegetation as Xero-Euxinian (dry) as a result of low average precipitation.⁷ The Xero-Euxinian forest cover in the north of Central Anatolia is largely a combination of oak and pine: *Pinus nigra* (Black pine-Karaçam), *Quercus cerris* (Oak), *Juniperus excelsa* (Grecian Juniper), *Quercus pubescens*, *Pyrus elaeagrifolia*, *Pyrus syrica*, *Berberis*, *Crateagus laciniata* and *Crateagus monogyna* (one-seed haw-thorn).⁸ The remnants of this forest type are to be found in the interior of the region at higher altitudes. However, the low rainfall and wide temperature variation of the continental climate do not favor growth.⁹ Finally, arable farming and animal grazing also reduce the vegetation cover (particularly oak and pine).¹⁰

⁵ Zohary 1973, 178

⁶ Ertuğ 1997, 13. The vegetation map shows the areas of *Artemisia* steppe, feather-grass steppe, open woods and bushes (steppe woods)

⁷ Zohary 1973, 175, defines Xero-Euxinian as a transitional geographic region between the Euro-Siberian and the Irano-Turanian because of its Irano-Turanian steppe covered with Euro-Siberian trees and shrubs

⁸ Van Zeist 1991, 158

⁹ Wilcox 1992, 2

¹⁰ Bender 1975, 94

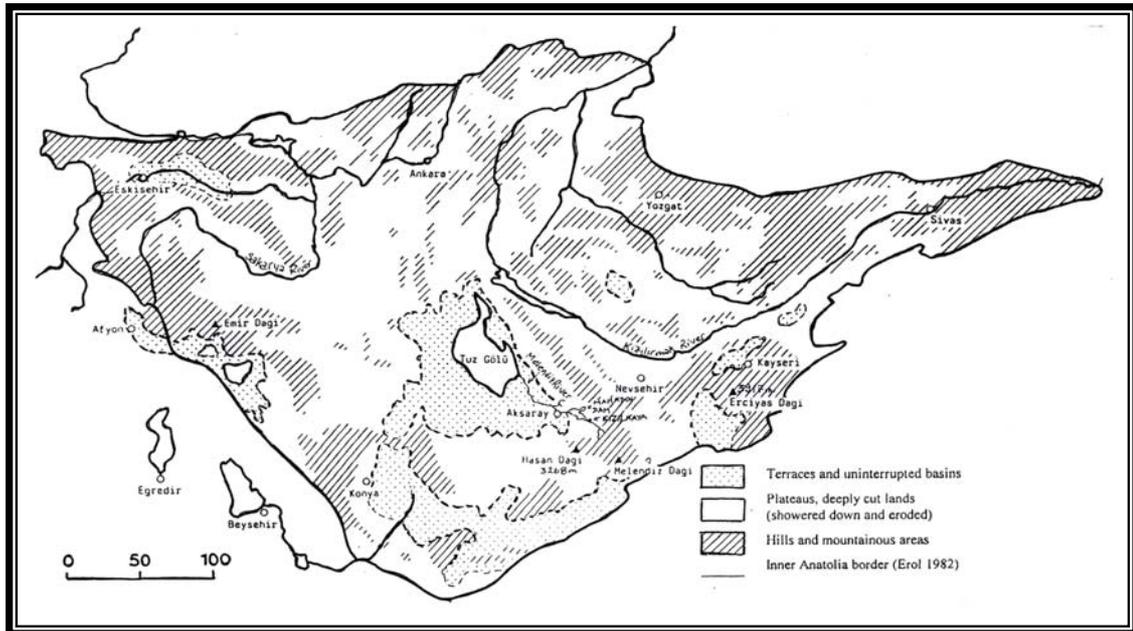


Fig 2.4 Vegetation map of Central Anatolia (from Ertuğ 1997)

- Legends :
- 1 Potential area of primary *Artemisia* steppe
 - 2 Potential area of feather grass steppe and dwarf bushy steppe formations
 - 3 Potential area of open woods and bushes ('steppe woods')

Soil

Soil can be considered as the main factor for the organisms to survive. In Turkey, there are several type of soils, and climate is one of the dominant factors in the formation of soil series.¹¹

The soil categories reflect the degree of erosion in the environment (on farmland, woodland and pastureland). Erosion and soil degradation are caused by human and natural factors.¹² Especially, when the surface of the soil held together by the roots of grass is cut and torn up during the cultivation of the land, and damaged by

¹¹ Doğan 1998, 1

¹² Doğan 1998, 6-7. Human factors are as follows; land use: Farmers use pasture and woodland for agricultural purposes instead of increasing the productivity of soil. Dry cultivation: it makes the soil more sensitive to erosion. Destruction of forests: It causes water erosion. Overgrazing: It highly increases erosion and degrades soil fertility. Natural factors are as follows; climate, rain, heat, wind and slope of the land

the hooves of the grazing domesticated animals, it loosens and becomes highly erodible.¹³ This is evident in the Sakarya river basin at Gordion, where 4 meters of sediments aggraded along the river in the last 2000 years as a result of extensive erosion, and it highly influenced the environmental situation in the vicinity of the site (see chapter 3). Furthermore, soil degeneration and devegetation favour acidic conditions, which create a handicap for agriculture.¹⁴ Therefore, the economy is directly affected by this situation, both cereal agriculture and livestock raising.

The typical soils for Central Anatolia are brown, chestnut brown and alluvial. Brown soils occur in the areas where annual rainfall is below 400 mm.¹⁵ Brown soil is mostly alkaline, sometimes neutral or slightly acidic.¹⁶ Chestnut coloured soil, with less lime content occurs at over 1000m above sea level in areas covered by forest steppe. The alluvial soil found in the old lake basins and old river beds, is favorable for plant cultivation.¹⁷

2.2 Historical Background

2.2.1 Settlement History

Concerning the settlement history of Anatolia, the transition from the end of the Late Bronze to the Early Iron Age is still problematic. At the end of the late

¹³ Butzer 1982, 127

¹⁴ Butzer 1982, 127; (Bender 1975, 97) Bender discusses how wild plants adapt to naturally disturbed habitats as a crop weed complex. The wild cereals specifically prefer open soils on basaltic and limestone formations

¹⁵ Atalay 1994, 362-363

¹⁶ Zohary 1973, 482

¹⁷ Türkiye Geliştirilmiş Toprak Haritası Yenileme Etüdüleri Projesi Toprak Su Genel Müdürlüğü 1982,36

Bronze Age, considering the political, religious, cultural and social lives of the Anatolian people, many striking changes occur. First of all, an important ruling power, the Hittite empire, collapses and many cities are destroyed. The exact reason of its fall has not been found out. One of the reasons might be a political conflict among the rulers or the people under rule. According to Mellink, the Hittites fought against the Anatolian chieftains who tried to gain their own economic and political independence, or new groups immigrating to Anatolia.¹⁸

In the beginning of the Early Iron Age, foreign intruders immigrate from the Balkans, Caucasus, Near East, Greece, and Aegean and Mediterranean islands. These immigration cycles might have continued since prehistoric times. The newcomers mix with the native Anatolians and the native people, new intruders and tribes emerge under the name of Phrygians, Armenians, Lycians, Carians, Urartians, Lydians, Mysians, Bithynians, Paphlagonians, Psidians, Isaurians and Lycaonians.¹⁹

At this time, the Phrygians appear in the history of Anatolia. We do not know exactly to how many cycles of immigrations they contributed or which routes they followed and with whom they mixed. In addition, it is not clear why they came and how they arrived in Anatolia, by land or sea? There is not much meaningful evidence also about the existence of the Phrygians at Gordion until the 9th century BC. The Phrygians' origin and their arrival at Gordion still are a subject of discussion among scholars.²⁰ However, there is a strong belief that the Phrygians immigrated to Anatolia

¹⁸ Mellink 1991, 621

¹⁹ Mellink 1991, 619

²⁰ Herodotus. VII.73, 385, wrote about the Phrygians referring to them as Macedonians, according to him, the Briges or Bryges when they were in Europe. However, they changed their name to Phrygians, when they arrived to Anatolia. He, also identified them as a horse-rearing military aristocracy; Strabo; (Strabo VII.3.21), called the Phrygians Thracian colonists, and Xanthus of Lydia mentioned their arrival in Anatolia from Europe and from the west of the Black Sea; (Mellink 1975, 420), according to Assyrian sources, they were known as Mushki people from the east; (Ramsay 1962, 34), believes that the Phrygians came from Troy, and they were originally the people of the coast and were forced to immigrate to Central Anatolia by the barbarian Thracian tribes

from south-east Europe, since the Phrygian language which is considered as the strongest evidence, has significant similarities with the Balkan languages.²¹

Their political-cultural life comes into existence after the 9th century BC, since there is no political unity among the tribal societies in the Early Iron Age.²² During the Early Phrygian period (950 ?-720? B.C.), Gordion becomes the capital city of the Phrygians at the end of which the Citadel Mound is destroyed.²³ This event has not been explained satisfactorily yet, and the date of the Early Phrygian destruction is still problematic and the object of debate among scholars.²⁴ According to the Assyrian sources, the west part of Anatolia, covering the whole Kızılırmak basin is occupied by the Phrygians.²⁵ Midas of Phrygia is reported to have been in coalition with Psiri of Charchemish against the Assyrian empire.²⁶ This illustrates political relations between the Phrygians and the southeastern territories.²⁷ However, in the 7th century BC the region to the south-east of the Kızılırmak river (most of Cappadocia) comes under the rule of the Assyrians, and later at the end of the 7th century B.C, the Median Empire expands its control up to the the border of the Kızılırmak river in west-central Anatolia.²⁸ The Phrygians gradually start to lose their power and, consequently, the Lydians establish their rule at the capital city of Gordion and extend to the west of the Kızılırmak river. Following the sack of Sardis in 547 BC, the Achaemenid Empire dominates the region until the beginning of the Hellenistic period.

²¹ Mallory 1990, 32, mentions that the Phrygian language is very close to Thracian and Illyrian, two main Indo-European languages of the Balkans, particularly, to the Thracian language. However, both Thracian and Illyrian have scant linguistic remains. The other similarities are the tumulus burials and the handmade burnished ware pottery.

²² Yakar 2000, 54

²³ Voigt and Henrickson 2000, 51

²⁴ Voigt and Henrickson 2000, 52; however, (Gürsan-Salzmann, pers.comm) according to the new C14 analysis, Mary Voigt has recently announced that the exact date of the destruction level is 835 BC.

²⁵ Mellink 1991, 622

²⁶ Sams 1993, 192-193. Midas is known as Mita of Mushki (Mushki-Phrygians) by the Assyrians

²⁷ Hawkins 1982, 417-422

²⁸ Yakar 2000, 54

2.2.2 Settlement system

Since the researches and surveys regarding the Iron Age period are still preliminary, it is very difficult to discuss the settlement system during this period. However, in the light of the surveys and excavations of Hattuša, Gordion and Kalehöyük excavation teams, a few assumptions can be made.

A remarkable research has been done by the Boğazköy-Hattuša excavations. Forty-three settlements with Phrygian period ceramics have been identified.²⁹ In Fig 2.5, the middle of the Late Bronze Age (Old Hittite period-1500 BC), Early Iron Age,

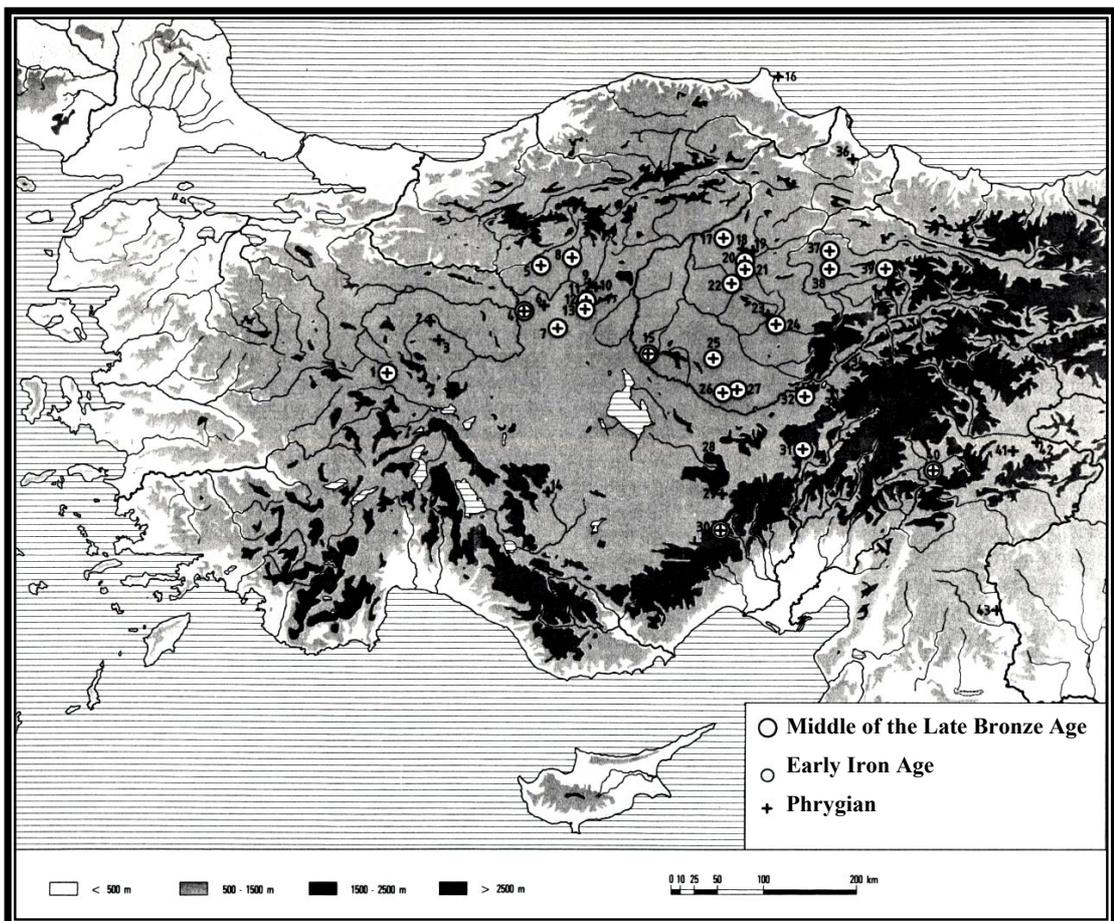


Fig 2.5 Adapted from Bossert 2000

²⁹ Bossert 2000, 5

and Middle Iron Age (Phrygian=Late Hittite period) settlements are illustrated. These sites are located in the Upper Sakarya basin, middle Black Sea coast, Middle and Upper Kızılırmak basin, Konya plain and Southeast Anatolia (see Table 2.1).

Twenty-three of them are dated to the middle of the Late Bronze Age and four of them are dated both to the middle of the Late Bronze and Early Iron Age. The survey results reveal a remarkable feature: although more than half of the sites show evidence for both the MLBA and Phrygian period, only 4 actually show continuity through the EIA. The appearance of few sites concerning the Early Iron Age might suggest that there are no satisfactory explanations for the characteristics of the EIA.

Table 2.1

Date	Upper Sakarya basin	Middle Black Sea coast	Middle Kızılırmak basin	Upper Kızılırmak basin	Konya Plain	Southeast Anatolia
MLB EIA Phrygian	Gordion		Kalehöyük Porsuk			Elbistan
MLB + Phrygian	Afyon Asarcık Bitik Gavurkale Hacılar Karaoğlan		Demirciçeşme Alacahöyük Eskiyapar Boğazköy Alişar Hashöyük Hacıbektaş Topaklı Kültepe Fraktin	Kilisetepe Maşat Kayapınar		
Phrygian	Pişmişkale Midas city Hacituğrul Cankırıkapı Hacıbayram Yalıncağ	Sinop Akalan	Büyükgüllücek Pazarlı Kerkenesdağ Yassıdağ Sultanhan Kululu Göllüdağ Tepebağları		Alaaddintepe	Aslantepe Değirmentepe Kargamış

Another regional survey covering 22 mounds (see Table 2.2 and Fig 2.6) within a 30 km radius of Kalehöyük was done by Mikami and Omura in 1986.³⁰ The survey results points out that the occupation history of the area starts from the Early Bronze Age. Pottery sherds collected from the sites show evidence of LBA and Phrygian period habitations, but do not indicate any Early Iron Age occupancy.



Fig 2.6 From Mikami and Omura 1987

Table 2.2 The names of the mounds that are surveyed in 1986

NO	NAME
1	Darıözü Höyük
2	Kağnıcak Höyük
3	Degirmenözü
4	Adısız Höyük
5	Kızlar Höyük
6	İsahocalı Höyük
7	Yeniyapan Höyük
8	Çayözü Höyük
9	Ömerhacılı Höyük
10	Tepeköy Höyük
11	Sıdıklı Ortaoba
12	Akpınar
13	Faklı Höyük
14	Yassihöyük
15	Höyüklütarla
16	Höyükülü
17	Doydunun Höyük
18	Kuru Höyük
19	Taşlık Höyük
20	Höyükülü Tarla
21	Tek Höyük
22	Hanyeri Höyük

In the Upper Sakarya basin, a regional survey was done by Sumner in the vicinity of Gordion in 1987. 39 sites were identified in an area of 400 km² (see Fig 2.7).³¹ This survey also revealed that most of the Early Bronze Age sites showed continuous occupancy till the end of the middle of the Late Bronze Age. The number of the settlements increases in the middle of the Late Bronze Age period, however, the number slightly decreases in Phrygian times and remains stable in later periods. In addition to that, only nine of seventeen MLB mounds were settled in the Phrygian period. The survey results do not specifically mention about a gap between MLB and EIA. However, they show a change in settlement patterns at the end of the middle of

³⁰ Mikami and Omura, 1987

³¹ Sumner 1992

the Late Bronze Age period, and might suggest abandonment as a result of environmental deterioration, disease, or catastrophe (see Table 2.3).

