IDENTIFYING MEDIEVAL KOMANA IN THE 12^{th}-13^{th} CENTURIES THROUGH SPATIAL ANALYSIS OF ARCHAEOLOGICAL DATA WITH A MULTIDISCIPLINARY APPROACH

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Prof. Dr. Tülin GENÇÖZ
Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Doctor of Philosophy.

Prof. Dr. D. Burcu ERCİYAS
Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Doctor of Philosophy.

Assoc. Prof. Dr. Evangelia PİŞKİN
Co-Supervisor

Prof. Dr. D. Burcu ERCİYAS
Supervisor

Examining Committee Members

Prof. Dr. M. Lütfi SÜZEN	(METU, GEO)	
Prof. Dr. D. Burcu ERCİYAS	(METU, SA)	
Prof. Dr. Y. Selim ERDAL	(Hacettepe U., Anthr.)	
Assoc. Prof. Dr. Ufuk SERİN	(METU,SA)	
Assist. Prof. Dr. Meryem ACARA	(Cumhuriyet U., Art Hist.)	

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Name, Last name : Mustafa Nuri TATBUL

Signature :

ABSTRACT

IDENTIFYING MEDIEVAL KOMANA IN THE 12th-13th CENTURIES THROUGH SPATIAL ANALYSIS OF ARCHAEOLOGICAL DATA WITH A MULTIDISCIPLINARY APPROACH

TATBUL, Mustafa Nuri

Ph.D., Department of Settlement Archaeology

Supervisor: Prof. Dr. D. Burcu ERCİYAS

Co-Supervisor: Assoc. Prof. Dr. Evangelia PİŞKİN

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Dynamics of Medieval Anatolia such as economy, politics, social life and religion, are mostly studied through written sources, public monuments, religious architecture and in most cases decontextualized material culture. These sources of evidence mostly represent the wealthy class and ruling elites.

Both rural and urban sites do have the archaeological potential for understanding production, consumption and discard behaviors within domestic and industrial contexts. This kind of a perspective with a multidisciplinary approach, will surely help transform this potential to knowledge.

With this approach the role of archaeological excavations is huge, they provide the conditions to detect behavioral signatures through spatial analysis, understanding of the organization and operation of spaces in intrasite level, thus provide the construction of past dynamics.

The statistical representation of artifacts and ecofacts from a variety of contexts and distribution patterns of all archaeological finds within spaces are expected to increase our understanding of the use of space, production, consumption and discard behaviors. Formation processes in such a study also has increasing significance.

In this thesis, medieval Komana (12^{th} – 13^{th} centuries) is studied through spatial analysis of archaeological data. The results of spatial analysis is used in order to identify operation and organization of the site and to set Komana into archaeological and historical context among numerous contemporary sites in various settings, with a comparative analysis.

Keywords: Komana, Medieval Archaeology, Danishmend, 12^{th}–13^{th} century, Spatial Analysis.

ÖZ

12. - 13. YÜZ YILLARDA ORTAÇAĞ KOMANASI'NIN ARKEOLOJİK VERİLERİN MEKANSAL ANALİZİ YÖNTEMİ KULLANILARAK VE ÇOK DİSİPLİNLİ BİR YAKLAŞIM İLE TANIMLANMASI

TATBUL, Mustafa Nuri
Doktora, Yerleşim Arkeolojisi Anabilim Dalı
Danışman: Prof. Dr. D. Burcu ERCİYAS
Eş Danışman: Doç. Dr. Evangelia PİŞKİN

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Anadolu Ortaçağı'nın ekonomi, siyaset, sosyal yaşam ve inançsal dinamikleri daha çok yazılı kaynaklar, kamusal ve dini mimari kalıntılar, ve arkeolojik kontekstini yitirmiş materyal kültür aracılığı ile anlaşılmaktadır. Bu tür kaynaklar daha çok varsıl ve yöneten elit kesimi temsil etmektedir.

Gerek kırsalı gerekse kenti temsil eden arkeolojik alanlar, üretim ve tüketim davranışlarının konut ve atölye gibi kontekstlerde anlaşılması adına son derece büyük bir potansiyele sahiptir. Bu tür bir bakış açısı çok disiplinli bir yaklaşım ile birlikte hazırda bekleyen bu potansiyelin bilgiye dönüşmesine kesinlikle yardımcı olacaktır.

Bu yaklaşım ile birlikte arkeolojik kazıların rolü son derece önemlidir ve mekânsal analiz yolu ile davranışa dair izlerin belirlemesi ve yerleşim içi ölçekte

mekanların organizasyonu ve işleyişinin belirlenmesine olanak sağlamaktadırlar, böylece geçmiş dinamiklerin anlaşılmasına katkıda bulunurlar.

Çeşitli kontekstlerden elde edilen kültürel buluntular, hayvansal ve bitkisel kalıntılar ve tüm arkeolojik buluntu gruplarının mekanlar içindeki dağılımlarının istatistiksel olarak analiz edilmesi, mekanların kullanımı, üretim ve tüketim davranışlarının daha iyi anlaşılmasına olanak sağlamaktadır. Arkeolojik tabakaların oluşum süreçlerinin iyi belirlenmesi de bu tür çalışmalarda geçmiş dinamiklerin anlaşılması açısından son derece önemlidir.

Bu tez çalışmasında, 12. ve 13. yüz yıllarda Komana ortaçağı, arkeolojik verinin mekânsal analizi yöntemi ile aydınlatılmaya çalışılmaktadır. Elde edilen mekânsal analiz sonuçları yerleşimin organizasyonu ve işleyişinin ortaya çıkarılması, ve karşılaştırmalı analitik bir yöntem ile Komana'nın çağdaşı olan değişik karakterde bir çok yerleşim içinde, Komana'yı arkeolojik ve tarihsel bir konuma yerleştirmeyi amaçlamaktadır.

Anahtar Kelimeler: Komana, Ortaçağ Arkeolojisi, Danişmendler, 12.-13. yüz yıllar, Mekânsal Analiz.

To my Grandfather (Muhsin Tatbul)

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CHAPTER 1

INTRODUCTION

Every aspect related to the dynamics of Byzantine Anatolia such as economy, politics, social life and religion mainly derived from the study of a variety of written sources, monumental public architecture and in most cases decontextualized material culture, which are mostly representing ruling class and wealthy elites. This mission to reveal the Byzantine palatial life, has already built a massive accumulation of knowledge on the subject area, but resulted in an ignorance of the rural population. Rural and domestic sites representing everyday life of the Byzantine Anatolia both the for Byzantines and the Seljuks bear the potential to enlighten the economy, social interaction and political relations from a different aspect and scale. Medieval layers were excavated at the majority of the Turkish excavations but were often ignored or less emphasis was given to their publication as a result of diverging interests of the excavators. Therefore, concrete evidence for an understanding of the economic, social and political history of the period, especially at rural and domestic scales was necessary. Besides, site characteristics and the context of these limited and fragmentary excavation data were not well understood adding on to the gap.

In most medieval excavations there is a visible gap between features and artifacts. There is insufficient emphasis on a spatial interpretation of archaeological data and inferences on function have mostly been based on mere observations of features and archaeological finds. Spatial analysis at intrasite level has been a growing interest in the western archaeology since 1970s with the contribution of interdisciplinary research where archaeology is situated in the center as the coordinating discipline. But, spatial analysis has mostly been preferred at historical sites with in situ finds or at prehistoric excavations where limits of sites are not defined by architectural boundaries. There has been a research based on lack of spatial analysis and valuable and comprehensive research in this field have been in minority.

At Komana, a need to develop a methodology to deal with sites where archaeological record was highly disturbed by both cultural and natural processes, and multiple occupation phases were present. Even though the major proportions of the archaeological record were disturbed and full of fragmented materials, it was still possible to detect primary refuse materials in original contexts. At least each material group promised to have certain degrees of representation.

These three aspects: contexts representing production, consumption and discard, a quest for understanding function of the rooms through spatial analysis of material distributions and the condition of the archaeological record with highly disturbed layers and highly fragmented materials, came together rather well at Komana providing me with a case study.

The aim of this thesis is to understand different social, historical and archaeological processes at Komana during the medieval period (late 11th – mid. 13th century), by looking at the material distribution within spaces in a building formerly identified as a workshop. The function of the rooms at the so called workshop area based on the distribution of materials was questioned. The study was conducted with the belief that there is a possibility to detect, signatures of production, consumption and discard in and around utility features within domestic and industrial units through spatial analysis. In order to achieve this goal, statistical representation of artifacts and ecofacts in a variety of contexts are considered. Following an exploration of the use of space the aim has been to set Komana into the context of the middle Byzantine Anatolia in comparison with similar sites.

The spatial analysis in the thesis also was used to explain the impact of formation processes on the archaeological record. This goal derived from a need to link the past dynamics with present representations in an attempt to relate the archaeological record with past behaviors and identify what is missing from the systemic context.

In most projects, materials recovered from the excavations were studied by specialists and reports were written separately. Bringing together all kinds of data would give a wider picture of the past. In addition, the author's full participation in the excavation, collection, evaluation and interpretation of the data would be a great advantage.

The thesis is organized in 7 sections with Introduction and Conclusion. In Chapter 2, the historical background of Komana and particularly the socio-economic dynamics of the 12th-14th centuries will be presented. History of research from the early travellers accounts of the 19th century until the surveys and excavations of the last two decades will be summarized. Excavation areas of Hamamtepe archaeological site, its site stratigraphy and its location and environmental setting will be introduced.

In Chapter 3, the theoretical and methodological debates on spatial analysis in archaeology will be discussed. Aspects on the archaeological record, spatial relationship of features and materials, statistical and quantitative approaches, debates on the evaluation and interpretation of the statistical data will be discussed.

In Chapter 4, methods and approaches that were followed in order to conduct the research will be described. Excavation method, sampling strategies, identification and quantification of data, separation of contexts, analysis and interpretation methods of the data will be introduced. Another aim of Chapter 4 will be to define the limits of the study area, spatial units and features, share the results of previously conducted spatial analysis pilot studies at Komana, and describe material categories and dating of the archaeological layers.

In Chapter 5, the data from room layer fills and soil samples, will be discussed. Firstly, the whole data as it existed and secondly, the normalized (volumetric) data will be analyzed through tables and charts. Afterwards some combinations of normalized data sets will be analyzed through a computer aided statistical method, correspondence analysis (CA), and spatial analytical tool GIS software (Geographical Information Systems).

In Chapter 6, the results of the spatial analysis will be discussed and Komana will be analyzed within its chronological and geographical context.

In Chapter 7, the research results, limitations that were encountered during the research and future aspects of the study will be summarized.

CHAPTER 2

HISTORICAL GEOGRAPHY

2.1 Historical Background

Komana Pontika was located in the historical region of Pontos. Komana took its cognomen from *Pontos Euxenios*, which is called Black Sea in the present day. The name of the city was accompanied by the cognomen Pontika to differentiate it from another Komana in the Cappadocia region, named *Komana Cappadocia*. [1]

According to Strabo, the name of the city derived from the myth of Orestes and her sister Iphigeneia where they brought the sacred rites to Cappadocia from Tauric Scythia in the honor of Artemis Tauropolus. Here they left their hair as a symbol of mourning, hence the name Komana ("Kome", "Hair" in ancient Greek).[2]

Both Hellenistic cities had similar legendary ties, site function and administrative structure. Dio Casius reported that the two namesake cities bore the same honors, shared common stories, and had common relics. Each possessed the sword of Iphigeneia.[3]

Strabo tells us that Komana Cappadocia had a temple to Enyo, who was called Ma in the region. Inhabitants of the city were both men and women temple servants governed by a priest, who was second in rank after the king and also coming from the

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[1] For detailed information on Comana Cappadocia see Mutlu, 2016.

[2] Strabo, 12.2.3.

[3] Dio Casius, 36.11.

king’s family. Priest was the master of all servants of the city and he was managing the whole income of the temple and its land.[4]

Strabo also described Komana Pontika, founded after Komana Cappadocia, dedicated to the same goddess, Ma, and practicing exactly the same sacrifices, rituals, exoduses twice a year, priest’s wearing a diadem and their rank second after the king.[5]

When Pompey conquered Pontos in 64 BC, an autonomous status was given to Komana.[6] The temple state and its inhabitants, which were not less than 6000 in population, were first governed by Archelaus, who was appointed by Pompey, and the sacred land was extended with an additional two Schoeni (60 stadia).[7]

Strabo reports that in his time (probably late 1st century BC to early 1st century AD) Komana was a populous city, a very notable trade center for the people of Armenia. He mentions the cosmopolitan structure of the city during the “exoduses” of the goddess due to the men and women coming from other cities and countryside in order to attend the festivals.[8]

He describes a city with great prosperity so much so that the residents of Komana were living in luxury and all the lands were cultivated with vines. He also compares it to Corinth for the women were occupied with sacred prostitution, most of whom were dedicated to Aphrodite. Therefore, it was very attractive for merchants and soldiers as a retreat.[9]

In the 2nd century AD, Komana became a regular Roman imperial city. This was attested by an inscription found in Gümenek on a small, modern day dam built on the

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4 Strabo, 12.2.3.

5 Strabo, 12.3.32.

6 A detailed research on the historcial context and functioning of the temple states of Pontos was conducted by Emine Sökmen as a M.A. thesis. See Sökmen, 2005.

7 Strabo, 12.3.34.

8 Strabo, 12.3.36.

9 Strabo, 12.3.36.

Iris River by the State Hydraulic Works (Devlet Su İşleri), to regulate the debitage of the water. Reused limestone blocks on the dam, once on the legs of a stone bridge, bore the inscription *Ἱεροκαισαρέων Κομανέων* dated to 160 AD, attesting the city as of the divine emperor.[10]

Another architrave fragment found within the territory of Komana, now in Tokat Museum, was dedicated to Trajan, probably dating to after 116 AD.[11]

Two coins published by Imhoof-Blumer in 1897, attest to the status of the Roman city with an imperial temple. On one of the coins, Septimus Severus was depicted accompanied by inscribed captions AV.K.Λ. CEΠ.CEVOVHPOC, IEPOKAICA.KOMANEωN on the obverse, and a depiction of a tetra style temple and eagle struggling with a serpent on the reverse.[12]

On the second coin, Iulia Domna, wife of Septimius Severus was depicted with an inscription IOVΛIA ΔOMNA AΓ., IEPOKAICA. KOMANE on the obverse and a depiction of a tetra style temple accompanied by a round shield or wreath.[13] These coins should be dated to the late 2nd to early 3rd centuries AD (Reign of Septimius Severus between the dates 193-211 AD).

It is generally accepted that with the expansion of Christianity in the region and in general in Asia Minor, Komana started to loose its function and importance as a sanctuary during the Late Antiquity, and rural Byzantine communities began to be established in the region. It is not known yet what kind of an effect had the Arab invasion in the region but a battle between the Arabs and the Byzantines was reported in Sebastopolis in the late 7th century AD, which resulted with the defeat of the Byzantine armies.

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[10] Erciyas, 2015, 10; Erciyas and Sökmen, 2010b, 121; IGR III, no.106 (*Inscriptiones Graecae ad res Romanas Pertinentes*).

[11] Erciyas and Sökmen, 2010b,121; SEG XLII (1992) 339 (*Supplemantum Epigraphicum Graecum*).

[12] Imhoof-Blumer 1897 (Z.f.N.20 p.262 No.2).

[13] Imhoof-Blumer 1897 (Z.f.N.20.p.263 No.4).

Danishmends, who entered Anatolia in this period, occupied the region (Sivas, Amasya, Çorum, Tokat, Niksar, Kayseri, Malatya) for about a century from late 11th century to late 12th century AD and Danishmend Ahmed Gazi was the founder of the Principality who participated in Manzikert beside Sultan Alparslan of Seljuks.[14] Thus, Danishmends founded the Principality in the lands they gained during the Manzikert battle. Besides Seljuks and Danishmends, Saltukids, Menguceks and Artukids were other Principalities that were established in Anatolia after Manzikert.

Thirteen emperors reigned between 1025 and 1081, which were very rapid turnovers and it was considered as a period of political instability.[15] During the Komnenian period, the empire regained her power both in the Balkans and Asia Minor. In about a century, between late 11th and late 12th century, three Komnenian emperors Alexios I (1081-1118), John II (1183-43), Manuel (1143-80) reigned which was quite opposite to the previous period.[16]

The Battle of Dorylaion in 1097 was another milestone in the political developments of Anatolia during the Byzantine-Seljuk conflict.[17] Byzantines recaptured İznik with the help of the First Crusade, where Danishmends fought beside the Seljuks against the Christian armies. With this important event Byzantines partly gained control of the western Anatolia. In 1101 the army of the First Crusade was defeated by the Seljuk Sultan Kılıç Arslan I and Danishmends in Merzifon.

Komnenos realized that the Danishmends were expanding their power in Anatolia. He tried to draw them out from the lands they captured. During the revival of the Byzantine Empire, under the reign of Komnenoi dynatsy, John II Komnenos conducted military activities in northern and southern Asia Minor: he attempted to recover Paphlagonia and Pontus in the north, and Pamphilia, Cilicia and Pisidia in the

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14 Öngül, 2014, 254.

15 Holmes, 2008, 271.

16 Holmes, 2008, 273.

17 Ayönü, 2014, 98.

south. However, his success was temporary in Kastamonu, Gangra and in Neocaesarea between 1131 and 1135.[18]

Melitene was captured by the Danishmend ruler Gümüştekin in 1101. He was friendly towards the Christian and Armenian inhabitants of the city. Kılıç Arslan I took Melitene in 1105 from Danishmends and Maraş from the Crusaders.[19] In 1129, Danishmends became the most powerful Principality in Anatolia under the reign of Emir Gazi and extended its lands until Ankara, Çankırı, Kastamonu and the Black Sea coast.[20] When Melik Muhammed became the Danishmend ruler, he organized military campaigns towards the south to Melitene, Elbistan, Ceyhan, Çukurova and Maraş.[21] After Melik Muhammed, Danishmend lands were governed by his two brothers Yağıbasan (Sivas) and Aynüldevle (Malatya) and his son Zünun (Kayseri), in which period the decline of the Principality started. While Zünun was supported by the Seljuks, Aynüldevle and Yağıbasan allied with the Byzantines.[22]

In 1175 Sultan Kılıç Arslan annexed Sivas, Niksar, Komana, Tokat and other Danishmend lands and terminated the Sivas branch of Danishmends.[23] It is also important to mention that Manuel Komnenos II tried to regain Amaseia and Niksar in 1175 with an army of 30000, but he could not achieve.[24] At the Battle of Myriokephalon in 1176 was another milestone in Anatolia when the Seljuks permanently defeated Byzantines.

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[18] Korobeinikov, 2008, 710-11.

[19] Öngül, 2014, 258-9; Ayönü, 2014, 100.

[20] Öngül, 2014, 261.

[21] Öngül, 2014, 263.

[22] Öngül, 2014, 264.

[23] In 1775 the Sivas branch of the Danishmends were annexed to Seljuks and Malatya (Melitene) branch in 1778.

[24] Öngül, 2014, 269.

With the Mongol invasion of Anatolia in 1241-1244 AD the administrative structure of Anatolia was transformed: many small principalities were established. Seljuks lost the Battle of Kösedağ in 1243 at Sivas against the Mongols. The Mongol invasion resulted in the decline of the Seljuks in the 13th century and further collapse in the early 14th century. The second principality (Beylik) period started after the decline and collapse of Seljuks when the region, which included Komana, was governed by the Eretna Principality between 1328 and 1381, then governed by the Ottomans.

2.2 Social and Economic Dynamics of the Period

Until the invasion of the Turks, short before or the after Manzikert Battle in 1071, Byzantine communities had occupied the region. After the Manzikert Battle, Turks started to spread more efficiently into Anatolia. The conquest of Anatolia was not only through warfare. Turkmens having the primary role in the conquest of Anatolia continued their nomadic way of life moving seasonally between mountain pasturelands while the urban populations were Persian both in culture and language. Due to their mobility and seasonal occupation of pastures for their flocks, it was resulted with constant conflicts between local farms and Turks, and their only direct relation with the cities were through markets.[25]

The population of Seljuk sultanate had a multi ethnic structure composed of Greeks, Armenians, Syrians, Kurds, Arabs, Persians and Turks.[26] Among the ethnic groups most of the Turks were nomads while the Greeks and Armenians occupied cities and the countryside. The Arabs and Syrians were mostly living in the south-east Asia Minor. Seljuk authority gained the sympathy of the local populations through economic benefits. Heavy monetary demands by the empire in the provinces made the public discontent, which was resulted with an uprising against the capital under the leadership

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[25] Ölçer, 2005, 104.

[26] Korobeinikov, 2008, 723.

of the local aristocrats in the occasion of lack of Byzantine central power, who were also under the protection of Seljuk authority.[27]

Magdalino states that during the military attempts of the Empire to regain the former Byzantine territories (in the 12th century), Greek populations in Turkish occupied cities in Asia Minor frequently unwelcomed the Byzantine polity.[28] In 1175 in Amaseia and in Neocaesarea, the citizens refused to cooperate with the Byzantine forces following the besiege of the cities.[29] Korobeinikov also emphasizes the economic woes that drove on the local Greeks to cooperate with the Turkish authority.

Decrease of Byzantine power during the 10-11th centuries was due to the strong external enemies (i.e. Turks in the eastern frontiers), changes in the social structure, failure of armies of themes, lack of strong leadership and dissolution of cultural unity in Asia Minor.[30]

Decker explains the Seljuk control of Anatolian uplands with an environmental determinism especially with the occupation of upland plateaus by the Turkish Nomads. On the one hand environmental conditions such as topography, vegetation and climate were suitable for pastoralism; on the other hand the coastal lands were preferred by the Greek population.[31] Also, Hendy introduces and gives a summary on the specifications of Anatolian land, climate and vegetation. Accordingly, majority of the Anatolian peninsula comprise of elevated plateau, where coastal plains and river valleys were of 10% and land under 500 meters was 18% of the total surface.[32] The central plateau consisted of a mixture of arable and grazing lands, especially this can frequently be

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27 Saradi, 2008, 323.

28 Magdalino, 2008, 633.

29 Korobeinikov, 2008, 716.

30 Charanis, 1975, 20.

31 Decker, 2007, 239.

32 Hendy, 1985, 26.

observed in the west and north-east Anatolia i.e. Yeşilırmak, Çoruh.[33] Before the Turks arrived in Asia Minor and they introduced nomadic way of life, agro-pastoralism was habitual in Asia Minor where the Byzantine populations were strongly attached to their lands.[34]

Economic advancements are mostly a result of political developments, which were mostly observed in the empire.[35] However, 11^{th} -12^{th} centuries were the period of economic growth and it was understood that the correspondence between political and economic situation does not always go hand in hand, that the economic growth happened during the political downfall of Byzantine Empire.[36]

Even though the instability of the 11^{th} century, establishment of many new domestic units and monasteries, reuse of relinquished churches and foundation of small-scale industrial sites in the 11^{th} century were indicatives of economic boom.[37]

There was growth in rural economy, population increase and extension of agricultural lands through the 11^{th} and 12^{th} centuries, which was reflected on the archaeological surveys with an increase of rural Byzantine sites within the limits of the empire.[38]

Through the 11^{th} and 12^{th} centuries free market economy arouse in the lack of state control, which was more strict in the previous period and the guild organization left its place over time to local professional associations.[39] Byzantine society was

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33 Hendy, 1985, 28.

34 Decker, 2007, 265.

35 Laiou, 2002, 9.

36 Laiou and Morrisson, 2007, 3.

37 Holmes, 2008, 271-2.

38 Harvey, 2008, 332.

39 Saradi, 2008, 323.

subjected to increasing social stratification through the 12th century, where a different class of aristocracy, merchant and artisan classes was emerged.[40]

2.3 History of Research

2.3.1 Early Travelers' Accounts of the 19th - 20th Centuries

Around 1800 years after Strabo, Komana Pontika and its ruins were reported in some 19th - 20th centuries Western travelers' accounts, who organized expeditions into Anatolia. Among them, Cramer was the first, who visited the site in early 1830s. In his book, Cramer describes Komana in close connection with the information from Strabo's Geography.[41] He reports that the remains of the ancient city at Komanak were sufficient to identify the ancient city at the proposed location.[42]

In early 1840s, Hamilton visited Komana as part of his expedition to Asia Minor, Pontus and Armenia. Hamilton was the first who gave detailed information on the ruins visible at Komana. He reported a well preserved rectangular building and a Roman bridge called Gümenek Köprü on the lower part of the hill, which had arches in perfect condition but the bridge was repaired with wood. He commented that the remains at the site are sufficient to identify Strabo's Komana Pontika.[43] Also Hamilton was the first to report the rock-cut monumental tomb in the vicinity of the site. His description on the use of Iris river by the locals to transport large quantities of firewood for use in Tokat in 1840s was quite valuable in interpreting the use of environmental resources and use of natural ways to facilitate transportation in the ancient times.[44]

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[40] Laiou, 2002, 20.

[41] Cramer, 1832, 305, 307-8.

[42] Cramer, 1832, 309.

[43] Hamilton, 1842, 350.

[44] Hamilton, 1842, 349.

1890s, Hogarth and Munro conducted expeditions in Eastern Asia Minor to define the modern and ancient roads in the region. During their research they visited Komana. They describe Hamamtepe in detail with the dense but collapsed ruins full of architectural fragments of the great temple. They estimated the circumference of Hamamtepe about half a mile (ca.800 meters), which seems reasonable today. They also mentioned two bridges; one of which was a Roman bridge and the other a new bridge a few yards away from it. This bridge had a Roman inscription *Ἱεροκαισαρέων Κομανέων* on it.[45] They explained that there were no villages in the close vicinity and only few farms could be seen in the area. They mentioned that the ruins at the archaeological site were abundant and in place, therefore it will give good results if excavated. They also mentioned the rock-cut tomb.[46]

In the early 1900s, Anderson traveled along the Pontic region. He was the first to mention the name of the Gümenek village which surely derived from the ancient name Komana. Anderson discussing the location of the inscription on the bridge emphasized that the builders of the bridge inserted the inscription as if to rescue the memory of the holy city.[47] He reported Iris river, a bridge and the mound which was full of grass and weeds, some late ruins and almost no pottery fragments seen on the surface. He also mentions the cemetery full of marble blocks and a Türbe nearby, which is still standing on the western direction of the mound.[48] Finally, he reports the rock-cut tomb with a detailed description of architectural features and its structure.[49]

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[45] Hogarth and Munro, 1893, 94.

[46] Hogarth and Munro, 1893, 95.

[47] Anderson, 1902, 63. In this inscription "Komana, the sacred city of the Emperor" was inscibed (*Ἱεροκαισαρέων Κομανέων*).

[48] Anderson, 1902, 63.

[49] Anderson, 1902, 64.

Cumonts also travelled in Pontos and Armenia in early 1900s. They mention Komana Pontica in their publication.[50]

In mid. 1920s, von der Osten held an expedition in Anatolia in the search of ancient civilizations. He describes the mound and the monolith rock-cut tomb nearby.[51] Von der Osten stressed that there were less ancient remains in the region and remains of Komana Pontica were surely of an ancient sanctuary and pre-classical settlement.[52]

2.3.2 Archaeological Field Surveys and Excavations

Archaeological surface surveys were first started in 2004 by Burcu Erciyas and continued for 5 years (2004-2008). The surveys focused in the area and its close vicinity of Komana, which was previously defined by all western travelers during 19-20th centuries. In the first season, Erciyas and her team surveyed Hamamtepe, Kılıçlı, Bula and the villages along the Almus road on the eastern bank of Yeşilırmak.[53] The most significant finds of the season were a Byzantine basilica in the northern slope of Kılıçlı with its apses partly visible on the surface, a stone quarry with tool signs on it and a hexagonal pool in the fields of Bula village. The architectural plan of the buildings at Hamamtepe were tried to be defined and drawn from the surface traces.

In 2005, the survey was extended to the villages in the close vicinity of Komana, and geophysical prospection was implemented around the hexagonal pool, Kılıçlı village and Hamamtepe.[54]

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[50] Cumont and Cumont, 1906.

[51] Von der Osten, 1929a, 35. In his publication there are detailed drawings of plan and sections of the monumental tomb.

[52] Von der Osten, 1929b, 132.

[53] Erciyas, 2006.

[54] Erciyas, 2007; For the article published on the hexagonal pool see Erciyas and Çinici, 2010.

In 2006, surface survey continued towards the western direction of Hamamtepe. Geophysical survey also continued in the northern fields of Hamamtepe, around the Byzantine structure which is partly visible on the surface to the west of hexagonal pool. A topographical model of Hamamtepe was made by using geographical information systems and it was integrated with the geophysical studies.[55]

The 2007 season was significant for the team for they located Byzantine sites mostly characterized with church related elements such as terracotta florets and tiles around the central district of Tokat. In this season, many sites from the Early Bronze Age to the Ottoman periods were identified in the survey based on the ceramics, coins and architectural finds. Two Hellenistic period castles were inspected in detail and many tumuli were located during the surveys.[56]

The last season continued with surface surveys identifying sites of all periods in the region. A special study was conducted by Geomorphologist Bekir Necati Altın around the surveyed sites.[57]

After five years of survey, Burcu Erciyas started archaeological excavations at Hamamtepe in 2009. Among the sites identified during the surveys, Hamamtepe appeared to have the most potential for excavation due to the evidence collected and its strategic location in the valley. The excavations have been carried out for eight years.[58] Preliminary results and definition of the phases are summarized in the following pages of the current chapter.

[55] Erciyas et al., 2008.

[56] Erciyas and Sökmen, 2009.

[57] Erciyas and Sökmen, 2010a. Also, for the distribution analysis and assessment of the Byzantine settlements within the geomorphological zones, that were identified during the surveys, see Erciyas and Sökmen, 2010b, 122. Also see Altın, 2015.

[58] For the seasonal excavation reports see Erciyas et al., 2011; Erciyas, 2014; Erciyas and Tatbul, 2016. For the multidisciplinary preliminary results of the first five years of the excavations see Erciyas and Tatbul (eds.), 2015.

2.4 Location and Environmental Setting of Hamamtepe Archaeological Site

The ancient city of Komana is located in the inland central Black Sea region, 10 km. north-east of Tokat, within the limits of modern day village of Gümenek. The name "Gümenek" was derived from the ancient city's name "Komana", which was "Kumanat", a deme of Ottoman Empire in the early 20th century with a small number of population.

The archaeological site, where the current excavations have been conducted, extends on and around a hill named Hamamtepe. (Figure 1) Komana is not only limited to Hamamtepe but it expands on the slopes on both sides of a wide valley, where fertile agricultural lands are in use today. Yeşilırmak (Iris river) flows on the south-east side of Hamamtepe and continues all along the valley. Yeşilırmak must have passed through the middle of the ancient city with a stronger flow rate with elements of the settlement distributed on its banks.

Along the valley, a main ancient road passed connecting Dazimon (Tokat) to Neocaesarea (Niksar) and Hamamtepe had a strategic location on this road must have connected the inland settlements of Black Sea to the coastal area as an alternative route.

Hamamtepe is a semi-natural hill at the center of Komana with the dimensions of 150 m. x 250 m. and with a height of 30 meters measured from the level of the modern village road. Its altitude is 640 m. above sea level.

Figure 1: Hamamtepe archaeological site

It has been attested during the excavations that its bottom is irregular bedrock varying in height in different parts. Even though it is lower than the valley slopes in altitude, its slightly elevated location in the middle of the valley, nearby the road and especially on the shore of Yeşilırmak (Iris river) made it a strategic location for site preference. The top of the hill was enclosed by a fortification wall. Maintaining its strategic significance, Hamamtepe hilltop was settled from the Hellenistic to the Ottoman eras.

2.5 Excavated Areas at Hamamtepe

Archaeological excavations have been conducted at Hamamtepe since 2009. During the campaigns, 7 different areas were excavated. The most characteristic features, remarkable points and specific aims and objectives for each area are described below:

HTP01

Area HTP01 is located at the center and the highest point of Hamamtepe, thus the citadel. (Figure 2) As the master area of excavations, the aim in this area has been to understand the chronological sequence in the center of the citadel, even though it was aimed to understand the horizontal expansion of the latest phase at the mound.

In this area Ottoman dwellings of 16-18th centuries, medieval workshops and domestic units of 12-13th centuries, Middle Byzantine churches and graves of 10th - 12th centuries and pre-10th century phases were excavated. HTP01 area is the most widely excavated and intensively studied area of Hamamtepe. Ottoman period dwellings were observed to have expanded on the entire HTP01 area above the 12th - 13th centuries layers. 12th - 13th century workshop and domestic phase was the most densely settled in HTP01 at the center of the citadel. Two Middle Byzantine churches were discovered in HTP01 area. Inherently vast majority of the church materials have been recovered in this area and not so many in other areas.

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Figure 2: Plan of sectors HTP01 (on the east) and HTP02 (on the west)

HTP02

Excavations at HTP02 primarily aimed to unearth the fortification wall and the use of space both on the interior and exterior of the wall. In this area, the Ottoman phase, 12^{th} - 13^{th} centuries medieval phase and 10^{th} - 12^{th} centuries graves were unearthed. Although not dated so far, possibly pre-10^{th} century thick mortared walls have been unearthed just inside the fortification wall. Also, pottery sherds dating to as early as the Late Hellenistic and Early Roman periods came primarily from HTP02. It was attested that the graves have expanded until the fortification walls, even a few on the western slopes of the hill outside of the fortifications.

HTP03

Area HTP03 is located on the eastern end of the hill, on a steep slope, looking over Iris River. Aim in this area was to establish a stepped trench in order to understand the chronological sequence of the hill.

It was understood that this area was terraced and domestic units were constructed during the Late Roman and Early Byzantine Period in this part of the hill, which has a nice vista towards the river. HTP03 area is characterized with domestic finds such as a 5^{th} century bronze oil lamp and ceramics in architectural contexts.

HTP04

Area HTP04 is located on the north-east lower part of the hill outside of the fortification wall. The aim of this trench was to understand the chronological sequence in the lower parts of the settlement. In HTP04, structure, with ovens dating to the 12^{th} - 13^{th} centuries and a pre-10th century oven in a deeper level were discovered. Excavation in the trench was only possible to ca. 5 m. depth due to the risk of landslide.

At 5 m. deep, cultural materials were still coming. This area proved the presence of deep alluvial deposits derived from the Iris River around Hamamtepe.

HTP05

Area HTP05 is located on the north-east lower part of the hill and on the outside of the citadel. In this area no architectural and contextual archaeological remains were found until ca. 1 m. depth.

HTP06

Area HTP06 is located on the central southern part of the citadel close to HTP01 area. One trench was excavated in this area. The aim was to understand whether the 12-14th centuries workshop and domestic phase had expanded towards this part of the citadel. A structure with multiple ovens with air circulation pipe was recovered with a tramped soil floor partly with tile pavement, which was attributed to the workshops.

HTP07

Area HTP07 was located on the exterior western part of the fortification wall. This excavation aimed to understand the site’s expansion on the western part. Immediately following the topsoil, bedrock was uncovered.

2.6 Site Stratigraphy/Chronological Sequence

Archaeological excavations have been carried out on and around Hamamtepe since 2009. Before the excavation campaign started, some architectural remains were partly visible on the surface. The remains were also reported on travelers' accounts, who visited the site in the early 1900s.[59] Based on the visible remains it was estimated that Hamamtepe had the potential to have a fortification wall encircling the hilltop. This was also initially observed on the satellite images.

During the excavations conducted on Hamamtepe four architectural phases have been detected: (1) 16-18th century Ottoman dwellings, (2) 12-14th century Byzantine/Danishmend/Seljuk workshop and domestic units, (3) 10-12th century Middle Byzantine churches and graves, and (4) pre-10th century Byzantine structures. Even though no in situ structural remains were explored yet, Early Hellenistic and Early Roman materials have been found in deeper layers and as spolia in all later stratigraphic levels.

Ottoman Dwellings of 16th - 18th Centuries

Ottoman occupation phase has been identified very close to the surface level. The remains were highly disturbed by external factors. The locals have used the hill as pasture to graze their animals. In many spots of the site illegal excavation trenches were visible. In some cases even deeper phases were disturbed by these illegal acts.

Simple wall foundations constructed by stone and bound with mud represented the Ottoman phase. (Figure 3) Even though there was no physical evidence within the Ottoman layers, it has been an old tradition in the region to construct walls with mudbrick supported with wooden frames.

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[59] Anderson in his visit in 1902, described and illustrated the ruins of collapsed architectural features visible on the surface of Hamamtepe. For his detailed descriptions on the site, see: Anderson, 1902.

It has been observed that floors were constructed as compact soil after leveling with middle and small size stones below. (Figure 4) Earlier cultural materials such as tile fragments, large vessel fragments and animal bones were also seen as fill materials within the leveling layers.

Figure 3: Ottoman architectural phase in sector HTP01

Figure 4: Ottoman phase earthen floors

Spolia were frequently detected on the floors of the structures used as posts for wooden columns, as a characteristic element of the Ottoman phase at the site. While these bases were frequently detected on the corners and along the walls, in large rooms they were also observed installed at the center of the room in order to carry the roof.

In addition to uncharacteristic stones, architectural elements of the Roman and Byzantine periods were used as spolia in the construction of the buildings. Today, using the architectural elements of the historical buildings is common in the region as an easy way of access to construction material.

There were very few fire installations detected in the Ottoman phase and in a totally different character when compared to the ovens of the earlier 12th - 13th century Byzantine/Seljuk/Danishmend phase. Among them are two round open hearths encircled with tiles. There were no pits or storage features identified for the Ottoman phase. Occasionally there were storage vessels on the floor discovered in situ.

The Ottoman structures were considered to be dwelling units. Especially the larger spaces could have been used as stables for animals. In 2015 excavation season, an Ottoman street was discovered on the northern central part of the hill. On this street a large doorway of a house was identified with limestone blocks and a thin column shaft used as spolia on the entrance. There were traces originating from the rubbing of the door on the limestone block on two sides suggesting that this wide entrance had two-winged doors.

Ottoman phase was poorly represented in terms of the amount and variety of finds if compared to the earlier medieval phases of 12th - 13th and 10th - 12th centuries. The most frequent and characteristic finds were the terracotta pipe bowls, which were also found in almost all archaeological sites with Ottoman phase.[60]

Pottery finds dating to the Ottoman period were very limited at Hamamtepe. Fragments of dark green glazed tableware were attested in the Ottoman layers. There were few cases where almost complete storage type vessels were found within the Ottoman rooms. But the density of ceramics was such low that it cannot be even compared with the dominating 12th - 13th century assemblage on the site.

There were some blue colored monochrome tiles found in the Ottoman layers. They must have been used as ornamentation on the interior wall of one of the dwellings.[61]

Another characteristic group of finds were iron implements such as nails, horseshoes and a well-preserved nippers, which might be an evidence of horseshoe fitting on the site. A seal ornated with Ottoman script, Ottoman coins and a 17th century Polish silver coin were other evidences to support the dating of the Ottoman layers.

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[60] Terracotta pipe bowls were reported as characteristic finds recovered from Ottoman sites mostly dated to 17-18th centuries. For the excavations reports that mention terracotta pipe bowls, see: Mikami and Omura, 1988, 3; Erkmen et al., 2009, 223; Lightfoot and Mergen, 1997, 345; Tarhan and Sevim, 1993, 408; Karpuz, 1995, 382; Uluçam and Kavaklı, 1999, 613; Barışta, 2001, 401; Erciyas et al., 2015, 24; Erciyas and Tatbul, 2016, 612.

[61] Erciyas et al., 2015, 24.

According to the preliminary evaluation of the archaeological material from the Ottoman phases in Hamamtepe, it could be suggested that, large spaces were inhabited by a small population. There is no evidence for intense production, consumption and discard behaviors for the Ottoman occupation.

Danishmend/Seljuk Workshop and Domestic Phase of 12th - 13th Centuries

Just as the modern activities have disturbed the Ottoman phase, layers of 12th - 13th centuries phase at Hamamtepe were disturbed by the Ottoman construction activities such as digging for wall foundations and leveling for occupation floors. (Figure 5) These post abandonment cultural and various other natural processes had a great impact on the archaeological record representing the 12th - 13th centuries phase. 12th - 13th centuries Danishmend/Seljuk phase was represented by dry stone wall foundations. Similar to the Ottoman phase, walls were made of mudbricks and supported by wooden frames. Only in one case mud was recovered in a rectangular brick form.[62] (Figure 6) Considering that mudbrick was a very fragile and soluble material when subjected to water and weathering after collapse of the building, they must have decomposed and largely lost their forms. But melted mud layers were observed just over the floor levels almost in all trenches.[63]

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[62] Erciyas et al., 2015, 26.

[63] Melted mudbrick layers are frequently mentioned at Amorium excavations in the medieval layers. For the cases they were observed see: Lightfoot and Ivison, 2012.

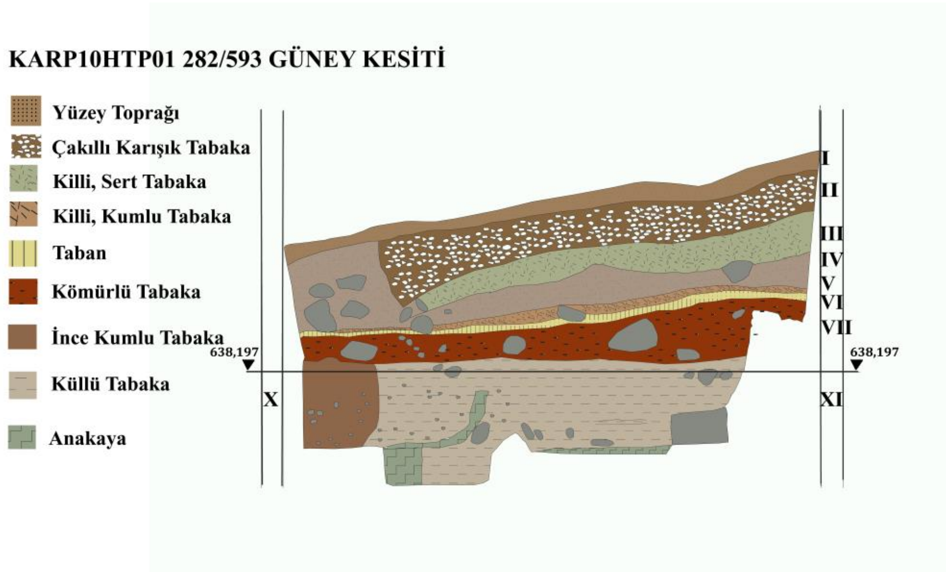

Figure 5: A sample section drawing. (by Coşku Kocabıyık)

Figure 6: Mudbrick tile recovered in the 12th-13th century layers

In many occasions marble and limestone blocks and other architectural decorative elements were found as spolia in the walls and structures.

Floors were of beaten earth soil and in some parts tile pavements were present. Also some floors had marks of the removed tiles from the floor reflected on the soil.

Walls of the structures of the earlier phases were partly used and modified for the workshop and domestic units. It has been understood that also the 10^{th} - 12^{th} centuries churches were modified and partly used during the construction of 12^{th} - 13^{th} centuries structures.

12^{th} - 13^{th} century phase was characterized with a rich number and variety of utility features on Hamamtepe. Therefore, one of the main questions regarding this phase is whether this site was a workshop of industrial activities, domestic unit or hybrid/multi-functional. (Figure 7)

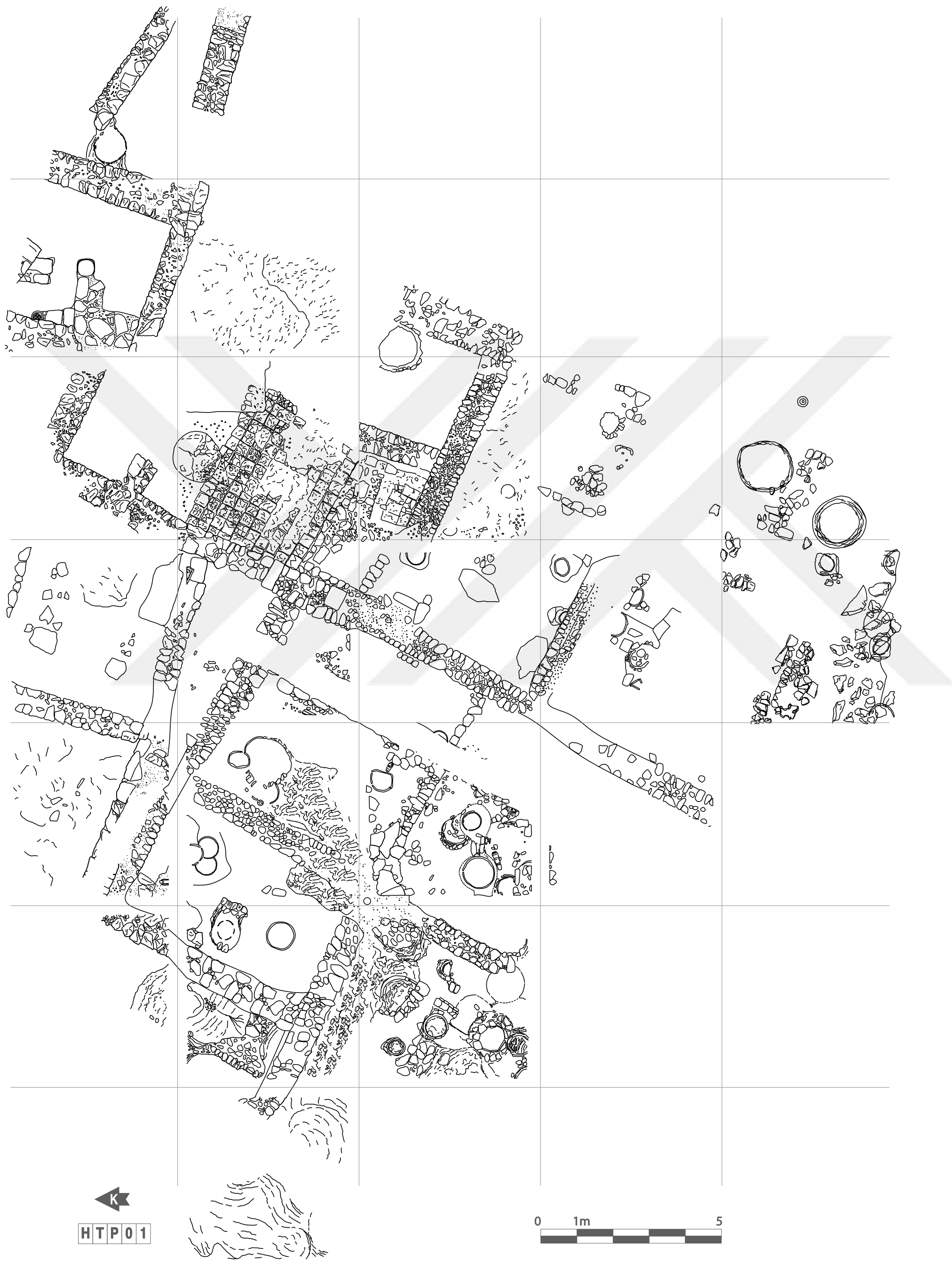

Figure 7: 12^{th}-13^{th} century Danishmend/Seljuk architectural phase in sector HTP01

Among various features, ovens with air circulation pipes, when possible, were frequently recovered installed in the room floors. Ovens were commonly found in archaeological sites representing 12th - 13th centuries occupied either by the Byzantines or Seljuks.[64] Since upper structures of ovens are fragile and open to deterioration, they were found mostly damaged. Even though they were subjected to various degrees of damage, they are still easily detectable and identifiable. (Figure 8)

Figure 8: 12th-13th century Danishmend/Seljuk phase in section HTP01 (view from the south)

[64] Tandır ovens were found in 12th – 13th centuries layers of Akarçay Höyük (Deveci and Ensert, 2004, 382), Anzaf Kaleleri (Belli, 1993, 448; 1996, 383; 1998, 547; Belli and Ceylan, 2001, 386), Çavuştepe (Erzen, 1980, 25; 1981, 91; 1983, 157-8; 1985, 198), Dilkaya (Çilingiroğlu, 1989, 263; 1991, 271), Gritille (Ellis, 1984, 121; 1986, 265), Gordion (Sams and Voigt, 1999, 565), Hangah (Darphane) Melik Mahmut Gazi (Gültekin, 2004, 320), Harran (Yardımcı, 1992, 425-6), İmikuşağı (Sevin, 1984, 148), İznik Tiyatro (Yalman, 1991, 385), Karagündüz Höyüğü (Sevin et al.,1998, 575; 2000, 410), Kinet Höyük (Gates, 2003, 409; Redford, 2012, 386), Mezraa Höyük (Yalçıklı and Tekinalp, 2002, 386; 2004, 378), Pirot Höyük (Karaca, 1983, 70-1), Samsat (Redford, 1995, 63), Sos Höyük (Sagona et al., 1997, 137) and Yumuktepe (Caneva et al., 2006, 108; 2007, 676).

Other types of characteristic features at Hamamtepe are pits carved in the bedrock. Since they were isolated from the soil and had the ability of water retention, they were supposed to be primarily used for keeping water. The mouth of a 2,5 m. rock carved pit at Hamamtepe was encircled with tiles to isolate it from the intrusions from the floor and keep it sterile[65].

There is another example of a shallow pit of which the interior was paved with stones and opening plastered with clay. It might be designed to keep dry food items such as grains in a sterile and cool environment.

Other than storage pits, refuse pits were also characteristic in the 12th - 13th centuries phase at Hamamtepe.

12th - 13th centuries phase have the most various and abundant archaeological materials at the site. Among them the vast majority is ceramics of all functions. Sgraffito glazed fine ware of 12th - 13th centuries are helpful in dating the phase, which are also present at contemporary medieval sites of the entire Anatolia. While a variety of imports indicated a vivid trade with the neighboring geographies, local production was also attested in the excavated layers based on the incised unglazed fragments and sufficient number of glazed tripods, even though no kiln was found yet. Incised unglazed ceramics, trivets with glaze sticked on and several waste materials of 12th - 13th centuries were reported by Redford in Kinet Höyük during the excavations of Byzantine layers.[66] Cooking and storage wares were also recovered from all contexts as if correlating the use of ovens and storage features. The spaces reflect both industrial and domestic character at the site.

Ceramics were the most abundant archaeological finds in the layers. Functional types appointed to cooking, storing and serving were scattered all over the layers. Not only use, both also production of 12th - 13th century glazed fine wares was attested based on the half products and tripods, even though no kiln were found yet.

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[65] Erciyas et al., 2011, 122.

[66] Gates, 1999, 266; Redford, 2004, 285.

Many amorph metal, bronze object, iron nails and fragments of instruments, tools and architectural elements were recovered. Metal slags were also recovered even though no metal oven was found yet.

Many glass objects and bracelets were found in various fragment forms.

Byzantine, Danishmend and Seljuk coins ranging between 11th - 13th centuries were recovered from the layers.

Other than various artifacts, animal bones and plant remains were the characteristic finds of the phase. Animal bones were found in all layers in huge amounts. Plant remains were recovered from burnt and mineralized contexts.

A special category of finds was the bone objects. Bone objects such as spindle whorls, needles, buttons, ornamental elements and various others were frequently found in all contemporary archaeological sites. Presence of them is an indicator for versatile use of animals, domestic and industrial operations.

According to the preliminary observation of archaeological data recovered from the 12th - 14th centuries phase, it can be suggested that there was a revival at the site. It is clear that small rooms were intensively occupied with various utility features. It might be suggested that the units and the population was primarily squeezed into fortification, even though extramural spaces of the citadel were also inhabited. This vivid life was reflected on the spatial organization with dense number of ovens, storage features and refuse pits in all rooms. These features were indicative of intensive production, consumption and refuse behavior in the archaeological record. Accordingly, variety and amount of materials in the layers and contexts were the richest among all architectural phases. A communal, collaborating and multifunctional community could be considered.

10th - 12th Centuries Middle Byzantine Churches and Graves

10th - 12th centuries were represented with two Middle Byzantine churches and graves.[67] Both churches have three apses and they are rather small chapels. (Figures 9, 10, 11) They were constructed back to back with distance of ca. 4 meters between them. They were assumed to be private chapels due to their close proximity and small sizes. Naves of both churches were constructed more diligently with three lines of terracotta tiles bound with mortar and a large stone order. While tiles were primarily used as pavements, limestone and marble blocks and inscription fragments were also discovered both on the floors and the walls.[68] In the central apse of the western church, a plain Roman column shaft was installed as altar.[69]

[67] For more details and discussions on the Middle Byzantine churches see: Erciyas et al., 2015, 29-32; Erciyas and Tatbul, 2016, 614-616.

[68] Inscriptions dated to the 2nd - 3rd centuries AD were published by Elif Alten (See Alten, 2015).

[69] A column shaft used as architectural feature has been reported in the 11th century Middle Byzantine church at Boğazköy-Hattuşaş (See Neve, 1984, 140).

Figure 9: 10th - 12th century 3 apsed church (Church A)

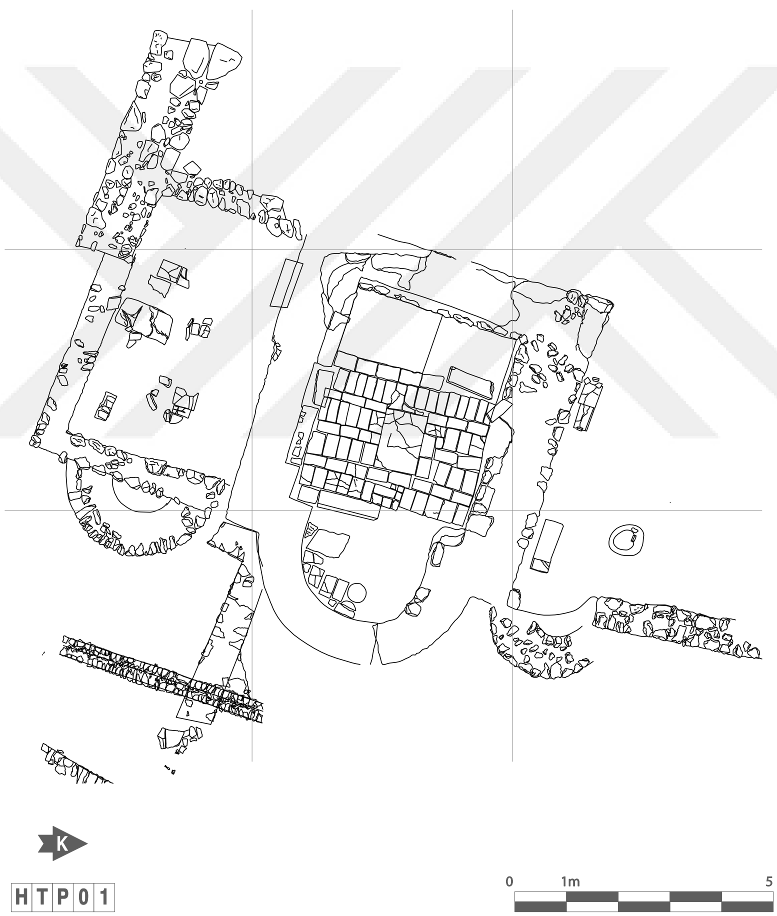

Figure 10: Architectural plan of church A

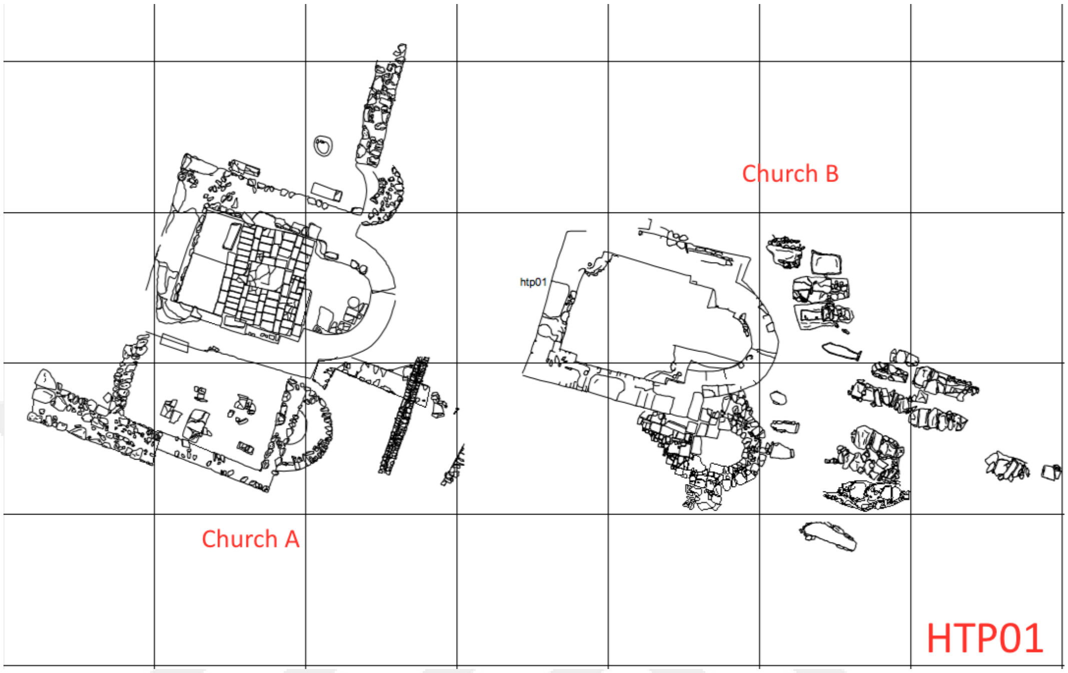

Figure 11: Architectural plan of adjacent churches in sector HTP01

In Church A, a thick layer of mortar and frescoes were removed from the top of the floor.[70] Since there were no cultural materials or ecofacts recovered from the deposit, except one burned oil lamp, it was clearly understood that the central nave was not used for another function before it collapsed. But the side aisles with small apses were modified and secondarily used during the 12th - 13th century phase. Tramped compact soil floors were detected following the tile floor in the aisles of the church, which were associated with the 12th - 13th century phase.[71]

[70] Frescoes were studied and published by Nilay Çorağan-Karakaya. They were dated to 11th century AD by the author (See Çorağan-Karakaya, 2015, 196).

[71] The same sequence has been remarked in the church excavation at Amorium, which was dated to 13th century Seljuk period based on a coin find. A tramped soil floor was formed during the Seljuk occupation after the church lost its original function (See Lightfoot and Mergen, 1997, 347).

By the eighth year of the excavation, 103 graves have been excavated at Hamamtepe in total.[72] (Figure 12) The graves were found concentrated in and around the church area and expanded to the western part of the citadel between the church and the fortification wall. Few graves were also found outside the western fortification on the rocky slope and no graves detected in the southern part of HTP01 area.

Figure 12 :10th - 12th century Byzantine graves in sector HTP01

Churches of the 10th - 12th centuries and graves were represented by the characteristic bronze finds such as crosses of various forms including reliquary, liturgical elements such as chandeliers, small bells and other ceremonial equipment.

[72] Human remains were studied by Yılmaz Selim Erdal and his team in the Anthropology Laboratory at Hacettepe University at Ankara, Turkey. An article on the preliminary results on the graves were published by Erdal et al. (Erdal et al., 2015).

Terracotta rosettes were other architectural elements dominating the layers of the churches.[73]

As the stratigraphy of the site showed, Hamamtepe was used as cemetery in the 10th - 12th centuries. It means that it was abandoned before 10th century and was not settled until the 12th century, and used as cemetery during that time span. However, below the graves pre-10th century remains were found both in architectural and finds scale.

Pre-10th Century Phases

Pre-10th century was represented by a fortification wall and stronger wall fragments constructed with mortar here and there below the 10th - 12th centuries phase layers. It was a citadel of the earlier period but the function of the interior buildings could not be defined yet. Ovens with different forms were found in HTP01 area and few limestone blocks possibly in situ placed over the bedrock in deep layers ca. 3 m. Unglazed earlier pottery, Roman pottery, animal bones and plant remains were recovered in those layers. Abundant number of roof and floor tiles used in the upper phases also came from the pre-10th century phases. This might be considered as an indicative of a well-organized and wealthy community that also had public properties.

[73] Terracotta rosettes were also named as "quatrefoils" in the terminology. Use of these architectural elements were quite popular in the Middle Byzantine churches. For the assemblage found in Komana see: Erciyas et al., 2015, 31.

CHAPTER 3

THEORETICAL AND METHODOLOGICAL DEBATES IN SPATIAL ANALYSIS IN ARCHAEOLOGY

3.1 Introduction

Archaeology is the study of human past through physical remains. In the practice of the discipline time, place and material are the absolute must components. From the earlier periods of discipline archaeological materials were categorized and given meaning in relation with past communities. Cultures and periods in different geographies were defined based on the materials. Archaeological knowledge accumulated by typology of artifacts and technological advancements were explained through typology. Cultural interactions between entities, influences on one another and origins of advancements were discussed under diffusion theories.

In 1950s, while the principle research questions focused on large-scale patterns of material culture in time and space, 1960s recognition of artifact patterns set forth functional and behavioral aspects instead of merely time and culture.[74] Now the research questions were on spatial variability of occupation floor assemblages, defining room functions, household organizations and activity area inspections.

With the scientific advancements after World War II, specifically exploration of absolute dating techniques such as C14, dendrochronology, aerial photography, new theories, methods and techniques involved in the discipline. The new archaeology was now more scientific, objective and interdisciplinary. It was based more on explicit theories, explaining processes, hypothesis testing, strategic data collection in

[74] Schiffer, 1995, 202.

accordance with research questions, use of quantitative data and statistical techniques as well as a more optimistic approach to the archaeological record.[75]

In order to deal with the complex structure of the archaeological record, more theoretical and methodological approaches emerged by processualists such as Middle Range Theory by Lewis Binford and formation processes theory by Michael Schiffer. Since the archaeological record is the bridge between the past and the present, all the components and conditions of its elements and its formation aimed to be explained in detail. These theoretical and methodological initiatives made the discipline more steady and open to improvements.

Because the formation of the archaeological record was due to horizontal and vertical processes of cultural and natural factors, spatial inspection of it emerged in different aspects. Spatial organizations of the past societies were inspected in different hierarchical scales. While settlement pattern studies aimed to define the organization of large and small settlement types within geographical regions and political and administrative networks, internal organization of settlement structures and behavioral and functional aspects of intrasite living became focus of interest.

Spatial relationship of objects in different analytical scales increased the potential of information that can be provided from the archaeological record. Levels of spatial inspection were defined in three aspects: macro scale, semi-macro scale and micro scale.[76] Within the limits of these spatial definitions the relationships between settlements and their natural environment (macro scale), organization of a site among its units/quarters and its periphery (semi-macro scale) and organization of an individual spatial feature such as a building complex, household unit or an activity area of a prehistoric camp site have been studied in intrasite level (micro scale). While surface survey materials in large areas were subject to macro scale spatial analysis, micro scale or intrasite spatial analyses were mostly practiced in excavated sites.

[75] Renfrew, 2008, 41.

[76] Clarke, 1977, 5.

In the early period of the application, spatial analysis in archaeology was given importance due to uncritical assessment and unsatisfying interpretation of the archaeological data, lack of objective assessment of archaeologists on the archaeological record and a need to cope with large amounts of spatially referenced archaeological data accumulated.[77]

3.2 Theoretical and Methodological Debates

Since the birth of processual archaeology in 1960s, a variety of theoretical and methodological issues have been put forward, discussed and developed on spatial analysis in archaeology. I would conveniently group the body of theoretical and methodological applications, improvements and debates of spatial archaeology under four major titles: (1) archaeological record, (2) spatial relationships, (3) statistical and quantitative approach and (4) interpretation and inference.

The first notion is the archaeological record, which was not only crucial for spatial analysis but also for applications of archaeological method and theory. It is the physical world, where past and present is linked in various degrees of representations. Therefore the strengths and weaknesses of this link had to be well understood through archaeological inquiries.

The second body of theoretical and methodological debates focused on the rules of spatial relationships of the archaeological materials. While contextual relation of materials, contemporaneity and feature-artifact relations were interrogated, the potential of behavioral and functional inferences through spatial distribution patterning and physical conditions of artifacts were debated.

Statistical and quantitative approach as a result of processual movement constituted the third class of the debates. Selection of proper sampling unit sizes,

[77] Hodder and Orton, 1976, 2.

quantifying artifact fragments, testing appropriate multivariate statistical techniques and searching for random and non-random distribution patterns have build up the agenda.

The last body of arguments centered upon the interpretation of data and inference. Especially how to read human behavior, interpret space function and explain C-transformations and N-transformations from quantitative data were the hot topics. Interpretative tools such as ethnographic analogy, experimentation, ethnoarchaeology and uniformitarianism were integrated in the spatial analysis theory and method.

3.2.1 Archaeological Record

Archaeological record is the physical remains of the past which archaeologists deal with in order to reconstruct the past. It is composed of physical remains, it is static and spatially distributed and it is formed as a result of cultural and natural transformational processes.[78] Archaeological record consist of physical materials both visible on the land surface and beneath the earth. These physical materials include architectural features, artifacts and ecofacts positioning partly on the surface or invisible within the soil fills. Because they are no more in use, they are stable. And until they become stable they have been exposed to a variety of cultural and natural transformations.

Two principle theories emerged and developed for decoding archaeological record in the first two decades of processual archaeology: one was the Middle Range Theory pioneered by Lewis Binford and the other was Formation Theory of Michael Schiffer.

Binford termed archaeological record as *present statics* and the time where the materials are elements of an actual living system as *past dynamics*. He addresses the archaeological record (present statics) to be carefully read to make reliable inference

[78] Papaconstantinou, 2006, 14.

about *past dynamics*. According to Binford the archaeological record was the linkage to fill the gap between past and present.

Middle Range Theory

Binford, in his middle level theorizing attempt to reconstruct the past human behavior, offered to deal with the archaeological data by appealing to site formation, ethnoarchaeology and experimental studies.[79] He suggested using those tools to better analyze and interpret the present statics (archaeological materials) in the pursuit of past dynamics (past phenomenon).

Binford's middle-range theories were descriptive reconstruction of the past by observations on the present archaeological remains.[80] Describing the formation of the archaeological record was crucial in Binford's middle-range approach where he was aiming to describe taphonomy and change of deposited artifacts natural and cultural factors.[81]

According to Binford observations on the archaeological record do not only enable archaeologists to recognize the contexts of the past behavior. If we aim to understand the linkage between statics and dynamics, we must observe both aspects simultaneously.[82] Based on this aspect Binford suggested that archaeological records of excavated sites should be given meaning with observations in the present day. He claimed that the study of contemporary peoples, conducting experiments to see cause effect relationships and appealing to all sorts of historical sources was necessary.[83] Binford also stated that ethnoarchaeology, experimental archaeology and historic site

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[79] Nærøy, 1997, 2.

[80] Kosso, 1991, 622.

[81] Kosso, 1991, 622.

[82] Binford, 2002, 23.

[83] Binford, 2002, 26.

archaeology had the potential to improve the methods of inference from the archaeological record.[84]

Binford introduced ethnographic analogy, ethnoarchaeology, experimentation and uniformitarianism as the linking inferential tools between past and present. Taphonomy of ecofactual remains became the key element of archaeological inquiry. It was crucial in explaining the transition of faunal remains from dynamic biosphere to static geosphere, thus the formation processes of the archaeological sites.

In early 1970s, Binford conducted his cornerstone ethnoarchaeological research on Nunamiut culture in Arctic region. His primary concern was the animal exploitation of Eskimos and faunal analysis. Following that research he traveled to Australia to observe lithic tools manufacture of aborigines who were still producing and using stone tools.

His observations on the manufacture, use and discard on the stone tools in Australia and butchering and consumption of the animals in the Arctic, initiated the activity area and distribution pattern recognition studies in spatial and behavioral archaeology. These patterns are always visible in the archaeological records in certain degrees, of course considering the effects of the formation processes both cultural and natural. Also his aspect of observing distribution patterns of both lithic artifacts and faunal remains together emerged in this period.

Formation Theory

In the very busy agenda of theory building in archaeological discipline, Schiffer emerged with proposals concerning transformational processes of both cultural and natural factors. Very similar to Binford, Schiffer termed the archaeological record as

[84] Binford, 2002, 104.

archaeological context and the things when they were a part of a behavioral system as *systemic context*.[85]

Uselife of artifacts and *taphonomy* of faunal remains, were given special attention. Observing the uselife of artifacts helped to define the stages an archaeological material passed during its time in *systemic context or in past dynamics*.

Prior to analyzing the spatial relationship of artifacts, ecofacts and features among each other, the spatial units where the items are present in space, are also investigated in formation aspects. This investigation emerged the understanding of the cultural and non-cultural transformational processes that are effective on the formation of the archaeological record in and around settlements, sites or specific structures, features and even layers. Spatial relationships of objects are important however the cultural behavior or the non-cultural factors that affect the position, form and structure of them must be understood well in order to produce reliable inferences on the archaeological record in the pursuit of the past human behavior. Identification of the processes that form the archaeological record and to build a linkage between contemporary observations on the archaeological record and expressions on the past is crucial in that sense.[86] Understanding the formation processes enables the reconstruction of the lifecylce of the settlements, sites, structures, features and artifacts in various aspects.

In his approach of decoding archaeological context to infer systemic context, Schiffer suggested to better understanding the formation processes originated both from cultural and natural factors during the formation of the archaeological context. He argued that archaeological materials transform from their original period of use in systemic context until the archaeologists recover them in archaeological context.

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85 Schiffer, 1972, 157; 1996, 3.

86 Papaconstantinou, 2006, 23.

Therefore he called those cultural and natural (non-cultural) factors as C-transforms and N-transforms.[87]

Archaeological sites experience the processes of construction, habitation, abandonment and post-abandonment.[88] To what extent we can reconstruct the systemic context or dynamics of a site in the past depends on the refuse disposal behavior of the humans. In every stage of a site such as habitation, abandonment and post-abandonment we can expect certain characteristic patterns of refuse that possibly originated from a variety of elusive behaviors.

La Motta and Schiffer attributed the formation of house floor assemblages to two contrary directions of material flow: accretion and depletion. In each stage (habitation, abandonment and post-abandonment) of formation processes of house floor assemblages, they stated that both accretion and depletion factors had a role. Basically while accretion processes ended up with deposition of objects in domestic structures, depletion processes resulted with the removal of objects from archaeological deposit of a domestic structure or the location of last use.[89] Based on these two, characteristic refuse behaviors were attributed to each process (i.e. de facto refuse as accretion and curate behavior as depletion in abandonment processes).

Habitation phase of a site represents the dynamic life of a community where we can expect to deal with refuses originated directly as a result of activities in related locations where they enter into the archaeological record or archaeological context. These activities may include food preparation and consumption, artifact production and repair, labor and social activity area maintenance, recreation and rituals. In general primary refuse and provisional discard were attributed to habitation phase as a result of accretion and secondary refuse deposition as depletion processes.[90]

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[87] Schiffer, 1996, 23.

[88] La Motta and Schiffer, 1999, 19.

[89] La Motta and Schiffer, 1999, 20.

[90] La Motta and Schiffer, 1999, 20.

Difference between *primary refuse* and *secondary refuse* is that while both are discarded elements, primary refuse materials are discarded in the location of use and secondary refuse materials to an unrelated location.[91]

Secondary deposition represents the removed primary refuse from the area of activity and the deposition to a remote/removed location, which may be a midden, toft, landfill or an abandoned structure.[92]

Provisional discard is another process representing habitation phase, where broken or worn-out objects are kept with the possibility of further use.[93]

When a site is abandoned the process of formation of archaeological context begins. In other words things start to become static. The content of the archaeological record is directly proportional with the wide variety of human behavior during the abandonment stage.

During the abandonment stage some materials are left behind in their location of last use. This behavior is called *de facto refuse*. Schiffer terms the elements that took place in the archaeological context "without the performance of discard activities" as *de facto refuse*.[94] The partly opposite is *curate behavior* as Binford terms, where still usable items are removed and transported during the processes of abandonment.

Another process is the ritual abandonment such as firing the abandoned structure. In this behavior a rapid collapse of building, well preservation of de facto refuse and of botanical remains requiring firing conditions could be expected.

In terms of abandonment processes de facto refuse is defined as an accretion process, curate behavior is of depletion. Ritual behavior can be either accretion or depletion.[95]

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91 Schiffer, 1972, 161; 1996, 58: La Motta and Schiffer, 1999, 21.

92 La Motta and Schiffer, 1999, 21.

93 La Motta and Schiffer, 1999, 21.

94 Schiffer, 1972, 160.

95 La Motta and Schiffer, 1999, 20.

There are multiple variables that affect the behavior of abandonment. Schiffer mentions them mainly as: rate of abandonment which can be either rapid (unplanned) or slow (gradual), capabilities in transportation, season of abandonment, distance to destination, immigrating population size, whether the abandonment is temporary and a return is possible/anticipated, size and weight of the artifacts to be transported, replacement costs, remaining uselife and functioning of the transported object and condition curate probabilities.[96] Especially curate priority is given to the objects, which are quite portable, have high replacement costs and are still usable, and de facto refuse occurs when they are difficult to transport and easy to replace.[97] In the case that a floor assemblage provides easily portable, valuable and usable objects, an inference can be made that there might have been a rapid or unplanned abandonment[98] and no plunder until the objects entered into the archaeological record or survived by chance.

For the rapid unplanned abandonment behavior 11th century Byzantine Rural site Çadır Höyük might be a good case. The observation was as follows: while broken jars and other objects left behind, there was no evidence for valuable objects. There was no evidence of human death but the stable was full of animals such as cattle, goat, sheep and pigs tied up and left to their fate. This scene was interpreted by the excavator as the community left the settlement to escape from Seljuk raids and they needed to move quickly that they could not take the animals with but left them in the stables with the thought that they may return back after the danger is over.[99]

After a structure is abandoned, formation processes still continue. The structure can be reused for habitation or some other functions. New post-abandonment primary, secondary and provisional discard processes may occur, which hide or erase the traces

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96 Schiffer, 1996, 90-1.

97 La Motta and Schiffer, 1999, 22.

98 La Motta and Schiffer, 1999, 22.

99 Cassis, 2009, 32.

of prior habitation stage. In this case some accretion or depletion behavior may originate due to the reuse of the structure after abandonment. This interference may lead to bias in the pursuit of understanding the actual operation of the structure.

As observed in most cases of archaeological record the construction for floor leveling of later phases result with the disturbance of the previous phase. In these conditions traces of habitation and abandonment behaviors are destroyed.

Another type of formation processes is originated from natural factors. Their impacts are recorded on the archaeological materials from their occurrence until their recovery in the archaeological context. During their time from discard until their recovery they are subjected to deterioration as a result of various elements. These elements are grouped under three basic groups of agents: chemical agents, physical agents and biological agents.[100]

Chemical agents produce the chemical reactions that will deteriorate the materials. Corrosions on metal objects, especially coins, deterioration of animal bones due to salt and acidic contents of soil and are mostly encountered conditions.[101]

Physical agents both cause to formal deterioration on individual artifacts and deposit thus sites. While earthquakes, landslides, volcanoes, hurricanes, floods etc. affect the sites in a rapid manner, wind, water and sunlight have weathering impacts on features and artifacts that will alter their forms.[102]

Biological agents such as bacteria, fungi, pests, burrowing animals and plant roots cause to deterioration.[103]

In order to identify formation processes attributes of artifacts and characteristics of deposits that allow archaeologists for the practical identification of formation

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[100] Schiffer, 1996, 147 (after Downing, 1970,5: Rathje and Schiffer, 1982,130).

[101] Schiffer, 1996, 148.

[102] Schiffer, 1996, 148-149.

[103] Schiffer, 1996, 149-150.

processes have to be comprehensively analyzed.[104] Schiffer defines deposit as an entity created by some minimal unit of cultural and natural deposition (i.e. a layer of trash, fill of a pit and floor of a structure).[105] These observations are grouped into three aspects: (1) simple properties of artifacts, (2) complex properties of artifacts and (3) other properties of deposits.[106]

Simple properties of artifacts are inspected based on the size, density, shape, orientation and dip, uselife factors, damage and accretions properties of artifacts recovered during the excavations.[107]

Schiffer draws a model for the uselife of archaeological materials by categorizing in two groups as durable and consumable elements. While he divides the processes of durable element into five as procurement, manufacture, use, maintenance and discard, consumable elements constitute of the procurement, preparation, consumption and discard stages.[108]

Complex properties of artifacts are inspected based on artifact quality, artifact inventory, vertical distributions, horizontal distributions, artifact diversity, artifact density of deposits, measures of disorganization, artifact reassembly and representation of parts.[109]

Other properties of deposit include detailed inspection of sediments, ecofacts and other intrusive materials and geochemistry.[110]

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[104] Schiffer, 1996, 265.

[105] Schiffer, 1996, 266.

[106] Schiffer, 1983, 675; 1996, 267.

[107] Schiffer, 1996.

[108] Schiffer, 1972, 158-159.

[109] Schiffer, 1996.

[110] Schiffer, 1996.

Pompeii Premise

City of Pompeii is a phenomenon in archaeology as being a perfect site to study artifact assemblages in complete preservation. Since the city was covered with a thick layer of volcanic ash as a result of Vesuvius eruption in AD 79, everything in Pompeii remained almost in their last positions. Therefore, the archaeological record in Pompeii as representing *de facto refuse* and providing a nearly complete picture of the systemic inventory on the house floor assemblages accepted as the ideal model to make behavioral and organizational inferences on archaeological record.

Ascher was the first who used the term "Pompeii premise" while stressing that what archaeologists disturb are not the remains of communities as they were frozen in time but the process of decomposition.[111] While Pompeii is a unique case, archaeological sites often are extremely disturbed by post-occupational processes of both cultural and natural factors. In most cases artifacts are not recovered in their original systemic location of use and they are in highly fragmented forms. They do not keep their integrities and entire forms. Data used in behavioral archaeology are mostly of secondary refuse.[112]

It has been a much-debated argument that formation processes of archaeological sites have to be well understood prior to make safe inferences on the floor contact assemblages. Taking Pompeii as a model, without appealing to formation processes, may lead to bias in studying occupation floor assemblages. Therefore refuse behavior and natural factors should be comprehensively analyzed before evaluating the patterns.

Allison reconsiders and discusses the "Pompeii premise" based on her house content study.[113] She not only brings attention to the eruption event of AD 79 but also the destructive earthquake of AD 62, which resulted with building collapses,

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[111] Ascher, 1961, 324.

[112] Schiffer, 1996, 201.

[113] Allison, 1995.

abandonment of some parts of the city, recovery from the destruction, deposition to abandoned buildings etc. She also considers the behavior of its inhabitants during the 17 years time span of low-level seismic activities between earthquake and eruption.[114] She stresses that even though Pompeii provides well-preserved archaeological evidence in terms of architectural and house floor assemblages; the excavations at Pompeii revealed variability and complexity of Pompeii. Instead of taking it a model site of frozen moment, it should be considered as a model for changing social life.[115]

3.2.2 Spatial Relationship

Contemporaneity of Data, Spatial Relationship of Objects and Feature Object Relation

The principle rule of spatial analysis in archaeology in every scale is to ensure that the data brought together is contemporary. In terms of intrasite analysis, the elements of each phase should be safely distinguished from others. As we have discussed in the previous part, the archaeological record is highly decomposed. Therefore, even though the materials represent a single phase, they might have lost their systemic contexts. I should mention here one more time the importance of understanding the formation processes in detail, especially if a multidimensional spatial inspection is aimed on the archaeological record.

The relationship between objects was rested upon the contexts defined by the excavators. Potential of material distribution and spatial artifact patterning has not been sufficiently recognized. Evaluation of the spatial patterns by the excavator’s observations was limiting the scientific approaches of archaeology as well. An objective

[114] Allison, 1995, 50.

[115] Allison, 1995, 170.

and statistical base was established instead of inspection.[116] Spatial relationship of objects in different analytical scales increased the potential of information gained from the archaeological record. Recognition of artifact relationship among different types in intra-site level became important in the pursuit of understanding the behavior.[117]

Archaeological materials in whatever processes they have been exposed to, they still hold a place within the multidimensional archaeological layer. Pattern recognition by extraction of the spatial distribution of objects within the multidimensional layers provide the relationship of objects to each other and the space under investigation; on one hand the relation of objects to each other or a same or different group of objects, on the other hand the position of an object or a group of objects within a boundaries defined space and around utility features are the concerns of spatial analysis both in vertical and horizontal terms.

Recognition of distribution patterns is not only crucial in understanding the systemic context but also to define the degree of transformational processes exposed on the archaeological record. Therefore, a hypothesis, which may not be answered positively, would resolve the decomposition of the archaeological record. In this respect providing formation data is valuable, as well as data representing systemic context.

Statistical Representation of Human Behavior and Recognition of Random/Non-random Distribution Patterns

Intra-site spatial analysis is the recognition and identification of the spatial patterning of the artifacts within structures, between structures that constitute a site or a boundary indeterminate temporary activity location such as a temporary used hunter-gatherer camp site, a Paleolithic activity area, a midden, a treshing floor or a discard location apart from a settlement. With this task the distribution patterns of the materials

[116] Whallon, 1973, 266.

[117] Blankholm, 1991, 41.

are determined by appealing to multivariate statistical techniques and the quantitative information is interpreted in order to make behavioral inferences that are reflected on the archaeological record.