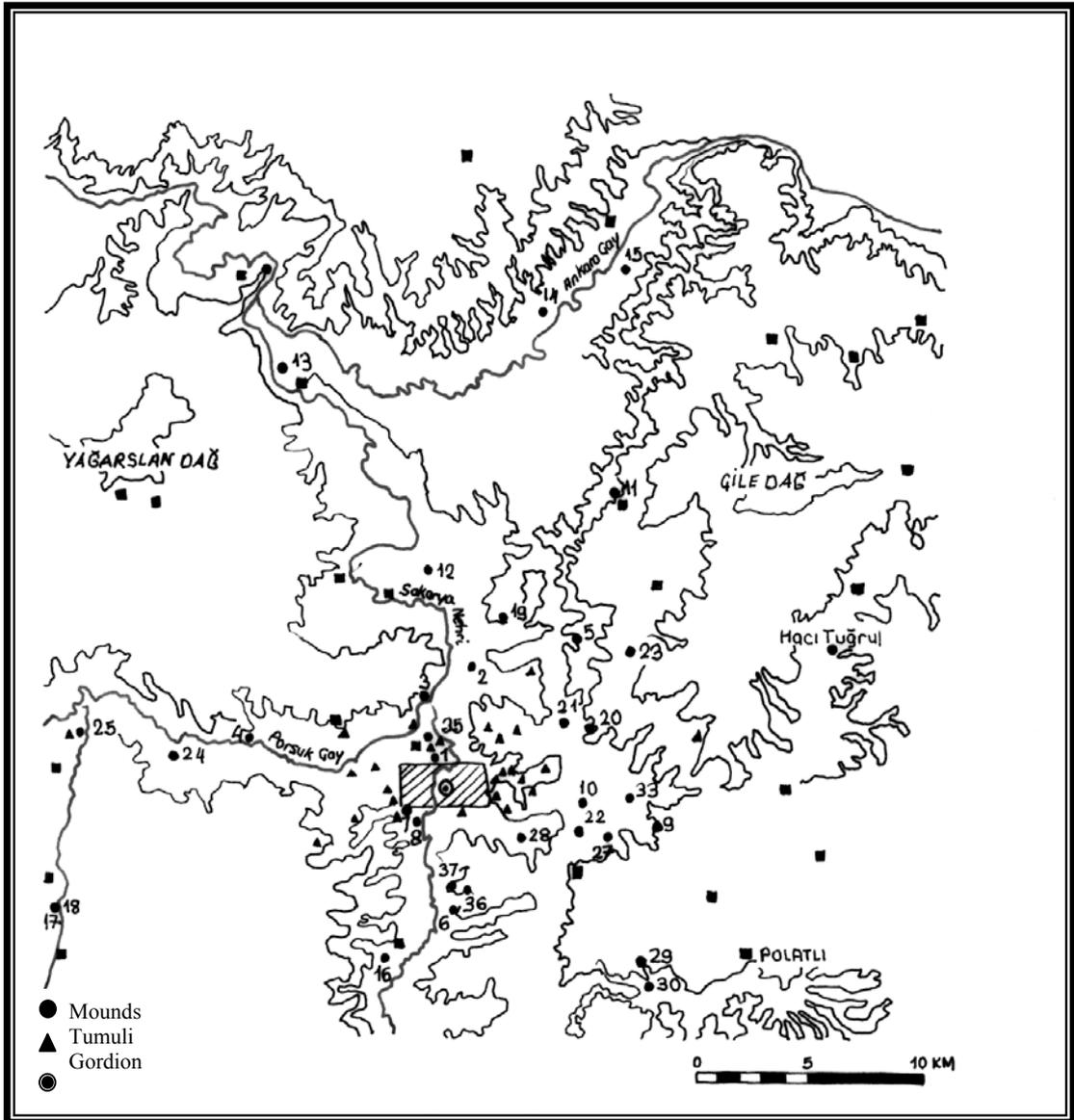


Fig 2.7 Adapted from Sumner 1987

Table 2.3 Regional survey in the vicinity of Gordion

No	NAME	TYPE	RECEN T	LATE	PHRYG	MLB	EB
1	KIRANHARMAN S.	MOUND			X		
2	KIZLARIN TEPE	4 MOUNDS			X	X	
3	KOLLAR TEPE	SURFACE RIDGE			X	X	
4	SAZILAR WEST	BUILDINGS/SURFACE	X	X			
5	KILLIK TEPE	MOUND		X	X	X	
6	BEYLIKOPRÜ EAST	MOUND		X		X	X
7	BEBI WEST	SEVERAL MOUNDS			X	X	
8	BEBI	MOUND/HOUSE HOLLOWS	X	X	X		
9	HAMAM BOĞAZ	MOUND				X	X
10	ÇEKİRDEKSİZ	MOUND					X
11	MUSLİM	MOUND				X	
12	IMAMZADEH	BUILDINGS	X				
13	ÇAĞRIK	BUILDINGS	X				
14	SARIOBA WEST	MOUND		X	X	X	X
15	SARIOBA	MOUND		X	X	X	X
16	BEYLİKKÖPRÜ	MOUND/RIDGE				X	X
17	DEMİRCİ A	MOUND				X	X
18	DEMİRCİ B	MOUND				X	X
19	ŞABANÖZÜ WEST	MOUND		X			
20	KUŞAKLI	SURFACE	X				
21	ÇATEPE	MOUND	X				
22	ÇEKİRDEKSİZ A	MOUND	X				
23	MEDET TEPE	HOUSE HOLLOW/SLOPE	X				
24	KAYAOPU	MOUND				X	X
25	İLÖREN	SURFACE/RIDGE		X			
26		LOW MOUND/SURFACE			X		
27	BOZ HÜYÜK	SURFACE/SLOPE		X			
28	ÇEKİRDEKSİZ B	SURFACE/SLOPE		X	X		
29	OÇPINAR NORTH	MOUND/RIDGE			X	X	X
30	UÇPINAR SOUTH	SURFACE/SLOPE	X	X	X	X	
31	NORTHEAST RIDGE	SUR/MOUND/RIDGE			X		
32	LEFT BANK	MOUND/SLOPE		X	X		
33	KALE	MOUND/HILL	X				
34		MOUND					
35	KIRANHARMAN	SURFACE/RIDGE					
36		SURFACE RIDGE	X				
37		BUILDING/SLOPE	X				
	GORDION	MOUND		X	X	X	X
	POLATLI	MOUND				X	X
			12	13	14	17	11

Adapted from Sumner 1987

After the destruction of the main cities at the end of the Late Bronze Age, the later settlements are smaller relative to the previous periods. The deficiency of archaeological evidence creates a handicap to understand the changes in the cultural, social and economic lives of the Early Iron Age inhabitants. Yet, the gap between the middle of the Late Bronze and Early Iron Age might reveal that there is an unstable settlement system in Anatolia as a result of destructions, conflicts and migrations, or that we simply do not recognize EIA material everywhere.

The settlements pattern of the Middle Iron Age is known much better. Most probably the Upper Sakarya basin, where the capital city Gordion is located, is densely occupied in the Early Phrygian period. There might have been many small towns governed by the “Phrygian State”. Since the Phrygians have a centralized government system, they might have also selected some other cities as centers to rule the small villages. Among the latter, we can count Ankara and Hattuša. Most of the cities of this period are also fortified like Gordion. The Iron Age surveys of Tuba Ökse in the upper Kızılırmak basin indicate that many Phrygian settlements have fortresses (hillforts).³²

In addition, the Sakarya and Ankara plains are noteworthy to point out the great numbers of burial mounds³³. Elite people are buried in them with their precious belongings.³⁴

³² Ökse 1998, 331; Some of the well known settlements that have Phrygian hillforts or fortification walls are as follows; Mellink 1974, HacıTuğrul-Karahöyük; Mellink 1982, Ankara; Stephen 1994, Gavurkalesi; Omura 1998, Kaman-Kalehöyük; Summers 1999, 177, Kerkenes Dağ; Seeher 1995, Boğazköy-Hattuša

³³ Not all of the mounds are dated to the Early Phrygian period and most of them are not excavated.

³⁴ The carving of the rock sanctuaries and building up the burial mounds needed large amount of labour and artistic work. Some of the timbers such as boxwood used in making the wooden tables in the tumuli was brought from afar. They might reflect partly the development of the power and economic growth of Phrygia

The open air sanctuaries of the Phrygians, likely to be indicators of their pastoral life, are found in the highlands and close to water springs.³⁵ In addition, Roller states that the cult monuments define the boundary zones of the Phrygians' where the highlands and mountains act as the natural limits of their villages.¹ Emilie Haspels discovered several rock sanctuaries and tombs in the "Phrygian Highlands" which lie between four towns Eskişehir (ancient Dorylaeum), Kütahya (ancient Kotiaion), Afyonkarahisar (Byzantine Akroenos), and Seyitgazi (ancient Nacolea)³⁶. Similar ones have also been recovered to the northeast of Pessinus.³⁷ However, like many archaeological sites, rock monuments might have been also buried under the sediments of the Sakarya river. Therefore, there is not much information about the Phrygians' religious activities.

The discovery of new Iron Age settlements with Phrygian occupation levels might illuminate the Phrygians' regional settlement patterns and their extended borders. The distribution of the Phrygian sites and Phrygian inscriptions³⁸ (see Fig 2.8) may illustrate cultic and socio-political connections.³⁹

³⁵ There is not a clear identification of open air sanctuaries. They are known as step altars and rock-cut ritual basins found at highlands. Their exact dates are not known and they might have been used even earlier than the Phrygian period

³⁶ Roller 1999, 102

³⁷ Haspels 1971, 20

³⁸ Devreker and Vermeulen 1992, 110

³⁸ Brixhe and Lejeune 1984

³⁹ Summers 1994, 241; the extended borders of Phrygia are not known, however, the evidence of the Phrygians' cult practices might give some clue about it; according to Roller (Roller 1999, 64), evidence of their cult practices is seen in all Central Anatolia. It even spreads to Afyon and Kütahya in West Anatolia, to the Elmalı plain-north of Lycia in the south, to the district around Bolu (ancient Bithynia) in the north and to the Marmara Sea in the north-west. The spread of the Phrygian Mother goddess as a cult was also evident in the region beyond the Kızılırmak River (ancient Halys) towards Kerkenes Dağ in the East, and the region of ancient Tyana, near modern Niğde, in the southeast of Central Anatolia; (Summers and Summers 1999, 177), identify Kerkenes with the ancient city of Pteria which had an inter-regional position controlling major routes from the Black Sea to North Syria and the Mediterranean passing through the Taurus Mountains inter-regional position controlling major routes from the Black Sea to North Syria and the Mediterranean passing through the Taurus Mountains

- 1 Midas City
- 2 Kümbet
- 3 Arslankaya
- 4 Maltaş
- 5 Fındık
- 6 Çepni
- 7 Germanos
- 8 Gerede
- 9 Fıranlar
- 10 Gordion
- 11 Karahöyük
- 12 Höyük
- 13 Kalehisar
- 14 Pazarlı
- 15 Hattuşa
- 16 Tyana
- 17 Porsuk

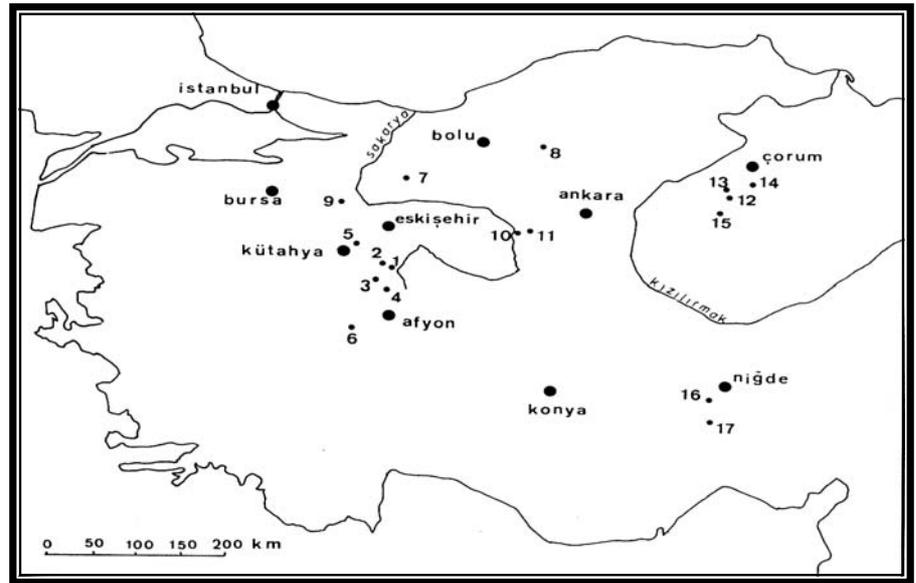


Fig 2.8 The finding spots of the Phrygian Inscriptions (from Brixhe and Lejeune 1984)

2.2.3 Communication Networks

Since the exchange economy concerns surplus from the subsistence economy, the imports are mentioned within the network system.

The physical features of Turkey permit many connecting passages throughout the country. The sea routes along the Mediterranean, Aegean and Black Sea coasts find land links to the interior parts of Central Anatolia through several ports, and these links intersect the routes proceeding from Northeast, East and Southeast of Turkey.

The communication networks of the Iron Age, have not much changed since the obsidian trade routes of the Neolithic period. The natural passageways remain the same. However, their control by the rulers of the territories might effect independent transitions. In reference to the new movements of people coming to Anatolia from overseas, other mainlands and continents, or changing their permanent residence within the borders of the country, there is a need to consider both the sea and land routes mentioned above.

The Early Iron Age is a time when inland and overseas communications are reduced strikingly relative to the Middle of the Late Bronze Age. Particularly, the collapse of the Hittite empire might have influenced the communication lines with the coastal lands, since the Hittites kept control of the main inland networks.

Therefore, the material culture of the Early Iron Age settlements does not show much cultural, political and social contacts between the peoples of the varied Anatolian regions. Small groups of people of different origin acting independently might have moved to different parts of the country.⁴⁰ This period might be considered as the time of new immigration cycles and emergence of people. However, the dark hand made ware of sub-phase 7B at Gordion reveals parallels in LH IIIC Mycenaean Greece, Troy VIIb, Thrace and Kalehöyük. The wide spread of this pottery might point out some cultural contacts among the Early Iron Age people.⁴¹

Gordion has a very important strategic location on the path of the main inland routes. With regard to trade, it was on the crossroads since prehistoric times. While the Hittites were dominating Central Anatolia during the Late Bronze age, the site was a small political unit under their control.⁴² During the Early Phrygian period Gordion lived its most prosperous times. The large megarons with many remains of wealth and luxury belong to the elite of the city.⁴³ The Phrygians, as might be expected from this period, start to produce and exchange many striking iron and bronze objects which are significant as a sign of international contact between west, south-west and east.⁴⁴ The

⁴⁰ Bouzek 1997, 31

⁴¹ The rectilinear houses found at Gordion might suggest a contact with west. One-room houses rectangular in plan are also found at phase IId of Kalehöyük. Omura thinks that it is a western influence, since it shows similarity with Gordion

⁴² Voigt 1994, 276. At this time, with its mass production of pottery, Gordion had a centralized state economy. Gordion's location was significant concerning the metal trade networks

⁴³ De Vries 1980, 34

⁴⁴ Yener and Özbal 1994, 379. They comment that military and domestic items were found among the metal objects; shields, swords, cauldrons, ampholus bowls, belts, pitchers, fibulae, pendants, and rings. These objects which were found in the tumuli correspond to the Urartian ones, (De Vries 1980:33),

contacts with mainland Greece and the islands in the west increase as a result of Ionian trade and colonization.⁴⁵ The Phrygians might have used the south-western road via Afyon-Salihli to reach Smyrna, or Afyon-Salihli-Selçuk to Ephesus and Miletus. In attempting to trace the lines of communication with the south-east regions, we might consider some special products as evidence. The inlaid wooden furniture with figured ivory plaques, relief orthostates, and ivory horse trappings found on the City Mound suggest the influence of Neo-Hittite city states and North Syria⁴⁶. The connection of Gordion to the Mediterranean coast and south-east Anatolia might be established via the Haymana plateau- Konya plain (Iconium)- Niğde (Tyana) road through the Cilician Gates, or via the Haymana plateau-Aksaray (Acemhöyük)-Niğde-Elbistan to Kargamış road. The Phrygian ceramics found at Sinop and Samsun on the Black Sea coast suggest a northern road on the plateau via Ankara.

The Phrygian inscription on the black stone of Tyana found near Niğde, is an important indicator of south and south-eastern relations.⁴⁷ Moreover, the Phrygian type of tumuli recovered in the Uşak-Güre and Dinar-Afyon area, in the plain of Elmalı in Bayındır, Karaburun and Kızılbil in north Lycia, and in the region of Tyana might indicate the cultural-political extension of the Phrygians in later periods.⁴⁸

The sixth century, under Lydian control, witnesses an increase in the variety of Greek and Lydian pottery and Phrygian exports.⁴⁹ Besides, the Ivory and glass

were also found on mainland Greece; Muscarella (Muscarella 1992:338) also states that in the west, a lot of Phrygian fibulae from the 8th century were found in Greek sanctuaries, Lindos, Samos, Olympia, the Argive Heraion; belts at Chios, Ephesus, Bayraklı and Samos; omphalos bowls and bowls at Samos, Olympia, Perachora and the Argive Heraion

⁴⁵ Austin and Vidal-Naquet 1977, 49; overpopulation occurred in mainland Greece.

⁴⁶ De Vries 1990, 390; Sams thinks that, (Sams 1979: 46), this contact could be the result of political and commercial relationships

⁴⁷ Mellink 1991, 625

⁴⁸ Mellink 1991, 632

⁴⁹ This might suggest much closer contact with the west; (Roebuck 1959, 48-9), as well, large quantities of Lydian wares, little master cups, Attic pottery and East Greek pottery were found at Gordion. In the sixth century, the Phrygians were also exporting slaves. In Miletus, Phrygian slaves were known to grind barley. The Phrygian economy was partly based on selling the slaves. In the ancient sources, Phrygia was known as a source for slaves

artifacts found in the excavations at Gordion suggest that these kind of imports came to Gordion by the great overland trade road from the east.⁵⁰ Herodotus, mentions the Persian Royal Road as leading from Lydian Sardis in the West through the Cilician Gates, and then reaching Susa near the Persian Gulf. This implies that the location of Gordion might have been use as a strategic station on the Royal Road. A post-Phrygian road found near the tumuli might support this suggestion.⁵¹

2.3 Summary

This chapter attempts to define a regional framework for the study areas outlining the physical features of Central Anatolia. When the sites are set in their regional settings, the differences and similarities become apparent. With the exception of differences in the regional altitudes, precipitation and closeness to the main streams, the environmental setting of Gordion and Kalehöyük in their regions reveal partial resemblance. The presence of highlands with cultivated plains at lower altitudes with a continental climate suggest a mixed-farming and herding economy. Particularly, the Sakarya and Kızılırmak rivers play important roles in their regional economies.

The settlement history of both the Upper Sakarya and Middle Kızılırmak basins starts later than the Neolithic period. Most frequently one notes continuous occupancy until the middle of the Late Bronze Age. However, there is a break in the settlement system of EIA. Many sites do not reveal any occupation of this period. This

⁵⁰ Young 1963, 348. The increasing evidence of Urartian and Persian products suggests the overland route between Ionian coast, Central Anatolia and East. For the overland route across Anatolia in the 8th and 7th centuries BC, see Birmingham's article (Birmingham 1961, 185-195)

⁵¹ Young 1963, 348; Ramsay 1962; (Briant 1996: 390), the royal road was used to transport goods by the Persians. At Gordion there were winter caravans on the way to Susa.

could be also a reason of an absence of significant EIA material culture. Yet, the excavations and surveys suggest that the Middle Kızılırmak basin was more densely settled than the upper Sakarya basin. Complex societies such as the Assyrians, Hittites and others inhabited this area during the Bronze Age. Moreover, their interregional communication networks were established through the bend of the Kızılırmak river to all directions of Central Anatolia.

In the Early Phrygian period, the Phrygians formed their state in the Upper Sakarya basin and extended their contacts throughout Central Anatolia. They might have made their settlement choices according to the geographical privileges of the region. In the earlier times of the Phrygian State, their mobile pastoralism was probably more important than the long-range exchanges. This activity might have influenced their interregional contacts and helped to extend their cultural and political borders.

In the Middle Phrygian period, the political power of the Phrygian state became less effective and almost lost, but their cultural and social life possibly remained largely unchanged. The increase in the long-range exchange and its continuity in the Late Phrygian period suggests that the Phrygian economy became more diversified even after the collapse of this state and may indicate that they became less dependent on mobile pastoralism.

CHAPTER 3: GORDION

In this section, the environmental setting of Gordion is observed through the land use analysis and geomorphological studies. The physical features of its surrounding are explored to make some assumptions about past land use and its economic potential. The geomorphological studies are taken into consideration in understanding the role of the Sakarya river in environmental changes. In addition, the archaeological evidence: architecture, pottery, botanical and faunal remains are analyzed to indicate social and economic changes in relation to the environment. Furthermore, the ethnoarchaeological and ethnohistorical data is used to provide a new perspective on past conditions.

3.1 Environmental Setting

The Site and its Location

The mound called Yassihöyük, and known as Gordion in ancient sources, is located about 100 km southwest of Ankara and 20 km west of the provincial town of Polatlı in west-central Turkey at about 700 m above sea level.⁵² As for the climate, with average precipitation of 386.9 mm (1931-1991), winters are cold and rainy and summers are hot and dry.⁵³ Yassihöyük, which is known as the Citadel Mound, is the main locus of a large occupation. It culminates 16 meters above the plain and covers an area of 12ha. To the south of the Citadel Mound, is located a small fortified site called Küçük Höyük, whose summit culminates 22m above the plain, and the area between them is known as the Lower Town. The area to the north-west of the Citadel

⁵² Marsh 1996

⁵³ Doğan 1998, 165

Mound, where the settlement extends over about 72 hectare is called the Outer Town (see Fig 3.1).⁵⁴ The whole site, including the topographic zones described above, is situated on the right and left banks of the Sakarya (Sangarius) river.

Its most important tributaries are the Porsuk and Ankara rivers, which connect 3 km north of the mound. The Porsuk river flows from Eskişehir, to the west of Gordion, and the Ankara flows from the capital city of Ankara, to the north-east of Gordion. Pleistocene tectonics, having raised the plateau at the east of the valley, played a great role in shaping the present-day Sakarya valley.⁵⁵ The sites are scattered along the slopes and ridge-tops of the valley where more than 100 burial mounds or tumuli can be seen at a close distance.⁵⁶

Vegetation

The wider region of Gordion is treeless today. The only trees and shrubs like the tamarisk (*Tamarisk*), poplar (*populus*) and willow (*Salix*) grow along rivers and watered gardens⁵⁷, where one sees also minor types like the hawthorn (*Crataegus*) and elm. At Mihaliçcik, nearly 40-50 km away from Gordion, at an elevation of about 1000m, there is a pine forest (with an understory of oak and juniper) in the mountainous zone. Oak and juniper grow starting about 10 km from the site. However, the absence of juniper and oak in the area today cannot be attributed to deforestation during the 1st millennium BC.⁵⁸

⁵⁴ Voigt 1997, 1

⁵⁵ Rosen 1996

⁵⁶ Voigt 1997, 1

⁵⁷ Miller 1992

⁵⁸ Miller 1998, pers. comm

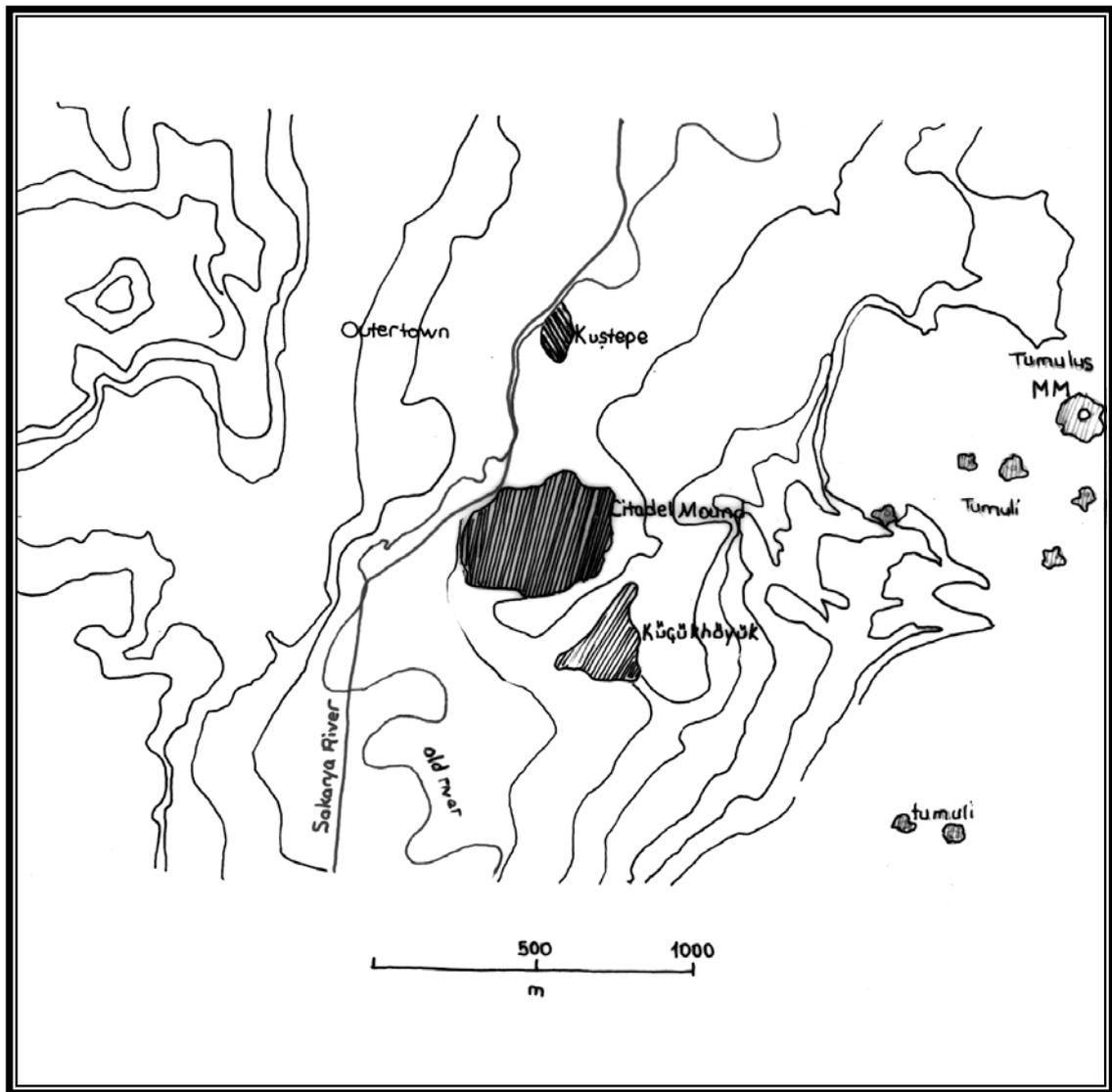


Fig 3.1 Adapted from Sumner 1987

3.1.1 Geomorphological Research

The geomorphological studies help us to understand the conditions of topography, hydrology and climate of the ancient sites during the early human occupation.⁵⁹ At Gordion, the geomorphological researches were done by Tony Wilkinson, Arlen Miller Rosen and Ben Marsh. They have focused on tracing sedimentary processes of the Sakarya river and changes in settlement patterns in the

⁵⁹ Cohen 1952, 135

landscape of Gordion. Rosen has studied the past land forms examining the geological stratigraphy of the region starting from the Pleistocene period.⁶⁰ In her surveys, she emphasized that the topography of the area at that time was very flat (there were no hills and mountains) as there was a great salt lake in the region.⁶¹ Later, topography started changing in the eastern part of the Sakarya valley, where folding and uplift of the Pleiocene strata formed plains and valleys, thus the basins of the Porsuk and Sakarya rivers were created.⁶²

Rivers have a very important role in the evolution of landscape. The Sakarya river springs around Çifteler village, located in the north of the Sultan mountains. It drains about 60, 000 km², and empties in the Black Sea.⁶³ The shift of the Sakarya river at Gordion was carefully examined by Ben Marsh in five phases (SAK I, II, III, IV,V) (see Fig 3.2). In phase SAK I, soil erosion and sedimentation raised the bed of the river beginning from the end of the Pleistocene period when the glacial meltwater

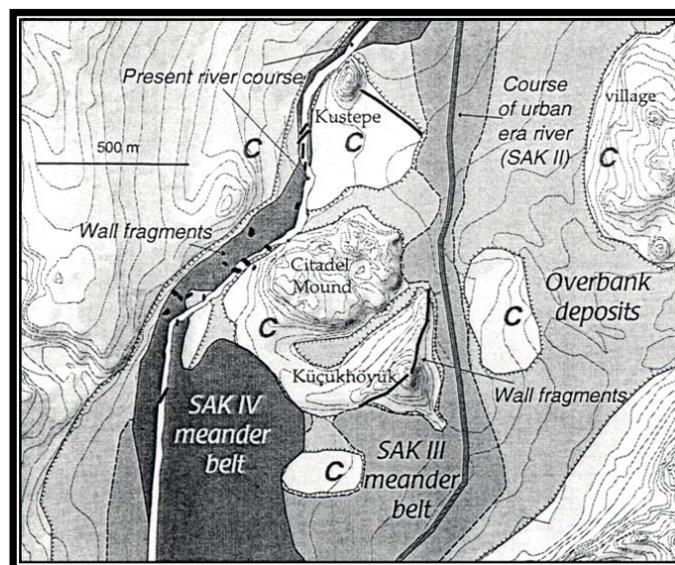


Fig 3.2 From Marsh 1999

⁶⁰ Rosen 1998

⁶¹ Rosen 1998

⁶² Rosen 1998

⁶³ Marsh 1999, 165, Marsh states that the Sakarya river is not navigable. However, in ancient times; Briant 1996, 392, both the Sakarya and Kızılırmak rivers might have been used for the transportation of goods

from the Taurus mountains moved over the Sakarya plain.⁶⁴ In phase SAK II, the Sakarya river shifted to the east of the Citadel and lower town, in the middle of the valley. Its altitude was 3m below the present alluvial plain.⁶⁵ Marsh defines this phase as an early urban period extending from the Bronze Age to 600 B.C. (see Table 3.1).⁶⁶ In phase SAK III, the Sakarya river was sandy and straight and 6m below the present river, but then it began meandering and carrying alluvium which raised its bed. After 600 BC, during the Middle Phrygian period, it aggraded remarkably and many hectares of the settlement were buried under 3 to 5 meters of sediments.⁶⁷

Table 3.1: Evolution of the Sakarya River at Gordion

Form	Onset	Origin	Location	Channel	Sedimentation
Sakarya V	1967	Channelization by the Turkish government	West of mound; 3-5 m below plain	Straight; 20-30m wide	Down-cutting at present
Sakarya IV	19 th century?	Shifted course from aggradation and fan growth	West of mound After a major course change	Shallow, meandering; eroding into stone city walls	Meager silty over-bank sediment
Sakarya III	Ca. 600 B.C	Widespread disturbance of vegetation in watershed	East of mound; eroded out parts of city	Meandering, aggrading; sandy, gravel bed	3-5 m of fine grained over-bank sediment
Sakarya II	Early urban period; Bronze Age to ca. 600 B.C	Urbanization (and irrigation?)	East of Citadel Mound; plain 3-5 m lower than present	Gravelly, straighter and steeper than later forms	Continuous paleosol on plain; clean channel gravel
Sakarya I	Pre-settlement	Pleistocene pluvial/ glacial flow from beyond present basin; Holocene watershed runoff	Transgressed the valley; 4-8 m below present plain	Varying	2-m cycles of coarse to fine sand

From Marsh 1999

In phase SAK IV, the meandering movement continued, and finally in phase SAK V, the Sakarya river was artificially channeled.⁶⁸ The settlement patterns at Gordion changed according to the shifting of the river bed, and the old bed of the river

⁶⁴ Voigt 1997, 21-3

⁶⁵ Voigt 1997, 23

⁶⁶ Marsh 1999, 166

⁶⁷ Marsh 1999, 168

⁶⁸ Voigt 1997, 26

formed an alluvial valley of good agricultural land. In the last 2000 years, 4 m of sediment accumulated in the Sakarya Valley. This also indicates that erosion was the main reason for reshaping the present landscape.⁶⁹

Soil

When the Sakarya alluvial sediments were examined by Tony Wilkinson in 1992, he stated that the soil is mostly grey and greyish brown, and especially that the soil of habitation areas is more grey than in the uninhabited ones.⁷⁰ The distribution of soil types suggests that the west shore of the Sakarya river was not densely settled but mainly used for cultivation purposes.

Also clay analysis of pottery was done by Henrickson and Blackman.⁷¹ They emphasized that ancient potters used the clay of the river to make pottery. However, waterlogging and erosion, and extensive alluviation could have buried the clay sources used in antiquity. The clay analysis of the ceramics showed that Late Bronze Age potters used calcareous river clay from the vicinity of Gordion while Early Phrygian potters used the non-calcerous type in their production.⁷² Besides the clay sources, Phrygian builders used the red fluvial sandstone in the construction of the Terrace building on the city mound.⁷³

The area around Gordion, east of the Sakarya river, is mainly covered with brown soil which is good for dry farming, but, it is not used for farming today, because it is highly degraded. The western shore of the Sakarya is covered with alluvial soil. This type is very good for agriculture, as it has rich deposits of minerals

⁶⁹ Voigt 1996

⁷⁰ Wilkinson 1992

⁷¹ Henrickson and Blackman 1996, 79

⁷² Henrickson 1996, 79

⁷³ Rosen 1998

carried by the river.⁷⁴ Today, the agricultural fields are on the west bank of the river, while, the habitation areas are located on the east.

3.1.2 Land Distribution Analysis

This analysis consider the present day land morphology, and it is linked closely to the results of surveys and geomorphological studies. Regional topographical⁷⁵ and soil maps (see Fig 3.3)⁷⁶ are used to interpret the physical features of the land . A contour map prepared within a circle of 10 kilometers in radius is used to illustrate Gordion in its present environmental context and to make some assumptions about its setting in the past (see Fig 3.4).⁷⁷ Particularly, it aims to illustrate the type of exploitation of the area by the inhabitants of Gordion as a function of the relative distance and abundance of land forms, indicative of economic potential.

As it is shown on the maps, the Sakarya and Porsuk rivers are the main rivers, and many intermittent streams join their river valleys. The soil map demonstrates that the arable areas are found mostly in the valley bottom, lying along the Sakarya and Porsuk rivers. The average altitude of the area changes between 700 and 1000 meters. The areas above 800 meters are partly used for cultivation.

The regional survey done by Sumner indicates that most of the sites and the tumuli are found to the east of the Sakarya river below 850 meters where the soil has lower agricultural potential (see Fig 2.7).⁷⁸ However, the soil in that area might have

⁷⁴ 1972, Toprak Su Genel Müdürlüğü., Ankara İli Toprak Kaynağı Envanter Raporu

⁷⁵ The topographical map of 1: 100.000 scale has been taken from the Harita Genel Komutanlığı.

⁷⁶ The soil map of 1: 100.000 scale has been taken from the Institution of Agricultural and Village Affairs.

⁷⁷ Jarman and et al. 1982, 38; The maps are prepared using the "site catchment analysis" of Claudio Vita-Finzi.

⁷⁸ Sumner 1992



Fig 3.3

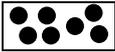
-  Arable areas
-  Meadows
-  Hilly Zones
-  Grazing areas



Fig 3.4

been available for cultivation in the Phrygian period, since the course of the Sakarya river lay to the east of the Citadel and lower town, in the middle of the valley. On the contrary, the upper terraces of the west bank of the river are highly cultivated (see Fig 3.3), and less settled. Besides, the immediate banks of the Porsuk and Sakarya rivers are not arable, since they are highly eroded as a result of deforestation, grazing, tectonic movements and plowing. They are the marshy districts or meadows used particularly for grazing cattle.⁷⁹ The cultivated areas to the north of Gordion are restricted because of the high ridge of limestone and gypsum rocks.⁸⁰ The pediments around the hill slopes are not used for agricultural activities, since they have dissected surfaces.⁸¹ Table 3. 2 shows arable areas, hilly zones, meadows and grazing land in percentages and kilometer squares in an area of 314 km² around Gordion.

Table. 3.2

Gordion	Arable areas	Hilly zones	Meadows	Grazing land
Km²	145	43	19	107
%	46	13	6	35

Since the present village Yassihöyük which is located close to Gordion has a mixed economy, the grazing land is important for animal husbandry. The livestock is found mostly close to the hilly zones. The pastures located 5 km distant from the village are most probably used for daily grazing⁸². However, the available upland pastures point to herding activities, and Wilkinson suggested that in the past the transhumant sites might have been linked to Gordion by narrow hollowed tracks.⁸³

⁷⁹ Sumner 1992; the river terraces have gypsum gravel and gypseous loam soils which are not good for cultivation. Cattle prefers wetter areas

⁸⁰ Wilkinson 1992

⁸¹ They are known as gentle slopes surrounding mountains, and they are formed by sheet floods under semiarid climate

⁸² Gürsan-Salzman (pers. comm) states that the arable land for Yassihöyük is 1,600 and grazing land is 400 ha.