Distribution of archaeological materials whether they are random or non-random within a defined space is important since it is assumed that any distribution pattern other than random might designate possible human behavior in space. Distributional analysis increases the quality of spatial data and the meaningful patterns resulted from this analysis exposes the social action in space.[118]

While conducting the significance test we should consider the three matters: first we are looking for distribution patterns, which are behaviorally interpretable, second even if we found statistically significant spatial relationships it does not mean that they are representing behavior and third a behavior may not be represented as statistically significant in the record.[119]

Checking for non-random distributions of artifacts became a prerequisite issue in spatial analysis and it was generally accepted that random distributions were not drawing suitable pictures to inspect human behavior in the archaeological record and random patterns are useless to perform statistical and methodological applications.[120] With the application of spatial analytical techniques, limitations in detecting invisible patterns composed of large amounts of data by usual traditional techniques were reduced.[121]

Whallon in his research to define contents and position of tool kits on the occupation floor of Paleolithic sites, suggested three procedures for recognition of distribution patterns of artifacts: first testing for non-random spatial concentrations of each type of artifacts, second reorganization of data to best screen clusters in the

[118] Barceló & Maximiano, 2007, 3.

[119] Blankholm, 1991, 43.

[120] Blankholm, 1991, 42.

[121] Hodder and Orton, 1976, 242.

analysis of inter-correlation among artifact types and last analyzing spatial inter-correlations between artifact types to define similar distributions.[122]

In 1970s Schiffer's introduction of primary and secondary refuse increased the behavioral aspects of artifact categories in the spatial research when compared to the standard analysis of formal tool types[123] and material distributions that were found unrelated within the artifact groups may be meaningful when analyzed whether they are concentrated around features.[124]

Artifact Function, Activity Area and Room Function

Spatial analysis in archaeology is applied in Paleolithic sites mostly with indeterminate boundaries and sites with infrastructures where spaces are already defined by architectural structures and utility features.

In boundaries indeterminate sites, such as Paleolithic and temporary hunter-gatherer camp locations, stone artifacts and faunal remains distributions were investigated in order to define limits of activity areas, activities themselves and function of the area investigated.

Also spatial patterns among artifact types were considered to propose function to the tool types. In early 1970s, spatial patterning of artifact distributions utilized to make functional inferences. Same type of artifact clusters in certain locations was interpreted as possible indicatives of special functions.[125]

122 Whallon, 1973, 266.

123 Blankholm, 1991, 41.

124 Whallon, 1973, 267: Simek, 1984, 405.

125 Blankholm, 1991, 38. Also see Binford 1966 and Whallon 1973 for the determination of function based on spatial patterning of artefacts.

In such sites, since there are no physical spatial units, artifact counts per grid or exact coordinates recorded for each individual artifact is needed.[126] Functional features such as hearths and artifact and faunal material clusters around them were regarded in defining activity locations, activities themselves and function of both artifacts and the activity are used. Therefore testing for randomness of distribution patterns is prerequisite especially in Paleolithic and boundaries indefinite sites due to the absence of architectural structures that define spatial units.

In the sites where architectural structures were taken as spatial units artifact, faunal and floral contents recovered from the occupation floors and functional features such as ovens, storage vessels and pits together representing a single occupation phase in each room were investigated in order to understand the type of activities performed, refuse behaviors, function of the rooms and complex formation of the archaeological record associated with those spatial units.

Such investigations were conducted to understand room functions, household behaviors, intra-site organizations and formation of the archaeological record within the range of Neolithic to historical periods. In the last decade, two PhD dissertations, were written taking two important classical sites as case studies, one in Sagalassos, Turkey and the other in New Halos, Greece. The first dissertation aims to develop a methodology for Classical Archaeology conducting contextual analysis at intrasite level bringing together Roman architectural and contextual elements with both artifactual and ecofactual data sets.[127] The second dissertation aims to explore domestic economy and social organization through spatial analysis of archaeological data among a group of excavated Greek Houses following a statistical approach (i.e. Correspondence analysis) and defining functions for domestic units.[128]

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[126] See Whallon 1973; 1974 for the application of grid count data collection and sampling by coordinates.

[127] Putzeys, 2007.

[128] Haagsma, 2010.

Outstanding examples of intra-site spatial analysis research on Classical and Hellenistic Greek domestic assemblages were conducted at Halieis[129] and Olynthus[130] in multiple houses. Ceramic contents of rooms were grouped and calculated as much as possible in terms of MNV (minimum number of vessels) based on rim and base counts where plenty of whole vessels were also recovered as de facto refuses.[131]

Both sites are noteworthy with their approach to archaeological record that in historical archaeology excavations mostly focus on the reconstruction of the architecture and artifact studies were held separately than spatial investigations. In Halieis and Olynthus the spatial investigation of artifacts with proper quantification methods in accordance with architectural understanding of the domestic structures were held together.

Also the spatial interpretations of rooms were discussed at Halieis in terms of understanding the formation processes and their effects on living room floor contents and artifact forms and conditions. It is a well-organized research considering the importance of explaining site formation processes in spatial studies, which was introduced by Schiffer few decades ago.

Olynthus is a significant example of a Greek city well researched in terms of household and city organization. Use of space and function of the rooms were investigated based on artifacts recovered from living floors of the houses. Weaving areas were defined based on loom weights recovered,[132] food preparation areas were inferred with the presence of grindstones[133] and bronze vessels and objects of daily use were located as house contents.[134]

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[129] Bradley and Nevett, 1999.

[130] Cahill, 2008.

[131] Bradley and Nevett, 1999, 47.

[132] Cahill, 2008, 172.

[133] Cahill, 2008, 163.

[134] Cahill, 2008, 165.

Iron Age site Tel Halif provides another well-established comprehensive spatial analysis of organization and use of domestic space.[135] The site experienced destruction and fire during a warfare event that rich variety artifact and ecofact contents of the domestic structures were sealed under collapsed walls and roofs due to destruction and fire.[136] Also micro-artifact samples taken from floors were integrated to the spatial research.[137] Samples close to ovens provided faunal and floral remains that were interpreted as closely related with cooking activities.[138]

3.2.3 Statistical Representation and Quantification of Materials

Spatial Archaeology focused on the description and analysis of spatial distributions that more reliable basis for interpretation was established with quantitative and statistical approach.[139]

Quantitative approach provided discovery of patterns, objectivity in analyzing those patterns and to handle large amounts of data. The patterns of data could be demonstrated explicitly in a quantified form and objectivity was crucial to refrain from subjective interpretations in the pursuit of producing scientific knowledge.[140]

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135 Hardin, 2004.

136 Hardin, 2004, 72-73.

137 Hardin, 2004, 74.

138 Hardin, 2004, 75.

139 Hodder and Orton, 1976, 7.

140 Hodder and Orton, 1976, 241.

Sampling Unit Size and Sampling Method

In spatial analysis studies scale of the spatial inspection is crucial in terms of recognition of randomness.[141] Improper selection of inspection scale may result with the disappearance of the actual distribution pattern. Clusters close to or larger than the subject area will not be recognized. Thus the scale of the sampling unit in spatial analysis is crucial that the recognition of distribution pattern is highly dependent on the selection of observation scale. The sampling strategy decision should consider the intended proportional artifact/ecofact size that assumed to be detected within the sampling unit.

The statistical technique and data collection method should be responsive. Whallon in his early spatial analysis work on Paleolithic occupation floor uses both grid collection (1mx1m) and 2d coordinates for individual artifacts in order to determine randomness of the artifact distributions.[142] While artifact counts per grid was needed for dimensional analysis of variance, coordinate data was proper for nearest neighborhood analysis. This case is a good example to suggest that sampling method and statistical technique used should be compatible.

Quantification of Artifacts and Ecofacts, Coping with Artifact Fragments, Proper Statistical Techniques

In spatial analysis determination of quantity of artifacts is the basic procedure to compare contents of spatial units and rooms. Since the integrity of artifacts varies due to many factors, they are recovered as whole, broken and in highly fragmented forms. The principle in spatial analysis is to estimate the systemic inventories of the occupation room floors or the density of the artifact in an archaeological fill.

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141 Blankholm, 1991, 43.

142 Whallon, 1973, 266-267; 1974, 16.

While the whole and refitable broken pieces are relatively easier to quantify, highly fragmented pieces needs practical methods of quantification in a most correct way. Therefore best method should be selected to determine correct representation of each artifact types in rooms.

In ceramic studies MNV (minimum number of vessels) is calculated considering the identifiable elements of the vessels such as rims, bases and handles.

Another technique is to refit the fragments within an assemblage. This technique is also used for both to determine minimum number of vessels and to understand the degree of formation processes effective on the archaeological record.

In more problematic and complex archaeological deposits number of pieces and scaling weight of the fragments are other alternative techniques to determine the density and distribution of artifact types and to understand the degree of fragmentation thus the degree of disturbance on the archaeological record. In the conditions where fragmentation is evaluated with quantification and scaling of pieces the volume of the deposit should be taken into account.

In the quantification of faunal remains, MNI (minimum number of individuals) and NISP (number of identified specimens) are the widely accepted techniques appealed. Quantification of plant remains also use MNI while the volume of the soil sample taken and charcoal sorted are considered in the calculations.

3.2.4 Interpretation and Inference

Distribution patterns are needed to be carefully analyzed and interpreted in order to make reliable inferences on the human behavior. The main argument was that sole statistics couldn't reflect human behavior directly. There was a need for interpretative tools to produce reliable inferences through archaeological data. Use of ethnographic data in order to interpret and explain archaeological data created the research area of ethnoarchaeology. Statistical techniques are for the recognition of the patterns and ethnoarchaeology is the tool to identify and interpret the patterns.[143] Emphasis on the ethnoarchaeological studies emerged due to unsatisfaction with quantitative methods and the complex nature of formation of the archaeological record.[144]

Analogy (ethnographic analogy, ethnoarchaeology or experimental archaeology) and uniformitarian assumption (processes in the past were not qualitatively different than those we observe today) were used as the tools in order to interpret the archaeological data.[145]

The role of ethnographical analogy and uniformitarian assumption is crucial in interpreting archaeological record. Binford pioneered Ethnoarchaeology while he was investigating the hunter-gatherer groups and prehistoric sites since interpretation and inference was difficult due to the lack of accumulated knowledge on type and function of tools of that period and historical sources to appeal. Even though those interpretative tools emerged to deal with archaeology of prehistoric periods, it is also crucial for the interpretation of archaeological sites of the historical period, for instance, in terms of interpreting architectural character of the structures and functional features such as ovens. It should be considered that the structure techniques and the use of ovens are still observable in the rural areas in Anatolia. Recent ethnoarchaeological studies on the use of tandır ovens in Anatolia are noteworthy in this aspect.[146]

Besides the use of ethnographical analogies and uniformitarian assumption as interpretative tools, spatial investigation of material distributions also increased the potential of inferences. These developments also followed by functional and behavioral inferences. In parallel with Schiffer's attempts in understanding formation processes to define the degree of transformation of the archaeological record from its systemic context, taphonomic studies emerged to explain the life cycle of especially faunal

[143] Papaconstantinou, 2006, 16.

[144] Papaconstantinou, 2006, 21.

[145] Papaconstantinou, 2006, 23.

[146] For ethnoarhaeological study on ovens see Parker, 2011: Parker and Uzel, 2007.

remains and later artifact. All these developments created the emergence of micro scale or intra-site spatial studies in archaeology widely integrated with distribution pattern recognition, ever-growing statistical techniques and detailed explanations formation processes.

3.3 Discussion and Some Remarks on Hamamtepe along with Theoretical and Methodological Debates

During the excavations in Hamamtepe, it has been discussed whether the site had been abandoned rapidly or gradually. Absence of complete *in situ* pottery vessels, not more than a few and most probably survived by chance in sheltering gaps, were possible indicatives of a gradual abandonment behavior. However, the site might have been abandoned in a rapid way but revisited to remove items at a later time or plundered by others in random visits. But it is clear that there are no signs of any destruction via an earthquake, warfare or fire, which could seal the archaeological record as in systemic inventory.

It has been also observed that the buildings collapsed gradually by the result of both N-transforms and in a later period leveled for the consequent phase constructions (C-transforms). While roof tiles and wall stones have been detected on the upper levels of the occupation layers determining the building collapse sequence, compact trampled soil floors have been detected in lower levels in various locations highly distorted but in patches here and there showing their association to the wall foundations which were taken as references for the identification of the room boundaries and occupation phases.

There is lack of whole artifacts originated from *de facto refuse* or in situ condition. Majority of the pottery are in highly fragmented sherd forms recovered from layer fills located in different levels, but in some close contexts refitable ceramic pieces and very rarely whole vessels have been recovered. Those primary refuse contexts enabled the convenient calculations of minimum number of vessels (MNV). It has been considered that the layer fills had been highly disturbed by C and N-transforms during the post-abandonment phase, but we expect that even if the finds are in very fragmented form, they might have been remained within the limits of the room where they were associated in the past and we assumed that the wall foundations ranging between ca.30 cm to ca.80 cm in height might have prevented any material flow out of the room boundaries. This hypothesis can be tested optimistically even though the possibility of distortion from floor leveling of the later phase is highly considered. In this case, a proper way of basic identification of material fragment and quantifying fragment counts and taking weights might enable us to make inferences/interpretations regarding the room characters based on the suggested artifact functions.

In archaeological fill many other whole and partly broken still identifiable and quantifiable objects such as bone artifacts, metal objects, coins and other small finds are present. Their distributions will be included within the room fill contents.

However, it has been a critical question that even if we consider the room fills containing the materials related to the room activities, they might have been deposited there as mixed materials during the construction of phase 1 (Ottoman phase is the latest) while the room floors had been leveled. In this case the materials would not be original representatives of the room activities. Even though the situation is contrary, the data is still valuable in terms of understanding the site function as a whole and in understanding the formation processes created these conditions.

There are also many ovens, pits and storage pits which we consider as contexts representing the occupation phase. Preliminary observation of highly fragmented material inclusions of the layer fills over the occupation floors indicated a variety of post-occupation processes were effective in the site. However the layers are distorted by post occupation processes, on one hand pits and storage pits bear the potential to contain primary refuse materials possibly originated from the last activity took place in the site, on the other hand the soil samples taken from in and around ovens and from pits associated with ovens provided valuable plant data which were considered also as primary refuse remained from the final activity.

Moreover, trampled compact soil floors incorporating micro-remains were also sampled in some locations even though they were highly distorted by post-abandonment processes but still can provide data that represent occupation phase.

Eventually, it has been considered that the entire site has not been affected from C and N-transforms equally. Therefore there are data groups representing occupation, abandonment and post-abandonment phases individually. In terms of refuse behavior, we can also claim that primary refuse data were survived in the site in various locations. Especially most of the ovens, pits and storage pits provided primary refuse materials even though with some intrusive materials due to contamination from feature-fill boundaries.

I also want to state here the advantage of including various types of materials such as ceramic, bone and plant data within the analysis that it helps to compensate the lack of primary refuse data recovery of one type while the others are missing.

As a general overview discussed above Hamamtepe is far away from the sites that have perfectly preserved or rapidly sealed archaeological contexts. As I discussed in the beginning part of this chapter, I am aware of the Pompeii Premise and the heavily distorted link between past dynamics and present statics in Hamamtepe. Therefore my inferences will be made extra carefully.

Spatial analysis method and techniques of Paleolithic excavations were also discussed in the previous parts of this chapter. Even though our spatial analysis methods are considering room limits and the material contents within and among the rooms, grid samplings were applied in two different pilot studies. The aim of those studies was to see the 3 dimensional distribution patterns within the archaeological fill gradually until the floor level. It was aimed to determine non-random distributions to see if any meaningful clusters were present and to see the relation of the concentration with the oven, pit features and immediately on the occupation floors even though there was high degree of fragmentation and disturbance.

These studies provided us the spatial data to safely infer the strong post-occupational disturbances based substantial data, which was already our subjective observational assessment.

In the absence of systemic contents of the rooms, fragment distribution patterns of artifacts and bones, whole small finds and in this disadvantageous conditions the valuable plant data will guide us to infer for the use of the rooms. Architectural and functional features will also contribute to the interpretation and understanding of the room functions and activities performed within them.

CHAPTER 4

METHODS AND DEFINITIONS

4.1 Introduction

The aim of this chapter is to define the elements of the area under the scope and to introduce the methods of the dissertation.

Methodology of this dissertation is consisted of 4 parts: (1) excavation, (2) identification and quantification of archaeological data, (3) determination and evaluation of spatial and contextual specifications, and (4) analyses and interpretation of data. Within the following parts spatial and contextual definitions, utility features and material categories were introduced.

On one hand methodological stages were designed in order to conduct spatial analysis of archaeological materials in an intrasite level, on the other hand research questions, especially those related with production, consumption and discard behaviors reflected in spaces, were considered in the design. In the formation of the methodology I always asked these questions to my self: “What is my methodology? How will I manage this thesis? How should be a spatial analysis methodology from putting the research questions to making inferences? How will I approach the material in every stage of the research? Which materials will contribute in behavioral and functional inferences?

4.2 Excavation Methodology

4.2.1 Excavation

5x5 m. trenches are taken as excavation units at Hamamtepe. Trench names are originated from the GPS coordinate system (last three digits of x and y axes i.e. 272/593).

The trenches are considered as artificial spatial units and layers as both spatial and contextual units of the excavation. Therefore the spatial and contextual units are decided during the excavations in the site.

Collection of archaeological materials during the excavations were implemented in two ways: (1) hand collection and (2) soil sampling followed by flotation and dry sieving in special cases. Archaeological materials such as ceramics, animal bones, metal and glass fragments and other special finds are recovered through hand collection. Some contexts that might have small size artifacts or ecofacts are dry sieved in 1cm. mesh in the site. Burnt and mineralized contexts such as ovens, pits and burnt areas are soil sampled in order to recover the macro plant remains, animal bones in small mammal level and small artifacts that are invisible by naked eyes.

Materials are collected with spatial and contextual definitions/references thus proper for spatial analysis of material distributions among the units. As long as the excavated areas are enlarged, the architectural units and utility features are unearthed and real spatial units such as buildings are defined with specific room and feature numbers.

4.2.2 Spatial Analysis Pilot Studies

In the early stage of my research I implemented two pilot studies during the fieldworks in order to test and decide for the design of the spatial analysis methodology. In these pilot works 1 square meter grids were planned as artificial sampling units in the excavation area. Each grid was numbered, sampled and distribution patterns were analyzed both horizontal and vertical axes. Other than artificial sampling units, contextual properties, architectural and utility features were considered in the analysis of material distributions. Both ecofactual and artifactual materials were included in the study.

Pilot Study I

In Pilot Study I[147], a total trench in the dimensions of 5x5 m. was divided into 25 equal grids and boundaries defined with ropes. 10 of the grids, which were randomly selected, were sampled in separate bags and the remaining 15 grids were collected in one bag in order to record the total amount of materials both in horizontal and vertical axes. The whole layers, which were starting from the topsoil until the occupation floor level, were sampled. Each pickaxe level was taken as horizontal lots/spits and was given layers and sub-layer numbers (i.e. Layer 3.1, Layer 3.2). (Figure 13)

Taken into account that detailed collection of 25 grids in one horizontal level and repeating the same application in all lots would be time and energy consuming random sampling was tried. Grid size 1 square meter was preferred assuming that this diameter would be sufficient to follow human activity originated material distributions. The distribution patterns of ceramics and animal bone fragments were screened not only to interpret human behavior but also the formation processes and condition of the archaeological record.

In pilot study I, where 25 grids were established on the whole trench, some of the grids coincided with the wall structures. This limited the uniform collection of data in equal/standard conditions from all grids. Application of the method was difficult in archaeological layers with architectural remains. This method was applied more properly in sites such as prehistoric campsites or flint chipping sites, where the

[147] Tatbul, 2013, 197-209.

occupation floors were free of architectural features. In other words, the artificial grids are better to use in archaeological fills at open areas. This condition did not prevent me to use this method totally, but character of the site with complex wall structures and collapsed wall stones here and there. Also bringing together the grid data of trenches in the study area would be difficult. Also a considerable portion of the study area was already excavated and materials were collected as total layer finds.

Figure 13: Data collection of Pilot Study I

Pilot Study II

In Pilot Study II[148], grids were set within the trench when the level of the walls of a complete room were elevated. 9 grids, each 1 square meter, were set in the corner

148 Pilot Study II was presented at the European Association of Archaeologists Conference in İstanbul, 2014. This paper with the title "All or Nothing" represents the approach of bringing together all data types and evaluate them in relation with spatial and contextual distinctions.

of the room and all of them were fully sampled. (Figure 14) In this pilot work, only the layer just over the occupation floor was gradually sampled. The features such as ovens, a pit, a container and a burnt area context scattered were also elements of the room, thus provided strong contextual data in the evaluation of the data and making inferences.

In Pilot Study II, the variety of data was increased that archaeobotanical data, glass data and metal data were also integrated in the analysis besides ceramic and animal bones data. Ceramics were categorized under three functional groups as fine ware, cooking ware and storage ware.

Modified methodology in Pilot Study II provided strong evidence for food preparation. Presence of an oven, a near by ashy pit full of cereals and abundant number of burnt cooking wares within the room were significant elements. Contrary to domestic character of the room, no artifact production evidence was seen. It was understood that due to the post-abandonment processes, the layer was highly disturbed that no meaningful patterns were detected by grid sampling but provided data to understand the degree of transformation of the archaeological record. The total quantification of materials recovered from the room fill provided sufficient spatial data in understanding the room character.

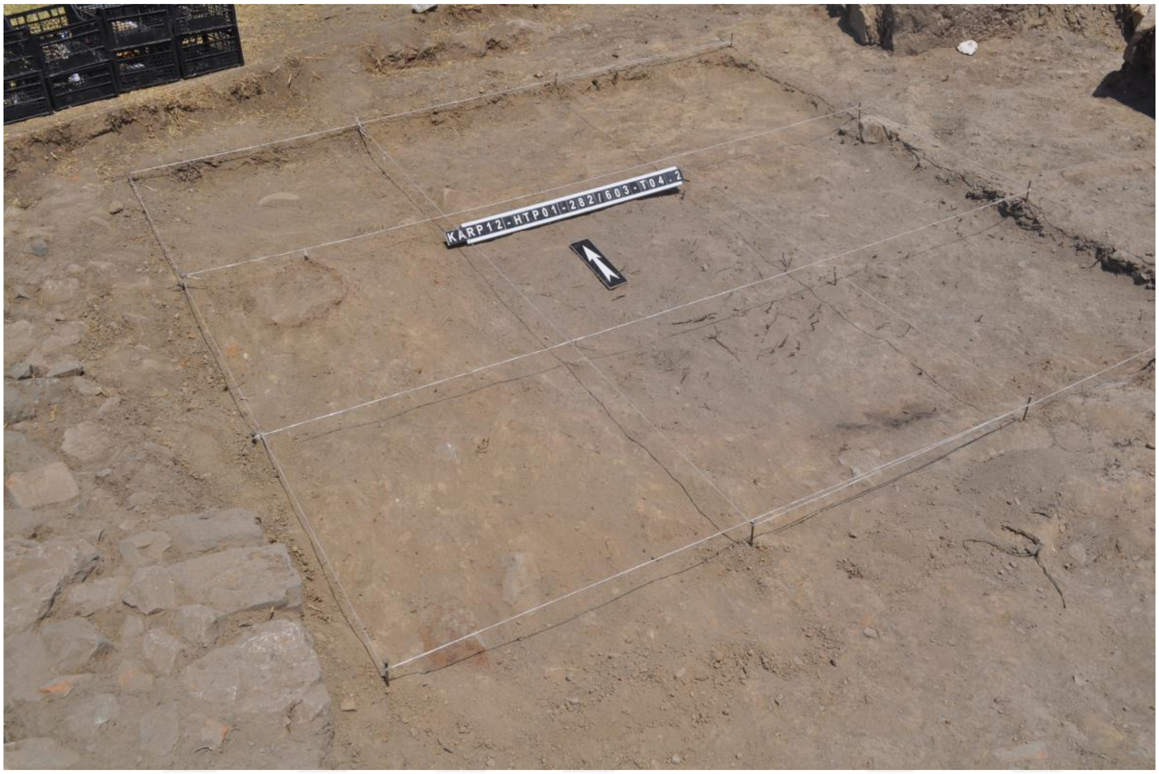


Figure 14: Grids of Pilot Study II

4.3 Identification and Quantification of Archaeological Data

Both artifactual and ecofactual materials, which were recovered from the study area, were integrated. Both data classes were seen to have potential to provide spatially referenced behavioral patterns such as production, consumption and discard, and to help the understanding of transformational processes that were effective on the archaeological record.

My approach in integrating both artifacts such as ceramics, metals, glass, bone objects, coins, other objects and ecofacts, here as animal bones and plant macro remains was to see the picture from a wider view and with multiple aspects and explore whether there are any correlation between find types within the spatial setting.

4.3.1 Identification and Quantification of the Artifactual Data

Ceramics

Ceramics were distinguished under three functional categories as fine ware, cooking ware and storage ware. (Figure 15) While fine ware was mostly represented by green, brown and yellow glazed table wares, cooking wares consisted of cooking pot and lid fragments burnt in most cases. Storage wares were represented by pottery groups of storing liquids and dry food. Vast majority of the ceramics on the site were in fragmented forms. Therefore, fragment counts and weights were considered in quantification. Each method has deficiencies resulting with bias. In most cases high fragment counts of small sized sherds against low fragment counts of larger sherd sizes are over represented, and vice versa when taken weights. The ratios among each group were targeted instead of calculating Minimum Number of Vessels (MNV). Ceramics recorded from the rooms were in highly fragmented forms. In very rare cases they were recovered complete or almost complete forms.

Figure 15: Ceramic finds

Metals

Metal data was analyzed with a focus on to see if there were any metal tools, architectural attachments which were mostly applied on wooden surfaces, and items related with metal production and wastes of metal production such as slags. (Figure 16) Materials that were considered under the metals category were both collected from the layers and recovered from the heavy residual part of the soil samples.

Highly corroded condition of the metals was a disadvantage that functional inferences on the tools were limited. Therefore metals that were once used as tools or architectural attachments were identified as amorph metals. In the cases where lead and bronze fragments were seen in the contexts they were quantified in weights and included in the analysis. In few cases bronze objects were recovered well preserved and functional inferences were possible for those assemblages. Metal slags were also quantified in order to prove whether there was metal production activity in the site. In few cases the invisible globules (round micro slags) were observed with the help of heavy residue samples, which was otherwise impossible to detect.

The most abundant, characteristic and identifiable metal finds of the 12th - 13th century layers were nails. Nails considered to be remained after the wooden materials disappeared. Metal slags remained as a result of metal production or metal processing activities were defined and recorded as metal slags. While the amorph metals and metal slags were measured by taking weights in grams, nails were quantified in number of pieces.

Figure 16 Amorph metal finds

Glass

Glass materials were grouped under three categories as fragments, bracelets and unidentified vitrified materials. Since glass is very fragile, degree of fragmentation was extremely high. Glass was both recovered from the layers by hand collection and as heavy residue materials from the soil samples. (Figure 17)

Glass materials were included in the analysis not only with their use as functional objects but also to understand whether there were any indicatives of production. While the recovery of glass bracelet fragments was a sign of female presence in the site, it is also a question whether the bracelets were manufactured in the site. While glass fragments and unidentified vitrified fragments were measured in grams, bracelet fragments were counted. In some closed contexts less fragmented glass fragments were recovered where some identifiable pieces were observed.

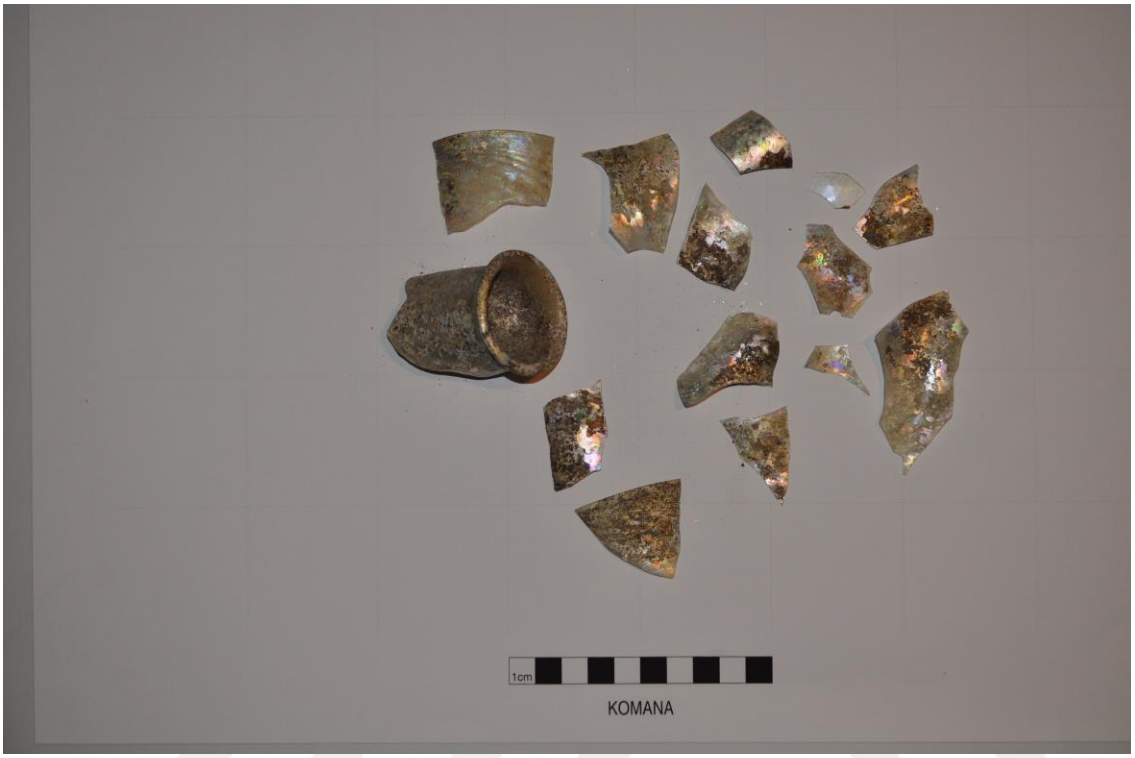


Figure 17: Glass fragments

Bone Objects

Several bone objects were recovered from the rooms under analysis. Among them were spindle whorls and needles, which were special in making functional inferences. (Figure 18) These objects were also cross-checked with animal bones data whether they were local manufacture of the site. Bone objects were grouped according to their possible functions as mentioned above and they were calculated in numbers.

Worked bone objects were identified under these categories: spindle whorls, needles, buttons, hoops, needle jackets, knife handles, earrings, decorative objects, bell shaped objects and unidentified objects. They were recovered as whole or partial. They were quantified in pieces.

Figure 18: Bone objects

Inventory Objects and Instruments

Several objects and instruments were distinguished in functional categories such as sewing/weaving, cooking/food consumption, jewelry, religious paraphernalia, tools, metal working, hunting/fishing, architectural parts (such as furniture or ornament) , various household items, lighting and some unspecified.

Some of the small finds were defined as special finds. Personal belongings and jewelry such as bronze bracelets, silver rings, bronze rings, bronze earrings, gold earrings, unidentified gold pieces, bronze crosses, bronze pendants, silver pendants, agate seals were considered under this category. Finds such as terracotta loom weights, sphero-conical cups and whole ceramic vessels were also included under this category.

Coins

Coins are one of the most abundant finds in the layers. Vast majority of the coins recovered at Komana are highly corroded due to the soil conditions and minority of them can be read and dated after intensive cleaning. The coins recovered from the workshop phase are dating between 11th to 13th centuries and Byzantine, Danishmend and Seljuk coins have been identified among them.[149] (Figure 19)

Figure 19: Byzantine coin (11th century)

4.3.2 Identification and Quantification of the Ecofactual Data

Animal Bones

Zooarchaeological materials are the most abundant in the layers as a result of very dense animal exploitation and deposition at the site. (Figure 20) While economic animals such as cattle, ovicaprids, pig, chicken, equids and game animals such as deer, hare and partridge were included in the analysis, intrusive animals such as rodents and other wild species or small mammals were not included in the analysis. Fish bones and

[149] Most of the Byzantine coins are dated to the 11th century. Preliminary study on these coins were conducted by Burcu Erciyas and detailed information of the study were obtained from her study notes. (Erciyas, 2010).

eggshells were also recovered through soil sampling, which was other wise invisible within the faunal taxa.

Information on the preferred species (economy), consumption, butchery, tannery, hunting and bone working are the focus of the spatial study on the bone materials since they are directly related with the use of space and behavior.

Identification procedure of animal bones was done using modern reference collections, zooarchaeological guides and digital sources.[150] NISP was preferred for the quantification of identified species level.

Animal bones were among the primary finds together with ceramics in the excavation. Animal bones were recovered from every trench in high quantities. Their forms vary between whole element and fragments, as well as micro fragments recovered from the heavy residue of soil samples.

[150] Identification of the animal bone assemblage was done by Evangelia Ioannido-Pişkin, who was a member of the Department of Settlement Archaeology and director of Environmental Archaeology Research Unit at METU. Identifications were done appealing to the reference collections at Environmental Archaeology Research Unit at METU and British Institute at Ankara.

Figure 20: Animal bone finds

Plant Remains

Archaeobotanical materials were recovered from an intensive number of soil samples taken from potential burnt and mineralized contexts. Plant remains provide valuable information about food preparation, consumption and discard and the use of utility features whether their function were domestic or they were operated for industrial purposes.

Economic plant species such as wheat, barley and cereals that lost their forms were categorized as cereals. Pulses such as lentil, pea, chickpea and vicia were categorized under pulses. While a variety of both domestic and wild fruits were grouped under fruits, grape was distinguished as a private category since its economic use varies in many ways such as wine-making, dried for long term use or consumption through the winter, as jam and fresh consumption are important for the period and site.

Identification of plant remains was done using modern reference collections, archaeobotanical atlases[151] and digital sources.[152] All plant remains were recovered by soil sampling. (Figure 21)

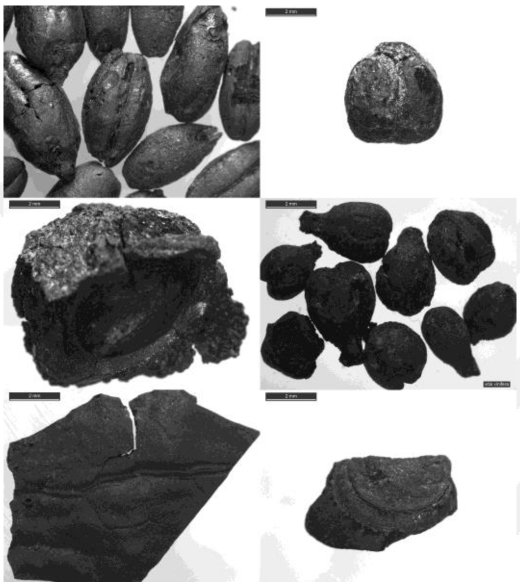


Figure 21: A group of plant remains

4.4 Spatial and Contextual Distinctions

Since spatial analysis of material distributions were conducted to understand the use of space, to infer function to a space and to infer behavior acted in that space, spatial and contextual distinctions should be set properly, thus the representation of materials within the space, where they were found, could be safely constructed. While primary refuse in archaeology represents the safest context, where the link between the last behavior and objects in the space is not lost yet, secondary refuse represents the less

151 Digital Atlas of Economic Plants in Archaeology was used as identification manual (Neef et al., 2012).

152 Identification of plant remains was done by Evangelia Ioannido-Pişikn and Mustafa Tatbul. Modern plant reference collections at British Institute at Ankara and Environmental Archaeology Research Unit at METU were used.

safe context, where the connection was lost between the object and the final act. When the materials were subjected to fragmentation they travel within the archaeological record and loose their contexts. Within the area studied in this dissertation, safe and unsafe contexts were observed and defined during the excavations. Contexts such as ovens and pits were supposed to have potential to provide primary contexts based on the presence of burnt and mineralized plant remains, less fragmented ceramics, clusters of special animal species and elements, and closed forms that prevented or minimized amount of material flow from layer fills. While the burnt plant remains inside the ovens were considered to be originating from the final use of the ovens, remains from the pits represent the discard behavior of a final event or a short time range of events. Contrary to primary refuse contexts, layer fills were considered as the contexts that were effected by multiple cultural and natural transformational processes, therefore the objects recovered from that space lost their strong link from the particular behavior or the act. Layer fill materials were highly fragmented and they were hard to refit without bringing together all fragments collected from different layers and rooms.

Based on these differences of representations in the archaeological record, contexts were given meaning. Even though ovens and pits were seen as the most secure part of the data collected, especially this aspect was supported by the light fraction plant data, all other data types recovered from these contexts, as part of the original deposition or as intrusive from the layers fills. Even though secondary refuse data were seen as unsecure in terms of understanding a rapid or short term continuous events or acts, they were evaluated as the representatives of the general character and long term occupation of the site.

4.4.1 Spatial Features

Dry wall foundations represent Danishmend/Seljuk occupation phase where they constitute rectangular rooms with multiple utility features in various parts of them. (Figures 22, 23) It is considered that the upper parts of the wall foundations were followed by mudbrick tiles supported with wooden construction materials. However, the disintegrated mudbrick and clay layers have been detected in the room fills during the excavations. In a few cases, substantial whole and fragmented mudbrick samples have been recovered in these layers. This convinced us to suggest that the mudbricks after the collapse of the buildings, melted, dissolved and merged into the archaeological fill. Few fragments of wood were detected but most of them were probably decayed and reused as construction material or fuel during the post-abandonment of the site. Another characteristic of the archaeological record is the collapsed and dispersed stones originating from the wall foundations and tile fragments frequently seen in the layer fill over the occupation floor. This pattern of material order within the stratigraphy of the layer fill is observable in all trenches where Danishmend/Seljuk phase is present.

Figure 22: 12th-13th century Danishmend/Seljuk phase, Room I

A total number of 8 rooms are under the scope of this research. 4 of the rooms were fully excavated while 4 of them were partly revealed due to the limits of the decided trenches excavated, presence of unremoved upper phase structures and remains partly abolished and erased during the construction and use of the upper Ottoman phase. However, the remaining parts of the partly excavated and revealed room boundaries are still inspectable providing the common room, feature and material characters of the fully excavated Danishmend/Seljuk period rooms. Features and materials of the partly excavated rooms provide the most crucial data for the subject area of the research in some aspects.

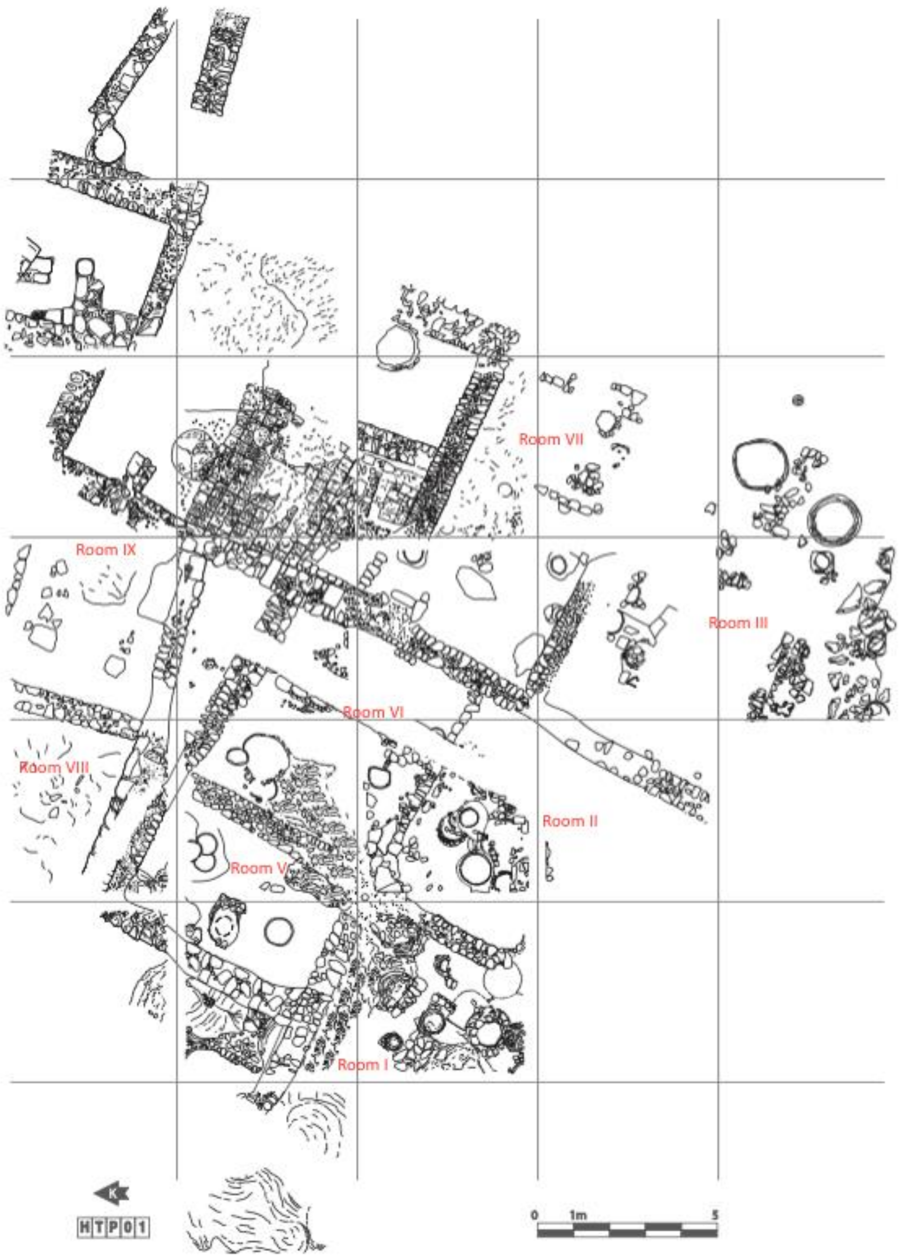
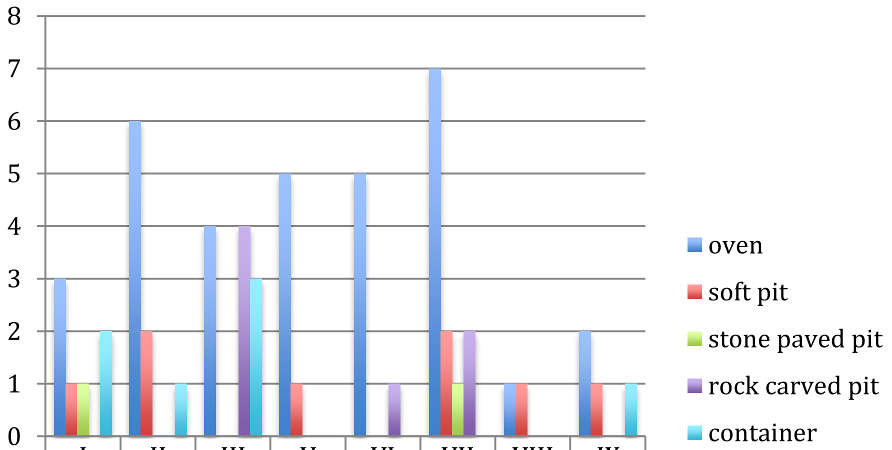


Figure 23: Architectural plan of the study area

In none of the rooms an access to the room is clearly detected and understood. All rooms under study are attached to each other composing a group of rooms possibly a complex used contemporaneously for common or different functions. Since the physical remains of the rooms are the wall foundations, it is considered that the room accesses were in upper levels of the walls, which are unfortunately destroyed in the post-abandonment and construction of the upper Ottoman phase. Therefore, a complementary access analysis could not be appealed in the spatial investigation. However, in the final conclusions of the spatial analysis of the area under study, access possibilities might be suggested based on the analyses of a variety of spatial data sets.

Different types of features were recovered within the rooms which are important in two terms: the first was to understand the function of the rooms and the second to check for the potential primary refuse and activity refuse patterns within and around them. Distribution of the features revealed in the 8 rooms is summarized as follows: (Figure 24)

3 ovens, 1 soft pit, 1 storage pit, 2 containers and 1 bench were revealed in Room I. 6 ovens, 2 soft pits and 1 container were located in Room II. 4 ovens, 4 rock carved pits and 3 containers were revealed in Room III. 5 ovens and 1 soft pit were found in Room V. 5 ovens and 1 rock carved pit were found in Room VI. 7 ovens, 2 soft pits, 1 stone paved storage pit and 2 rock carved pits were revealed in Room VII. 2 ovens, 1 soft pit and 1 container were found in Room IX.



	I	II	III	V	VI	VII	VIII	IX
oven	3	6	4	5	5	7	1	2
soft pit	1	2	0	1	0	2	1	1
stone paved pit	1	0	0	0	0	1	0	0
rock carved pit	0	0	4	0	1	2	0	0
container	2	1	3	0	0	0	0	1

Figure 24: Distribution of features among rooms

4.4.2 Contextual Features

The contexts defined for the Danishmend/Seljuk phase is divided into two: (1) archaeological fill and (2) special contexts defined as the utility features. While the archaeological fill represents the layer fill covering over the occupation floor and scattered features within the room, special contexts represent the inclusions of the features.

Archaeological Fill

Archaeological fill represents the layers defined as the Danishmend/Seljuk phase occupation over the floor level. The materials recovered in the fill vary in terms of fragmentation, degree of representation of the occupation period due to the post-abandonment natural and cultural formation processes. The layer fills extending over the open occupation space were those mostly subjected to the formation processes when compared to the following special contexts of features.

However, the materials recovered from the layer fill contexts are being tested whether they represent the materials originated from the period of occupation of the related rooms. Vice versa it is aimed to explain how these materials were accumulated in the room fills and what kind of processes were the actors of these formations.

Ovens

Ovens are defined as the features related with potential domestic or industrial activities, such as food preparation, glass object and metal tool production. They are in round shape made of terracotta materials. (Figure 25) Mostly supported with stones and terracotta or pithoi fragments in the exterior sides. The interior bottoms are flat constructed with a tile, flat stone or flat bedrock. In some cases river pebbles are used around to strengthen its structure from the exterior sides. They mostly include ash and charcoal in and around. They are in the form of round and deep ovens in different sizes.[153] Degrees of preservation are varied due to the post-abandonment processes. While they are in some cases entirely preserved, in other cases upper parts are destroyed, even only the bottom parts survived where they were planted. Most of the ovens have air circulation pipes attached in the bottom parts to provide oxygen for the combustion and possibly to gain high temperature. Few of them are also observed as a part of an oven system connected to each other with air circulation pipes.

Ovens represent the majority of the utility feature contexts. They were considered as closed or semi-closed contexts with the potential of material contents from the last activity of occupation. Inclusions of ovens are studied through soil sampling, flotation and laboratory procedures. However, materials collected by hand were also included within the contextual data.

[153] In various medieval and Ottoman archaeological sites they are called “tandır” ovens.

Figure 25: An oven excavated in Room I

Stone Paved Storage Pits

Stone paved storage pits were revealed constructed under the floor levels. While interior parts were paved with stones, openings were in the floor level mostly plastered with clay and mud and in some cases lined with reused tiles. The bottom parts were mainly flat bedrock. Their depth varies roughly between 1 to 3 meters. It was observed that the interior spaces were isolated from the soil in order to store grains where it was crucial to protect the food from rodents and insects. (Figure 26)

Stone paved storage pits are considered to be closed or semi-closed contexts that were normally expected to be used as storage locations. However, if a rapid abandonment or a catastrophic end is not in action, they were mostly used as primary refuse locations in the final period of occupations and gradual abandonment. Due to their forms, materials such as ceramic vessels are kept isolated from the outer environment with less mobility thus they are less subjected to formation processes. Therefore they are less fragmented when compared with the materials recovered from the room layer fills. As it was observed in all pits even though they were different in type, they provided ceramic fragments that were possible to refit. These wide and deep pits have the potential to provide conditions for special concentration of materials.

Figure 26: A deep storage pit (F08) in Room I

Soft Pits

Soft pits were revealed dug into the compact soil floors. They were mostly detected close to an oven and not deeper than 1 meter. Their contents include ash and charcoal having charred plant remains, various burnt materials, animal bones, less fragmented ceramics, and other small finds. They were considered as close, quick and temporary refuse locations that were cleaned and emptied in short intervals of time or closed when full, instead of storage features. Therefore they may contain the waste materials of last activities. (Figure 27)

Figure 27: Cesspit (F34) revealed in Room VIII

Rock Carved Pits

Rock carved pits were detected with their openings in the floor levels, similar to the stone paved storage pits. Their interior is complete bedrock so they are naturally isolated from the soil, thus the intruder rodents and insects. It is considered that their primary function was to store dry food or liquids such as water and dye. If not used as storage, they might have been used as hollows to dye textiles. Their depth varies between 50 cm. to 1,5 meter, and their diameter range between 1 to 1,5 meter. (Figure 28)

Since the layout of Hamamtepe is bedrock, the inhabitants in many cases used this natural formation, which was naturally isolated from the soil and easy to give shape. While they were supposed to be used to store food and to keep liquids, they were considered as locations of refuse in the final period of occupation. Therefore, besides hand collection of materials such as ceramics and animal bones, soil samples were taken from these pit contexts to identify last traces of activities in micro scale.

Figure 28: A pit carved in bedrock in Room III

Containers

Containers were defined as features built with stone, reused tile fragments and small or mid-size vessels planted on the floors. Their functions were considered as to keep materials temporary during the activities of food preparation and material production related with the use of ovens.

Containers were the context that were supposed to be used to keep raw materials during the activities of food preparation or crafts making and activities related to the use of ovens. Besides recording the hand-collected materials, these contexts were studied through soil sampling.

4.5 Dating of the Phase

Danishmend/Seljuk occupation phase was dated based on the abundant amount of archaeological finds that were extended to the entire layers. The primary material to date the layers was the green-yellow glazed ceramics that give the date of 12th - 13th centuries AD. Late 11th century Byzantine coins, 11-12th centuries Danishmend and 12th - 13th centuries Seljuk coins were recovered from the layers. It was considered that Byzantine and Islamic coins were contemporarily in circulation.

In terms of constructions, Danishmend and Seljuk phase in Komana was characterized with a fortification wall, domestic structures with simple wall foundations, mostly earthen floors but partly paved tile floors with spolia of roof tiles and bricks of the earlier periods, fire installations mostly as round ovens that were generally termed as “tandır ovens” and storage, refuse and ash pits as the indicators of an active production and trade center.

In contemporary archaeological sites that represent the Byzantine and Seljuk period in Anatolia, the very characteristic glazed ceramics dated to 12th - 13th centuries, coin evidence of the same centuries and glass bracelet were the characteristic finds to date the sites. Most of them were in a citadel form, with domestic units constructed with simple walls using mud as binder, mud-brick tiles that survive very rare, reused roof tiles and other earlier architectural spolia fragments, earthen floors, fire installations and refuse pits.

Hamamtepe is a multi-phase mound representing the sequence of 10th - 11th centuries AD Middle Byzantine, 12th - 13th centuries AD Danishmend/Seljuk and 16th - 17th centuries AD Ottoman occupation phases represented by substantial architectural remains. The Early Byzantine, Early and Late Roman and Hellenistic phases are also represented but artifacts and architectural material fragments hitherto.

The 12^{th} - 13^{th} centuries Danishmend/Seljuk period phase is under the scope of the research. While the anterior 10^{th} - 11^{th} centuries Middle Byzantine phase is represented by two small adjacent churches on the hilltop and graves dispersed around those churches and mainly along the western part of the hill, the final phase is a 16^{th} - 17^{th} century Ottoman phase which is represented by simple dwellings with foundations, frequently with no utility features, rubble earthen floors. The rooms built over the 12^{th} - 13^{th} centuries Danishmend/Seljuk phase structures severely disturbed them with their foundations in most occasions.

Since the 12^{th} - 13^{th} centuries Danishmend/Seljuk phase is situated between two phases, distinguishing the thin layers representing short occupations is pretty difficult. Especially the rooms, which were immediately built on bedrock, may represent multiple occupations throughout centuries.

CHAPTER 5

DATA ANALYSIS

5.1 Data Analysis

5.1.1 Analysis of Room Materials

5.1.1.1 Ceramic Distribution Analysis

Distribution of ceramic types is studied among the rooms based on the provenance of materials whether they were recovered from the layer fill of the rooms or from the features located within the room boundaries. My aim in screening the layer fill and features separately is to optimistically detect any meaningful patterns and if possible to securely distinguish the representative materials of the systemic context. Distribution patterns based on both ceramic fragments counts (Figures 29, 30, 31) and fragment weights (Figures 31, 32, 33) are analyzed separately in order to discriminate for consistency or variation stemming from the quantification method.

Based on the Number of Fragments

Room I

6% (158) of the fine ware, 7% (117) of the cooking ware and 7% (157) of the storage ware were recovered from the room fill, which can be considered as below average among the rooms. However, the picture is significantly different when the amount of the materials recovered from the features is analyzed. 42% (265) of the fine ware, 39% (261) of the cooking ware and 38% (287) of the storage ware were recovered from the features as the highest among the rooms.

The significant cluster of ceramics at Room I within the materials recovered from features is due to the presence of a deep stone paved storage pit (F08). Abundance of ceramic fragments in the deep pits might be an indication that such pits were used for rubbish disposal in a stage of occupation. The equal percentages of fine, cooking and storage ware both in fill and feature contexts do not lead to infer any specific function for the room based on the ceramic proportions.

Room II

20% (501) of the fine ware, 13% (212) of the cooking ware and 15% (328) of the storage ware of the fill materials were recovered from Room II, which is above average and considerably a high number among the rooms. 4% (27) of the fine ware, 4% (25) of the cooking ware and 6% (47) of the storage ware were recovered from the features within the boundaries of Room II. The low number of materials recovered from the features can be attributed to the lack of wide and deep pits even though there is a high number of features with 6 ovens and 2 soft pits. It can be inferred that ovens and soft pits were not specifically used for disposing broken ceramic vessels. In Room II it is clear that there is no disposal evidence within the features. However, abundance of materials is present in the fill context. This might be an indication of vessels used in the room but moved and fragmented intensively during the abandonment and post abandonment phases. Or an alternative inference might be that they were brought during the construction of subsequent phase for leveling.

Room III

4% (104) of the fine ware, 5% (86) of the cooking ware and 14% (318) of the storage ware were recovered from Room fill, where the high number of storage wares is significant. 40% (254) of the fine ware, 22% (148) of the cooking ware and 29% (223) of the storage ware were recovered from the feature contexts. High number of materials recovered from the features of Room III is significant as it was observed in Room I. The high number of materials recovered from feature contexts is due to the presence of deep and wide rock carved pits within room III. Even though there is 10 features within the Room III consisted of 4 ovens, 3 containers and 3 rock carved pits, and this significant concentration of materials is found in one of the rock carved pits. Concentration of broken ceramic fragments in pit context clearly indicates a rubbish disposal activity. High percentage of fine ware among the ceramic types is significant not only based on the fragment number but also the weights. However, this difference in ceramic type percentages is not satisfactory to infer for a specific room function, even though the fine ware shines out.

Even though the amount of ceramics recovered from the fill is less than the ceramics recovered from the features, storage ware has a quite high percentage than the other types. Therefore storage function based on the fill materials might be noted.

Room V

4% (107) of the fine ware, 9% (148) of the cooking ware and 9% (211) of the storage ware were recovered from the room fill. There are no finds recovered from feature contexts, where 5 ovens and 1 soft pit are present within the room limits. Once more absence of the materials in the feature contexts can be related with the lack of deep pits. Even though the storage ware is slightly higher than the other types, it does not support any inference for the room function.

Room VI

22% (550) of the fine ware, 11% (181) of the cooking ware and 11% (242) of the storage ware were recovered from the room fill. In the feature contexts there are no materials recovered, where 5 ovens and 1 shallow rock carved pit are present.

There is high percentage of fine ware in the room fill, which might be noted for room function. It cannot be inferred for a disposal activity due to the lack of materials recovered from the features.

Room VII

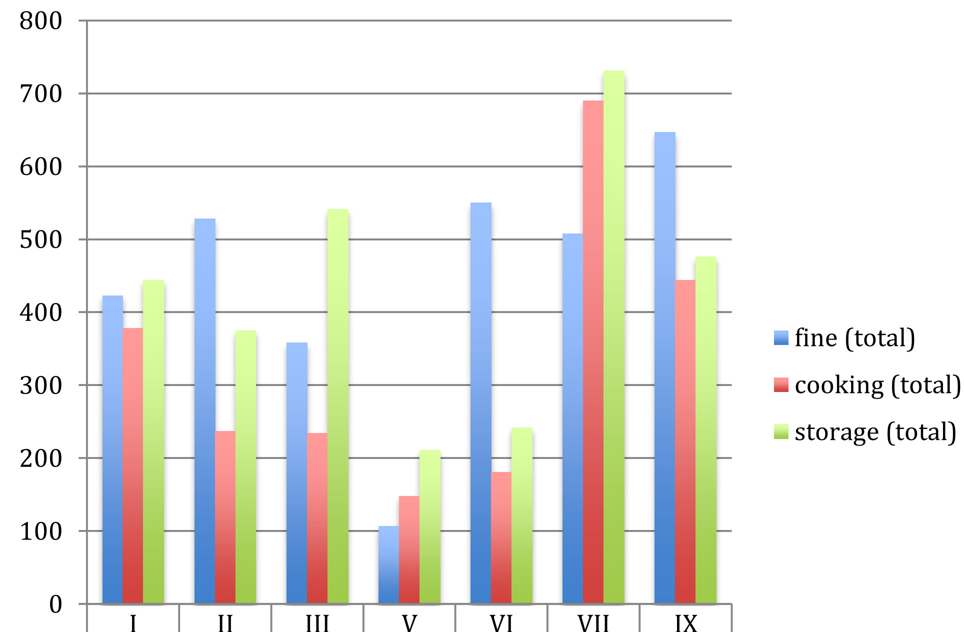
17% (417) of the fine ware, 28% (461) of the cooking ware and 23% (527) of the storage ware were recovered from the room fill. 14% (91) of the fine ware, 35% (229) of the cooking ware and 27% (204) of the storage ware of the materials were recovered from the feature contexts. Two significant issues can be proposed for the materials distributions: while Room VII provided the highest number of cooking ware and storage ware within the fill context, the number of cooking ware and storage ware are high in the features context and the proportion of fine ware is low compared with the cooking ware and storage ware. The high numbers both in fill and feature contexts seems to be related with the large volume of soil of the room fill and 11 features consisted of 6 ovens, 2 rock carved pits, 1 stone paved storage pit and 2 soft pits.

It should be noted that the fine ware percentage is constantly low than the other types both in fill and features. High percentage of cooking ware and slightly lower percentage of storage ware might be noted as indicatives of room function as cooking and storing.

Room IX

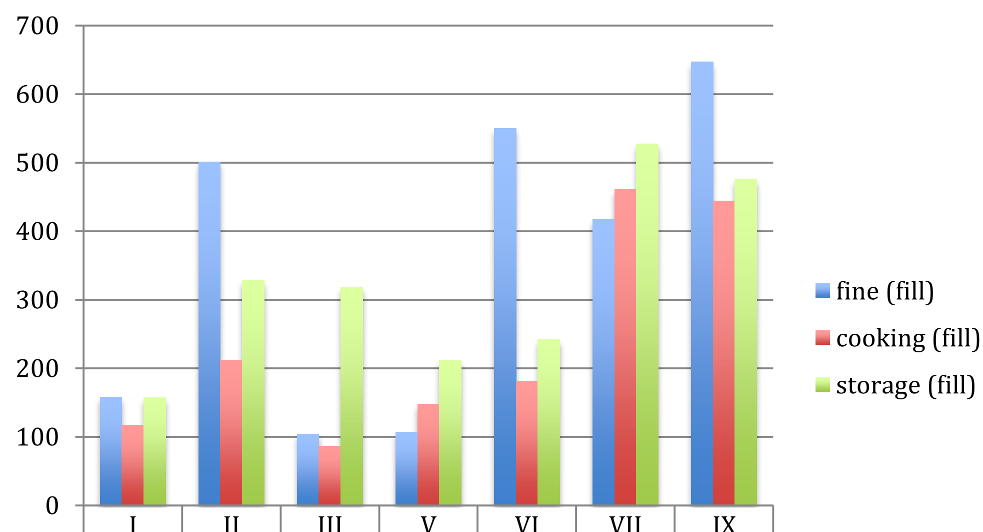
26% (647) of the fine ware, 27% (444) of the cooking ware and 21% (476) of the storage ware were recovered from the room fill. Low number of features with 1 ovens, 1 container and 1 soft pit have not provided any ceramic materials from the features context, where the lack of wide and deep storage and refuse pits is effective in the room. The most significant trend is the highest number of fine ware recovered from the fill context among the rooms. Proportion of cooking ware and storage ware are the second higher among the rooms.

Any deposition activity cannot be inferred in Room IX. Ceramic type percentage does not indicate for a specific room function, where all types are equally present.



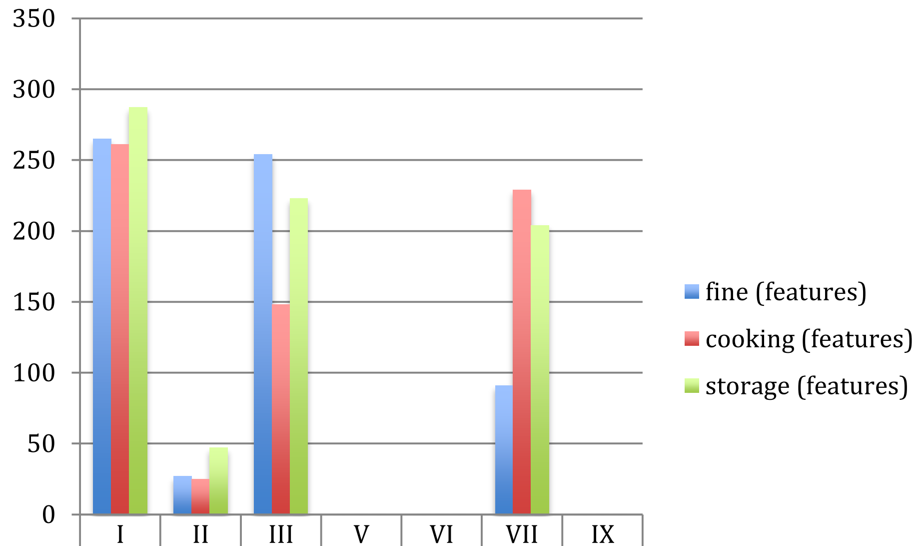
	I	II	III	V	VI	VII	IX
fine (total)	423	528	358	107	550	508	647
cooking (total)	378	237	234	148	181	690	444
storage (total)	444	375	541	211	242	731	476

Figure 29: Distribution of ceramic fragments in rooms



	I	II	III	V	VI	VII	IX
fine (fill)	158	501	104	107	550	417	647
cooking (fill)	117	212	86	148	181	461	444
storage (fill)	157	328	318	211	242	527	476

Figure 30: Distribution of ceramic fragments in room fills



	I	II	III	V	VI	VII	IX
fine (features)	265	27	254	0	0	91	0
cooking (features)	261	25	148	0	0	229	0
storage (features)	287	47	223	0	0	204	0

Figure 31: Distribution of ceramic fragments in room features

Based on the Weight of Fragments (gr.)

Room I

7% (1830 gr) of the fine ware, 6% (2040 gr) of the cooking ware and 4% (3860 gr) of the storage ware were recovered from the room fill context. These proportions for the fill context are below average among all rooms. 28% (4480 gr) of the fine ware, 32% (7520 gr) of the cooking ware and 28% (9810 gr) of the storage ware were recorded from the feature context with significantly very high proportions. It is clear that feature contexts provide more materials than the fill context in Room I. The concentration in feature context can be related to the presence of a deep and wide stone paved storage pit (F08).

While the fine ware has the highest percentage based on the number of fragments, its rank considerably reduced based on the fragment weights. This difference is probably the result of small fragment sizes.

Room II

16% (4540 gr) of the fine ware, 13% (4860 gr) of the cooking ware and 12% (10540 gr) of the storage ware were recovered from the room fill context. The proportions of the materials are average. 2% (320 gr) of the fine ware, 3% (640 gr) of the cooking ware and 3% (1200 gr) of the storage ware were recorded in the feature context. Even though all types are present in the feature context, the proportions are extremely low among the rooms. When I compare with the rooms that have most materials in feature context, once more I can emphasize the absence of wide and deep pits in Room II.

A deposition activity cannot be inferred. While there is low amount of materials recovered from the room both from the fill and the features, there is no difference between the percentages that may suggest room function.

Room III

4% (1230 gr) of the fine ware, 6% (2320 gr) of the cooking ware and 15% (13510 gr) of the storage ware were recovered from the room fill context. While the proportions for the fine ware and cooking ware are low, amount of storage ware is average among all rooms. 57% (9180 gr) of the fine ware, 38% (9070 gr) of the cooking ware and 37% (13090 gr) of the storage ware were recovered from the feature context. Room III has the highest amounts for the all three types among all rooms in feature context.

A deposition activity can be suggested for the materials recovered from rock carved pits. It should be noted that the fine ware percentage increased to 57% in fragment weights, which is 40% in number of fragments. This is an indication of large fragment sizes of fine ware. Any functional inference cannot be made, where all types are considerably present in room III.

Room V

2% (680 gr) of the fine ware, 9% (3410 gr) of the cooking ware and 4% (3730 gr) of the storage ware were recovered from the room fill context. There are no materials recorded for the feature context in Room V. In the absence of materials from the feature context, the amount of materials recovered from the fill context is quite low. It is proper here to mention once more that there is lack of pits to provide concentration of materials.

Amount and proportions of the materials recovered from Room V fill does not provide any functional inference. Deposition of broken vessel fragments has not been observed.

Room VI

25% (6930 gr) of the fine ware, 15% (5340 gr) of the cooking ware and 13% (11810 gr) of the storage ware were recovered from the room fill context. The proportions are above average among the rooms. Proportion of fine ware is significantly higher than cooking ware and storage ware in the fill. There are no materials recovered from the feature context.

The high percentage of fine ware might be noted as an indicator for room function. There has been no deposition of broken ceramic vessels observed.

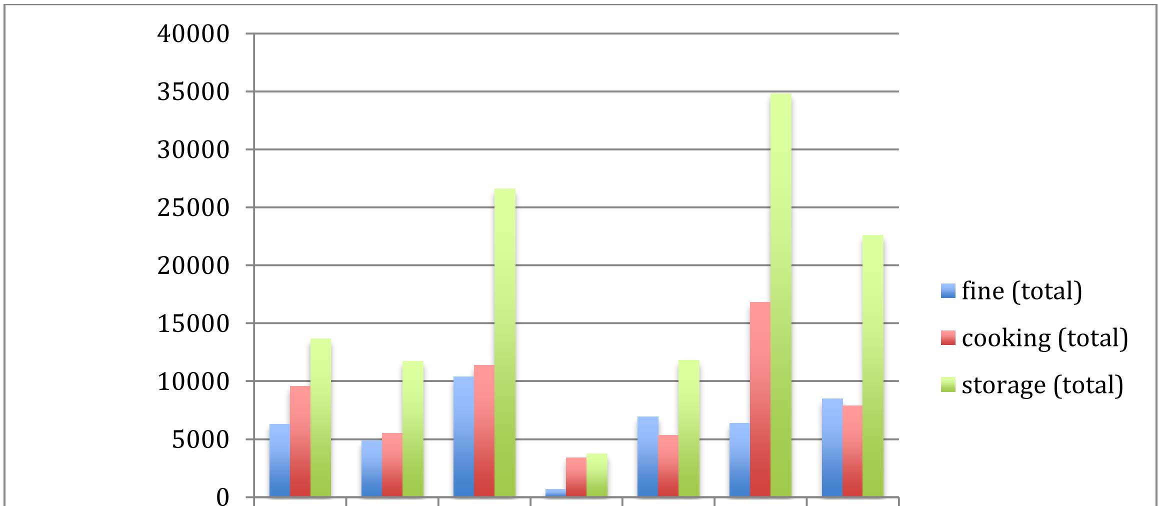
Room VII

15% (4180 gr) of the fine ware, 29% (10400 gr) of the cooking ware and 27% (23830 gr) of the storage ware were recovered from the room fill context. While the cooking ware and storage ware provide the highest proportions among the rooms in fill context, amount of fine ware is average. 14% (2190 gr) of the fine ware, 27% (6410 gr) of the cooking ware and 31% (10990 gr) of the storage ware were recovered from the feature context. As observed in the fill context, proportion of fine ware is average in the feature context. It is proper to suggest that the low percentage of fine ware in both contexts shows consistency in Room VII. “Number of fragments” also has the same pattern as “weight of fragments” for both fill and features, where low percentage of fine ware is consistent. High concentration of storage ware and reasonably high percentage of cooking ware can be indicatives of storing and cooking functions for Room VII.

Considerable percentage of materials recovered from pit context indicates a deposition event of broken vessels.

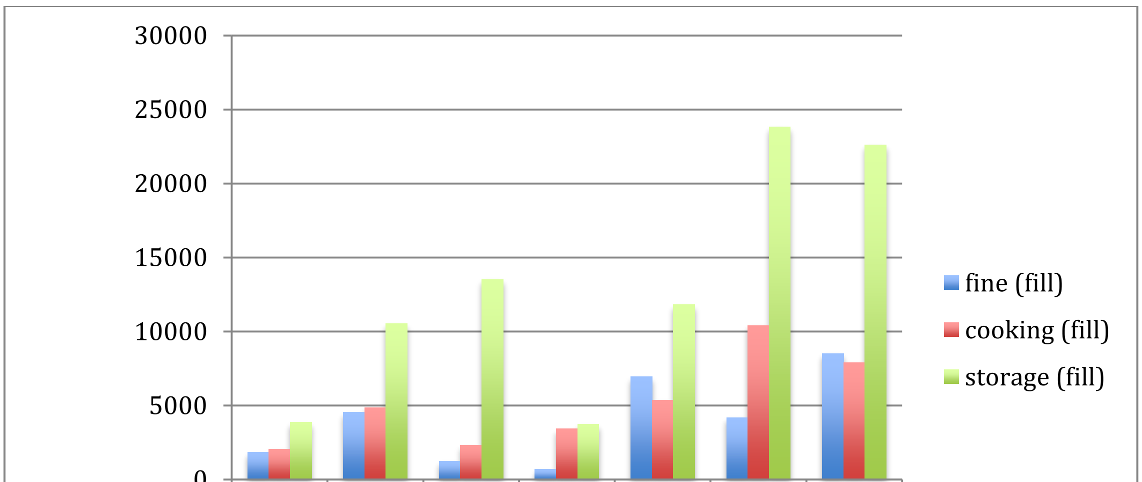
Room IX

31% (8510 gr) of the fine ware, 22% (7880 gr) of the cooking ware and 25% (22610 gr) of the storage ware were recovered from the fill context in Room IX. Proportion of fine ware is significantly lower than cooking ware and storage ware in the fill context. There are no materials recorded in feature context of Room IX. This can be related to the absence of pits among the features. Even though there is a soft pit in Room IX, there are no ceramic fragments recovered from it. By this case and most other cases (except F34 cesspit), where there is soft pit, there are no ceramics recovered if not entered from the fill. It can be conveniently inferred that soft pits do not contain ceramic fragments that were specially deposited.



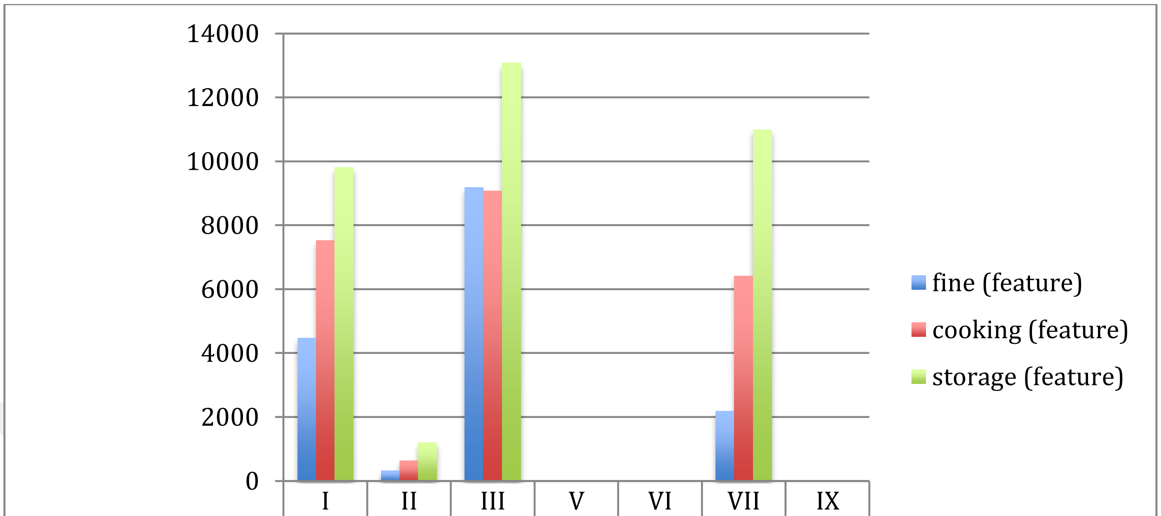
	I	II	III	V	VI	VII	IX
fine (total)	6310	4860	10410	680	6930	6370	8510
cooking (total)	9560	5500	11390	3410	5340	16810	7880
storage (total)	13670	11740	26600	3730	11810	34820	22610

Figure 32: Distribution of ceramics in rooms (gr.)



	I	II	III	V	VI	VII	IX
fine (fill)	1830	4540	1230	680	6930	4180	8510
cooking (fill)	2040	4860	2320	3410	5340	10400	7880
storage (fill)	3860	10540	13510	3730	11810	23830	22610

Figure 33: Distribution of ceramics in room fills (gr.)



	I	II	III	V	VI	VII	IX
fine (feature)	4480	320	9180	0	0	2190	0
cooking (feature)	7520	640	9070	0	0	6410	0
storage (feature)	9810	1200	13090	0	0	10990	0

Figure 34: Distribution of ceramics in room features (gr.)

Conclusions and Discussions

The amount of materials recovered from features is highest in Room I, Room III and Room VII. The common trait for those rooms is that they have wide and deep pits. Vice versa, Room II, Room V, Room VI and Room IX do not have wide and deep pits that may contain clusters of ceramic fragments. This observation is valid both for “number of fragments” and “weight of fragments” distributions.

Room II, Room VI, Room VII and Room IX provided the highest amount of materials for the fill context, while the amount of fragments in fill were lower in Room I, Room III and Room V.

The only room that provides high amount of materials for both fill and feature context is Room VII. This might be the result of 11 features scattered within the room and the large size of the room.

Room II, Room VI, Room VII and Room IX have the highest amount of fine ware recovered in the fill over the room floors.

Room VII and Room IX have the highest amounts of cooking ware in the fill context, while the rest of the rooms have lower proportions.

Room VII and Room IX have the highest amount of storage ware in the fill context and rests of the rooms have lower but a reasonable number of fragments. Based on these concentrations, Room VII and Room IX may had a function related to food storing and food preparation when we consider the ceramic types recovered from fill. And this is valid for Room VII both for fill and feature contexts.

Room I and Room III has the highest amounts of fine ware fragments in the feature context. Even though this picture is valid both for number of fragments and weight of fragments, Room III gives 57% of fine ware when we consider the distributions based on weights. Room VII has a fair amount of fine ware while Room II has very lower.

There are no fine ware recovered in Room V, Room VI and Room IX in their features.

Room I and Room VII has the highest numbers of cooking ware in the feature context. But Room III, Room I and Room VII have high cooking ware when we look at the distribution based on weights. Based on the numbers of fragments, in Room III the cooking ware are in a fair amount, while very low in Room II. There are no finds recovered from the features of Room V, Room VI and Room IX.

Room I, Room III and Room VII has the highest numbers of storage ware recovered from the features. While the numbers is low in Room II, no finds were recovered from the features of Room V, Room VI and Room IX.

In the fill context when I looked at fragment numbers of storage ware, Room VII and Room IX provide the highest concentrations. Room II and Room III have considerable average and Room I, Room V and Room VI have below average concentrations. While Room VII and Room IX provide the highest concentrations for the storage ware, Room II, Room III and Room VI are average and Room I and Room V have lower concentrations.

Ceramic distributions were investigated based on "number of ceramic fragments" and "weight of ceramic fragments". Both methods gave very equal results with very slight deviations. These very slight differences do not change the ratios of ceramic types between each other and among the rooms. In some cases the differences between calculating by number and by weight indicate the degree and size of fragmentation of the ceramic vessels.

It is very difficult to infer any function by only looking at the ceramic type fragments. In some cases all three types are present with high percentages or considerable amounts to represent that type of ceramic vessel, in other cases one type is dominating the other two or two types are present together while the third is less. These significant clusters are noted and discussed above in the previous sections. To make safe inferences, other ceramic types should be approached in the same way. To infer for functions of the rooms, significant clusters of find types should be brought together and interpreted in relation with utility features.

When the fill and features are observed separately, these contexts generally provide different results. Only in room VII, both fill and feature contents are in high percentages. While fill contents are considered as highly fragmented and moved occupation materials on one hand, they were also counted as materials brought in during the construction and leveling of the subsequent phase on the other. Feature contents especially from deep and wide rock carved pits are considered as the deposited damaged vessels that lost their functions during the occupation or final stages of occupation. Therefore, deposited ceramic fragments in pit context might not be the indicatives of room functions. Deposited materials might be brought from other parts of the site, therefore they might be representing the site in general instead of the room itself.

5.1.1.2 Metal Distribution Analysis

Metal finds, other than bronze objects and object fragments, were inspected under three categories as amorph metals, metal slags and nails. (Figures 35, 36, 37) These three forms are present in most layers however in highly fragmented, corroded and weathered conditions. The distribution of metal finds is inspected among the rooms based on the provenance of materials whether they were recovered from the room fill or from the features located within the room boundaries. On one hand my intention in separating the fill and feature context is to distinguish the occupation material from the materials brought during the post-occupation phases, on the other hand to find out meaningful distribution patterns which may help to infer functions for the rooms. While amorph metals and metal slags were calculated based on their weights, nails were counted.

Room I

While 1% (420 gr) of amorph and 3% (9) of nails were recovered from the fill context, no slags were recorded in Room I. 21% (720 gr) of amorph and 27% (20) nails were recovered from features of Room I but no slags were recorded. Absence of slags both in fill and features does not indicate any metal production activity. Amorphs from the fill context are the lowest among the rooms but features provide a percentage above average. Vast majority of the amorphs were recovered from a deep and wide stone paved storage pit (F08) while the fill is very poor for the amorphs. This may be an indication of rubbish disposal in pits as it was observed for ceramics. While the number of nails recovered from the fill context was the lowest among the rooms, features have one of the highest percentages among the rooms. A deep storage pit (F08) provided the vast majority of nails in Room I.

Room II

4% (1185 gr) of amorph, 7% (365 gr) of slag and 8% (20) of nails were recovered from the fill context of Room II. While 5% (160 gr) of amorph and 9% (7) of nails were recovered from the features, no slags were recorded. Percentages of amorphs recovered both from fill and features are low among the rooms. While there were no slags recovered from features, a considerable percentage was recorded within the fill. Small-scale metal production may be considered in Room II. All nails recovered from the features context are coming from a soft pit (F20).

Room III

17% (5545 gr) of amorph, 44% (2185 gr) of slags and 16% (42) of the nails were recovered from the fill of Room III. While there were no slags recorded in the features, 16% (565 gr) of amorph and 27% (20) of the nails were recovered from the features. While the amorph percentage is the second high among the room fills, features also provided considerable percentage of amorphs, which were recovered from pits. This supported the general pattern of rubbish disposal where deep pits contain considerable amounts of materials. Room III fill provided the second highest percentage of slags while no slags were recorded in features. High percentage of slags in the room fill may be noted as an indicative of metal production. Room III fill provided the second high percentage of nail counts. A percentage of nails were recovered from the features, where all were recorded in pits.

Room V

2% (515 gr) of amorph and 7% (19) of the nails were recovered from the fill while there were no slags recorded. 0,1% (5 gr) of amorphs and 1% (1) of nails were recovered from features while there were no slags found. In general Room V is one of the poorest room among the others in terms of metal finds. There is no evidence for metal production at all. Very small percentage of amorphs was recorded in the fill while it was totally empty in the features. While a considerable number of nails were found in the fill, only a single piece of nail was recorded in the features context in a soft pit.

Room VI

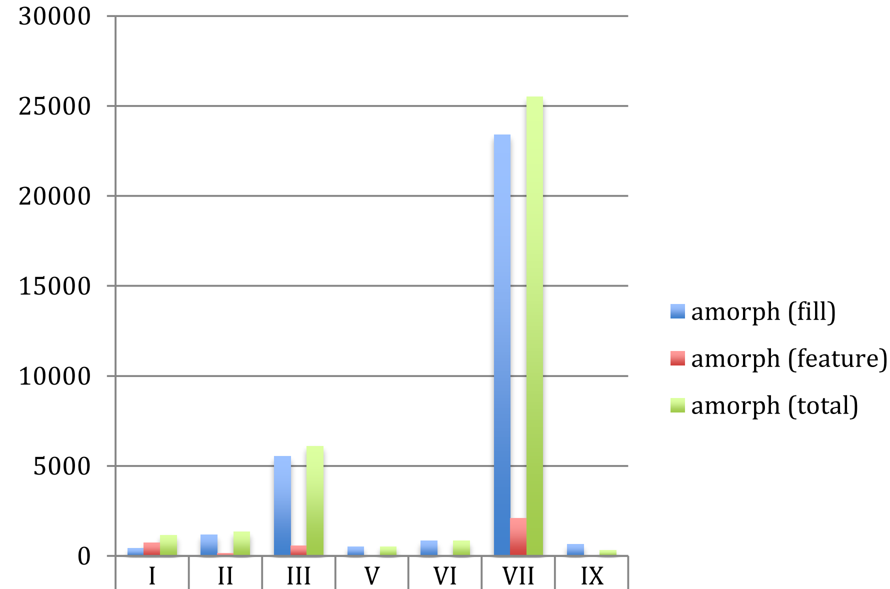
3% (835 gr) of the amorph and 6% (15) of the nails were recovered from the room fill while no slags were recorded. Non of the features in the room provided any metal find. Metal production cannot be suggested for Room VI in the lack of metal slags. Considerable number of nails was recorded in the fill while there were no finds in the features.