⁸³ Wilkinson 1992

Today, the villagers practice seasonal pastoralism, and the flocks are taken to the uplands in summer.⁸⁴

Water supply for the fields in the vicinity of Gordion in antiquity

The Sakarya river is the main water source in the area, and it is fed by the Porsuk and Ankara streams. There are also springs at higher elevations where one can notice Pleistocene marls and basalt strata⁸⁵, and irrigation above the flood plain is done only in the vicinity of large springs, like at Şabanözü village. The water was directed towards the plain and the lower terraces by a network of irrigation canals and weirs.

3.2 History of Excavation

The first excavations at Gordion began under the direction of Gustav and August Körte in 1904 (see Fig 3.5). The two brothers started digging the Citadel Mound, Küçük Höyük and five tumuli.⁸⁶ In 1950, new excavations were carried out by the University of Pennsylvania under the direction of Rodney Young and lasted until his untimely death in 1973. Young continued the work where the Körte brothers had left off. In addition, Rodney Young and his team excavated nearly two hectares of a fortified palace court on the Citadel Mound, the fortification system of the Küçük Höyük and 29 tumuli among which the Midas Mound.⁸⁷

New excavations began in 1987, under the auspices of the Pennsylvania University, the university of North Carolina at Chapel Hill, the College of William

⁸⁴ Gürsan-Salzman pers. comm

⁸⁵ Rosen 1998

⁸⁶ Gustav 1904

⁸⁷ De Vries 1990, 371-406

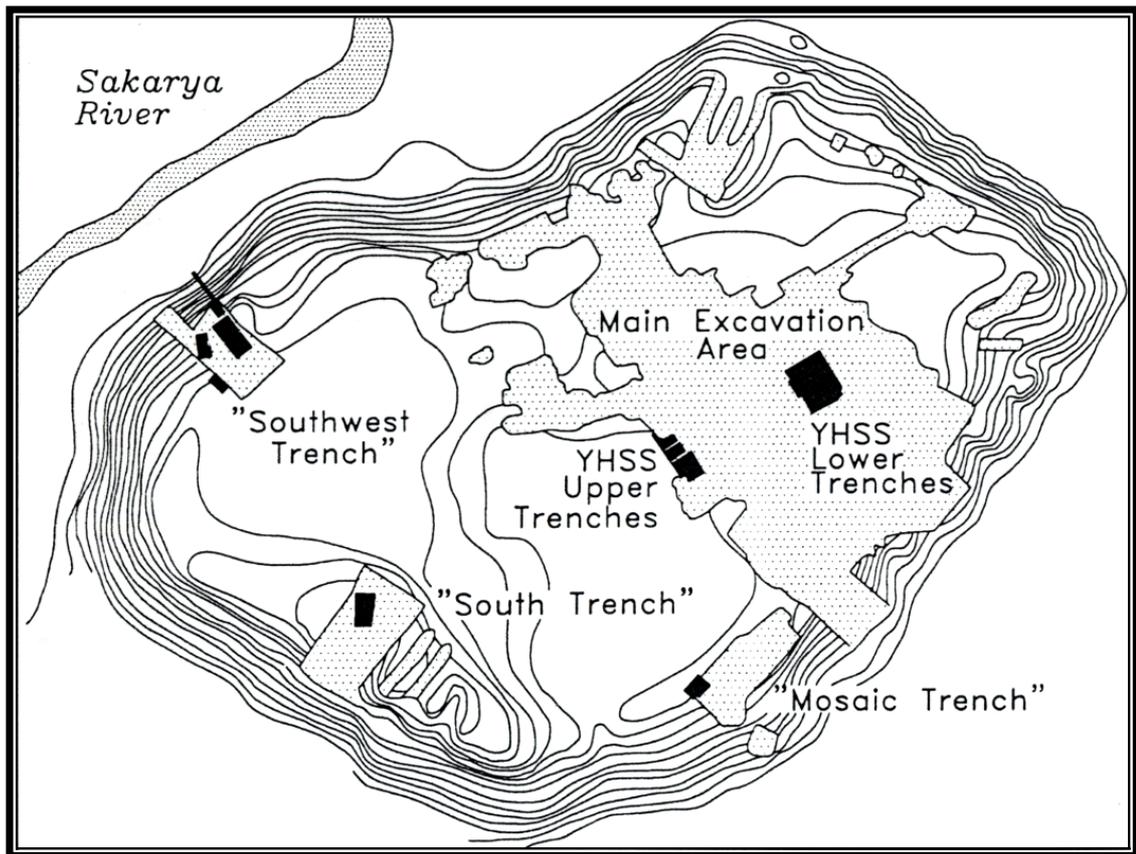


Fig 3.5 From Voigt and Henrickson 2000

and Mary, the Royal Ontario Museum and the University of Toronto (the last two universities joined later) with Professor Kenneth Sams as Project Director and Mary Voigt as field director. The excavation area covers three topographic zones: the Citadel mound, the Lower town located between the Citadel Mound and Küçük Höyük to the south, and the Outer Town, the lower part of the settlement on the left bank of the Sakarya river.⁸⁸ The environmental and settlement surveys, as well as the ethnoarchaeological studies have been published as interim reports by the excavation team.

⁸⁸ Voigt 1994, 265

3.3 Archaeological Evidence

The archaeological evidence based on the stratigraphic sequence of Gordion is given to draw a broad framework for the ancient economy. Particularly, changes in building structures, pottery, faunal and botanical remains are brought together to attempt an interpretation of the economy of the site.

3.3.1 Architecture and Stratigraphy

The stratigraphic sequence of Gordion starts roughly from the Old Hittite period (1500 BC) and lasts until Ottoman times (1300 AD) (see Table 3.3).⁸⁹ The phases are numbered from the latest to the earliest (1-10). The tenth, ninth and eighth phases belong to the Middle and Late Bronze Age periods (the Old Hittite and Hittite Empire periods). The later phases till the end of the first millennium BC, are as follows:

Phase 7- Early Iron Age (1100-950 BC.)

The Early Iron Age phase is divided into two sub-phases based on architecture and ceramic evidence as 7B and 7A. In sub-phase 7B, semi-subterranean rooms constructed in shallow rectilinear pits were found. They were built of wood and mud plaster on top of the Late Bronze Age deposits. The rooms were identified as dwellings. They had hearths, bins and bell-shaped pits full of botanical, faunal and ceramic remains.⁹⁰ Flat stone slabs and orthostats were found in larger rooms. These dwellings were separated by courtyards with bell-shaped pits used for grain storage.⁹¹

⁸⁹ Voigt 2000

⁹⁰ Voigt 1989, 267

⁹¹ Henrickson and Voigt 1995, 83

In sub-phase 7A, wooden framework was used in architecture and the pits had a cylindrical form rather than the bell-shaped one.⁹²

Table 3.3 The Stratigraphic Sequence of Gordion

Phase	Period Name	Approximate Dates
1	Medieval	10-12 th century AD
2	Roman	1 st century BC-3 rd century AD
3	Hellenistic	330-150 BC
4	Late Phrygian	550-330 BC
5	Middle Phrygian	720?-550 BC
6	Early Phrygian	950-720? BC
7	Early Iron Age	1100-950 BC
9-8	Late Bronze Age	1400-1200 BC
10	Middle Bronze Age	1600-1400 BC

From: Voigt and Henrickson (2000)

Phase 6 -Early Phrygian Period (950?-720? BC)

The Early Phrygian period can be identified with its formal and monumental buildings, which reflect the flourishing time of the Phrygian kingdom. The monumental plan of the citadel is dated to the last quarter of the 8th century BC.⁹³ The citadel entrance is controlled by towers, and it is connected by a roofed ramp to a rectangular gate called the Polychrome House (see Fig 3.6).⁹⁴ It opens towards a palace area where freestanding megarons are found on both sides of the two open courtyards.⁹⁵ Hearths, pits and hard-packed surfaces point to domestic activities in the courtyards. The other two remarkable buildings of this phase, based on a megaron plan, are the Terrace Building with 8 units (TB) and the Clay Cut (CC) building with

⁹² Henrickson and Voigt 1995, 87

⁹³ Sams 1994, 211

⁹⁴ Sams 1994 211

⁹⁵ De Vries 1990, 379; Henrickson and Voigt 1995, 89, the formal plan replaced the domestic structures with open courtyards. The remains of the elite quarter point to the political importance of Gordion

four units at the south-west of the gate (See Fig 3.7).⁹⁶ These two multi-structured buildings are regarded as the service areas of the palace.⁹⁷ The citadel was destroyed in the late 8th century BC, and this is the end of the Early Phrygian period. The stratum is identified as "Destruction level" in the literature.⁹⁸

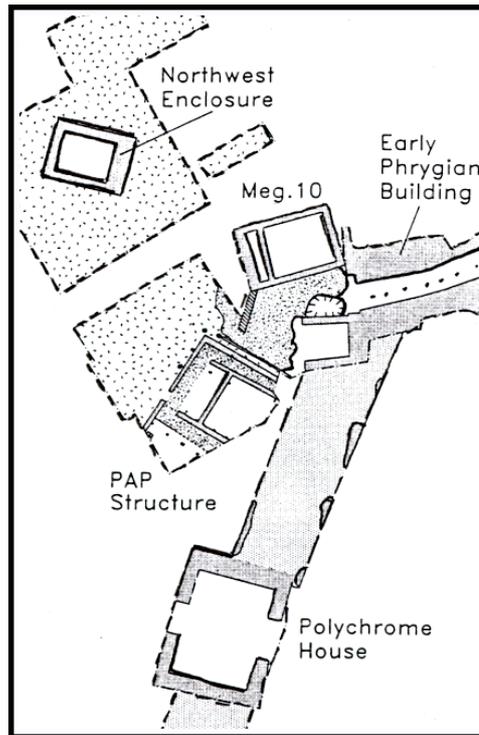


Fig 3.6 From Voigt and Henrickson 2000

In buildings TB and CC, many grinding stones, ovens with two chambers, food storage areas, doughnut type clay loomweights and spindle whorls are found.⁹⁹ In the storage bins were discovered, food imports such as hazelnuts, *ziziphora capitata* seeds (a steppe plant used as flavoring) and cornelian cherries (from the Black Sea mountain range).¹⁰⁰ The clay loomweights provide evidence for textile production.¹⁰¹

⁹⁶ Sams 1994, 211

⁹⁷ Voigt 1994, 270

⁹⁸ The Destruction level is dated to 835 BC (see footnote 24)

⁹⁹ Sams 1994, 211

¹⁰⁰ De Vries 1990, 383

¹⁰¹ Voigt 1994, 272

In addition to the loomweights, over a thousand spindle whorls were found from the destruction level and tumuli as well as awls of bone and bone bobbins, all also point to textile manufacture. Furthermore, Phrygian fibulae found in building MM, the Citadel Mound and building TB are also related to Phrygian clothing.¹⁰² De Vries thinks that the workers of these buildings could have been women who made the weaving, grinding and baking.¹⁰³

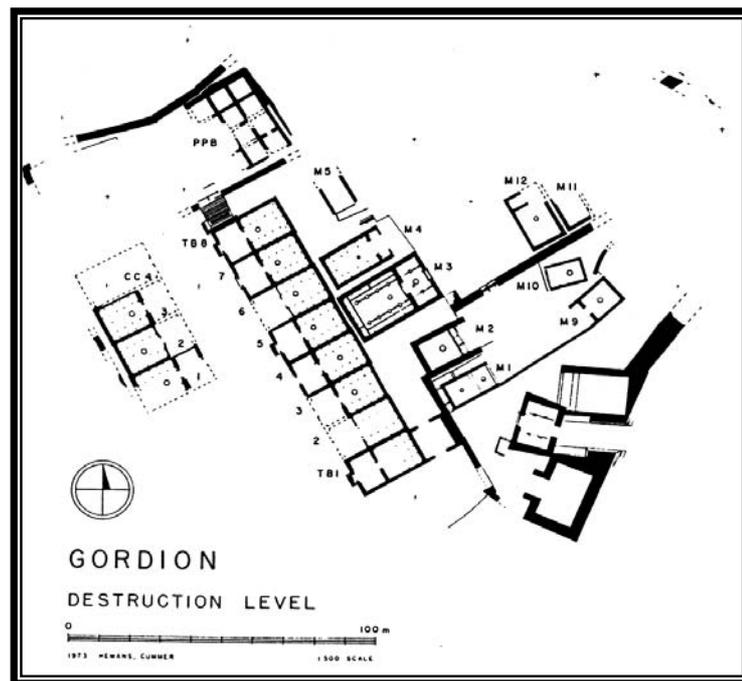


Fig 3.7 From Sams and Voigt 1996

Phase 5: Middle Phrygian Period (720?-550 BC)

This phase shows the reconstruction of the buildings after the destruction of the City Mound (see Fig 3.8).¹⁰⁴ The Middle Phrygian reconstruction process shows that the City Mound extends towards a western mound occupied by merchants or

¹⁰² Burke 1998, 198-258; in his dissertation mentioned the aspects of Phrygian economy based on textile production, and its probable export to other places (Boehmer 1973, see Boehmer's article on Phrygian textiles, their origin and export). He examined the fragments of wool and linen cloth from the destruction level and tumuli

¹⁰³ De Vries 1975, 33-49

¹⁰⁴ Voigt 2000, 52

minor officials.¹⁰⁵ In addition, a Middle Phrygian fortification system at Küçük Höyük was built towards the south of the City Mound, and it was destroyed in the third quarter of the 6th century.¹⁰⁶ Excavations prove that the Outer Town to the north of the Citadel Mound was also settled in this period. In the Lower Town, the excavated multi-roomed (agglutinative) houses are identified as domestic structures, and some buildings with stone platforms suggest industrial activities.¹⁰⁷

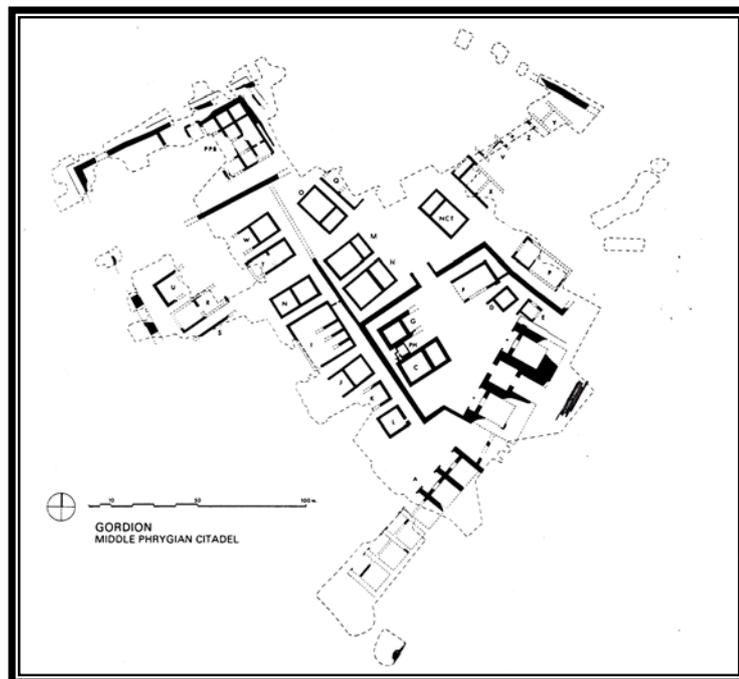


Fig 3.8 From Voigt 1997

Phase 4: Late Phrygian Period (550-330 BC)

The houses in the fortified Lower Town B had single roomed pithouses in contrast to the Middle Phrygian multi-room structures.¹⁰⁸ In Lower Town A, a multi-

¹⁰⁵ Voigt 1997, 5-6, in one of the deposits called operation 17, many completed pottery vessels were found thrown into a pit.

¹⁰⁶ Sams and Voigt 1996

¹⁰⁷ Voigt 1997, 8, The people who lived on Lower Town were defined as craft specialists as a result of finding jewellery molds

¹⁰⁸ Sams and Voigt 1996

roomed structure, identified as a military or a government building, suggests a continuation of the fortification system of the Middle Phrygian period. A Persian administrative building known as the Mosaic Building, was excavated on the Eastern Citadel Mound.¹⁰⁹ Subterranean cellars found on the mound were used as workshops rather than dwellings during the Achaemenid empire. This phase shows that in the Late Phrygian period, the Citadel Mound became a center of manufacturing activities for producing luxury items made of bone, ivory and alabaster. Under Persian rule, Gordion loses its political role and becomes a minor center. However, it is identified as a market center¹¹⁰, which played an important economic role in the region with an increase in long distance trade.

3.3.2 Ceramic Evidence

The analysis of the pottery might give information about the clay sources in the vicinity of the settlements. Its functions and styles provide evidence of social, cultural and political relations among the different populations. The pottery of Gordion has been studied since the excavations of the Körte brothers, and the recent studies of Gordion pottery in its social, economic and political contexts have been done by Robert. C. Henrickson.¹¹¹

¹⁰⁹ Voigt 1997, 9

¹¹⁰ Voigt 1994, 278, writes that stone working, ivory carving, smelting and melting processes are accepted as evidence for industrial activities; Sams and Voigt 1997, 684, reveal that many metal artifact were discovered in Operation 17 on the Citadel Mound such as sickle, bronze cylinders used for horse's headstall, bronze pins and arrow heads

¹¹¹ Henrickson 1993

Phase 7-Early Iron Age(1100-950 BC)

Sub-phase 7B is characterized by Early Iron Age Hand made ware (EIAH). This type of pottery has no prototypes in the Late Bronze Age, and it does not even reveal any technological link to its predecessors.¹¹² The widespread appearance of dark hand made ware and its simple production suggests a kind of adaptation to changing economic conditions after the collapse of Late Bronze Age states.¹¹³ This type of ware shows parallels in LH III C Mycenaean Greece, Troy VIIb1-2 Knobbed and Coarse wares, Thrace and Kalehöyük.¹¹⁴ The lack of potter's wheel and simple ceramic production led Henrickson to consider the absence of mass production, replaced by household-based pottery production.¹¹⁵

In sub-phase 7A, Early Iron Age buff ware is common. It does not reveal any connection either to LBA pottery or EIAH. Its appearance and the continuous use of EIAH still remain problematic among scholars. According to Henrickson, this might suggest the presence of more than one cultural group at the site.¹¹⁶ Alternately, it might be also associated to improved techniques and an emerging elite.¹¹⁷ EAI Buff ware continues through the Phrygian period as the prototype of the Gordion ceramic tradition.¹¹⁸ The typical ceramics of this period are jars with ledge or enlarged rims, globular pots, pedestal base bowls, tankards and small S-profile pots. These forms nearly remained the same until the Early Destruction Level at the end of phase 6 (720? BC).

¹¹² Henrickson 1993, 106

¹¹³ Henrickson 1993, 108

¹¹⁴ Henrickson 1993, 120. Henrickson mentions the appearance of dark handmade ware in the Aegean dated to the LHIII C period 1190/1180-1065 (Shelmardine, 2001: 332); Henrickson, 1993: 117; Rutter and Bankoff suggest a south-eastern European origin for it. Ian Morris, 2000:199, thinks that this type of ware was a hybrid of local traditions and customs brought in from outside of Greece. It was also found all the way from Corinthia to Southern Italy

¹¹⁵ Henrickson 1992

¹¹⁶ Henrickson 1993, 110

¹¹⁷ Morin, pers.comm

¹¹⁸ Henrickson 1992, 122

Phase 6: Early Phrygian Period (950-720? BC)

The new political status of Gordion as capital and regional center affected its economy in a positive way. As a result of this economic revolution, the production of pottery became more complex and mass production reappeared.¹¹⁹ The standardized types of pots, their size, production techniques and finishing methods are considered as evidence for large scale production of ceramics at Gordion,¹²⁰ which is probably related to the increase in the local urban population.¹²¹ The use of non-calcareous clays brings a shift to grey wares instead of buff at this period.¹²² However, the lack of this type of clay in the vicinity of Gordion suggests that the sources are located elsewhere in the neighbourhood, or they are deeply buried under more recent alluviation.

Phase 5: Middle Phrygian Period (720?-550 BC)

The pottery assemblage (grey, fine, Phrygian Polychrome, buff common, cooking, highly burnished wares and coarse orange storage jars), representing the mass production of standardized vessels of the Early Phrygian Period, continues in this phase.¹²³ The grey wares are especially common.¹²⁴ The mass produced vessels have a coarse fabric showing that emphasis seems to be given to the quantity of pots rather than to their quality.¹²⁵

¹¹⁹ Henrickson 1992,10

¹²⁰ Henrickson and Blackman 1996, 70

¹²¹ Henrickson and Blackman 1996, 78

¹²² Henrickson and Blackman 1996, 78; Also, the shift to grey colour ware indicates reducing fire

¹²³ Henrickson 1994, 112

¹²⁴ Henrickson 1993, 133

¹²⁵ Henrickson 1993, 133

The absence of a clear class of imported domestic wares shows that local production met the needs of the local population.¹²⁶ Although, Gordion passes under the rule of Lydia and later under the Persians, the typology and technology of this pottery do not change much from phase 6.¹²⁷ In the first half of the 6th century BC., the imported wares come from the East.

Phase 4: Late Phrygian Period (550-330 BC)

The Late Phrygian Pottery tradition continues until Alexander the Great conquers Anatolia.¹²⁸ Most of the pottery assemblage such as gray common and utilitarian wares of this phase show continuity from the Middle Phrygian Period .On the other hand, there is a decrease in local fine grey wares and polished fine wares. However, new Persian and Greek shapes and new techniques of pottery production are apparent.¹²⁹ The increase in the quantity of imported ceramics, especially at the location of the Lydian garrison on Küçük Höyük, is quite evident.¹³⁰ Following Lydian domination, during Persian rule, new vessel forms appear and they illustrate new trade contacts with the West.¹³¹ In this phase, Greek imports increase, especially black-figure and black-glazed pottery. Containers such as amphoras for transporting oils or wine are found in large numbers.¹³² In addition, there are large numbers of Greek and Lydian wares. The presence of lydions and lekythoi might suggest transportation of ointment and oil rather than import of these vessels.¹³³

¹²⁶ Voigt 1997, 16

¹²⁷ Henrickson 1993, 196

¹²⁸ Henrickson 1993, 140.

¹²⁹ Henrickson 1993, 141, the discontinuity in fine wares is supposed to point changes in economic and socio-political structure of Gordion

¹³⁰ Henrickson 1993, 146, such as lydions and lekythoi

¹³¹ Henrickson 1992, Achaemenid pots were imported and some were even locally made

¹³² Voigt 1997, 18

¹³³ Henrickson 1993, 108

3.3.3 Archaeozoological Evidence

Archaeozoology studies the relationship between human beings and animals in the past. Therefore, it enables one to have information about the kind of stock, the environment in which the animals live and the changing nature of the subsistence economy.¹³⁴ At Gordion, systematic faunal analysis started under the direction of Zeder and Arter with the renewed excavations during the 1988 and 1989 seasons. Initially, the aim was to reconstruct the animal based subsistence economy over a 1400 year period, and second, to see if animal bones might help to identify cultural affiliations deduced from the material culture. The faunal analysis also aim to trace the impact of the animal based economy on the landscape around Gordion.¹³⁵

Zeder and Arter produced two stages of analysis. The first analysis covers the samples of bones collected in the field. All bones were counted and weighed by species to understand the changing patterns of animal utilization at the site. In the second analysis, they are grouped following stratigraphically controlled loci such as floor deposits, trash middens and pits. However, the only available (published) data reviewed in this section is derived from stage I analysis.

In this analysis, 114,845 animal bones were examined and classified according to their species, and in the initial stage, 25,003 bone fragments were identified by phase and by species based on the total number of identifiable bones (see Table 3.4). The basic counts of bones in the table illustrates the major and minor contributors of the faunal assemblage. Table 3.5 shows the major domesticated animals ovicaprids (sheep+goat), cattle and pig by phase in percentages (based on number of bones).The proportions of sheep and goat, and ass and horse are also

¹³⁴ Martin 1984, 1

¹³⁵ Zeder and Arter 1992

shown in Tables 3.6 and 3.7 According to the results of these tables, the faunal data of Gordion is discussed phase by phase below. It must be noted that all the assumptions made here are the results of very limited data, since the tables are prepared according to the number of animal bones, and neither the actual number of animals represented, nor the contribution of each in terms of quantities of meat.

Table 3.4 The total numbers of identifiable bones¹³⁶

Domestic	4	%	5	%	6	%	7A	%	7B	%	8	%	Total	%
Bos	1,191	11,6	390	17	248	15,5	287	10,7	123	6,8	52	7	2,291	11,9
Equid	256	2,5	33	1,4	24	1,5	35	1,3	26	1,4	13	1,8	387	2
Ovicaprids	6,680	65	1,261	56	1,103	69	2,027	75,9	1,488	83,1	531	76	13,090	68
Sus	1,399	13,6	440	19	109	6,8	116	4,3	87	4,8	53	7	2,204	11,4
Canid	37	0,3	9	0,4	21	1	28	1,04	20	1,1	8	1	123	0,6
Wild														
Deer	39	0,38	4	0,1	23	1,4	134	5,02	22	1,2	10	1,4	232	1,2
Hare	306	2,9	77	3,4	20	1,2	17	0,6	13	0,7	21	3	454	2,3
Birds	522	5,1	30	1,3	42	2,6	24	0,8	11	0,6	10	1,4	639	3,3
Total	10,230	100	2,244	100	1,590	100	2,668	100	1,790	100	698	100	19,220	100

From Zeder and Arter (1994:109)

Table 3.5 Distribution of major domesticated contributors by phase in percentages.

Phase	Ovicaprid (sheep and Goat) % of total	Sheep:Goat	Bos (Cattle)	Sus (Pig)	Total Number of bones
4	72	1.85:1	13	15	9,270
5	60	2.20:1	19	21	2,091
6	76	2.62:1	17	7	1,460
7A	83	1.74:1	12	5	2,430
7B	88	2.16:1	7	5	1,698
8	84	3.11:1	8	8	636

From: Zeder (1994:110)

¹³⁶ The total number of identified bones are classified as domestic and wild animals. Since, in some cases it is not possible to distinguish between wild and domesticated species, no sub-totals are given in this table. The percentages of this table do not correlate to the other data sets. Zeder and Arter might have had difficulty in distinguishing the bones of the animals. Therefore, the numbers in this table slightly change relative to the other tables

Table 3.6 Proportion of Sheep and Goat¹³⁷

Phase	% Sheep	% Goat	Sheep : Goat	Total Number
4	65	35	1.85:1	1.302
5	69	31	2.20:1	302
6	72	28	2.62:1	181
7A	64	36	1.74:1	258
7B	68	32	2.16:1	253
8	76	24	3.11:1	74

From: Zeder (1994:112)

Table 3.7 Proportions of Ass and Horse

Phase	% Ass	% Horse	Ass: Horse	Total Number
4	50	50	1.00:1	154
5	39	61	0.64:1	23
6	56	44	1.25:1	9
7A	25	75	0.33:1	12
7B	11	89	0.13:1	9
8	60	40	1.50:1	5

From Zeder (1994:112)

Phase 7(7B and 7A)-Early Iron Age Period (1100-950?)

To this time period, (7B is the transitional phase from Late Bronze Age into the Early Iron Age), dates the immigration of new cultural groups. This is apparent in the archaeological records and ancient texts. According to Zeder and Arter, the increase in the number of horse bones suggests the arrival of new groups. However, equid bones cover only 1,4% of the total of identifiable bones. Therefore, it can not be considered as an indication of new comers. During this phase, the proportion of

¹³⁷ Not all the ovicaprids are identified as sheep and goat. In this table, the identified ones are included.

sheep relative to goats decreases in comparison to Phase 8.¹³⁸ This might show that the meat and hair of goat are preferred more than sheep products, or that the environment is more favorable to goats.¹³⁹ The appearance of deer bones indicates its consumption as a meat source.

Phase 6: Early Phrygian Period (950 -720? BC)

The analysis shows that, during this phase the proportion of the sheep increases and goats decrease. The increase in sheep might suggest its preference for its wool, since textile production is important in the economy of Gordion in this period. The decrease in the number of deer is coincidental with the decrease of juniper at that period.¹⁴⁰ The decrease in the forest habitat, favored by deer, might have effected the survival of this species.

Phase 5: Middle Phrygian Period (720?-550 BC.)

In this phase, the number of sheep and goat decreases. The number of pigs sharply increases relative to phase 6. In addition, deer decreases, and hare dramatically increases¹⁴¹. The number of birds considerably decreases. The continuous decrease in the number of deer bones might suggest a gradual decrease in the forested habitats preferred by deer.¹⁴²

¹³⁸ Zeder 1994, 11-12, the amount of sheep and goat might give information about the environment. Sheep prefers better pasture and need more water than goats. In addition, sheep provide more meat and wool while goats yield milk for a longer period of time and produce hair. Although, sheep and goat are hardly identified from one another, Zeder distinguished them using several bones

¹³⁹ However, the changes in the proportions of sheep and goat are not remarkable to make some assumptions.

¹⁴⁰ Zeder and Arter 1994, 110

¹⁴¹ It is not justified to talk about the wild animal meat supplement in the subsistence economy, since they cover only a small percentage of the diet.

¹⁴² Zeder and Arter 1992, 114

Phase 4: Late Phrygian Period (550 -330 BC)

In this period, the amount of sheep and goat increases. The birds cover a large amount of the sample (50% of the sample, including: ducks, geese and chickens).¹⁴³ Domesticated barnyard fowl is common. The chicken was domesticated in southeast Asia and the Middle East. It is present in Anatolia in the Late Bronze and Iron Ages.¹⁴⁴

3.3.4 Archaeobotanical Evidence

Archaeobotanical research enables archaeologists to evaluate archaeological findings in order to provide information about the life styles of ancient people and the past conditions of their environment.¹⁴⁵ Plant remains provide important evidence for past and present land use practices, diet, architecture as building material (such as roof beams) and trade.¹⁴⁶ In other words, this kind of research helps to understand the economy of ancient societies.¹⁴⁷

At Gordion, the archaeobotanical studies were started by Rodney Young. His team mainly collected construction material such as roof beams from the City Mound, food remains (charred seeds) from the Early Phrygian destruction level, wooden furniture and log structures from the Midas mound (700 BC.).¹⁴⁸ The systematic collecting of paleoethnobotanical sample, in stratigraphic sequence, was pursued in the course of the renewed excavations in 1988 and 1989. The archaeobotanical and ethnobotanical studies have been in progress since then, with the purpose of

¹⁴³ Zeder and Arter 1994, 112

¹⁴⁴ Zeder 1994, 113

¹⁴⁵ Aytuğ and Görcelioğlu 1994, 393

¹⁴⁶ Miller 1995, 91

¹⁴⁷ Miller 1991, 133

¹⁴⁸ De Vries 1975

reconstructing the ancient environment. They consider present plant diversity, cultural selection, differential burning and vagaries of preservation within the same region.¹⁴⁹

The present plant diversity around Gordion is examined by the ethnobotanical surveys of Miller. Unfortunately, her studies have not been published yet. On the other hand, her project of the preservation of biological diversity on the Midas Mound shows a variety of plants growing on the tumulus.¹⁵⁰ She identifies different types of plants affected by aspect and elevation of the slopes. It is significant to understand the physical factors in their growing. Her survey points the present distribution of the anti-pastoral types as a result of grazing on the lower slopes of the mound.

The samples for the archaeobotanical studies are taken from different archaeological contexts (fireplaces, storage pits, residential areas and trash deposits), and they include large quantities of seeds and charcoal. The material from the occupation debris belongs to the Late Bronze Age, Early Iron Age, Middle Phrygian and Medieval periods. Refuse material found in the pits comes from the Late Phrygian domestic and manufacturing contexts.¹⁵¹ Pits containing plant remains in occupation debris are from the Hellenistic and Early Phrygian period (elite quarter). The wood charcoal and seeds seem to come from burned dung and brush fuel. The analysis of charcoal and seeds enable the scholars to identify different types of fuels like wood, brush and dung.¹⁵²

The Preliminary analysis of pollen from soil samples from Gordion was done by Irene L. Good in 1990. The pollen samples obtained from refuse pits in the open

¹⁴⁹ Smart and Hoffman, 1988, 196

¹⁵⁰ Miller, 1999, 231

¹⁵¹ Miller, paper submitted to TÜ-BAR

¹⁵² Miller 1998

trenches of the 1989 field season show that the inhabitants of Gordion in the Late Bronze Age deforested and degraded the local vegetation.¹⁵³

Wood used as construction and furniture material

The wood charcoal that is recovered from building structures and furniture shows the cultural selection of timbers by ancient people. In the Early Iron Age, according to the charcoal obtained from the burnt building ("BRH" at phase 7), juniper is the predominantly used wood in structures (see Table 3.8). Besides juniper, smaller quantities of pine, oak, poplar, and other wood types used for structural material are to be found.¹⁵⁴ In the Early Phrygian Destruction level at Terrace Building 2A (during phase 6), in the working areas of the palace complex, pine appears to be the most abundant wood. The same timber was used also in the construction of an ordinary residence of the Hellenistic period. These examples show that the inhabitants of Gordion used the local wood such as juniper and black pine according to their availability close to the site. The present landscape of Gordion has juniper, oak and pine trees, though receded to a distance of 20-50 km.¹⁵⁵ Black pine and cedar are found at Hamidiye village, 68 kilometers from Gordion and into the Çatacık forest, 100 kilometers distant.¹⁵⁶

¹⁵³ Good 1990

¹⁵⁴ Miller 1999, 17

¹⁵⁵ Miller 1992

¹⁵⁶ Atalay 1985, 48

Table 3.8 Frequency of charcoal from Gordion burnt structures (% of samples containing a particular type)

	<u>BRH Structure</u>	<u>Terrace Building</u> <u>2A</u>	<u>"Abandoned Village"</u>
Phase	7	6	3
#samples	21	28	21
#pcs exam'd	169	140	202
Oak	14	7	52
Pine	48	96	95
Juniper	76	0	0
Conifer	5	0	0

From Miller (1999)

We can cite more accurate evidence for the regional plant cover from dendrochronological studies. The juniper pieces taken from the Midas Mound Tumulus yield a date of 757-737 BC?¹⁵⁷ The timbers found in the tumulus might have been reused, since their dates range considerably. For instance, the other samples taken from the burial chamber of the Mound are identified as Pine, Boxwood and Lebanon cedar and these timbers were cut in around 718 BC.¹⁵⁸ While the transportation of these timbers from far seems to be difficult, most are considered native to the area around Gordion. The only timbers that are transported from a long distance to be used in burial mounds are Lebanon cedar which grows near Afyon and boxwood in the Black Sea forests. This evidence strongly suggests that these rare types of imported timbers were used as a sign of high status.¹⁵⁹ It also demonstrates timber trade from the forests close to Gordion.¹⁶⁰

¹⁵⁷ Kuniholm and Striker 1982, 417

¹⁵⁸ Kuniholm 1996, 782

¹⁵⁹ Miller 1998

¹⁶⁰ Miller 1999, 18, lebanon cedar grows 100 km far away from Gordion near Afyon and Boxwood grows in Black Sea forests which are about 125 km far away from Gordion. The possible ancient routes passing by Gordion might also prove the timber trade

Wood used as fuel

Another evidence for the type of wood used in ancient times comes from the burned fuel found in settlement areas. As fuel wood is rarely transported from distant areas, represented species must have grown near Gordion, except for the possibility that structural timbers (such as juniper) may be recycled as firewood after the old buildings are dismantled. When the trees are cut down near the settlements, the woodland composition changes and people use other choices (brush wood and dung) among local trees and plants.¹⁶¹ A similar pattern of tree cutting is observed at Malyan in Southern Iran and at Kurban Höyük in southeastern Turkey.¹⁶²

The analysis of the relevant deposits, where juniper is absent, shows that this species was rarely used for fuel in the Early Phrygian period. It is reserved mainly for the construction of royal tombs.¹⁶³ This analysis also emphasizes a decline in the usage of juniper in comparison to oak in the Middle Phrygian period (see Table 3.9).¹⁶⁴ However, in the Late Bronze Age juniper was used as the first fuel wood relative to the later periods, since it was considered more beneficial than oak.¹⁶⁵ Furthermore, the large amount of pine in the fuel charcoal of the Early Phrygian period proves the decline of juniper. The rulers of the Phrygian state might have been able to support wood cutters in the pine forest during the Phrygian period, although it is not as close as the oak and juniper steppe-forest (according to Miller, this might also suggest a strong division of state-organized labor).¹⁶⁶ The increase in the number of secondary growth trees such as hawthorn, poplar, willow and tamarisk in

¹⁶¹ Miller 1984, 71

¹⁶² Martin 1984

¹⁶³ Miller 1998, 4

¹⁶⁴ Mc Govern 1995, 92

¹⁶⁵ Miller 1998, 4

¹⁶⁶ Miller 1998, 5

the Middle Phrygian period reveals that tree cutting gradually brought about changes in the composition of woodland around Gordion.¹⁶⁷

Table 3.9 Frequency of fuel remains from Gordion samples (% of samples containing a particular type)

	Late Bronze	Early Iron	Early Phrygian	Middle Phrygian	Late Phrygian	Hellenistic	Medieval
Phase	8/9	7	6	5	4	3	1
#samples	9	38	18	8	78	33	13
#pcs exam'd	50	162	110	52	528	232	69
Oak	11	36	28	87	64	76	46
Pine	33	53	94	37	63	55	85
Juniper	89	32	39	12	36	15	8
Conifer	0	11	11	0	10	3	

From Miller (1999)

Seeds and Charcoal

Seed and charcoal analysis may help to reconstruct ancient agriculture and reflect the fuel choice of ancient people. It also enables us to make environmental interpretations.¹⁶⁸

The Gordion seed analysis, obtained by flotation, suggest that most of the seeds originate from non-tree fuel sources. The patterns of fuel consumption might affect the measures of cultigens, wild plants and anti-pastoral species in the seed and charcoal assemblages.¹⁶⁹ Therefore, the ratio of seed to charcoal obtained from Gordion may show the relative importance of dung and wood as fuel. On the other hand, the increase in the amount of anti-pastoral types of plants which are not eaten by animals such as wild rue (*Peganum harmala*) and camel thorn (*Alhagi camelorum*) are less likely to be used as evidence for dung fuel. They are probably the remains of

¹⁶⁷ Miller 1998, 5

¹⁶⁸ Smart and Hoffman 1988, 172

¹⁶⁹ Miller 1999, 20

brush fuel.¹⁷⁰ The fewer appearance of wild plants and anti-pastoral species in the Early Phrygian deposits might suggest that wood (oak and pine) was used as fuel more than dung and brush. However, the presence of tree species in charcoal assemblages of the later periods implies that wood continued to be used as fuel. Moreover, trees remained significant in the economy of the site in spite of their gradual decrease until the Medieval period.¹⁷¹

The seed remains of cultivated plants from burnt buildings provide evidence for the agricultural activities at Gordion. The majority of the remains are cereals such as the seed and rachis fragments of barley, bread wheat and einkorn. Small piles of 6-row barley, bread wheat and bitter vetch were found in an Early Iron Age burnt house.¹⁷² The evidence for the cultivation of 6-row barley may illustrate the drinking habits of the Phrygians as it was used for making beer. Also, the great quantities of charred grain, grinders and ovens found in the buildings suggest large-scale beer production besides bread.¹⁷³ In addition, the flax seeds and loomweights found in the Destruction level can be considered together as evidence for cloth manufacture.¹⁷⁴

Future progress in archaeobotanical studies at Gordion will give more information about the land use of the ancient people and the changing patterns on the landscape.