Room VII

72% (23415 gr) of the amorphs, 48% (2390 gr) of the slags and 52% (136) of the nails were recovered from the room fill. 59% (2100 gr) of the amorph, 53% (290 gr) of the slags and 35% (26) of the nails were recovered from the features. In general, Room VII has the highest percentages of metal finds. Metal production can be considered based on both the fill and the features data. Amorph fragments were recovered most in Room VII both from the fill and the features. Pits provided the vast majority of all metals recovered from the features. Both fill and features provided the highest amounts of nails.

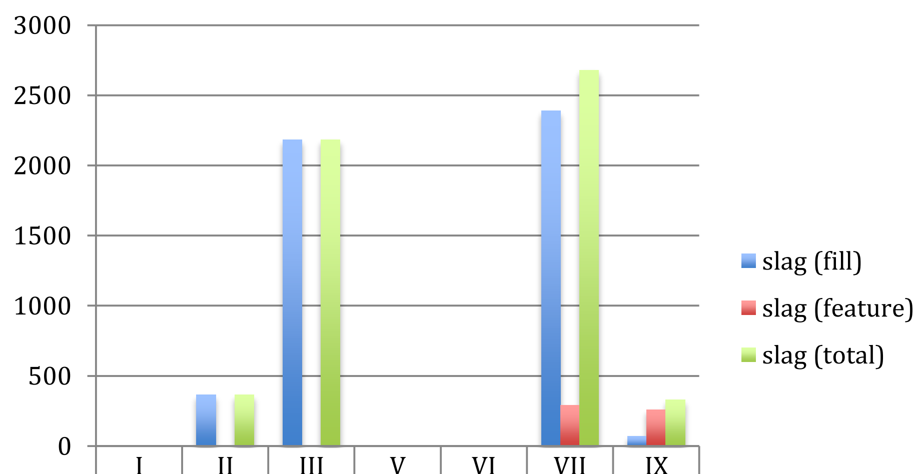
Room IX

2% (640 gr) of the amorph, 1% (70 gr) of the slag and 8% (22) of the nails were recovered from the fill. While there were no finds recorded for amorph and nails, 47% (260 gr) of the slags were recovered from the features of Room IX. Percentage of amorph in the fill is quite low and no amorphs were recorded in features. Slag percentage is extremely low in the fill, but a high percentage of slag was recorded in a soft pit in the features context. An average percentage f nails were recovered from the room fill where no nails were found in the features.



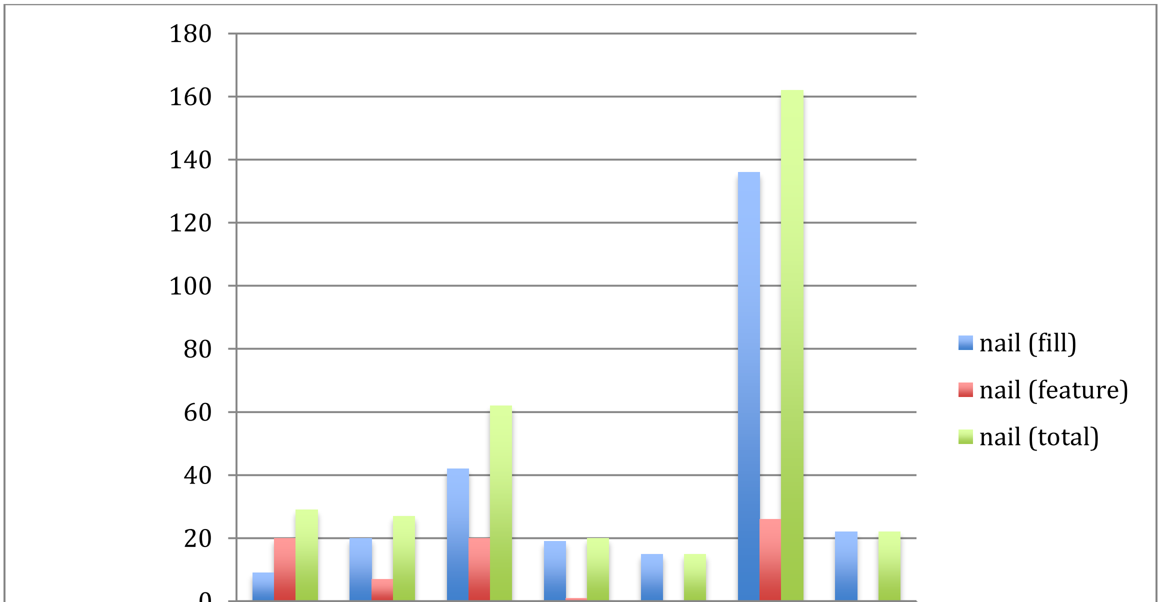
	I	II	III	V	VI	VII	IX
amorph (fill)	420	1185	5545	515	835	23415	640
amorph (feature)	740	160	565	5	0	2100	0
amorph (total)	1160	1345	6110	520	835	25515	330

Figure 35: Distribution of Amorph metals among rooms (gr.)



	I	II	III	V	VI	VII	IX
slag (fill)	0	365	2185	0	0	2390	70
slag (feature)	0	0	0	0	0	290	260
slag (total)	0	365	2185	0	0	2680	330

Figure 36: Distribution of metal slags among rooms (gr.)



	I	II	III	V	VI	VII	IX
nail (fill)	9	20	42	19	15	136	22
nail (feature)	20	7	20	1	0	26	0
nail (total)	29	27	62	20	15	162	22

Figure 37: Distribution of nails among rooms (counts)

Conclusions and Discussions

Amorphs were present in all rooms even though in different percentages. On one hand they may represent metal objects used for various functions such as craftsmanship and daily use, on the other hand they may represent construction materials attached to wooden structures on the buildings.

Nails are present in all rooms in considerable amounts. They are assumed to be present as construction materials. They were mostly recovered from fill where the collapsed building materials are dispersed. However, nails were also recovered from the features that vast majority came from the pits.

Slags were not recovered from all rooms. There was no single piece of slag in Room I, Room V, and Room VI. In the features context they were recovered from a rock carved pit and a soft pit. No remains were found in ovens. Even though slags were recovered from features in Room VII and Room IX, their sample sizes are quite small.

Slags recovered from the fills of Room III and Room VII is more considerable in size to infer for metal production or related activity, or neighboring trenches in the eastern part. The amount of amorph metals in room VII is extremely higher than the other rooms that this area might have been used as a junkyard where disfunctioning metal items were collected to recycle and reuse in manufacture.

However, the presence of slags does not immediately indicate any metal production in the rooms they were found. Heavy residue recovered from the soil samples taken from the burnt contexts, pits and ovens are considered to be checked. Heavy residue is very crucial in observing the invisible metal production refuse in a smaller scale.

5.1.1.3 Glass Distribution Analysis

Distribution of glass materials was analyzed based on their provenance whether they were recovered from the layer fill or from the features within the room boundaries. (Figures 38, 39)

Glass was analyzed in two categories as glass fragments and bracelet fragments. Since their condition of preservation was in highly fragmented form, glass fragments were calculated in grams. The degree of fragmentation was less for bracelet fragments, which were recovered in almost half or slightly less than half forms in different thicknesses and patterns.

Room I

2% (9,27 gr) of glass fragments and 2% (1) of the bracelet fragments were recovered from the layer fill. 4% (13,24 gr) of the glass fragments and 40% (2) of the bracelet fragments were recovered from the features.

Room II

9% (39,4 gr) of the glass fragments and 11% (6) of the bracelet fragments were recovered from the layer fill. While 0,1% (0,37 gr) of the glass fragments were recovered from the features, no bracelets were recorded.

Room III

11% (45,95 gr) of the glass fragments and 9% (5) of the bracelet fragments were recovered from the layer fill. 82% (243,91 gr) of the glass fragments and 20% (1) of the bracelet fragments were recovered from the features.

Room V

9% (37,32 gr) of the glass fragments and 7% (4) of the bracelet fragments were recovered from the layer fill. There were no finds recovered from the features of Room V.

Room VI

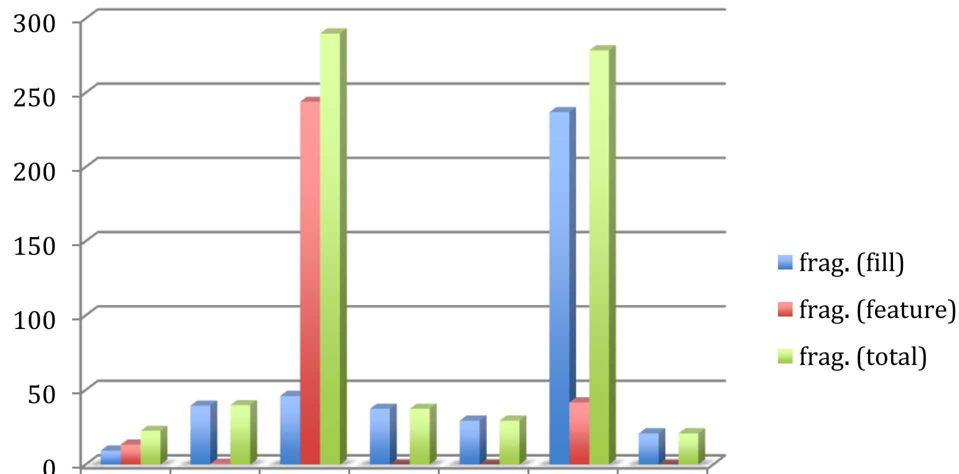
7% (29,33 gr) of the glass fragments and 15% (8) of the bracelet fragments were recovered from the layer fill. There were no finds recorded from the features.

Room VII

57% (236,91 gr) of the glass fragments and 42% (23) of the bracelet fragments were recovered from the layer fill. 14% (41,61 gr) of the glass fragments and 40% (2) of the bracelet fragments were recovered from the features.

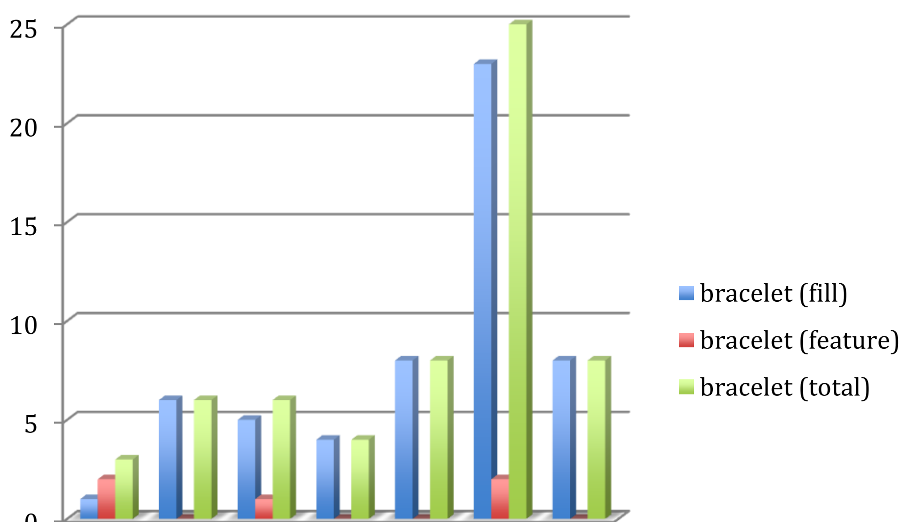
Room IX

5% (20,82 gr) of the glass fragments and 15% (8) of the bracelet fragments were recovered from the layer fill. There were no finds recovered from the features.



	I	II	III	V	VI	VII	IX
frag. (fill)	9,27	39,4	45,95	37,32	29,33	236,91	20,82
frag. (feature)	13,24	0,37	243,91	0	0	41,61	0
frag. (total)	22,51	39,77	289,86	37,32	29,33	278,52	20,82

Figure 38: Distribution of glass fragments (gr.) among rooms



	I	II	III	V	VI	VII	IX
bracelet (fill)	1	6	5	4	8	23	8
bracelet (feature)	2	0	1	0	0	2	0
bracelet (total)	3	6	6	4	8	25	8

Figure 39: Distribution of bracelet fragments among rooms

Conclusions and Discussions

Room VII has the highest percentage (57%) for the glass fragments recovered from the fill. While Room I has the lowest percentage (2%), other rooms have average values ranging between 5-11%. Therefore, Room VII is significant among the rooms.

The pattern is similar for the bracelets recovered from the room fill. Room VII has the highest percentage (42%), while Room II has the lowest (2%) and other rooms are ranging between 7-15%. Number of bracelet fragments is making a significant cluster in the layer fill of Room VII.

In terms of glass fragments recovered from the features, Room III has the highest percentage with 82%. While there were no finds recovered from the features of Room II, Room V, Room VI and Room IX, lowest amount (4%) were recorded for Room I and an average amount (15%) for Room VII. The concentration of glass fragments in Room III is due to the vast majority of finds recovered from a rock carved pit context. It was observed that these fragments were of goblets/wineglass and a glass plate, which were quite luxury tableware.

Number of bracelet fragments recovered from the features is quite low (5), while 1 of them was recovered from a container, 4 of them were recorded in rock carved pit context. While Room I (40%), Room III (20%) and Room VII (40%) provided the finds, no remains were found in the features of other rooms.

It was observed that the degree of fragmentation of the glass objects was high. They were observed in small fragments in every level of the fill context. It can be suggested that they can easily move within the room fill.

However, the concentration recovered from the rock carved pit in Room III provided a less fragmented assemblage when compared to the samples from the layer fill that was open to external effects.

The glass assemblage recovered from the rock carved pit in Room III can conveniently be considered as refuse disposal as a result of a short time range or one time activity.

A total number of 60 bracelet fragments were recorded from the fill and features. This number is quite considerable for the representation of the female occurrence and use of the rooms under investigation by female population. Room VII shows a significant concentration of bracelets with 23 fragments in the fill (42%). While minimum one bracelet fragment was attested in every room, this concentration brings forth the question whether the women used Room VII intensively.

5.1.1.4 Distribution Analysis of Bone Objects

Distribution of bone objects defined under the categories of spindle whorl, needle, button, hoop, needle jacket, knife handle, earring, decorative object, bell shaped object and unidentified objects were inspected among the rooms. (Figure 40)

Room I

17% (1) of the spindle whorls and 17% (1) of the unidentified bone objects were recovered in the room fill.

Room II

17% (1) of the unidentified bone objects were found in the layer fill.

Room III

17% (1) of the spindle whorls, 100% (1) of the decorative bone objects and 17% (1) of the unidentified bone objects were found in the layer fill.

Room V

17% (1) of the spindle whorls and 17% (1) of the unidentified bone objects were recovered from the room fill.

Room VI

100% (1) of the bone hoops and 17% (1) of the unidentified bone objects were recovered from the room fill.

Room VII

33% (2) of the spindle whorls, 100% (3) of the bone needles, 100% (2) of the bone buttons, 100% (1) of the needle jackets and 100% (1) of the bone earrings were recovered from the layer fill.

100% (1) of the bone hoops were recovered from the features of Room VII. It was the only bone find recovered from a feature, in a container.

Room IX

17% (1) of the spindle whorls, 100% (1) of the bone knife handles and 17% (1) of the unidentified bone objects were recovered in the fill context.

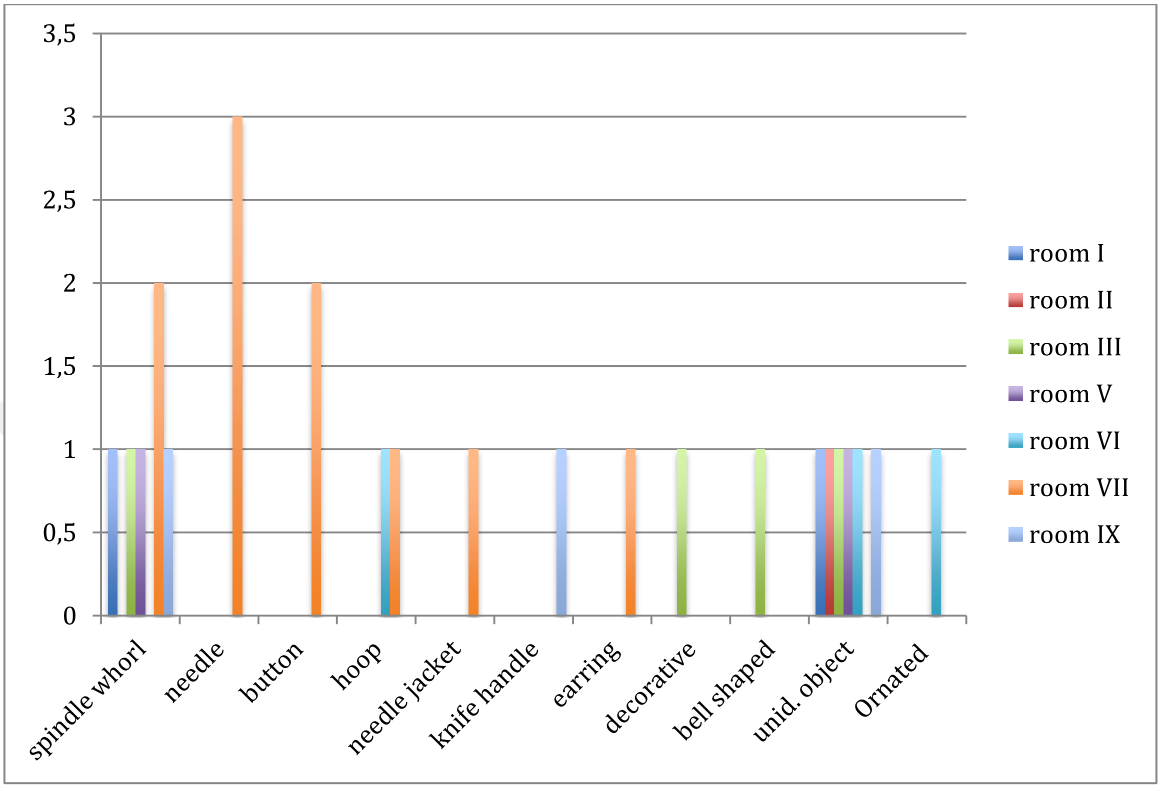


Figure 40: Distribution of bone objects among rooms

Conclusions and Discussions

At least one bone item was found in every room under analysis. While vast majority of the bone objects were recovered from the layer fill, only one single bone hoop was found in a container at Room VII.

Spindle whorls were the most found identified bone object among the rooms. They were found in Room I, Room III, Room V, Room VII and Room IX. A total number of 6 spindle whorls were attested within the rooms, which was considered as strong evidence for wool making at the site.

A total number of 3 bone needles, 2 buttons and 1 needle jacket were only found in Room VII. Presence of these items was considered as tailoring activities at the site. 2 bone hoops were found in Room VI and Room VII. 1 bone earring was found in Room VII. 1 bone knife handle was found in Room IX. 1 decorative bone plaque was found in

Room III. It had a square shape with nail holes on the corners. It was considered as a decorative element attached on the cover of a book or wooden case. 1 bell shaped bone object was found in Room III. A total number of 6 unidentified bone objects were found in all rooms, except Room VII.

It was observed that bone was specially used as raw material for making objects to be utilized in daily domestic and producing activities, such as wool making, tailoring and as accessories and decorative elements.

Presence of side products as bone objects as a result of bone making, could be actually a consequence of major activities such as animal husbandry, butchery and tannery. Indicators for these major activities will be concluded comprehensively and correlated with zooarchaeological data.

5.1.1.5 Distribution Analysis of Functional Inventory

Distribution of room inventories was grouped under functional categories in order to interpret the room functions based on the finds. Categories were as follows: sewing /weaving, cooking/food consumption, jewelry, religious paraphernalia, tools, metal working, hunting/fishing, architectural parts (furniture or ornament), various household items, lighting and unspecified items. (Table 1)

Room I

1 bone spindle whorl, 1 whole jug, 1 unidentified gold piece, 1 arrow head and an unidentified bone object were recovered from Room I. It is difficult to infer a function for the room based on the few samples of inventories.

Room II

There was no inventory finds recovered related with sewing/weaving and cooking/food consumption activities, and jewelry items were absent except 1 glass bead. However, there were bronze finds recovered such as a bronze cross, two hand tools and a bird relief. 1 piece of unidentified bone object was also found.

Room III

While 1 bone spindle whorl, 1 bronze bracelet, 1 agate seal ring stone and 1 bronze tweezers were found in Room III, 3 items under the category of architectural/furniture/ornament parts were found. Besides two other bone objects with unspecified function category were revealed.

Room V

There was only 1 bone spindle whorl was recovered from Room V. It is the most empty room amongst others.

*Room V*I

1 bone hoop, 1 terracotta spool, 1 whole jug, 1 bead, 1 cylindrical bronze pipe and hook, 1 bronze melting pot, 1 ornated circular bone object, 1 bronze lid, 1 bronze rattle, 1 glass object, 1 metal object and 1 unidentified bone object were found in Room VI. There was at least one item from each category but it was not possible to make any functional inference for the room.

Room VII

A total number of 40 items were recovered from Room VII. 12 items were related with sewing/weaving which contains 1 terracotta loom weight, 2 bronze needles 2 bone spindle whorls, 3 bone needles, 1 needle jacket, 2 bone buttons and 1 bone hoop.

2 whole jugs, 1 ceramic lid and 1 grinding stone were found which characterizes cooking/food consumption in Rom VII.

1 bronze ring, 1 bronze earring and a glass bead were found as jewelry items.

2 bronze crosses and 5 bronze bells were recovered which were the items related with religious paraphernalia. However, those metal finds could have been collected to

be melted and reused after they lost their real function, since they were found in a considerable distance to church area.

1 bronze tweezers, 1 bronze tongs and 1 stone tool were recovered as hand tools.

1 decorative bronze nail and 1 both ends decorated bronze object were found representing architecture/furniture/ornament parts group.

Various household items such as bronze chain, bronze tripod and a bronze vessel handle were found.

The only bronze oil-lamp and 3 mercury bottles were found in Room VII.

Room IX

9 jewelry items were found in Room IX. Among them 2 Fatimid gold earrings, 3 silver rings and 1 silver pendant with Jesus relief and attached pearls were found at one spot which can be considered as a hoard, or jewelry items once they were inside a cloth money bag. Other finds were 1 bone spindle whorl, 1 bone knife handle, 1 bronze cross and 1 unidentified bone object.

Table 1 Distribution of functional room inventories among rooms

Function/finds	Room	Room II	Room III	Room V	Room VI	Room VII	Room IX
Sewing/weaving							
Terracotta loom weight						1	
Bronze needle						2	
Bone spindle whorl	1		1	1		2	1
Bone needle						3	
Bone button						2	
Bone hoop					1	1	
Bone needle jacket						1	
Terracotta spool (makara)					1		
Cooking/food consumption							
Whole jugs	1				1	2	
Ceramic lid						1	
Grinding stone						1	
Bone knife handle							1
Jewelry							
Bronze bracelet			1				1
Bronze ring						1	
Bronze earring						1	
Bronze pendant							1
Silver ring							3
Silver pendant							1
Agate seal			1				
Pearl bead					1		
Glass bead		1				1	
Gold earring							2
Unidentified gold piece	1						1
Bone earring						1	

Table 1 (continued)

Architectural/furniture/ ornament parts							
Decorative bronze nail						1	
Bronze bird relief		1					
Bronze knuckle (menteşe)			1				
Decorated bronze object						1	
Decorative bone object			1				
Ornated circular bone object					1		
Glass hook			1				
Various household items							
Bronze lid					1		
Bronze chain						1	
Bronze rattle (çıngırak)					1		
Bronze tripod						1	
Bronze vessel handle						1	
Lighting							
Bronze oil-lamp						1	
Varied interpretation							
Mercury bottle						3	
Unspecified							
Glass object					1		
Metal object					1	1	
Unidentified bone object	1	1	1	1	1		1
Bell shaped bone object			1				

Table1 (continued)

Religious paraphernalia							
Bronze cross		1				2	1
Bronze bell						5	
Tools							
Bronze miniature tool		1					
Bronze tool handle		1					
Bronze tweezers			1			1	
Cylindrical bronze hook					1		
Bronze tongs (maşa)						1	
Stone tool						1	
Metal working							
Bronze melting pot					1		
Hunting/fishing							
Arrow head	1						

Conclusions and Discussions

The most items from all categories were recovered from Room VII. Especially items related with sewing/weaving possibly are strong evidence for inferring such a function to Room VII. Besides, vast majority of cooking/food consumption related inventory items and religious paraphernalia items were found in Room VII.

Room IX is significant with its jewelry items recovered from a spot find.

5.1.1.6 Distribution of Analysis of Coins

Distribution of coins was analyzed both within the contexts and the 8 rooms under study. A total number of 103 coins were found in the study area. While 66% (68)

of the coins were recovered from the layer fills, 25% (26) recovered from the pit, 8% (8) from ovens and 1% (1) from container contexts. (Figure 41)

Majority of the coins were recovered from rooms I (17), II (15), III (23), VII (20) and IX (18), while rooms V (2), VI (7) and VIII (3) had very few. (Figure 42)

Rooms II (13), III (9), VI (7), VII (16) and IX (17) were significant since the vast majority of the coins were found in layer fills, however, this contextual dominance of the layer fill was normally expected. 11 coins found in a deep storage pit (F08) in room I, 6 coins found in an oven (F49) and 7 coins found in rock carved pits (Fx2 had 6 coins) in room III and 3 coins found in a soft pit (F34 cesspit) in room VIII were more significant clusters among the features and rooms. (Figure 43)

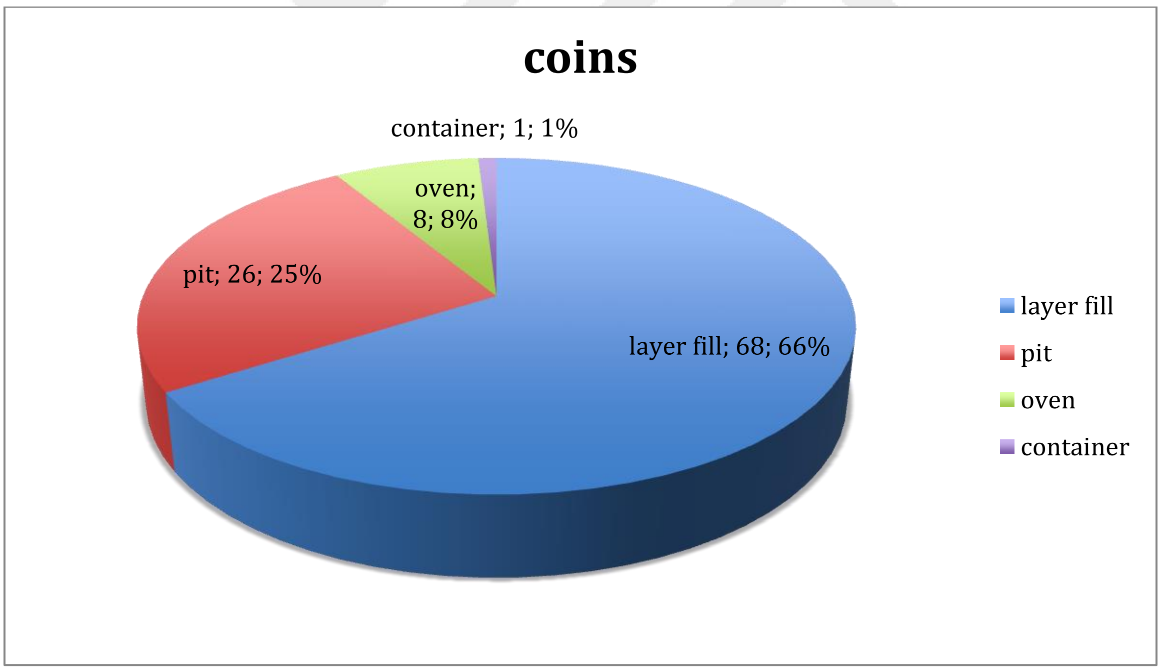


Figure 41: Distribution of coins among contexts

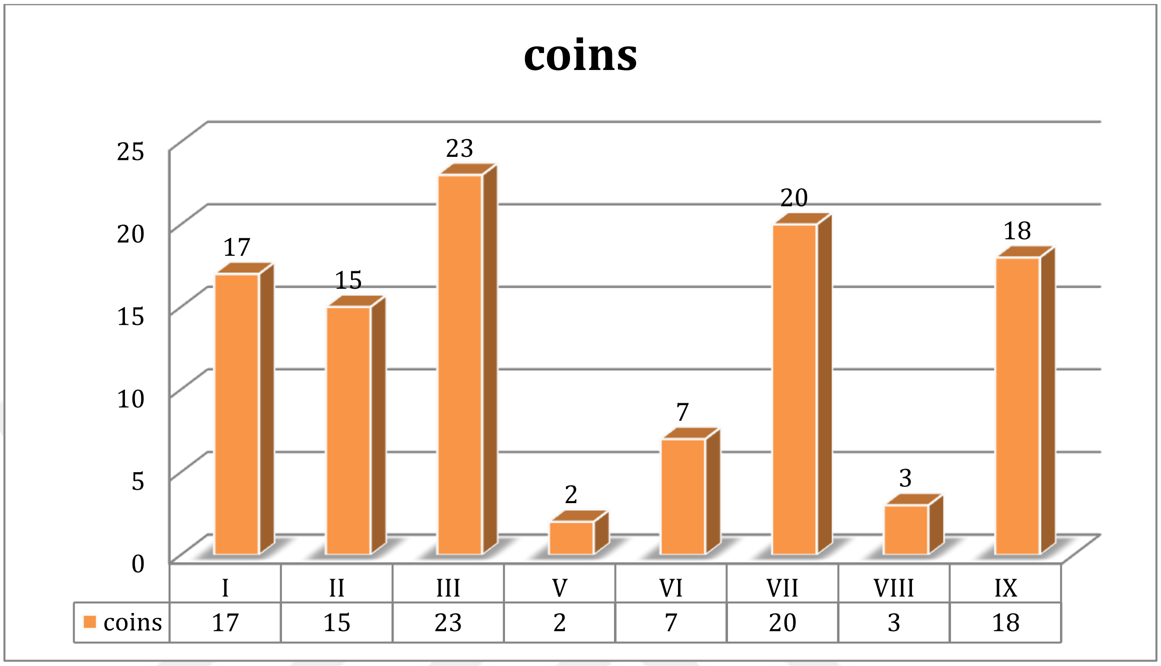


Figure 42: Distribution of coins among rooms

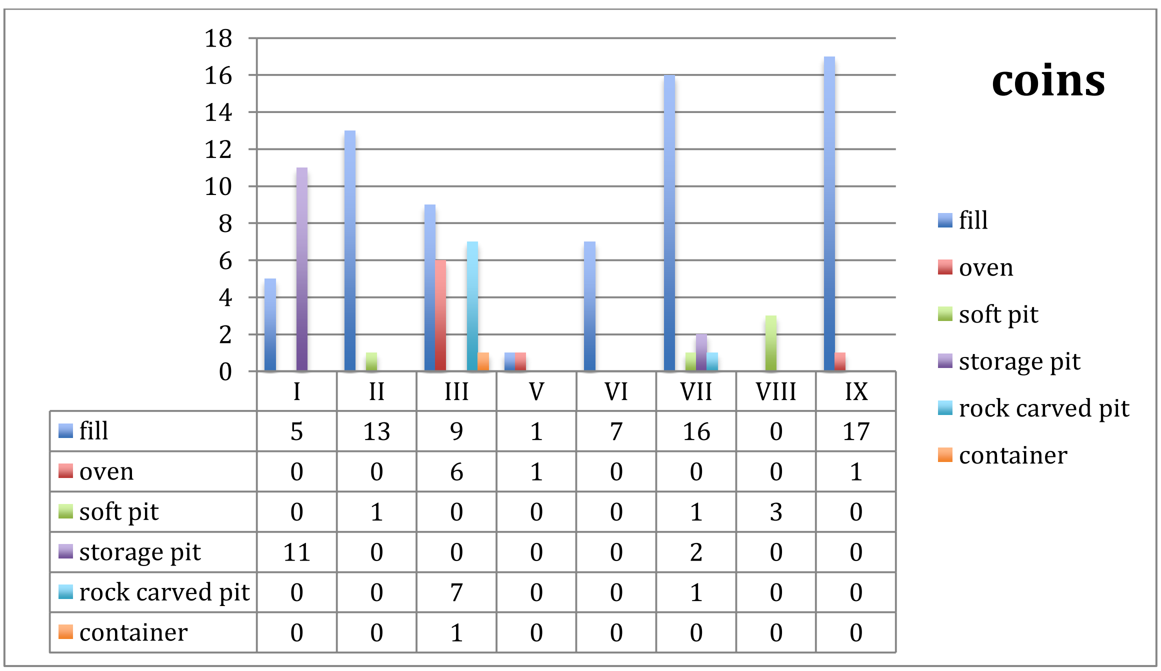


Figure 43: Distribution of coins among features and rooms

5.1.1.7 Distribution Analysis of Animal Bones

A total number of 4943 animal bones were identified in species level, which were recovered from the rooms under study. Economic species under study included ovicaprid, equid, cattle, pig, deer, hare and birds. Species identified as sheep, goat and sheep/goat were categorized as ovicaprids. Horse, donkey and equids were counted as equids. Birds comprised of mostly chickens, partridges and other birds. Species identified as roedeer, redeer and deer were categorized as deer.

Quantification of animal bones were made based on NISP (Number of identified specimens).

Majority of the bones identified were of ovicaprids with 49% (2408). While cattle was represented with 28,0% (1382), pig was 4,6% (226), bird was 12,8% (634). The less represented species were equids with 1,5% (75), hare with 4,3% (212) and deer with 0,1% (6). (Figure 44)

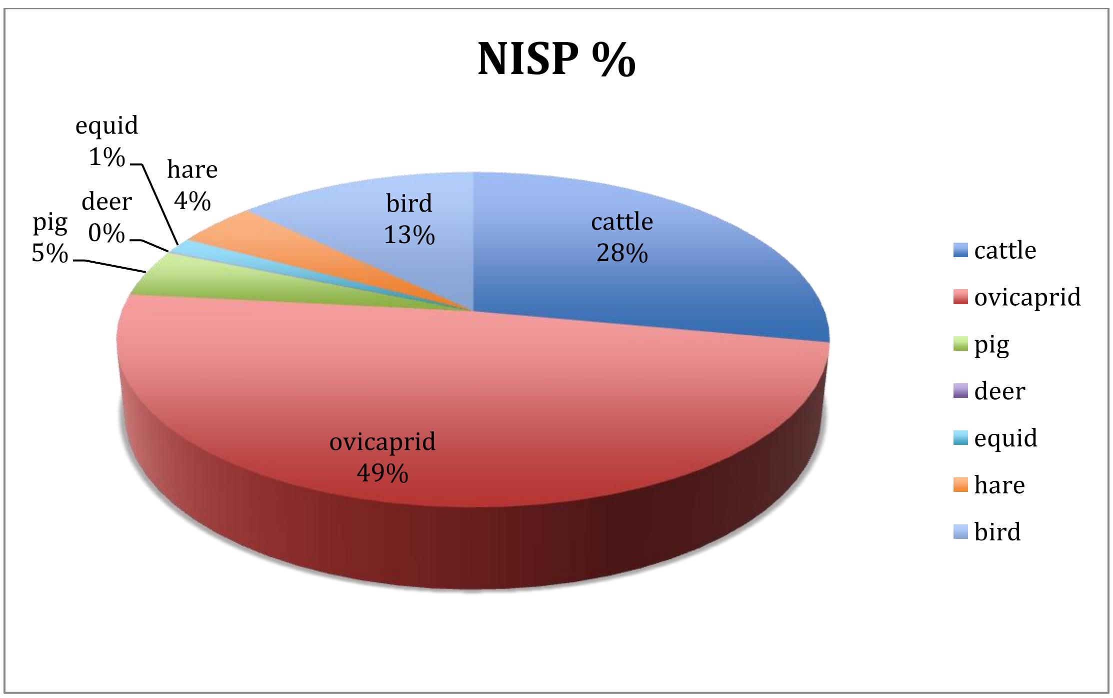
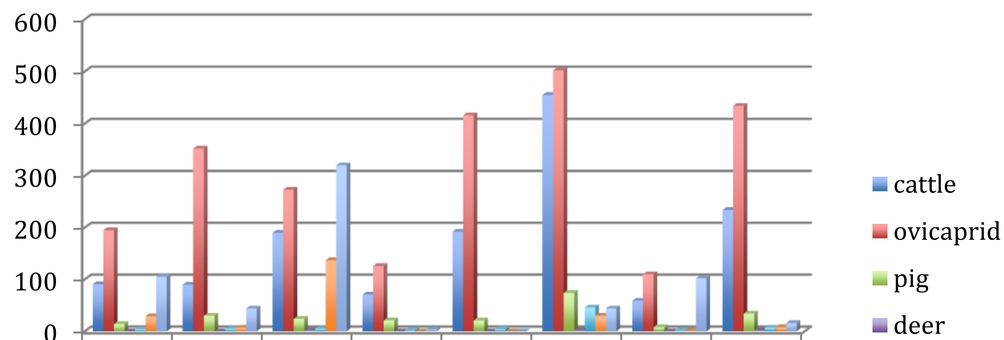


Figure 44: General proportion of animal species (NISP)

Distribution of Animal Bones within Rooms

A total number of 8 rooms were analyzed within the scope of the research. Distribution and representation of animal species recovered from the room limits were as follows. (Figure 45)



	I	II	III	V	VI	VII	VIII	IX
cattle	91	90	190	71	192	455	59	234
ovicaprid	195	352	273	126	416	502	110	434
pig	14	30	24	21	21	74	8	34
deer	0	0	2	0	0	2	0	2
equid	4	5	5	2	4	46	2	7
hare	29	7	137	0	0	30	1	8
bird	105	44	320	3	0	44	102	16

Figure 45: Distribution of animal bones among rooms

Room I

47,8% (195) of the animal bones was representing ovicaprids, 22,3% (91) were of cattle, 18,4% (105) of chicken, 7,1% (29) of hare, 3,4% (14) were of pig and 1% (4) were of equids. No remains of deer species were found.   (Figure 46)

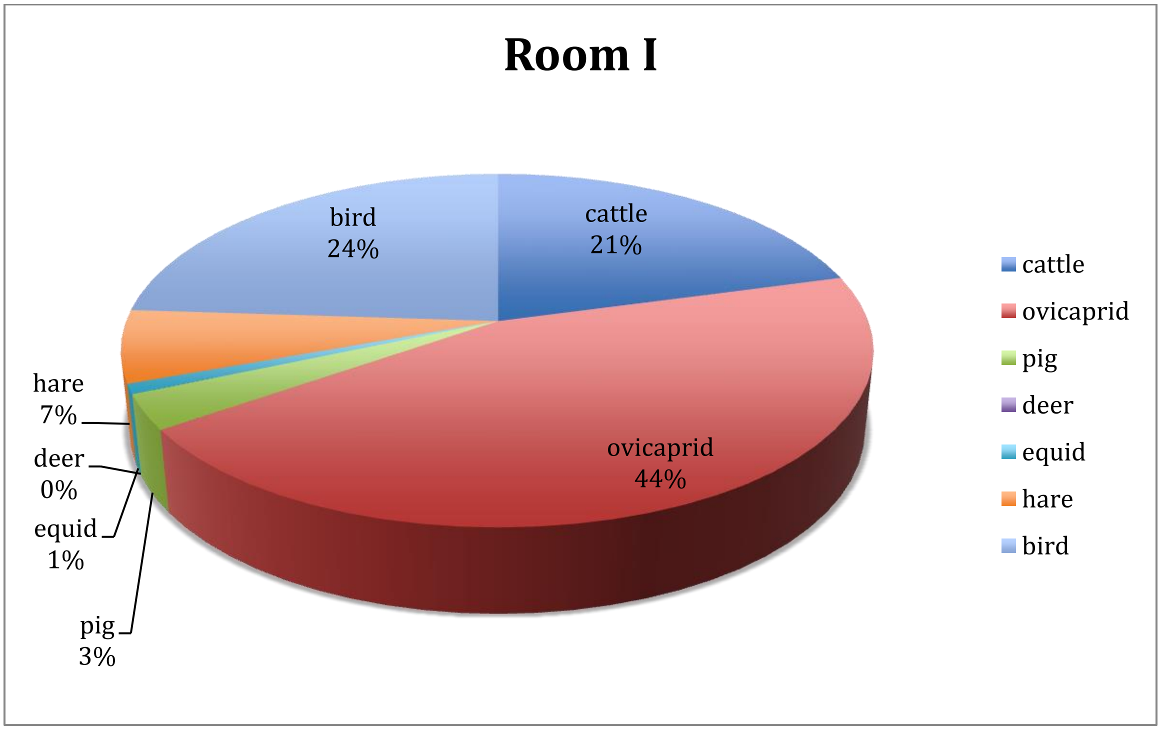


Figure 46: Proportions in Room I

Room II

67% (352) of the animal bones were representing ovicaprids, 17% (90) were of cattle, 6% were of pig (30) and 8% (44) were of bird. While there were no bones representing deer, hare was 1% (7) and equid was 1% (5). (Figure 47)

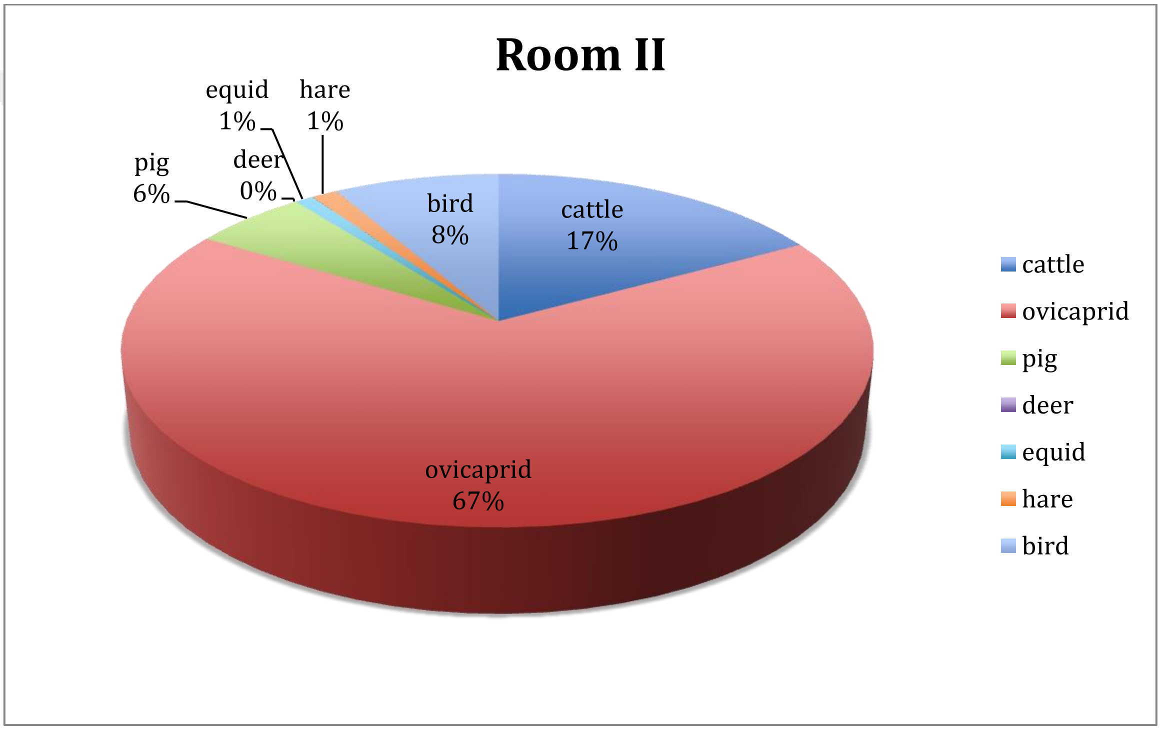


Figure 47: Proportions in Room II

Room III

29% (273) of the animal bones recovered from Room III were identified as ovicaprids. Cattle was 20% (190), bird was 34% (320), pig was 2% (24), equid was 1% (5), deer was 0,4% (2) and hare was 14% (137). (Figure 48)

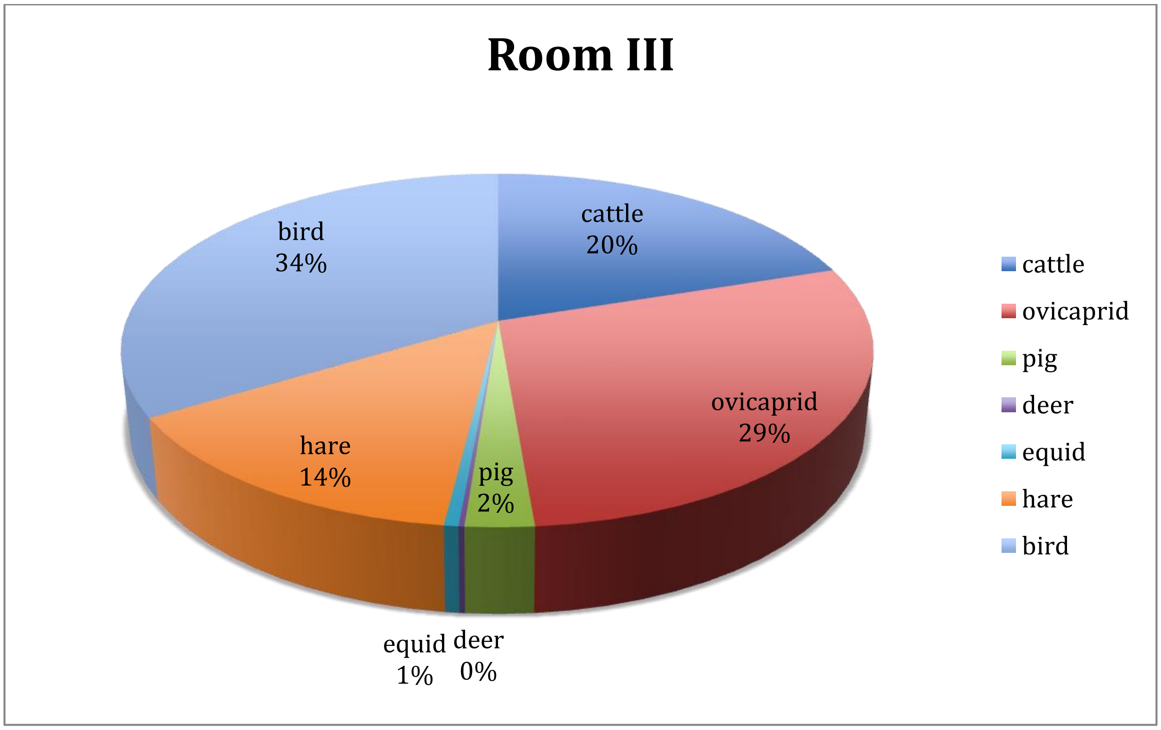


Figure 48: Proportions in Room III

Room V

Vast majority of the animal bones recovered from Room V was ovicaprid bones with 57% (126). Cattle was second in rank with 32% (71) and pig bones had the highest percentage in a room with 9% (21). While no deer and hare were seen, equid was 1% (2) and bird was 1% (3). (Figure 49)

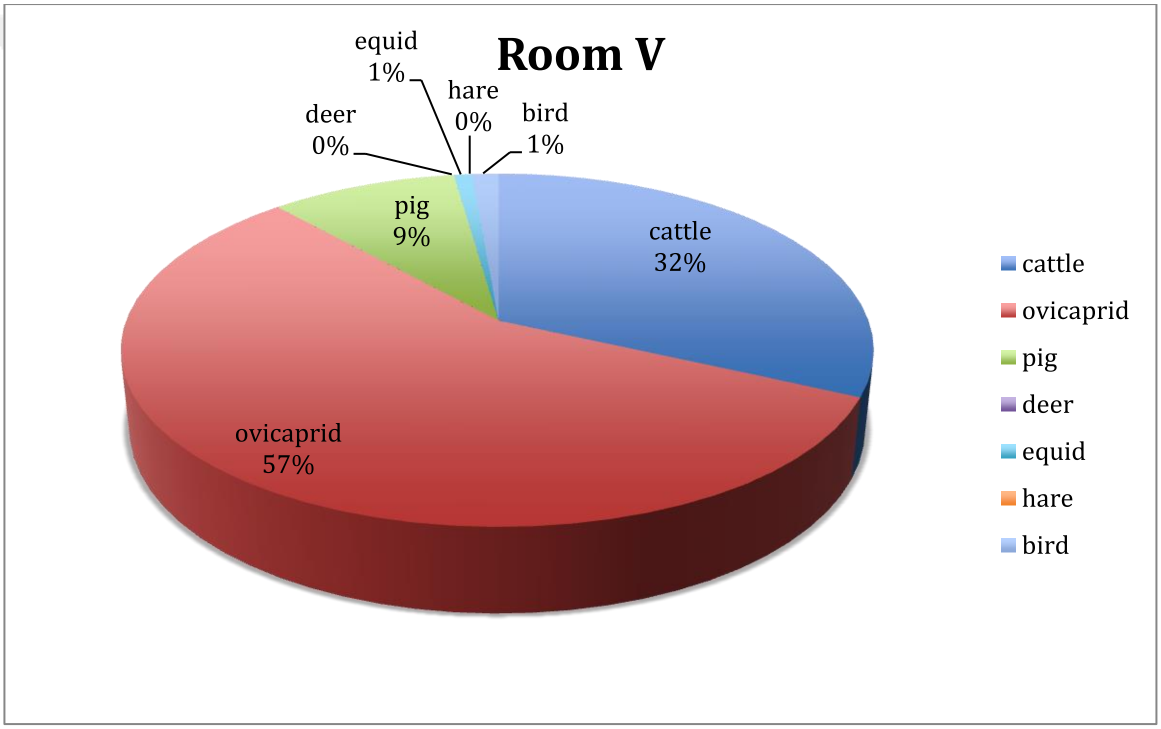


Figure 49: Proportions in Room V

Room VI

While vast majority of the bones were representing ovicaprids with 66% (416), cattle were represented by 30% (192). Pig was 3% (21), equid was 1% (4) and no remains were found of deer, hare and bird. (Figure 50)

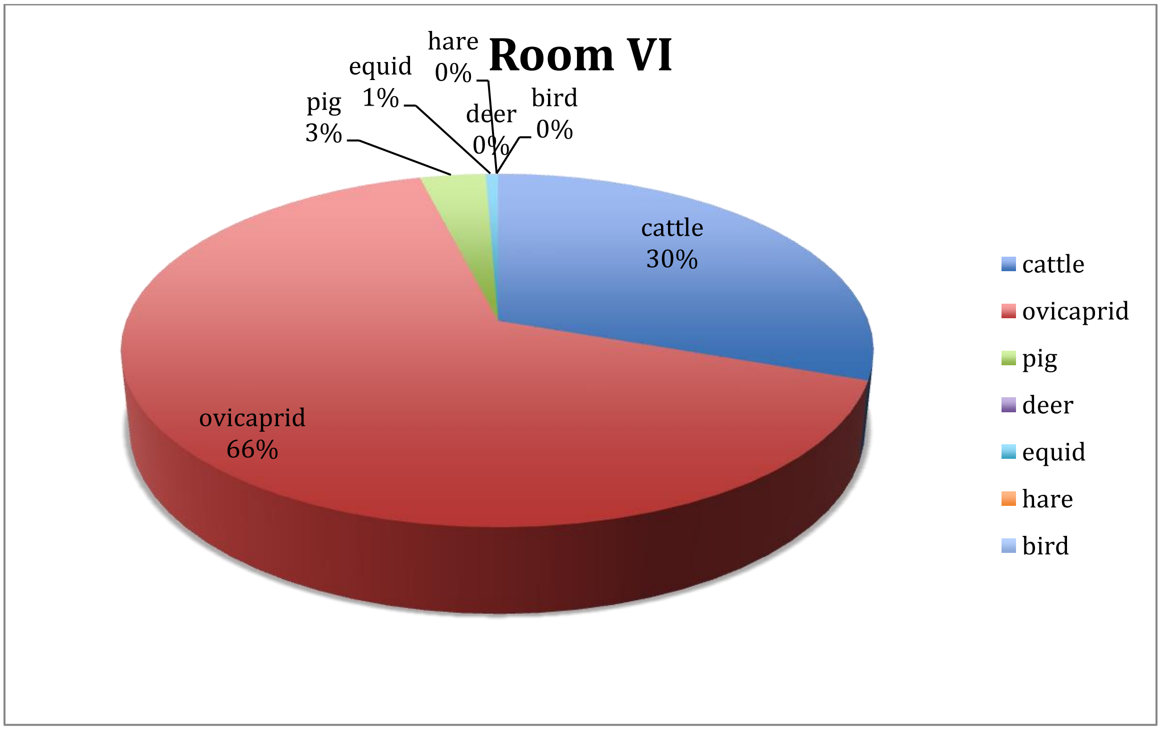


Figure 50: Proportions in Room VI

Room VII

Ovicaprids were represented by 44% (502) and cattle were 39% (455). Pig was 6% (74), equid was 4% (46), hare was 3% (30), bird was 4% (44) and deer was 0,2% (2). (Figure 51)

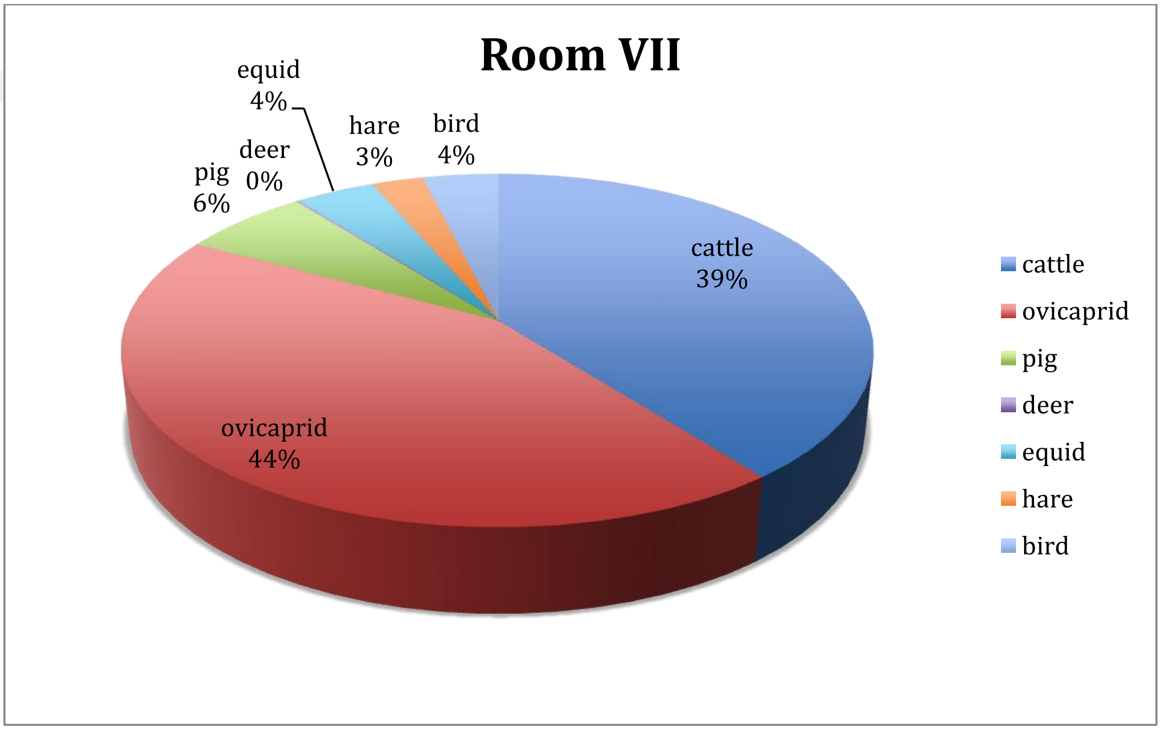


Figure 51: Proportions in Room VII

Room VIII

39% (110) of the animal bones recovered from Room VIII were of ovicaprids. Cattle was 21% (59), bird was 36% (102), pig was 3% (8), equid was 1% (2) and hare was 0,4% (1). There were no deer bones found. (Figure 52)

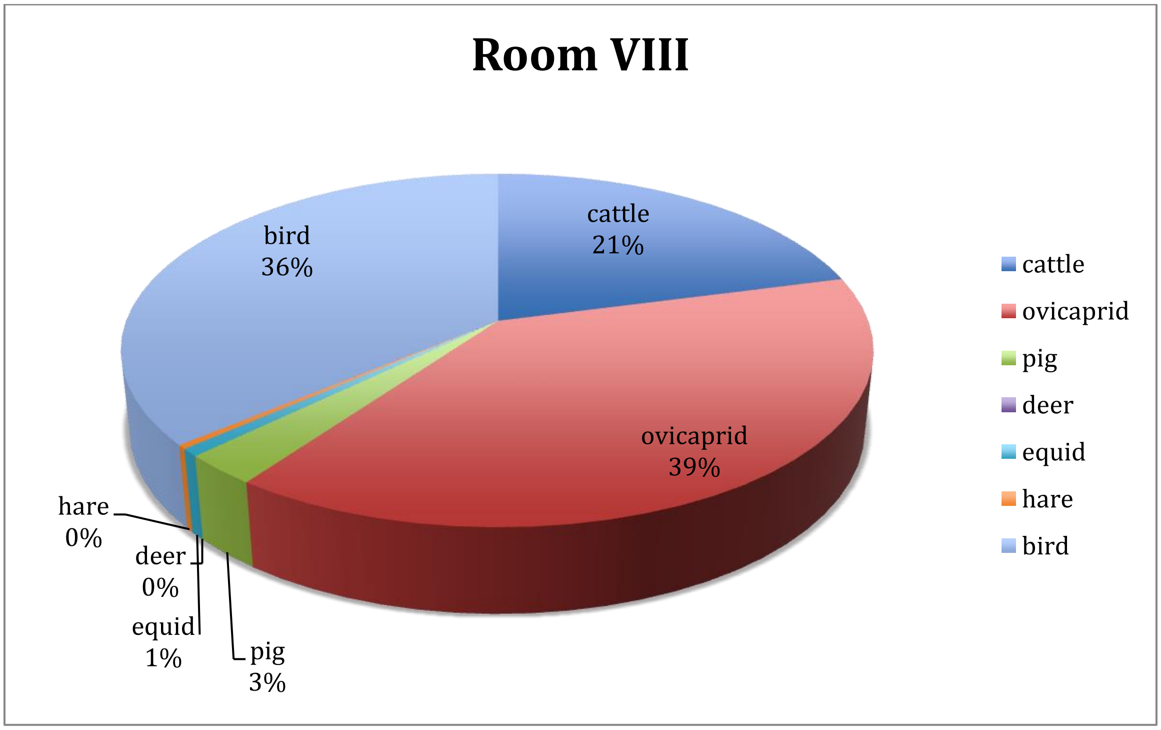


Figure 52: Proportions in Room VIII

Room IX

The vast majority of animal bones recovered from Room IX were ovicaprid bones with 59% (434). Cattle were 32% (234) and pig was 5%(34). Very few bone remains were of deer with 0,3% (2), of equid with 1% (7), hare with 1% (8) and chicken with 2% (16). (Figure 53)

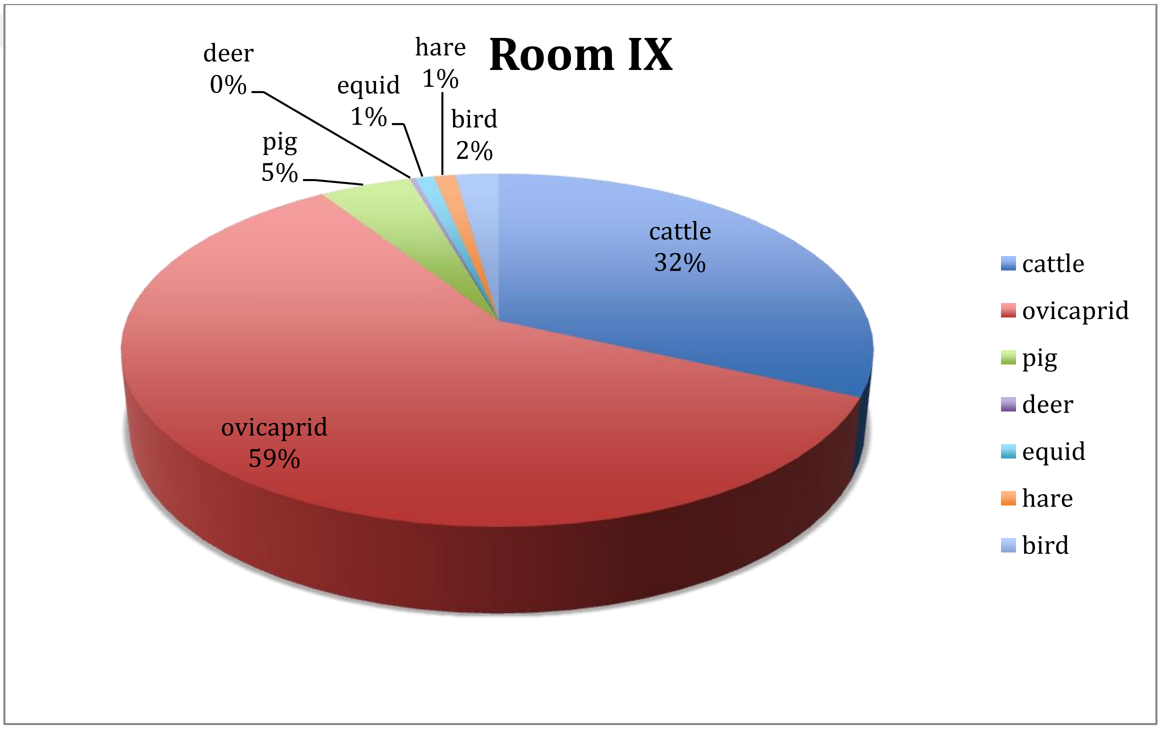


Figure 53: Proportions in Room IX

Conclusions and Discussions

In all rooms it has been observed that ovicaprids formed the vast majority of the bone proportions ranging between 46% and 69%. This rate of percentage is also valid for the general proportion of ovicaprids in total area of study (8 rooms) with 55,8%. Cattle was the secondary species in all rooms ranging between 18% and 41%. Cattle constituted 32% of all animal bones in the total area of study.

Proportion of pig bones within the rooms were ranging between 3,4% and 9,5%. In total study area, the proportion of pig bones was 5,2%.

Equids constituted 1,7% (75) of all animal bones within the study area ranging between 0,6% and 4,2%. Room VII had a cluster of equid bones with 4,2% (46) which was very high when compared to the other rooms that had lower percentages.

3,7% (159) of the assemblage was represented by chicken species. The proportions within the rooms were changing between 0,4% and 21,4%.

Hare, a category of small size game animal, constituted 1,3% (56) of all assemblage. Its proportion was quite considerable that it can be conveniently suggested that hare was a popular hunting animal.

Another type of small size hunting animal was partridge during the 12-13th centuries. Remains of partridge bones were frequently recovered especially in few garbage pits. This data will be added later.

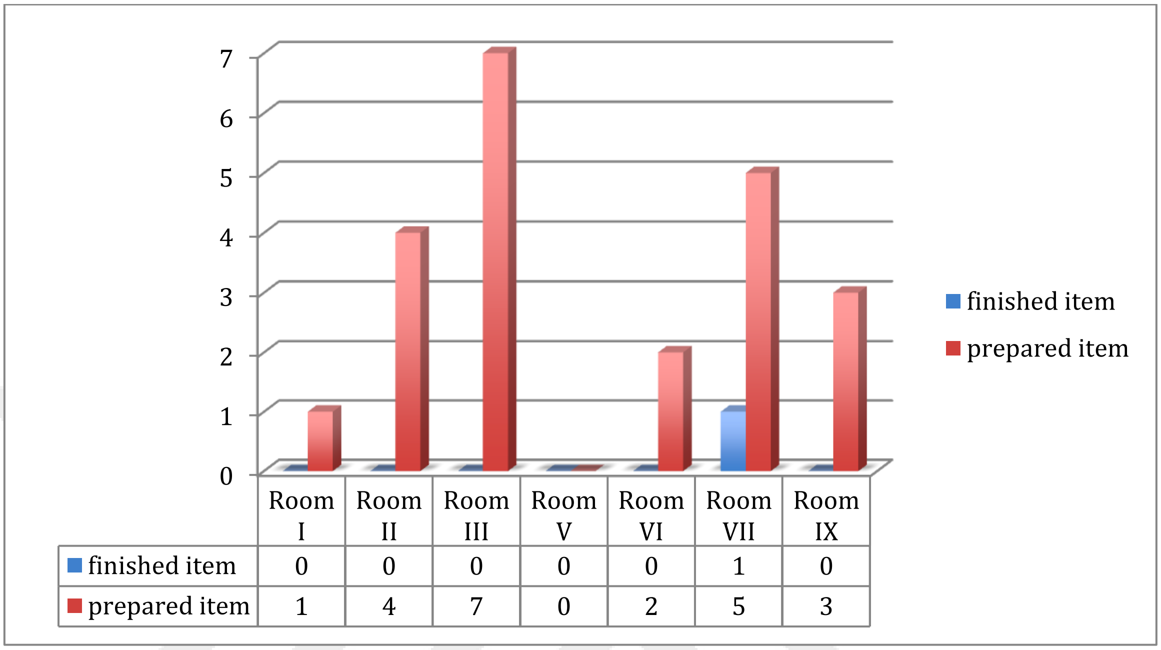
Both hare and partridge figures were seen on the 12th - 13th centuries glazed pottery in various sites. It is clear that popularity of these species inspired artisans to display them on their artifacts.

Very few number of deer bones were recovered from Rooms III, VII and IX (0,1%) (6). They were only sufficient to confirm the presence of the species. According to the data recovered from the 8 rooms it was not possible to suggest deer as a popular game animal.

Evidence for Bone Working

Animal bones assemblage was observed whether there were any bone working signs on them. Bone working was observed on the samples in two stages: (1) finished item and (2) prepared for bone working.

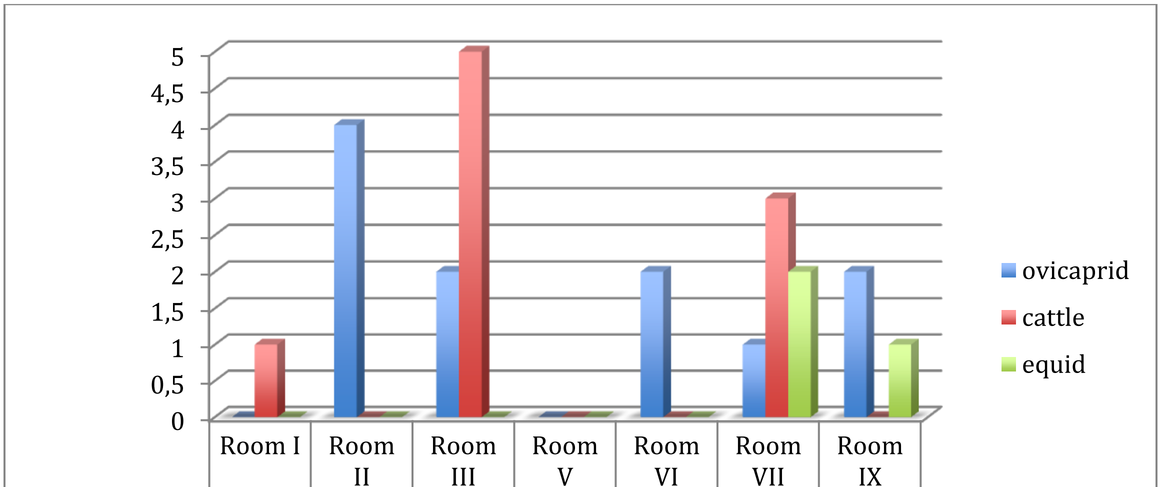
Only 1 item was identified as finished item in Room VII. 23 samples were identified in the stage of “prepared for bone working”. Among the rooms, Room III had 7, Room VII had 6 and Room II had 4 records as the highest numbers. (Figure 54)



	Room I	Room II	Room III	Room V	Room VI	Room VII	Room IX
finished item	0	0	0	0	0	1	0
prepared item	1	4	7	0	2	5	3

Figure 54: Bone working data

Among the worked bones, species preference was observed to understand which species were suitable as raw materials of bone working. Ovicaprids with 11 and cattle with 9 samples were the most used species among others. In 3 cases equid bones were used. (Figure 55)



	Room I	Room II	Room III	Room V	Room VI	Room VII	Room IX
ovicaprid	0	4	2	0	2	1	2
cattle	1	0	5	0	0	3	0
equid	0	0	0	0	0	2	1

Figure 55: Species preferred for bone working

Conclusions and Discussions

Considerable numbers of bone objects were recovered from the study area, such as spindle whorls, needles, buttons and decorative elements. The presence of the bone objects emerged the question whether they were produced in the site. Prior to become an object, bones went through a preparation stage. This stage can be observed within the assemblage.

A total number of 23 worked bones within 8 rooms can be conveniently taken as evidence of bone working in the site. However, clusters of 7 items recovered from the layer fill of Room III and 6 items of Room VII were not sufficient to suggest these rooms as point of bone working or bone object production. A stronger cluster in certain spots should be attested in order to safely infer any artisanal activity.

It is clear that ovicaprids, cattle and equids were preferred as raw materials of bone working. The difference in amount among the species are not sufficient to grade the most suitable and preferred species yet.

Burnt Bones

The amount of burnt bones were analyzed whether they might be indicatives of food preparation ways or formation of the archaeological record. Among 6804 bone entries, only 63 (0,9%) of them had burnt sign records. 6741 bones were observed as unburnt (99,1%). (Figures 56, 57)

Considering the refuse patterns, especially those observed around fire installations and ashy pits, burnt bones were not a result of cooking activity but accidental burns due to refuse disposal in burning contexts after meet consumption or butchery activities.

In terms of formation processes of the archaeological record, there were no evidence to infer for a destructive fire in the site that resulted with the burn of the materials and the very small percentage of burnt bones did not support any special event.

Distribution of burnt bones among the rooms were quite equal that no cluster could be identified. Therefore no significant conclusion could be suggested related with the presence of burnt bones within the rooms.

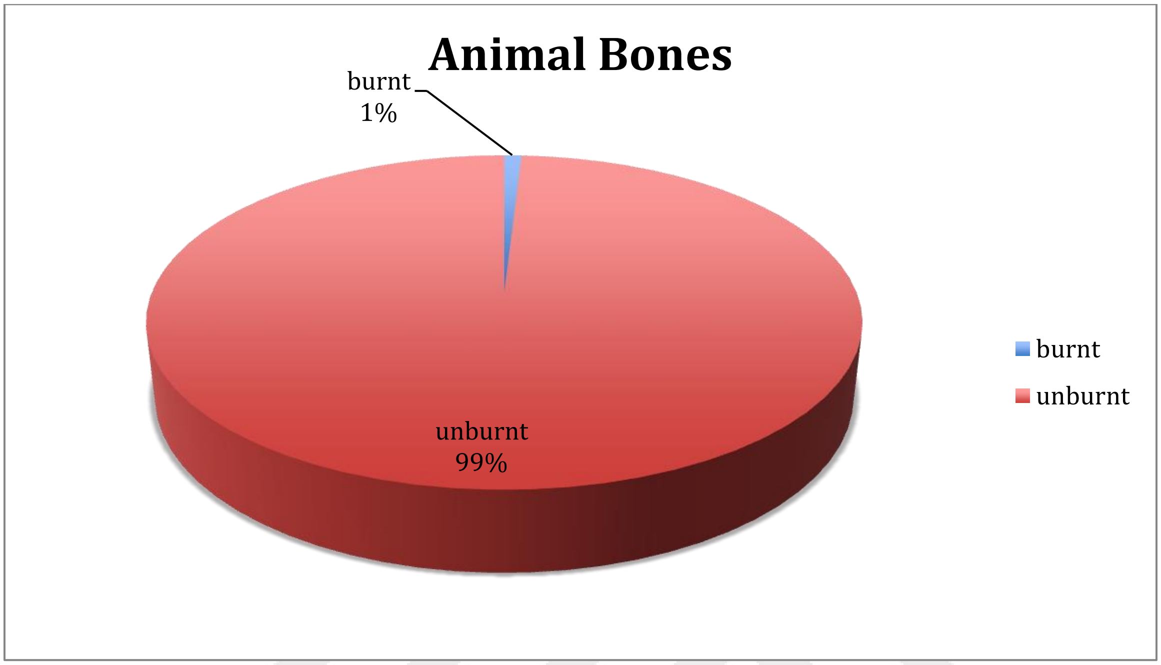


Figure 56: Burnt bones

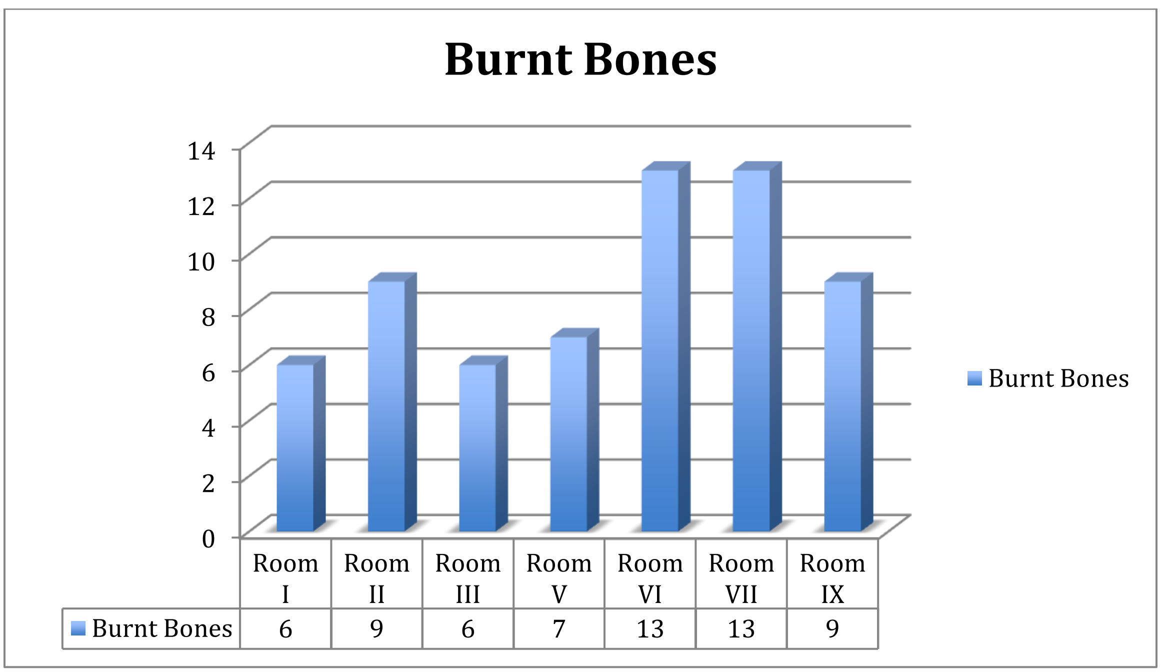
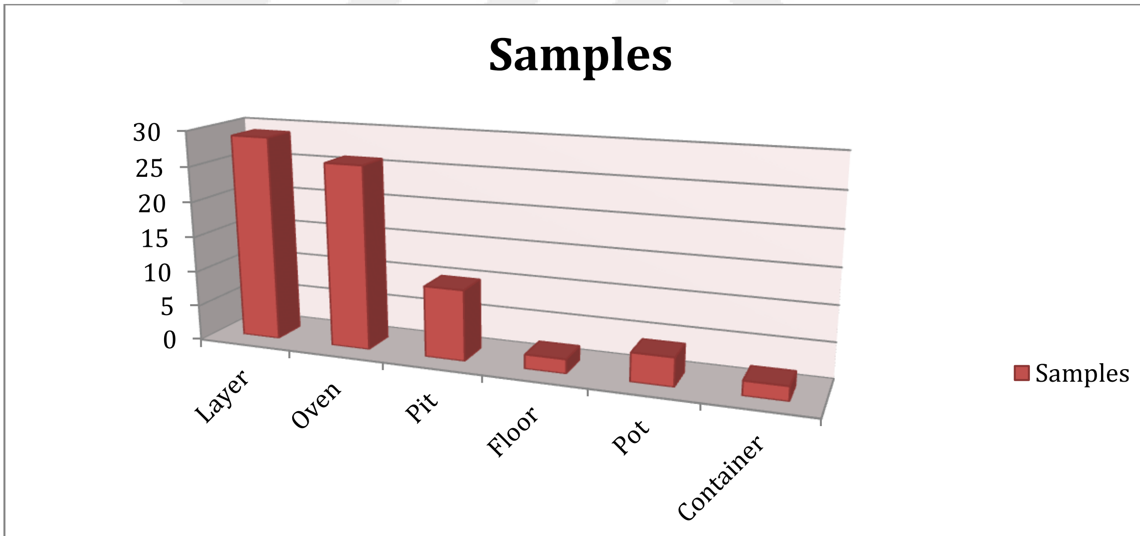


Figure 57: Distribution of burnt bones among rooms

5.1.2 Analysis of Plant Samples

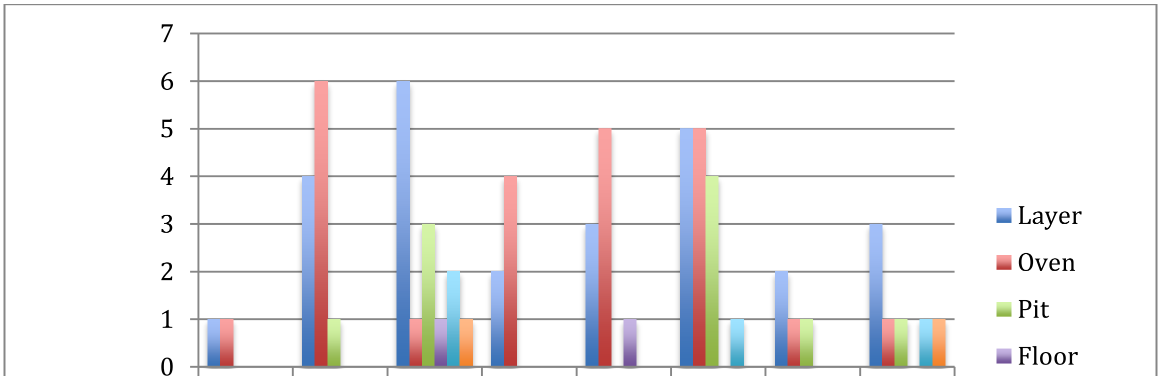
Distribution of Plant Samples

A total number of 73 soil samples were analyzed from a variety of contexts such as burnt area-fill, oven, pit, floor, pot/vessel and container within the study area. (Figures 58, 59) Distribution of plant remains was analyzed in four aspects: (1) distribution of plants within rooms referred with features and contexts, (2) distribution of plants within each feature and context, (3) distribution of plants between features and contexts and (4) distribution of plants inter rooms.



	Layer	Oven	Pit	Floor	Pot	Container
Samples	29	26	10	2	4	2

Figure 58: Contextual distribution of samples in general



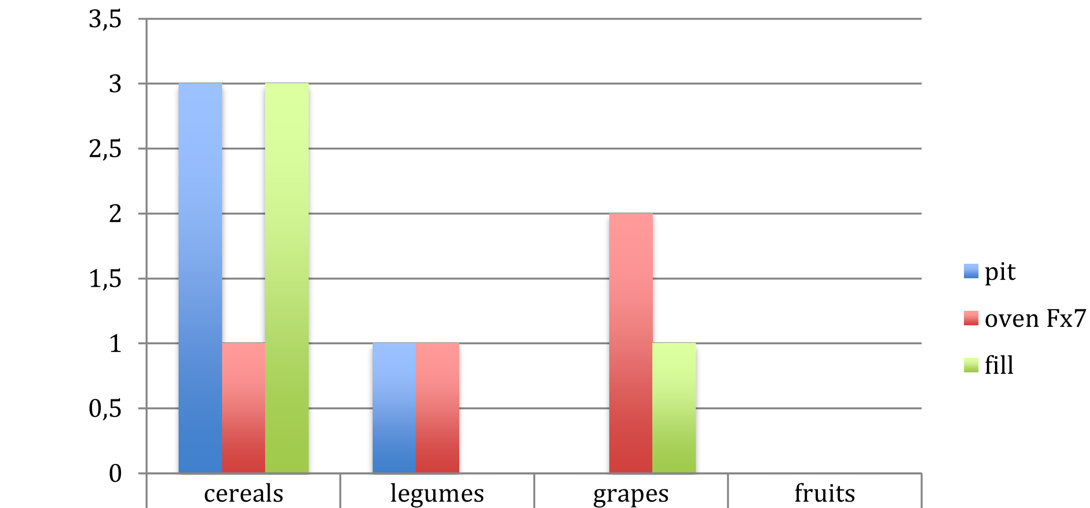
	I	II	III	V	VI	VII	VIII	IX
Layer	1	4	6	2	3	5	2	3
Oven	1	6	1	4	5	5	1	1
Pit	0	1	3	0	0	4	1	1
Floor	0	0	1	0	1	0	0	0
Pot	0	0	2	0	0	1	0	1
Container	0	0	1	0	0	0	0	1

Figure 59: Contextual distribution of samples among rooms

5.1.2.1 Distribution of Plant Samples within Rooms

Room I

There was lack of samples in Room I, which was excavated in the first year of excavations, in 2009. Even though Room I has a wide variety of features that could hold rich amount of plant remains, there were only two samples taken from burnt contexts but the samples are almost empty. While 1 cereal, 1 legume, 2 grape seeds were recovered from an oven and only 1 cereal was found in a sample taken from fill. (Figure 60) In Room I, amount of plants that were recovered from two samples are very low. Even though not satisfactory in amount, presence of plant remains was attested in the oven. This evidence should be considered for an inference for the plant use and food preparation activity in Room I. But it would be better to make any inference on these small samples after all sample patterns are analyzed. For the features that were not sampled, presumptions can be made according to the plant inclusions of the other features in other rooms. They would be helpful in making generalization in feature function and room use.