¹⁷⁰ Miller 1999, 21, Miller tells that herbivores might eat wild rue and camel thorn seeds while they are dry. However, they are not abundant in the seed analysis

¹⁷¹ Miller 1999, 21

¹⁷² Sams 1977, 110

¹⁷³ Sams 1977, 110

¹⁷⁴ Miller 1992

3.3.5 Summary of archaeological, zoological and botanical evidence

Phase 7(7B and 7A)-Early Iron Age Period (1100-950?BC)

This phase shows discontinuity in architectural technique and building plans relative to phase 8. The buildings are subterranean and used as dwellings. New ceramic types such as EIAH and EIA buff ware appear, and they do not reveal any similarities with the earlier phases. The absence of mass production suggests low population density and a simple economy. The faunal remains point out an increase in the number of horse bones at the beginning of this phase. This is considered as a new population movement at the site. The increase in the number of wild species particularly deer might indicate a cultural preference of deer as a diet, a meat supplement, or a social attribute to hunting activities. The charcoal evidence obtained from BRH building shows that juniper is predominantly used wood in structures. However, to obtain fuel, Early Iron Age people preferred pine relative to juniper and oak. The seed samples taken from the same building reveals that the main cultivated cereals were barley, bread wheat and einkorn.

Phase 6: Early Phrygian Period (950 -720? BC)

The striking indicators of this phase are the formal and monumental buildings. During this time, Gordion is known as a capital and a regional center. The mass production and standardization of pottery point to a large scale production. The service areas of the palace complex are used for weaving, grinding and baking. The weaving process is significant in this phase. It reveals textile production, and a long range exchange. In this phase, sheep increases relative to goat. Few wild animals are visible such as hare, deer and bird species . The presence of hare, deer and birds

manifests hunting activities at the site. For instance, the incised drawings found on the surface of the walls in Megaron 2 from the Early Phrygian period represent narrative scenes of the Phrygian wild life.¹⁷⁵ The drawings illustrate men participated in hunting (a hunter is shown bagging a hare)(see fig 3.9).¹⁷⁶ Among the drawings, we see also lions, birds, and chickens. Other examples depict also wild and tame animals, such as running horses, bearded billy-goats and deer (see Fig 3.10).¹⁷⁷ The depiction of these animals are also seen on the Gordion hatched animal style pottery from the 8 th century BC.

The low amount of deer bones suggests a decrease in forest habitat. Cattle decreases, and its low frequency implies less ploughing as it is mostly used for traction. Botanical results reveal that pine is abundant, and highly used in the construction of burial chambers. Its transportation from pine forests distant from Gordion suggests a state organized labour. The presence of Boxwood (Black Sea forests) and Lebanon (from Afyon) cedar in the tumuli suggests both a long-distance transportation and timber trade. The flax seeds found in the destruction level point to cloth manufacture, and charred grain and barley suggest bread and beer production. In addition, the less amount of wild plants and anti-pastoral species in seed analysis illustrate that pine and oak were used as fuel more than dung.

¹⁷⁵ Roller 1999, 145

¹⁷⁶ Roller 1999, 148; a similar drawing is found on an orthostat block from Iron Age levels at Kültepe in Central Anatolia It is a neo-Hittite prototype like the drawings of the lions

¹⁷⁷ Roller 1999, 145

Phase 5: Middle Phrygian Period (720?-550 BC)

During this time, the citadel mound extends towards its west, south and north directions. The western part of the mound is occupied by the merchants or minor officials. In the north, Küçük Höyük is used as a Phrygian fortification system. In the lower town, the buildings are both used for residential and industrial purposes. There are small amounts of imported wares (Greek, Lydian, East-Greek, West Anatolian). The standardization and mass production of pottery continue. The number of sheep and goat bones decreases. Oak is used more than pine and juniper to obtain fuel. The decline of juniper starting from the Early Phrygian period shows that the gradual increase of tree cutting brings changes in the composition of woodland around Gordion. The seed assemblage does not provide any evidence for this phase.

Phase 4: Late Phrygian Period (550 -330 BC)

The presence of a Persian administrative building on the Citadel Mound proves the rule of the Achaemenid empire. In this phase, Gordion loses its political power, and becomes a minor center. However, it continues to be a market center. Most of the areas excavated, are identified as workshops used for manufacturing luxury items in materials such as bone, ivory and alabaster. There is an increase in long distance trade, evident in the imported pottery assemblage. Many Greek, Lydian and Persian wares are to be found. Sheep and goats increase and birds cover a large part of the faunal assemblage. The charcoal evidence indicates that the secondary riverine trees are used as fuel more than oak, pine and juniper.



Fig 3.9 From Roller 1999b

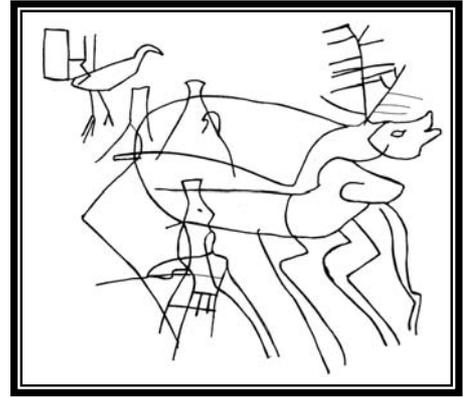


Fig 3.10 From Roller 1999b

3.4 Ethnoarchaeology

In recent years, archaeologists, archaeozoologists and archaeobotanists have been increasingly studying the material cultures of living societies.¹⁷⁸ The purpose of this study is to find answers to archaeological questions, using the ethnographic data.¹⁷⁹ The ethnographic data furnishes a creative idea for the interpretation of archaeological evidence.¹⁸⁰ However, the evidence collected from ethnoarchaeological researches is accepted as an indirect approach in interpreting past societies. In the Middle East, ethnographic data have been collected from modern village communities for years, but it is hardly used in defining a relationship between architectural features and the social-economic situation of society.¹⁸¹

In Turkey, early and preliminary ethnoarchaeological research was done at Uslu in the district of Elazığ¹⁸², the Aşvan project also in Elazığ¹⁸³ and at Caferhöyük in the district of Malatya as well as at Gordion.¹⁸⁴ The ethnoarchaeological research

¹⁷⁸ Eddy 1984, 25

¹⁷⁹ Hodder 1986, 104

¹⁸⁰ Watson 1979, 5

¹⁸¹ Gürsan-Salzman 1997, 26

¹⁸² Angle and Dattarelli 1989, 405-24

¹⁸³ Payne 1973, 281-303

¹⁸⁴ Aurenche and Calley 1984, 122-9

begun in 1994 by Gürsan-Salzman at Yassihöyük region near Gordion is ongoing. Her work aims at understanding the processes underlying the ancient economy in the region of Gordion. Documenting changes in landuse, agricultural and pastoral systems from the pre-mechanized era (prior to 1950's) to the present, encompasses surveys in area of C. 500 km² in the Sakarya drainage and upland. Prior to Salzman's research, an ethnographic study of Yassihöyük was done by Middle East Technical University in 1960, published in 1965. In this section, this source is not used as an evidence.

3.4.1 Yassihöyük and its economic organization

Yassihöyük village covers an area of nearly 2500 hectares with a population of 412 people, and 80 households.¹⁸⁵ The economic base of the village is primarily mixed with some farming and herding. The key agricultural crops are wheat and barley. Melon, sugar beet and onion have been grown as cash crops in the last two decades. The location of the village near the Sakarya river allows access to good arable land for the crops. However, in the last 80-90 years, there has been much erosion as a result of land clearance and grazing which degraded the landscape.¹⁸⁶ The mixed farming strategy, and the diversification of crops reduces, in part, the farmers' risk. Besides, in some villages like at Yeni Köseler, 15 km away from Yassihöyük, the mixed farming strategy also depends on exchanging certain crops and animal by-products with others.¹⁸⁷ According to Gürsan-Salzman, a specialized type of transhumance is practiced at villages in upper lands such as Yeni Köseler (non-milking sheep are taken to grazing areas in the upland pastures during 10 months of the year, while milking sheep stay in the village and graze nearby). In this way, herds

¹⁸⁵ Gürsan-Salzman 1997, 26

¹⁸⁶ Miller pers.comm

are fed a wider range of food resources, or they are all exchanged for other crops and animals, while some of them are sold.

3.4.2 Domestic Architecture at Yassihöyük

Yassihöyük houses are complex dwellings made of mudbrick. This type of house with a large courtyard surrounded by a stone or mudbrick wall is common in most Middle Eastern villages.¹⁸⁸ Salzmänn examined different sized courtyards which have four main installations: a rectangular roofed house, cooking facilities, storage rooms and animal pens.¹⁸⁹ The architecture of Yassihöyük dwellings gives information about the social and economic life of the people. Villagers use their courtyards for various activities especially in summer months. There, they bake bread, dry fruits and vegetables, prepare food such as pasta, wheat starch, vinegar and tomato paste, boil bulgur in large cauldrons on portable hearths, shear and wash the wool and cut mudbricks and prepare plaster with white wash. When they finish preparing the food for winter storage, they keep it in basement storage room in glass or plastic containers.¹⁹⁰ Villagers also make dung cakes to use as fuel and dry them in the courtyard using cooking facilities like the hearth, oven and tandır house, each of which has a different function related to the type of food, prepared in them.¹⁹¹ The function of other structures in the courtyards changes according to the relative importance of the herding and agriculture practised by the household, or the size of sheepfolds and cereal storage rooms located in the courtyards. One can identify the

¹⁸⁷ Gürsan-Salzmänn, pers.comm

¹⁸⁸ Horne 1991, 49

¹⁸⁹ Gürsan-Salzmänn 1997, 28

¹⁹⁰ Gürsan-Salzmänn 1997, 29

¹⁹¹ Gürsan-Salzmänn 1997, 29

function of these structures by examining food remains, consumed goods and related tools.

3.4.3 Archaeological Implications

The ethnoarchaeological evidence at Yassıhöyük can be partly used as a modern analogue to interpret the archaeological evidence. The traditional life in the village (even though it is changing at a fast rate) can be a good source of ethnographic data.

The empirical observation of archaeological evidence might enable us to do a comparison between present and past life at Gordion. The historical continuity could be illustrated by several lines of archaeological evidence. The animal bones found in archaeological deposits show that the main animals at Gordion were sheep and goat, the same as the present economic base of the village. The archaeobotanical results reveal the use of dung cakes as fuel in ancient times. Besides, although very few botanical results have been published, there is a good evidence for the cultivation of cereals such as wheat and barley. That also suggests a mixed herding and agricultural strategy in antiquity, similar to the one which forms the present economy. The architecture of the houses with courtyards is similar to the Early Phrygian Courtyards in the elite quarter of the City Mound. The courtyards of the ancient were not used for domestic purposes but features and installations like hearths, pits and hard-packed surfaces indicate the occupation areas of the formal building. Building materials like mud-plaster, stone and wood found in excavated houses show that similar techniques are used in today's village houses at Yassıhöyük.

Although, these analogies may be not used as direct evidence between the past and present at Gordion. However, the ethnoarchaeological model, when completed, would enable us to use it to answer questions relevant to the ancient economy and settlement pattern.

3.3.4 Ethnohistorical information

The ethnohistorical evidence is obtained from the 19th century travellers in Asia Minor.

19th century travellers in Asia Minor

In the 19th century, several travellers from England, Germany and France came to Turkey. They were aware of the historical and archaeological wealth of the country from the ancient written sources. They took very detailed notes giving information about the local people, their life style, the environment and the undiscovered ancient sites mentioned in historical texts. As their visits were done before modern life arrived to Turkey, their observations are considered as useful ethnohistorical data.

The travellers who passed through Central Turkey give information about agriculture and animal herding. Hamilton in his research of Asia Minor, observed the extensive pastures of the Turcoman tribes on the banks of the Sakarya river.¹⁹² He also mentioned manufacture and export of large quantities of textiles such as the silky hair of angora goats.¹⁹³ Lennep in his travels around Sivrihisar saw many angora goats mixed with sheep. A shepherd told him that “Goats give better and more wool when they are fed solely on grass, but have also the leaves of trees as schrub oak and

¹⁹² Hamilton 1842, 434

¹⁹³ Hamilton 1842, 418

willow".¹⁹⁴ Kinneir who travelled earlier than Hamilton, also talks about the Turcoman tribes who grazed their flocks on the rich pastures of the Sakarya river around Gordion and Pessinus.¹⁹⁵ The Turcomans rely on their flocks . They buy corn and other necessities by selling their houses, sheep and oxen.¹⁹⁶ For that reason, they raise considerable quantities of animals to reduce risk.

According to the 19th century travel documents, besides herding, agricultural activities were also remarkable. Barkley mentions the importance of the grain market by comparing it with the fertile provinces of the Danube.¹⁹⁷ He states that the Sakarya and Kızılırmak rivers are sources of wealth for Turkey since the soil is rich and it gets enough water to produce great quantities of cereals which makes valleys rich.¹⁹⁸ Texier wrote about the agricultural work at Gordion and the rich vineyards in the area.¹⁹⁹ Even in the 12th–13th centuries, the growth of commerce was based on wheat farming in Central Turkey.²⁰⁰ The situation was not different in the 4th century BC, when Alexander the Great chose Gordion for his winter quarter with an army of 35,000 men. According to Frederick Starr, one of the reasons of Alexander's selection of this area was its richness in wheat and its convenience to feed his army.²⁰¹ The same situation was seen during the Roman Empire when the agricultural regime was based on dry cereal farming and the raising of sheep and cattle; this regime started during the Republican period (2nd century B.C.) when the Roman mobile armies were supplied with food.²⁰²

¹⁹⁴ Lennep 1870, 194

¹⁹⁵ Kinneir 1818, 50

¹⁹⁶ Kinneir 1818, 158

¹⁹⁷ Barkley 1891, 129

¹⁹⁸ Barkley 1891, 128

¹⁹⁹ Texier 1862, 415

²⁰⁰ Travels Marco Polo 1953, Book I, Ch 2, 21

²⁰¹ Starr 1962, 13

²⁰² Mitchell 1993, 230

3.3.5 Summary

Since, the ethnoarchaeological study has not been completed and published, we do not have much information about the present land-use of Yassihöyük. However, the preliminary studies have showed that there is still transhumant activity in the area. This is significant to understand the agricultural strategy of present rural life. Coupled with that, studying the economy and settlement patterns of West and Central Anatolia during the Early Ottoman Period might be used as a model to understand the ancient economy. Furthermore, we are also aware of the fact that the pastoral activities in the rural life of Central Anatolia have been practiced since the Neolithic period, and transhumance is done repeatedly to reduce the risk of economy in mixed farming communities, particularly in the regions where semi-continental climate prevails.²⁰³

²⁰³ Yakar 2000, 192

CHAPTER 4: KALEHÖYÜK

This chapter reviews Kalehöyük in its environmental setting, using geomorphological research, land distribution analysis, archaeological and archaeozoological evidence. It must be noted that most of the available data used in this section is still at its preliminary analytical stage relative to the study of Gordion.

4.1. Environmental Setting

The site and its location

Kalehöyük is located in Kırşehir province in the center of Central Anatolia, only three kilometers east of Kaman, beyond the Kızılırmak.²⁰⁴ Kalehöyük is a large trapezoidal mound with a diameter of 280 metres at its base; its height is 16 meters above ground.²⁰⁵ Its distance to Gordion is nearly 150 kilometers. It is very close to other Phrygian sites such as Boğazköy, Alacahöyük, Kalehisar and Pazarlı.²⁰⁶ It is situated on an old Ottoman caravan road (göç yolu) linking Kaman to Cappadocia.²⁰⁷

The area around Kalehöyük is a typical Central Anatolian plateau at about 1000-1500 meters above sea level, and the mound is at an elevation of 1069 meters. The region consists of bare uplands and sloping hillsides. The highest peak in the vicinity of Kalehöyük is the Baran Mountain Range, which rises behind Çağırkan village to the south of the site. The water supply is obtained from the springs close to

²⁰⁴ Hongo 1997, 275

²⁰⁵ Mikami and Omura 1991, 64

²⁰⁶ Huber 1995, 183

²⁰⁷ Hongo 1996, 5

the site.²⁰⁸ The topography of the area shows hills, flat plains and valleys. Today, the vicinity of the site is cultivated by the inhabitants of Çağırkan village, located 2 kilometers to the south.²⁰⁹ According to pollen analyses made around the site, the area became deforested by the second millennium BC.²¹⁰ Today, the only trees close to the site grow by stream beds. The area is characterized by the typical Central Anatolian climate. It is dry with average annual rain fall of 400 millimeters, above the level of sufficiency for dry farming.²¹¹

4.1.1 Geomorphological Research

The regional and local geomorphological surveys at Kalehöyük are combined with geophysical studies to clarify changes in the occupation phases, landscape and soil types of the city area. However, the evidence obtained from the surveys can be presented in this section only in general outline as the studies are still preliminary.

The geomorphological studies started in 1997 with the objective of investigating geomorphological evolution and climatic change during the Late Quaternary of the Aksaray area.²¹² In 1998, the survey results were evaluated in relation to the excavation of Kalehöyük. Research demonstrates that the pediments, fans and terraces around the site have been formed as a result of processes related to climatic changes in the Late Quaternary period.²¹³ Coupled with that, an active fault scarp which was formed by an earthquake during the same time period, was investigated near Kalehöyük.²¹⁴

²⁰⁹ Hongo 1996, 4

²⁰⁹ Mikami and Omura, 1986 65

²¹⁰ Hongo 1997, 4

²¹¹ Hongo 1997, 4

²¹² Kashima and Sayhan 1998, 227

²¹³ Kashima and Sayhan 1998, 227

²¹⁴ Kashima and Sayhan 1999, 239

A preliminary geomorphological research also started on the south-east slopes of Mt. Tama (south-west of Kalehöyük), the north slopes of Mt. Bozçal (east of Kalehöyük) and the drainage area of the Darıözü river (north of Kalehöyük).²¹⁵ The results related to climatic changes during the Late Quaternary, reveal pediments and active fault scarps on the south-eastern slopes of Mt. Tama, alluvial fans on the northern slopes of Mt. Bozçal, and river terraces and valley fill deposits in the drainage area of the Darıözü river.²¹⁶

4.1.2 Land Distribution Analysis

Since the geomorphological studies are preliminary, and the physical conditions of the site are not much studied, the only information about land use is obtained in part from geomorphological analysis and regional survey, and in part by an examination of regional topographical and soil maps at a 1:100,000 scale (see 4.1).

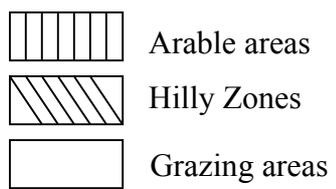
The contour map prepared within a 10 km radius of the site shows its environmental setting at an altitude above 1000 meters (see Fig 4.2). The altitude in an area covering 314 km² changes between 1000 and 1500 m, and the altitude of the arable areas varies between 1000 and 1250 meters, most of which lay below 1150 meters. There are vineyards in the vicinity of Kaman, Çağırkan, Başköy, Darıözüköyü, Müderris and Hacılar. To the west of Kalehöyük, the Darıözü river with its tributaries waters the area. The Darıözü river might have been flowing closer to the site in the past, and its shift away from the site suggests a reason for its abandonment in the Hellenistic period. In addition, there are several mountain springs and wells. The valleys along the Darıözü river are very narrow, and subjected to erosion;

²¹⁵ Kashima and Sayhan 1999, 240-42

²¹⁶ Kashima and Sayhan 1999, 241-45



Fig 4.1



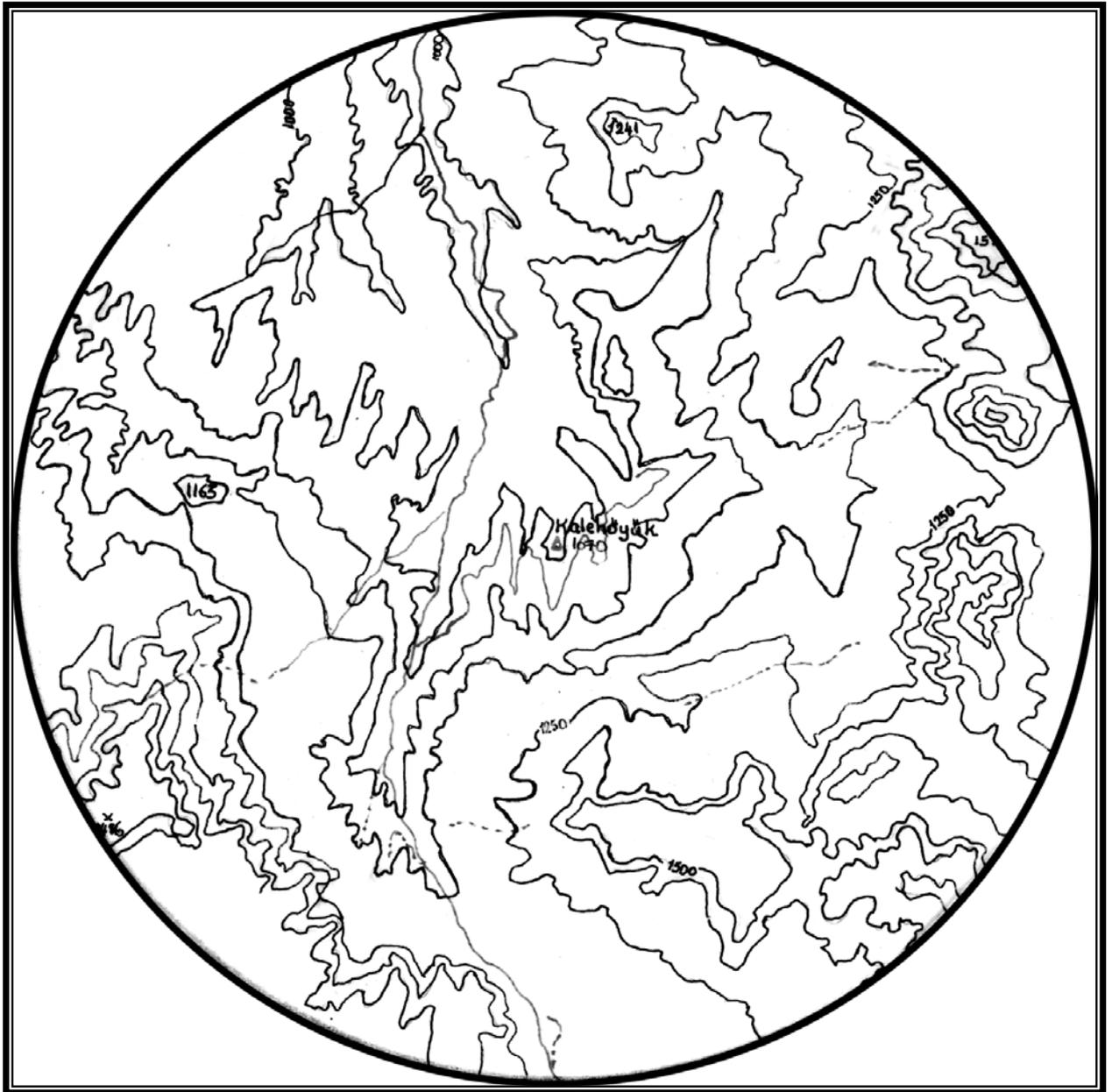


Fig 4.2

cultivation is done nevertheless partly in the drainage area of the river Dariözü²¹⁷ and on the slopes of the mountains. During the geomorphological studies, numerous pediments, fans and terraces were investigated in the vicinity of the site.²¹⁸ The discovery of fans containing alluvial deposits and pediments is significant, since several are used for cultivation. The present day land use is roughly illustrated in Table 4.1.

Table 4.1

Kalehöyük	Arable land	Hilly zones	Grazing areas
km²	62	72	180
%	19	24	57

The hilly zones, and the areas used for cultivation and grazing are given in percentages and square kilometers over an area of 314 km². The livestock kept today in the lower parts of the hilly zones reveals daily herding activities. The amount of arable lands and grazing areas have probably changed since the Early Bronze Age. If we consider that the people of Kalehöyük used the vicinity of the site for cultivation and herding, the amount of the grazing areas should have increased through time as a result of the degradation of soil. 57% of the area consists in lands appropriate for grazing; this, combined with the 24% share of hilly zones (even less available to exploitation), shows clearly that the environment allows more herding than cultivation. This might have been significant when we think about the population increase in ancient times, in order to reduce the risk, the ancient inhabitants might

²¹⁷ Kashima 1999, 242; There are three levels of river terraces (Upper, Middle and Lower) in the drainage of the Dariözü river. Kalehöyük is located at the edge of the lowest terrace

²¹⁸ Kashima 1999, 245

have given more importance to herding. Therefore, the grazing areas should not only suggest an environmental deterioration, but also a strategy of a mixed-economy.

The regional survey of Kalehöyük illustrates that most of the settlements are located in the north, north-east, south and southwest of the site (see Fig 2.6). The hilly area above 1500 m to the south-east of the site did not permit habitation. However, in the uplands below 1300m , eight mounds were found. These sites might have played a role in the ancient transhumant activities. The absence of mounds in the west and north-west of Kalehöyük might result from their burial under the sediments deposited by the Kızılırmak river, or their destruction through erosion.

4.2 History of Excavation

The first excavation at Kaman-Kalehöyük sponsored by the Middle Eastern Culture Center in Japan, started in 1986. The site has been excavated under the direction of Dr. Sachihiko Omura since 1989. The excavations were conducted in the North and South sectors of the mound.²¹⁹ The stratigraphic sequence encompasses three cultural phases²²⁰: The Medieval period, Iron Age (Phrygian) and Middle to Late Bronze Ages (Assyrian Colony Period and Early Hittite) (see Table 4.2).²²¹ The elucidation of the stratigraphic sequence is believed to be a significant contribution to the cultural chronology of Central Anatolia. The strategic location of Kalehöyük in the bend of the Kızılırmak River, provides remarkable material evidence of Iron Age Cultures in Central Anatolia.²²²

²¹⁹ Hongo 1996 6

²²⁰ Hongo 1997, 240

²²¹ Huber 1995, 185

²²² Hongo 1996, 8

4.3 Architecture, Stratigraphy and Ceramic Evidence

The Iron Age is divided into four separate building and ceramic phases: II d, II c, II b and II a. This sequence extends from the 12th to the 4th century BC. ²²³

Table. 4.2 Periodisation at Kalehöyük

Phase	Architectural levels	Date	
Phase I			
I A	1-1, 2	16 th -17 th c. AD and later?	Ottoman period
I B	1-3, 4	16 th -17 th c. (or earlier?)	Hiatus
Phase II Iron Age			
II A	II-1-7	Mid. 7 th -4 th c. B.C	Achaemenid?
II B	II-8,9	mid. 7 th c. B.C	
II C	II-10, 11	8 th -mid. 7 th c. B.C burning in upper levels of II D	
II D	(II-12-16) II-12-19	12 th -early 8 th (?) c. B.C	
Phase III Late Bronze Age			
III A	III-1, 2	ca 1450-1180 B.C	Hittite Empire?
III B	III-3, 4	ca 1650-1500 B.C	Old Hittite
Middle Bronze Age III C	III-5 -12	Ca 1950-1780 B.C	Burning (destruction ?) Assyrian Colony
Early Bronze/ Middle Bronze Age III D	III-13	ca 2000 B.C	

From: Hongo (1998)

²²³ Hongo 1997, 276

Subphase II d (12th-early 8th BC ?)

In this subphase, the one-room houses are rectangular in plan. Many of them are built at ground level with upper structures supported by wooden columns. They are also characterized by pillar holes in the floor. One room structures are also found at Gordion in the Late Bronze Age. Omura suggests that the architectural plan of this phase shows an influence from the west, while its painted pottery is influenced from the south of the Kızılırmak River.²²⁴ This pottery is considered to be related to the Early Iron Age Hand made ware (EIAH) at Gordion, and to the Knobbed Ware from Troy VIIb-2 dated to 1160-1100.²²⁵

Subphase II c (Early Iron Age 8th and mid 7th BC)

During this subphase, the site is fortified, and single and multi room buildings with subterranean structures are common. New types of painted and hand-made pottery are produced.²²⁶ The shapes of pottery continue to be the same, however, new decorative motifs such as the circle, meander, and hatched designs are used.²²⁷ Alişar IV type painted pottery known as Early Phrygian pottery (it is characterized by black brown decoration on light background, and by highly stylized deer and goat figures with narrow necks and legs) is typical for this phase at Kalehöyük and to the east and south-east of the Kızılırmak River.²²⁸ This regional influence shows itself particularly on painted Early Phrygian pottery²²⁹, and similar painted pottery dated to the late 8th and early 7th centuries BC. is also found at Gordion.²³⁰ In fact, the painted pottery called "Early Phrygian painted pottery" has strong eastern influence, and in subphase

²²⁴ Omura 1999, 220

²²⁵ Hongo 1996, 24

²²⁶ Hongo 1996, 26

²²⁷ Hongo 1996, 31

²²⁸ Hongo 1996, 31

²²⁹ Hongo 1996, 28

²³⁰ Hongo 1996, 28

IIC, carries an earlier tradition which belongs to the Early Iron Age of the eastern Anatolian Plateau.

Subphase IIb (Middle/Late Iron Age mid 7th BC)

During this time, the houses are all dug into the ground to a depth of about 1.5 meters (semi subterranean in rectangular plan).²³¹ However, the orientation of the houses shows differences from IID, IIC and IIA. Red painted wares start to replace the previous style of phase IIC, and the type and number of Iron artifacts increase, among which, Phrygian, Syrian, East Anatolian and West Anatolian type of fibulae, as well as Scythian and a few Kimmerian type winged arrowheads are to be found. Large amounts of Gray Ware, which is also discovered in the west, south-west and in the bend of the Kızılırmak river, are found in this stratum.²³²

Subphase IIA (Late Iron Age and the Achaemenid Period ? mid 7th and 4th BC)

During this phase, buildings with multi-room structures are excavated. The area of the site extends, and one- room structures are no longer used as in IID, IIC and IIb levels.²³³ There is an increase in the quality of pottery in comparison to the previous subphases. Painted plates start to be used (as table wares) for the first time.²³⁴ The motifs painted on pottery include human figures, besides the animal ones. Western Anatolian type pottery , known as Gray Ware, is also present illustrating contact or similarities with the Phrygians. Hearths and molds are found in the rooms, and they are considered as evidence for local fibula production in the workshops of

²³¹ Hongo 1996, 31

²³² Hongo 1996, 32

²³³ Omura 2000, 330

²³⁴ Hongo 1996, 33

Kalehöyük.²³⁵ The Phrygian fibulae and the other small finds collected in this level also suggest the continuous influence of the Phrygians at the beginning of phase IIa.²³⁶ In addition, the black Greek pottery sherds suggest contact with the west. Finally, the remains of Persian artifacts reflect the rule of the Achaemenids in the region after the mid-6th century BC.²³⁷

4.4 Archaeozoological Evidence

Faunal remains collected during the excavations, have been analysed on the basis of the stratigraphic sequence of the site (see Table 4.4).²³⁸ A total of 26,900 bone fragments were excavated, and 7,375 of them are identified to the species using the NISP analysis (Number of Identified Specimen). In addition, the identification of animal bones are done according to the range of identified taxa, butchery techniques, change in body size, kill-off patterns and their changes at different time periods.²³⁹ Bones of domestic animals cover 95% of the total number of identified fragments, both by numbers and bone weight (see numbers in Table 4.3). The analysis of bone weight shows meat supply.²⁴⁰ The faunal remains following the stratigraphy of the Iron Age, starting with the Late Bronze age level are presented below:

²³⁵ Hongo 1996, 34

²³⁶ Hongo 1997, 278

²³⁷ Hongo 1996, 34

²³⁸ Hongo 1997, 278

²³⁹ Hongo 1996, 59. It is unfortunate that such detailed data are not also available from Gordion, when the kill-off patterns, butchery techniques and change in body size of the animals are not available

²⁴⁰ Hongo 1996, 59

Table 4.3 Summary of Identified Fragments by Subphase (corrected for multiple specimens from a single individual

NISP

Domestic	IIIa	%	IId	%	IIC	%	IIf	%	IIa	%	Total	%
Bos	192	19.9	131	16.9	160	16.3	79	10.8	245	16.4	615	12.4
Sus	158	16.4	127	16.4	184	18.7	83	11.3	324	21.5	718	14.5
Ovis	56	5.8	49	6.3	86	8.7	69	9.4	91	6.0	295	6.0
Capra	18	1.9	34	4.4	34	3.5	29	4.0	82	5.4	179	3.6
Ovis/Capra	466	48.4	367	47.4	465	47.2	399	54.5	621	41.2	1852	37.5
Equids	22	2.3	8	1.0	7	0.7	10	1.4	16	1.1	41	0.8
Canis	15	1.6	20	2.6	27	2.7	8	1.1	48	3.2	103	2.1
Birds	0	0.0	0	0.0	0	0.0	0	0.0	2	0.1	2	0.0
Sub-total	927	96.3	736	95.1	963	98.1	677	92.25	1429	95.6	4732	95.7
Wild												
Sus	0	0.0	3	0.4	5	0.5	2	0.3	2	0.1	12	0.2
Ovis/Capra	1	0.1	1	0.1	1	0.1	8	1.1	1	0.1	11	0.2
Cervus	3	0.3	10	1.3	3	0.3	1	0.1	1	0.1	15	0.3
Carnivores	20	2.1	10	1.3	3	0.3	5	0.7	4	0.3	22	0.4
Lepus	7	0.7	3	0.4	7	0.7	32	4.4	55	3.7	97	2.0
Other	5	0.5	11	1.4	3	0.3	7	1.0	14	0.9	20	0.4
Sub-total	36	3.7	38	4.9	19	1.9	55	7.5	65	4.4	213	4.3
Total	963	100	774	100	985	100	732	100	1506	100	4945	100.0

Adapted from Hongo (1996)

Subphase IId (12th-early 8th BC ?)