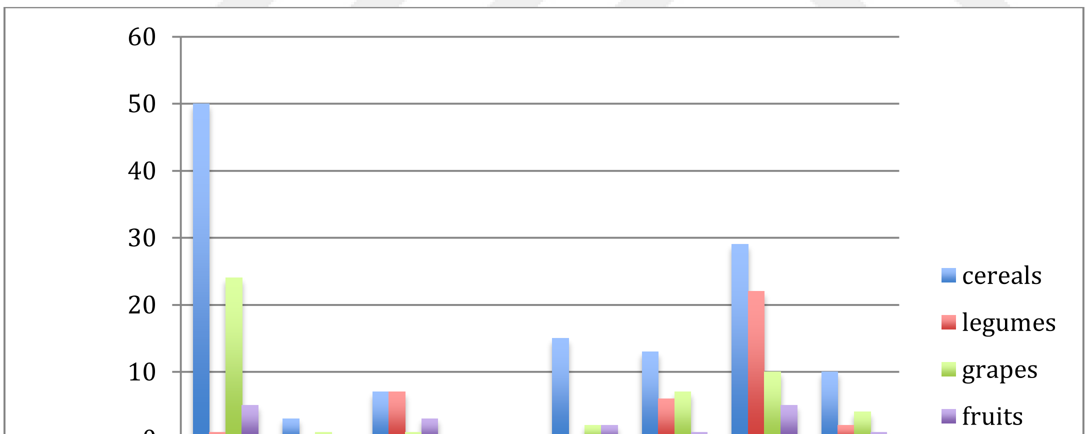
	cereals	legumes	grapes	fruits
pit	3	1	0	0
oven Fx7	1	1	2	0
fill	3	0	1	0

Figure 60 Distribution of plant remains in Room I

Room II

A total number of 11 samples were analyzed. (Figure 61) 4 of them were from fill, 6 from ovens (F01, F02, F03, F73, F74, F75) and 1 from a pit (F72) containing ash and charcoal. Each of the 4 samples taken from fill provided very poor amounts of cereals, legumes and grapes. In the fill samples 10 cereals, 2 legumes, 4 grapes and 1 fruit remains were found. While oven F73 had no plant remains in it, F02 provided 3 cereals and 1 grape, which is very poor when compared to the other ovens in the room. 4 ovens provided sufficient amounts of economic plant remains attesting that the ovens were used for food preparation. In oven F01 50 cereals, 1 legume, 24 grapes, 5 fruit remains were recovered. In oven F03 7 cereals, 7 legumes, 1 grape and 3 fruit remains were found. In oven F74 15 cereals, 2 grapes and 2 fruit remains were found. In oven

F75 13 cereals, 6 legumes, 7 grapes and 1 fruit remain were found. While the majority of the remains were wheat and barley, considerable number of legumes including lentil and vicia faba was recovered. In terms of fruits, grape pedicels and whole grapes accompanied grape seeds. Few fragments of walnut and hazelnut shells, prunus cerasus, prunus dulcis, citrullus colocynthis and celtis were found. F72 pit, which was probably used to keep the refuse of the ovens, provided 29 cereals, 22 legumes, 10 grapes and 5 fruit remains were found. For the empty ovens F73 and F02, it should be taken into account that the ovens might have been cleaned before the abandonment, therefore few remains were left behind. Besides F73 was in poor condition in terms of integrity but remaining parts were sampled, thus lack of remains in the sample might be due to this fact. Poor plant remains found in the fill samples were probably originated from the cooking activities around ovens.

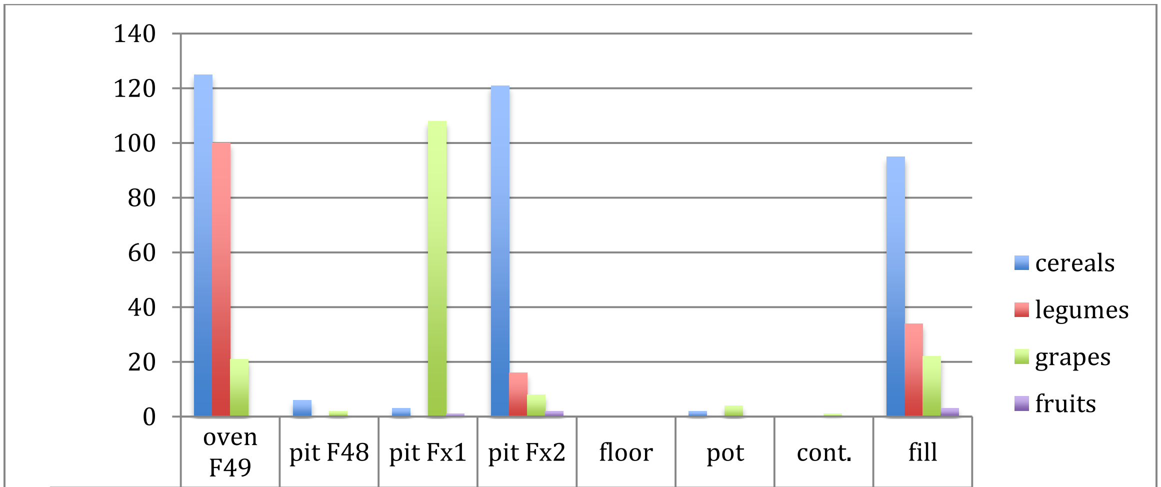


	oven F01	oven F02	oven F03	oven F73	oven F74	oven F75	pit F72	fill
cereals	50	3	7	0	15	13	29	10
legumes	1	0	7	0	0	6	22	2
grapes	24	1	1	0	2	7	10	4
fruits	5	0	3	0	2	1	5	1

Figure 61: Distribution of plant remains in Room II

Room III

15 samples were analyzed in Room III. 6 samples were from fill, 1 from oven, 3 from pits,1 from floor, 2 from pots and 1 from container. (Figure 62) It was observed that fill samples contain considerable number of plant remains, which can represent food activity within the limits of the room. While cereals such as wheat and barley dominate the assemblage, legumes such as vicia and lentil and grapes as fruits were attested in the samples. In the fill 95 cereals, 34 legumes, 22 grapes and 3 fruit remains were found. 1 oven (F49) sample analyzed has a very rich composition of economic plants. 125 cereals, 100 legumes and 21 grape seeds were quantified in the sample. It is significant that oven F49 was used intensively for food preparation. Supporting the use of the oven for food activity, considerable amount of plant remains were attested in refuse pits adjacent to the oven in Room III. Samples from three pits (F48, Fx1, Fx2) were analyzed. Each three pit showed different characters. In F48 6 cereals and 2 grape seeds were found. While Fx1 provided 3 cereals,108 grape seeds in mineralized form and 1 fruit remain, Fx2 had 121 cereals, 16 legumes, 8 grape seeds and 2 fruit remains. 1 sample from floor was analyzed but no plant remains were recovered. In one samples taken from a cooking pot, which was found in the layer, 2 cereals and 4 grape seeds were found. Another ceramic pot sampled was empty. In one sample taken from a container (F46) 1 grape seed was found. In Room III samples analyzed from fill, oven and pits suggested that there was intensive food preparation and discard.

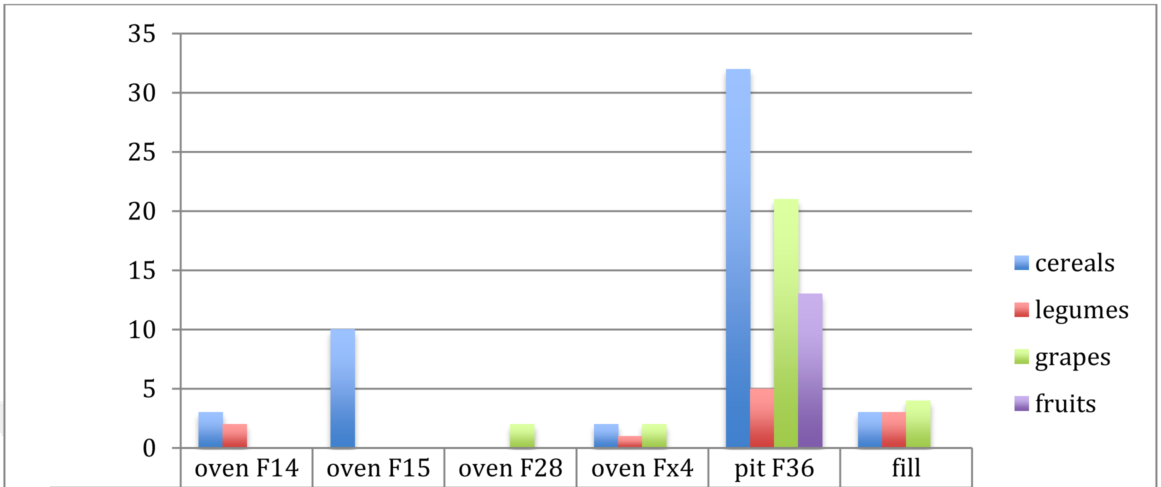


	oven F49	pit F48	pit Fx1	pit Fx2	floor	pot	cont.	fill
cereals	125	6	3	121	0	2	0	95
legumes	100	0	0	16	0	0	0	34
grapes	21	2	108	8	0	4	1	22
fruits	0	0	1	2	0	0	0	3

Figure 62: Distribution of plant remains in Room III

Room V

2 fill, 1 pit and 4 oven samples were analyzed in Room V. (Figure 63) 3 cereals, 3 legumes and 4 grapes were found in the fill samples. The same pattern was observed in the oven samples. In oven F14 3 cereals and 2 legumes were found. In oven F15 10 cereals were recovered. In oven F28 only 2 grape seeds were found. In oven Fx4 2 cereals, 1 legume and 2 grapes were found. In pit F36, 32 cereals, 5 legumes, 21 grapes and 13 fruit remains were found. The only significant feature was pit F36. In rest of the samples, the amount of plant remains is not rich but presence of species was attested in the features. The ovens might have been recently cleaned before the abandonment of the site.

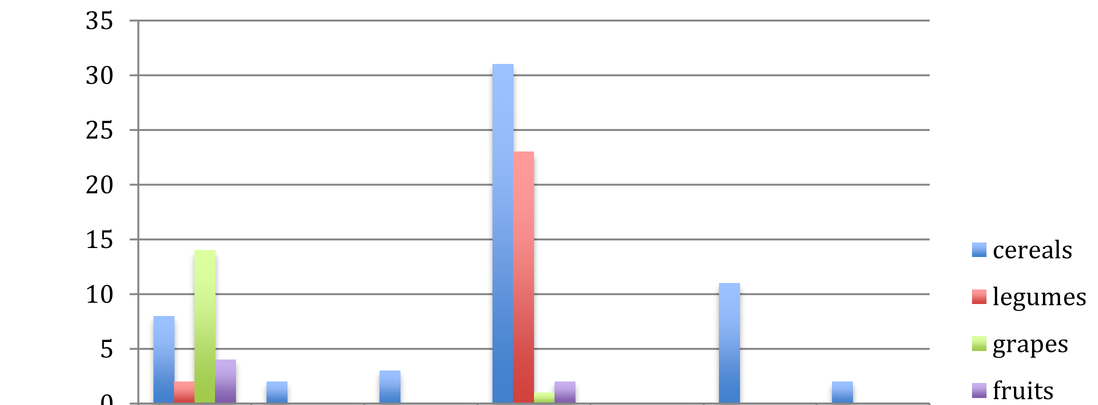


	oven F14	oven F15	oven F28	oven Fx4	pit F36	fill
cereals	3	10	0	2	32	3
legumes	2	0	0	1	5	3
grapes	0	0	2	2	21	4
fruits	0	0	0	0	13	0

Figure 63: Distribution of plant remains in Room V

Room VI

3 fill, 5 oven and 1 floor sample was analyzed in Room VI. (Figure 64) Fill samples provided 11 cereals. From the 5 oven samples, oven Fx6 has no plant remains recovered. In oven F11 2 cereals and in oven F12 3 cereals were found. Oven F68 has 31 cereal, 23 legumes, 1 grape and 2 fruit remains. In oven F10 8 cereals, 2 legumes, 14 grapes and 4 fruit remains were found. From a floor sample 2 cereals were recovered. As a result, it can be suggested that the ovens in Room VI were used for food preparation. Presence of plant remains in fill and floor samples support the food activity within the room.



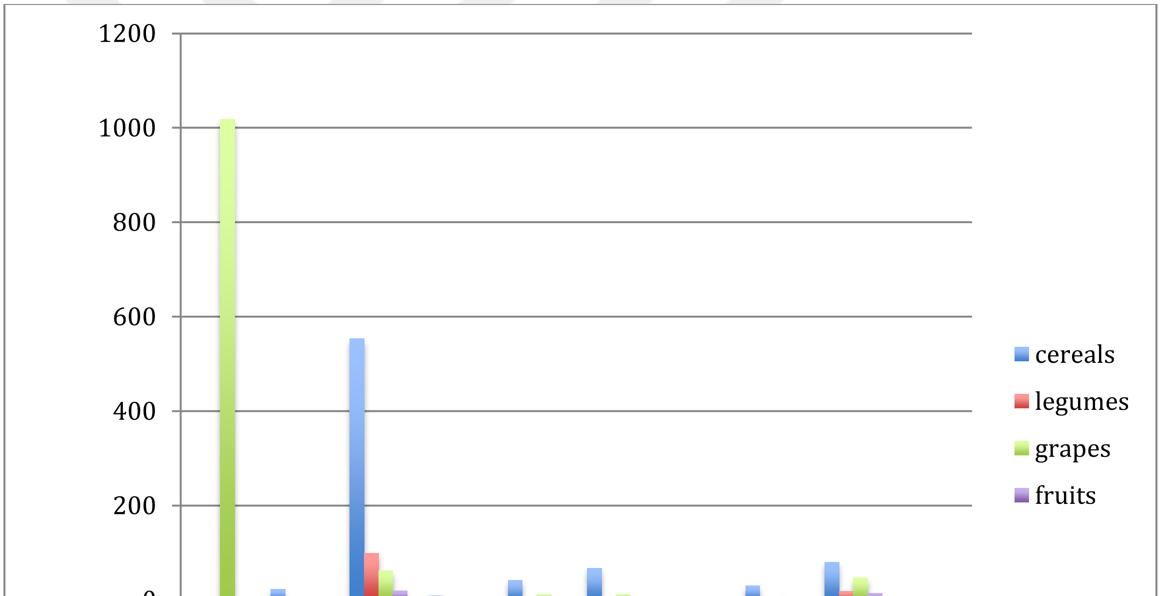
	oven F10	oven F11	oven F12	oven F68	oven Fx6	fill	floor
cereals	8	2	3	31	0	11	2
legumes	2	0	0	23	0	0	0
grapes	14	0	0	1	0	0	0
fruits	4	0	0	2	0	0	0

Figure 64: Distribution of plant remains in Room VI

Room VII

12 samples were analyzed in Room VII. 3 samples were from fill, 5 from oven, 4 from pit and 1 from a pot. (Figure 65) Samples analyzed from the fill context provided few but a considerable variety of all economic plant species, which seems to be an indicator of food activity in Room VII. In the fill samples 4 cereals, 1 legume, 4 grape seeds and 2 fruit remains were found. Even though F30 oven provided very few plant remains, ovens F16, F24, F66 and F45 have rich plant contents that definitely suggest for cooking activity in the ovens. In oven F16 42 cereals, 6 legumes, 12 grapes and 3 fruits were found. In oven F24 67 cereals, 3 legumes, 12 grapes and 4 fruits were found. In oven F66 80 cereals, 18legumes, 47 grape seeds and 14 fruit remains were recovered. In oven F45 30 cereals, 5 legumes and 7 grapes were found. In oven F30 only 4 cereals were recovered. 4 pits were sampled in Room VII. Pit F19 provided 4 cereals, 1 legume, 1081 grape seeds in mineralized form and 3 fruit fragments. Amount of grape seeds are similar with pit F34 of Room VIII, which was defined as cesspit. Very few cereals and

legume were recovered from pit F19. In pit F32 22 cereals, 1 legume and 1 grape seed were found. In pit F33 553 cereals, 99 legumes and 62 grape seeds and 19 fruit remains were found in charred form. In pit F43 9 cereals, 3 legumes, 2 grape seeds and 1 fruit remain were found. One sample taken from a sphero-conical was empty. In the fill context the plant recovery was quite weak with 4 cereals, 1 legume, 4 grapes and 2 fruit remains. As a result of the plant remains analysis in Room VII, ovens were used for cooking activities and pits were used to discard refuse materials either charred or mineralized conditions.

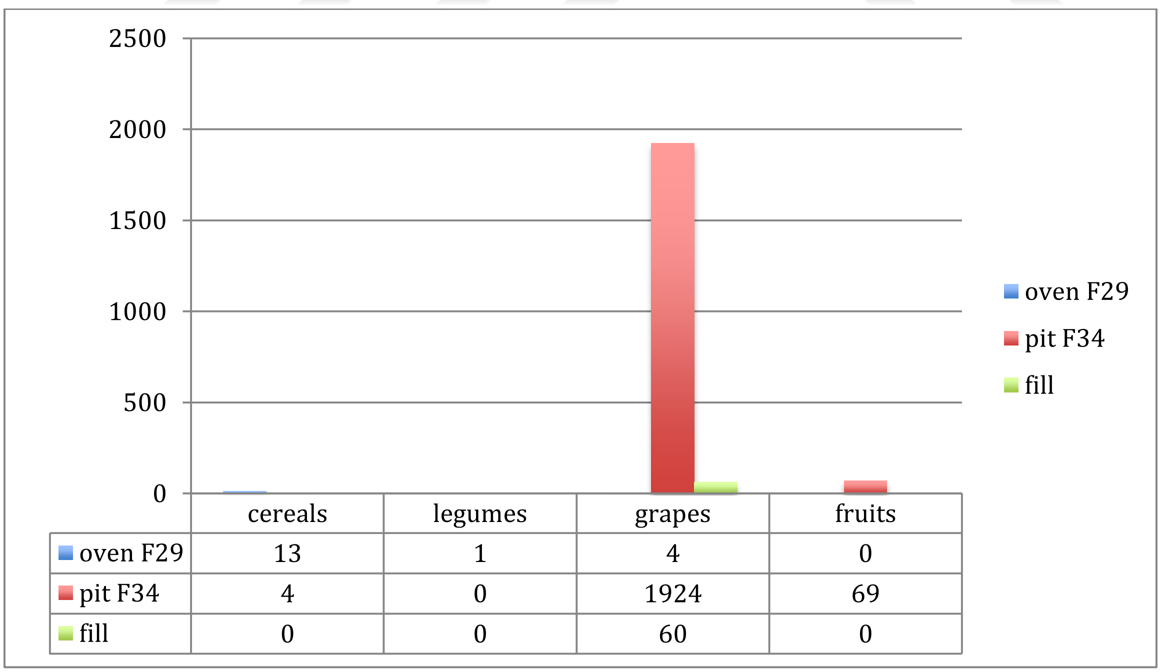


	pit F19	pit F32	pit F33	pit F43	oven F16	oven F24	oven F30	oven F45	oven F66	fill
cereals	4	22	553	9	42	67	4	30	80	4
legumes	1	1	99	3	6	3	0	5	18	1
grapes	1018	1	62	2	12	12	0	7	47	4
fruits	3	0	19	1	3	4	0	0	14	2

Figure 65: Distribution of plant remains in Room VII

Room VIII

4 samples were analyzed 2 from fill, 1 from oven and 1 from pit context in Room VIII. (Figure 66) In fill sample 60 grape seeds and 1 legume were recovered while no other remains were found. In oven F29 13 cereal remains, 1 legume, 4 grape seeds were found. The numbers are not that high but satisfying to suggest that the oven was used for cooking. In pit F34 4 cereals, 1924 grape seeds, 69 fruit remains were found and a rich amount and variety of yet unidentified plant seeds all in mineralized form were present. Based on the composition of the pit considering other finds and its texture as well, it was defined as a cesspit. 60 grapes found in the fill sample were related with the cesspit because the spot of sample was the upper boundary of the cesspit. As a result, it can be suggested that there was cooking and discard of plant refuse in Room VIII.

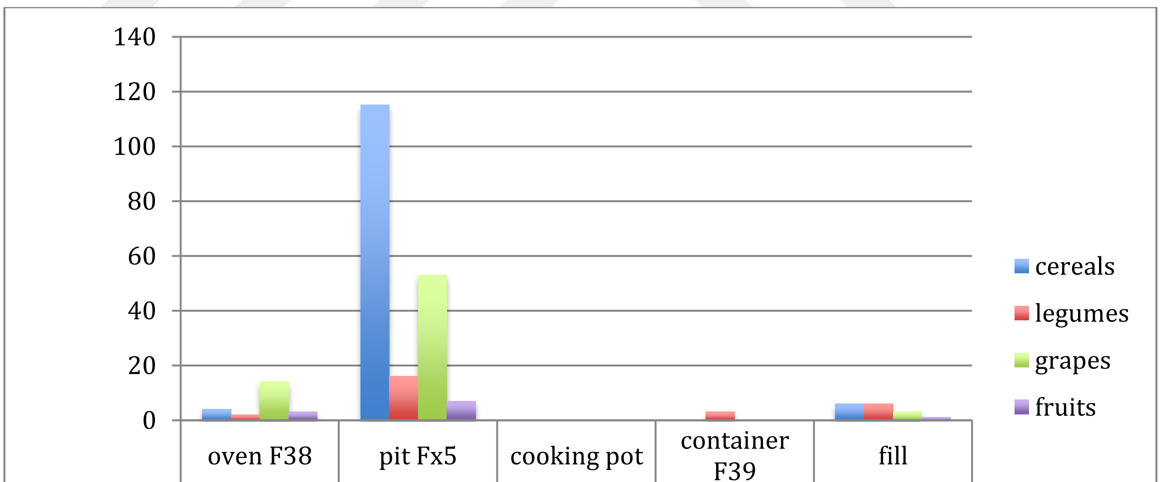


	cereals	legumes	grapes	fruits
oven F29	13	1	4	0
pit F34	4	0	1924	69
fill	0	0	60	0

Figure 66: Distribution of plant remains in Room VIII

Room IX

7 samples were analyzed in Room IX. 3 of them were fill, 1 oven,1 pit, 1 pot and 1 container sample. (Figure 67) While 2 of the fill samples have 6 cereals, 6 legumes, 3 grapes and 1 fruit remain were found. In oven F38 4 cereals, 2 legumes, 14 grapes and 3 fruit remains were recovered. Since the oven was not keeping its integrity only the bottom part could be sampled and this amount is sufficient to suggest for cooking activity in oven F38. In an adjacent pit Fx5 115 cereals, 16 legumes, 53 grapes, 7 fruit remains were found. 1 cooking pot was sampled but it was free of plant remains. In container F39 only 3 legumes were recovered. Observation on the plant samples in Room IX suggested that, there was food preparation in oven F38 and refuse of the charred plants were attested in Fx5.



	oven F38	pit Fx5	cooking pot	container F39	fill
cereals	4	115	0	0	6
legumes	2	16	0	3	6
grapes	14	53	0	0	3
fruits	3	7	0	0	1

Figure 67: Distribution of plant remains in Room IX

Conclusions and Discussions

It was observed that the ovens do not provide economic plant remains in all cases. I have considered two possibilities for these whether they were recently cleaned before abandonment or functional discard of the features, and in some cases the poor recovery conditions of the ovens are effective on the contents of the sample, which were found almost destroyed in various cases. I also consider any other type of activity in the ovens other than cooking. This will be sought with a cross check in heavy residue samples whether they contain any production related materials such as metal or glass slags.

Structures of pits whether they were carved in rock or dug in soil layers look like they were used for the common purpose for rubbish disposal. But a pattern might be suggested based on the recovery conditions of the plant remains. For instance while soft pits primarily contain ash and charred plants, rock carved pits provide mineralized grape seeds mostly, probably providing the conditions for mineralization. There were no cereal or pulse remains found in mineralized form. There was only one case that a mineralized cereal was found in F34 cesspit and in all other cases they were charred. But grape seeds were seen in both charred and mineralized forms. In two cases such as F34 in Room VIII and F19 in Room VII, the character of the pits indicates that their function might have been cesspits. Feature and species relations were discussed in more detail and in different aspects in the following parts.

As a result, there are considerable amount and variety of economic plants recovered in all rooms and in various feature contexts. Food preparation activity and consequent remains of these activities were strongly attested.

5.1.2.2 Distribution of Plants Between and in each Feature and Context

Among each feature and sampling context, distribution of plant groups was analyzed. The aim was to understand whether there were any significant connections between feature type and species. In the ovens 513 cereal grains (%56,1), 178 legumes (%20), 173 grapes (%19,2) and 41 fruit remains (%4,7) were recovered. While cereals were the most found species inside the ovens, all plants were used as part of the diet. Vast majority of the plant remains were recovered in charred conditions. (Figure 68)

In the pits 866 cereal grains (%20,1), 158 legumes (%3,7), 3188 grapes (%73,8) and 107 fruits remains (%2,5) were found. While the cereals were recovered in charred form in the pits, vast majority of the grapes were mineralized. An other observation is that the mineralized plant remains, especially grape seeds, were recovered from pits carved in bedrock having capability of water retention and which have a character of a cesspit. Contrary to the rock bottomed pit context, charred remains mostly recovered from soft pits adjacent to any oven in most cases, but few cases are vice versa.

Samples analyzed from the fills provided 130 cereal grains (%49,7), 46 legumes (%15,8), 97 grapes (%32,3) and 7 fruits remains (%2,2). Fill samples gave a closer pattern to ovens when we check the ratios of the species. Plant remains recovered from the fills were supposed to be the parts scattered around during the cooking and refuse discard activities. An alternative explanation can be sought in the formation processes of the archaeological record. Both post abandonment cultural and natural factors might have been effective in the displacement of the materials from both oven and pit contexts, which were the source of the materials.

Floor, pot and container samples were either small in number or were empty. Only 2 cereal grains were found in floor samples. Only 2 cereal grains and 4 grape seeds were found in pot samples. Only 3 legumes and 1 grape seeds were found in container samples.

A high percentage of species against others were seen as significant cluster, but it is quite difficult to infer intensive usage. A high percentage may not be an indicator for a superior usage of that species. Their abundance in the context depends on how much they were wasted and subjected to fire, thus remained.

Distribution of cereals, legumes, grapes and fruits were also analyzed between the features and contexts. As expected, cereals were mostly found in pits (%57,12) as the final location of primary refuse disposal and in ovens (%33,84) as the in situ remains of the final cooking activity. Floors, pots and containers provided almost no remains. Cereals found in the fills (%8,58) were quite satisfactory to attest cooking activities in the rooms. Legumes were mostly recovered from ovens (%46,23) and pits (%41,04) mostly in charred form. Use of legumes was also attested in the fill contexts (%13,25), while floor, pot and container samples provided almost no remains. Vast majority of grapes (%92,06) were recovered from the pits in mineralized forms. Amounts of grapes in ovens (%5,00) and fills (%3,00) were satisfactory to support and attest their usage in the domestic context. Almost no remains were found in floors, pots and containers. Fruits remains were abundant in pits (%69,03) and in ovens (%26,45). While very few of them were found in fills (%4,52), floor, pot and container samples were free of fruit remains.

Conclusions and Discussions

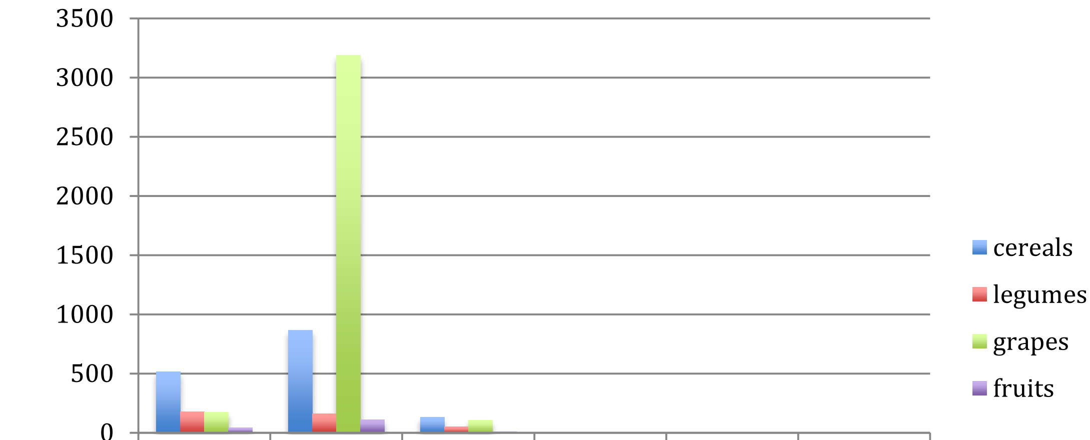
Samples taken from oven contexts provided all plant groups in certain amounts, while cereal grains dominated the contents with 486 (%56,1), legumes with 173 (%20) and grapes with 166 (19,2) were in almost equal amount and fruits were attested with 41 (%4,7). Based on the sufficient amount of plant remains recovered from the ovens, use of ovens for cooking activities can be conveniently suggested.

The picture was different in the pit samples. While pits provided the most amounts of grapes with 3188 (%73,8), 866 cereal grains were found in the pits, which was almost double of the oven contexts. The presence of grape seeds mostly in mineralized forms is a clear indication of intensive use of grapes. They were recovered from either cesspit and garbage pit contexts, and a variety of processes were considered for the use of grapes whether they were freshly consumed, dried for winter seasons, took part in meals, used in wine, syrah or jam making. Presence of rich number of cereal grains in pits, almost all in charred form, clearly represents the refuse of cooking activities in the ovens. While the plant remains found in the ovens represent the materials dropped in the fire while the cooking activities were performed, charred cereal grains and charred legume, grape and fruit remains represent the cleaned and deposited ashy content of the ovens into the nearby pits. It is also considered that after a while these pits are emptied when full. Based on these aspects, it is possible to suggest that while the ovens represent remains of very recent cooking activities prior to the abandonment of the site or functionally discarded oven features in particular, pits represent a more longer duration of activity refusals accumulated and mixed in one context until cleaning and reuse. Amounts of legumes with (%3,7) and of fruits with 107 (%2,5) were moderate as in oven contexts.

In the fill samples while cereals were found in most amount with 160 (%49,7) grapes were second with 104 (%32,2), legumes were 51 (%15,8) and fruits were 7 (%2,2). Those plant remains recovered from the fills were considered as dropping elements here and there while cooking in ovens and their cleaning and transfer to pits. The proportions of plant groups are reasonable when compared to the presence of them within the oven and pit contexts.

Very few remains were recovered in the container and pot sample contexts therefore it was thought unnecessary to mention here.

Vast majority of the cereals were recovered from pit contexts with a number of 866 (%57,12). Following the pits, ovens provided 513 (%33,84) cereal grains. Amount of legumes recovered were almost equal of which were 178 (%46,23) from the ovens and 158 (%41,04) from the pits. Pits can be suggested as the source of grape seeds in terms of the character of the archaeological record with 3188 (%92,06). Especially rock carved pits and in few cases cesspits provided remains in mineralized forms. Fruit remains were majorly in pits with 107 (%69,03) and secondarily in ovens with 41 (%26,45).



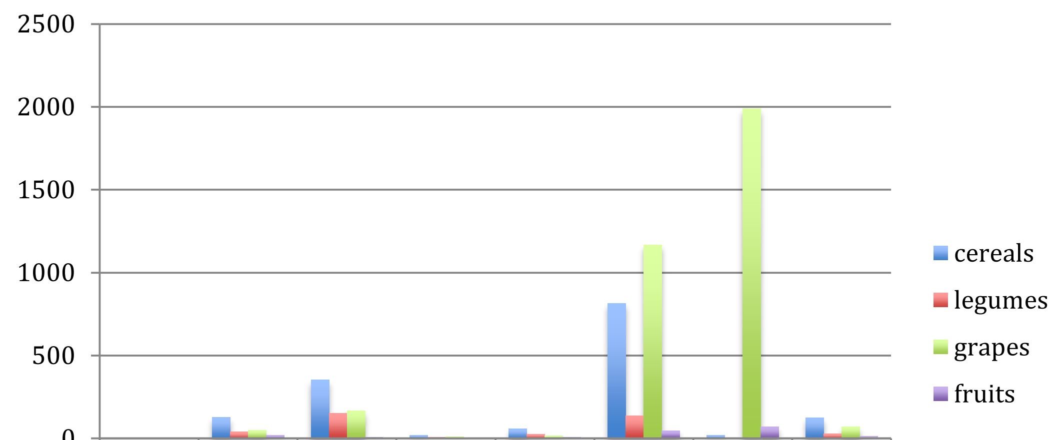
	Oven	Pit	Layer	Floor	Pot	Container
cereals	513	866	130	2	2	0
legumes	178	158	51	0	0	3
grapes	173	3188	104	0	4	1
fruits	41	107	7	0	0	0

Figure 68: Distribution of plant remains among features and contexts

5.1.2.3 Distribution of Plants Among Rooms

Distribution of plant remains were analyzed between 8 rooms in order to see if there were any meaningful concentrations in the rooms. (Figure 69) More than half of the cereal grains (%53,96) were recovered from Room VII. While %23,22 of the cereals were found in Room III. Room II (%8.38) and Room IX (%8,25) provided almost equal number of cereals. Room V (%1,19), Room VI (%3,76) and Room VIII (%1,12) had considerable number of cereals to attest the presence of the species. Room I was very poor in cereals which is due to the lack of samples. Room III (%38,96) and Room VII (%35,58) hold very close proportions of legumes. Room II (% 9,87), Room VI (%6,49) and Room IX (%7,01) had moderate amounts of legumes that attest the use of this plant group in the domestic context. Room I (%0,26), Room V (%1,56) and Room VII (%0,26) had very limited amounts. The vast majority of the grapes were recovered in Room VII (%33,64) and Room VIII (%57,41). In Room III (%4,79), Room IX

(%2,02) and Room II (%1,41) considerable number of grapes were recovered. In Room I (%0,06), Room V (%0,23) and Room VI (%0,43) very limited amounts were found. Vast majority of the fruit remains were recovered in Room VII (%29,68) and Room VIII (%44,52). Room II (%10,97), Room III (%3,87), Room VI (%3,87) and Room IX (%7,10) provided moderate amounts of fruit remains. Room I and Room V had no fruit remains.



	I	II	III	V	VI	VII	VIII	IX
cereals	2	127	352	18	57	815	17	125
legumes	1	38	150	6	25	137	1	27
grapes	2	49	166	8	15	1165	1988	70
fruits	0	17	6	0	6	46	69	11

Figure 69: Distribution of plant remains among rooms

Conclusions and Discussions

Vast majority of the cereals were recovered from Room VII with 815 (%53,76). Following Room VII, Room III provided 352 (%23,22). Room II provided 127 (%8,38) and Room IX provided 125 (%8,25) almost in equal amounts. Rest of the rooms attested the presence of cereals even though in low numbers. Legumes were mostly recovered from Room III with 150 (%38,96) and Room VII with 137 (%35,58). The proportions were similar with the cereal clusters in those two rooms.

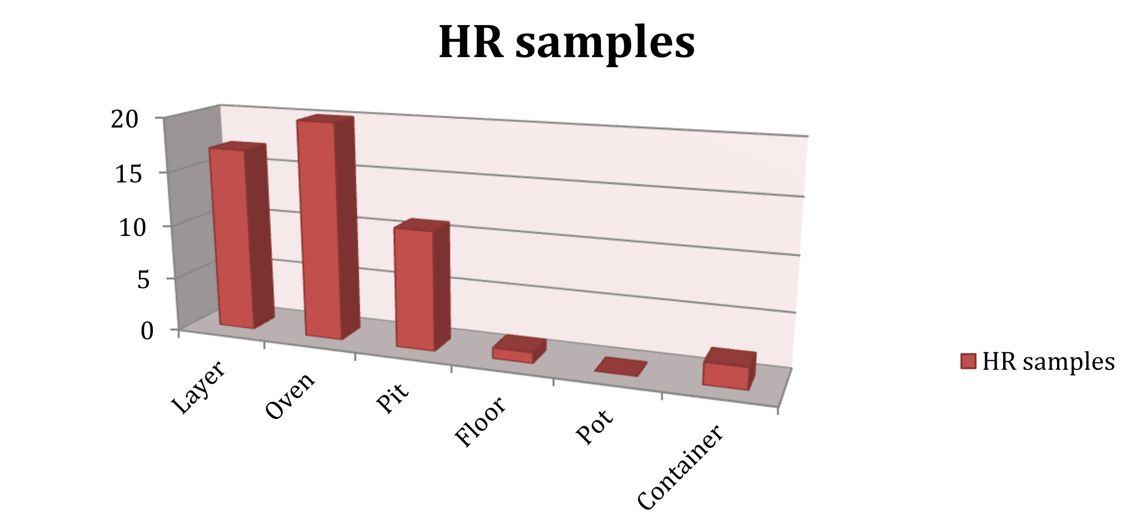
Room VII with 1165 (%33,64) and Room VIII with 1988 (%57,41) were the rooms where grapes were consumed and discarded. Fruits provided the similar clusters with grapes in Room VII with 46 (%29,68) and Room VIII with 69 (%44,52).

It was significantly observed that while cereals and legumes were found in similar proportions in same rooms, grapes and fruits were found in similar proportions. This can be an indicative of cereals and legumes were consumed for main meals in those rooms, while grapes and fruits were located together in rooms for different kinds of food products such as wine, jam or syrup with a mixture of fruit flavors. Grapes and fruits as characteristic cesspit ingredients were also concerned.

5.1.3 Analysis of Heavy Residue Samples

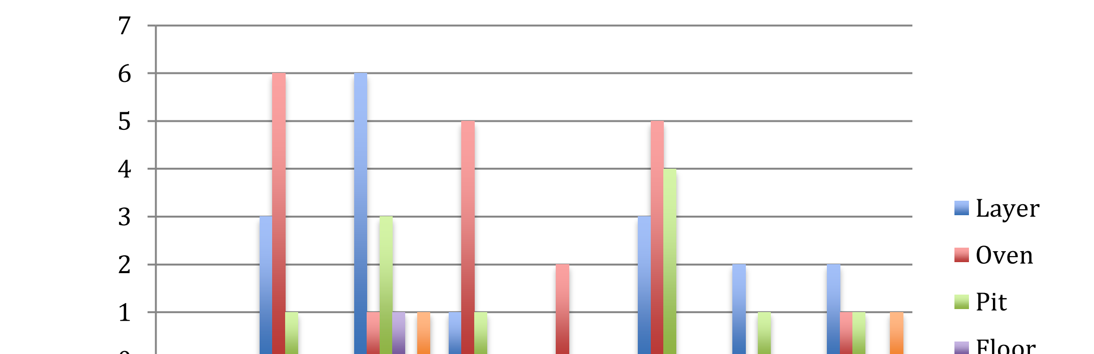
Distribution Analysis of Heavy Residue Samples

A total number of 51 soil samples that provided heavy residue materials were analyzed. As defined previously for the soil samples, the sampling contexts were consisting of ovens, pits, containers, floors and burnt layer fills. (Figures 70, 71) As it was done for the plant remains, heavy residue analysis focused on four aspects: (1) distribution of heavy residue materials within rooms referred with features and contexts, (2) distribution of heavy residue materials within each feature and context, (3) distribution of heavy residue materials between features and contexts and (4) distribution of heavy residue materials between rooms.



	Layer	Oven	Pit	Floor	Pot	Container
HR samples	17	20	11	1	0	2

Figure 70: Contextual distribution of heavy residue samples in general



	I	II	III	V	VI	VII	VIII	IX
Layer	0	3	6	1	0	3	2	2
Oven	0	6	1	5	2	5	0	1
Pit	0	1	3	1	0	4	1	1
Floor	0	0	1	0	0	0	0	0
Pot	0	0	0	0	0	0	0	0
Container	0	0	1	0	0	0	0	1

Figure 71: Contextual distribution of heavy residue samples among rooms

5.1.3.1 Distribution of Heavy Residue within Rooms

Room I

There were no heavy residue materials collected even though there were two samples including light fractions in the plant materials. As a general condition for Room I, there were few soil samples taken during the excavations of 2009 season. The lack of soil samples limited my research for this rooms even though Room I had one of the richest variety of features among the rooms under study. However, I tried to see the overall picture of feature context and material contents within the scope of my research. The overall picture might let me infer some generalizations about the possible contents for the unsampled contexts in the end. This approach might be helpful in overcoming the limitations resulted from lack of samples, thus lack of data.

Room II

10 heavy residue samples were analyzed in Room II in total. While 6 of the samples were from ovens (F01, F02, F03, F73, F74, F75), 1 sample was from a pit (F72) and 3 samples were representing various samples taken from layer fills. (Figures 72, 73, 74)

Amorph metal fragments were the most found materials distributed within Room II. They were recovered both from oven and pit samples. Vast majority of amorph fragments were found in oven F03 with 75,16 grams. Amorph fragments in all sampling contexts were inferred as fragments of both instruments and architectural functional and decorative elements. They were corroded and dissolved after their final use and during their time within the archaeological record.

Only slag remains were found in oven F02 with 3,66 grams. The amount of slags recovered in HR samples is not sufficient to suggest any metal production in Room II.

A cluster of nails was detected in oven F74 with 23. 21 of them were very tiny furniture nails. They were attached to wooden furniture or most probably to a small wooden chest, but used as fuel in the oven in the final use of the oven, or even the final period of occupation before the abandonment. It can be suggested that the wooden materials were put to good use as fuels just before the abandonment of the site. This can be considered as an indicative for a gradual abandonment of the site with less effort spent for fuel supply from the natural environment.

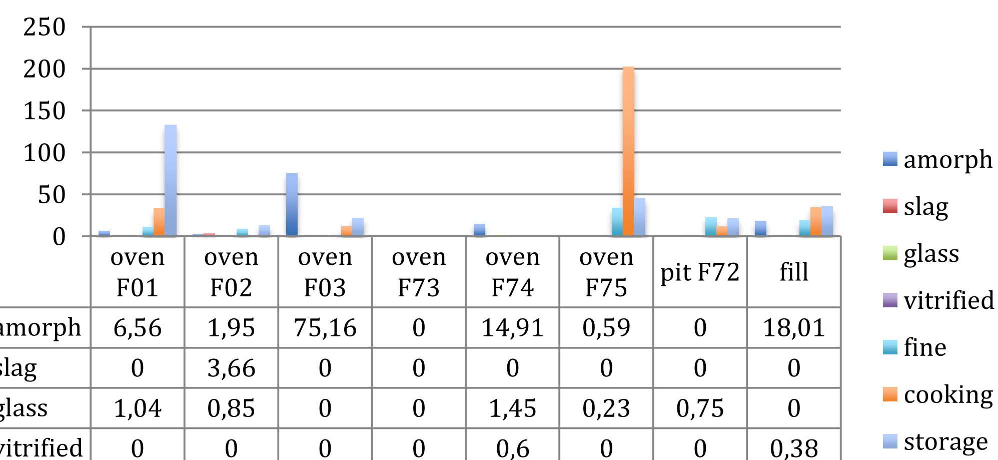
It was observed that oven F73 and fill samples provided a total number of 2 round micro slags, which can be considered as intrusive materials to the contexts, but not an indicative of metal production in Room II.

The distribution of glass objects fragments and unidentified vitrified materials were analyzed. The amount of them were quite small that no further inference can be made other than intrusive materials within the samples and no indication of glass production can be suggested within Room II. 2 glass bracelet fragments were found in pit F72.

Ceramic fragments that were recovered from heavy residue samples and >5mm in size were analyzed within the features and contexts of Room II. 23 storage, 6 cooking and 5 fine ware fragments were recovered from oven F01. The ratio was similar when measured in grams as 133,17 gr. storage, 33,46 gr. cooking and 10,85 gr. fine wares. 4 storage, 1 cooking and 4 fine ware fragments were recovered from oven F02, which were 12,69 gr. storage, 0,81 gr. cooking and 8,6 gr. fine wares in grams. 2 storage, 2 cooking and 3 fine ware fragments were recovered from oven F03, which were 22,15 gr. storage, 11,55 gr. cooking and 1,4 gr. fine ware in grams. In oven F73 and F74 no ceramic remains were recovered. In oven F75 4 storage, 16 cooking and 6 fine ware fragments were recovered, which were 45,16 gr. storage, 202,07 gr. cooking and 33,66 gr. fine ware when scaled. In pit F72, 2 storage, 2 cooking and 9 fine ware fragments were recovered, which were 21,05 gr. storage, 11,87 gr. cooking and 22,25 gr. when scaled. In the fill samples 4 storage, 2 cooking and 3 fine ware fragments were recovered, while 35,38 gr. storage, 34,13 gr. cooking and 19,09 gr. fine ware were scaled.

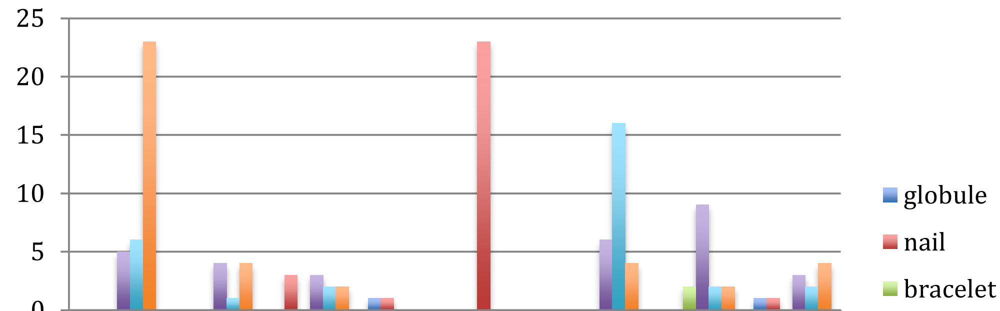
Distribution of three functional groups of ceramic fragments showed that all types are present in the samples. There were concentrations of storage ware fragments in oven F01 with 23 pieces and 133,17 gr. and of cooking ware fragments in oven F75 with 16 pieces and 202,07 gr. However, oven F75 provided the most cooking ware fragments among the samples and might be possible to infer that these cooking pot fragments were originated from one single pot, which was used in the final period of the oven and therefore dropped in it.

Animal bone fragments recovered from the HR samples of Room II were inspected in species level and calculated as NISP. While bone fragments of larger species such as cattle and ovicaprid were found within the features, smaller species such as bird, fish and fragments of eggshells were found in considerable numbers. While 16 bird bones were found in oven F73, 27 bird and 5 fish bones in oven F74 were significant finds. In most features presence of eggshells were attested. A total number of 9 fish bones found in the fill samples was also important as evidence of food activities.



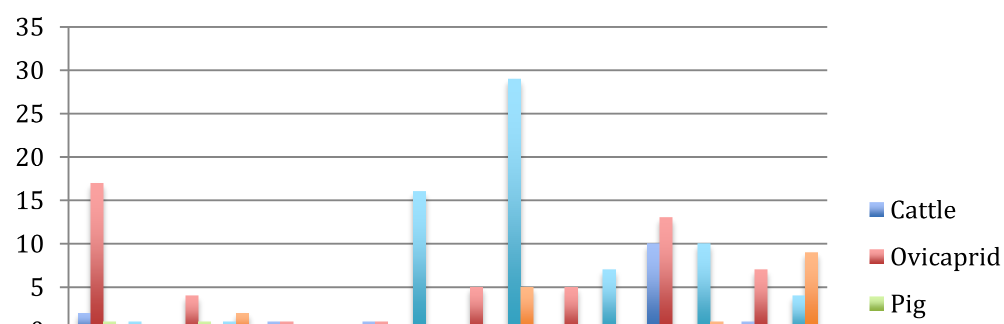
	oven F01	oven F02	oven F03	oven F73	oven F74	oven F75	pit F72	fill
amorph	6,56	1,95	75,16	0	14,91	0,59	0	18,01
slag	0	3,66	0	0	0	0	0	0
glass	1,04	0,85	0	0	1,45	0,23	0,75	0
vitrified	0	0	0	0	0,6	0	0	0,38
fine	10,85	8,6	1,4	0	0	33,66	22,25	19,09
cooking	33,46	0,81	11,55	0	0	202,07	11,87	34,13
storage	133,17	12,69	22,15	0	0	45,16	21,05	35,38

Figure 72: Distribution of HR amorph, slag, glass, unidentified vitrified fragments, fine, cooking and storage ware weights (gr.) in Room II



	oven F01	oven F02	oven F03	oven F73	oven F74	oven F75	pit F72	fill
globule	0	0	0	1	0	0	0	1
nail	0	0	3	1	23	0	0	1
bracelet	0	0	0	0	0	0	2	0
fine	5	4	3	0	0	6	9	3
cooking	6	1	2	0	0	16	2	2
storage	23	4	2	0	0	4	2	4

Figure 73: Distribution of HR globule, nail, bracelet, fine, cooking and storage ware counts in Room II



	oven F01	oven F02	oven F03	oven F73	oven F74	oven F75	pit F72	fill
Cattle	2	0	1	1	0	0	10	1
Ovicaprid	17	4	1	1	5	5	13	7
Pig	1	1	0	0	0	0	0	0
Hare	0	0	0	0	0	0	0	0
Bird	1	1	0	16	29	7	10	4
Fish	0	2	0	0	5	0	1	9

Figure 74: Distribution of HR animal bones (NISP) in Room II

Room III

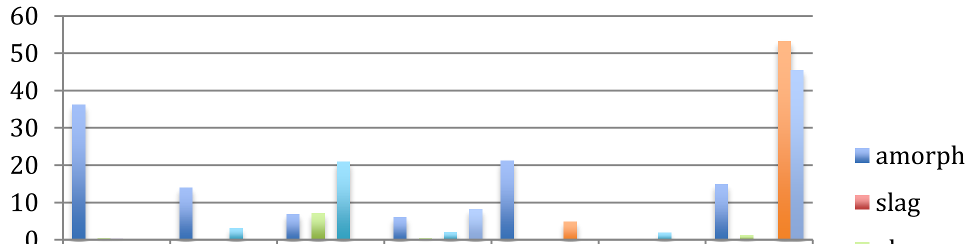
12 heavy residue samples were analyzed in Room III. 1 sample was from an oven (F49), 3 samples were from pits (Fx1, Fx2, F48), 1 sample was from floor, 1 sample was from a container (F46) and 6 samples were from fill contexts. (Figures 75, 76, 77)

Among the metal fragments recovered from the heavy residue samples, amorph fragments were the most finds within all except container F46 which provided no metal fragments except 1 nail. The highest amount of amorph was recovered from oven f49 with 36,21 gr. In none of the contexts slag or micro slag remains were recovered. While very small amount of bronze fragments were found, no lead has been observed. 5 nails were found in various sample contexts.

Vast majority of the glass fragments were recovered from pit Fx2 with 7,18 gr., while the amount of glass fragments were quite low in rest of the samples. As it was inferred before in Room II, glass fragments in Room III should be considered as intrusive materials that can be easily broken into small pieces and easily travel. However, the glass fragments concentration in pit Fx2 is more meaningful that this pit provided the highest amount of glass objects in the hand-collected assemblage during the excavation of the pit. It was inferred that the glass assemblage found in pit Fx2 was deliberately deposited.

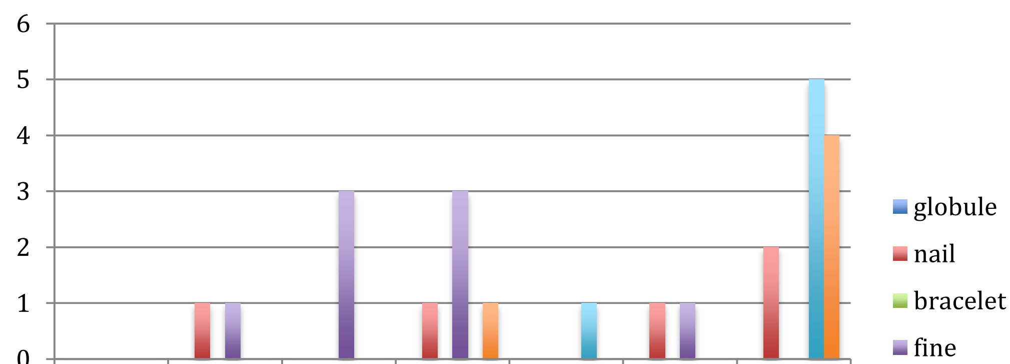
The amount of ceramic fragments recovered from the heavy residue samples in Room III was quite low. It was observed that while the majority of fine wares were recovered from pits, storage and cooking wares were coming from fill samples almost in equal portions.

When observing the HR bone distributions within the features of room III, a similar picture was seen as in room II. While 26 bird and 3 fish were found in pit Fx1, pit Fx2 had 29 bird, 4 fish and 2 hare bones. These compositions for the two pits were significant since they provided similar patterns. All features had egg remains.



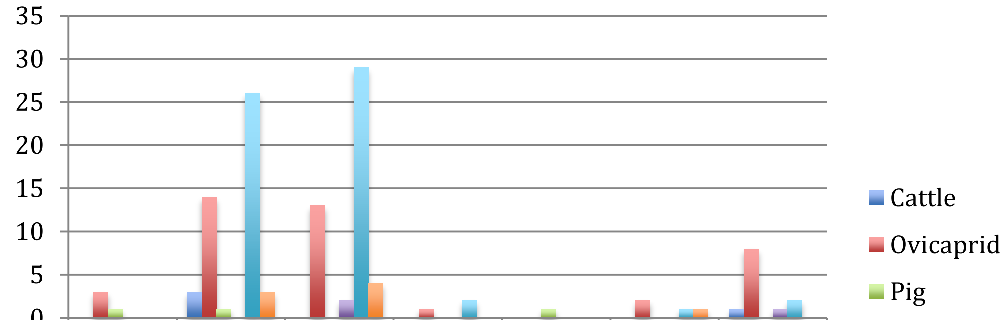
	oven F49	pit Fx1	pit Fx2	pit F48	floor	cont. F46	fill
amorph	36,27	13,96	6,9	6,03	21,19	0	14,9
slag	0	0	0	0	0	0	0
glass	0,43	0,08	7,18	0,49	0,01	0,18	1,2
vitrified	0,3	0	0	0	0	0	0
fine	0	3,09	20,88	2,06	0	1,85	0
cooking	0	0	0	0	4,79	0	53,29
storage	0	0	0	8,18	0	0	45,5

Figure 75: Distribution of HR amorph, slag, glass, unidentified vitrified fragments, fine, cooking and storage ware weights (gr.) in Room III



	oven F49	pit Fx1	pit Fx2	pit F48	floor	cont. F46	fill
globule	0	0	0	0	0	0	0
nail	0	1	0	1	0	1	2
bracelet	0	0	0	0	0	0	0
fine	0	1	3	3	0	1	0
cooking	0	0	0	0	1	0	5
storage	0	0	0	1	0	0	4

Figure 76: Distribution of HR globule, nail, bracelet, fine, cooking and storage ware counts in Room III



	oven F49	pit Fx1	pit Fx2	pit F48	floor	cont.	fill
Cattle	0	3	0	0	0	0	1
Ovicaprid	3	14	13	1	0	2	8
Pig	1	1	0	0	1	0	0
Hare	0	0	2	0	0	0	1
Bird	0	26	29	2	0	1	2
Fish	0	3	4	0	0	1	0

Figure 77: Distribution of HR animal bones (NISP) in Room III

Room V

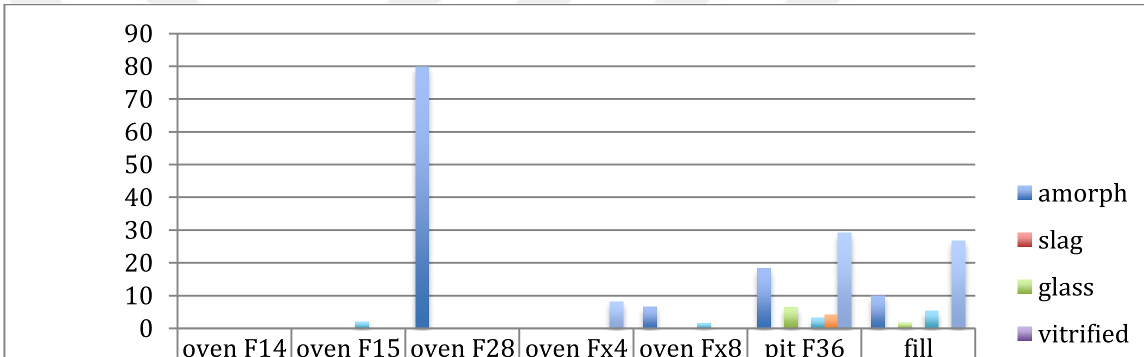
7 heavy residue samples were analyzed in Room V. 5 samples were taken from ovens (F14, F15, F28, Fx4, Fx8), 1 from a pit (F36) and 1 from the fill. Figures 78, 79, 80)

Vast majority of amorphs were found in oven F28 with 79,9 gr. While there were no slags recovered from any of the samples, pit F36 provided 1 round micro slag, which should be considered as intrusive material from the layer fill. 4 nails were recovered from the ovens. In pit F36 10,48 gr. of lead was found.

Vast majority of glass fragments were recovered from pit F36 with 6,47 gr. The case is not same with Fx2 in Room III where glass was abundant in hand-collected assemblage. The amount recovered from the heavy residue sample was not rational with the amount of glass collected by hand from pit F36.

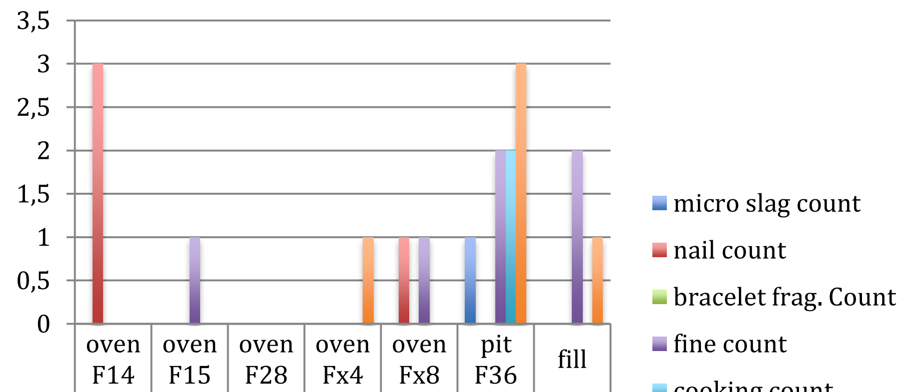
Very few ceramic fragments were recovered from the heavy residue samples in Room V. There was a concentration in pit F36 with 9 fragments in total, which was a very low number.

While the HR samples of room V were poor in general concerning the recovery of animal bones, bird, fish and egg fragments were attested within the features such as oven F14, oven F15, and pit F36 in very low quantities. Ovicaprids were the most as in all rooms.



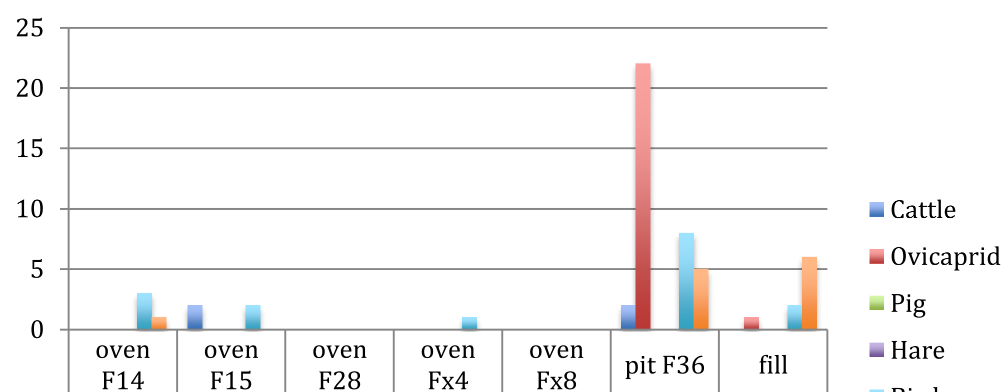
	oven F14	oven F15	oven F28	oven Fx4	oven Fx8	pit F36	fill
amorph	0	0	79,9	0	6,65	18,33	9,96
slag	0	0	0	0	0	0	0
glass	0,07	0	0	0	0	6,47	1,75
vitrified	0	0	0	0	0	0	0
fine	0	1,99	0	0	1,65	3,21	5,39
cooking	0	0	0	0	0	4,13	0
storage	0	0	0	8,2	0	29,21	26,7

Figure 78: Distribution of HR amorph, slag, glass, unidentified vitrified fragments, fine, cooking and storage ware weights (gr.) in Room V



	oven F14	oven F15	oven F28	oven Fx4	oven Fx8	pit F36	fill
micro slag count	0	0	0	0	0	1	0
nail count	3	0	0	0	1	0	0
bracelet frag. Count	0	0	0	0	0	0	0
fine count	0	1	0	0	1	2	2
cooking count	0	0	0	0	0	2	0
storage count	0	0	0	1	0	3	1

Figure 79: Distribution of HR globule, nail, bracelet, fine, cooking and storage ware counts in Room V



	oven F14	oven F15	oven F28	oven Fx4	oven Fx8	pit F36	fill
Cattle	0	2	0	0	0	2	0
Ovicaprid	0	0	0	0	0	22	1
Pig	0	0	0	0	0	0	0
Hare	0	0	0	0	0	0	0
Bird	3	2	0	1	0	8	2
Fish	1	0	0	0	0	5	6

Figure 80: Distribution of HR animal bones (NISP) in Room V

Room VI

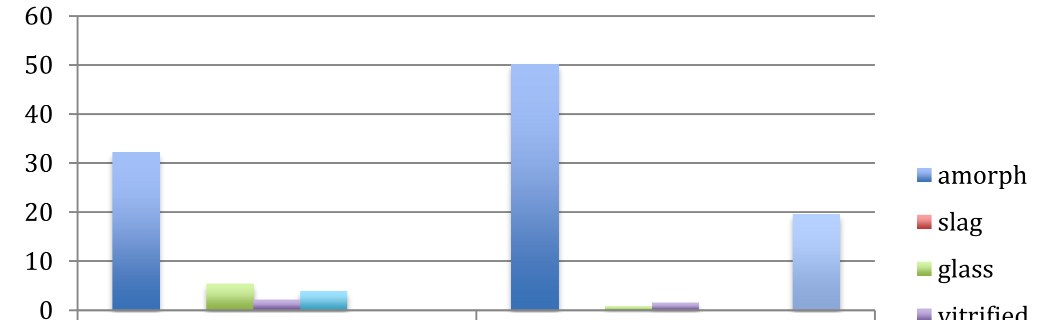
2 heavy residue samples were analyzed in Room VI. Both samples were taken from ovens (F10, F68). (Figures 81, 82, 83)

32,14 gr. of amorph was recovered from oven F10, while oven F68 provided 50,2 gr. There were no slag remains found in the samples but only 2 round micro slags were recovered. 4 nails were found in oven F10.

Very small amount of glass and vitrified fragments were recovered from the samples that all considered as intrusive.

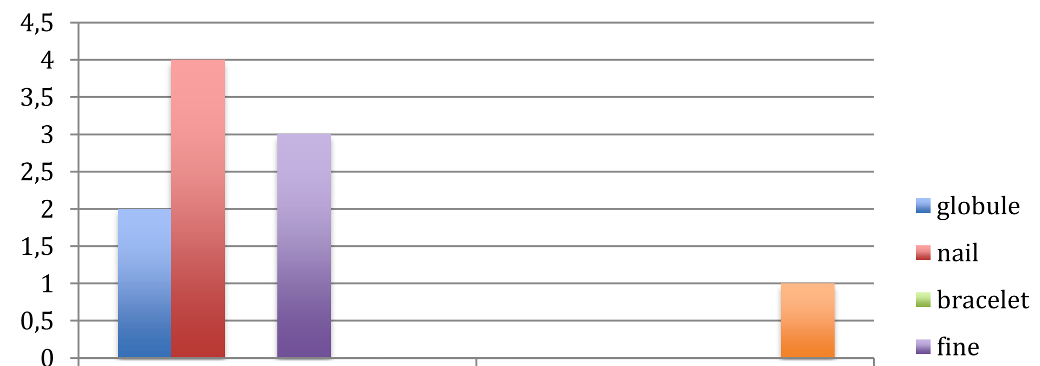
Ceramic fragments were such poor that a total number of 4 fragments were recovered from both ovens.

HR samples recovered from VI showed some extraordinary results. In oven F10 175 fish, 168 bird and 38 hare bones were found. Accumulation of such quantities in a single oven context can be explained only deposition of materials as a result of one time activity or event of a special event of food consumption or can be seen as garbage refusal after the oven lost its function in the final period of occupation. Also in another oven F68 presence of hare, bird and fish were attested.



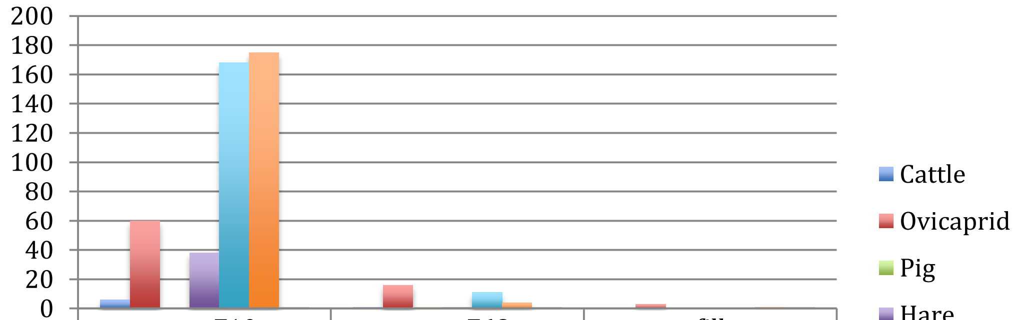
	oven F10	oven F68
amorph	32,14	50,2
slag	0	0
glass	5,39	0,84
vitrified	2,13	1,51
fine	3,93	0
cooking	0	0
storage	0	19,51

Figure 81: Distribution of HR amorph, slag, glass, unidentified vitrified fragments, fine, cooking and storage ware weights (gr.) in Room VI



	oven F10	oven F68
globule	2	0
nail	4	0
bracelet	0	0
fine	3	0
cooking	0	0
storage	0	1

Figure 82: Distribution of HR globule, nail, bracelet, fine, cooking and storage ware counts in Room VI



	oven F10	oven F68	fill
Cattle	6	1	0
Ovicaprid	60	16	3
Pig	0	1	0
Hare	38	1	0
Bird	168	11	0
Fish	175	4	1
Egg	1	1	1

Figure 83: Distribution of HR animal bones (NISP) in Room VI

Room VII

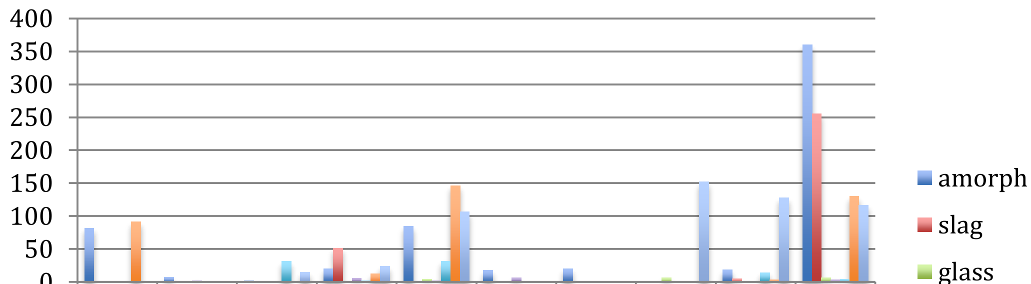
12 heavy residue samples were analyzed in Room VII. 5 samples were from ovens (F16, F24, F30, F45, F66), 4 samples from pits (F19, F32, F33, F43) and 3 samples were of the fill. (Figures 84, 85, 86)

It has been observed that amorph metal fragments were recovered from all samples. Vast majority of amorphs came from fill samples with 359,84 gr. Also oven F16 provided 81,64 gr. and oven F66 had 84,93 gr. of amorphs. 255,67 gr. of slags were recovered from the fill samples. Only oven F45 had 51,5 gr. of slags. While fill samples provided 24 round micro slags, oven F66 had 4. Even though there were metal production discard materials recovered in Room VII it would not be safe to suggest any production activity. Particularly the slags and micro slags found in oven F45 and oven F66 were considered as intrusive materials originated from the layer fill. Light fraction samples from oven F45 and oven F66 provided sufficient plant materials to associate these ovens with cooking activities. However, a multipurpose use of the ovens should be taken into account not only for this case in Room VII, but for the entire study area. In this case of interpretation, priority was given for the plant data than the slag remains recovered from the oven contexts for both the amount of plant material evidence were sufficient and highly fragile charred plant seeds were intact due to the closed context of the oven feature. Few fragments of bronze were recovered from the samples. This is quit expectable since Room VII was the most bronze finds recovered room among others. Vast majority of the bronze finds were associated with the church equipment that were considered to be brought together to be recycled and reused in the Danishmend/Seljuk times. A total number of 14 nails were recovered from the samples. This number is quite proportional with the nails recovered from Room VII by hand collection during the excavations (136 from the room fill and 74 from the room features). Based on this statistically attested observation presence of few nails within the ovens, pits and layer fill samples might be interpreted as intrusive materials to the contextual layers.

Except pit F32, all samples provided glass fragments in a variety of amount from 0,17 gr. to 6,64 gr. Glass fragments were considered as intrusive in the samples. Also majority of the samples have 0,1 gr. to 6,44 gr. of unidentified vitrified materials. Room VII has a density of all kinds of materials and intensive use of fire. Therefore materials that were subjected to fire in any way might be expected but there is no strong evidence to relate these materials with time of use of the ovens.

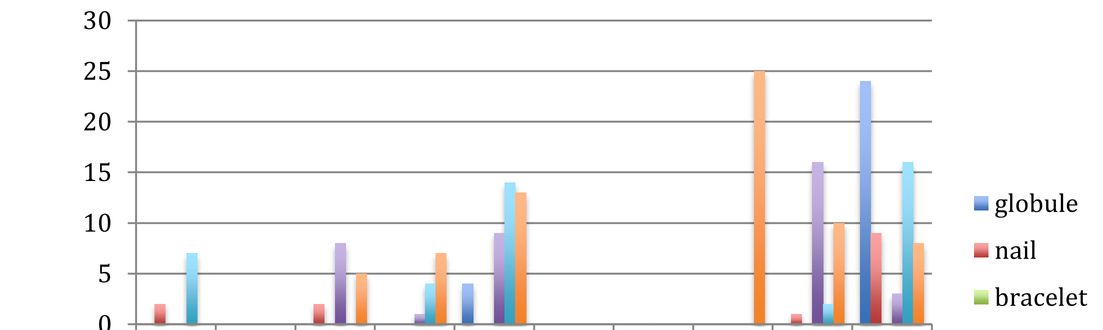
Among the ovens, oven F66 provided the most ceramic fragments with 36. Of them 13 were storage, 14 were cooking and 9 were fine wares. Oven F16 only provided 7 cooking ware fragments but it was not clear whether the fragments were of a single vessel. Among the pits, F33 provided only 25 pieces of storage ware. Pit F43 had 10 storage, 2 cooking and 16 fine ware fragments. In the fill samples, 27 ceramic fragments were found. The amount of ceramics in various samples were proportional with the rich amount of ceramics collected by hand during the excavations in the room fill and its features. It is not possible to clearly infer any relation between the ceramic groups and feature and contexts in Room VII only looking at the heavy residue materials.

HR samples provided considerable number of animal bones in room VII. Oven F66 had 100 ovicaprid, 137 hare and 10 bird bones, which were more significant among other features in, room VII. Especially the rich quantity of hare bones in the oven reminded the same pattern of oven F10 in room VI. 137 hare bones were very extraordinary for an oven context, which should be explained by a special event of food consumption or refuse deposition in the final use of the oven. Pits F19 provided 41 and F43 provided 20 bird bones, which should be considered as a special pattern for the pit contexts. Considerable numbers of bird, fish bones and eggshells were seen in all samples.



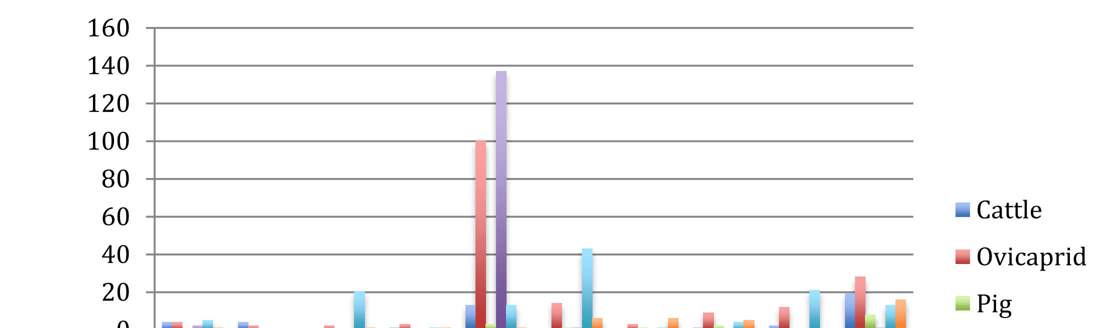
	oven F16	oven F24	oven F30	oven F45	oven F66	pit F19	pit F32	pit F33	pit F43	fill
amorph	81,64	7,52	1,71	19,88	84,93	18,06	20,5	0,26	18,66	359,8
slag	0	0	0	51,5	0	0	0	0	4,99	255,7
glass	0,3	0,61	0,16	0,48	4,55	0,17	0	6,26	0,18	6,64
vitrified	0,64	2,2	0	5,73	2,14	6,44	0	0	0,1	3,43
fine	0	0	31,16	2,03	31,8	0	0	0	14,34	4,44
cooking	91,26	0	0	12,49	146,4	0	0	0	3,62	129,9
storage	0	0	15,01	24,19	106,5	0	0	152,3	128,1	116,8

Figure 84: Distribution of HR amorph, slag, glass, unidentified vitrified fragments, fine, cooking and storage ware weights (gr.) in Room VII



	oven F16	oven F24	oven F30	oven F45	oven F66	pit F19	pit F32	pit F33	pit F43	fill
globule	0	0	0	0	4	0	0	0	0	24
nail	2	0	2	0	0	0	0	0	1	9
bracelet	0	0	0	0	0	0	0	0	0	0
fine	0	0	8	1	9	0	0	0	16	3
cooking	7	0	0	4	14	0	0	0	2	16
storage	0	0	5	7	13	0	0	25	10	8

Figure 85: Distribution of HR globule, nail, bracelet, fine, cooking and storage ware counts in Room VII



	oven F16	oven F24	oven F30	oven F45	oven F66	pit F19	pit F32	pit F33	pit F43	fill
Cattle	4	4	0	1	13	0	0	1	2	19
Ovicaprid	4	2	2	3	100	14	3	9	12	28
Pig	0	0	0	0	3	1	1	2	0	8
Hare	2	0	0	0	137	1	0	0	0	1
Bird	5	0	20	1	13	43	1	4	21	13
Fish	1	0	1	1	1	6	6	5	0	16

Figure 86: Distribution of HR animal bones (NISP) in Room VII

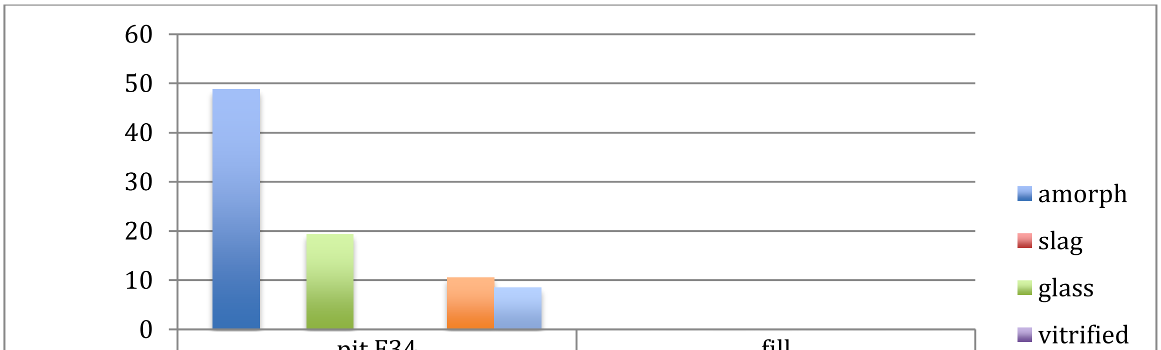
Room VIII

3 heavy residue samples were analyzed in Room VIII. 1 sample was from a pit (F34) and 2 samples were from the fill. (Figures 87, 88, 89)

While fill samples provided no amorph finds, pit F34 had 48,75 gr. There were no slags and micro slags, bronze fragments and nails. 3,91 gr. of lead was found in F34. 19,31 gr. of glass fragments was found pit F34, where a 12-13th c. long perfume bottle was found in pieces but hand collected and restored.

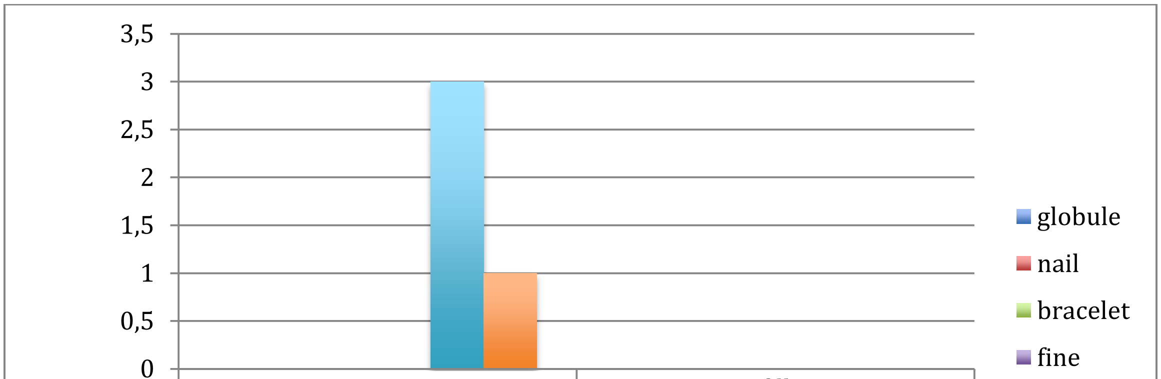
While no ceramics were found in the fill samples, 3 cooking and 1 storage ware were recovered in the pit F34 sample. Even though the presence of ceramics have been lacking in the pit F34 heavy residue sample, a rich number of fragments that completed individual vessels were collected by hand during the detailed excavation of the pit.

The HR sample observed in oven F29 provided very poor result but at least besides the large species bird bones were attested. Pit F34 had a very rich content with 266 ovicaprid, 89 bird, 16 hare and 15 fish bones.