In this phase, the ratio of sheep to goat decreases relative to IIIa (Late Bronze Age), but sheep and goat still cover nearly 48% of the total fragments. The decrease in the number of the sheep suggests poor environmental conditions, which are not tolerated by sheep, or it puts forth the importance of goat products (hair and milk) at that time.²⁴¹ A similar pattern of change in sheep to goat ratios is also observed in phases 7B-7A (Early Iron Age) at Gordion, which are roughly contemporary with subphase IId at Kalehöyük.²⁴² Besides, the kill-off patterns of the samples show that slaughtering happened at adult stage, and this might reflect an increase in wool

²⁴¹ Hongo 1997, 253

²⁴² Hongo 1997, 245

production during the Early Iron Age.²⁴³ The number of cattle and pig are roughly the same. 17% of the total number covers cattle and it might suggest that this animal is used for traction and ploughing. 4.9% of the total assemblage include wild animals. Their number is very small compared with the number of domestic animals. However, it shows that Kalehöyük people hunted. This might point out a need for a meat supplement.²⁴⁴ In addition, the number of horse bones decreases dramatically relative to IIIa.

Subphase IIc (Early Iron Age 8th and mid 7th BC)

Faunal remains in subphase IIc resume generally the same patterns as those of IIId. However, the ratio of sheep to goat increases. The total increase in sheep and goat ratios and in the number of slaughtered adult animals implies that these animals are herded for milk and wool rather than meat.²⁴⁵ The economy of this phase is agro-pastoral, based on sheep and goat herding. 35% of the assemblage covers cattle and pig. Their number remains nearly the same relative to IIId. Cattle is used for cultivation, whereas pigs are kept in the households.²⁴⁶ The wild animals are rare.²⁴⁷

Subphase IIb (Middle/Late Iron Age mid 7th BC)

The ratio of sheep and goat relative to cattle and pig increases dramatically, and this suggests a shift or preference in herding practices.²⁴⁸ Herding might have become more important than cultivation. It might be also related to a warmer and

²⁴³ Hongo 1997, 248

²⁴⁴ Hongo 1997, 245

²⁴⁵ Hongo 1997, 253

²⁴⁶ Hongo 1998, 271

²⁴⁷ It is very difficult to identify the wild animals from the domestic ones, since their bones are found in such small numbers.

²⁴⁸ Hongo 1996, 91

dryer climate as pigs and cattle prefer wetter climate rather than the dry one.²⁴⁹ There is also an increase in the number and variety of wild species such as wild boar, sheep, goat, red deer, small and large carnivores and several species of birds relative to earlier phases.²⁵⁰ People might have preferred them as meat supplement. Yet, the numbers are still very small to support these assumptions. In addition, the increase in the number of horses suggests the appearance of a mobile population dependent on long-distance transportation.²⁵¹

Subphase IIa (Late Iron Age and the Achaemenid Period ? mid 7th and 4th BC)

This phase shows patterns similar to subphase IIc. However, there was an increase in the proportion of pigs and bird species; This indicates tendencies similar to the Late Iron Age levels at Gordion.²⁵² An increase in the size of domestic animals (sheep, goat and cattle) and the kill-off patterns both at adult and old stage suggest that these animals were kept for milk primarily, then for their meat. Besides, the preference of larger size of animals and their herding in large numbers might emphasize a higher status, since, the herds are often owned by ruling elites.²⁵³

4.5 Summary

Hongo believes that Kalehöyük was a rural village with a subsistence economy based on sheep-goat herding and agriculture.²⁵⁴ Kalehöyük shows a continuous occupation and this enables one to observe the stylistic changes in material culture

²⁴⁹ Hongo 1997, 246

²⁵⁰ Hongo 1996, 92

²⁵¹ Hongo 1997, 254

²⁵² Hongo 1997, 255

²⁵³ Hongo 1997, 255

²⁵⁴ Hongo 1996, 156

through time²⁵⁵, there is no destruction level after the collapse of the Hittite empire like at other major sites such as Hattuša, Alishar, and Alacahöyük.²⁵⁶ However, there are burnt levels. The architectural and pottery evidence obtained from the site are not sufficient to give strong comments on the social, political and economic life of Kalehöyük. However, the faunal remains give rough information on the socio-cultural life of the site in the Iron Age. The faunal remains also reflect the site as a small town with its economy based mainly on herding and agriculture. The changes in the ratio and size of the animals show slight variations between the economic life of different cultural phases at Kalehöyük (see Table 4.4). Besides, according to Hongo, the increase in herding activities with short lasting occupation of Subphase IIb implies the presence of a highly mobile population who depend on a pastoral economy.²⁵⁷ Furthermore, the faunal remains from IIa suggest that the economic life and the subsistence strategy of Kalehöyük have not changed so much from the present village life. This might be good evidence to show continuity in patterns of animal husbandry and environmental factors at the site. Nevertheless, future excavations considering new methodologies in archaeology and the results of various analysis might support or add new concepts to the identification and function of the site and its environment.

²⁵⁵ Hongo 1996, 41

²⁵⁶ Hongo 1997, 242

²⁵⁷ Hongo 1998, 271

Table. 4.4 Stratigraphic Phases and Cultural Attributes

Phase	Date		Cultural/Political Affiliation	Evidence of Destruction/Conflict	Status of the Site	Faunal Remains	Population (suggested By archaeological and Faunal Evidence)
II a	mid. 7 th - 4 th c. BC	Iron Age	Phrygian/Persian		Important town/local center	Change(similar to IId-c)	Continuity from Ic Increased Phrygian influence some new population
II b	mid. 7 th c. BC		?	Sudden change (no trace of violence)	Rural?	Change	Change-intrusive (origin unknown)
II c	8 th - mid. 7 th c BC		?		Rural/small town	Continuity	More influx of new population
II d	12 th - early 8 th (?) c. BC		?" Dark Ages" Some Neo-Hittite influence	Burnt levels in upper IId	Rural/small town	Continuity	Gradual change, continuity in lower levels, increased influx of new population
IIIa	ca 1450-1180 BC	Late Bronze Age	Hittite			Some change	Continuity
IIIb	ca 1650-1500 BC		Hittite			Continuity	Continuity with some influx of new population
IIIc	ca 1950-1780 BC	Middle Bronze Age (Early/Middle Bronze)	Anatolian (Influence of Assyrian Colony)	"destruction" level at the end of III c	Local center	Continuity	"Anatolian"
IIId	ca 2000 BC		Anatolian		?		"Anatolian"

From: Hongo(1998)

CHAPTER 5: CONCLUSION

The aim of the concluding chapter is to join all the available archaeological, environmental and subsistence data to come to a certain conclusion, which should not be considered as an end in itself, but as the start of a discussion. This section will help to view aspects of the ancient economy in a regional context of the Iron Age. Therefore, the questions mentioned in the introduction chapter are answered based on the available data.

The analyses of the environmental and regional settings of the study areas provide a framework of the ancient economy which highly depends on empirical observations. According to Jarman, this provides "an invaluable independent assessment of the economic potential, against which the inferences drawn from the on-site faunal and botanical evidence can be tested".²⁵⁸

The sites are located in the same region, but in different zones. This difference is visible in their topographic features, particularly, in the altitude, in the width of the plains, and the closeness of the city mounds to the main streams. Their territories are surrounded by lowlands and uplands and the environmental conditions show variation from one area to another. The seasonal variations in temperature affect the settlement patterns and economic strategies of the people. The villagers have preferred to have a mixed-economy since ancient times, and its range varies from pastoralism to farming according to environmental, cultural and political factors. Particularly, modern ethnographic data suggests that mobile pastoralism has been considered as a risk-reducing economic option to mixed farming. The physical features of the study areas are convenient for this type of economic strategy. There might have been seasonal

²⁵⁸ Jarman and et al. 1982, 35

movements between the lowlands and uplands. Furthermore, the geographical setting of the study areas might assign an important place for short-range transhumance movements (up to 50-60 kilometers) in the regional economy. This is inevitable when a site functions as a regional center in a centralized state, or when the settlements can not produce enough to survive in their local environments, which might happen as a result of drier climate, environmental deterioration, population increase, or cultural selection of particular natural sources such as tree species which are not available in the vicinity. At Gordion, ancient wood cutters probably traveled 40 kilometers to reach a pine forest near Mihalıçcık which is located to the north-west of the site. However, other activities might have appeared at closer distances (less than 30 km), since the uplands around Gordion start at a distance of 20-25 kilometers from Gordion.

The present land use of the sites is examined through the land distribution analysis. Considering the time-distance factor in the daily agricultural and hunting activities, the land management of Gordion and Kalehöyük is observed over an area 10 km in radius. A very vast plain covers the territory of Gordion, which is about 700 meters above sea level. Therefore, almost half of the area is arable. This gives an advantage to Gordion over Kalehöyük. The hilly zones cover only 13% of the land, whereas the grazing land and the meadows roughly spread over the remaining part.

However, we do not know if the grazing areas are formed as a result of soil degradation, or as a need for pastureland. Yet, we might expect that the Phrygians practiced seasonal mobile pastoralism away from their fertile plains, and partly used gardens and meadows (to obtain fodder for their animals) in winter time. They might not have taken the risk of losing their fields in order to open pasture areas, but had mobile pastoralism to reduce the loss. In addition, the evidence suggests that pastoral

system in the pre-mechanized era was more effective than agriculture with traditional tools.

When we think about the Phrygian period, we might expect that a large portion of the arable area was used for agricultural purposes, since Gordion was an urbanized center. Yet, based on the archaeobotanical data of Gordion, the seed remains of cultivated plants provide evidence for the agricultural activities. The most important cereals were wheat and barley. Moreover, in the excavation of the buildings at the Citadel Mound, great quantities of charred grain, grinders and ovens were found.

The ethnohistorical data obtained from ancient sources and 19th century travellers also support evidence for agricultural practices at Gordion. The site functioned as a station for the armies because of its convenience to supply cereals. Its vast plains with wheat farming and water supply made it a very important strategic location on one of the main trade routes. Moreover, the ethnoarchaeological evidence also points out the good arable land for the crops at Yassıhöyük village today.

At Kalehöyük, the control of the land draws a different picture relative to Gordion. The arable land covers 19%, grazing areas 57%, and the hilly zones 24% of the total area. The site never functioned as a regional center, but remained as a rural town. Therefore, there was not an organized agricultural system like at Gordion. Some of the grazing areas might have been used as cultivated fields in the past. Also, the absence of vast plains enables more herding in the area. However, the vicinity of Kalehöyük is productive in its own sight, but does not allow the same population density to develop. Moreover, the distance to the uplands is much closer than at Gordion. People of Kalehöyük might have done daily pastoralism even in summer time. The environment of Kalehöyük might have been used in the mobile pastoralism of other lowland settlements, which were located in the basin of the Kızılırmak river.

The archaeozoological and archaeobotanical studies are still at their preliminary stages. If there had been more information, their results might have acted as a resolution of the perplexing problem of the ancient economy. The botanical remains of Gordion manifest how the Phrygians used the tree resources in their surrounding. The usage of different types of trees and the differences between their quantities through time contribute to an understanding of the vegetation cover of the past. Especially useful contributions have been made by examining the tree types used in construction, furniture making, and in providing fuel sources. The evidence suggests that in the first millennium BC, the forested zone was much closer to Gordion than it is today. Deforestation occurred as a result of human activity rather than climatic changes. Particularly, the increase in wood cutting for industrial purposes might have caused erosion after 600 BC, since the aggrading of the Sakarya river accelerated at that time.

The animal bones collected from the sites cover only a small amount of the potential faunal assemblage. Yet, some suppositions based on the limited data and empirical observations, can be deduced to gain sight of the past agricultural system. At both sites, the majority of the faunal assemblage consists in bone fragments of sheep and goat, which are considered as indicators of pastoralism. However, the analyses of their ratios are still preparatory to future studies, and results need better combination. Most bone remains come from domesticated species. At Kalehöyük wild animals cover less than 10% of the total assemblage, and at Gordion less than 4%. The difference in the amount of total wild animals might indicate the variation in the environmental factors of the sites. Yet, it must be noted that the distinction between the bones belonging to sheep and goat, ass and horse, and corresponding wild

species is very difficult, and for this reason the comparison of the bone remains with the samples of the other sites is extremely important.

In this respect, the integration of the faunal assemblages of Gordion and Kalehöyük is significant. During the Hittite Empire Period Phase 8, large numbers of sheep at Gordion are roughly equal to Subphase IIIa at Kalehöyük. The decrease in the number of the sheep in phases 7B-7A (Early Iron Age) is contemporary with subphase IId, and the increase in Phases 6-5 is current with the phases IIb- IIa. The sheep to goat ratios of Kalehöyük between the Middle Bronze age and Late Iron age are very similar to those of Gordion. The increase and decrease in sheep to goat ratios might reflect environmental and climatic changes, and different economic strategies. For instance, at Kalehöyük, the slaughtering of sheep and goat at the adult stage suggests wool and skin production in the Early Phrygian period. Their use is probably the same at Gordion, since textile production and its long-range or short-range exchange are significant in this period. Phrygian textile is also mentioned in several ancient sources.

As it is apparent in the ethnoarchaeological data of Gordion, there is a specialized type of transhumance between the highlands and lowlands. The villagers of Yeni köseler, which is 15 km away from Yassihöyük, exchange certain crops and animal by-products with others. This might have happened in a regional integrated economy of Gordion and Kalehöyük, since their environment allowed mobile pastoralism. The lowland agricultural products brought to the highlands might be exchanged with the animal products. However, since, the higher elevation of Kalehöyük suggest more pastoralism, the type of exchange products might show variation with the ones at Gordion. In addition, this system of exchange might occur

also with a circulation of small proportions of other goods such as textiles and pottery.

The settlement history of Gordion and Kalehöyük start from the Early Bronze Age, and their Iron Age and Phrygian levels correlate with each other. Unlike most of the sites surveyed and excavated in the Upper Sakarya and Middle Kızılırmak basins, they show a continuous occupation between the Late Bronze and Early Iron Age. The semi-continental climate permitting dryland agriculture is productive at both sites. However, the physical differences in the land forms change the agricultural pattern of their environments. Furthermore, the status of the sites except the Early Iron Age phases reveals variation.

Table 5.1 provides a synopsis of the development of both sites and offers a side-by-side comparison. In the Early Iron Age, both sites are considered as small settlements with simple economy. In the Early Phrygian period, Gordion becomes a regional center, and consequently has a regional economy based on mixed-farming covering mobile pastoralism, which is the focus of exchange. The mass production and standardization of pottery appear and continue until the end of the Middle Phrygian period. In addition, long range exchanges start to integrate to the economy. During this time, Kalehöyük continues to function as a rural town, and to have an agro-pastoral economy. In the Middle Phrygian period, Gordion acts as a regional center, but not as a capital, since the Phrygian State starts to lose its power. There is still a regional economy, but the focus of exchange is different, since coins started to be used. In addition, the integrated long-range exchanges continue to be present. Kalehöyük remains as a local center between the mid of the Middle and Late Phrygian period. The Phrygian influence increases, and Gray ware becomes more common. Moreover, long-range exchange appears under the rule of Persians. In the

Late Phrygian period, Gordion under the rule of the Achaemenid empire, becomes a minor industrial center. Its economy continues to be regional, and long-range exchanges increase.

As it is apparent from the above review, Gordion and Kalehöyük present different pictures in their environmental settings in terms of their status in the Iron Age. However, their integration is significant to observe the status of economy both at a densely populated political unit and at a rural town. Although, they differ from each other in their agricultural systems, they help us to overview the dynamism of a regional economy.

Table 5.1 Comparative Table of Gordion and Kalehöyük based on their stratigraphic sequences

Date	Phase	GORDION	Phase	KALEHÖYÜK
1200				Status of the site rural town Faunal Remains sheep and goat assemblage show, continuity relative to IIIa, however, sheep ratio relative to goat decreases. Wild animals increase. Decrease in equids after the disintegration of the Hittites. Pottery painted pottery related to EIAH and Troy VIIb-2 appears in the early levels of the phase. Architecture semi-subterranean rooms(one-room houses) Evidence of Conflict / Destruction Neo-Hittite influence Population new population increase, gradual change. Status of economy local
1100 1000	7	Status of the site small settlement Faunal remains increase in equids and wild species (particularly deer). Pottery new ceramic appearance EIAH and EIA Architecture discontinuity in building plans and techniques relative to Phase 8. New storage facilities appear. Semi-subterranean houses. Botanical remains pine, juniper and oak are used for fuel and construction. Status of economy simple/local. Population mixed Phrygian	II d	
950 900 800	6	Status of the site regional capital. Faunal remains sheep increases relative to goat. Less number of deer and other wild species. Pottery mass production and standardization. Gray Ware is abundant Architecture formal and monumental buildings with megarons(service areas) Botanical remains pine is abundant. Evidence of conflict/Destruction catastrophe or fire at in 720 BC. Population Phrygian. Mobile pastoralism . Regional. Integrated long-range exchanges iron and bronze objects, Gray Ware, textile Status of economy local and regional	II c	Status of the site rural town Faunal remains continuity Pottery Alişar IV type painted pottery Architecture multi-room buildings with subterranean structures Population more influx of new people Status of economy local(agro-pastoral)
720 700	5	Status of the site regional center Faunal remains sheep and goat assemblage decrease. Pig and hare increase Pottery mass production and standardization continue. Local production. Small amount of imported wares (Greek, Lydian, East-Greek and West Anatolian). Architecture Enlargement of the site in residential and industrial occupation areas Botanical remains gradual augmenting of tree cutting, increase in the consumption of riverine trees. Composition of woodland around Gordion changes. Mobile pastoralism regional Integrated long-range exchanges continuity. Population Phrygian Status of economy local and regional		

680			II b	<p>Status of the site rural? Faunal remains Sheep and goat increase. Increase in equids. Wild species. Pottery red painted ware. Large amounts of Gray Ware. Architecture semi-subterranean buildings in rectangular plan with a different orientation relative to IId, IIc and IIa Status of conflict/Destruction sudden change no trace of violence Population change intrusive origin unknown Mobile pastoralism local Status of economy local</p>
630				<p>Status of the site local center Faunal remains sheep relative to goat decreases. Hare increases. Pottery painted plates with high quality. Gray ware is common. Imported pottery (black Greek pottery and Persian). Architecture multi-room buildings Population Phrygian influence some new population (Phrygian-Persian) Mobile pastoralism regional? Integrated long-range exchanges west and Persia Status of economy local and regional?</p>
600				
550			II a	
500	4	<p>Status of the site minor center/Industrial Faunal remains sheep and goat increase. Bird species increase Pottery Many imported wares (Greek, Lydian, Persian) Architecture large amount of workshops Botanical remains continuity Population Phrygian-Persian Mobile pastoralism regional? Integrated long-range exchanges increase in exchange items Status of economy local and regional</p>		
400				
330				

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