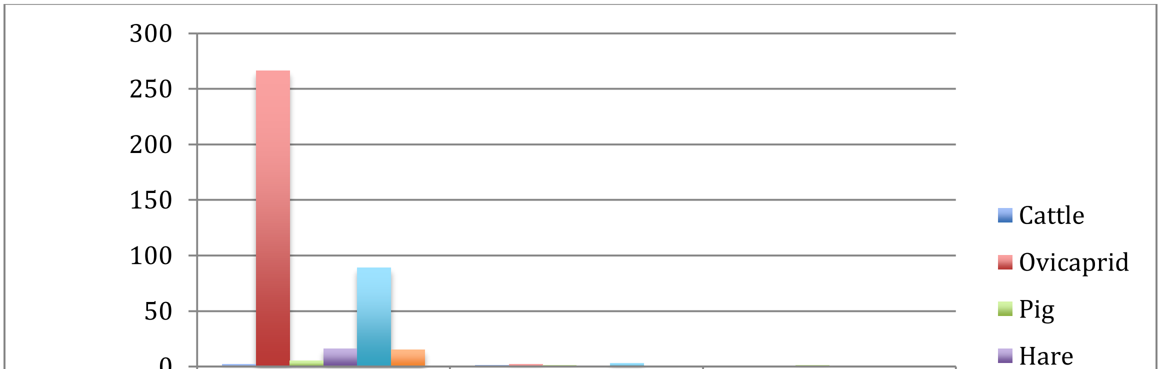
	pit F34	fill
amorph	48,75	0
slag	0	0
glass	19,31	0,09
vitrified	0	0,06
fine	0	0
cooking	10,44	0
storage	8,4	0

Figure 87: Distribution of HR amorph, slag, glass, unidentified vitrified fragments, fine, cooking and storage ware weights (gr.) in Room VIII



	pit F34	fill
globule	0	0
nail	0	0
bracelet	0	0
fine	0	0
cooking	3	0
storage	1	0

Figure 88: Distribution of HR globule, nail, bracelet, fine, cooking and storage ware counts in Room VIII



	pit F34	oven F29	fill
Cattle	2	1	0
Ovicaprid	266	2	0
Pig	5	1	1
Hare	16	0	0
Bird	89	3	0
Fish	15	0	0

Figure 89: Distribution of HR animal bones (NISP) in Room VIII

Room IX

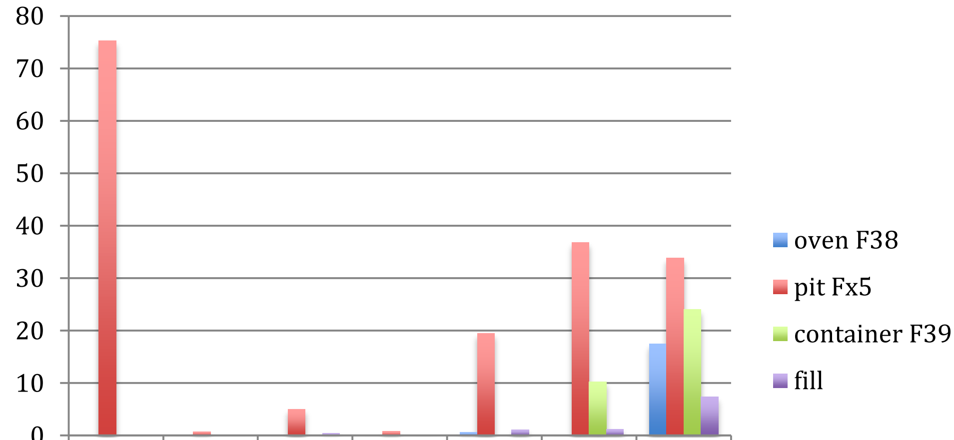
5 heavy residue samples were analyzed in Room IX. 1 sample was from oven F38, 1 from pit Fx5, 1from container F39 and 2 samples were from the fill. (Figure 90, 91, 92)

Almost all of the amorph among the samples was found in pit Fx5 with 75,27 gr. The only slag remain was in pit Fx5 0,76 gr. and it was considered as intrusive. There were no nails, micro round slags, bronze and lead found in the samples.

5,04 gr. of glass fragments were found in pit Fx5 and 0,44 gr. in fill samples, which looks very intrusive as well as the amount of unidentified vitrified fragments that would not worth to mention.

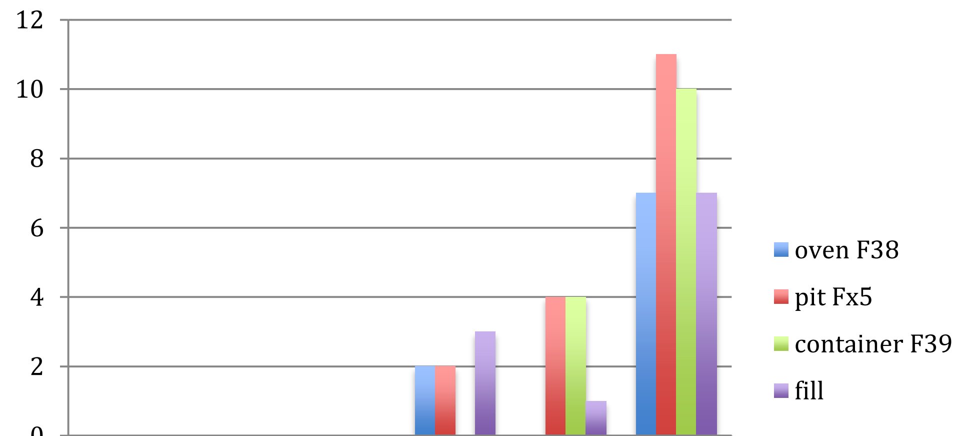
There was no deliberate ceramic deposition in pit Fx5 as far as understood during the excavations and the amount of hand collected ceramics showed. 17 ceramic fragments were found in the heavy residue sample however, these are considered as the intruding materials from the layer fill of Room IX, which had one of the richest ceramic assemblages among the rooms. As for the pit sample, all samples provided some ceramics but all of them were intrusive from the layer fill. Therefore, no special relation can be inferred between the materials and features and contexts.

While the HR samples in room IX were poor in contents, pit Fx5 had 28 bird, 16 ovicaprid bones considerable numbers of pig, hare, bird, fish and eggshells.



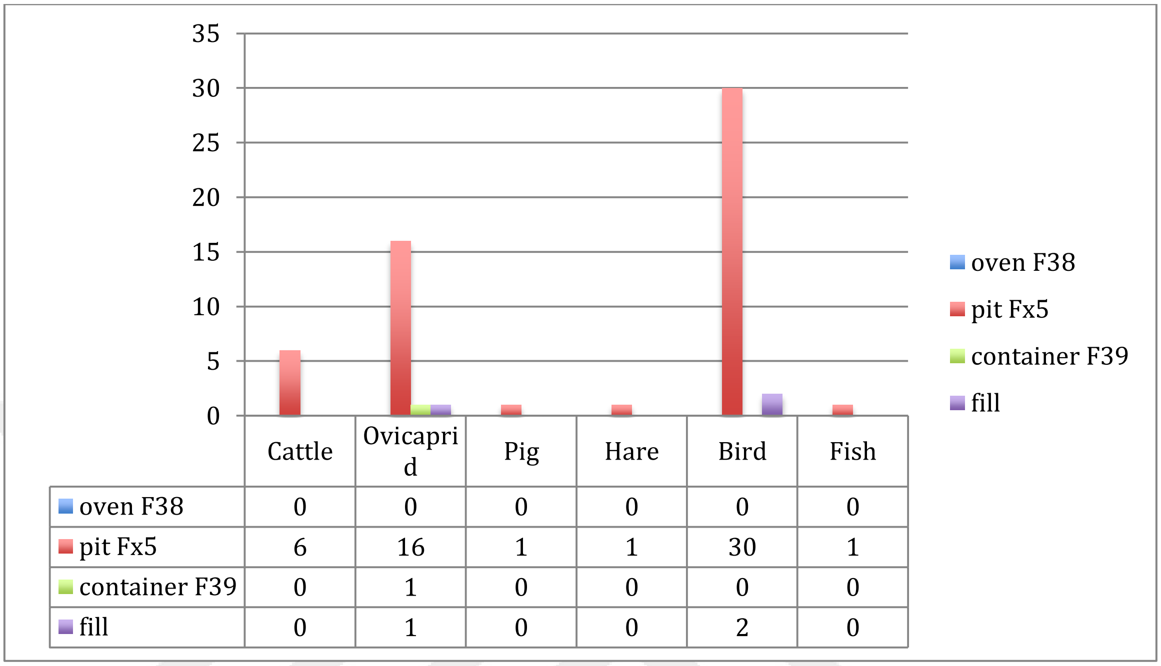
	amorph	slag	glass	vitrified	fine	cooking	storage
oven F38	0	0	0	0	0,6	0	17,46
pit Fx5	75,27	0,76	5,04	0,84	19,51	36,85	33,88
container F39	0	0	0	0	0	10,26	24,07
fill	0,08	0	0,44	0,15	1,16	1,22	7,38

Figure 90: Distribution of HR amorph, slag, glass, unidentified vitrified fragments, fine, cooking and storage ware weights (gr.) in Room IX



	globule	nail	bracelet	fine	cooking	storage
oven F38	0	0	0	2	0	7
pit Fx5	0	0	0	2	4	11
container F39	0	0	0	0	4	10
fill	0	0	0	3	1	7

Figure 91: Distribution of HR globule, nail, bracelet, fine, cooking and storage ware counts in Room IX



	Cattle	Ovicaprid	Pig	Hare	Bird	Fish
oven F38	0	0	0	0	0	0
pit Fx5	6	16	1	1	30	1
container F39	0	1	0	0	0	0
fill	0	1	0	0	2	0

Figure 92: Distribution of HR animal bones (NISP) in Room IX

Conclusions and Discussions

The heavy residue materials as one face of the results of the soil sampling showed clear outcomes, especially in understanding the character of the archaeological fill. The significant inferences were as follows:

The amorph fragments were recovered from almost all samples. While none of them were recovered in situ, they were evaluated as the unidentified fragments of the highly corroded and disrupted metal instruments or architectural attachments, which were larger in size and collected by hand as metal finds. The presence of amorph metal fragments was considered as the remains once metal instruments or architectural attachments during the occupation of the rooms.

Another information I sought for in the heavy residue samples was whether there were any signatures of metal production. The frequent use of ovens in all rooms set forth this question whether any small scale industrial activity was present, if they were not only used for domestic activities basically for cooking or heating. Among the rooms within the scope of my dissertation, very low numbers of slags and micro round slags were detected within the heavy residue samples of features and fill contexts. However, in all cases they were considered as intrusive materials originated from the layer fill of earlier phases or most probably of any metal production area within the Danishmend/Seljuk phase but located in a close by room/trench in the site. Therefore, I can conveniently suggest that according to the heavy residue samples, there were no metal production activity identified within the rooms under study.

Very low amounts of bronze fragments were recovered from the samples. They were originated from the highly corroded and broken bronze objects mostly associated with the church phase and the secondary use of its items during the Danishmend/Seljuk phase. In few samples lead fragments were recovered. It was not possible to suggest their way of use due to their amorph shapes. However, they were known to be used as lead stamps during the Middle Byzantine times. No relation could have been established between the lead fragments and the features they were found. Considerable number of nails was observed within the heavy residue samples which were also recovered during the excavations of the rooms. Nails were considered to be the materials once used on the wooden architectural attachments and remained after the dismantle of the structures and decay of the wood or released as a result of secondary use of the parts as fuel. In one case very tiny nails were recovered in oven F74 in Room II. They were interpreted as part of a wooden chest burnt in the oven. It might be considered as evidence that the discard materials were benefited as fuel in firing of the ovens.

Glass fragments were recovered from almost all heavy residue samples. They were very fragile and easily move within the archaeological fill. They were considered as intrusive materials originated from the layer fill of the earlier phases. However, in pit F34 in Room VIII and in Fx2 in Room III larger fragments of glass vessels were recovered during the excavations. In this case the recovery conditions of the glass in closed contexts against semi-closed and layer fill contexts might be compared. Based on this case it would be reasonable to suggest that closed contexts such as deep pits preserves glass materials and helps to keeps the parts together. Based on this assumption it might be reconsidered that even if there were high amounts of glass vessels in the rooms, they were highly fragmented and disappeared in the less protective semi-closed contexts and open room fills.

Ceramic fragments >5 mm that were recovered from the heavy residue samples were analyzed. All fragments were considered as the part of the ceramic assemblages collected by hand during the excavations. No relation could be established between ceramic types and feature contexts. Rather, ceramic data obtained from heavy residue samples were complementary to the totally hand collected ceramics recovered from the rooms. The degree of fragmentation, intrusion to the semi-closed and closed contexts and secondary deposition of ceramic fragments attested the strong cultural and natural transformations on the archaeological record, thus to reconsider which data to define as safe, semi-safe or unreliable.

5.1.3.2 Distribution of HR Among and in Each Feature and Context

Material contents recovered from heavy residue samples were analyzed in order to see whether there were any relation between sampling contexts and material groups. Observations on the oven, pit, fill, floor and container contexts were as follows: (Figures 93, 94, 95)

In the ovens a pattern of any material cluster cannot be suggested as signature for the artifact fragments. All material groups were considered as intrusive materials from the layer fill and their recovery from the ovens were due to their random movements. In only one case a cluster of tiny nails were seen in oven F45 that it was interpreted as the possible remains of a wooden chest used as fuel in the oven. Also attention was paid on the amount of cooking ware fragments, which was quite considerable within the ovens especially when a possible functional relation was sought. Even though a general food preparation activity can be proposed within the room limits based on the ovens, cooking wares and food remains, why the cooking pot fragments were inside the ovens could not be reasonably explained. Therefore they were evaluated as intrusive ceramic fragments that were everywhere in the layers over the ovens, thus few pieces inside the ovens.

Animal bones recovered from the HR samples provided a different picture when compared to the artifacts. Very high numbers of hare (178), bird (285) and fish (191) recovered from the ovens as total clearly indicated that these small species were a part of an additional diet to cattle and ovicaprid economic species and more importantly supported the function of the ovens as food preparation features and gave clues about refuse disposal behaviors.

Among the pit samples, there were no significant pattern seen which can be indicative for any functional relation when analyzing the distribution and quantity of artifact fragments. However, the picture was different as seen in the oven contexts that high number of birds (174), fish (31) and eggshells indicated that the various types of pits whether for garbage or storing liquids or dry food, lost their real function in the final period of occupation and resulted with becoming the refuse deposition points for the inhabitants.

In the fill samples there were no significant patterns of an individual artifact group. But same as for the oven and pit contexts, the evidence of food preparation, consumption and discard behaviors resulted with the spread of evidence in the burnt fill contexts even though in small numbers.

Amount of materials from floor and container samples were not considerable, therefore there is no need to mention them here.

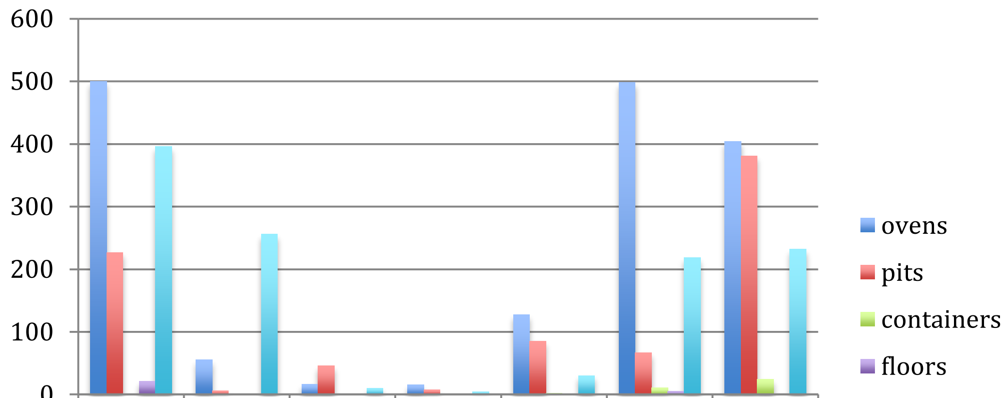
Material distributions among contexts and features were compared in order to see whether there were any special patterns. Majority of the amorph metal fragments were recovered from ovens with 500,01 gr., from pits with 226,72 gr. and from fill samples with 396,23 gr. While floor samples provided 21,19 gr., there were no remains recovered from container samples. Small amounts and fragment sizes of the materials indicated that these types of materials were highly corroded and subjected to c and n-transforms therefore randomly distributed at any layer of the archaeological record. While vast majority of the slag remains were recovered from fill samples with 255,67 gr., ovens provided 55,16 gr. When I looked at the micro slag distributions, while fill samples provided 24 pieces, ovens had 8. Even though the ratios look reasonable at first sight, the amount of materials were extremely lacking, therefore it would not be safe to suggest any metal production based on the heavy residue scale. The amount of bronze fragments was quite low as 6,67 gr. from fill and 4,86 gr. from the ovens. No inference can be made about their contextual distributions. Even though leads were recovered from pits with 14,39 gr., while 3,29 gr. from fill and 2,08 gr. from the ovens, this pattern should not be considered as pits provide more leads than other contexts in the heavy residue samples. The material size is not sufficient to make any general inference.

Pits provided the vast majority of the glass fragments with 45,93 gr. Glass remains were recovered in large amounts from the pits during the excavations. Therefore, there was correlation between the glass assemblage and heavy residue materials of pits. Form of the pits provides the conditions to keep materials within their boundaries and in less fragmented conditions. Since layer fills were more open to outer factors they easily break and travel. In this respect I can conveniently suggest that pits are the spots to look for glass in the archaeological record at Hamamtepe.

Vast majority of the nails were found in oven with 40, while they were 13 in fill samples.

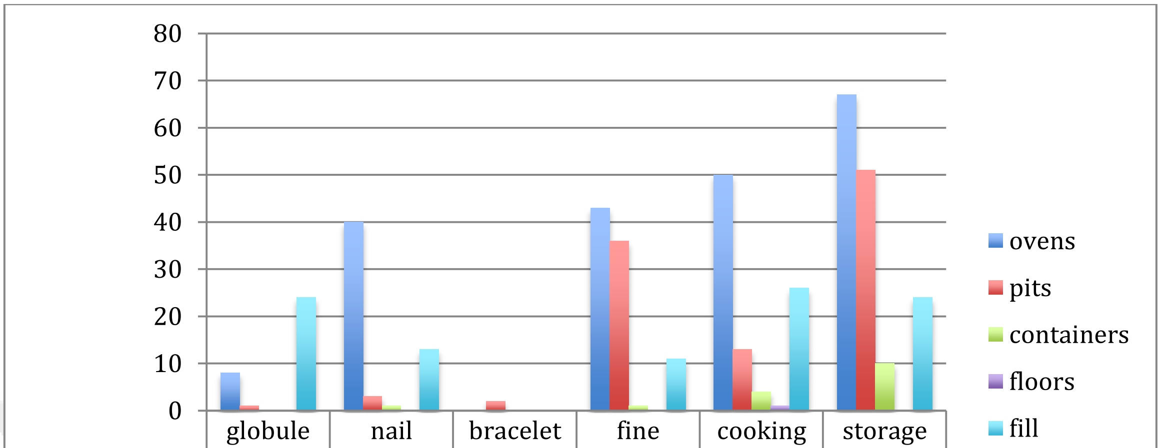
Among the contexts ovens provided the highest ceramic values in all functional types. However, this cannot be taken as an indicative that the ovens provide more ceramics than other contexts and features. Number of samples should be considered as well but the fragments recovered from the heavy residue samples are considered to be intrusive materials from the layer fill.

Contents of the HR samples were analyzed among the sampling contexts. In all species ovens provided the majority of the bones. Even though the ovicaprids were the dominating species in the layers, hare, bird and fish bones were in a similar proportion with ovicaprids within the oven samples. In pits ratio of bird bones were more than the ovicaprids. Except pig and hare, rest of the species were in considerable amounts. In the fill context all species were in less quantity but the amounts of ovicaprids and fish were moderate.



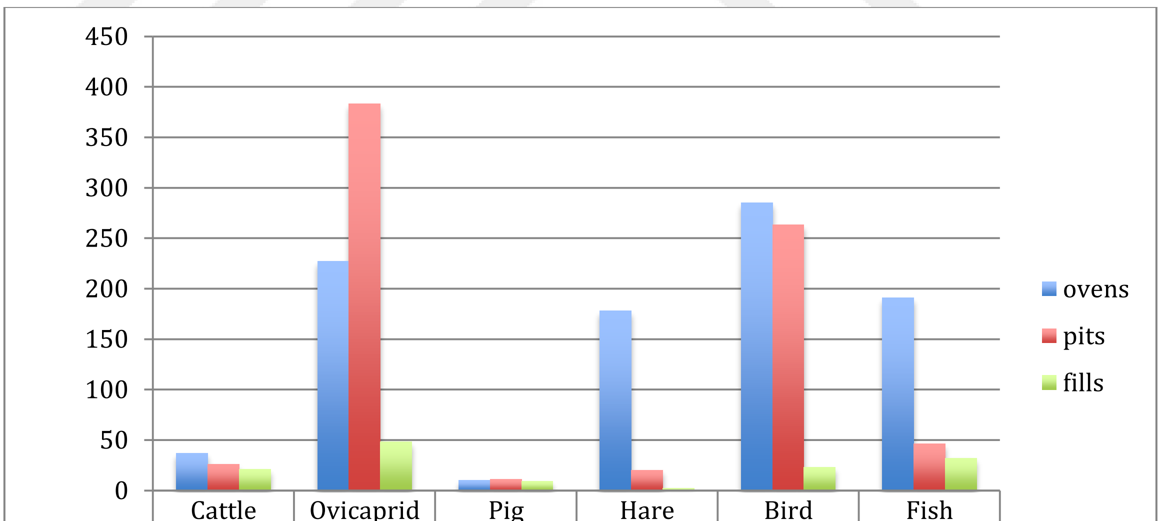
	amorph	slag	glass	vitrified	fine	cooking	storage
ovens	500,01	55,16	16,4	15,25	127,67	498,01	404,01
pits	226,72	5,75	45,93	7,38	85,34	66,91	381,1
containers	0	0	0,18	0	1,85	10,26	24,07
floors	21,19	0	0,01	0	0	4,79	0
fill	396,23	255,67	10,12	4,02	30,08	218,55	231,73

Figure 93: Distribution of HR finds among sampling contexts



	globule	nail	bracelet	fine	cooking	storage
ovens	8	40	0	43	50	67
pits	1	3	2	36	13	51
containers	0	1	0	1	4	10
floors	0	0	0	0	1	0
fill	24	13	0	11	26	24

Figure 94: Distribution of countable finds among sampling contexts

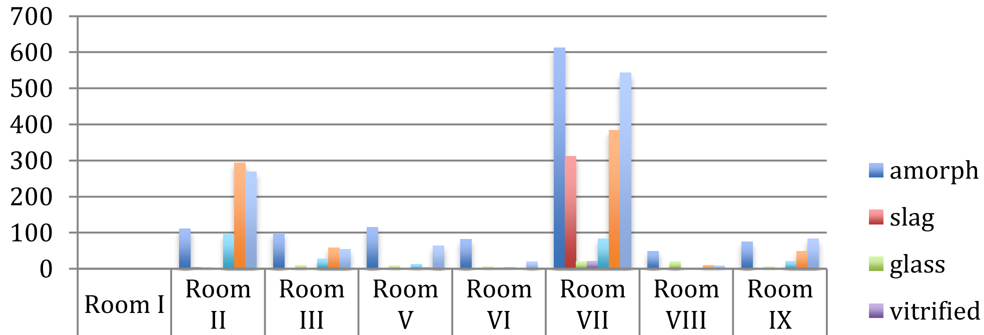


	Cattle	Ovicaprid	Pig	Hare	Bird	Fish
ovens	37	227	10	178	285	191
pits	26	383	11	20	263	46
fills	21	48	9	2	23	32

Figure 95: Distribution of HR animal bones among sampling contexts

5.1.3.3 Distribution of Heavy Residue Materials Among Rooms

Among the rooms Room VII provided 613 gr. of amorph, which had the highest amount. Rest of the rooms had close numbers. (Figure 96) This concentration of amorph in the heavy residue samples should be considered as significant, since Room VII also dominated the amorph metal distribution that were collected by hand during the excavations.

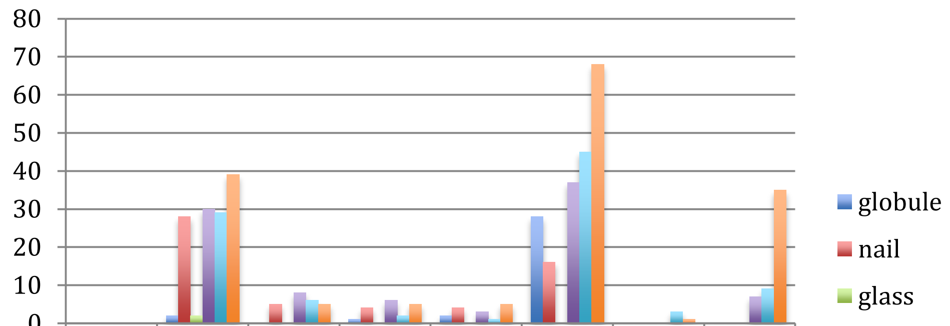


	Room I	Room II	Room III	Room V	Room VI	Room VII	Room VIII	Room IX
amorph	0	110,62	99,25	114,84	82,34	613	48,75	75,35
slag	0	3,66	0	0	0	312,16	0	0,76
glass	0	4,32	9,57	8,29	6,23	19,35	19,4	5,48
vitrified	0	0,98	0,3	0	3,64	20,68	0,06	0,99
fine	0	95,85	27,88	12,24	3,93	83,77	0	21,27
cooking	0	293,89	58,08	4,13	0	383,65	10,44	48,33
storage	0	269,6	53,68	64,11	19,51	542,91	8,4	82,79

Figure 96: Distribution of HR finds among rooms

The same observation was valid for the slag remains where Room VII provided 312,16 gr. of slag while the rest of the rooms had very limited amounts, which were even unnecessary to mention. Round micro slags were also concentrated in Room VII with 28. Thus, slags in both scales were recovered from Room VII. Bronze fragments were very little in amount but Room VII had the most with 7,82 gr. Considering that Room VII had the cluster of bronze objects recovered during the excavations, the ratio of fragments found in heavy residue samples in Room VII were not surprising. Lead was found in the heavy residue samples of Room V with 10,48 gr., Room VII with 5,37 gr. and Room VIII with 3,91 gr. Nails had significant clusters in Room II with 28 and in

Room VII with 16. (Figure 97) Room VII also provided the vast majority of the nails recovered from the rooms with 162.



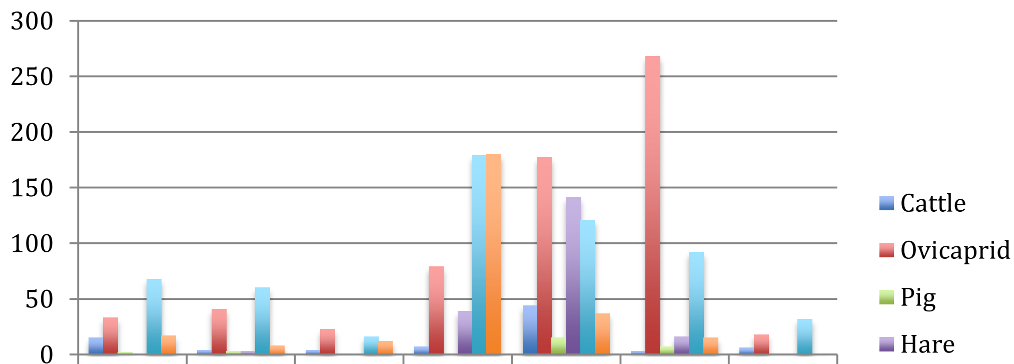
	Room I	Room II	Room III	Room V	Room VI	Room VII	Room VIII	Room IX
globule	0	2	0	1	2	28	0	0
nail	0	28	5	4	4	16	0	0
glass	0	2	0	0	0	0	0	0
fine	0	30	8	6	3	37	0	7
cooking	0	29	6	2	1	45	3	9
storage	0	39	5	5	5	68	1	35

Figure 97: Distribution of HR finds among rooms

While glass fragments concentrated in Room VII (19,35 gr.) and Room VIII (19,4 gr.), rest of the rooms had close amounts between 4,32 gr. and 9,57 gr. Only 2 glass bracelet fragments were found in the heavy residue samples, which was in a pit context at Room II. Unidentified vitrified fragments were significant in Room VII with 20,68 gr.

For all ceramic types Room VII had significant amounts, which were similar with the amounts recovered during the excavations. Contrary to the ceramic amounts collected in the excavations, heavy residue samples in Room II provided more fragments. The results were similar both for ceramic weights and counts with a slight difference in Room IX, which had a significant increase in storage wares.

Fish (180) and bird (179) bones recovered from the HR samples were rich in room VI. Ovicaprid (177) and hare (141) bones were the most finds in room VII and followed by bird bones. (Figure 98)



	II	III	V	VI	VII	VIII	IX
Cattle	15	4	4	7	44	3	6
Ovicaprid	33	41	23	79	177	268	18
Pig	2	3	0	1	15	7	1
Hare	0	3	0	39	141	16	1
Bird	68	60	16	179	121	92	32
Fish	17	8	12	180	37	15	1

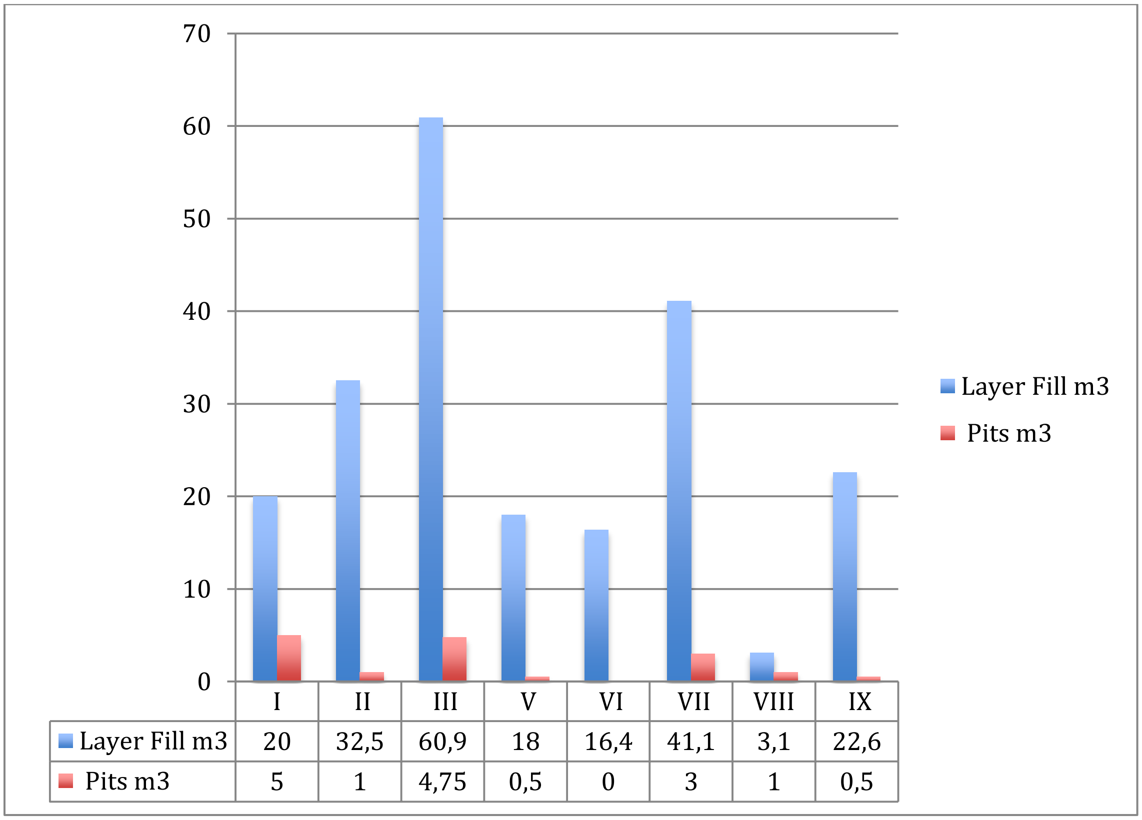
Figure 98: Distribution of HR animal bones among rooms

5.2 Volumetric Data Analysis

Justification and Application

In the previous section the total amounts of materials recovered within the room and feature boundaries were analyzed. It was considered that the differentiations between the excavated room fill volumes in regard to the entire room sizes, soil depths over the occupation floors and partly existed and partly excavated rooms in one hand and recovery conditions of the features and varying amounts of soil sampling volumes from the features on the other would be misleading in conducting the comparative analysis of material distributions among the rooms and the features. Therefore, volumetric calculations were made in order to normalize the material densities representing both layer fills and the soil sampled feature contexts.

Since the accumulation of materials within the features, especially within the different types of pits, were considered as closed contexts which were representing patterns of discard during the final period of the occupation of the site, they were distinguished from the volumetric analysis of the fills, but evaluated separately. However, the whole volumes of the fills and features were also combined to see the total density of materials within the room limits without any contextual distinctions. In order to calculate the fill volumes, room areas (m^2) and layer fill depths (m.) were measured. Using these measurements the room fill volumes were determined and the material inclusions were calculated per m^3. (Figure 99)



	I	II	III	V	VI	VII	VIII	IX
Layer Fill m3	20	32,5	60,9	18	16,4	41,1	3,1	22,6
Pits m3	5	1	4,75	0,5	0	3	1	0,5

Figure 99: Volume calculations of room layer fills and pits

There was variety in the recovery conditions of the features where some were entirely present while the rest were damaged in various degrees. For this reason, the amount and quality of the soil samples indicated great differentiations, even though the most potential parts of the features were totally sampled.

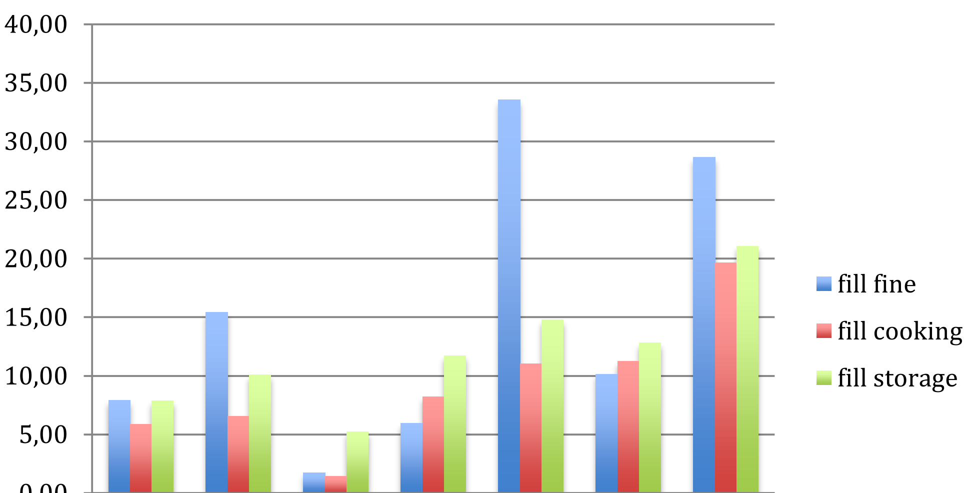
During sampling and flotation the amounts of the soils were measured in liters. Therefore, in order to prevent any bias that would originate from the random sampling strategy (in terms of the sample portion), the material contents were calculated per liter for each feature.

And lastly, the ratios between the different find types within each room did not change since they were equally effected from volumetric calculations. This also shows clearly that volumetric analysis targets to make comparisons among the rooms and the features by establishing a common ground among them.

Results of the Volumetric Analysis

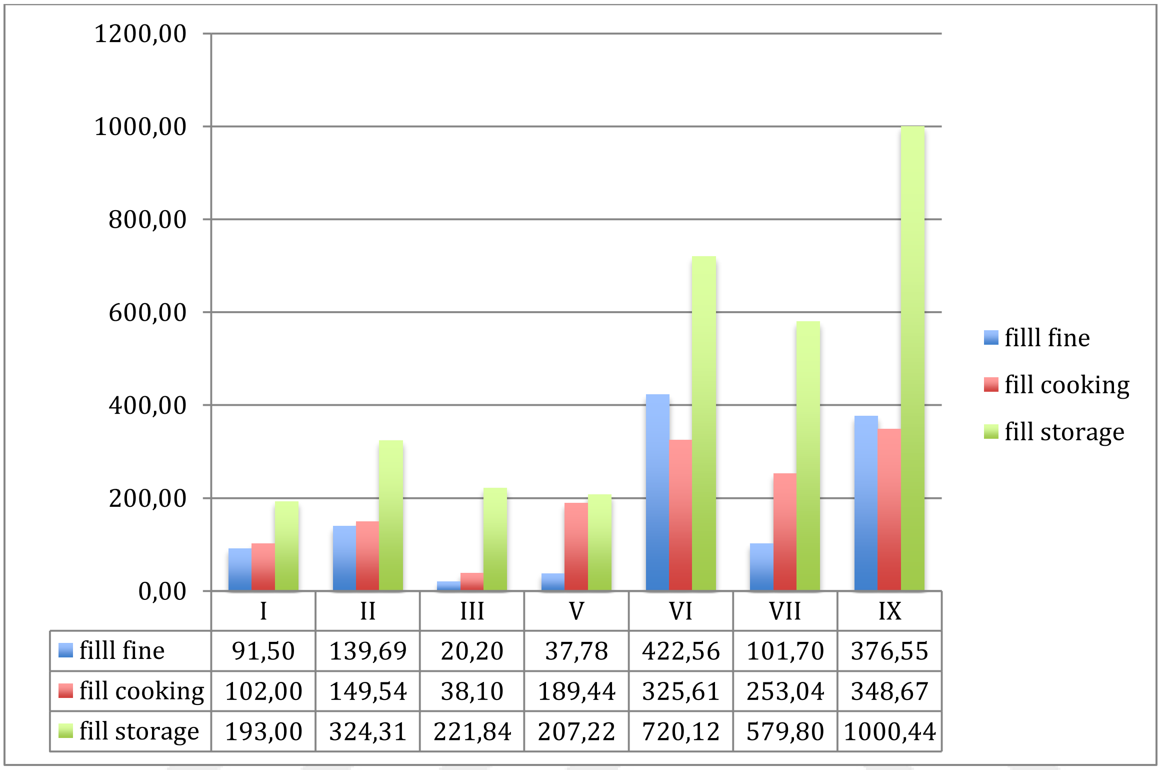
Per m³

The amount of fine ware in room VI increased while rooms II, VII and IX decreased. Cooking ware increased in room VI but decreased in rooms II, III, VII and IX. Storage ware increased in room VI and decreased in rooms II, III, VII and IX. In regard of the weights of fine ware, the ratios were same with slight increase in room VI and decrease in room VII. Cooking ware increased in room VI but decreased in room VII. Storage ware increased in room VI and III but decreased in room VII. Normally as it was expected, the number and weight of ceramic fragments per m^3 decreased in the rooms with large volumes such as VII and III, and increased in the rooms with less volume such as VI. (Figures 100, 101)



	I	II	III	V	VI	VII	IX
fill fine	7,90	15,42	1,71	5,94	33,54	10,15	28,63
fill cooking	5,85	6,52	1,41	8,22	11,04	11,22	19,65
fill storage	7,85	10,09	5,22	11,72	14,76	12,82	21,06

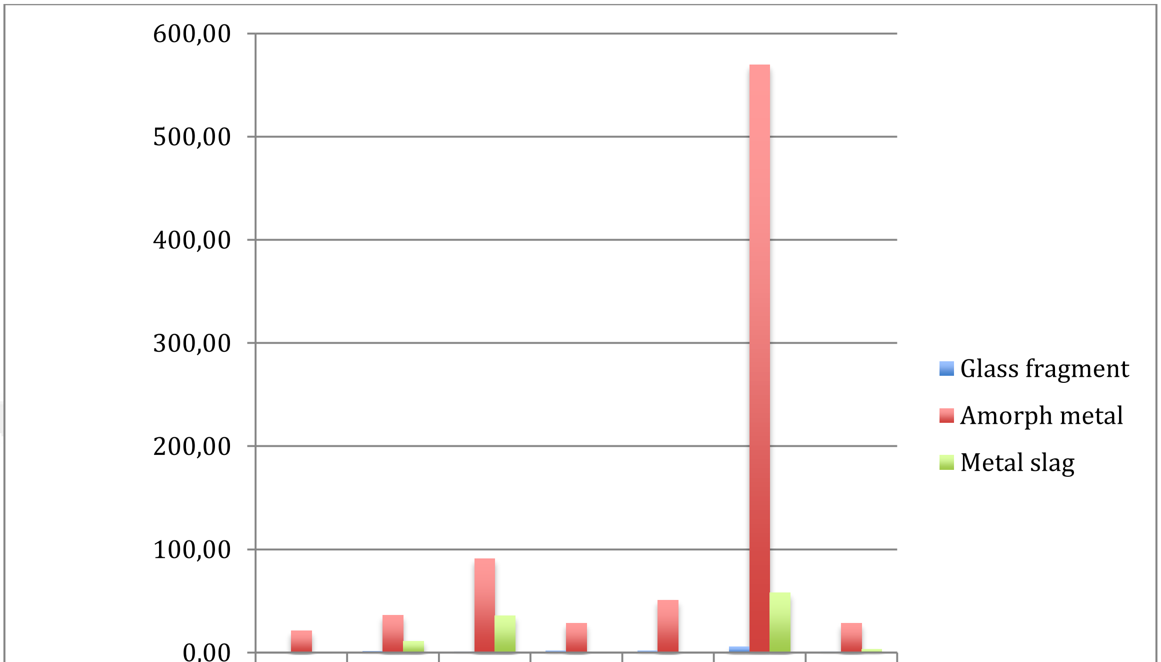
Figure 100: Number of ceramic fragments per m^3 within the room fills



	I	II	III	V	VI	VII	IX
filll fine	91,50	139,69	20,20	37,78	422,56	101,70	376,55
fill cooking	102,00	149,54	38,10	189,44	325,61	253,04	348,67
fill storage	193,00	324,31	221,84	207,22	720,12	579,80	1000,44

Figure 101: Weight of ceramic fragments in grams per m^3 within the room fills

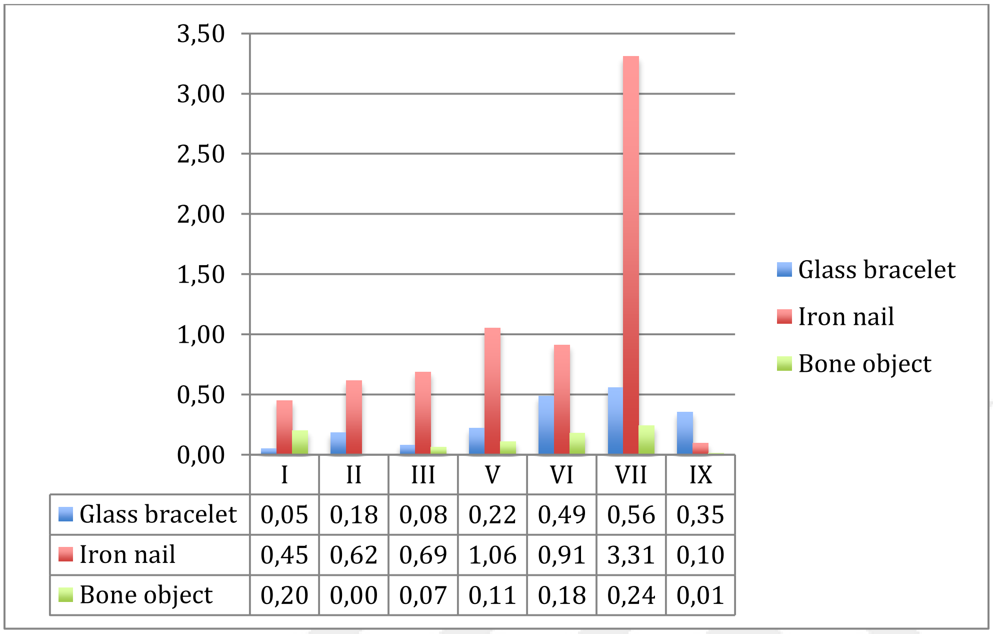
Amount of amorph fragment weights per m^3 did not make very significant changes where room III slightly decreased and rest of the rooms equally increased but room VII surprisingly kept its value. Proportion of slags increased in room VII while others kept their values similar. (Figure 102)



	I	II	III	V	VI	VII	IX
Glass fragment	0,46	1,21	0,75	2,07	1,79	5,76	0,92
Amorph metal	21,00	36,46	91,0500	28,61	50,91	569,71	28,32
Metal slag	0,00	11,23	36	0,00	0,00	58,15	3,10

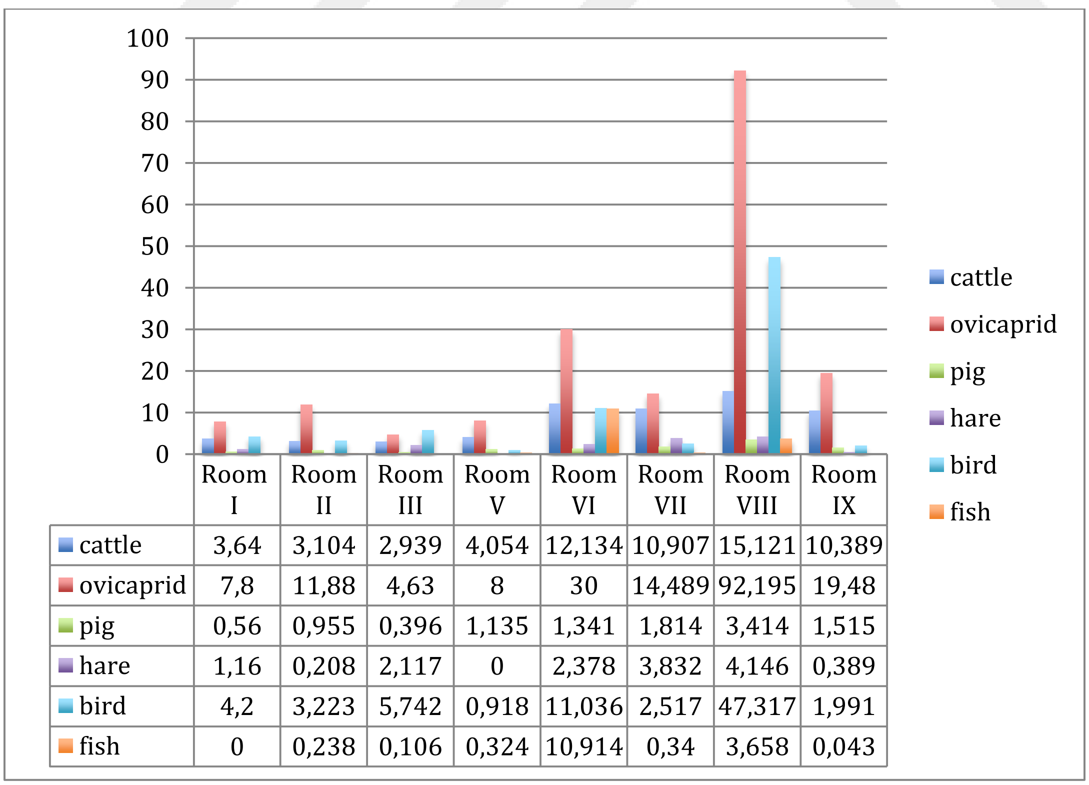
Figure 102: Weights of amorph metals, metal slags and glass fragments in grams per m^3 within the rooms

Number of nails per m^3 increased in room V and VI but decreased in rooms II, III, VII and IX. (Figure 103) Amount of glass fragments per m^3 slightly increased in room V, VI and IX while decreased in rooms III and VII. Number of bracelet fragments per m^3 increased in room II, V, VI and IX. While the drop for Room III was slightly, it significantly decreased in room VII. Number of bone objects per m^3 increased in rooms I, V and VI but decreased in rooms III and IX. The differences in ratios are potentially due to the small size of the assemblage as it was also valid for the change in bracelet fragments. Amount of animal bones were also calculated per m3. (Figure 104)



	I	II	III	V	VI	VII	IX
Glass bracelet	0,05	0,18	0,08	0,22	0,49	0,56	0,35
Iron nail	0,45	0,62	0,69	1,06	0,91	3,31	0,10
Bone object	0,20	0,00	0,07	0,11	0,18	0,24	0,01

Figure 103: Number of iron nails, glass bracelets and bone objects per m^3 within the rooms



	Room I	Room II	Room III	Room V	Room VI	Room VII	Room VIII	Room IX
cattle	3,64	3,104	2,939	4,054	12,134	10,907	15,121	10,389
ovicaprid	7,8	11,88	4,63	8	30	14,489	92,195	19,48
pig	0,56	0,955	0,396	1,135	1,341	1,814	3,414	1,515
hare	1,16	0,208	2,117	0	2,378	3,832	4,146	0,389
bird	4,2	3,223	5,742	0,918	11,036	2,517	47,317	1,991
fish	0	0,238	0,106	0,324	10,914	0,34	3,658	0,043

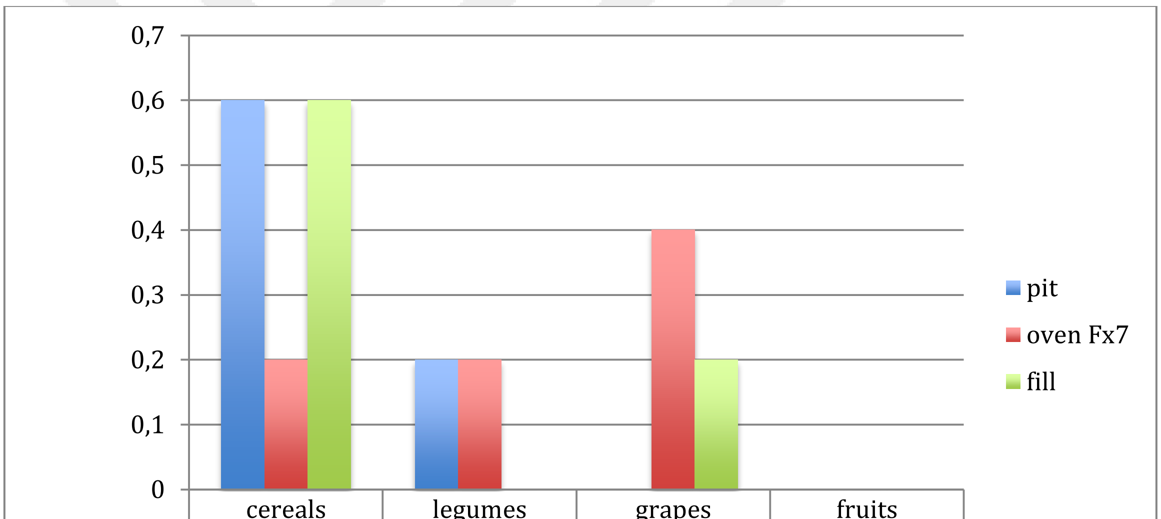
Figure 104: Number of animal bones hand collected per m^3 within the rooms

Per Liter

Plant Remains

Number of plant remains recovered from each sample showed significant differences per liter.

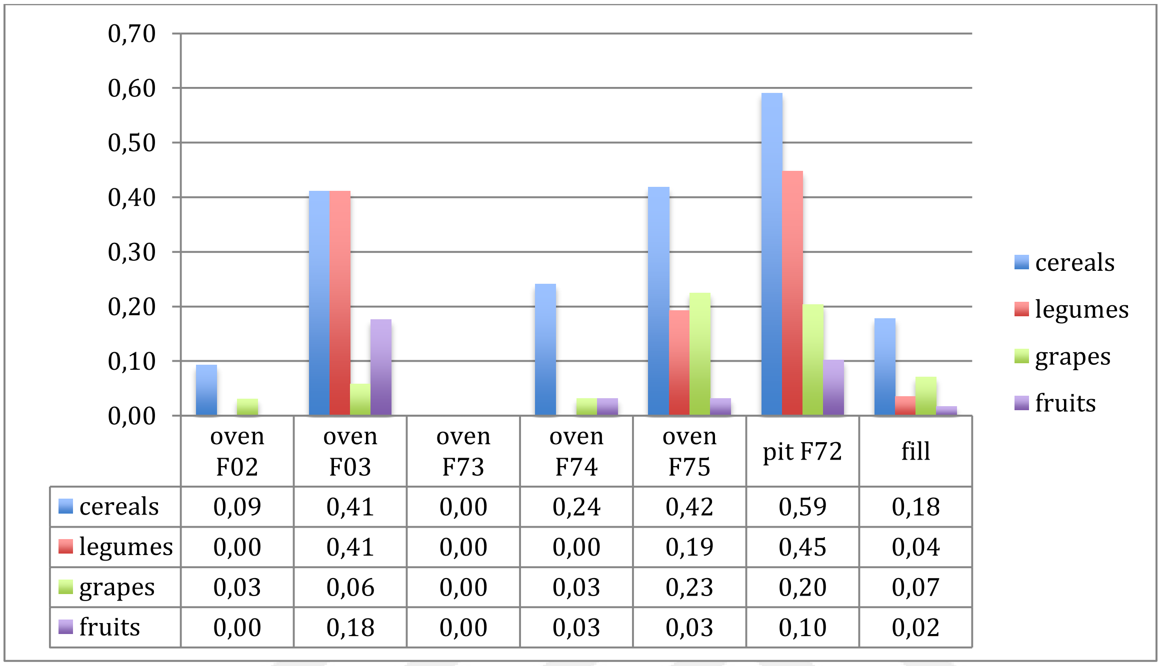
Observations on the very limited amounts of samples from room I has not shown any difference when compared with the normal quantity of materials. (Figure 105)



	cereals	legumes	grapes	fruits
pit	0,6	0,2	0	0
oven Fx7	0,2	0,2	0,4	0
fill	0,6	0	0,2	0

Figure 105: Number of plants per liter (Room I)

In room II number of plants per liter in F03, F75 and F72 increased and they become the richest samples within the room, while F01 and F72 were the richest in total amounts of each feature. (Figure 106)

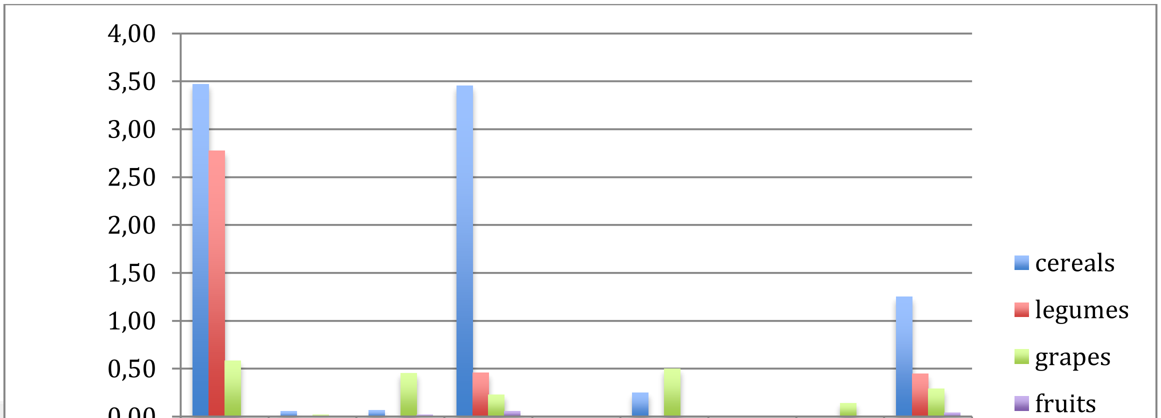


	oven F02	oven F03	oven F73	oven F74	oven F75	pit F72	fill
cereals	0,09	0,41	0,00	0,24	0,42	0,59	0,18
legumes	0,00	0,41	0,00	0,00	0,19	0,45	0,04
grapes	0,03	0,06	0,00	0,03	0,23	0,20	0,07
fruits	0,00	0,18	0,00	0,03	0,03	0,10	0,02

Figure 106: Number of plants per liter (Room II)

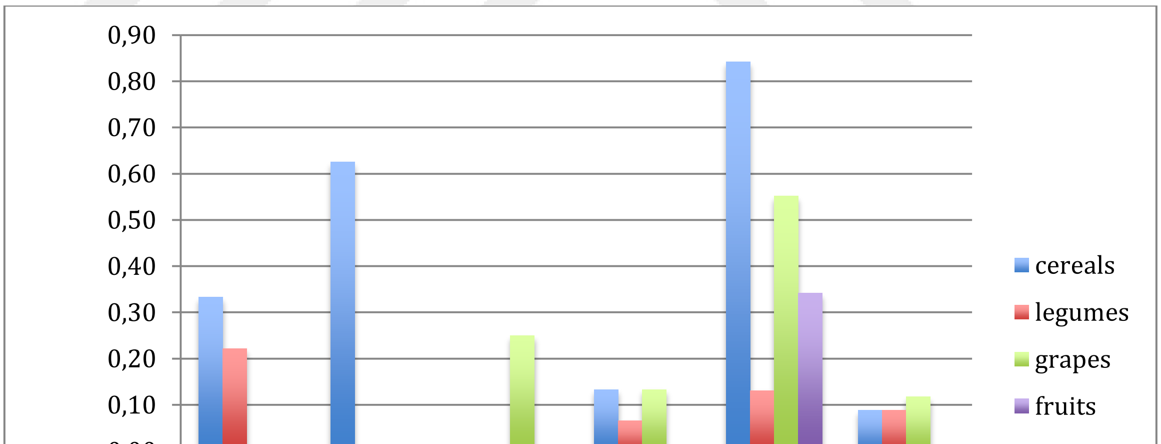
In room III while F49 and Fx2 had similar values, grapes in Fx1 became unimportant and amount of plants in the fill context also decreased. It is significant that while grapes were richest in Fx1 in total inspection, volumetric calculation limits its visibility. (Figure 107)

In room V number of plants increased in F14, F15, F28, Fx4 and slightly in the fill context. F36 kept its values slightly the same. It can be clearly seen that while the total amount of grapes in F36 were ten times bigger than in F28, after volumetric calculation the ratio became twice bigger and similar for the cereals where F36 has three times bigger cereals, it became almost equal in ratio. (Figure 108)



	oven F49	pit F48	pit Fx1	pit Fx2	floor	c.pot	s.pot	cont.	fill
cereals	3,47	0,06	0,07	3,46	0,00	0,25	0,00	0,00	1,25
legumes	2,78	0,00	0,00	0,46	0,00	0,00	0,00	0,00	0,45
grapes	0,58	0,02	0,45	0,23	0,00	0,50	0,00	0,14	0,29
fruits	0,00	0,00	0,02	0,06	0,00	0,00	0,00	0,00	0,04

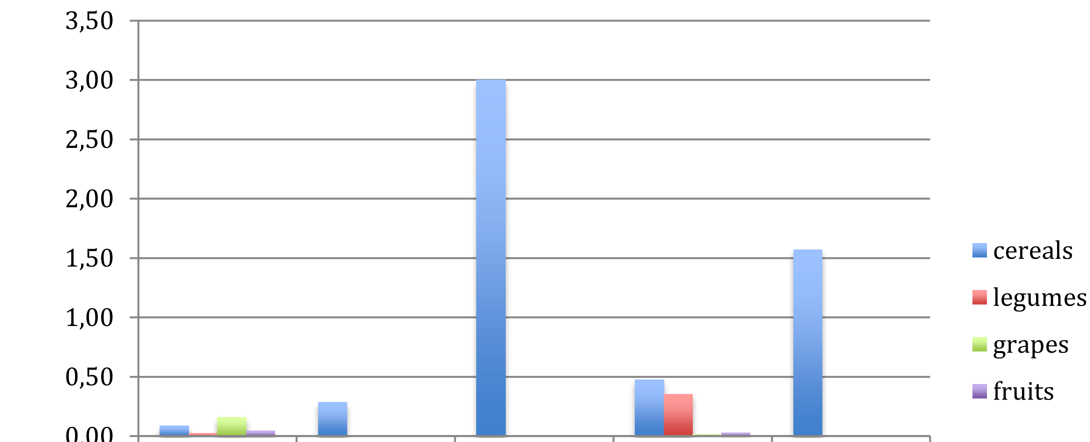
Figure 107: Number of plants per liter (Room III)



	oven F14	oven F15	oven F28	oven Fx4	pit F36	fill
cereals	0,33	0,63	0,00	0,13	0,84	0,09
legumes	0,22	0,00	0,00	0,07	0,13	0,09
grapes	0,00	0,00	0,25	0,13	0,55	0,12
fruits	0,00	0,00	0,00	0,00	0,34	0,00

Figure 108: Number of plants per liter (Room V)

In room VI number of plants increased significantly in F12 and in the fill context. Plants in F10 and F68 decreased while they were the highest in total quantification. F12 with ten times less cereals than F68 became six times richest. (Figure 109)



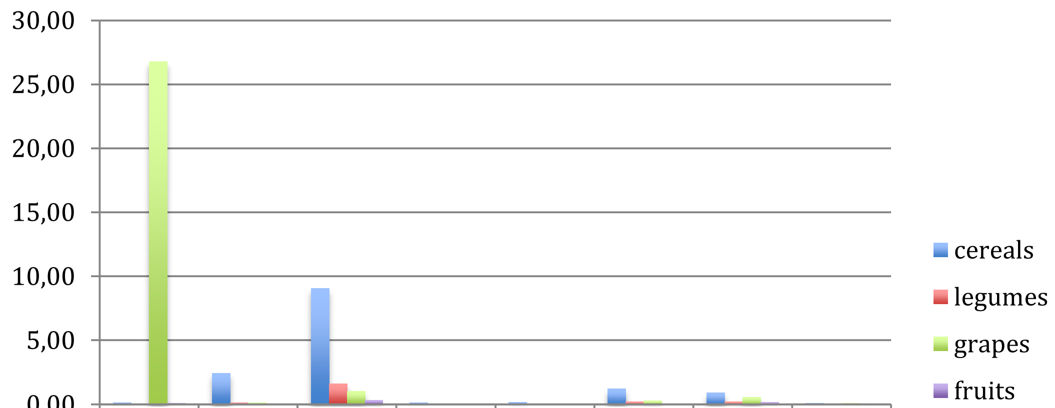
	oven F10	oven F11	oven F12	oven F68	fill
cereals	0,09	0,29	3,00	0,48	1,57
legumes	0,02	0,00	0,00	0,35	0,00
grapes	0,16	0,00	0,00	0,02	0,00
fruits	0,04	0,00	0,00	0,03	0,00

Figure 109: Number of plants per liter (Room VI)

In room VII the plant ratios are observed to be slightly similar after volumetric calculation. (Figure 110)

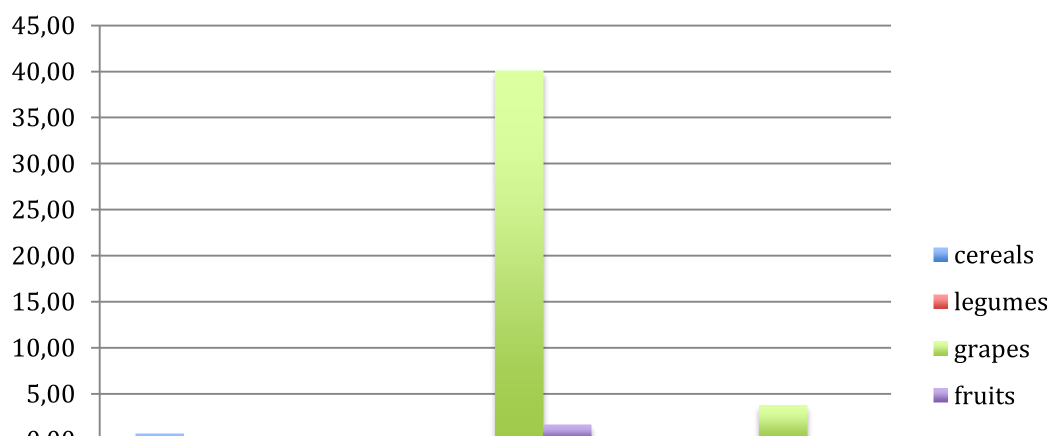
In room VIII F34 kept its significance with very slight increase in grapes and fruits. Grape ratio in the fill context also slightly increased. (Figure 111)

In room IX number of plant remains per liter in F38, in the fill context and legumes in F39 significantly increased, while plant ratios in Fx5 sharply dropped. (Figure 112)



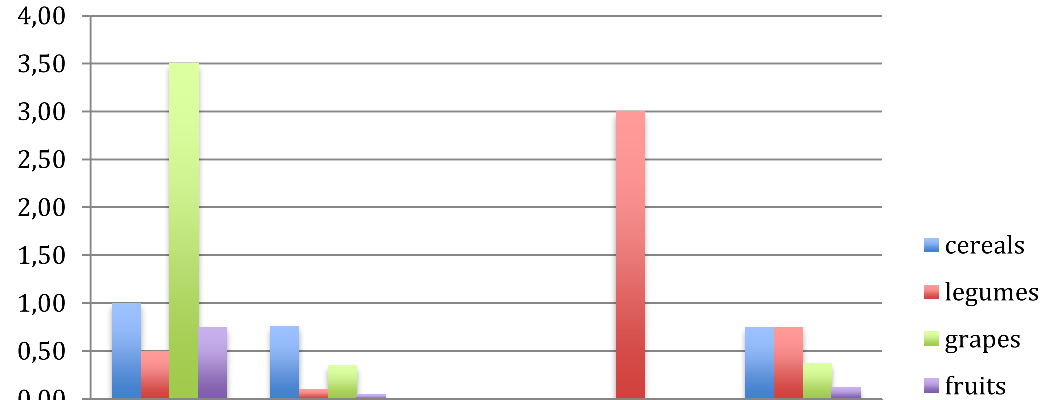
	pit F19	pit F32	pit F33	pit F43	oven F30	oven F45	oven F66	fill
cereals	0,11	2,44	9,07	0,11	0,17	1,20	0,91	0,09
legumes	0,03	0,11	1,62	0,04	0,00	0,20	0,20	0,02
grapes	26,79	0,11	1,02	0,03	0,00	0,28	0,53	0,09
fruits	0,08	0,00	0,31	0,01	0,00	0,00	0,16	0,04

Figure 110: Number of plants per liter (Room VII)



	oven F29	pit F34	fill
cereals	0,65	0,08	0,00
legumes	0,05	0,00	0,00
grapes	0,20	40,08	3,75
fruits	0,00	1,67	0,00

Figure 111: Number of plants per liter (Room VIII)

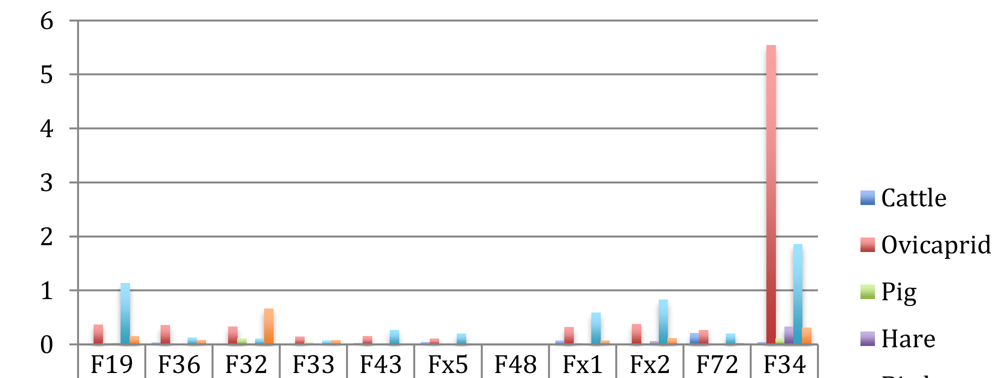


	oven F38	pit Fx5	cooking pot	container F39	fill
cereals	1,00	0,76	0,00	0,00	0,75
legumes	0,50	0,11	0,00	3,00	0,75
grapes	3,50	0,35	0,00	0,00	0,38
fruits	0,75	0,05	0,00	0,00	0,13

Figure 112: Number of plants per liter (Room IX)

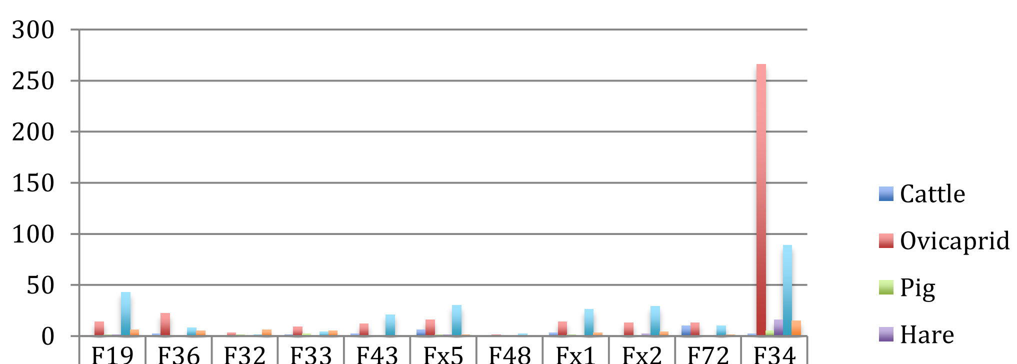
HR Animal Bones from Pit and Oven Contexts

Ratios of ovicaprid, cattle, pig and hare bones were observed to be similar among all pit samples. Bird bones slightly increased in F19, F34, Fx2 and F34. Fish bones in F32 significantly increased when compared with all other pit samples. (Figures 113, 114)



	F19	F36	F32	F33	F43	Fx5	F48	Fx1	Fx2	F72	F34
Cattle	0	0,032	0	0,016	0,025	0,039	0	0,068	0	0,204	0,041
Ovicaprid	0,368	0,354	0,333	0,147	0,15	0,105	0,009	0,318	0,371	0,265	5,541
Pig	0,026	0	0,111	0,032	0	0,006	0	0,022	0	0	0,104
Hare	0,026	0	0	0	0	0,006	0	0	0,057	0	0,333
Bird	1,13	0,129	0,111	0,065	0,262	0,198	0,018	0,59	0,828	0,203	1,854
Fish	0,157	0,08	0,666	0,081	0	0,006	0	0,068	0,114	0,02	0,312

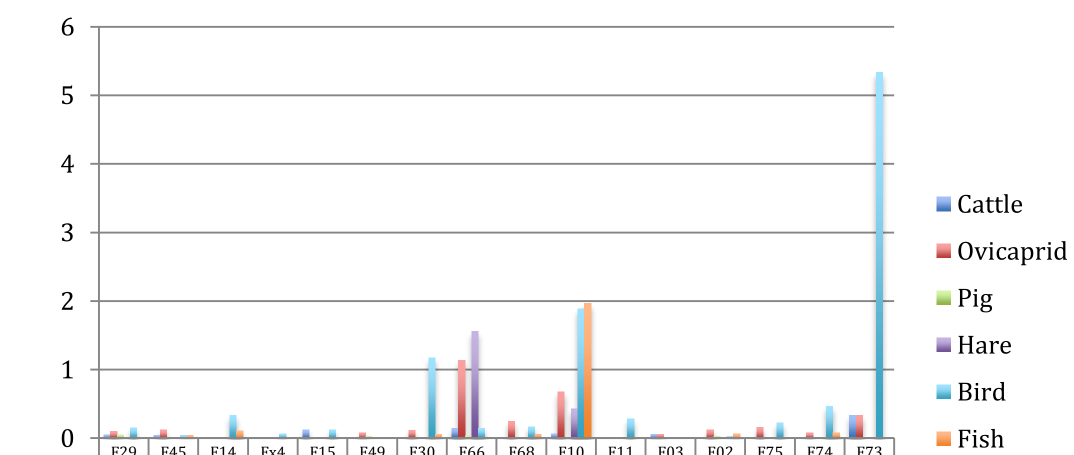
Figure 113: HR animal bones from pit samples (NISP per liter)



	F19	F36	F32	F33	F43	Fx5	F48	Fx1	Fx2	F72	F34
Cattle	0	2	0	1	2	6	0	3	0	10	2
Ovicaprid	14	22	3	9	12	16	1	14	13	13	266
Pig	1	0	1	2	0	1	0	1	0	0	5
Hare	1	0	0	0	0	1	0	0	2	0	16
Bird	43	8	1	4	21	30	2	26	29	10	89
Fish	6	5	6	5	0	1	0	3	4	1	15

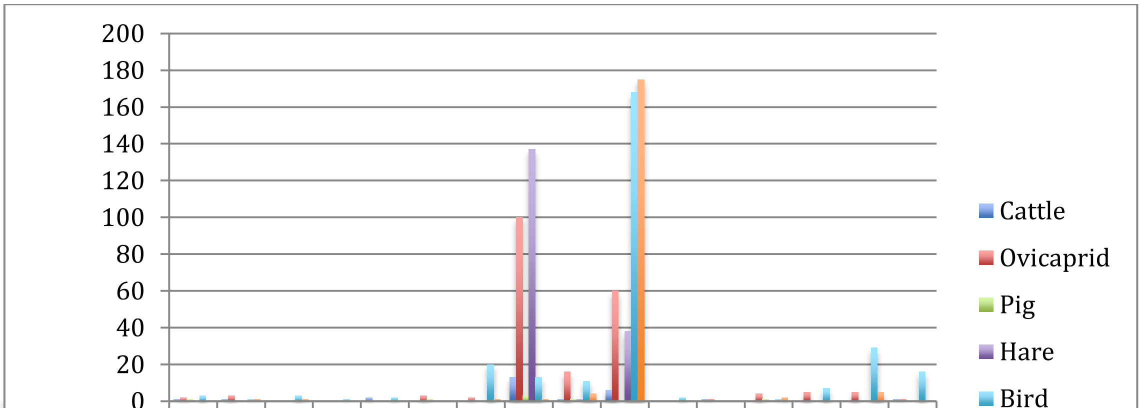
Figure 114: HR animal bones from pit samples (NISP total)

Cattle bones in F15, F10 and F73 slightly increased and decreased in F66. Ovicaprid bones were observed to be similar with a slight increase in F73. Pig bones did not change. Hare bones in F66 and F10 kept their significant visibility also in the volumetric analysis, even though F66 (88 liters) and F10 (89 liters) had the largest volumes among all oven samples. Bird bones slightly increased in F14, F30, F11 and decreased in F10 and F74. Bird bones in F73 increased extraordinarily and became the most significant context in terms of birds. However, this difference was due to its smallest volume (3 liters) among all oven samples. F73 had the highest NISP per liter for bird bones with only 16 specimens while F10 had 168. This example shows a potential bias that may occur in the condition that a sample volume is small and number of specimens was moderate and vice versa for the samples with larger volumes (i.e. F10 with 89 liters of sample). Fish bones in F10 kept its significance among other ovens samples. (Figures 115, 116)



	F29	F45	F14	Fx4	F15	F49	F30	F66	F68	F10	F11	F03	F02	F75	F74	F73
Cattle	0,05	0,04	0	0	0,125	0	0	0,147	0,015	0,067	0	0,058	0	0	0	0,333
Ovicaprid	0,1	0,12	0	0	0	0,083	0,117	1,136	0,246	0,674	0	0,058	0,125	0,161	0,08	0,333
Pig	0,05	0	0	0	0	0,027	0	0,034	0,015	0	0	0	0,031	0	0	0
Hare	0	0	0	0	0	0	0	1,556	0,015	0,426	0	0	0	0	0	0
Bird	0,15	0,04	0,333	0,066	0,125	0	1,176	0,147	0,169	1,887	0,285	0	0,031	0,225	0,467	5,333
Fish	0	0,04	0,111	0	0	0	0,058	0,011	0,061	1,966	0	0	0,062	0	0,08	0

Figure 115: HR animal bones from oven samples (NISP per liter)



	F29	F45	F14	Fx4	F15	F49	F30	F66	F68	F10	F11	F03	F02	F75	F74	F73
Cattle	1	1	0	0	2	0	0	13	1	6	0	1	0	0	0	1
Ovicaprid	2	3	0	0	0	3	2	100	16	60	0	1	4	5	5	1
Pig	1	0	0	0	0	1	0	3	1	0	0	0	1	0	0	0
Hare	0	0	0	0	0	0	0	137	1	38	0	0	0	0	0	0
Bird	3	1	3	1	2	0	20	13	11	168	2	0	1	7	29	16
Fish	0	1	1	0	0	0	1	1	4	175	0	0	2	0	5	0

Figure 116: HR animal bones from oven samples (NISP total)

5.3 Correspondence Analysis (CA)

Justification and Aims

The materials studied in this thesis consist of many different groups. Accordingly descriptions in the first part of Chapter 5 are broken down by type of materials. However, a multivariate analysis was needed in order to characterize rooms' function bringing all types of data together. CA is a widely used multivariate statistical technique used in archaeology (i.e. cluster analysis and principle component analysis-PCA these are other types of multivariate techniques, they are not the same as CA), and in this thesis it was chosen amongst the various types of multivariate techniques because of the data studied are in nominal scale. In CA, a table of data is converted into one plot which represents both the columns and the rows of the table. The points close to each other on the plot represent similarities and points in a distance represent differences.[154]

For instance, in the first CA applied below for the distribution of ceramic among the rooms (Figure 117), columns represent the ceramic types and rows represent rooms. The aim of this analysis is to understand which rooms are associated with which type of ceramic groups or vice verse which ceramic groups are significantly present in which rooms when we put all the data together.

Each of the two axes in the plot represents one factor and the total inertia of F1 and F2 represents the degree of solution of the test. In general an inertia around 70% is considered to be acceptable and represents a good solution.[155] In other words inertia shows the "quality of approximation of data to the reality".[156]

Some data sets were analyzed together in order to answer specific questions. In the following parts CA analysis of those data sets were applied and discussed. Computer aided statistical software "Excel-Stat" was used to for the analysis.

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[154] Baxter and Cool, 2010, 212.
[155] Baxter and Cool, 2016, 136.
[156] ibid.

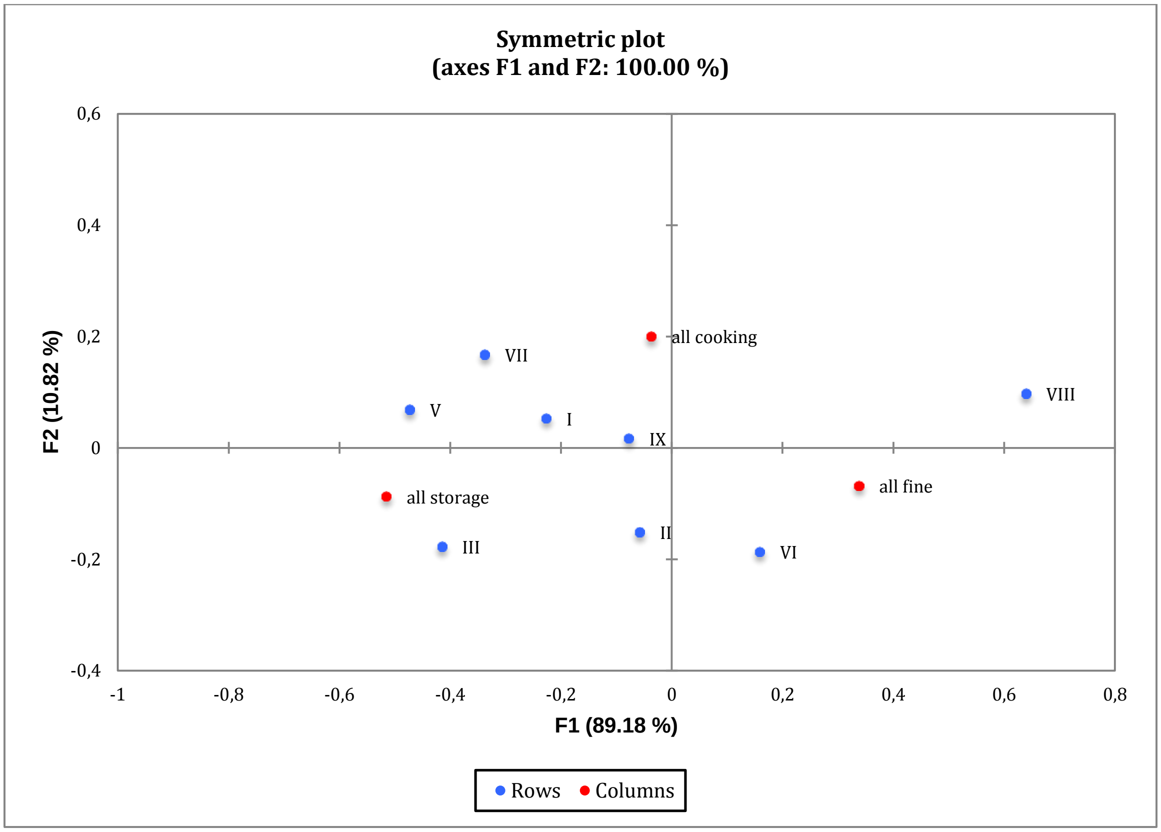
Distribution of Ceramic Groups

Total distribution of three ceramic groups within the rooms were calculated (number of fragments per m^3) according to the total soil volumes removed from over the occupation floors and features. (Figure 117) The aim was to check for whether there was any patterning that would indicate inferences on the function of the rooms. It should be kept in mind that the degree of fragmentation of the ceramics was high and post occupational processes could have been effective on the disturbance of the in situ contexts. Nevertheless densities of ceramic groups were screened in order to test any meaningful patterning.

The most balanced distribution was observed in room IX showing that in this room all three types of ceramics are found to be equal in abundance without any of them being more or less important than the others. Rooms I, V, VII and IX showed similar pattern that their position in the plot is influenced by the cooking ware. Rooms II and III are associated for storage ware. While Room VI is closely related to the fine ware, Room VIII dose not show any association with any ceramic group.

As a result it can be suggested that Room IX shows consumption, cooking and storing function but they should be expected evenly. But since room IX had equal distance from all ceramic groups, any of the functions could not be assigned to room IX stronger than others. Rooms I, V, VII and IX could be associated with cooking functions.

The inertia is quite high with 89% that the solution of the data set used in the test is strong.



Eigenvalues and percentages of inertia:		
	F1	F2
Eigenvalue	0,125	0,015
Inertia (%)	89,184	10,816
Cumulative %	89,184	100,000

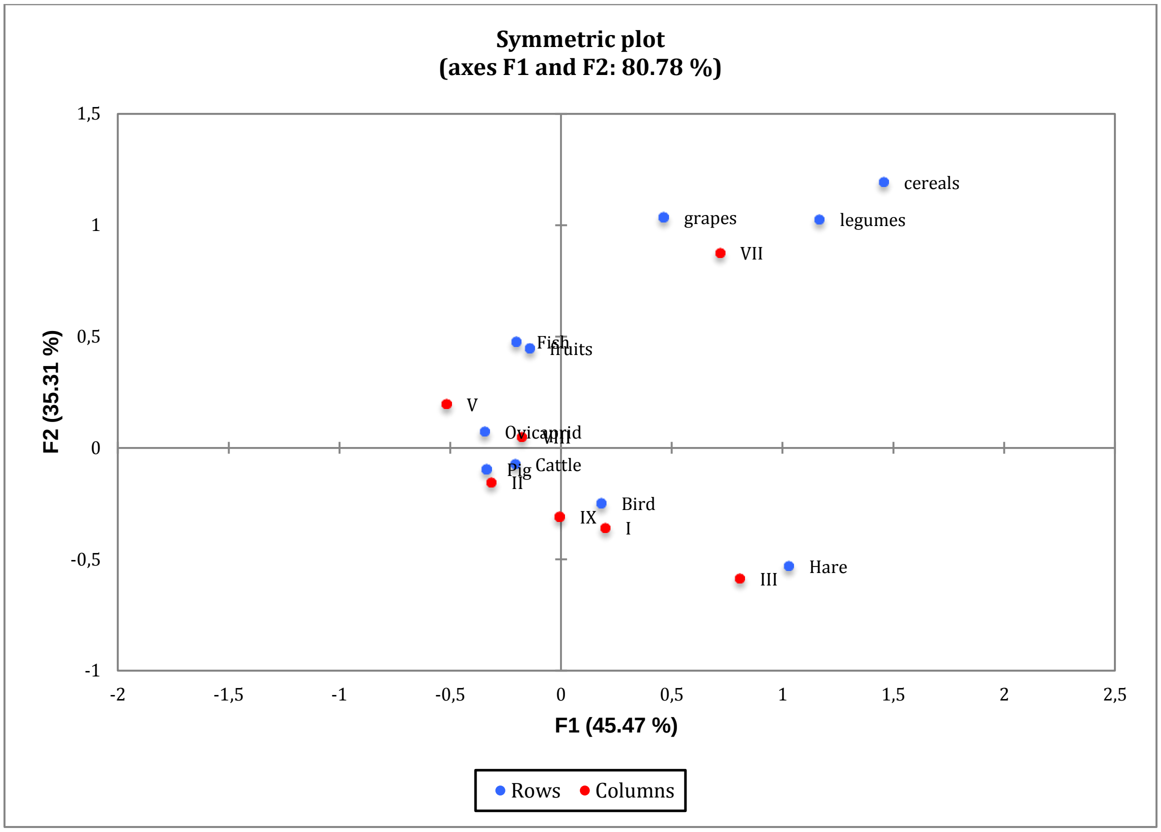
Figure 117: Ceramic groups in rooms

Distribution of Plant and Animals Bones within the Pits

Since the pits were observed to have rich contents of food waste, the compositions were analyzed. In this section, plant remains (NISP per liter) and animal bones (NISP per $m^{3)}$ were analyzed together in order to observe the differences and similarities in compositions. (Figure 118)

The four main domestic species ovicaprid (sheep and goat), cattle and pig are more abundant in rooms II, V and VIII that their distribution pattern is statistically the same. While rooms I and IX are associated with bird bones, hare bones concentrated in room III. Room V position in the plot is influenced by ovicaprid, fish and fruit remains. Room VII has very rich concentrations of economic plants and it is characterized with the presence of legumes, cereals and grapes. It is clear that room VII should be mentioned as having effective plant use thus cooking.

The inertia is 80%, which means that the solution of the statistical test is high.



Eigenvalues and percentages of inertia:						
	F1	F2	F3	F4	F5	F6
Eigenvalue	0,166	0,129	0,038	0,018	0,013	0,002
Inertia (%)	45,467	35,311	10,278	4,946	3,489	0,511
Cumulative %	45,467	80,777	91,055	96,001	99,489	100,000

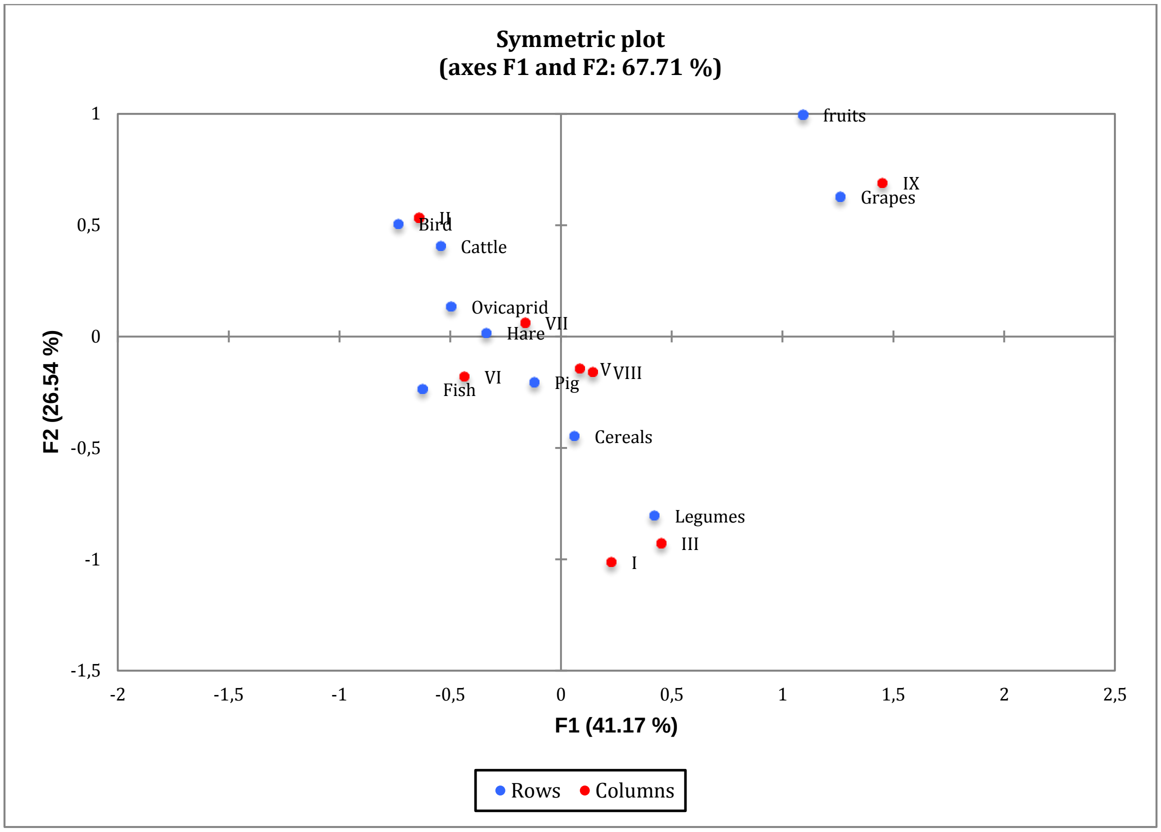
Figure 118: Plants and animal bones from pits

Distribution of Plant and Animals Bones within the Ovens

After analyzing the pit contexts as the spots of refuse, ovens, where cooking activities were supposed to be implemented, were analyzed. (Figure 119) Plant remains and animal bones (for both group NISP per liter) recovered from the soil sampling contexts of ovens were analyzed together in order to see the differences and similarities in compositions, thus to explain why and how these ovens were used and to detect possible signature patterns that may represent any special human behavior.

Ovens in rooms II and VII are characterized by concentrations of bird, cattle, ovicaprid and hare species. Ovens in room VI are associated with the presence of fish and pig bones. While ovens in rooms V and VIII are significant for cereals, legumes make a cluster in rooms I and III. Oven samples in room IX display the significance of grape and fruit species.

The inertia of the statistical test is 68% therefore the solution of the test can be suggested as weak.



Eigenvalues and percentages of inertia:

	F1	F2	F3	F4	F5	F6	F7
Eigenvalue	0,434	0,280	0,181	0,123	0,026	0,008	0,003
Inertia (%)	41,167	26,540	17,159	11,666	2,463	0,725	0,280
Cumulative %	41,167	67,708	84,866	96,532	98,995	99,720	100,000

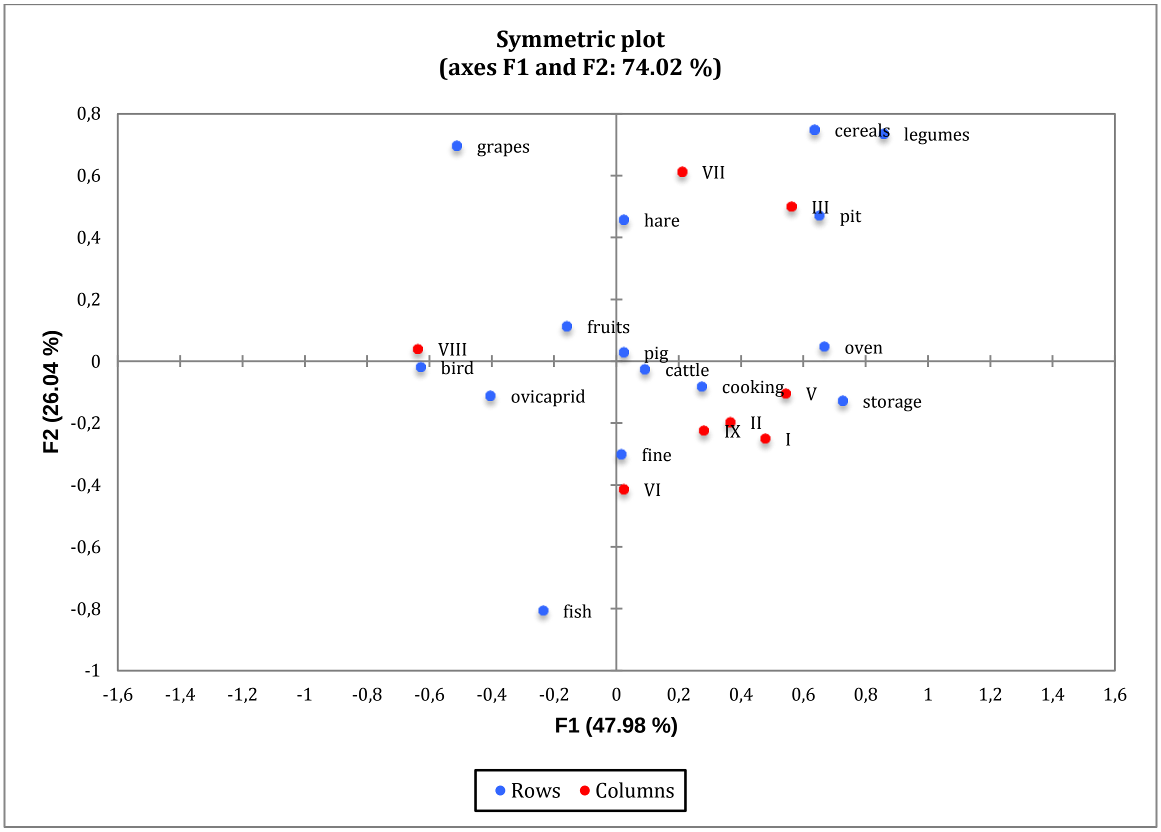
Figure 119: Plants and animal bones from ovens

Distribution of Total Plants, Animal Bones, Ceramics with and without Features

Total quantity of ecofactual materials and ceramic types that were recovered within the room limits were analyzed taking into consideration the number of features in each room. The aim of this analysis was to understand whether the material compositions of rooms were supporting any food preparation and discard activities that would help us infer the room function. (Figures 120, 121)

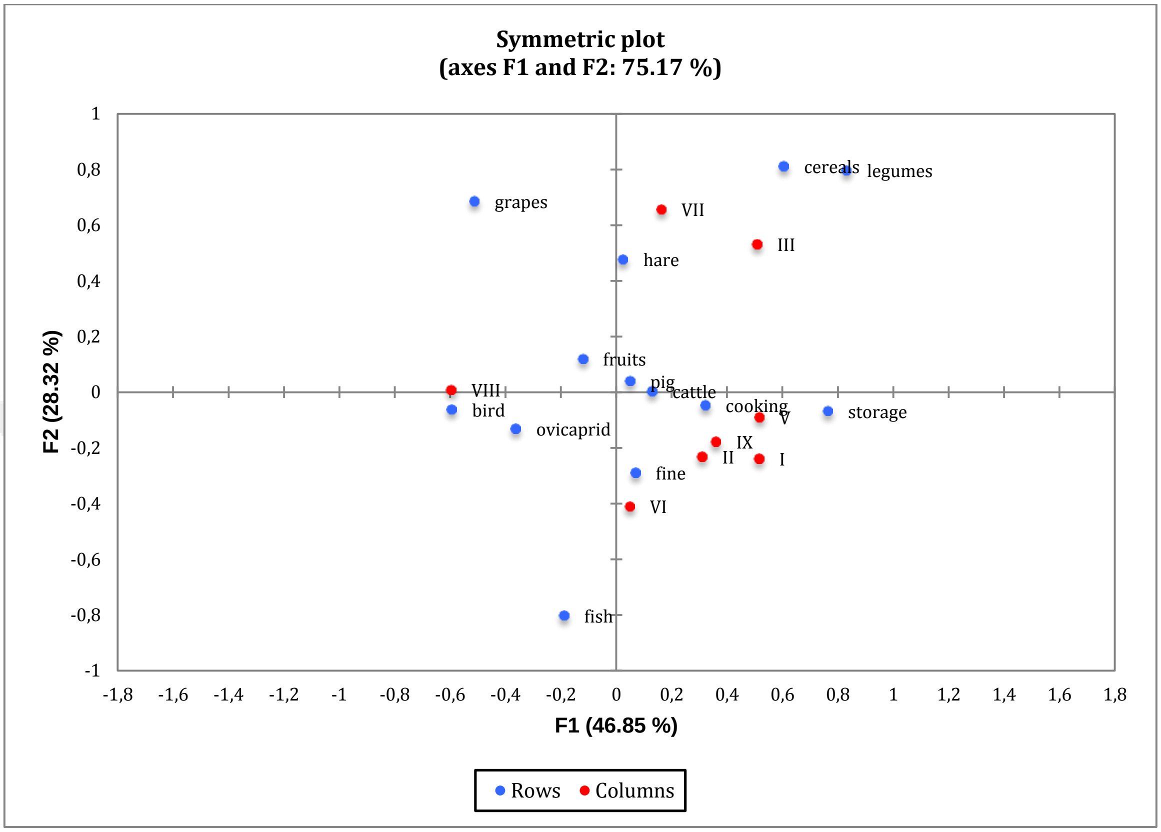
Rooms III and VII are mostly associated with pits and an abundance of cereals, legumes and hare bones. Also, ovens and pits are concentrated in rooms III and VII. Room VIII stands away from all other rooms and only have some association with bird bones. Rooms I, II, V, VI and IX make a cluster around the concentration of fine, cooking and storage ware, which have strong influence on the association of these rooms. Fish and grape are isolated in the plot and do not seem to have any strong influence on any of the rooms.

The inertia of the test is 74% (75% excluding the architectural features) and this suggests that the solution of the test is quite strong.



Eigenvalues and percentages of inertia:							
	F1	F2	F3	F4	F5	F6	F7
Eigenvalue	0,205	0,111	0,054	0,030	0,016	0,007	0,003
Inertia (%)	47,984	26,040	12,730	7,099	3,776	1,561	0,809
Cumulative %	47,984	74,024	86,754	93,853	97,630	99,191	100,000

Figure 120: Plants, animal bones, ceramics and architectural features (pits and ovens)



Eigenvalues and percentages of inertia:

	F1	F2	F3	F4	F5	F6	F7
Eigenvalue	0,191	0,115	0,057	0,031	0,007	0,005	0,001
Inertia (%)	46,851	28,320	13,952	7,683	1,683	1,175	0,337
Cumulative %	46,851	75,170	89,122	96,805	98,488	99,663	100,000

Figure 121: Plants, animal bones and ceramic categories without features

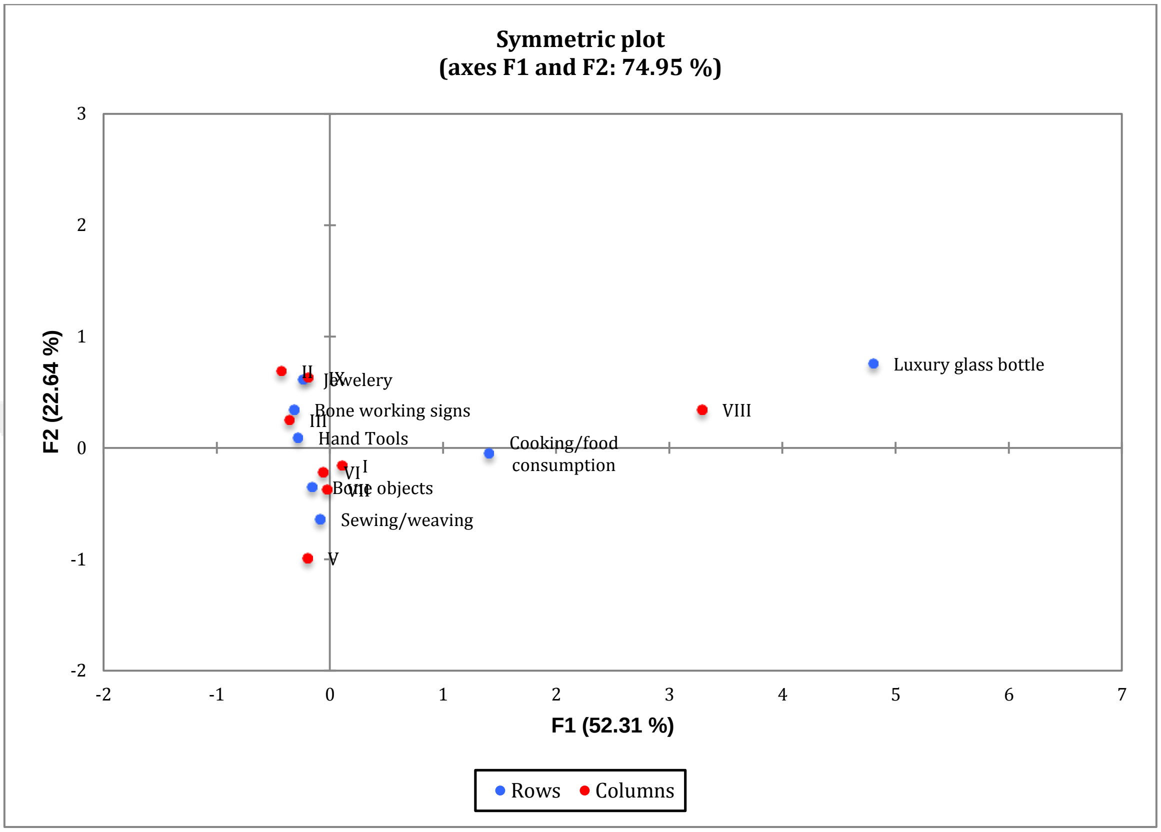
Items that were Recovered as a Whole and Assigned to a Function

Items that were recovered compete or could be pieced together, were recovered from the rooms. Therefore these items were categorized and their distributions were analyzed in order to see whether they could provide any strong evidence for functional inference of the rooms. (Figure 122)

Rooms V, VI and VII are associated with bone objects and items related to sewing/weaving activities. Rooms II, III and IX position in the plot is influenced by items that represent jewelry, bone working and hand tools. Among all rooms, only room VIII is strongly associated with a luxury glass bottle which was found discarded in a pit in this room. Also with the support of the analyses in the previous plots, the room fitted well for an area of refuse disposal.

In general most of the rooms have similar concentrations. Evidence of cooking/food consumption seems weak among the rooms based on this inventory group. But the previous plots of plant, animal bone and ceramic data provided strong indications of cooking/food consumption activities.

The inertia of the test is 75% that the solution of data set is strong.



Eigenvalues and percentages of inertia:						
	F1	F2	F3	F4	F5	F6
Eigenvalue	0,469	0,203	0,171	0,042	0,008	0,005
Inertia (%)	52,306	22,640	19,001	4,687	0,840	0,526
Cumulative %	52,306	74,947	93,948	98,635	99,474	100,000

Figure 122: Items that were recovered as a whole and assigned to a function

Discussion of the Analysis Results Individually For Each Room

Room I

In the CA analysis applied for ceramic groups among rooms, room I is associated mostly with cooking ware, which might be indication of cooking activities in the room. CA analysis for plant remains and animal bones within the pit and oven contexts showed that room I was mostly associated with bird bones in the pits and legumes in the ovens. When total amounts of plant remains, animal bones and ceramic groups are analyzed together, room I is mostly associated with all three ceramic groups (fine, cooking and storage).

Room II

CA analysis applied for ceramic groups showed that room II is mostly associated with storage ware. When plant remains and animal bones within the features analyzed, cattle and pig bones are mostly associated with pit contexts and bird, cattle, ovicaprid and hare bones are concentrated in ovens. CA analysis of functional inventories showed that room II is associated with jewelry items, bone working waste and hand tools.

Room III

In the CA analysis of ceramic groups, room III is associated with storage ware. When ecofacts and feature relations are analyzed, pits are mostly associated with hare bones and ovens with legumes. When both ecofacts, ceramic groups and feature types are analyzed together, room III is characterized with pits, cereals, legumes and hare bones. CA analysis of functional inventories showed similar results with room II and IX that room III is associated with jewelry items, bone working waste and hand tools.

Room V

CA analysis of ceramic groups showed that room V is mostly associated with storage ware. Analysis of ecofacts within the features characterized room V cattle, pig and ovicaprid bones within pit contexts and cereals and legumes in ovens. When all ecofacts, ceramics and architectural features are analyzed, room V is associated with all three ceramic groups (fine, cooking, storage). CA analysis of functional inventories characterized room V with bone objects and sewing/weaving elements.

Room VI

Room VI is associated with fine ware in the CA analysis of ceramic groups. While the room is associated with fish and pig bones within the oven contexts, when all ecofacts, ceramics and features are analyzed, fine ceramics characterizes room VI in the analysis.

Room VII

CA analysis of ceramic groups showed that room VII is mostly associated with cooking ware. While grapes, legumes and cereals are concentrated in pit contexts, ovens in room VII are mostly characterized with bird, cattle, ovicaprid and have bones. When all ecofacts, ceramics and features were analyzed together, room VII is associated with ovens, pits, cereals, legumes and hare bones. CA analysis of functional inventories showed that room VII is mostly associated with bone objects and sewing/weaving elements.

Room VIII

CA analysis of ceramic groups among rooms proved that room VIII is associated with cooking ware. While ovicaprid, cattle and pig are associated with pit contexts, cereals concentrated in ovens of room VIII. When all ecofacts, ceramics and features are analyzed, room VIII is characterized with bird bones only. CA analysis of functional inventories proved that room VIII is associated with luxury glass bottle.

Room IX

CA analysis of ceramic groups showed that room IX is mostly associated with cooking ware. While pit contexts are characterized with bird bones, ovens are mostly associated with grape and fruit remains. When all materials are analyzed together, all three ceramic groups (fine, cooking and storage) are concentrated in room IX. CA analysis of functional inventories showed association with jewelry items, bone working waste and hand tools.

5.4 Intrasite GIS Analysis

Justification and Aims

Intrasite GIS has been a spatial analysis tool used in archaeological science since 1990s. It has been mostly used in micro scale archaeological investigations such as within a site, within a building complex or in room and feature base. It is used by archaeologists for documentation and organization of the excavation data based on georeferenced data, further in the analysis of distribution patterns to define activity areas, household organizations of the past societies, to understand spatio-temporal relations, character and formation of the archaeological record.[157]

At Komana, GIS analysis, was used to better demonstrate material distribution patterns and their contextual relations with the spatial units, utility features and among same and different find groups. It was aimed to understand activity areas, define room and feature functions and to interpret the formation of the archaeological record.

Method

The 8 rooms, where detailed material sampling was conducted, were analyzed with intrasite GIS tool. Quantum GIS open access software was utilized in order to conduct the analysis. The sampled part of the architectural plan was digitized and georeferenced. Rooms, feature contexts such as ovens, pit and containers were integrated into the plan and defined as individual spatial vector layers. After the spatial infrastructure was established, the archaeological data, which was organized in excel tables in csv. format (comma separated value), were converted to attribute tables and integrated into the GIS infrastructure. For the room materials count/m^3 and gr./m^3 and for the soils samples count/liter volumetric calculations were considered.

[157] For a detailed information on the various scales and potential of using GIS in archaeological investigations see: Barcelo and Pallares, 1998.

Queries and Analyses

Ceramic Densities within the Rooms

The ceramics were queried in order to understand whether there was any concentration of any type in the rooms individually. When I look at the densities among the rooms:

Fine, cooking and storage ware densities (count/$m^{3)}$ in the rooms were analyzed. Fine wares indicated a concentration in the northern area, where room VIII had the most while room VI and IX had moderate densities. (Figure 123) Cooking wares were concentrated in rooms I, VII, VIII and IX. Rooms II, V and VI had moderate densities. (Figure 124) Storage wares were concentrated mostly in room IX and moderately in the rest of the rooms except VIII. (Figure 125) When we look at the room compositions the densities of each group (fine, cooking and storage) against each other were slightly changing in each room. Therefore, no dominance of any type can be suggested against others in any of the room. The only room with lack of storage ware fragments was room VIII. (Figure 126)

Figure 123: Distribution of fine ware among rooms

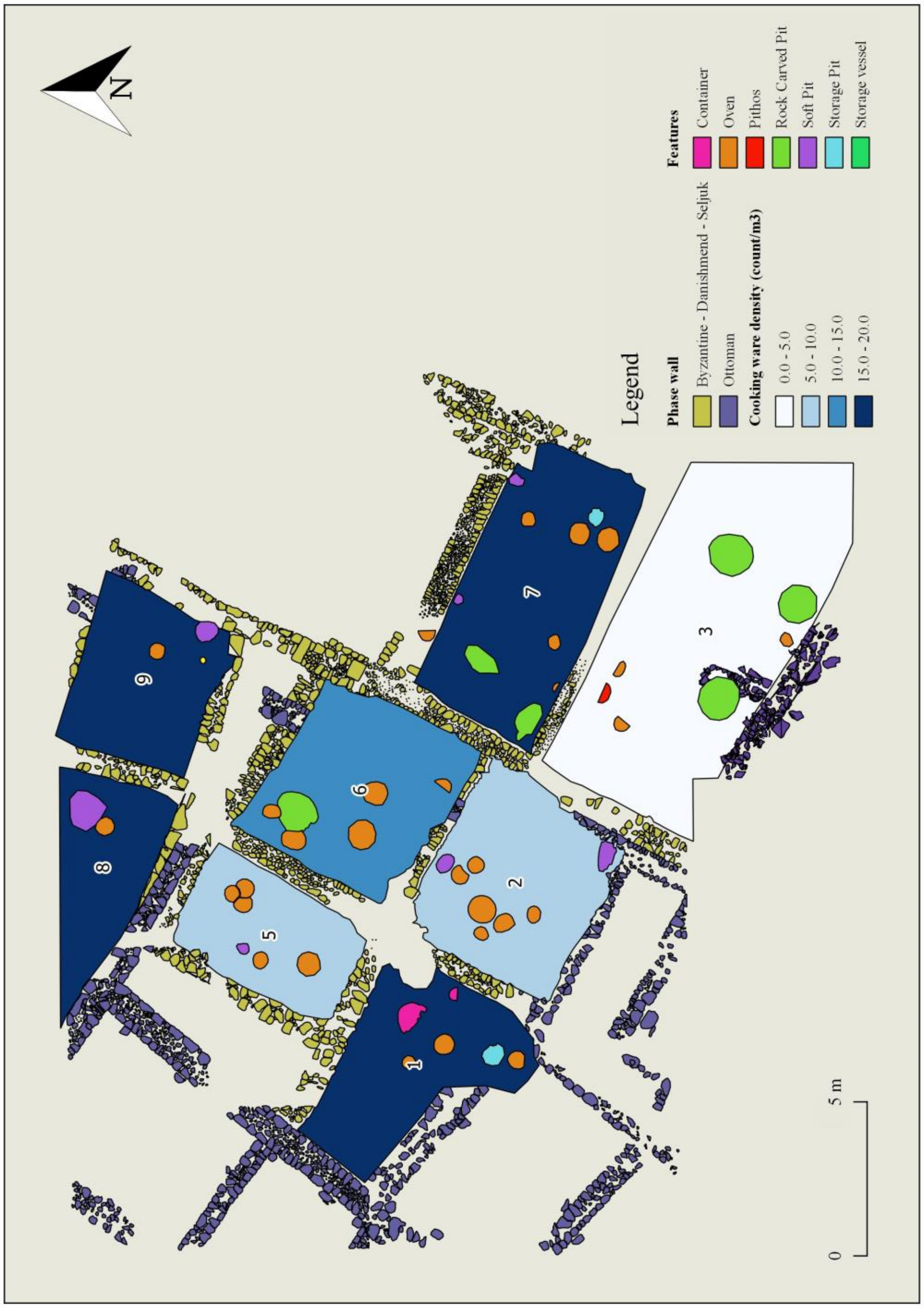


Figure 124: Distribution of cooking ware among rooms

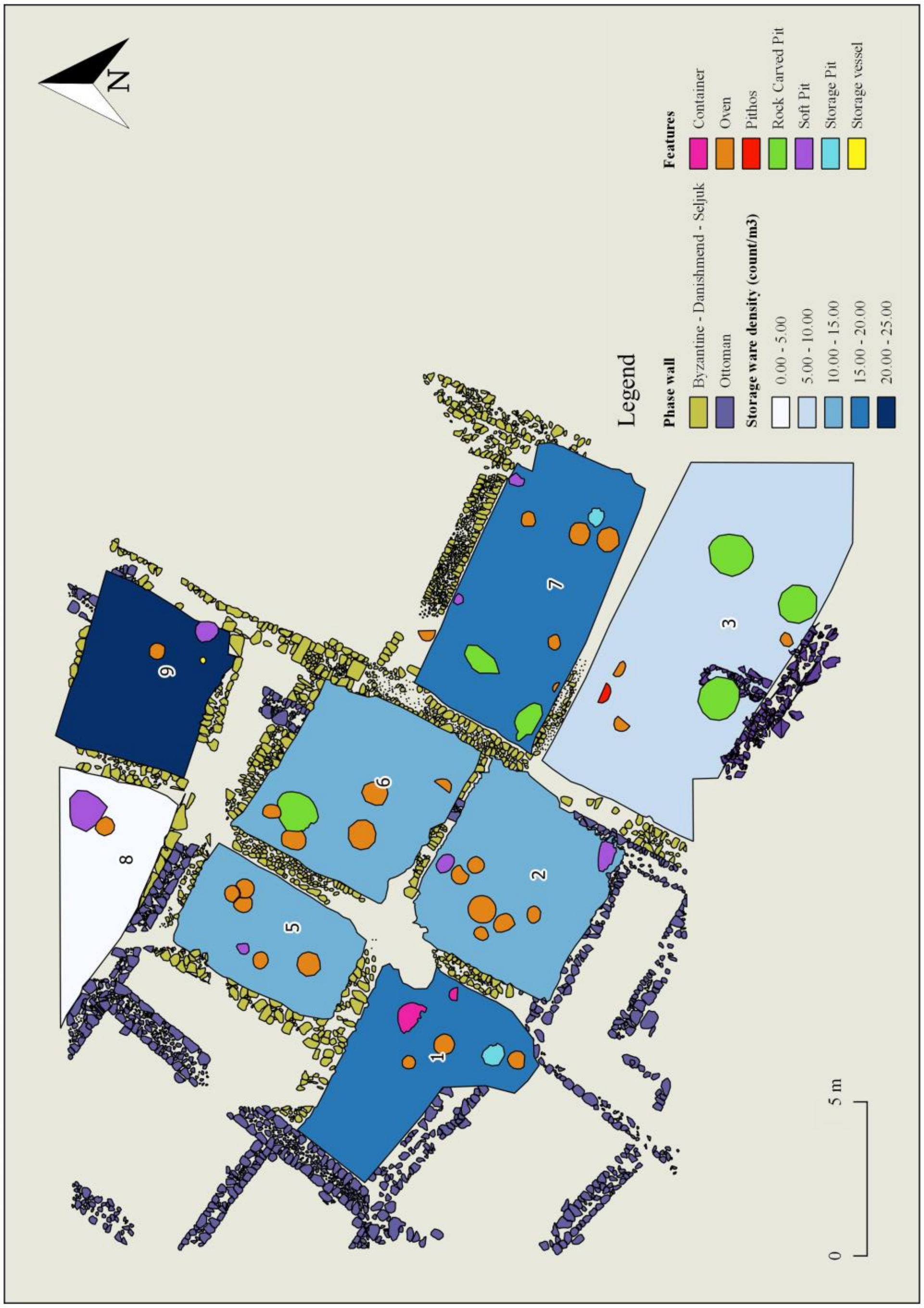


Figure 125: Distribution of storage ware among rooms

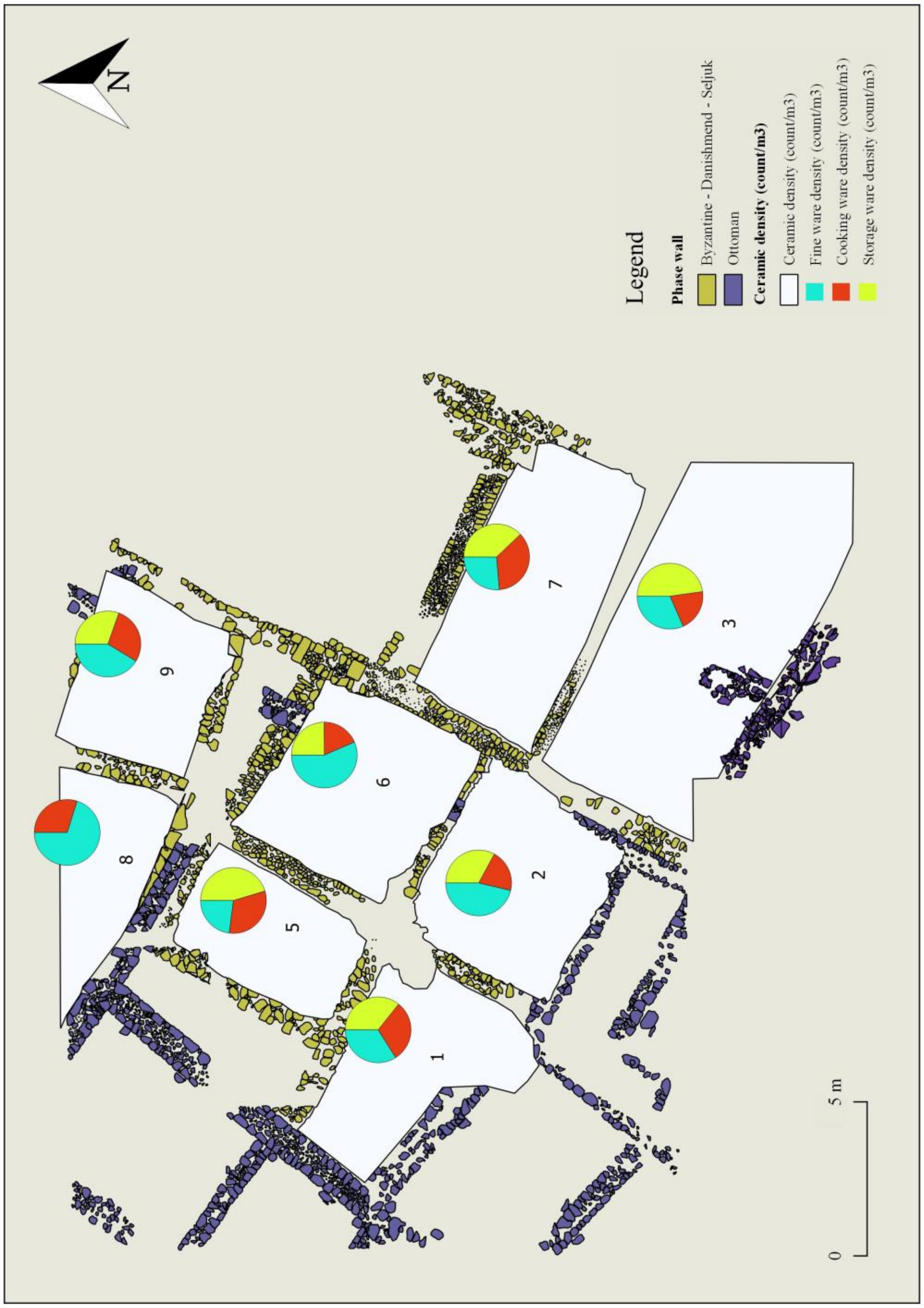


Figure 126: Ratios of ceramic fragments in each room

Artifact Densities within the Rooms

Densities of artifact fragments other than ceramics were analyzed within the room layer fills. Among them, amorph metals concentrated in the eastern area. In room VII corroded amorph metals are extremely dense (659,71 gr/m^3), and it was moderate in room III. Rest of the rooms had low densities.

Similar to the amorph metals, room VII had the most and room III had a moderate density of metal slags, while rest of the rooms had very small concentrations. (Figures 127, 128) Glass fragments were only dense in room VII and rest of the rooms were quite poor. (Figure 129) Density of iron nails was most significant in room VII. (Figure 130) When we look at the proportions of amorph metals, metal slags and glass densities within each room, the amorph metals dominated in all rooms. This picture is also possibly the result of differences between the weights of glass and metals. But still, the abundancy of amorph metals vs. the others can be clearly suggested. Density of metal slags were quite moderate in rooms II, III, VII and IX. (Figure 131)

Artifact Densities within Features (Heavy Residue)

Ratios of artifact fragments such as amorph metals, slags, glass and unidentified vitrified materials were analyzed within the heavy residue samples taken from the features. (Figure 132) Evidence for metal and glass production was sought for in the samples. Amorph fragments dominated majority of the samples. Slags had higher ratios in F45 (room VII) and in F02 (room II) but their amounts were extremely insufficient to associate these features with metal production. In three cases glass is the only find among the four groups, in F72 (room II), F14 (room V) and F33 (room VII), however, their amounts are extremely small to suggest any relation with the features. In F19 and F45 (room VII) vitrified material densities are high but insufficient in amount. In general, it is not possible to associate the features with any artifact production activity. Density of amorphs is due to high corrosion and fragmentation.

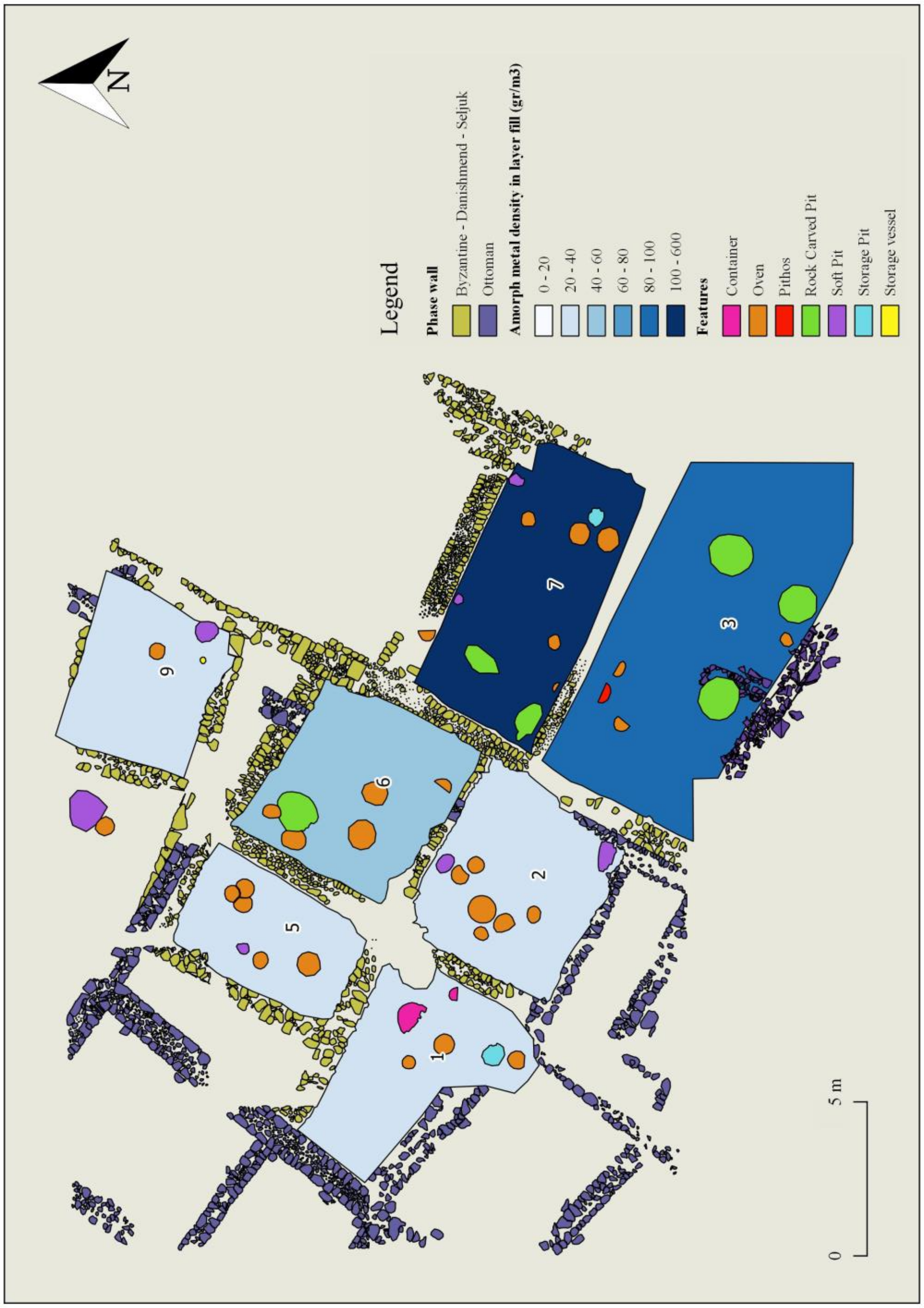


Figure 127: Distribution of amorph metal fragments among rooms

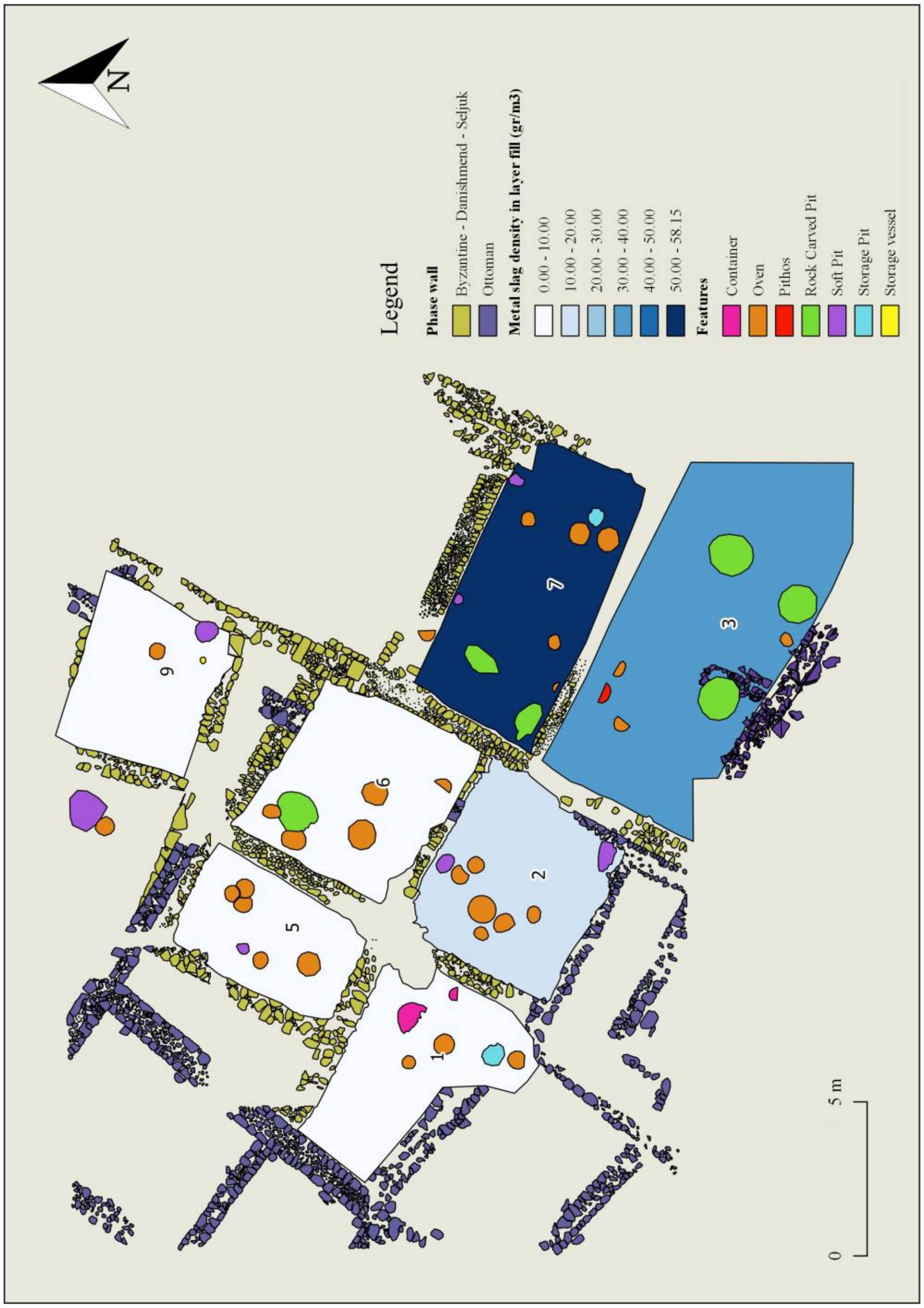


Figure 128: Distribution of metal slags among rooms

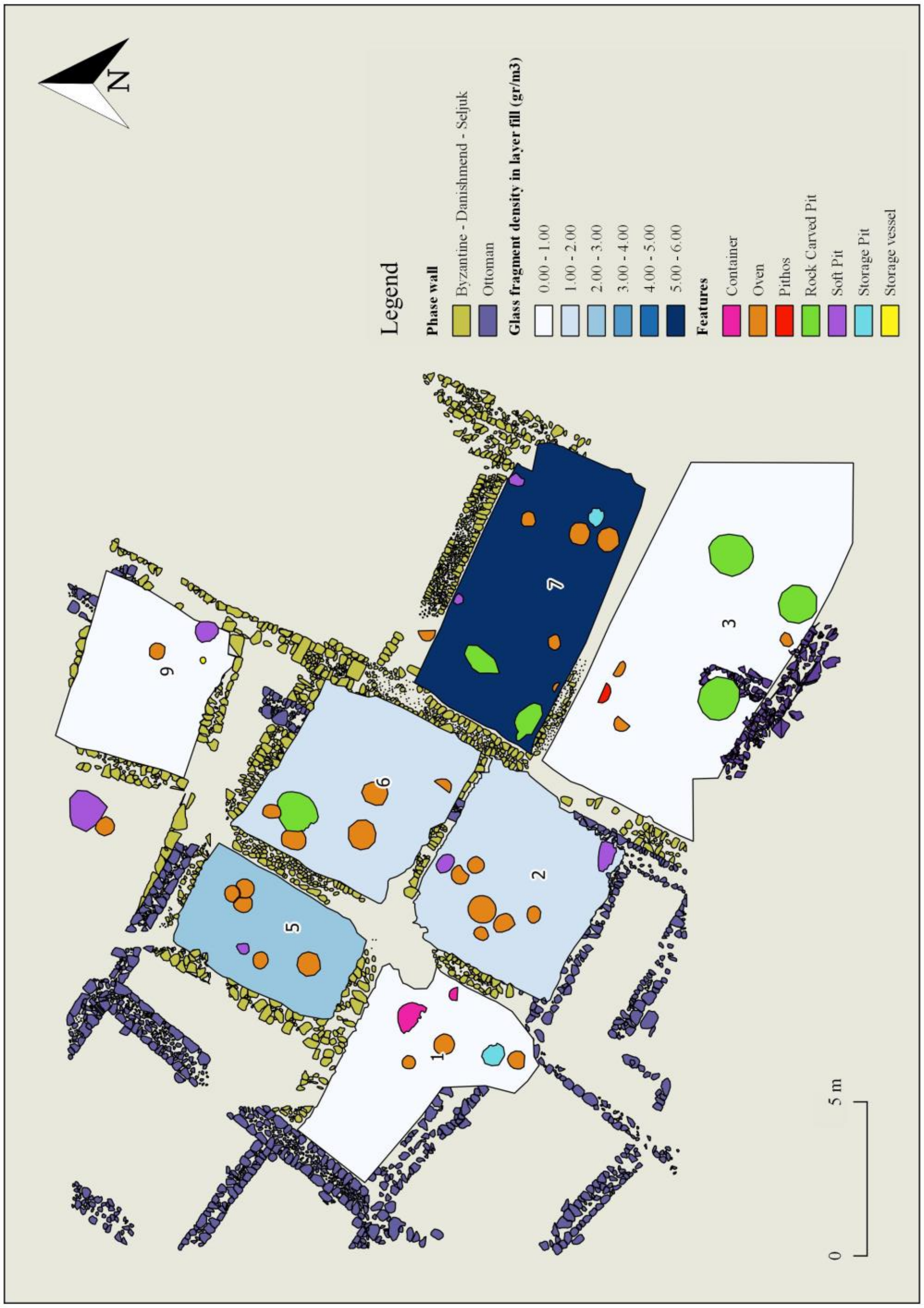


Figure 129: Distribution of glass fragments among rooms

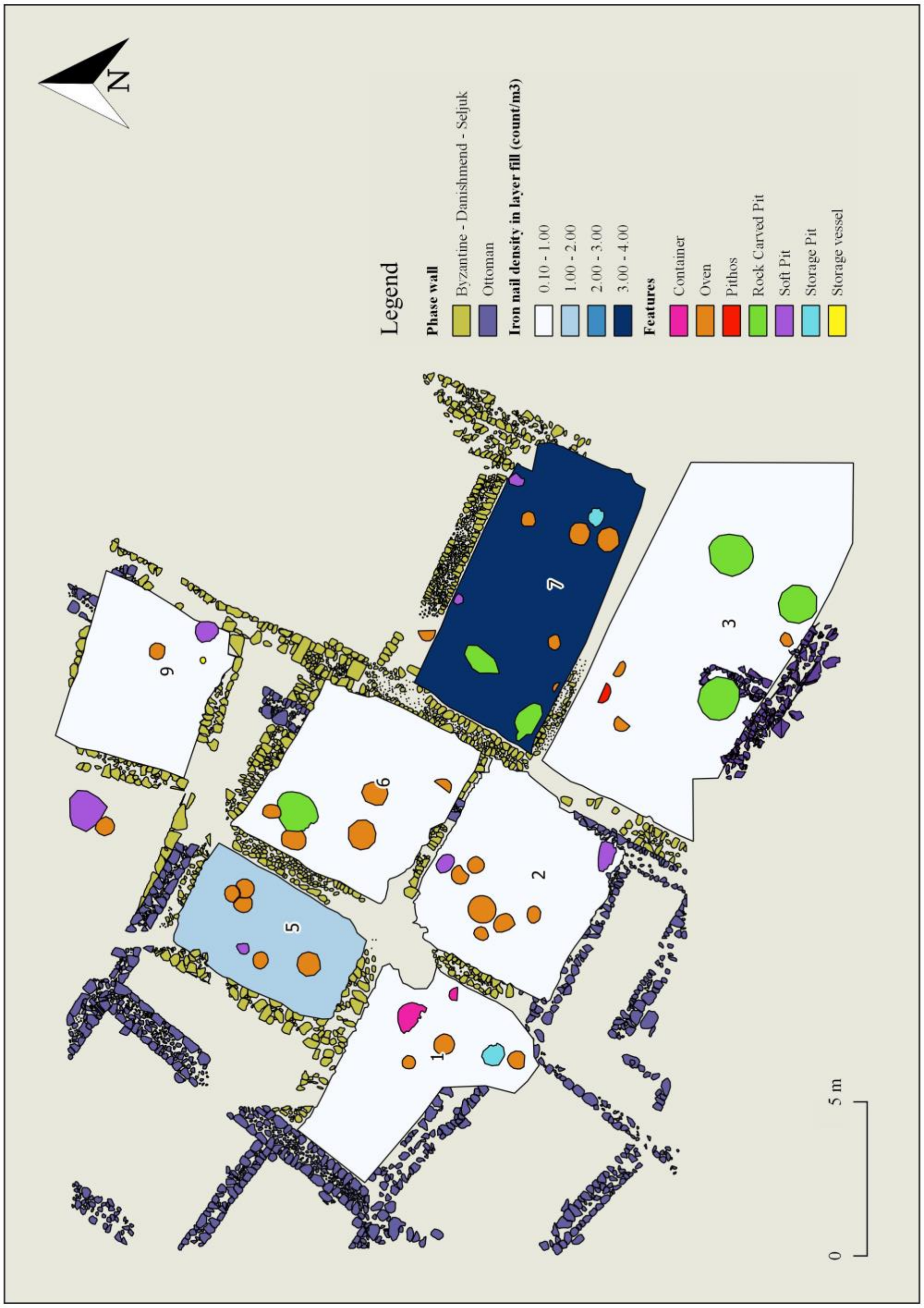


Figure 130: Distribution of iron nails among rooms

Figure 131: Ratios of amorph, slag and glass fragments in each room

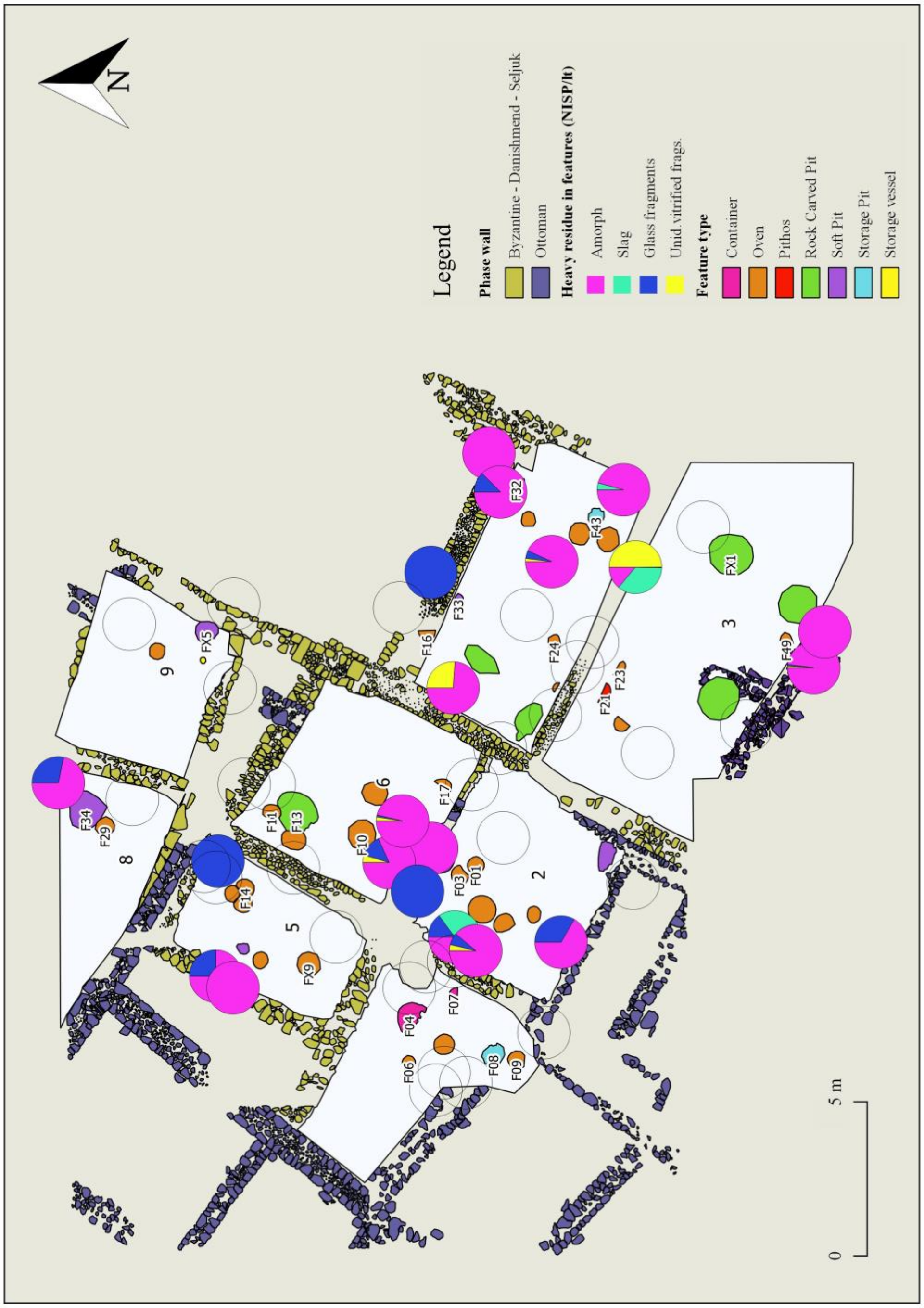


Figure 132: Ratios of amorph, slag, glass and vitrified fragments in heavy residue samples (gr/liter)

Animal Bone Densities within the Rooms

Total density of animal species (NISP/m^3) were analyzed within the rooms both coming from the layer fills and features. The most abundant species was ovicaprids followed by the cattle, which was also valid for the site in general. Bird bones were also in considerable amounts. Hare was found in rooms I, III and VII. Fish density was significant in room VI. Pig was the third large sized animal within the assemblage and present in similar proportions in all rooms. (Figure 133)

Animal Bone Densities within the Features

Ratios of species were analyzed within the heavy residue samples that were taken from the feature contexts. Large species such as cattle, ovicaprid and pig were present in the heavy residue samples. However, there were two significant issue regarding these samples: firstly, they provided evidence for very tiny species and elements such as fish bones, small birds and ovicaprid sesamoids, otherwise invisible in the archaeological record. Secondly, they provided evidence for behavioral patterns reflected as refuse patterns in some features showing concentrations of certain species such as fish, bird and hare. (Figure 134)

Ratios of fish bones were high in F02 (room II), F14, F36 (room V), F10, F68 (room VI), F19, F32, F33, F45 (room VII). Hare bones significantly concentrated in F66 (room VII) and in numerous features bird bone ratios were higher than the larger species.

Figure 133: Ratios of animal species in each room

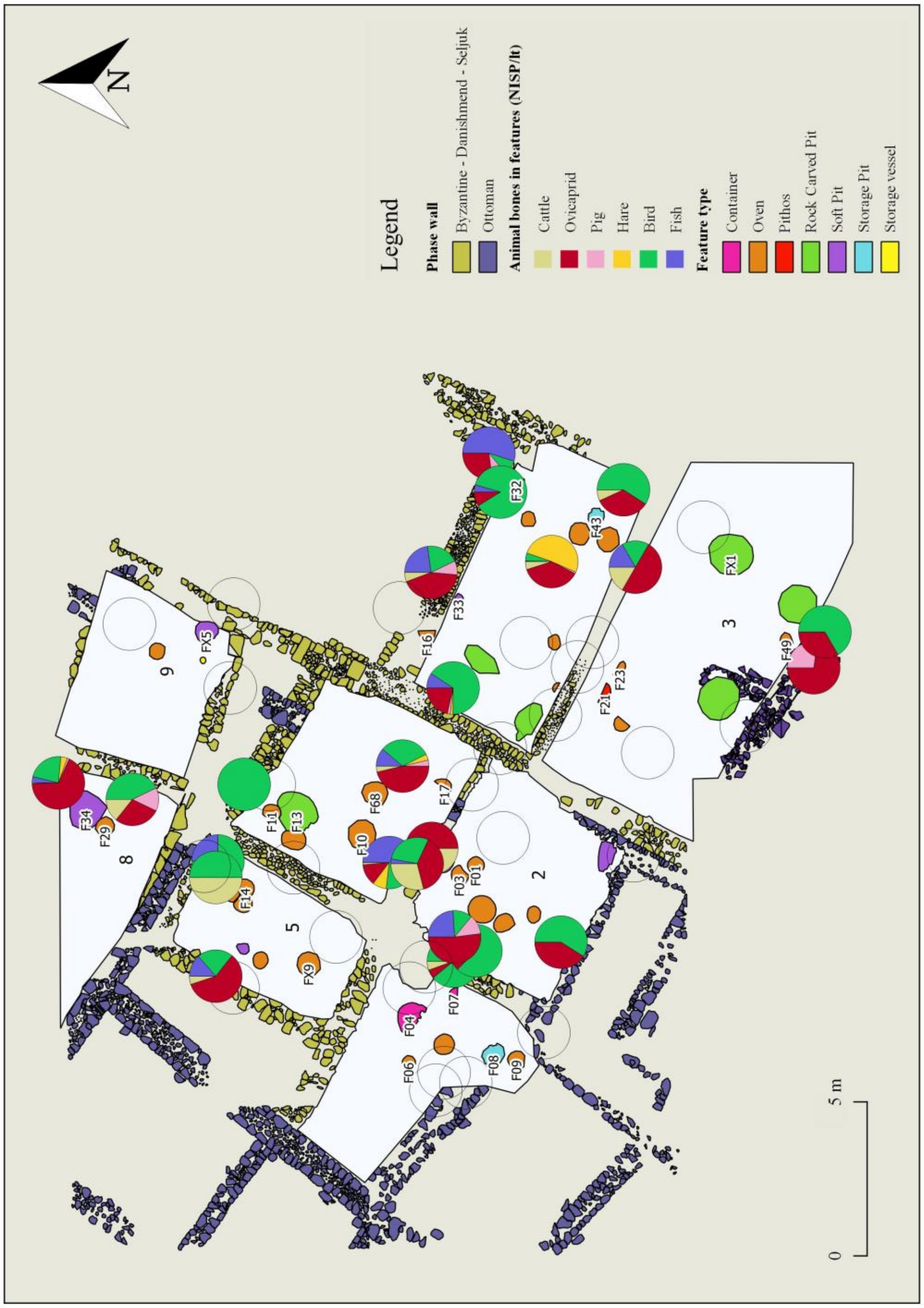


Figure 134: Ratios of animal bones in each soil-sampled feature (HR) (NISP/liter)

Plant Densities within the Features

Densities of plant remains within the features were analyzed (NISP/liter). The most dense species were cereals. In most cases cereals were accompanied by legumes. Cereals and legumes concentrated both in ovens and oven related pit contexts. Grapes were found in high concentrations in pit contexts. Fruit remains were found in a pit context in room VIII and oven contexts in rooms II, V, VI, VII and IX. (Figure 135)

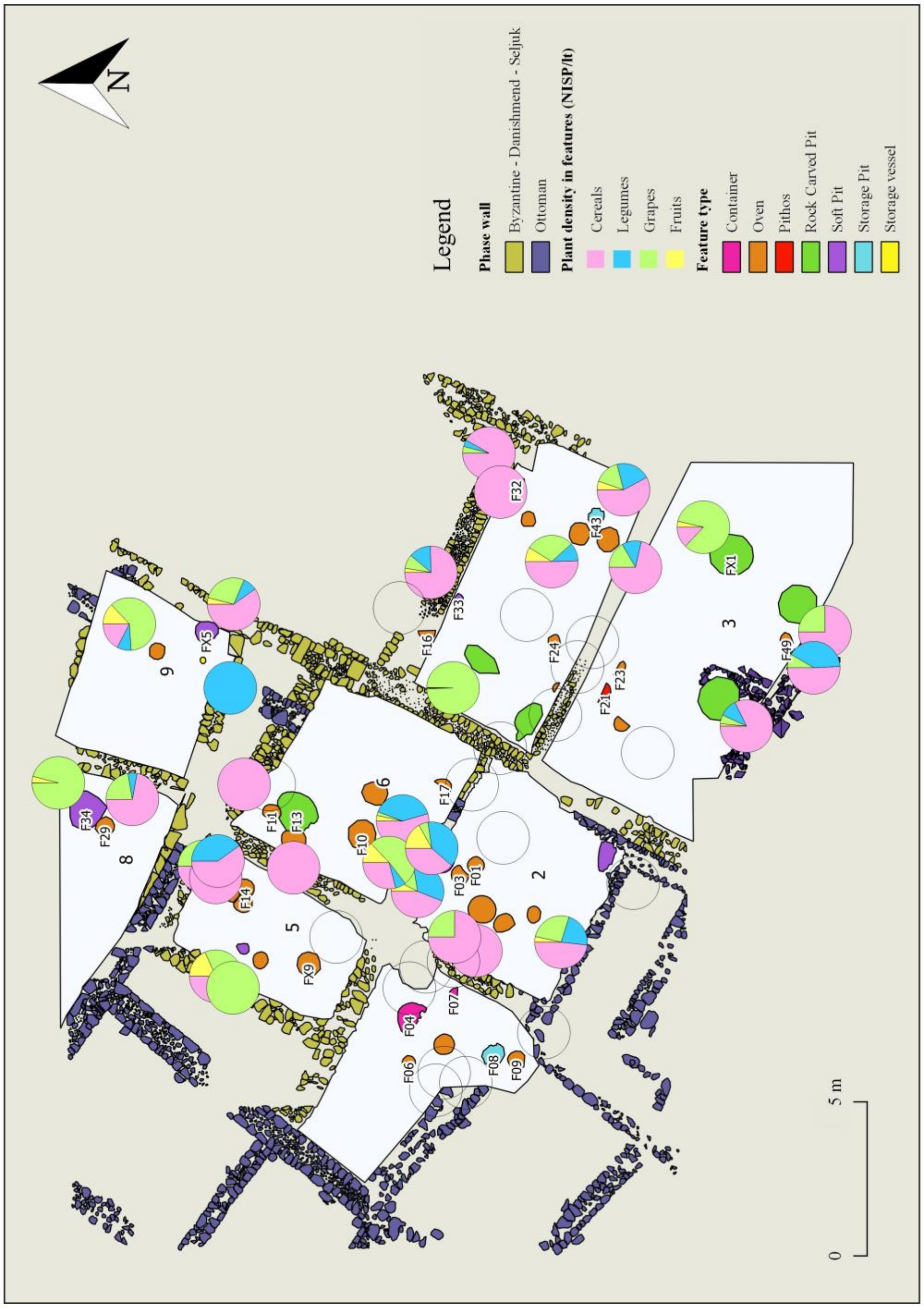


Figure 135: Ratios of plant species in each sampling context

Analysis Results

As a result of the analysis, based on the ceramic distributions it has been observed that no specific functional inference can be made for any of the rooms while all functional groups were present in sufficient amounts. It seems like the ceramic fragments were randomly distributed in the rooms. This might be a result of the floor leveling of the upper Ottoman phase when the ceramics lost their original locations of use. Another assumption might be that they were still within the room boundaries where they were originally located, thus multiple functional types were present in all rooms.

Due to the extreme density of amorph metals in the eastern area, at room VII, the area was considered to be a junkyard, where the metals were deposited for recycling and further use in a metal workshop. Bronze objects associated with the church phase were also concentrated in this area, which were evaluated as collected to be recycled. Presence of a metal workshop was strongly considered for this eastern area not only because of the concentration of metal finds but also the metal slags. This is valid both due to the detailed sampling in the eight rooms and observations on the neighboring trenches excavated.

Ovicaprid, cattle and pig bones, as the large animals of the assemblage, were distributed in similar proportions within all rooms, similar to the proportions at the site in general. Bird, hare and fish bones showed some differences in concentration. While fish bones were extremely dense in room VI, hare bones were found concentrated in rooms I, III and VII. The differentiations in bird, hare and fish densities were found associated with some special activities of consumption and disposition within a short range of time.

The densities of plant remains within the features were strongly suggesting food related use of the ovens and pits. While charred cereals, legumes and grapes were found in the ovens and pits as the discards of food preparation activities, grapes found in the pits, mostly in mineralized forms, were not subjected to fire. Also a cesspit context in room VIII was identified.

CHAPTER 6

DISCUSSIONS

Komana and its territory were ruled by the Danishmends and the Seljuks from the late 11th to the middle of the 13th century until the Mongol invasion of Anatolia.[158] Following the Mongol invasion, Eretna Principality controlled the region for a short period in the 14th century until the Ottomans established unity in Anatolia. Danishmend/Seljuk period in Komana, particularly at the site of Hamamtepe, was identified at the upper levels of the mound during the archaeological excavations. As a result of the excavations it was understood that in the Danishmend/Seljuk period there was a fortified settlement not only limited to the fortified area but also extending to the extramural areas. While domestic spaces were attested outside of the city walls, a variety of spaces in terms of use and function were identified at the intramural part of the settlement.

In the pursuit of understanding the operation of the Danishmend/Seljuk period settlement and setting it to its archaeological and historical contexts with the existed contemporary sites in Anatolia, spatial analysis of archaeological data within 8 adjacent rooms, which were located at the center of the fortified site, was performed to understand behavioral patterns, formation character of the archaeological record, particular function of the rooms and situate the site as a whole within its historical context. Spatial analysis of the archaeological data deriving from these spaces was conducted and an inductive approach was assumed in order to make inferences on the site.

[158] As a result of the defeat by Mongols in the Battle of Kösedağ in Sebasteia (Sivas) in 1243, Seljuks started to loose their power in Anatolia.

The results of the statistical and spatial analysis have been helpful in characterizing the medieval site. In order to compare the material from the 8 rooms with the rest of the building some observations and interpretations regarding architecture and artefacts recovered from the unstudied section were also included in the discussion.

Several contemporary medieval sites such as Kinet Höyük, Samsat, Gritille, Anaia/Kadıkalesi, Gözlükule, Tios, Yumuktepe, Korucutepe, Hasankefyf, Kubad-Abad, Amorium, Daskyleion/Hisartepe, Tille Höyük, Aşvan Kale, Taşkun Kale, Tyana/Kemerhisar, Çadırhöyük, Beycesultan, Kınık Höyük have proved useful in characterizing and setting Komana into context during the 11-13th centuries.

In this chapter, I would like to discuss Komana in the light of its archaeological record and question the function of the studied rooms, in order to understand whether they represented industrial/artisanal or domestic functions. In order to achieve that, some characterizing criteria for food preparation, consumption and discard were selected. The data was questioned to identify possible production of ceramic, metal, glass, bone and textile. Distribution of artefacts was interpreted to represent possible domestic, artisanal/industrial or commercial activity.

Behavioral Patterns and Formation and Interpretation of the Archaeological Record

One of the aims of this dissertation has been to develop a methodology to identify behavioral patterns and define significant material concentrations in archaeological contexts and to identify some representative data sets used in a short period of time.

Another aim has been to gain as much information as possible from the archaeological record, from layers that were subjected to intensive formation processes such as the layer fill contexts with highly fragmented materials.

With this strategy I tried to differentiate the data collected from the layer fills from closed contexts such as ovens, pits and storage features. While it was almost impossible to explain what a ceramic fragment represented in a layer fill, charred plants in an oven or animal bones disposed in a pit were more helpful in explaining behavioral patterns and the final activities associated with the features.

Contextual differentiation of archaeological materials gave good results in understanding the use of features and rooms. However, highly fragmented fill materials also provided more general inferences in assigning function to the rooms and the site in general.

Another benefit of screening the material in terms of their contexts provided an understanding of why some find groups accumulated in certain spots in less fragmented forms and why in narrow spaces proved to be better in producing less fragmented finds.

Closed contexts have been very important because they represented a single event or activities in short intervals. An individual examination of each closed context provided an understanding of signature patterns in the archaeological record.

As a result concentration of certain finds could be identified suggesting special refuse patterns.

Overall, it was attested statistically and qualitatively that the materials recovered from the layer fills of the rooms were almost entirely highly fragmented, which means no in situ vessels were found in the original place of uses. The vessel fragments found blended in the layer fills only provided general spatial interpretations. Most excavation reports consulted were provided this type of information and were often used either to date the layer or to assign function in a very general sense.

Special Contexts

In two ovens high concentration of animal bones were found. In the oven (F66) (room VII) 137 hare and 100 ovicaprid and 13 bird bones, and in the second oven (F10) (room VI) 175 fish, 168 bird, 38 hare and 60 ovicaprid bones were recovered. In both cases very few bones were burnt, which means that they were thrown when the fire/cinder was almost gone. Deposition of such big amounts of bones of very rare species within the animal bones assemblage was significant. This could either be an evidence for a special case of banquet subsequent to a hunting event in the final days of occupation or may indicate that the ovens were used as a garbage location for short time intervals of a monotonic food consumption after the ovens lost their functions. The study proved that heavy residue samples were helpful in the recovery of less visible species such as fish otherwise their existence as a part of the diet would not have been detected.

In pit F34 (room VIII) 290 ovicaprid bones with a majority of sesamoids, 191 birds, 17 hare, 15 fish, various rodent bones, a complete skeleton of a cat, insects, mineralized grape seeds ca.2000, water melon, wild berry and fig seeds were found in a greenish and ashy soil structure. There were also restorable glazed ceramic fragments and a luxury gold enamel dark blue perfume bottle disposed in the pit with a rocky bottom. The pit was identified as a cesspit depending on this evidence.[159]

In a deep rock carved pit Fx2 (room III) 342 bird and 138 hare bones, 121 cereal grains, 211 glazed ceramics mostly restorable and 241,24 gr. of glass vessel fragments were recovered. The density of material and composition of the pit was significant. The accumulation of bird and hare bones were considered an indication of short period refuse disposal representing one or few consecutive events. Also in another deep rock carved pit (F08) (room I) 110 bird, 27 hare bones, 195 glazed ceramic, 227 cooking ware and 244 storage ware fragments were recovered. These two pits were possibly isolated storage features to securely keep cereal grains or water. In the last period of the

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[159] In Britain, structures and contents of 49 pit samples were analysed in 9th-15th centuries medieval sites and indicators to securely identify a cesspit were questioned. Insect remains, mostly mineralized seeds of fig, plum, berries, grape, spices and fish bones, rodents, egg shells, a rich variety of cultural materials such as whole ceramic and glass vessels, metal objects and various other cultural and biological ingredients were observed within the cesspits. In most samples charred cereal grains were very few and deposition of ash was supposed to be cleansing additivies to the cesspits. For more information on the study see: Smith, 2013. Also, Medieval ceramics recovered from a cesspit context were studies in Durres. Vroom mentiones the composition of the pit (one contextual division she studied) having 321 ceramic fragments, 18 tiles and 2 animal bone fragments only. She also explains how the excavators decided for the character of the pit as cesspit by having almost no animal bones, its silty soil property and possible remains of human faeces and its compacted structure. For more information on the study see: Vroom, 2007, 320.

occupation they were used as dump locations. In the archaeological record at Komana, it was understood that the closed feature contexts were potential locations for the survival of the ceramic and glass objects in less fragmented forms. Also, the closed feature contexts provided special clusters of certain types of materials that would enable an understanding of short time range of activities.

The only ceramic vessels survived in unibody were recovered because they were accidentally stuck into holes and spaces that protected them from external effects.

Soil samples taken from the pit and oven contexts provided a chance to detect plant and feature relations in terms of feature functions and general characteristics of contextual distributions of plants at Komana. It was understood that fire related (ovens) (i.e. F49 with 125 cereals, 100 legumes and 21 grapes) and ash deposited (ash pits) (i.e.F33 with 553 cereals, 99 legumes and 62 grapes)) feature contexts almost always contained charred cereal, legume and fruit remains. Mineralized grape and other fruit species survived in rock-bottomed pits, which had potential for water retention (i.e.F34 with 1924 grape seeds), and cereal grains, except a few cases, never survived in mineralized forms.

At Komana, in the contexts under study coins dating to between 11^{th}-13^{th} centuries were recovered. These contexts are datable to the 12^{th}-13^{th} centuries based on pottery. The 11^{th} century coins must have been in circulation at least until the next century. Similarly, at Tille Höyük the coins recovered from Level I were dated to the 11^{th} century but they were not in accord with the ceramics. It was considered that the coins were still in circulation one century after they were minted.[160] In Aşvan Kale, Mitchell also stated that the Byzantine and Islamic coins were in circulation at the same time during Medieval II. He also suggested the use of 11^{th} century coins for about a century. Most of the glazed ceramics in Aşvan Kale showed Seljuk and Persian influence in decoration. Therefore, the use of kilns was dated to the 12^{th}-13^{th} centuries in spite of the 11^{th} century coin evidence. Even though Medieval II at Aşvan Kale was

160 Moore, 1993, 197.

dated to the Seljuk period and the ceramics were Islamic in inspiration and design, the population or at least the potters, who operated the workshops were possibly Christians.[161] This clearly shows that both Byzantine and Islamic coins were valid contemporaneously and that the discordance between the dates of different artifact groups does not necessarily indicate disturbed contexts. This was true for Tille Höyük, Aşvan Kale and Komana.

Industrial/Artisanal Activities and Production

In order to understand whether there were industrial/artisanal activities in Komana, types of data often considered by scholars as indicators of production, were examined. Data was considered to identify ceramic, metal, glass, bone object and textile productions, which were among the common industrial/artisanal professions of the period and were identified commonly at medieval sites.

Ceramic Production

Indicators for ceramic production were sought for in the statistical and spatial data from the 8 rooms under study and the evidence proved to be quite insufficient. A ceramic kiln could either be found in the study area or at the entire site.

While there were no production wasters, slags, imperfect wares or half products such as incised, biscuits (fired but not glazed), tripods (trivets) within the 8 rooms, during the 2015 excavation season, tripods with glaze smeared over and half products such as incised and biscuits were found concentrated in one area at the northern part of the HTP01 sector. The area with the concentration was not within the limits of the 8

[161] Mitchell, 1980, 55. In Aşvan Kale, the majority of the economic mammals comprised of pig bones and there were small finds representing Christian populations. For details see: Mitchell, 1980.

rooms but a couple of meters outside. On some plates recovered in various pits within the 8 rooms analyzed evidence of repair was found.

In Kinet Höyük, ceramic production was strongly attested for, which was not only a production but also a trade center.[162] Redford also observed excess amounts of pottery, more than a settlement needs, and contextual discord such as preserve of fine ware in non-elite contexts, and used these as important indicators for ceramic production.[163] At Komana, even though some direct evidence for production such as kilns, tripods, half products, wasters and slags were absent in the rooms under study, fine wares in non-elite contexts were recovered. However, there is no sufficient data and measure to prove Redford's suggestion at Komana yet.

In Samsat, 12th-13th centuries glazed ceramics and mercury/perfume pots were recovered.[164] Even though kilns or kiln furniture were not found at Samsat, the size of the settlement was regarded as a potential to suggest its own local production on the site to supply the needs of the local administration and countryside, which was a pattern seen at sites with similar sizes.[165]

In Aşvan Kale (Medieval phase II), according to the evidence of damaged ceramic kilns, tripods, lumps of melted glaze, production wastes, ashy layers, pottery fragments, animal bones and a variety of other rubbish disposal found inside pit contexts, a workshop area was defined. (Figures 136, 137) The composition patterns of materials were not seen proper for a dwelling context. A huge pit was found (6x8 m. and 2-1,5 m. deep), which was used for mudbrick production for the infrastructure of the workshop construction. An earthen floor cistern was found, which was used for industrial purposes. The whole (Medieval II 12th - 13th centuries) complex was

162 Redford, 2004, 284.

163 Redford, 2004, 285-6.

164 A detailed typology of the pottery can be seen in: Özgüç, 2009.

165 Redford, 1995, 66.

identified as a large-scale ceramic and jewelry production workshop.[166] Ceramic production was also indicated in two other important sites, Taşkun kale and Korucutepe, situated in the Euphrates basin. In Taşkun Kale, which was a neighboring site of Aşvan Kale, local glazed ceramic production was suggested.[167] In the 13th-14th century layers at Korucutepe, glazed ceramics, biscuits, tripods and ceramics with tripod marks on their interior indicate ceramic production.[168]

[166] Mitchell, 1980, 51; Mitchell, 1980, 53.

[167] McNicoll, 1983, 60.

[168] Loon, 1978, 43; Bakirer, 1980, 196. A detailed catalogue of ceramics including cooking vessels, lids, jars, jugs and glazed wares can be found in: Bakirer, 1980.

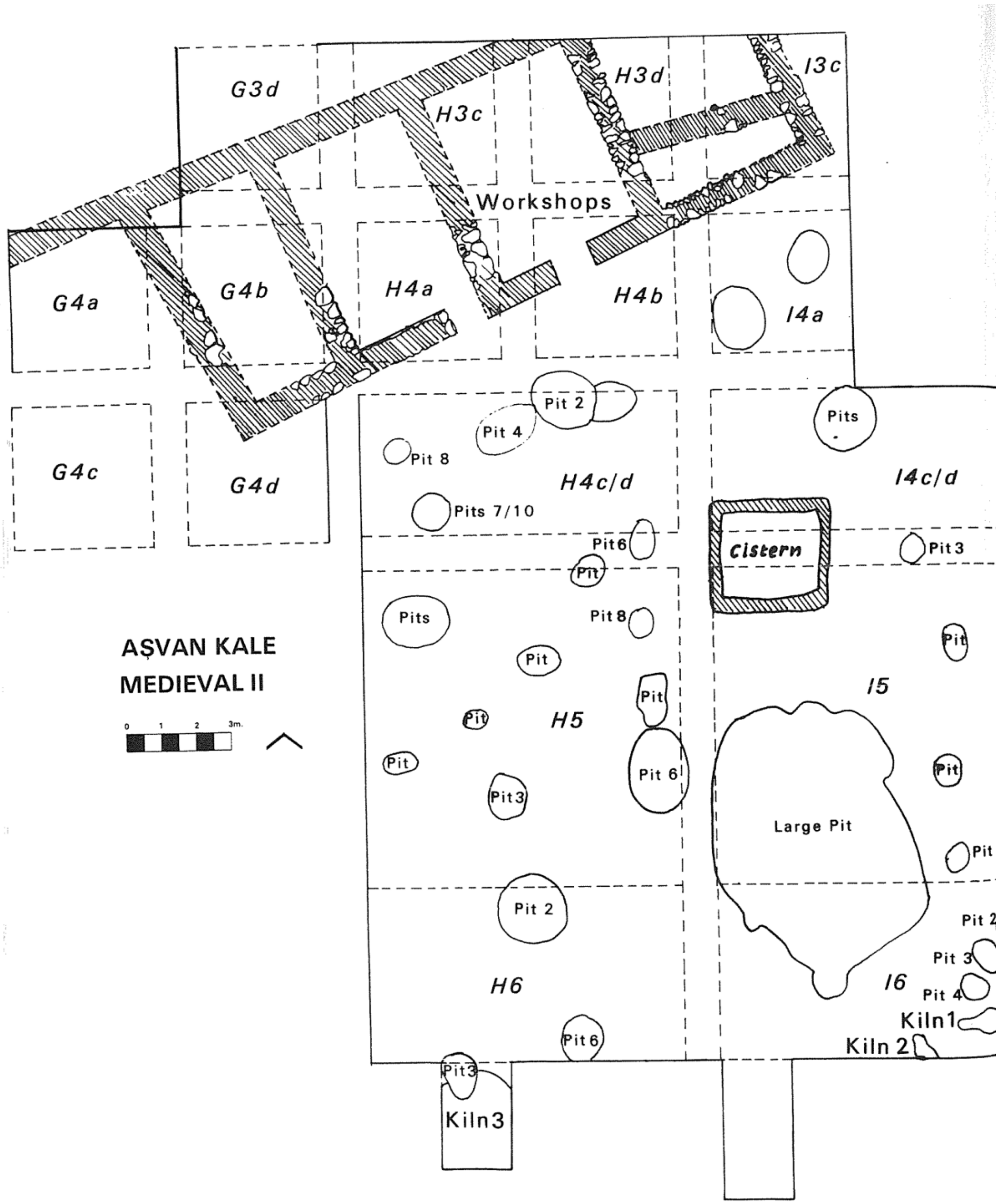

Figure 136: Aşvan Kale medieval phase II (After Mitchell, 1980)

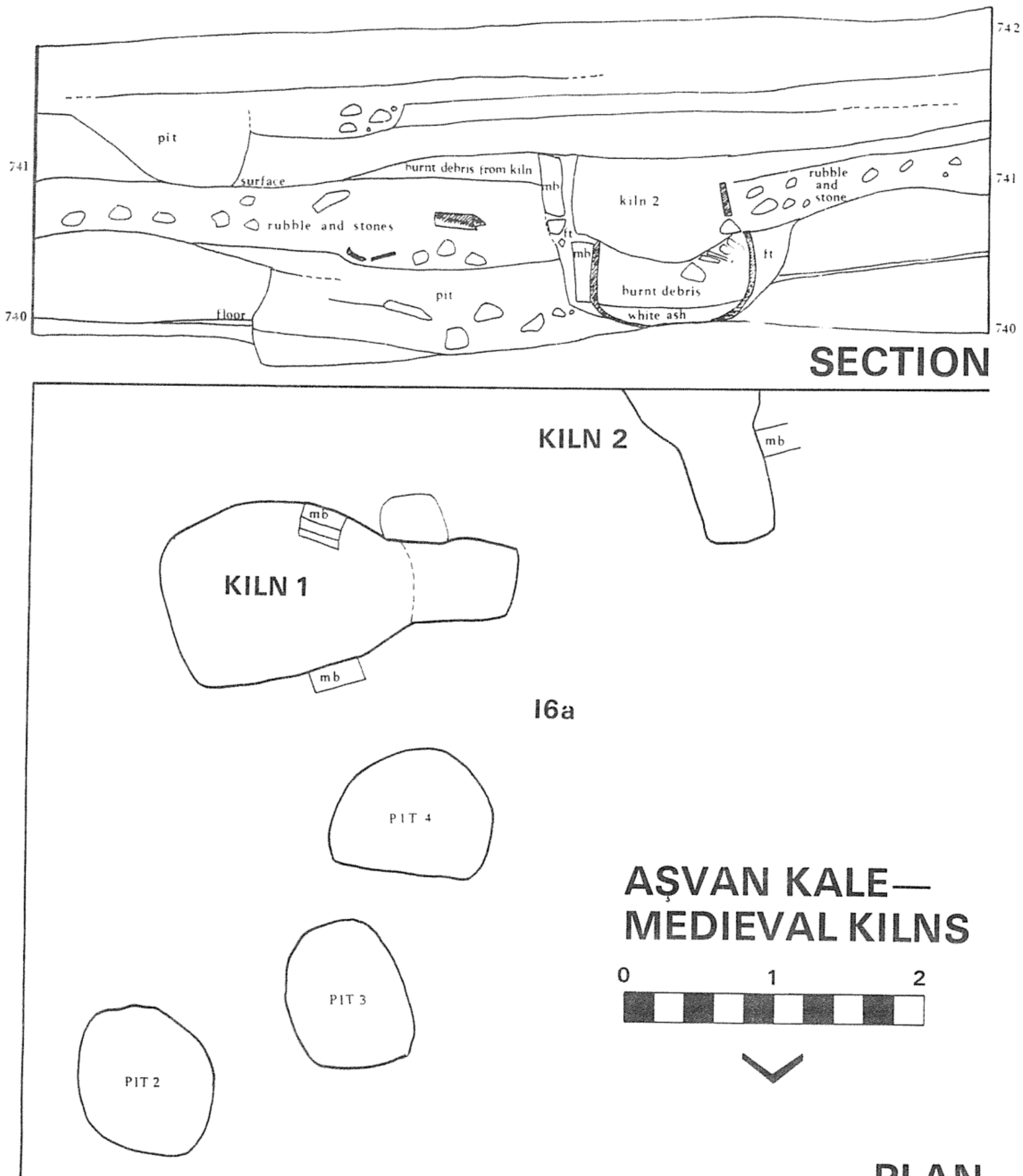

Figure 137: Aşvan Kale medieval ceramic kilns (After Mitchell, 1980)

Anaia/Kadıkalesi was another important production and trade center in the western coast of Anatolia. Ceramic production was suggested for Anaia/Kadıkalesi by Mercangöz based on the unglazed ceramic fragments, production wasters and a clay mound detected in the external limits of the citadel.[169] Even though ceramic kilns have not been found yet, the presence of kiln furniture such as tripods, cones and sticks and a rich number of ceramic wasters were revealed.[170] İnan also suggests that in the absence of a furnace, ca. 200 ceramic tripods are strong evidence for production besides half products, cones and false implementations.[171] Waksman also suggested that kiln furniture, biscuits and wasters were evidences of Byzantine ceramic production in Anaia.[172]

At Hasankeyf, within the Tigris basin in south-east Anatolia, ceramic workshops were discovered. Imperfect wares, tripods, 8 ceramic kilns survived in various conditions in the site. (Figure 138) In addition to these, preserve of 2 ovens and a reservoir for clay attested ceramic production in the medieval occupation layers. An area was defined as rubbish dump containing burnt and ashy layers, imperfect wares and slag remains. The ovens revealed in the workshop space suggested to be used for glaze (frit) preparation. These ovens (40-50 cm in diameter and 30 cm high) had air circulation pipes, had interiors full of ash. (Figure 139) Similarly at Komana there are multiple ovens in the spaces of the discussed structure. Since there is evidence for ceramic production and definitely glazing at the site, these ovens could have been used for glaze preparation. No evidence for glaze production detected within the heavy residue samples taken from the ovens at Komana but in the future further analysis may indicate such an activity at the site.

[169] Mercangöz, 2013b, 25.

[170] Mercangöz, 2013b, 30, 32, 54.

[171] İnan, 2013, 70-1.

[172] Waksman, 2013, 102.

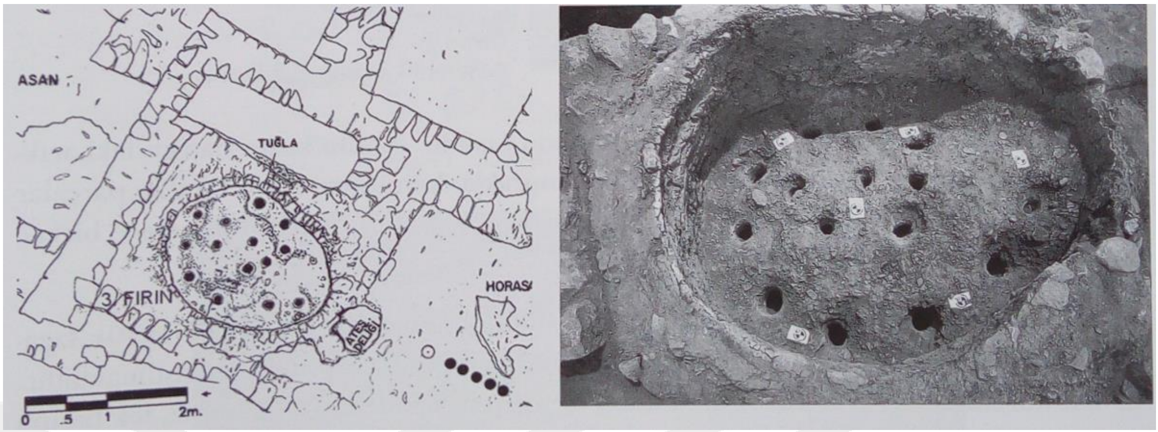

Figure 138: Ceramic kiln in Hasankeyf (After Çeken, 2007)

Figure 139: Oven suggested for glaze preparation at Hasankeyf (After Çeken, 2007)

At Hasankeyf, the majority of production was for glazed pottery, based on the ceramics concentrations around the kilns. The interior of the kilns however did not have any fragments. One large sized kiln was considered to have been for the production of coarse ware based on its potential for low temperature and concentration of coarse ware fragments around it. The workshop was suggested to have been established during the reign of the Artuqids, but the production continuity between the second half of the 14th to the 16th centuries. [173]

In central Anatolia, at Kubad-Abad, a ceramic workshop was also identified based on the recovery of glaze slags in many locations of the late 13th to the early 14th centuries. It was suggested that the local workshop was used temporarily during the construction of the palace in order to supply the needs of bricks, roof tiles, ceramics, water pipes and glass.[174]

In Iznik, 6 ceramic workshops, imperfect wares and Ottoman pottery were revealed. While the workshops were established in the theatre area during the 14th century the recovery of Byzantine pottery and tripods in the same area attests to an earlier operation of the workshops during the Byzantine period.[175]

There are some 12th - 13th century sites, where ceramic production has not been proven yet even though they were important sites of their period and they were occupied for long duration of time. In Amorium, while a kiln and production of coarse wares were mentioned for the 7th to the 11th century levels, there was no evidence for glazed pottery production during the Seljuk occupation of the site. Only few glazed ceramic fragments were found, which were considered as import items.[176] Özkul-Fındık also states that there have been no ceramic kiln and kiln furniture found in the Afyon region yet for the Ottoman period and the Ottoman pottery in Amorium were imports from Kütahya.[177]

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173 Çeken, 2007, 474-6, 478, 484, 485, 487.

174 Arık, 2007, 497.

175 Fındık, 2007, 539.

176 Lightfoot, 2007, 283-4.

177 Özkul-Fındık, 2003, 109. A detailed catalogue of small number of Seljuk and Ottoman pottery was published in: Özkul-Fındık, 2003.

At Tille Höyük, another site on the Euphrates basin, although storage wares, flat bottomed cooking wares with single double handles, lids and glazed ceramics, were recovered from the medieval layers, there was no attestation of local ceramic production.[178] Also At Gritille, an important medieval site in the Euphrates basin, there seems to be no evidence for ceramic, metal or glass production.[179] And finally, at Yumuktepe, rich number of import glazed ceramics from other production centers were attested but no local production or industrial activity mentioned in the publications.

In Komana, while evidence for ceramic production was weak in the 8 rooms under study, trenches excluded within the spatial analysis but in the sector HTP01 has provided positive data that it would be proper to suggest ceramic production during the 12th - 13th centuries. In most of the sites at various location in Anatolia ceramic production has been indicated. Among these sites, Anaia/Kadıkalesi was significant in terms of production not only for local demands but also as export in remote locations that Anaia wares were attested in Akra by archaeometric studies.[180] Anaia's potential for maritime transportation must have played the primary role in this long-range trade. At Komana, while there is evidence for export fine wares, it has not been identified yet whether the production was for local demand or for remote locations.

Metal Production

In Komana, evidence for metal production was sought for both within the 8 adjacent rooms and in the entire site. Presence of a furnace, crucible, metal slags, wasters, raw materials and signs of strong burn were considered as indicators for production.

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[178] Moore, 1993. A detailed catalogue of the ceramic finds at Tille Höyükcan be seen in: Moore, 1993.

[179] The ceramic distributions among phases were studied based on morphological types, quantified and calculated in percentages. There is a detailed catalogue of all functional types in: Redford, 1998.

[180] Waksman, 2013.

In Komana, in terms of metal production the evidence is scarce. The primary evidence for metal production is a furnace but at Komana a furnace was detected neither within the 8 rooms nor in the rest of the excavated areas of Komana. However, various sizes of raw materials, wasters and slag remains were found. Still they are not sufficient to suggest metal production within the limits of 8 rooms under study.

Another strong evidence for metal production is the crucible but no remains were found at Komana yet. Also, in other contemporary site reports, I have not come across any mentioning of a crucible.

There was abundant amounts and variety of metal implements found at the site, which can be taken as an indication of metal production but they might be products of export as well. Amorph metals especially concentrated on the eastern part of HTP01 area. Limited amounts of slags were found in the layers as clusters in the eastern part. In this area (room VII) a shallow pit on the bedrock, which was exposed to strong heat, was revealed with a concentration of long ceramic handles. These handles were broken from the body of the vessel and there were holes on the handles for hanging. They could not be associated with any ceramic form but it was clear that the length of the handles indicated a need to hold the vessel from a distance to avoid burning. Whether they were related with any crucible used in metal production is still a question.

Micro slags were detected within the heavy residue of the soil samples taken from the burnt contexts. Based on the spatial analysis conducted within the 8 rooms, very small amounts of remains were recovered that might be intrusive from the adjacent trenches. They are still insufficient to suggest metal production activity within the rooms. However, considerable amounts of small globules of congealed iron or slags were attested in near by trenches in the previous excavation seasons in Komana.

Iron production was attested in medieval Kinet Höyük.[181] Redford reported similar forms of small globules of congealed iron or slag within a foundation of a metal furnace. These were considered as indication of iron production in a metal workshop

[181] Redford, 2004, 284.

area at Kinet Höyük.[182] Arrowheads, knives, horseshoes and nails found in the layers, were considered to have been manufactured on the site.[183]

Metal production was also mentioned at Korucutepe. In the 13th - 14th centuries layers, an oven was found with iron slags around it.[184] This was considered as evidence for iron production even in the absence of a furnace. Also in Amorium, some slags were considered as the evidence of metal production.[185]

At Komana, the amorph metals could be identified as fragments of hand tools such as knives, scissors and locks, chains, hoops, hooks, etc. and architectural elements that were once attached to wooden constructions. Especially hooks were frequently found and they could be associated with hanging meat, where butchery activities were intensively performed at Komana. Abundant number of nails was also recovered from all layers with a special concentration in room VII in the eastern area. These items could be all local products of Komana.

As a result, based on the evidences it can be suggested that there was sufficient evidence for metal production at Komana, but not necessarily within the 8 rooms analyzed in detail.

Glass Production

At Komana, the most fragile and fragmented material of all was glass. Therefore, many small fragments of glass objects were found in all layers. However, in deep and closed pit contexts, glass materials presented clusters with larger fragment sizes when compared to the assemblages recovered from the layer fills.

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182 Redford, 2012, 388.

183 Redford, 2012, 390, 392.

184 Loon, 1978, 43.

185 Gill, 2002, 105.

The data was analyzed to understand whether there was glass production but there were no glass gobs or slags found within the 8 rooms studied. However, some burnt and vitrified fragments were found in the heavy residue soil samples. Still these evidences were insufficient to infer for glass production in the detailed studied area.

Even though no furnace, raw materials or frits were detected yet, in some layers outside of the rooms studied some false implementations of glass object fragments were observed.

In Anaia/Kadıkalesi, in addition to ceramic production and bone working, glass industry was also recognized due to the remains of glass fragments, frits and glass slags.[186] In Anaia glass slags, glass foams, frits and false implementations of wares were considered evidence for local glass production, even though no kiln was discovered yet. Short life span of kilns or temporary use by artisans could explain the absence of kilns. Production of glass bracelets, window glass and daily use wares such bottles were also attested. [187]

Glass production was observed at Tyana/Kemerhisar in the 12th century since a glass furnace and considerable amounts of glass bracelets were discovered.[188] Glass gobs and manufacturing wastes were also found in the workshop area at Tyana.[189] Zenon states that while the glass bracelets were mostly found in the burial contexts during the late antique and Byzantine periods, in the later periods they were frequently recovered from the contexts of domestic and daily life.[190] This argument was also true

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[186] Mercangöz, 2013b, 25. Detailed information on the daily use wares of glass, wineglass, oil-lamps and bracelets in Anaia dated to the 11-13th century were given in: Oral-Çakmakçı, 2013, 135-152.

[187] Coşkun-Hazinedar, 2013, 125, 127, 133, 131; Examples of 13th century glass bracelets were reported in: Ödekan and Akyürek, 2007, 263-5.

[188] Zanon, 2013, 181. Detailed information was given by Michela Zenon on the production proccesses, typology, decorative elements, manufacturing techniques and diffusion of Byzantine and Islamic glass bracelets in Asia Minor and its neighbouring lands in: Zanon, 2013, 181-97.

[189] Zanon, 2013, 194.

[190] Zanon, 2013, 195.

for Komana that in the 9th - 11th centuries Byzantine burial contexts many glass bracelets were found and the 12th - 14th century layers had glass bracelets in the contexts of daily life.

In Amorium evidence for glass production was weak and only indications were the amorph glass gobs, which were considered as the pre-melted materials for bracelet manufacturing and some fragments of vitrified materials.[191] In Tille Höyük, there were glass bracelets recovered from the medieval layers.[192] Various types of glass bracelets and agate beads were found in the middle Byzantine layers of Yumuktepe.[193] Also in Gritille, various glass objects including bracelets were reported.[194] Harput was under Artuqid rule from early 13th century until it was taken by the Ilkhanids. Ilkhanids controlled the region from the middle of the 13th century to the middle of 14th century. In Harput, a rich corpus of middle Byzantine and Ottoman glass bracelets were recovered in various layers.[195]

Production of glass bracelets at Komana could be suggested since bracelets were frequently found within the studied rooms and within the entire site. Although a glass furnace has not been detected yet, some twisted glass wasters were found at the site, which may be considered wasters. These were not clustered in a spot location.

The most significant find among the glass was a dark blue fine bottle ornated with gold enamel.[196] This bottle was recovered from a deep pit, identified as a cesspit (F34 in room VIII). The glass bottle, in fragments, was restored. This find has two

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191 Gill, 2002, 105. A detailed catalogue of glass bracelets in Amorium can be seen in: Gill, 2002.

192 Typological specifications of glass bracelets were defined in detailed in: Moore, 1993, 119-126.

193 Caneva and Sevin, 2004, 115-6; Köroğlu, 1998, 71.

194 Redford, 1998, 178-9.

195 Sevin et al., 2011, 27, 191-204.

196 A bottle fragment dated to the first half of the 12th century and ornated with enamel was found in Yumuktepe. For detailed information about the find see Ödekan and Akyürek, 2007, 44; Köroğlu, 1998, 70.

significance: Firstly, it helps to date the pit context (12^{th} - 13^{th} c.) together with fine glazed ceramics. Secondly, it is an extremely unique luxury item and thus it is surprising that it was found in a cesspit. While the use of this luxury item at the site discorded with the context, its presence might be explained by commercial or manufacturing reasons in the site.

As a result there was no sufficient evidence for glass production within the 8 rooms but the abundant amounts of glass object fragments and some fragments of false implementations and burnt vitrified slag fragments in various parts of the site could be considered as evidence for local production at the site in general.

Bone Working

At Komana, rich variety and amount of bone objects were attested at the entire site. Considerable number of bone objects were recovered also within the rooms under study. Spindle whorls, bone needles and buttons were the majority among the whole assemblage. A unique find, an ornated bone plaque with nail holes in the corners were found, which was probably attached on book covers or wooden boxes.[197]

The abundance of bone objects at the site brought about the question whether they were produced locally.

In order to identify possible bone working activity, the zooarchaeological data was analyzed. Among the finds, considerable number of bones prepared for bone working were identified. Unfortunately, none of the 8 rooms or any other space at the site could be recognized to have been solely reserved for bone working activities. Bone working activity is very difficult to recognize architecturally and unfortunately no features were associated with the activity in the excavation reports of other contemporary sites. Only end products and half worked bones were considered as

[197] Various examples of 11-12^{th} centuries bone plaque fragments were present from different sites (Ödekan and Akyürek, 2007, 146-77). 12-13^{th} centuries ornated bone plaque was found in Anaia/Kadıkalesi (Ödekan and Akyürek, 2007, 67).

evidence, which has also been the case at Komana. Only clustering of materials at specific places could be used to identify the location of the activity. The difficulty lies in the fact that small scale or domestic scale of bone manufacturing could have been performed any time and at any place.

At Anaia, the portable scales made of bone were discovered and indicated commercial activity.[198] Zooarchaeological data supported the preposition that they were locally manufactured. Ovicaprid metapodia were used as raw materials for bone working.[199] If manufacture of such complex tools were performed at the site then production of simpler items such as spindle whorls, buttons and needles could be strongly expected.

As a result, intensive exploitation of the animals in all aspects, use of the bones as raw materials, presence of half worked bones and objects as final products were all representatives of all stages of the process in Komana. While there were sufficient amounts of animal bones as raw materials in the site the local manufacture of bone objects was a high probability, which was already supported with the half worked bones and final products. Most of the items such as spindle whorls, needles and buttons were associated to weaving and sewing functions. The scale of manufacture has not been clarified yet whether it was for commercial demands or in order to be just self-sufficient. Also a specific location for bone object manufacture has not been identified yet at the site, therefore a large-scale industry could not be considered yet.

Wool Production, Textile Related Activities and Tannery

Based on the evidence of intensive animal exploitation and discovery of objects such as bone spindle whorls, needles, terracotta loom weights etc. textile production,

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[198] Altun, 2013, 154.

[199] Altun, 2013, 155.

wool production, weaving and sewing can be proposed at Komana. Cotton and flax seeds were sought within the archaeobotanical data but no evidence was found yet.

The exploitation of ovicaprids with 56% (NISP) among all other species still supports the presence of wool production. Ornaments and jewelry that may refer to the women presence as the master actors of these crafts were also considered.

In Yumuktepe, spindle whorls were found in the medieval layers and were suggested to be indicators of weaving activities associated with women in Yumuktepe.[200] Also in Tille Höyük, stone and bone spindle whorls were recovered.[201] Textile production, besides ceramics and metal production, was also attested in Kinet Höyük.[202] Stone and bone spindle whorls were found in many locations at Zeytinlibahçe Höyük as elements of domestic contexts.[203] Bone objects that were recovered from the Byzantine layers in Chersonessos were classifiied in three categories as the tools of (1) warfare, hunting and horse equipment, (2) working and domestic inventory and (3) spiritual life.[204] Numerous astragali with holes were identified as amulets in Chersonessos.[205]

In the lower town of Amorium an enclosure was assigned to multiple industrial and trading activities during the middle Byzantine times. Outside of the enclosure a tannery workshop was identified, which was in operation at the end of the 11th century. Numerous lower extremities of youngly slaughtered ovicaprids were found indicating tannery.[206]

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[200] Köroğlu, 2012, 315; Caneva and Sevin, 2004, 119; Köroğlu, 1998, 70.

[201] Moore, 1993, 119.

[202] Redford, 2004, 284.

[203] Dell'Era, 2012, 404.

[204] Klenina, 2012, 443.

[205] Klenina, 2012, 452-3.

[206] Lightfoot, 2007, 275-6.

At Komana, Pişkin suggested that the highest number of lower extremities (metapodia, phalanges) was recovered from the workshop phase.[207] While they were primarily used as meat supply, the secondary use of animals for milk, wool, hides and as track animals, was also indicated. At Komana, there seems to have been potential for the tannery, no location has not been identified for this function in the site yet.

The mortality profiles of ovicaprids may also provide information on how they were used. During the workshop phase, 65% of the ovicaprids were slaughtered between 2-3 years, 17% above 4 years and 18% below 1 year old. Pişkin suggested that 2-3 years was ideal for meat.[208] Thus, 17% mortality rate above 4 years seem to be low for a large-scale wool production but may be for small-scale milk and wool production it can be possible.

In Gözlükule, a dyer's workshop with a water drainage system and evidence of coloring matter were found in the Islamic layers.[209] Similar use of spaces was questioned at Komana, where deep rock carved pits were excavated in the western part of the site, interior of the fortification. They were considered to be suitable for performing dying activities, but the evidence is insufficient and thus it is too early to suggest that a dyer's workshop existed.

In Komana, sufficient number of spindle whorls, needles, buttons and loom weights, ovicaprids as raw source of wool not only in the 8 rooms under study but also in the entire site strongly attested the wool production, weaving and sewing activities performed in Komana. While the accumulation of such functional tools made cluster in room VII in the eastern part of sector HTP01, they were attested in all rooms. It was observed that in many excavations bone tools, especially spindle whorls could be found in any location in the site. This also supports the use of such tools without sticking to a place.

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[207] Pişkin, 2015, 121, 123.

[208] Pişkin, 2015, 122.

[209] Goldman, 1935, 547.

Jewelry Manufacture

In Anaia/Kadıkalesi sufficient evidence for jewelry manufacture was found. The earring molds (12^{th} - 13^{th} c.) were a strong indication.[210]

At Komana, gold, bronze, silver and lead jewelry items such as rings, earrings and bracelets, were found in various locations at the site. Their production at the site was also evaluated but no sufficient evidence has not been revealed yet.

Domestic and Food Related Activities

At Komana, food preparation, consumption and refuse disposal as signatures of domestic activities were sufficiently attested both within the 8 rooms and all the nearby trenches excavated. The most remarkable discovery was that all rooms had multiple utility features such as ovens, storages and pits. None of the rooms were considered as dwelling units only. However, most of the ovens and pits provided plant remains and layer fills and pits contained animal bones, suggesting strongly that there was food preparation, consumption and discard in the building complex.

Plant Remains in Domestic and Food Preparation Contexts

Cereals, legumes, grapes and a variety of fruit remains were found in the sampled contexts, which indicated a wide variety of plants as part of the diet. It would be proper to suggest that the plant remains related to domestic activities and were not intrusive materials. In the cases where the oven samples did not contain plants, it was perceived that they were cleaned after the last use before abandonment and never used again. Oven refuses or consumption refuses were frequently deposited in the nearby ashy pits thus provided clear evidence of domestic behavior.

[210] Mercangöz, 2013b, 25; Altun, 2013, 157; Ödekan and Akyürek, 2007, 77.

In the beginning of the research multiple ovens in adjacent rooms were considered to represent industrial operations. But the materials recovered from these spaces strongly indicated food related activities. Therefore it was later understood that food preparation was probably part of the services provided at the site for visitors, inhabitants and the workers. It is also possible that the artisans used the ovens also for food preparation besides industrial purposes. But the contexts revealed dominance of food items more than industrial. This was also attested by the heavy residue samples from the 8 rooms. The samples did not provide strong evidence for industrial activities, and the light fractions were quite rich in plants and charcoal. Burnt cooking pots and lids, storage wares and glazed fine wares were recovered from all rooms suggesting domestic activities.

In Kinet Höyük, while only one room with complete storage wares was identified as a storage space, highly fragmented forms of all types of ceramics scattered in various rooms have not been taken as strong evidence to suggest any function of the rooms. The cooking ware fragments and oven structures located in the same spaces could have indicated a kitchen.[211] Also in Kinet Höyük, another room with pits and tandır ovens accompanied by cooking wares was identified with food preparation function.[212] In two 13th century Crusader occupation phase samples from burnt fill contexts in Kinet Höyük-Tüpraş Field, cereals were recovered in majority (43,6%) while grapes were also in considerable portions (10,3%). In the 11th - 12th centuries occupation samples mostly taken from closed vessel contexts, cereals (3,3%) were attested but agricultural weeds 68% and cotton (20%) were the most significant assemblages.[213] Economic plant remains recovered from domestic contexts at Kinet Höyük indicates food preparation activities and agricultural practices in the settlement.

At Gritille, spaces with simple wall foundations and ovens for food preparation and cooking were identified. (Figure 140) Deep carved pits below the floors were

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211 Redford, 1995, 63.

212 Redford, 2012, 386.

213 Ramsay and Eger, 2015.

considered to have been used for storing produces such as grains.[214] (Figure 141) In the burnt Crusader occupation phase at Gritille, fava beans and vetches as animal fodders and wheat as food supply, were mostly recovered while cultivated legumes, barley, cotton, grapes and figs were also present in the assemblage. Miller stated that the inhabitants of Gritille were performing agriculture.[215]

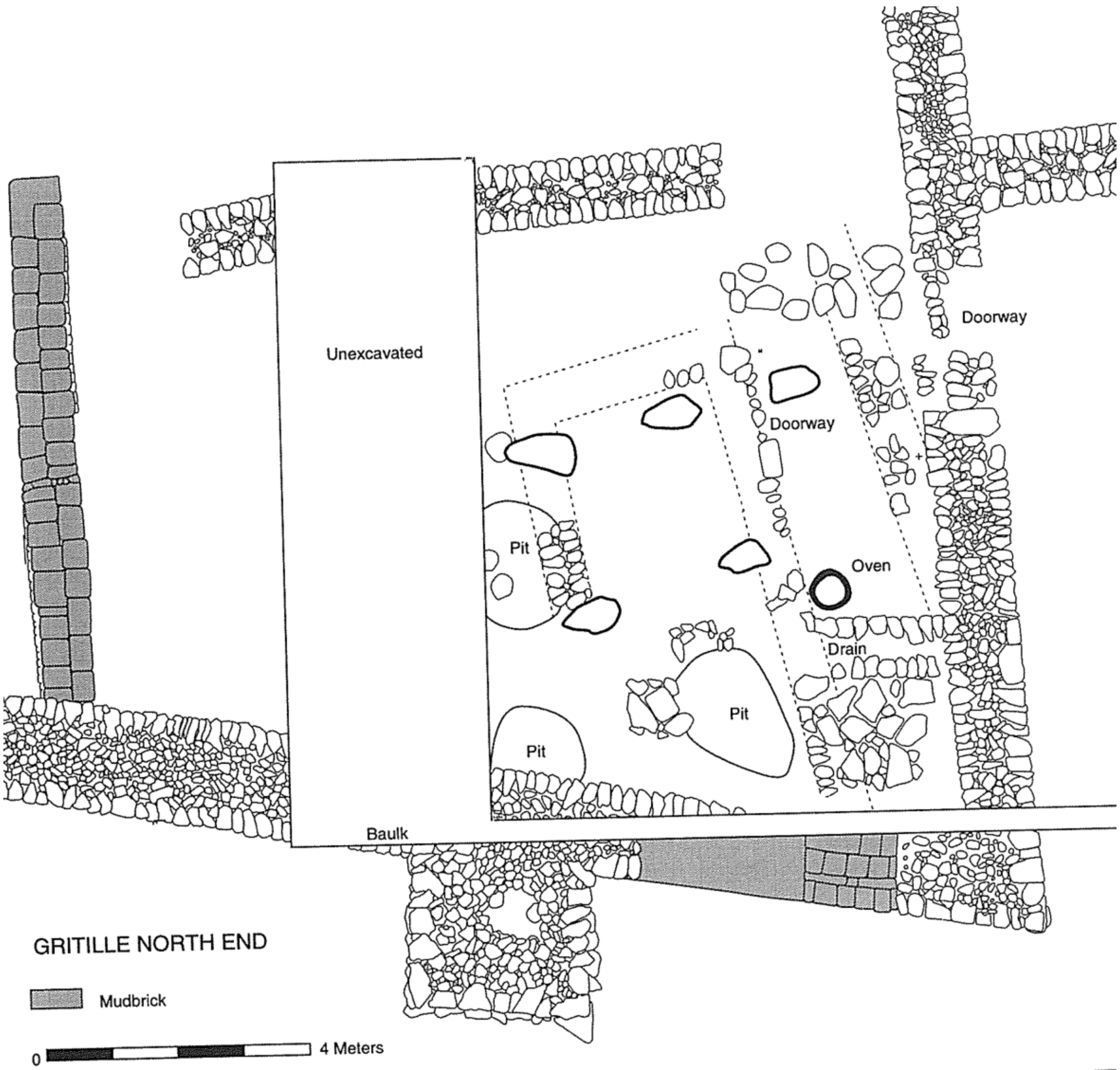

Figure 140: Features and plan of a domestic space at Gritille (After Ellis and Voigt, 1982)

214 Ellis and Voigt, 1982, 319, 327, 330.
215 Miller, 1998.

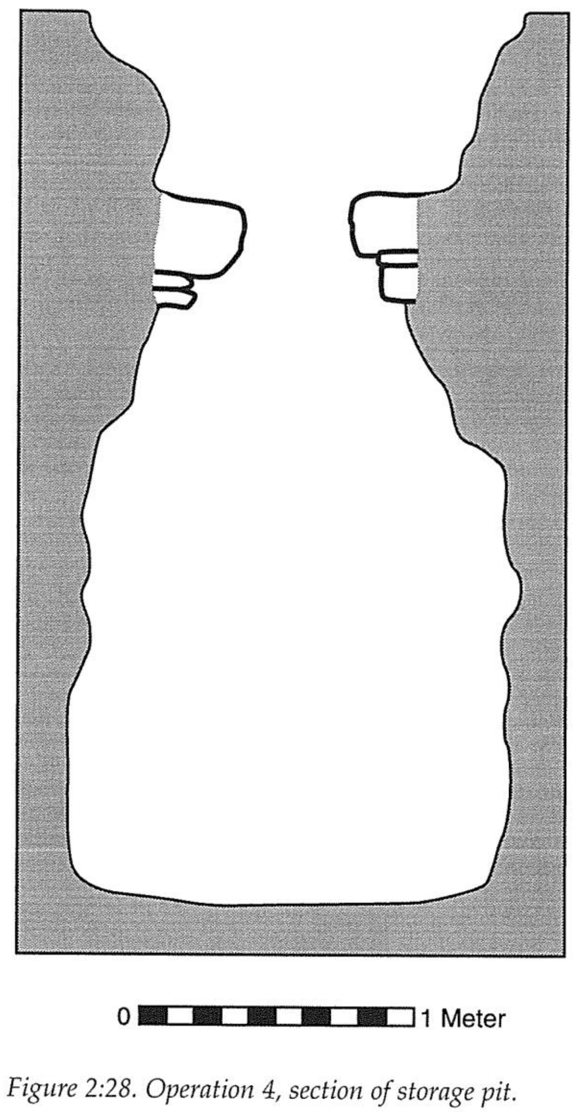

Figure 141: Deep storage pit at Gritille (After Ellis and Voigt, 1982)

In Yumuktepe domestic spaces of the 12^{th} - 13^{th} centuries had burnt storage jars full of cereals, amphorae, cooking pots, grinding stones, ovens, glazed fine wares, glass beakers and bottles.[216] In the medieval samples taken from storage contexts and dwelling spaces, cereals, legumes and fruits such as almonds and figs were recovered as

[216] Köroğlu, 2007, 443; Caneva and Köroğlu, 2010, 79.

the main elements of the diet. Some carbonized figs found in a line with holes that they were interpreted as dried figs.[217]

At Amorium two oven structures were revealed encircled with tiles and 13th century green glazed fine ceramics were found in the associated layers.[218] Economic plants such as cereals, legumes and grapes were reported in the 13th century layers.[219] 29 plant samples were analyzed from the church area pit, hearth and layer contexts (13th century). While there was human food detected in the samples, most of the remains were representing animal fodder such as legumes with small seeds and grasses. The plant evidence supported the conclusion that the church area was used as a stable and storage space where the fodder was kept but also close to human dwellings.[220] In Amorium, mineralized fig and grape seeds were found in a pit sample taken from the church area. This sample was interpreted as associated with the later use of the church as farmhouse and stable during the Seljuk occupation since sheep droppings were also found in the sample.[221]

In Korucutepe, domestic or food preparation function was attested in some spaces, where industrial activities were also performed in other parts of the site. (Figure 142) In the medieval layers cereals were reported from a pit context.[222] Also bread ovens with air circulation pipes were reported in Korucutepe.[223] (Figure 143) Similar ovens found in Komana may have been also used for bread making.

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217 Florentino and Ulaş, 2010, 113-4; Florentino, 2004, 161.

218 Lightfoot, 1998, 80.

219 Harrison and Christie, 1993.

220 Giorgi, 2012.

221 Lightfoot and Ivison, 1995. Also main economic taxa of cereals and legumes were mentioned in the samples at Amorium in this report.

222 Zeist and Bakker-Heeres, 1975, 238.

223 Loon, 1978, 44.

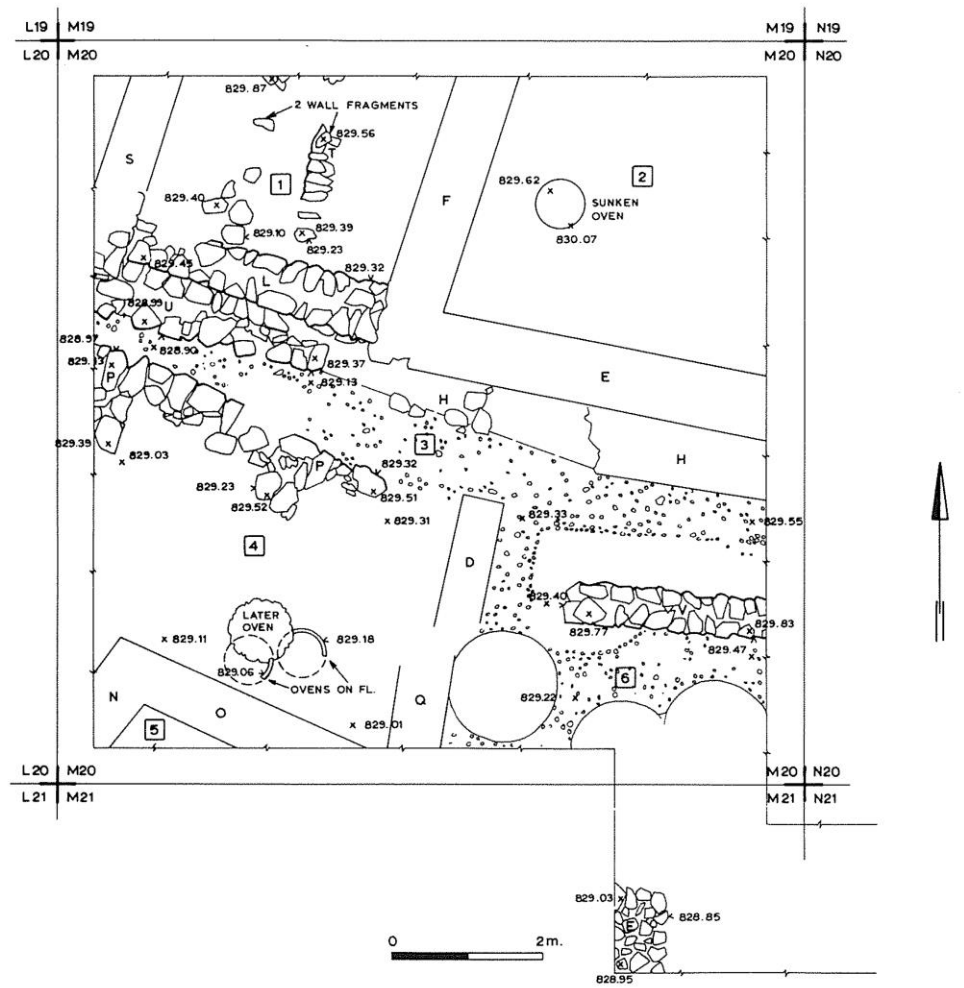

Figure 142: Features and architectural plan at Korucutepe (After van Loon, 1978)

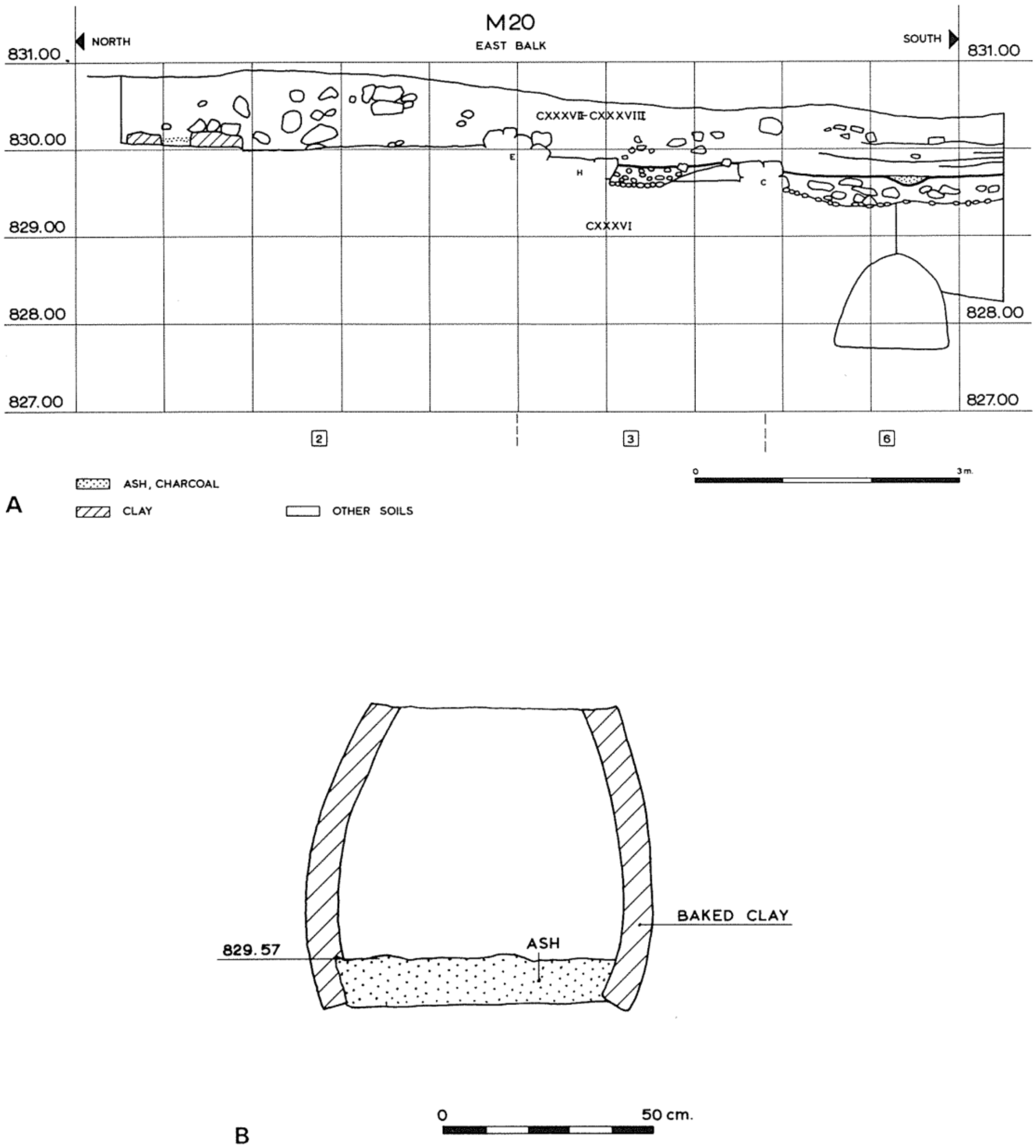

Figure 143: Section of an oven at Korucutepe (After van Loon, 1978)

There are various comparative evidences for the recovery of economic plants in domestic/food preparation contexts, which are useful for identifying room functions at Komana. In the 12th-13th century occupation of Daskyleion, cereals, legumes and buckthorn as the significant fruit species were recovered from 15 plant samples from pithoi, pits, hearths, floors and layer contexts.[224] At Mezra Höyük and Gri Virike, 11th-13th century layers had rich number of cereals, legumes, and grapes in pit, vessel and floor contexts.[225] At Kilisetepe, rich quantities of cereals, legumes, grapes, olives and other fruits such as fig and pomegranate were found in mostly pit fills, but also in layer fill and fire installation sample contexts in medieval layers.[226] In the 11th century shipwreck at Serçe Limanı, an assemblage of fruits was recovered. The assemblage was comprised of grape, apricot, almond, plum, sumac, olives, peach and watermelon.[227] These fruit species were also attested in Komana and, their values in commercial terms should be considered for the period. In middle Byzantine Beycesultan, a rich assemblage of cereals was recovered from a large vessel context dated to 10th century.[228] In Çadırhöyük, cereals and legumes were recorded in an oven sample dated to 11th century.[229] Even though Çadırhöyük experienced a rapid abandonment in the last quarter of the 11th century, the presence of the economic plant species in the oven context is noteworthy in terms of representing the domestic context at the middle Byzantine site. These common contextual properties of contemporary sites mentioned above were valid for most domestic/food preparation contexts of the period.

Animal Bones in Domestic and Food Preparation Contexts

At Komana, another rich group of assemblage was the animal bones that were frequently recovered from the archaeological layers and pits. Animals, together with the

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224 Oybak-Dönmez et al., 2016.

225 Oybak-Dönmez, 2006.

226 Bending and Colledge, 2007.

227 Ward, 2004, 495-511.

228 Helbaek, 1961, 78-80.

229 Smith, 2007.

plants, were the essential source of the diet. While main economic domestic species such as sheep and goat (ovicaprids), cattle, pig and chicken were exploited, game animals such as hare, partridge, deer and fish were also found in the assemblages.

Variety of the species mentioned above was all recovered not only from the rooms under study but also from the entire site in abundant amounts. Their presence in the rooms supported domestic activities performed within the rooms and were analyzed for food preparation, consumption and discard patterns.

In Komana, 51% of the animal bones recovered from the 8 rooms were ovicaprids, 29% was cattle and only 5% was pig, which comprised the economic mammals. There were birds with 8%, hare 5% and some fish as the small sized animals consumed.

In the medieval phases at Gritille, proportions of main animal taxa was as follows (NISP): 44,97% pig, 29,62% ovicaprid, 19,29% cattle, 0,04% chicken and 0,11% hare.[230]

In Korucutepe, there was no church and fortification reported. Inhabitants no longer ate pig but cattle, goat and camel. In the medieval layers of Korucutepe, 51% cattle, 44% ovicapris, 4% equids and 1% pig bones were recorded.[231]

In Yumuktepe, there was a balanced distribution of economic mammals (cattle, ovicaprid, pig) but an increase in gaming animals. Mortality profiles of ovicaprids were suggesting that 72% were killed after 6 years old. This was interpreted as an evidence for wool production rather than consuming for meat.[232]

In Kınık Höyük, the main animal taxa representing medieval layers were analyzed (NISP). While ovicaprid were ca. 78%, cattle were 22%, and there were almost no pigs recovered from the medieval layers. The lack of pig bones was

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[230] Stein, 1998, 181-209; Stein, 1988, 246.

[231] van Loon, 1980, 277; Boessneck and Driesch, 1975, 218.

[232] Grossi-Mazzorin and Minniti, 2010, 108.

associated with the Seljuk occupation. There were also birds such as chicken, goose, duck and partridge and equid, camel, deer and fish species attested.[233]

As a result the food evidence such as plants and meats were more than sufficient to suggest for intensive food preparation, consumption and discard behaviors within the 8 rooms studied in detail.

Site Specifications and Site Contexts

Between Komana and many other contemporary sites in Anatolia various commonalities were observed in terms of material compositions, production and domestic and food related activities. While some sites were more significant with their artisanal/industrial roles, in almost all sites domestic/consumption related evidence was common. Type of features and concentration of materials were very similar, thus providing the common indicators for the functional inferences.

Komana was also compared with other settlements in regard to its general site characteristics. Each site was significant and unique with single or multiple functions such as trade, production, military, administrative or dwelling in certain levels and their interior spatial organizations. Functions of these sites shaped with their strategic position associated within their close environmental circumstances such as geopolitical position, controlling a trade and communications route, exploitable agricultural and pastoralist potential lands, woodlands, mineral and water resources.

At Komana, a defensive wall encircled the site in the early middle Byzantine times, which was an indication of a need for protection. However, it was also clearly understood that the fortified site was not occupied only as a military garrison in the 12th - 14th centuries, and the presence of the fortification wall was not indicating an absolute presence of a military unit. Domestic units were also attested in the test trenches at the exterior north-east of the fortification. This shows that the settlement was not only

233 Highcock et al., 2015, 98-127.

limited with the upper parts but also extended outside of the fort. The fortified section of the settlement was for refuge during wartime and for guarding the production and storage units. It is possible that the settlement had a military/administrative unit, which has not been discovered yet.

At Komana, the presence of military elements was also analyzed, in spite of the strong evidence for artisanal and domestic use of the settlement. Among the archaeological finds recovered at Komana, neither in the 8 rooms analyzed nor in the entire excavated area, military equipment were recorded. Only few bone arrowheads and archer rings that could rather be associated with hunting activities were recovered. Therefore presence of soldiers in the site was not attested yet. Also since there were no burnt and destruction layer detected in the site, an indication of warfare or tension was not observed in the 12th - 13th century layers.

Metal assemblages recovered from the sites within the Euphrates basin were similar in composition. As observed at these neighboring sites, metal objects mostly consisted of arrowheads, spearheads, nails and needles.[234] In Tille Höyük, the metal finds comprised of nails, spearheads, arrowheads and needles.[235] In Gritille, metal objects composed of nails, spearheads, arrowheads, needles, horseshoes and hooks etc.[236] Metal find in Samsat such as nails, weights and arrowheads were abundant. Especially 12200 arrowheads were found in a tower.[237] The extreme amount of arrowheads shows the importance of defensive needs in Samsat and all other sites on the Euphrates basin.

Almost all of the 11th - 14th century contemporary sites, with different strategic significances, were fortified settlements with various functions. Kinet Höyük was

[234] McNicoll, 1983, 185-6.

[235] Moore, 1993, 119.

[236] Redford, 1998, 166-173.

[237] Özgüç, 2009, 12.

occupied from the second half of the 12th century to the early 14th century.[238] It was defined as a trade and production center, which was encircled by a fortification wall but attacked and burnt three times within a 150 years time span.[239]

Samsat was a fortified site on a major trade route between Syria and Eastern Anatolia in the Euphrates basin, which was occupied from the first half of the 12th century to the first half of the 13th century first by Crusaders and afterwards by Artuqids.[240] During the reign of Artuqids, Samsat was a governmental residence, where a large building complex with a courtyard, a well-established drainage and sanitary system unearthed. Based on the large size of the site, Goell suggested Samsat as the location of governor's palace.[241] In Samsat, there were also dwelling units with 3-4 room, courtyard and tandır ovens.[242]In the final phase of Samsat (level I) the city was under Seljuks rule that this was attested based on the ceramics data and architectural remains.

Gritille was a Byzantine site fortified in the 11th century and abandoned in the half of the 13th century.[243] Redford compares Gritille with other contemporary sites along the Euphrates in terms of their architectural specifications and spatial organizations suggests best parallels with Taşkun Kale. Redford also mentions that Lidar, fortified in the 11th century to protect its supplies, was larger than Gritille but followed the exact stratigraphic sequences.[244]

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238 Redford, 2012, 386; Redford, 2004, 283-4.

239 Redford, 2004, 284.

240 Redford, 1995, 56.

241 Redford, 1995, 60.

242 Özgüç, 2009, 11.

243 Decker, 2007, 233-4.

244 Redford, 1998, 68-76.

Tille Höyük, occupied from early 12^{th} to early 14^{th} century, was located in a strategic position on the west bank of Euphrates and the road connecting Adıyaman to Urfa. Its function was defined as domestic with storage and stable spaces. There was no mention of production but there was a fortification wall. The medieval structures were constructed with stone based mudbrick walls. There was enormous density of ovens, hearths and pits in the medieval phases. For instance in one midsized room (Room XXXIV in level II, phase Ia) 7 ovens and 1 pit were recovered. (Figure 144) Also in another area (Area defined as XXII in level I, phase I) 22 pits, 2 tandır ovens and 2 hearths were recovered.[245] (Figure 145)

[245] Moore, 1993, 19, 38, 23.

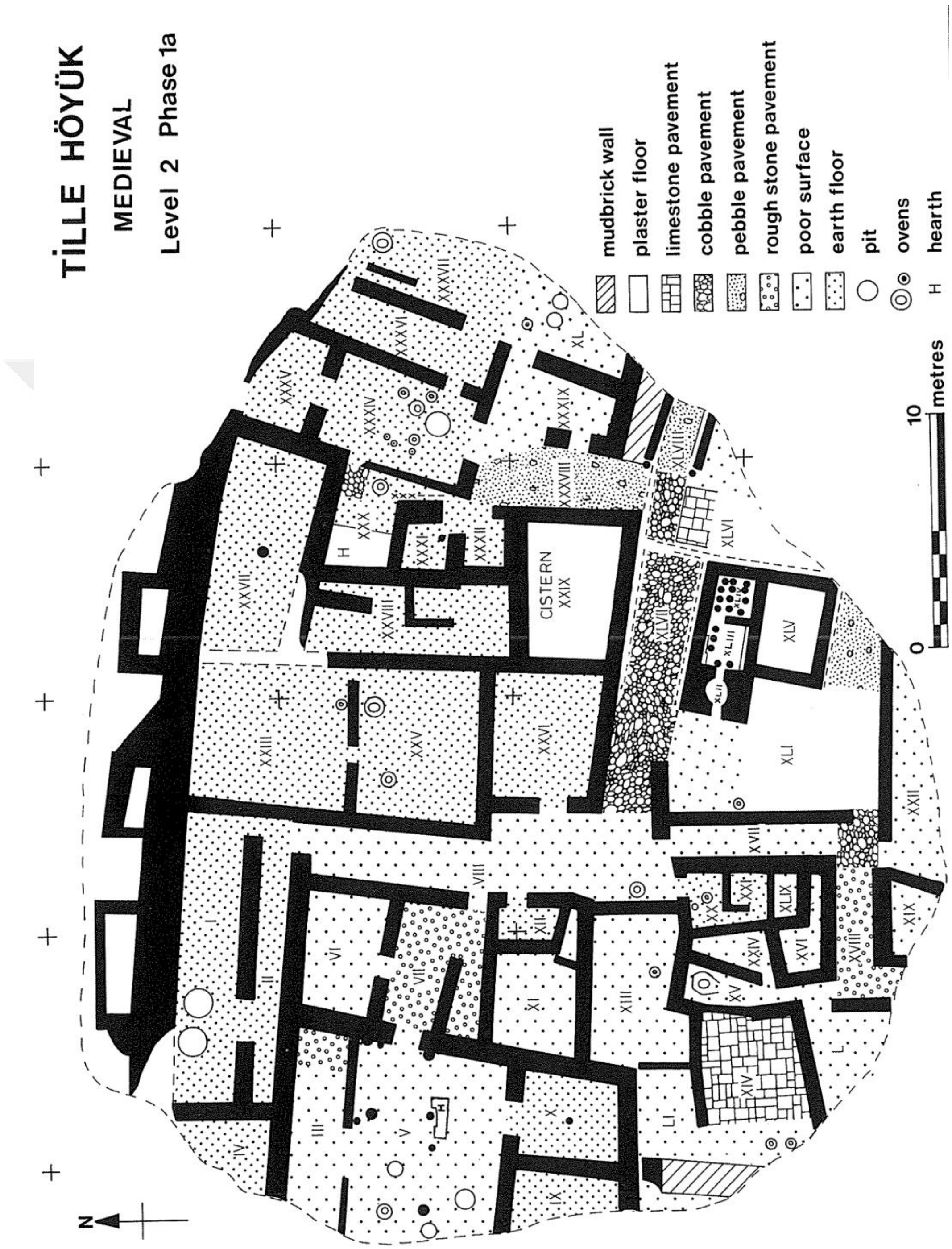

Figure 144: Distribution of features within the rooms at medieval Tille Höyük (After Moore, 1993)

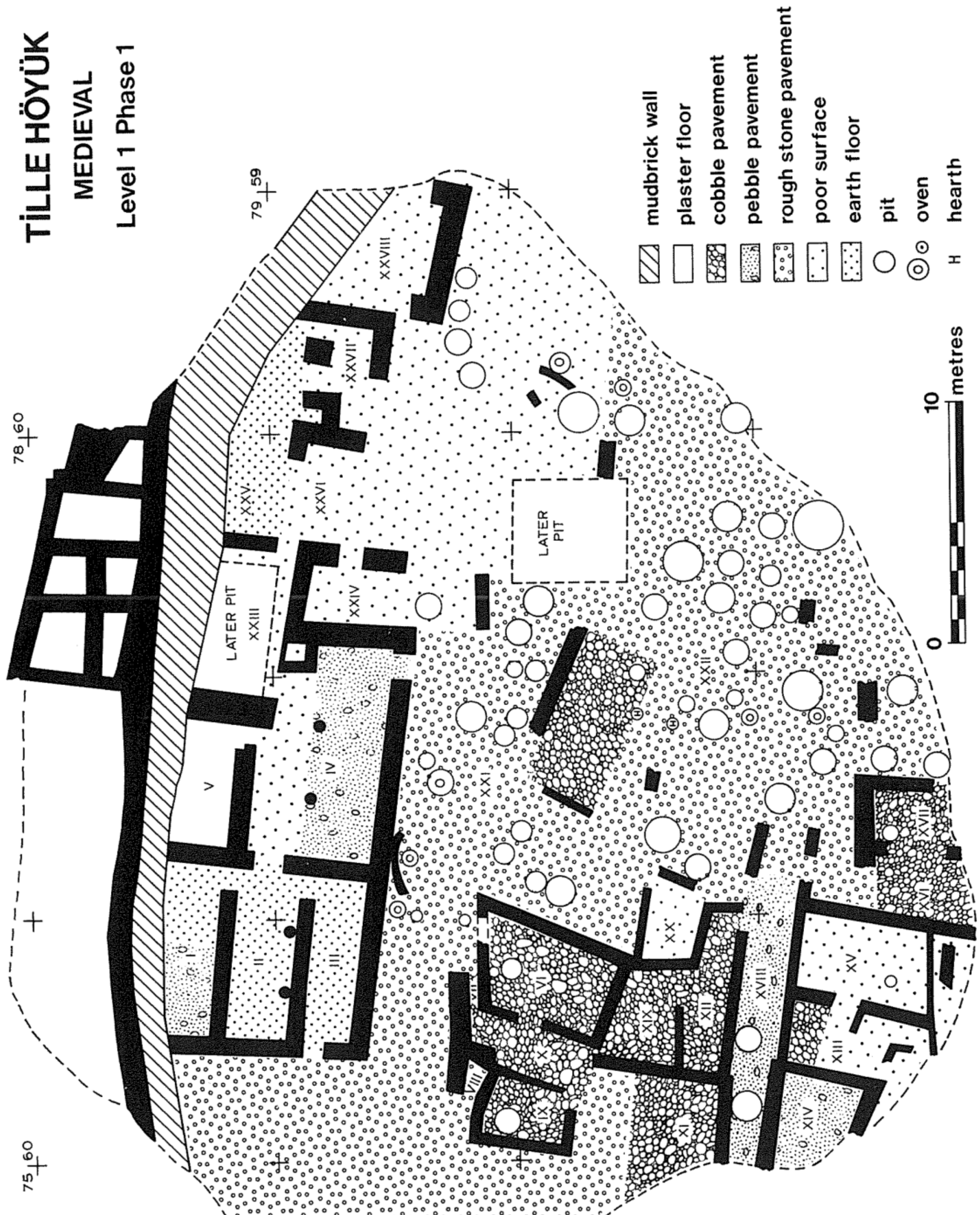

Figure 145: Plan showing dense number of pits at medieval Tille Höyük (After Moore, 1993)

In Taşkun Kale, rooms and spaces (total 36 units) were identified with one or multiple functions based on the utility features such as ovens and storage jars, and architectural and spatial organization of the units. (Figures 146, 147) In general, the function and use of the fortress was interpreted as follows: it was a protected residential complex with a community of non-Christians. It was too small for refuge of the entire community thus just for its residents. The capacity of the fortress was not high to bear a strong siege that it was a small scale and moderately protected unit such as a local police force. Its inhabitants were not agriculturalist therefore it was not a self-sufficient community. And its soldiers were supposed to be pedestrians due to the small size of the stable areas, which did not have the capacity to keep equids.[246]

Figure 146: Architectural plan and distribution of features at medieval Taşkun Kale (After McNicoll, 1983)

246 McNicoll, 1983, 9-12.

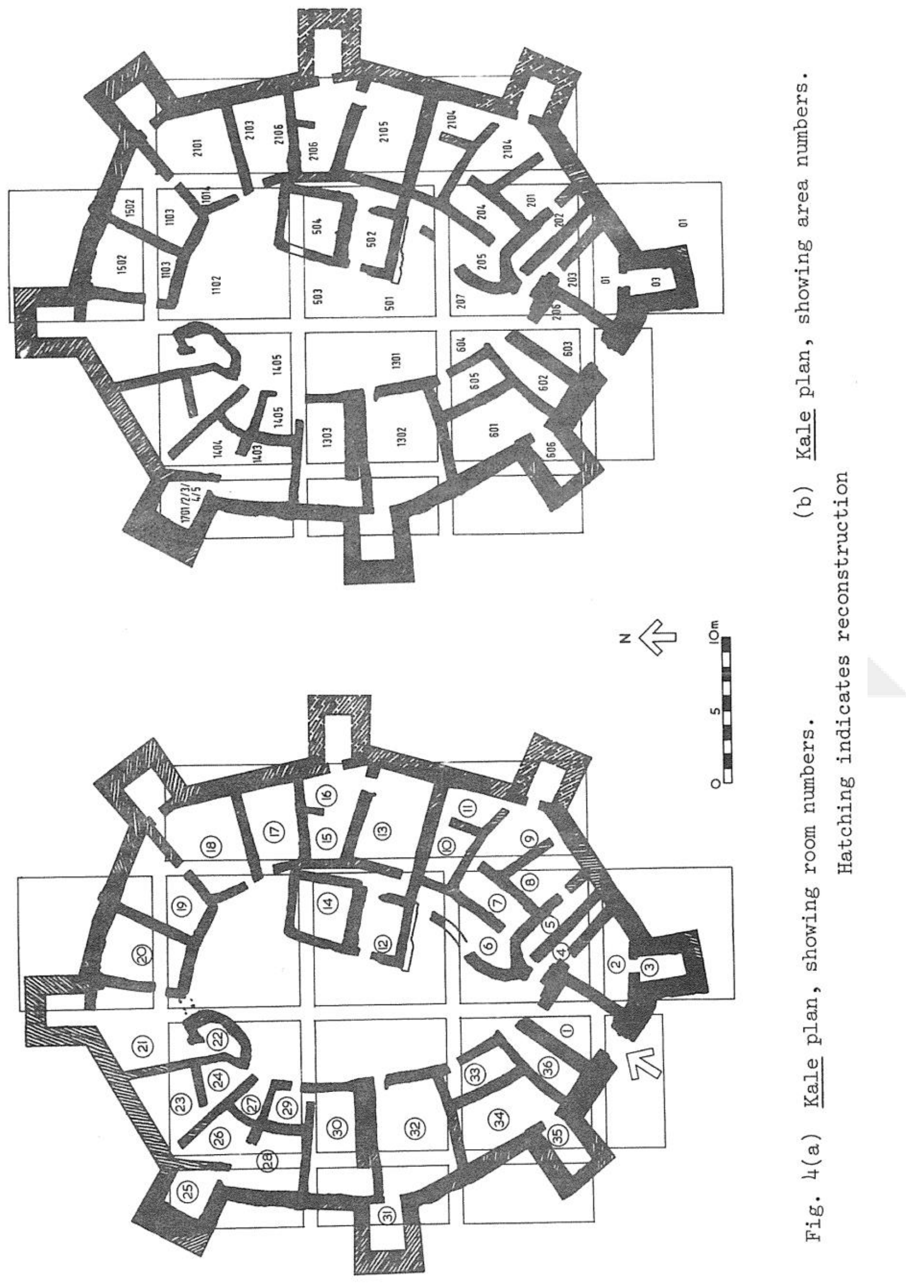

Figure 147: Plan showing rooms and areas at medieval Taşkun Kale (After McNicoll, 1983)

The medieval rural settlement of Sos Höyük was located in a fertile alluvial land in the bank of Dere Suyu, which was a branch of Aras River. The medieval layers of Sos Höyük, which was a rural settlement with a large complex of buildings was dated to the 13th century with comparable data to Tille Höyük.[247] In Sos Höyük, the composition of the finds were mostly cooking pots with smoke blackening, lids and very few fragments of green glazed wares, spiral and plain glass bracelets. Pits with ceramic and animal bone contents and deep ovens covered with clay were found within the stone based rooms.[248] While the character of the archaeological record was domestic, there were no remains of fortification wall and any mentioning of ceramic, metal or glass production in the site.

Two fortified settlements, Tios and Anai, were established immediately on the coastline. Tios was a fortified port city with a strategic location in the western Black Sea coast of Asia Minor. The glazed ceramics recovered from the medieval layers of Tios were dated to the 13th - 14th century[249] that Late Byzantine ceramics of Tios was rich in variety and the presence of storage wares were considered as the indicatives of well-established connection with other ports of Black Sea.[250] Repair of fortification walls of the port city in the 13th century was interpreted as insecure conditions along the coastline of Paphlagonia.[251]

Another fortified city in a very strategic location was Anaia/Kadıkalesi, on the Aegean, western coast of Asia Minor. Anaia was an important production and commercial port established in the 12th - 13th centuries. Its role in trade was strongly

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[247] Sagona and Sagona, 2003, 104; Sagona et al., 1998, 32; Sagona et al., 1995, 196, 202; Sagona and Sagona, 2004, 370. Charcoal sample taken from a room context of earthen floor with insitu vessels and intensive charcoal remains, the result was 1190 +/- 70 B.P. (680-1000 AD). However, the medieval layers were dated through 11th-13th centuries and still needs clarification.

[248] Sagona et al., 1995, 200; Sagona et al., 1996, 29; Sagona et al., 1997, 182.

[249] Anderson, 2009, 270.

[250] Anderson, 2009, 272.

[251] Anderson, 2009, 273.

attested with ceramic studies. Trade relations between Anaia and Akra were proven with chemical analysis, Anaia wares were detected in Akra in considerable amounts.[252] In Anaia locally produced amphorae were important to transport the local products[253] and import amphorae were also attested at the site.[254]

The castle in Dasykleion/Hisartepe, which was in a strategic point on a trade and communication route, was built during the reign of I. Manuel Komnenos (1143-1180).[255] Also in Manisa, a 12th - 14th centuries Byzantine and Turkish citadel with an external outer fortification area was surveyed, which was a military base during the Byzantine occupation.[256]

Another important issue I have observed in many of the contemporary sites, occupied during the 11th - 14th centuries, was the reorganization and use of the spaces. In many of the sites, middle Byzantine churches lost their significance and collapsed church areas were rearranged and used for domestic or industrial purposes. In some cases, the building materials were used as spolia, the marbles were converted to lime or the area itself was converted to a domestic unit, stable or workshop.

At Komana, the building materials of the churches were also used in the later constructions and church areas were rearranged as domestic units and workshop spaces. In Church A, while the central nave had collapsed and not used again, the southern nave was reused during the 12th - 13th centuries. Also in Church B, the central, northern and southern naves were reused as food preparation and as related activity spaces.

The church at Taşkun Kale collapsed substantially at the time of castle's construction in the 13th - 14th centuries. A second chapel was built during the construction of the castle, which was simple and small. After the chapel lost its

[252] Waksman, 2013, 110.

[253] Mimaroğlu, 2013, 115.

[254] Mimaroğlu, 2013, 121.

[255] Doğer, 2014, 22.

[256] Ermiş et al., 2016.

function, tandır ovens were placed in some rooms of the complex and therefore a domestic function was suggested for the church area.[257] (Figure 148) The 11th century church was converted to a storeroom in Yumuktepe in the 12th century.[258]

[257] McNicoll, 1983, 34.

[258] Köroğlu, 2007, 443.

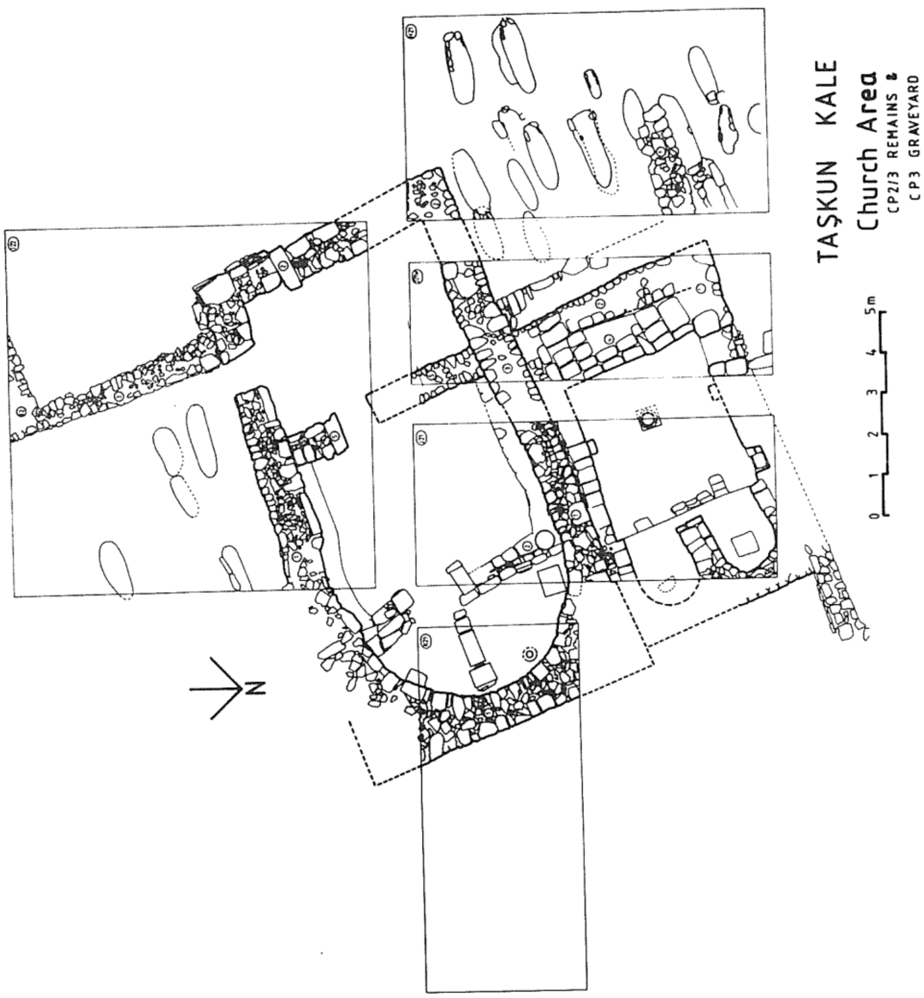

Figure 148: Church area at medieval Taşkun Kale (After McNicoll, 1983)

In Amorium, the church in the lower town was used as a farmhouse and stable during the Seljuk occupation and coins dated to 13th century, minted by Seljuks, were found in the same area. Based on the archaeobotanical evidence of cereals and ovicaprid faeces, various parts of the church were considered to have been used as courtyard and the stable of the farmhouse.[259]

A production and trade center was established in the 13th century in Anaia on the top of the ruins of a church area, which was probably damaged and abandoned due to an earthquake in the middle of 13th century.[260] After the Seljuk invasion in the 11th-12th centuries, the Baptistery in Tyana/Kemerhisar was abandoned and destroyed, and the ruins were used as lime and glass production area.[261] (Figure 149)

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259 Lightfoot, 1998, 81.

260 Mercangöz, 2013a, 22.

261 Zanon, 2013, 181.

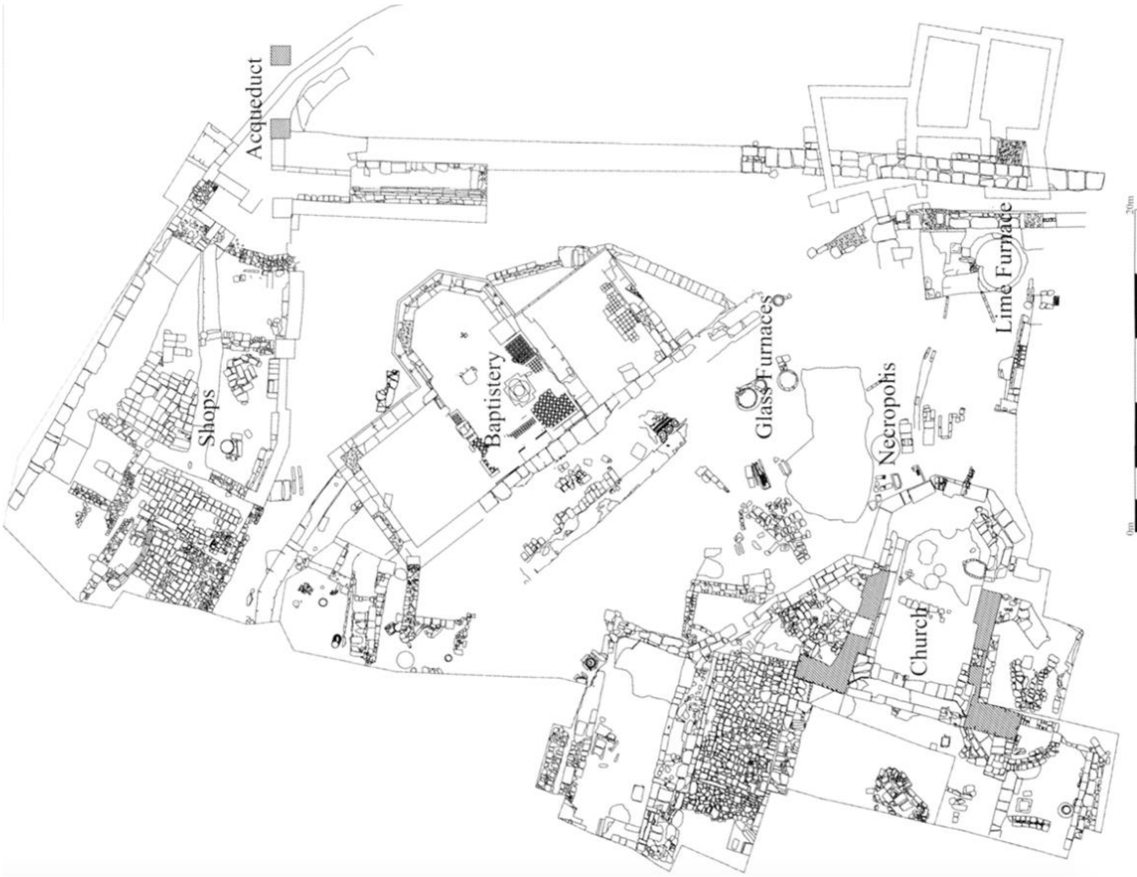

Figure 149: Baptistery area converted to glass workshop at Tyana/Kemerhisar (After Zanon, 2013)

Presence of glazed fine wares within the rooms with dense number of ovens and pits brings forth the question how to associate these finds within such a context. In a non-elite (domestic or industrial) context recovery of fine glazed ceramics as luxury items that could be proper for the use of elites, suggests that these finds are in contextual discord. If the glazed table wares were supposed to be luxury items, why do we find them everywhere at Hamamtepe? Why do we find them in the same spaces with multiple ovens and pits? While these features were more associated with storage and cooking wares? It should be also considered that access to the glazed pottery by the middle or lower class was easier or costless in the locations of production. Or they might be using the imperfect or faulty products. If this was the case, then it may be possible to suggest local ceramic production whenever they were found out of improper context. It should be also considered whether the glazed table wares became ordinary/common items for all classes of the community. It is also a common suggestion that tripod signs on the surfaces of the glazed table wares were ignored during the times of mass production when those items were widely used and became popular.

In all contemporary sites with Komana, which were occupied during the 11th - 13th centuries, glazed ceramics were attested both in elite, domestic and artisanal/industrial contexts. While unglazed wares were mostly assigned to dry and liquid storing and coarse wares were for cooking and large size storing functions such as pithoi, glazed wares were mostly associated with serving function and as table wares.

Besides suggesting Komana a center for production, trade should have been performed in the site and agro-pastoralist activities within its territory, especially considering Komana's strategic location as a (1) secure elevated and fortified hilltop in the middle of a fertile valley, (2) accessible location in a road connecting Black Sea coastal area with inland areas and (3) presence of Iris River as a natural resource of water for production, daily use and for possible river transportation.[262] Variety of products, presence of luxury items and export ceramics from other neighboring regions could be supportive criteria for commercial activities. Vorderstrasse in her recently unpublished preliminary ceramic report suggested a rich corpus of export ceramics from other areas.[263]

Based on the site specifications of Komana and results inferred from the interdisciplinary data analyzed above, it can be suggested that Komana could have the potential of a self-sufficient community in the 12th - 13th centuries. Agro-pastoralist potential of the territory, direct evidence of consumed crops and animals, production of glazed pottery, abundant number of metal and glass implements and evidences for their manufacture at site were observed in the settlement in various levels. Presence of import luxury items was also the indication of commercial activities and export of local manufactured ceramics to nearby areas could also be expected.

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[262] Hamilton, 1842, 349. (Transportation of firewood in the Iris River was reported by Hamilton in his visit to the region in the first half of the 19th century).

[263] Vorderstrasse, 2014; 2015 (Unpublished preliminary ceramic reports prepared during the Komana excavation seasons).

According to the archaeological evidence up to date, it is not possible to safely suggest Komana as a city during the 12th - 13th centuries and limits of its expansion. In the current stage of the archaeological expeditions, a fortified site with domestic occupation in its immediate external limits could be suggested. Moreover, geophysical prospection conducted in the modern agricultural fields on the northeast of Hamamtepe (about a distance of 200 meters) rooms with ovens and burnt contexts were identified similar to the structures revealed at the excavations. If these structures detected by geophysics were contemporaneous with the 12th - 13th century layers, this might be evidence for the expansion of the settlement to the flat areas.

In Danişmendname, Sisiyye was mentioned as an enormous city, which was strongly considered to had been located at Gümenek/Komana by scholars. Sisiyye, a fortified site having a bridge in front of the fort and a river passing in the middle of the city was narrated. A church in the size of a castle having innumerous priests and 360 various other churches were mentioned.[264]

A strong rain and flood event was mentioned that resulted with destruction of the city. It was narrated that only one quarter (500 houses) survived from the disaster, who accepted to become Muslims.[265] In this epic work, Tokat was mentioned as Dükiyye and in many cases it was plundered by the Christian population of Sisiyye who accepted Danishmend rule and Islam after a long period of struggle. According to Danishmendname both Dükiyye and Sisiyye were cities.

[264] Demir, 2012, 136, 140.

[265] Demir, 2012, 300.

CHAPTER 7

CONCLUSION

At Komana, the function and use of the rooms with numerous ovens and pits revealed in the center of the fortified settlement was a question from the beginning of the excavations. Especially the function of the ovens were seen quite important since their density within the rooms were high and their internal and external contents would be helpful in defining their operations. Such a density in adjacent rooms initially suggested to the excavators that the building complex was possibly part of a workshop. Therefore, primarily the production related items and wasters were sought for as the key elements in testing the hypothesis.

As a result, spatial analysis were conducted within the 8 adjacent rooms and their soil-sampled features showed that the rooms were primarily used for food related activities. This conclusion was made based on the dense ceramic, plant and animal bones data recovered within the room layers and especially the concentration of burnt plant remains within the ovens and pits. Moreover, the production related evidence was insufficient within the 8 rooms but there was promising data in the neighboring trenches in the same area. Metal slags, ceramic wasters and tripods were considered as strong indications of production at the site in general.

Considering the above-mentioned evidences here it was confidentially suggested that the site was multi-functional. Taking the site as a whole with its fortification and its strategic location on the bank of Iris, on an important trade and communications route and the fertile agricultural and pasture lands in its territory, Komana set well in the context of the 11^{th} - 13^{th} century settlement type.

During the excavations, observations on the archaeological record indicated potential differences between the degree of behavioral representation of the materials within the feature and layer context. Spatial and statistical analysis results approved the initial observations in a positive way. While oven and pit contexts provided signature patterns of final behavioral and activity refuses, materials from the layer fill enabled general inferences about the site.

The degree of fragmentation and decontextualization of the materials were high in the layer fill as a result of the impact of post-abandonment processes. Moreover, the spatial and statistical data and observations on the archaeological layers suggested that there was no indication of a rapid abandonment, a destruction layer due to an earthquake, warfare or fire. Therefore, effects of the gradual abandonment resulted with the lack of in situ finds, except the closed contexts, and the site was open to a long duration of cultural and natural processes. The gap between past and the present became harder to interpret on the archaeological record.

The thesis had its challenges though. Data had inconsistencies; there were unsampled (soil) feature contexts from the first year of the excavations, some of the soil samples lacked volumes and some rooms were partly excavated. These limitations reflected as missing data in the analyses, nevertheless, the existing data was sufficient for strong conclusions. Also access analysis could not be performed since the site was not fully excavated yet and unfortunately room entrances were not clearly detected in the excavations.

The lack of detailed ceramic typology for the whole region is problematic, ceramic refitting and calculations of MNV (minimum number of vessels) could not be done, but densities of functional groups were roughly established and they were helpful in general conclusions. Moreover, a typology on the highly corroded amorph metals would be better for functional inferences since some of the items were still provided some clues on their original forms, such as knives, hooks, hoops etc.

With this dissertation an initial attempt was made in Komana to understand the function and organization of the central part of the fortified settlement. In the future, more data will be collected and the limits of the spatial analysis will expand. New supportive results will be obtained in terms of production activities in the site. A forthcoming PhD dissertation on the provenance of the glazed ceramics at Komana, will enlighten the question whether they were local products or imports. A detailed ceramic typology is also in the research agenda, which will contribute in understanding more detailed use of the vessels and the scale of commercial activities. Archaeometric analysis on the metal slags will provide new evidence on the metal production in Komana and will fulfill the gap between slags and end products.

It has been attested that the extramural parts were occupied as domestic areas. In respect to understanding the organization of the entire site, uncovering of the fortification wall and excavations in the extramural areas will contribute as a whole.

Besides discovering function and organization of Komana, its reason of abandonment, its exact time range of occupation and socio-economic impacts of Seljuk rule is still a question. These research questions will also be sought for.

LIST OF ANCIENT SOURCES

Dio Cassius, *Roman History*, book 36.

Strabo, *Geography*, Book 12.

LIST OF ABBREVIATIONS

(IGR) Inscriptiones Graecae ad Res Romanas Pertinentes.

(SEG) Supplementum Epigraphicum Graecum.

(ZfN) Zeitschrift für Numismatik.

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APPENDICES

APPENDIX A: CONTEXTUAL PLANT SAMPLES

room	feature id.	context	wheat	barley	rye	oat	oryza	cereals	rachis/fork/culm
I	Fx7	oven						1	
I	N/A	fill	1						
II	N/A	fill		1	1				
II	N/A	fill	1						
II	N/A	fill	1	1					
II	N/A	fill	2	1				2	
II	F01	oven	38	4				8	
II	F03	oven	2	5					
II	F72	oven	16	13					
II	F02	oven	1					2	
II	F75	oven	11	2					
II	F74	oven	14					1	
II	F73	oven							
III	N/A	floor							
III	N/A	fill		1					
III	N/A	cooking pot	1	1					
III	N/A	fill	4	1				5	
III	N/A	fill	4					2	
III	F46	container							
III	F48	rock carved pit	1					5	
III	N/A	ceramic pot							
III	N/A	fill	15	2					
III	N/A	fill	3	1					
III	Fx1	rock carved pit	1	2					
III	N/A	fill	19	9				29	0/0/2
III	Fx2	rock carved pit	78	20		23			
III	F49	oven	41	19				65	
V	N/A	fill	1						
V	N/A	fill						2	
V	F14	oven		2				1	
V	Fx4	oven	2						
V	F15	oven	9	1					
V	F28	oven							

Table continued

room	feature id.	context	wheat	barley	rye	oat	oryza	cereals	rachis/fork/culm
VI	N/A	floor	1	1					
VI	N/A	floor	1	1				1	
VI	N/A	floor		1					
VI	Fx6	oven							
VI	N/A	fill	2	1				4	
VI	F68	oven	13	18					
VI	F10	oven	2	5				1	
VI	F11	oven	1					1	
VI	F12	oven		1				2	
VII	F19	rock carved pit	1	3					
VII	F32	soft pit	2	3				17	
VII	F33	soft pit	338	111	5	10		89	11//57
VII	F45	oven	25	2				3	//2
VII	F43	storage pit	7			1		1	
VII	F30	fill	1						
VII	N/A	mercury pot							
VII	F45	fill	1					2	
VII	F16	oven	20	12				10	
VII	F24	oven	38	17				11	2//3
VII	F30	oven	1					3	
VII	F66	fill							
VII	F66	oven	55	23				2	//1
VIII	N/A	fill							
VIII	N/A	fill							
VIII	F29	oven	4	2				7	
VIII	F34	soft pit/cesspit		3			1		
IX	N/A	cooking pot							
IX	N/A	fill	1						
IX	N/A	fill	1	1				3	
IX	F38	oven	2					2	
IX	F39	container							
IX	Fx5	soft pit	41	71				3	
IX	N/A	fill							

Table continued

room	feature id.	context	lentil	cicer a.	pisum s.	vicia s.	vicia e.	vicia f.	lathyrus	legumes
I	Fx7	oven			1					
I	N/A	fill								
II	N/A	fill								
II	N/A	fill								
II	N/A	fill								
II	N/A	fill			2					
II	F01	oven	1							
II	F03	oven	7							
II	F72	oven	20	2						
II	F02	oven								
II	F75	oven	4					2		
II	F74	oven								
II	F73	oven								
III	N/A	floor								
III	N/A	fill	1							
III	N/A	pot								
III	N/A	fill	1							
III	N/A	fill								
III	F46	container								
III	F48	rock carved pit								
III	N/A	ceramic pot								
III	N/A	fill	3			21				
III	N/A	fill								
III	Fx1	rock carved pit								
III	N/A	fill	4			4				
III	Fx2	rock carved pit	3			10				3
III	F49	oven	6		3	63			28	
V	N/A	fill								
V	N/A	fill	2							1
V	F14	oven	1		1					
V	Fx4	oven								1
V	F15	oven								
V	F28	oven								

Table continued

room	feature id.	context	lentil	cicer a.	pisum s.	vicia s.	vicia e.	vicia f.	lathyrus	legumes
VI	N/A	floor								
VI	N/A	floor								
VI	N/A	floor								
VI	Fx6	oven								
VI	N/A	fill								
VI	F68	oven	23							
VI	F10	oven								2
VI	F11	oven								
VI	F12	oven								
VII	F19	rock carved pit				1				
VII	F32	soft pit	1							
VII	F33	soft pit	12			4	15		1	67
VII	F45	oven			3		1		1	
VII	F43	storage pit	1				2			
VII	F30	fill								
VII	N/A	mercury pot								
VII	F45	fill								
VII	F16	oven			1	1			1	3
VII	F24	oven	2			1				
VII	F30	oven								
VII	F66	fill								1
VII	F66	oven	12			1	1	3	1	
VIII	N/A	fill	1							
VIII	N/A	fill								
VIII	F29	oven	1							
VIII	F34	soft pit / cesspit								
IX	N/A	cooking pot								
IX	N/A	fill	5							
IX	N/A	fill				1				
IX	F38	oven			1	1				
IX	F39	container	2			1				
IX	Fx5	soft pit	9	1	1	2				3
IX	N/A	fill								

Table continued

room	feature id.	context	vitis v.	grape pedicel/whole	prunus d.	prunus c.	prunus m.	prunus d.	prunus
I	Fx7	oven	2						
I	N/A	fill							
II	N/A	fill	3						
II	N/A	fill							
II	N/A	fill		//1					
II	N/A	fill							
II	F01	oven	15	5//9		1		1	
II	F03	oven	1					1	
II	F72	oven	6	2//4					2
II	F02	oven		//1					
II	F75	oven	6	1//1					
II	F74	oven	2	1//					
II	F73	oven							
III	N/A	floor							
III	N/A	fill	3						
III	N/A	cooking pot	4						
III	N/A	fill	2						
III	N/A	fill	1						
III	F46	container	1						
III	F48	rock carved pit	2	1//					
III	N/A	ceramic pot							
III	N/A	fill	7						
III	N/A	fill							
III	Fx1	rock carved pit	108	1//					
III	N/A	fill	8	1//1					
III	Fx2	rock carved pit	8			1			
III	F49	oven	21	2//					
V	N/A	fill							
V	N/A	fill	4						
V	F14	oven							
V	Fx4	oven	2						
V	F15	oven							
V	F28	oven	2						

Table continued

room	feature id.	context	vitis v.	grape pedicel/whole	prunus d.	prunus c.	prunus m.	prunus d.	prunus
VI	N/A	floor							
VI	N/A	floor							
VI	N/A	floor							
VI	Fx6	oven							
VI	N/A	fill							
VI	F68	oven	1						1
VI	F10	oven	10	1//4					1
VI	F11	oven							
VI	F12	oven							
VII	F19	rock carved pit	1018	1//					
VII	F32	soft pit	1						
VII	F33	soft pit	61	7//1				1	2
VII	F45	oven	7						
VII	F43	storage pit	2	2//					
VII	F30	fill	2						
VII	N/A	mercury pot							
VII	F45	fill							
VII	F16	oven	12	1//			1		1
VII	F24	oven	11	6//1					
VII	F30	oven							
VII	F66	fill	2					1	
VII	F66	oven	33	12//14					3
VIII	N/A	fill							
VIII	N/A	fill	60						
VIII	F29	oven	4						
VIII	F34	soft pit / cesspit	1924		1				
IX	N/A	cooking pot							
IX	N/A	fill	1						
IX	N/A	fill	2						
IX	F38	oven	8	14//6		1			1
IX	F39	container							
IX	Fx5	soft pit	50	54//3		3			1
IX	N/A	fill							

Table continued

room	feature id.	context	cucumis m.	citrullus c.	cucurbitaceae	f. carica	m. pyrus
I	Fx7	oven					
I	N/A	fill					
II	N/A	fill					
II	N/A	fill					
II	N/A	fill					
II	N/A	fill					
II	F01	oven		1			
II	F03	oven					
II	F72	oven	2	1			
II	F02	oven					
II	F75	oven					
II	F74	oven					
II	F73	oven					
III	N/A	floor					
III	N/A	fill					
III	N/A	cooking pot					
III	N/A	fill					
III	N/A	fill					
III	F46	container					
III	F48	rock carved pit					
III	N/A	ceramic pot					
III	N/A	fill					
III	N/A	fill					
III	Fx1	rock carved pit					
III	N/A	fill					
III	Fx2	rock carved pit					
III	F49	oven					
V	N/A	fill					
V	N/A	fill					
V	F14	oven					
V	Fx4	oven					
V	F15	oven					
V	F28	oven					

Table continued

room	feature id.	context	cucumis m.	citrullus c.	cucurbitaceae	f. carica	m. pyrus
VI	N/A	floor					
VI	N/A	floor					
VI	N/A	floor					
VI	Fx6	oven					
VI	N/A	fill					
VI	F68	oven					
VI	F10	oven					
VI	F11	oven					
VI	F12	oven					
VII	F19	rock carved pit	2				
VII	F32	soft pit					
VII	F33	soft pit			1		
VII	F45	oven					
VII	F43	storage pit					
VII	F30	fill					
VII	N/A	mercury pot					
VII	F45	fill					
VII	F16	oven					
VII	F24	oven					
VII	F30	oven					
VII	F66	fill					
VII	F66	oven		6			
VIII	N/A	fill					
VIII	N/A	fill					
VIII	F29	oven					
VIII	F34	soft pit / cesspit	23	2	2	40	1
IX	N/A	cooking pot					
IX	N/A	fill					
IX	N/A	fill					
IX	F38	oven					
IX	F39	container					
IX	Fx5	soft pit					
IX	N/A	fill					

Table continued

room	feature id.	context	rubus	cornus m.	punica g.	celtis	solanum m.	nigella s.	olea
I	Fx7	oven							
I	N/A	fill							
II	N/A	fill							
II	N/A	fill							
II	N/A	fill							
II	N/A	fill				1			
II	F01	oven				1			
II	F03	oven				2			
II	F72	oven							
II	F02	oven							
II	F75	oven							
II	F74	oven							
II	F73	oven							
III	N/A	floor							
III	N/A	fill							
III	N/A	cooking pot							
III	N/A	fill				1			
III	N/A	fill				2			
III	F46	container							
III	F48	rock carved pit							
III	N/A	ceramic pot							
III	N/A	fill							
III	N/A	fill							
III	Fx1	rock carved pit				1			
III	N/A	fill							
III	Fx2	rock carved pit							
III	F49	oven							
V	N/A	fill							
V	N/A	fill				11			
V	F14	oven							
V	Fx4	oven							
V	F15	oven							
V	F28	oven							

Table continued

room	feature id.	context	rubus	cornus m.	punica g.	celtis	solanum m.	nigella s.	olea
VI	N/A	floor							
VI	N/A	floor							
VI	N/A	floor							
VI	Fx6	oven							
VI	N/A	fill							
VI	F68	oven				1			
VI	F10	oven				1			
VI	F11	oven							
VI	F12	oven							
VII	F19	rock carved pit							
VII	F32	soft pit							
VII	F33	soft pit							
VII	F45	oven							
VII	F43	storage pit				1			
VII	F30	fill							1
VII	N/A	mercury pot							
VII	F45	fill							
VII	F16	oven							
VII	F24	oven				4			
VII	F30	oven							
VII	F66	fill							
VII	F66	oven				5			
VIII	N/A	fill							
VIII	N/A	fill							
VIII	F29	oven							
VIII	F34	soft pit / cesspit					3	6	
IX	N/A	cooking pot							
IX	N/A	fill							
IX	N/A	fill				1			
IX	F38	oven							
IX	F39	container							
IX	Fx5	soft pit			2				1
IX	N/A	fill							

Table continued

room	feature id.	context	juglans r.	corylus a.	pinus p. cone	quercus	weeds	F. buds	branch
I	Fx7	oven					2		
I	N/A	fill							
II	N/A	fill							
II	N/A								
II	N/A	fill							
II	N/A	fill					7		
II	F01	oven	1				15	1	4
II	F03	oven					5		
II	F72	oven					9		6
II	F02	oven					1		
II	F75	oven	1				11		1
II	F74	oven	2				23		4
II	F73	oven							
III	N/A	floor							
III	N/A	fill					25		
III	N/A	cooking pot					2		
III	N/A	fill					2		
III	N/A	fill							
III	F46	container							
III	F48	rock carved pit					1		
III	N/A	ceramic pot							
III	N/A	fill					1		
III	N/A	fill							
III	Fx1	rock carved pit					2		
III	N/A	fill							3
III	Fx2	rock carved pit	1				2	4	3
III	F49	oven					5		
V	N/A	fill							
V	N/A	fill					3		
V	F14	oven					8		
V	Fx4	oven							
V	F15	oven							
V	F28	oven					1		

Table continued

room	feature id.	context	juglans r.	corylus a.	pinus p. cone	quercus	weeds	F. buds	branch
VI	N/A	floor					9		
VI	N/A	floor							
VI	N/A	floor							
VI	Fx6	oven					1		
VI	N/A	fill							
VI	F68	oven					4		
VI	F10	oven		2			8		7
VI	F11	oven					1		
VI	F12	oven							
VII	F19	rock carved pit	1				2		
VII	F32	soft pit						1	
VII	F33	soft pit	12	1	1	1	96	28	10
VII	F45	oven					4		
VII	F43	storage pit					8	1	
VII	F30	fill					2		
VII	N/A	mercury pot					1		
VII	F45	fill							
VII	F16	oven	1				26	1	
VII	F24	oven					211	11	
VII	F30	oven							
VII	F66	fill							
VII	F66	oven					18		
VIII	N/A	fill							
VIII	N/A	fill					2		
VIII	F29	oven					1	1	
VIII	F34	soft pit / cesspit							
IX	N/A	cooking pot							
IX	N/A	fill							
IX	N/A	fill					4		2
IX	F38	oven	1				8		5
IX	F39	container					13		
IX	Fx5	soft pit					42		10
IX	N/A	fill					150		

APPENDIX B: CONTEXTUAL HEAVY RESIDUE SAMPLES

room	feature id.	context	amorph gr	slag gr	globule gr	globule	nail	furniture nail
II	N/A	fill						
II	N/A	fill					1	
II	F01	oven			0,36			
II	N/A	fill	6,03					
II	F03	oven	65,53				3	
II	F72	pit						
II	F02	oven	1,95	3,66				
II	F75	oven						
II	F74	oven					2	21
II	F73	oven				1	1	
III	N/A	floor						
III	N/A	fill						
III	N/A	fill						
III	N/A	fill						
III	F46	storage vessel					1	
III	F48	rock carved pit					1	
III	N/A	fill						
III	N/A	fill					1	
III	Fx1	rock carved pit					1	
III	Fx1	rock carved pit	13,43					
III	Fx1	rock carved pit						
III	N/A	fill					1	
III	Fx2	rock carved pit	6,9					
III	Fx2	rock carved pit						
III	Fx2	rock carved pit						
III	F49	oven	36,27					
V	F36	soft pit	10,19		0,03	1		
V	F14	oven					3	
V	Fx4	oven						
V	F15	Oven						
V	F28	oven	79,9					

Table continued

room	feature id.	context	amorph gr	slag gr	globule gr	globule	nail	furniture nail
V	N/A	oven	6,25				1	
V	N/A	fill						
VII	f30	oven					2	
VII	F44	oven						
VII	N/A	fill	238,22	176,66	4,94	24	9	
VII	F01	oven	70,44		0,27	4		
VI	F68	oven	45,45					
VI	F10	oven	18,3		0,01	2	4	
VII	F19	rock carved pit						
VII	F32	soft pit	18,2					
VII	F33	soft pit						
VII	F44	oven			0,89		1	1
VII	N/A	fill						
VII	f43	storage pit		4,99			1	
VII	N/A	fill		79,01				
VII	N/A	fill	16,05				1	
VII	N/A	fill		51,5	2,61			
VII	F16	oven	66,03				2	1
VII	F24	oven						
VIII	N/A	fill						
VIII	N/A	fill						
VIII	F34	soft pit / cesspit	8,27					
VIII	F34	soft pit / cesspit						
VIII	F34	soft pit / cesspit						
IX	N/A	fill						
IX	N/A	fill						
IX	F38	oven						
IX	F39	container						
IX	Fx5	soft pit	37,74	0,76				

Table continued

room	feature id.	context	unident.	bronze gr	lead gr	glass gr	vitrified gr	bracelet gr	bracelet
II	N/A	fill	5,42						
II	N/A	fill							
II	F01	oven	6,56	0,26		1,04			
II	N/A	fill		1,1			0,38		
II	F03	oven	9,63						
II	F72	pit				0,75		3,36	2
II	F02	oven				0,85			
II	F75	oven	0,59			0,23			
II	F74	oven	14,91			1,45	0,6		
II	F73	oven							
III	N/A	floor	21,19			0,01			
III	N/A	fill							
III	N/A	fill	5,61			0,92			
III	N/A	fill	4,73			0,04			
III	F46	storage vessel				0,18			
III	F48	rock carved pit	6,03			0,49			
III	N/A	fill				0,08			
III	N/A	fill	4,56	2,79					
III	Fx1	rock carved pit				0,05			
III	Fx1	rock carved pit							
III	Fx1	rock carved pit	0,53			0,03			
III	N/A	fill				0,16			
III	Fx2	rock carved pit							
III	Fx2	rock carved pit							
III	Fx2	rock carved pit		1,07		7,18			
III	F49	oven				0,43	0,3		
V	F36	soft pit	8,14		10,48	6,47			
V	F14	oven				0,07			
V	Fx4	oven							
V	F15	Oven							
V	F28	oven							

Table continued

room	feature id.	context	unident.	bronze gr	lead gr	glass gr	vitrified gr	bracelet gr	bracelet
V	N/A	oven	0,4						
V	N/A	fill	9,96			1,75			
VII	f30	oven	1,71			0,16			
VII	F44	oven	0,61						
VII	N/A	fill	51,9	2,78	3,29	0,59	2,51		
VII	F01	oven	14,49			4,55	2,14		
VI	F68	oven	4,75			0,84	1,51		
VI	F10	oven	13,84	0,24		5,39	2,13		
VII	F19	rock carved pit	18,06			0,17	6,44		
VII	F32	soft pit	2,3						
VII	F33	soft pit	0,26			6,26			
VII	F44	oven	0,08			0,02	1,08		
VII	N/A	fill							
VII	f43	storage pit	18,66	0,68		0,18	0,1		
VII	N/A	fill	45,87			6,04	0,09		
VII	N/A	fill	7,8			0,01	0,83		
VII	N/A	fill	19,88	4,24	2,08	0,48	5,73		
VII	F16	oven	15,61			0,3	0,64		
VII	F24	oven	7,52	0,12		0,61	2,2		
VIII	N/A	fill				0,03	0,06		
VIII	N/A	fill				0,06			
VIII	F34	soft pit / cesspit	1,68			9,16			
VIII	F34	soft pit / cesspit	1,13			0,99			
VIII	F34	soft pit / cesspit	37,65		3,91	9,16			
IX	N/A	fill				0,44			
IX	N/A	fill	0,08				0,15		
IX	F38	oven							
IX	F39	container							
IX	Fx5	soft pit	37,53			5,04	0,84		

Table continued

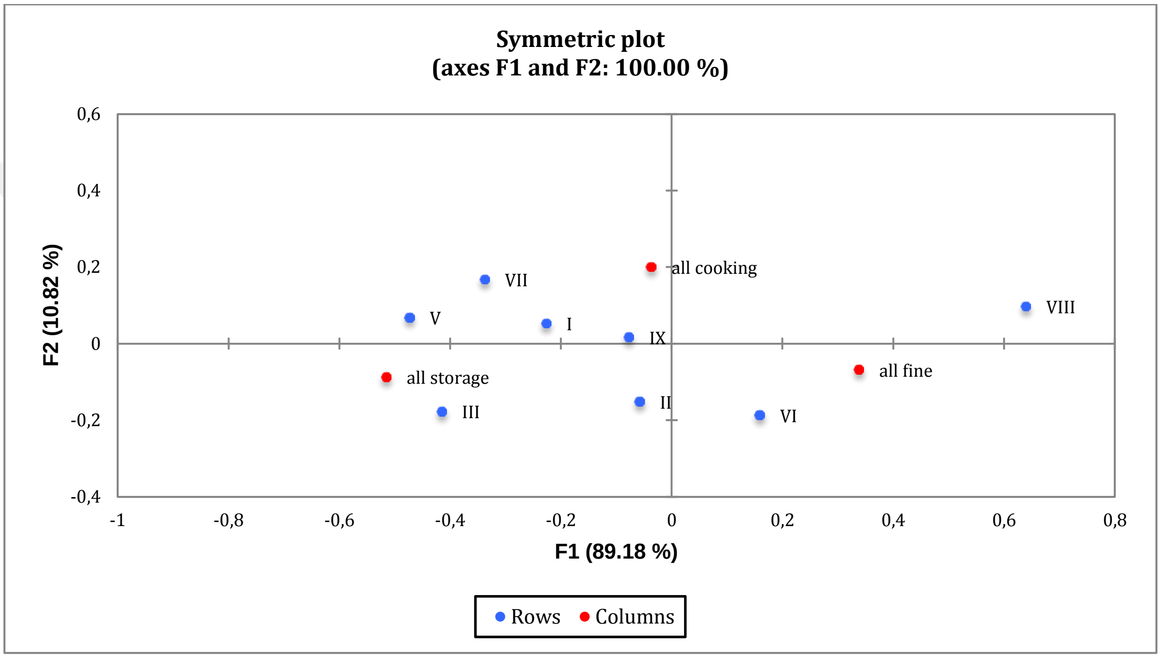
room	feature id.	context	fine >5mm	gr	cooking >5mm	gr	storage >5mm	gr
II	N/A	fill						
II	N/A	fill	1	0,62			1	4,37
II	F01	oven	5	10,85	6	33,46	23	133,17
II	N/A	fill	2	18,47	2	34,13	3	31,01
II	F03	oven	3	1,4	2	11,55	2	22,15
II	F72	pit	9	22,25	2	11,87	2	21,05
II	F02	oven	4	8,6	1	0,81	4	12,69
II	F75	oven	6	33,66	16	202,07	4	45,16
II	F74	oven						
II	F73	oven						
III	N/A	floor			1	4,79		
III	N/A	fill			2	17,4	2	24,33
III	N/A	fill						
III	N/A	fill						
III	F46	storage vessel	1	1,85				
III	F48	rock carved pit	3	2,06			1	8,18
III	N/A	fill			3	35,89	1	12,63
III	N/A	fill					1	8,54
III	Fx1	rock carved pit						
III	Fx1	rock carved pit						
III	Fx1	rock carved pit	1	3,09				
III	N/A	fill						
III	Fx2	rock carved pit	1	17,33				
III	Fx2	rock carved pit	1	1,28				
III	Fx2	rock carved pit	1	2,27				
III	F49	oven						
V	F36	soft pit	2	3,21	2	4,13	3	29,21
V	F14	oven						
V	Fx4	oven					1	8,2
V	F15	Oven	1	1,99				
V	F28	oven						

Table continued

room	feature id.	context	fine >5mm	gr	cooking >5mm	gr	storage >5mm	gr
V	N/A	oven	1	1,65				
V	N/A	fill	2	5,39			1	26,7
VII	f30	oven	8	31,16			5	15,1
VII	F44	oven	1	0,6			1	38,9
VII	N/A	fill	3	4,44	12	96,81	1	10,87
VII	F01	oven	9	31,8	14	146,37	13	106,47
VI	F68	oven					1	19,51
VI	F10	oven	3	3,93				
VII	F19	rock carved pit						
VII	F32	soft pit						
VII	F33	soft pit					25	152,33
VII	F44	oven	5	11,3	1	11	3	54,78
VII	N/A	fill					1	4,79
VII	f43	storage pit	16	14,34	2	3,62	10	128,05
VII	N/A	fill			6	33,1	7	105,9
VII	N/A	fill						
VII	N/A	fill	1	2,03	4	12,49	6	19,4
VII	F16	oven			7	91,26		
VII	F24	oven						
VIII	N/A	fill						
VIII	N/A	fill						
VIII	F34	soft pit / cesspit						
VIII	F34	soft pit / cesspit			3	10,44	1	8,4
VIII	F34	soft pit / cesspit						
IX	N/A	fill	3	1,16	1	1,22	7	7,38
IX	N/A	fill						
IX	F38	oven	2	0,6			7	17,46
IX	F39	container			4	10,26	10	24,07
IX	Fx5	soft pit	2	19,51	4	36,85	11	33,88

APPENDIX C: CORRESPONDENCE ANALYSIS

CA for the distribution of ceramic groups (CA-1)



Test of independence between the rows and the columns:	
Chi-square (Observed value)	51,072
Chi-square (Critical value)	23,685
DF	14
p-value	< 0,0001
alpha	0,05

Test interpretation:

H0: The rows and the columns of the table are independent.

Ha: There is a link between the rows and the columns of the table.

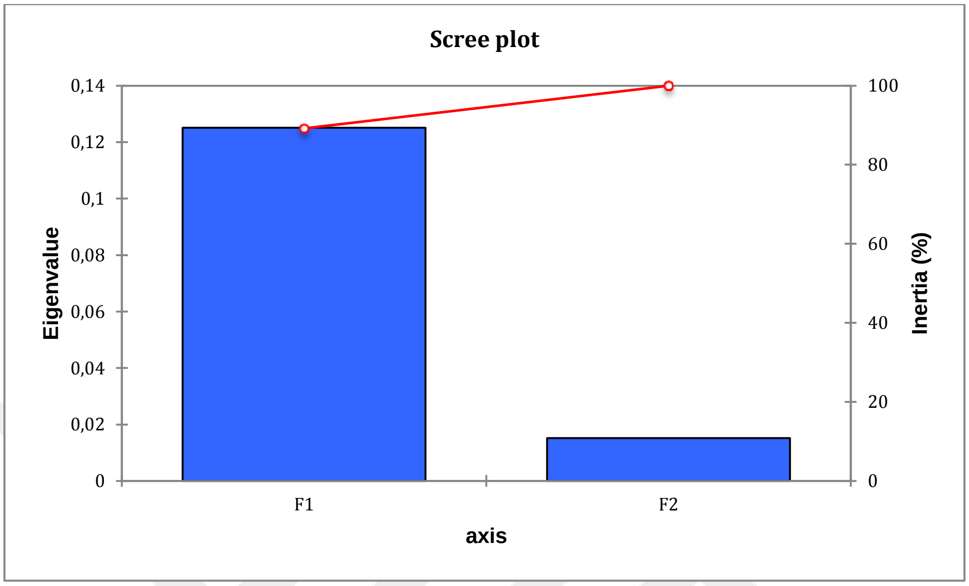
As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.

The risk to reject the null hypothesis H0 while it is true is lower than 0.01%.

Total inertia: 0,14

Eigenvalues and percentages of inertia:

	F1	F2
Eigenvalue	0,125	0,015
Inertia (%)	89,184	10,816
Cumulative %	89,184	100,000

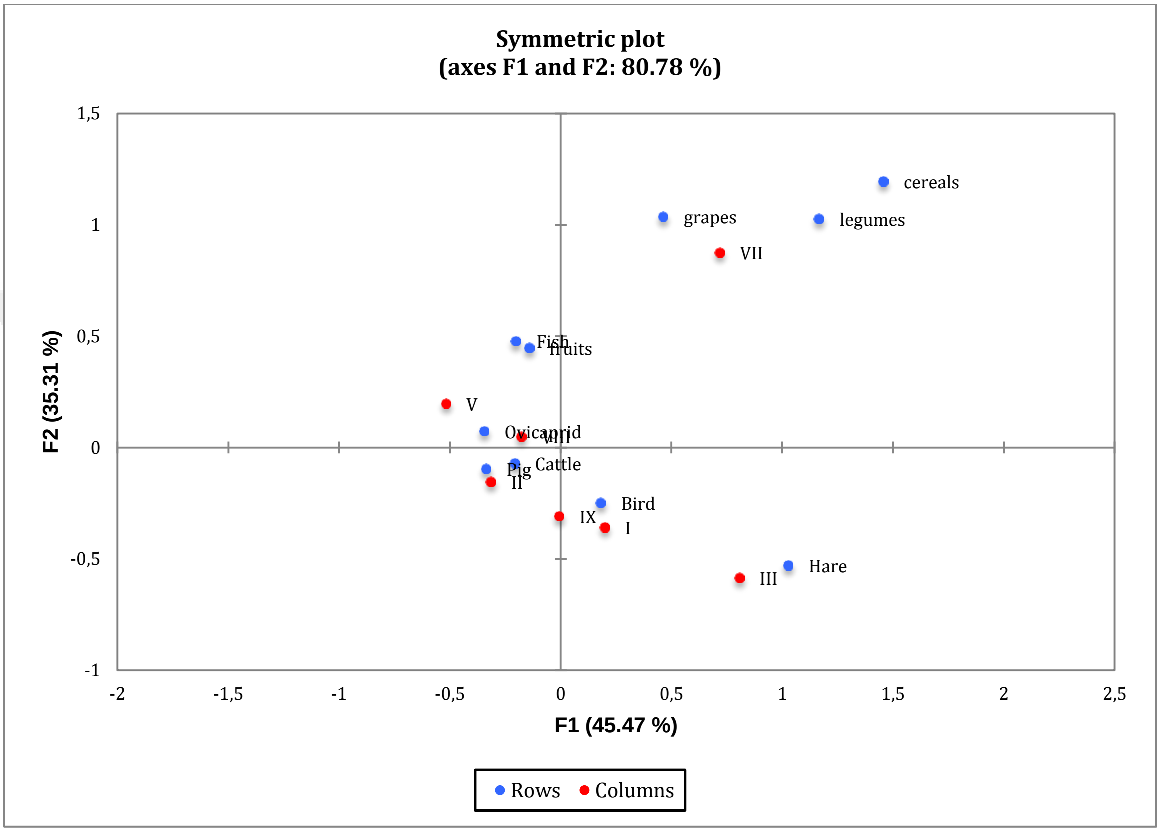


Squared cosines (rows):

	F1	F2
I	0,948	0,052
II	0,127	0,873
III	0,845	0,155
V	0,980	0,020
VI	0,420	0,580
VII	0,803	0,197
VIII	0,978	0,022
IX	0,955	0,045

Squared cosines (columns):		
	F1	F2
all fine	0,961	0,039
all cooking	0,033	0,967
all storage	0,972	0,028

CA for the distribution of plant and animals bones within the pits (CA-2)



Contingency table:							
	I	II	III	V	VII	VIII	IX
cereals	0,600	0,591	3,580	0,842	11,730	0,083	0,761
legumes	0,20	0,448	0,460	0,131	1,800	0,000	0,105
grapes	0,000	0,204	0,700	0,552	27,940	40,083	0,350
fruits	0,000	0,102	0,080	0,342	0,400	1,666	0,046
Cattle	0,600	18,000	5,263	6,000	5,333	36,000	12,000
Ovicaprid	18,800	65,000	13,894	62,000	24,666	290,000	32,000
Pig	0,800	11,000	0,421	0,000	1,666	10,000	2,000
Hare	5,600	2,000	29,052	0,000	8,000	17,000	2,000
Bird	22,000	45,000	77,894	16,000	30,666	191,000	60,000
Fish	0,000	1,000	1,473	10,000	5,666	15,000	2,000

Test of independence between the rows and the columns:	
Chi-square (Observed value)	457,291
Chi-square (Critical value)	72,153
DF	54
p-value	<0,0001
alpha	0,05

Test interpretation:

H0: The rows and the columns of the table are independent.

Ha: There is a link between the rows and the columns of the table.

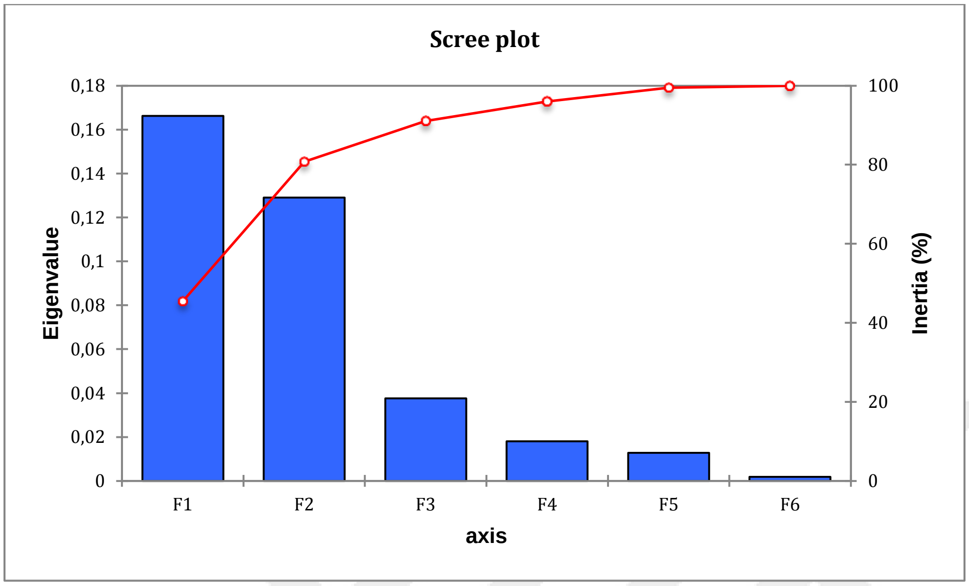
As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.

The risk to reject the null hypothesis H0 while it is true is lower than 0.01%.

Total inertia: 0,366

Eigenvalues and percentages of inertia:

	F1	F2	F3	F4	F5	F6
Eigenvalue	0,166	0,129	0,038	0,018	0,013	0,002
Inertia (%)	45,467	35,311	10,278	4,946	3,489	0,511
Cumulative %	45,467	80,777	91,055	96,001	99,489	100,000

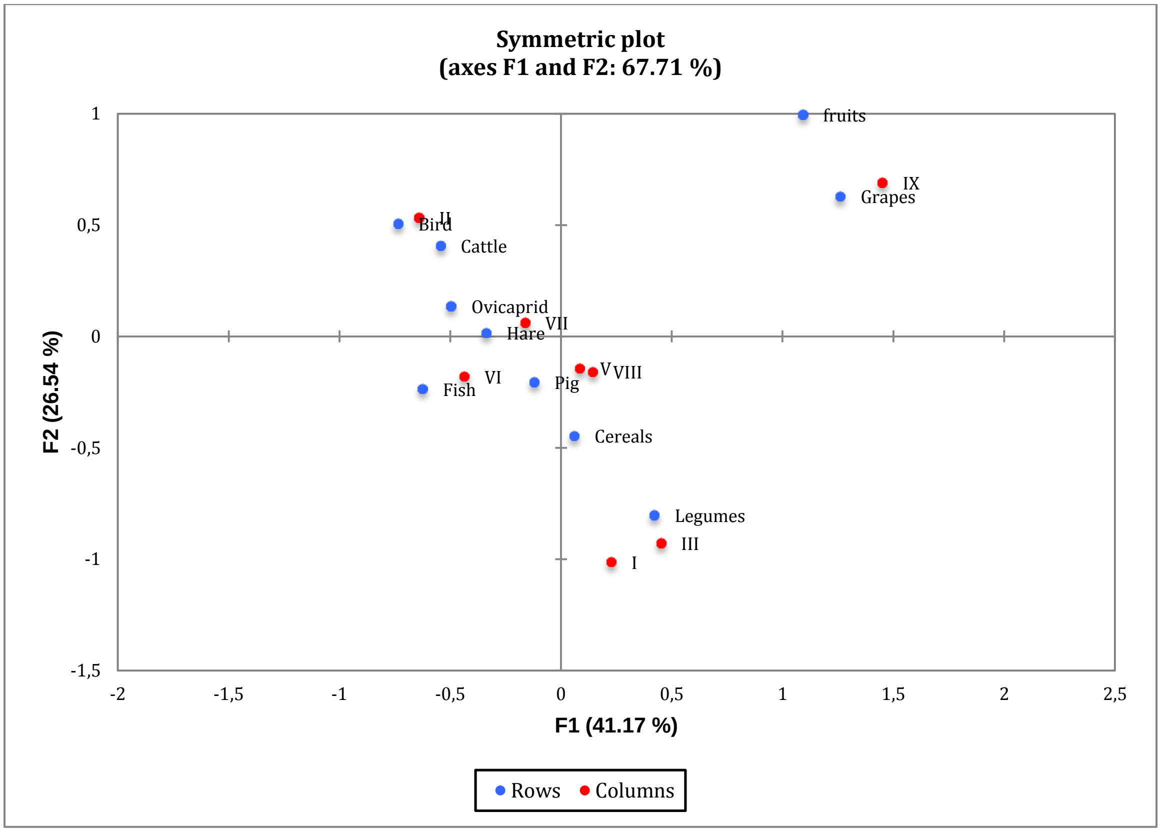


Squared cosines (rows):

	F1	F2	F3	F4	F5	F6
cereals	0,549	0,369	0,011	0,065	0,001	0,005
legumes	0,454	0,351	0,057	0,105	0,006	0,028
grapes	0,155	0,775	0,004	0,064	0,000	0,002
fruits	0,062	0,623	0,209	0,034	0,002	0,070
Cattle	0,234	0,029	0,534	0,104	0,049	0,051
Ovicaprid	0,885	0,040	0,049	0,001	0,023	0,002
Pig	0,110	0,009	0,699	0,043	0,139	0,000
Hare	0,706	0,188	0,052	0,001	0,051	0,002
Bird	0,305	0,575	0,018	0,018	0,082	0,002
Fish	0,052	0,296	0,343	0,261	0,040	0,008

Squared cosines (columns):						
	F1	F2	F3	F4	F5	F6
I	0,166	0,532	0,052	0,007	0,078	0,167
II	0,310	0,075	0,477	0,079	0,059	0,000
III	0,637	0,336	0,019	0,004	0,002	0,002
V	0,467	0,068	0,280	0,183	0,003	0,000
VII	0,398	0,591	0,009	0,002	0,000	0,000
VIII	0,633	0,050	0,042	0,268	0,004	0,003
IX	0,000	0,401	0,152	0,003	0,442	0,002

CA for the Distribution of plant and animals bones within the ovens (CA-3)



Test of independence between the rows and the columns:	
Chi-square (Observed value)	48,053
Chi-square (Critical value)	82,529
DF	63
p-value	0,918
alpha	0,05

Test interpretation:

H0: The rows and the columns of the table are independent.

Ha: There is a link between the rows and the columns of the table.

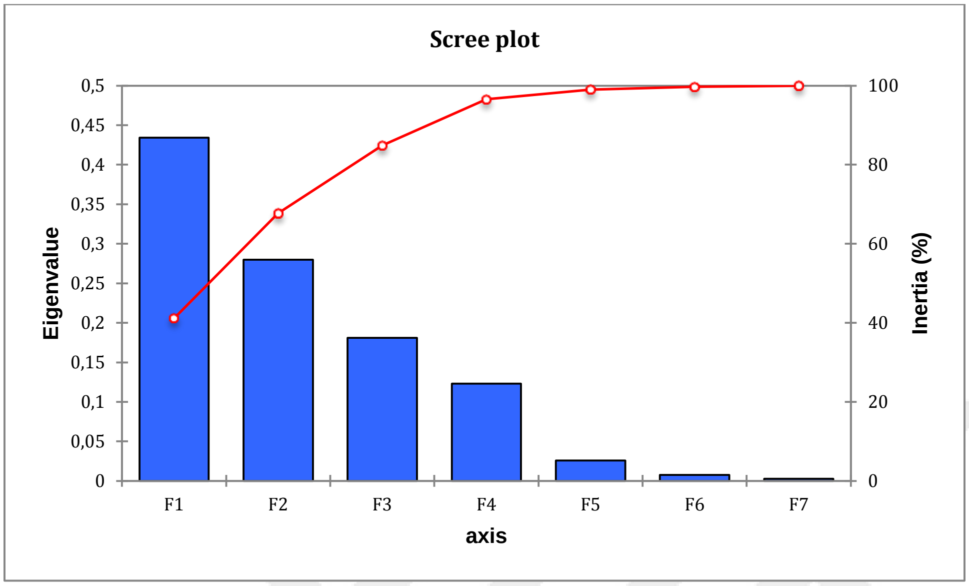
As the computed p-value is greater than the significance level alpha=0.05, one cannot reject the null hypothesis H0.

The risk to reject the null hypothesis H0 while it is true is 91.83%.

Total inertia: 1,055

Eigenvalues and percentages of inertia:

	F1	F2	F3	F4	F5	F6	F7
Eigenvalue	0,434	0,280	0,181	0,123	0,026	0,008	0,003
Inertia (%)	41,167	26,540	17,159	11,666	2,463	0,725	0,280
Cumulative %	41,167	67,708	84,866	96,532	98,995	99,720	100,000

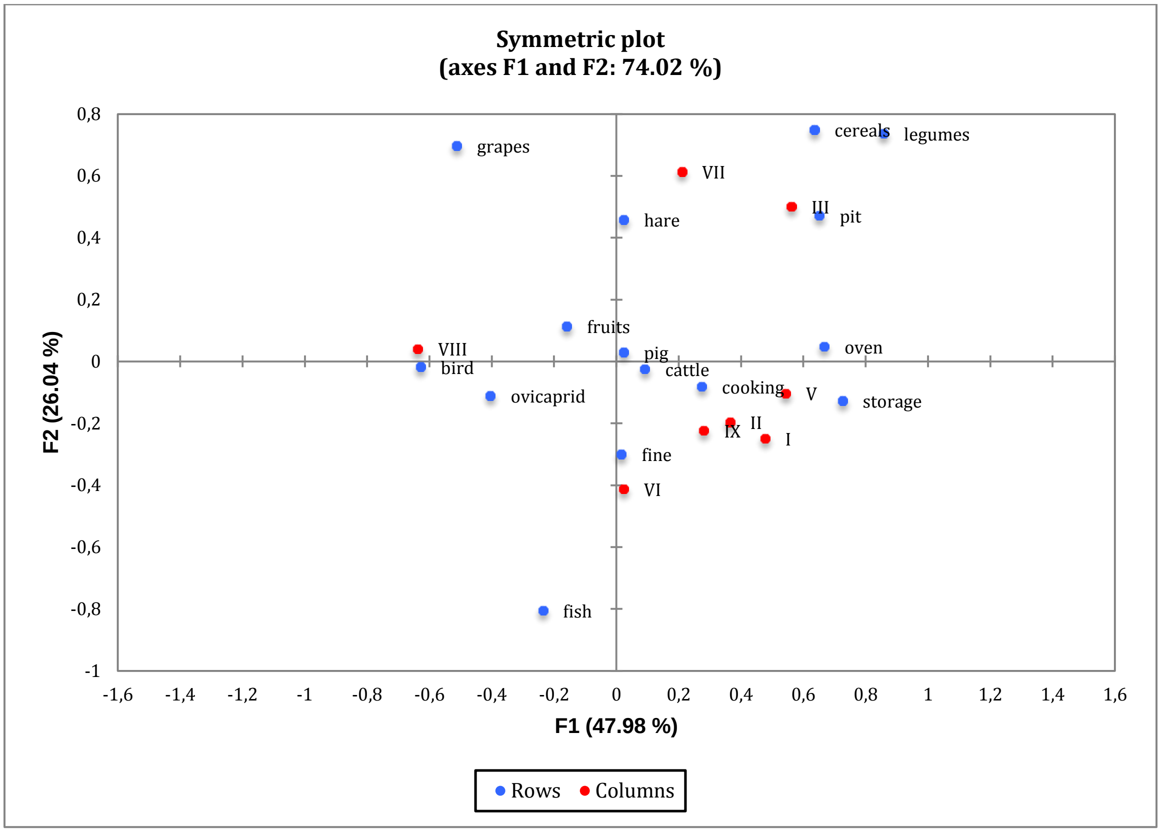


Squared cosines (rows):

	F1	F2	F3	F4	F5	F6	F7
Cereals	0,015	0,862	0,010	0,022	0,077	0,006	0,007
Legumes	0,147	0,533	0,218	0,055	0,043	0,002	0,002
Grapes	0,794	0,198	0,003	0,004	0,000	0,000	0,001
fruits	0,522	0,434	0,001	0,008	0,020	0,003	0,012
Cattle	0,334	0,187	0,069	0,097	0,189	0,071	0,053
Ovicaprid	0,380	0,028	0,432	0,130	0,002	0,029	0,000
Pig	0,004	0,013	0,000	0,039	0,590	0,344	0,010
Hare	0,045	0,000	0,691	0,252	0,010	0,002	0,000
Bird	0,571	0,270	0,157	0,002	0,001	0,000	0,000
Fish	0,173	0,025	0,143	0,641	0,016	0,001	0,002

Squared cosines (columns):							
	F1	F2	F3	F4	F5	F6	F7
I	0,038	0,751	0,034	0,001	0,051	0,030	0,095
II	0,417	0,289	0,278	0,015	0,001	0,000	0,000
III	0,161	0,678	0,124	0,027	0,009	0,001	0,000
V	0,029	0,081	0,194	0,066	0,268	0,323	0,038
VI	0,322	0,055	0,151	0,468	0,004	0,001	0,000
VII	0,037	0,006	0,585	0,371	0,001	0,000	0,000
VIII	0,026	0,032	0,000	0,002	0,847	0,092	0,001
IX	0,805	0,182	0,000	0,012	0,001	0,000	0,000

CA for the distribution of total plants, animal bones, ceramics with number of features (CA-4)



Test of independence between the rows and the columns:	
Chi-square (Observed value)	387,927
Chi-square (Critical value)	122,108
DF	98
p-value	< 0,0001
alpha	0,05

Test interpretation:

H0: The rows and the columns of the table are independent.
Ha: There is a link between the rows and the columns of the table.

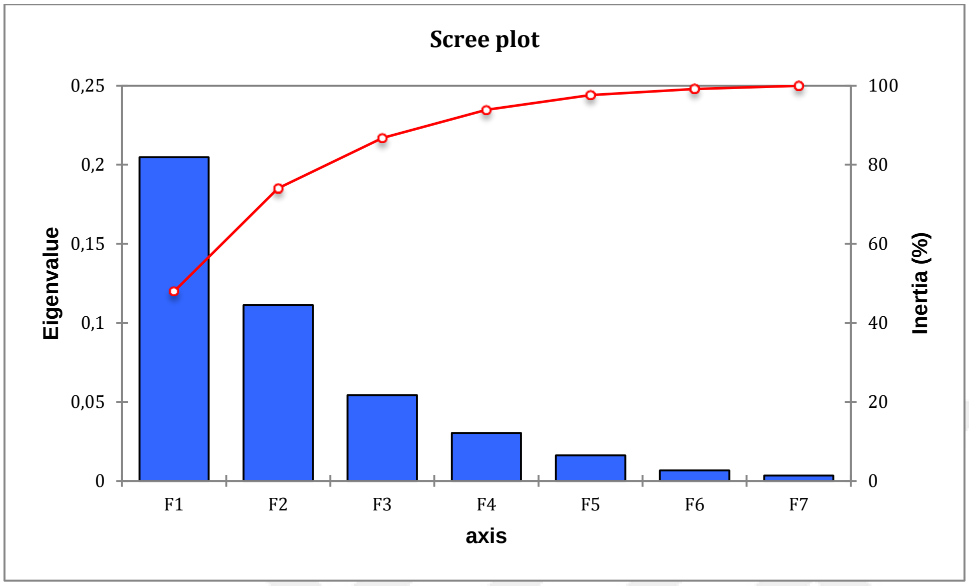
As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.

The risk to reject the null hypothesis H0 while it is true is lower than 0.01%.

Total inertia: 0,427

Eigenvalues and percentages of inertia:

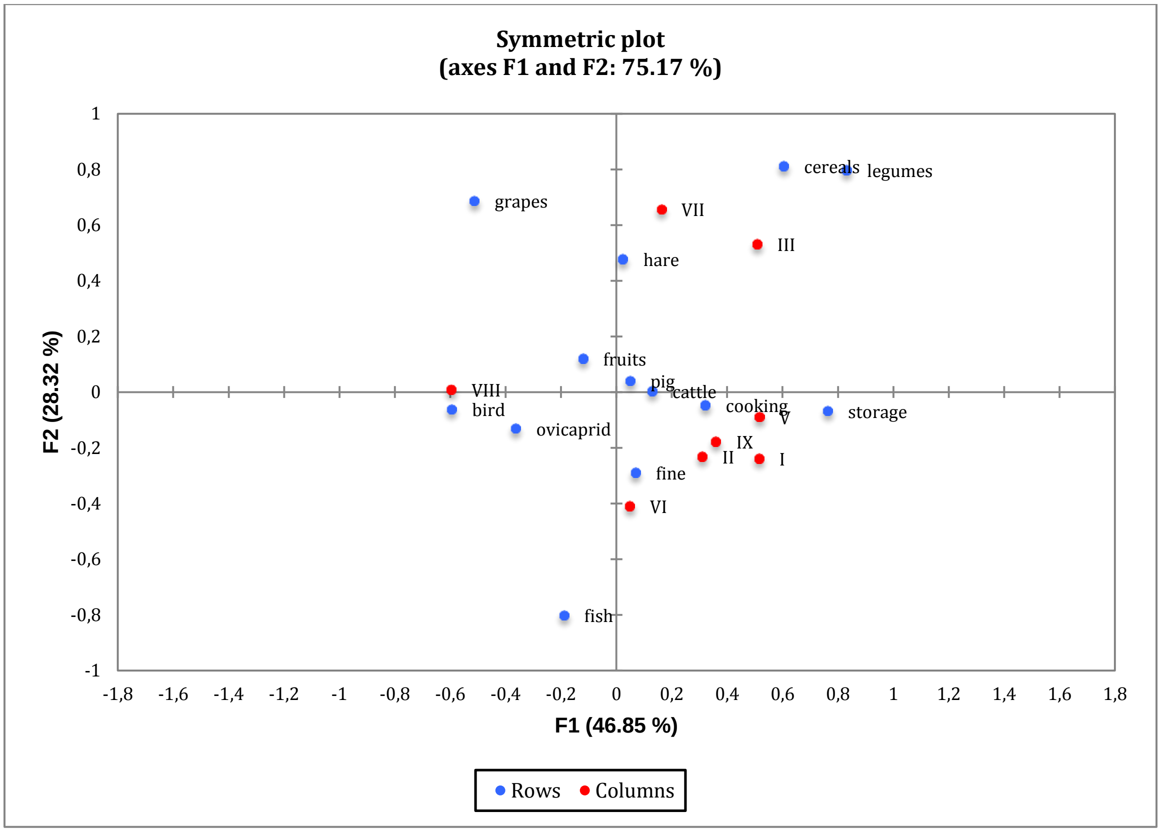
	F1	F2	F3	F4	F5	F6	F7
Eigenvalue	0,205	0,111	0,054	0,030	0,016	0,007	0,003
Inertia (%)	47,984	26,040	12,730	7,099	3,776	1,561	0,809
Cumulative %	47,984	74,024	86,754	93,853	97,630	99,191	100,000



Squared cosines (rows):							
	F1	F2	F3	F4	F5	F6	F7
cereals	0,333	0,461	0,192	0,004	0,008	0,002	0,000
legumes	0,326	0,240	0,147	0,210	0,039	0,039	0,000
grapes	0,310	0,573	0,055	0,058	0,001	0,001	0,002
fruits	0,072	0,037	0,361	0,016	0,006	0,501	0,008
cattle	0,133	0,010	0,008	0,551	0,054	0,179	0,065
ovicaprid	0,886	0,067	0,000	0,013	0,013	0,018	0,003
pig	0,008	0,011	0,185	0,027	0,412	0,263	0,094
hare	0,001	0,498	0,303	0,001	0,079	0,117	0,001
bird	0,748	0,001	0,052	0,170	0,000	0,024	0,004
fish	0,023	0,273	0,493	0,205	0,000	0,005	0,001
fine	0,002	0,839	0,004	0,000	0,057	0,004	0,093
cooking	0,445	0,039	0,445	0,007	0,023	0,027	0,014
storage	0,926	0,028	0,039	0,000	0,000	0,004	0,003
oven	0,539	0,003	0,027	0,007	0,421	0,000	0,003
pit	0,533	0,279	0,042	0,104	0,003	0,019	0,020

Squared cosines (columns):							
	F1	F2	F3	F4	F5	F6	F7
I	0,539	0,147	0,154	0,028	0,013	0,119	0,000
II	0,457	0,134	0,005	0,125	0,187	0,014	0,079
III	0,308	0,244	0,252	0,175	0,019	0,001	0,001
V	0,635	0,023	0,048	0,000	0,226	0,005	0,063
VI	0,002	0,481	0,405	0,111	0,000	0,001	0,000
VII	0,092	0,780	0,005	0,120	0,001	0,001	0,001
VIII	0,979	0,004	0,005	0,012	0,000	0,000	0,000
IX	0,300	0,192	0,297	0,004	0,146	0,060	0,000

CA for the distribution of total plants, animal bones and ceramics (CA-5)



Test of independence between the rows and the columns:	
Chi-square (Observed value)	351,858
Chi-square (Critical value)	106,395
DF	84
p-value	< 0,0001
alpha	0,05

Test interpretation:

H0: The rows and the columns of the table are independent.

Ha: There is a link between the rows and the columns of the table.

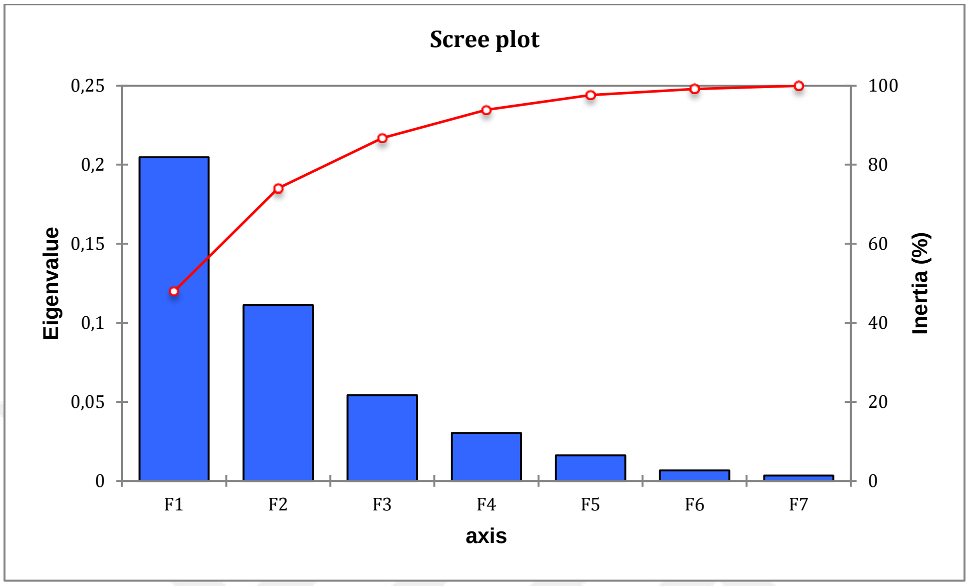
As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.

The risk to reject the null hypothesis H0 while it is true is lower than 0.01%.

Total inertia: 0,407

Eigenvalues and percentages of inertia:

	F1	F2	F3	F4	F5	F6	F7
Eigenvalue	0,191	0,115	0,057	0,031	0,007	0,005	0,001
Inertia (%)	46,851	28,320	13,952	7,683	1,683	1,175	0,337
Cumulative %	46,851	75,170	89,122	96,805	98,488	99,663	100,000

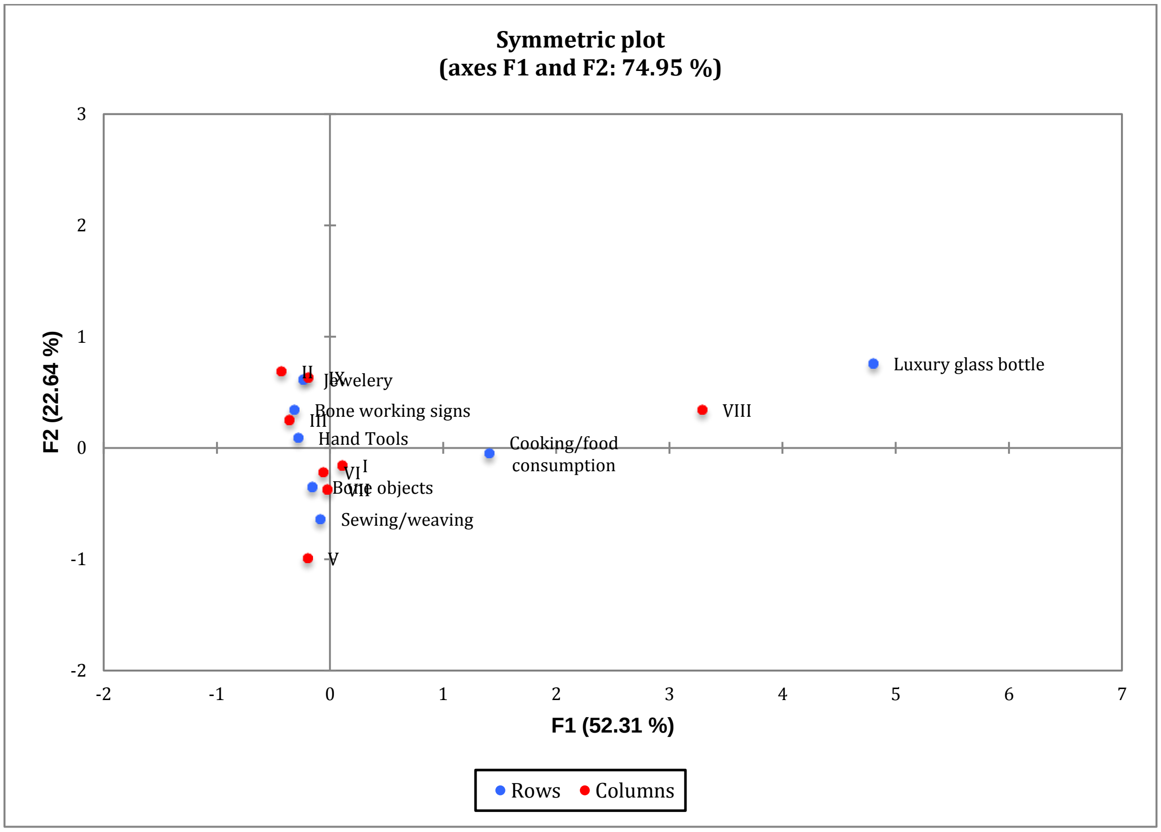


Squared cosines (rows):

	F1	F2	F3	F4	F5	F6	F7
cereals	0,278	0,502	0,219	0,000	0,001	0,000	0,001
legumes	0,281	0,258	0,177	0,256	0,023	0,003	0,002
grapes	0,317	0,568	0,057	0,056	0,001	0,001	0,001
fruits	0,042	0,042	0,357	0,023	0,521	0,007	0,008
cattle	0,256	0,000	0,027	0,447	0,152	0,006	0,111
ovicaprid	0,840	0,109	0,001	0,012	0,025	0,012	0,001
pig	0,029	0,019	0,174	0,028	0,306	0,374	0,070
hare	0,001	0,504	0,335	0,000	0,137	0,019	0,004
bird	0,728	0,008	0,048	0,182	0,030	0,004	0,000
fish	0,015	0,273	0,487	0,219	0,003	0,003	0,000
fine	0,046	0,806	0,001	0,001	0,003	0,140	0,003
cooking	0,576	0,012	0,361	0,003	0,032	0,001	0,015
storage	0,955	0,008	0,024	0,001	0,003	0,007	0,003

Squared cosines (columns):							
	F1	F2	F3	F4	F5	F6	F7
I	0,587	0,126	0,144	0,023	0,121	0,001	0,000
II	0,457	0,257	0,035	0,124	0,044	0,017	0,065
III	0,237	0,257	0,295	0,210	0,000	0,000	0,001
V	0,677	0,020	0,095	0,001	0,013	0,194	0,000
VI	0,006	0,462	0,415	0,116	0,000	0,000	0,000
VII	0,051	0,832	0,004	0,112	0,000	0,001	0,000
VIII	0,978	0,000	0,009	0,013	0,000	0,000	0,000
IX	0,548	0,134	0,236	0,000	0,050	0,020	0,013

CA for the items that were recovered as a whole and assigned to a function (CA-6)



Test of independence between the rows and the columns:	
Chi-square (Observed value)	90,649
Chi-square (Critical value)	58,124
DF	42
p-value	< 0,0001
alpha	0,05

Test interpretation:

H0: The rows and the columns of the table are independent.

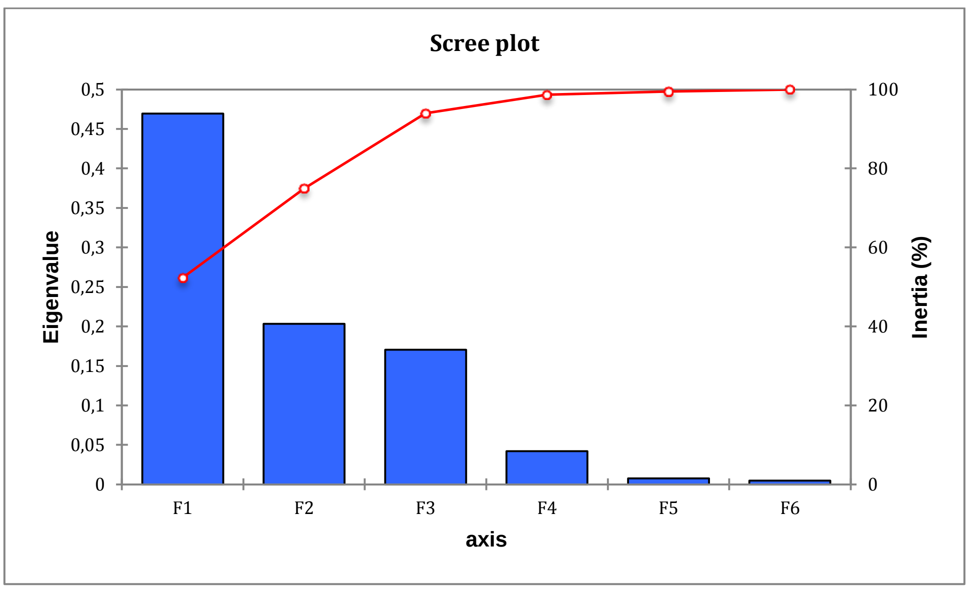
Ha: There is a link between the rows and the columns of the table.

As the computed p-value is lower than the significance level alpha=0.05, one should reject the null hypothesis H0, and accept the alternative hypothesis Ha.

The risk to reject the null hypothesis H0 while it is true is lower than 0.01%.

Eigenvalues and percentages of inertia:

	F1	F2	F3	F4	F5	F6
Eigenvalue	0,469	0,203	0,171	0,042	0,008	0,005
Inertia (%)	52,306	22,640	19,001	4,687	0,840	0,526
Cumulative %	52,306	74,947	93,948	98,635	99,474	100,000

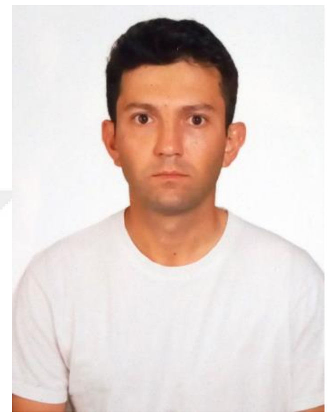


Squared cosines (rows):						
	F1	F2	F3	F4	F5	F6
Jewelry	0,068	0,461	0,453	0,017	0,001	0,000
Sewing/weaving	0,016	0,868	0,018	0,079	0,007	0,012
Hand Tools	0,080	0,008	0,707	0,168	0,035	0,002
Bone objects	0,106	0,517	0,092	0,257	0,024	0,004
Cooking/food	0,980	0,001	0,001	0,005	0,004	0,008
Bone working signs	0,223	0,265	0,453	0,043	0,015	0,001
Luxury glass bottle	0,951	0,024	0,010	0,006	0,003	0,006

Squared cosines (columns):						
	F1	F2	F3	F4	F5	F6
I	0,066	0,138	0,322	0,174	0,061	0,240
II	0,107	0,275	0,569	0,041	0,007	0,001
III	0,289	0,140	0,254	0,299	0,012	0,005
V	0,026	0,658	0,065	0,160	0,088	0,003
VI	0,041	0,593	0,148	0,000	0,076	0,142
VII	0,004	0,858	0,000	0,122	0,009	0,007
VIII	0,985	0,011	0,004	0,001	0,000	0,000
IX	0,041	0,446	0,508	0,004	0,001	0,000

APPENDIX D: CURRICULUM VITAE

Mustafa N. Tatbul



Contact information: Harbiye Mah. Nişancılar Sok. 43/14
06460 Dikmen, Ankara / TURKEY
Phone: +90 539 396 1384
E-Mail: mtatbul@gmail.com

Date of birth **:** 30/01/1978

Place of birth **:** Devrek, Turkey

EDUCATION

Ph.D in Settlement Archaeology, Middle East Technical University, Ankara, Turkey, September 2010 – February 2017

"Identifying Medieval Komana in the 12^{th}-13^{th} Centuries Through Spatial Analysis of Archaeological Data and Multidisciplinary Approach ", Middle East Technical University, Department of Settlement Archaeology, PhD Dissertation.

M.A. Classical Archaeology, Leiden University, Leiden, The Netherlands, September 2005 – August 2007.

“The Early Romanization in Asia Minor: The Visual and Functional Impact of Roman Rule from the Late Republic to Early Imperial Period“, Leiden University, Department of Classical Archaeology, M.A. Thesis, August 2007.

Post-Baccalaureate in Classical Studies, University of Pennsylvania, Philadelphia, PA, USA, September 2004 – May 2005.

B.A. Ancient Languages and Cultures (Classics), Ankara University, Ankara, Turkey, September 1998 – February 2004.

“Gaius Sallustius Crispus: His Life and His Works“, Ankara University, Ancient Languages and Cultures, Classics, B.A. Thesis, February 2004 (in Turkish).

RESEARCH INTERESTS

Spatial Archaeology, Arcahaeological Surface Survey, Archaeological Site Formation Processes, Environmental Archaeology, Archaeobotany, Middle and Late Byzantine Periods, Medieval Archaeology, Classical Archaeology, Classical Studies.

PROFESSIONAL WORK EXPERIENCE

Research Assistant, Department of Settlement Archaeology, Middle East Technical University, Ankara, Turkey, January 2011 – 2016.

Laboratory Assistant, Analysis of faunal and floral samples, operating and maintenance of Environmental Archaeology Research Unit Laboratory, Middle East Technical University, Ankara, Turkey, January 2011 – Present.

FIELD WORK EXPERIENCE

Field Director, Komana Archaeological Research Project (KARP), Tokat, Turkey, Excavation Season 2016.

Field Director, Komana Archaeological Research Project (KARP), Tokat, Turkey, Excavation Season 2015.

Field Director Komana Archaeological Research Project (KARP), Tokat, Turkey, Excavation Season 2014.

Field Archaeologist, Komana Archaeological Research Project (KARP), Tokat, Turkey, Excavation Season 2013.

Archaeobotanical Field Work (flotation), Pompeiopolis Archaeological Excavations, Kastamonu, Turkey, Excavation Season 2013.

Field Archaeologist, Komana Archaeological Research Project (KARP), Tokat, Turkey, Excavation Season 2012.

Archaeobotanical Field Work (flotation and sorting), Burgaz Archaeological Excavations, Datca, Mugla, Turkey, Excavation Season 2012.

Field Archaeologist, Komana Archaeological Research Project (KARP), Tokat, Turkey, Excavation Season 2011.

Field Archaeologist, Komana Archaeological Research Project (KARP), Tokat, Turkey, Excavation Season 2010.

Zooarchaeological Field Work, Tios Archaeological Excavations, Filyos, Zonguldak, Turkey, Excavation Season 2010.

Field Archaeologist, Komana Archaeological Research Project (KARP), Tokat, Turkey, Excavation Season 2009 (short term).

Field Training, Butrint Foundation Excavations in the Roman House and Late-Antique Basilica Complex on the Vrina Plain, Ksamili, Albania, Summer 2006.

LABORATORY EXPERIENCE

Laboratory Assistant, Analysis of archaeobotanical samples recovered from Hamamtepe- Komana, Tokat, Turkey, by Assist. Prof. Dr. Evangelia Pişkin, September 2010 - Present.

Laboratory Assistant, Archaeozoological study of the bone assemblages recovered from Hamamtepe- Komana, Tokat, Turkey, by Assist. Prof. Dr. Evangelia Pişkin, September 2010 - 2012.

Laboratory Assistant, Archaeozoological study of the bone assemblages recovered from Aşvan Kale, Taşkun Kale, Taşkun Mevkii and Çayboyu by Assist. Prof. Dr. Evangelia Pişkin, Supported by the British Academy and the British Institute at Ankara, Ankara, Turkey, September 2010 – 2011.

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Poster Presentations

Tatbul, M. N. (2016) Understanding the Middle Byzantine Site of Komana Through Spatial Analysis of Archaeological Data, 4th International Sevgi Gönül Byzantine Studies Symposium, 23-25 June 2016, İstanbul.

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LANGUAGES

Turkish, Latin, Ancient Greek, English, German (beginner), Italian (beginner).

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Prof. Dr. D. Burcu ERCIYAS, Department of Settlement Archaeology**,** Middle East Technical University, Ankara. Turkey, **E-Mail:** berciyas@metu.edu.tr

Assist. Prof. Dr. Evangelia Ioannido Pişkin, Middle East Technical University, Ankara, Turkey **E-Mail:** ioannido@metu.edu.tr

Prof. Dr. Mehmet Lütfi SÜZEN, Department of Geology, Middle East Technical University, Ankara, Turkey, **E-mail:** suzen@metu.edu.tr

* Reference letters are available upon request.

APPENDIX E: TURKISH SUMMARY / TÜRKÇE ÖZET

IDENTIFYING MEDIEVAL KOMANA IN THE 12th-13th CENTURIES THROUGH SPATIAL ANALYSIS OF ARCHAEOLOGICAL DATA WITH A MULTIDISCIPLINARY APPROACH

12. - 13. YÜZ YILLARDA ORTAÇAĞ KOMANASI'NIN ARKEOLOJİK VERİLERİN MEKANSAL ANALİZİ YÖNTEMİ KULLANILARAK VE ÇOK DİSİPLİNLİ BİR YAKLAŞIM İLE TANIMLANMASI

Ortaçağ'da Anadolu'nun ekonomi, politika, sosyal ve dini yaşam gibi dinamikler çoğu zaman yazılı kaynaklar, kamusal mimari kalıntılar ve sistematik yapılan kazıları ayrı tutarsak, kontekstini yitirmiş arkeolojik materyal kültür sayesinde anlaşılmaya çalışılmaktadır ve üretilen bilgi daha çok yöneten ve maddi olarak güçlü bir kesimi temsil etmektedir. Ortaçağ Anadolusu' nun bu saray ya da elit yaşamını ortaya koyan bu çaba temsil ettiği konu bakımından oldukça büyük miktarda bir bilgi birikimi oluştururken, kırsal ve evsel yaşamın temsil edilmesi oldukça ihmal edilmiştir.

Kırsal ve evsel kontekstlerin bulunduğu ve gündelik yaşamı temsil eden arkeolojik alanlar Anadolu'da yaşayan gerek Hıristiyan gerekse İslami inancı benimsemiş toplumların ekonomisi, sosyal, kültürel ve politik ilişki ve etkileşimlerinin farklı bir açıdan ve ölçekten aydınlatılabilmesi için son derece önemlidir. Türkiye'de gerçekleştirilen bir çok arkeolojik kazıda Ortaçağ tabakaları ile sık sık karşılaşılmakta fakat toplanan arkeolojik veriler araştırmacılar tarafından daha az ilgi uyandırdığından yayın aşamasına geçememekte ya da uzun bir zamanın ardından yayınlanabilmektedir. Bu nedenle, Ortaçağın ekonomi, sosyal ve siyasal tarihinin daha iyi anlaşılabilmesi için somut arkeolojik kanıtlar özellikle kırsal ve evsel yaşam ölçeğinde son derece önemlidir. Öte yandan parça parça elde edilen ve yayınlanan bu kazı verileri, Ortaçağ tabakalarının temsil ettiği yerleşimin karakteri hakkında son derece kısıtlı bilgi sağlamakta ve geçmişle günümüz arasında var olan bu boşluğu tam anlamıyla doldurmamaktadır.

Ayrıca birçok Ortaçağ kazısında, yapısal kalıntılar ve buluntular arasında bağlamsal bir kopukluklar vardır. Arkeolojik verinin mekânsal yorumlanmasına istatistiksel verilerin kullanımına yeterince önem verilmemekte ve mekânların işlevine dair çıkarımlar daha çok yapıların gözlemsel olarak incelenmesi ya da buluntuların varlığına dayanmaktadır. Yerleşim içi ölçekte konumsal analiz, Batı arkeolojisinde 1970'lerden itibaren, arkeolojinin liderliğinde disiplinler arası çalışmaların katkısıyla hızla gelişim göstermektedir. Buna rağmen, yerleşim içi ölçekte yapılan konumsal analizler daha çok in situ buluntuların arkeolojik veriyi oluşturduğu tarihi dönem yerleşmelerinde ya da mimari yapı kalıntılarının yerleşimin sınırlarını belirleyici olmadığı prehistorik yerleşim alanlarında ve paleolitik mağara yerleşimlerinde sıklıkla uygulanmaktadır. Ortaçağ arkeolojisinde mekânsal analiz alanında araştırma sayısı son derece az olmasına rağmen değerli ve geniş kapsamlı çalışmalar az da olsa yapılmaktadır.

Birçok araştırma projesinde kazılardan elde edilen veriler uzmanlar tarafından ayrı değerlendirilmekte ve raporlamalar ayrı ayrı yazılmaktadır. Tüm bulguları aynı anda değerlendirme sayesinde geçmişi daha geniş bir çerçeveden resmetmek mümkündür. Ayrıca, araştırmacının kazı, veri toplama, örnekleme, verinin değerlendirilmesi ve yorumlanması gibi tüm süreçlerde aktif rol alması son derece önemlidir.

Arkeolojik tabakaların gerek kültürel gerekse doğal oluşum süreçlerinden son derece fazla etkilendiği, ve birden fazla yapı katının mevcut olduğu alanlardan biri olan Komana'da tabakaların iyi anlaşılabilmesi için bir metodoloji geliştirme ihtiyacı ortaya çıkmıştır. Komana'da arkeolojik tabakaların fazla derecede parçalanmış malzeme ile dolu olmasına rağmen yine de geçmiş dinamikler ile doğrudan ilişkilendirilebilecek arkeolojik veriyi in situ olarak tespit etme olanağı bulunmaktadır. Bu yaklaşım sayesinde, en azından her buluntu grubuna içinde bulunduğu bağlam ile birlikte bir bilgi değeri biçilebilmektedir.

Yukarı da belirtilen dört yaklaşım: üretim ve tüketim alışkanlıklarını temsil eden kontekstler, arkeolojik verinin mekânsal analizi yoluyla odaların işlevlerinin anlaşılması ve kültürel ve doğal süreçlerden son derece etkilenmiş tabakalar ile başa çıkabilme gereksinimi, Komana'yı bu tür bir çalışmanın uygulanabilir bir alanı olarak cazip kılmıştır.

Komana /Hamamtepe arkeolojik alanı, Tokat'ın 10 km. kuzey doğusunda, Gümenek köyü sınırları içerisinde yer almaktadır. Yerleşme, Yeşilırmak (İris) kıyısında bulunması, Tokat-Niksar yolu üzerindeki konumu ve son derece verimli tarım alanlarının bulunduğu ovada kurulduğu yüksek nokta ile son derece stratejik bir öneme sahiptir. Burcu Erciyas tarafından, bölgede 2004-2008 yılları arasında yüzey araştırması yapılmış, 2009 yılından itibaren de kazı çalışmaları yürütülmektedir. Bölgenin tarihinin anlaşılması adına gerçekleştirilen bilimsel çalışmalar sadece bununla sınırlı değildir. 19. Yüzyılın ortalarından itibaren birçok Batılı seyyahın tüm Anadolu'da gerçekleştirmiş olduğu geziler sırasında yolları Komana ve yakın çevresi ile de kesişmiştir. Tuttukları seyahat notlar, çizimler ve fotoğraflar sayesinde Komana ve çevresinin geçmiş yüzyıl içinde geçirmiş olduğu değişiklikleri takip edebilme şansımız vardır. Komana ve çevresi hakkında diğer bir bilgi altyapısına da 12. yüzyılı kaleme alan Danişmendname ve, Hellenistik ve Erken Roma dönemlerinde Komana 'yı bize anlatan Strabo ve Dio Casius gibi antik yazarlar sayesinde ulaşılabilmektedir.

Alanda gerçekleştirilen kazılarda sırasıyla 16.-17. yüz yıllara tarihlenen Osmanlı konut evresi, 12.-13. yüz yıllara tarihlenen Danişmend/Selçuklu evresi, 10.-12. yüz yıllar arasına tarihlenen Bizans dönemi mezarlık evresi ve 10. yüzyıl öncesini temsil eden erken Bizans dönemi evreleri ortaya çıkarılmıştır. Geç ve erken Roma dönemleri ve Helenistik döneme ait malzemelere kazılarda ulaşılsa da henüz yapısal olarak bir kanıt elde edilememiştir. Etrafı bir sur duvarı ile çevrili olan yerleşmede, doktora tez çalışması kapsamında gerçekleştirilen mekânsal analiz yerleşmenin merkezinde bulunan ve yalnızca duvar temelleri ile ayakta duran 12.-13. yüz yıllara ait yapı grubu içerisinde birbirine komşu olan sekiz odada gerçekleştirilmiştir (HTP01 sektörü). Söz konusu mekanlar çamur harçlı taş temelleri çoğunlukla bozulmuş sıkıştırılmış toprak tabanlar, çok miktarda ocak ve çöp çukurları ile temsil edilmektedir.

Gerçekleştirilen bu doktora çalışmasının birden fazla amacı vardır:

Komana'da 12.-13. yüz yıllar arasında ortaya çıkmış değişik sosyal, tarihi ve arkeolojik süreçlerin, araştırmaların ilk safhasında bir atölye alanı olarak tanımlanan yapı grubu içerisinde arkeolojik malzeme dağılımlarından faydalanarak işlevlerinin anlaşılmasıdır. Bu çalışmada olası üretim ve tüketim davranışlarının gerek evsel gerekse işlik alanlarında bulunan ocak ve çöp çukurları gibi doğrudan kullanım ile ilişkilendirilebilecek yapılar etrafında belirlenebilmesi hedeflenmiştir. Bu amaçla çok çeşitli kontekstlerde bulunan kültürel buluntular ve bitki ve hayvan türleri gibi ekosistemin ve aynı zaman da tüketim ekonomisinin bir parçası olan buluntuların istatistiksel yöntemler ile birlikte ele değerlendirilmektedir. Çalışmanın ilk amacı 12. – 13. yüz yıllarda Komana arkeolojik yerleşiminin kazılarda elde edilen arkeolojik verilerin mekânsal analizi ve çok disiplinli bir yaklaşım ile anlaşılması ve çeşitli arkeolojik çalışmalar sonucu tanımlanmış ve literatürde yer alan, çağdaşı olan yerleşmeler ile kıyaslanarak Komana Ortaçağ yerleşiminin işlevi, işleyişi ve yerleşim özelliklerinin ortaya çıkarılması ve Komana'nın çağdaşları arasındaki yerinin belirlenmesidir.

Çalışmanın ikinci amacı kazılar sırasında tabaka, kontekst ve mimari olarak tanımlanan mekanlardan toplanan arkeolojik malzeme gruplarının mekânsal/konumsal dağılım analizi yöntemi ile üretim ve tüketim gibi davranışların anlaşılarak, mekanların, ocakların, çöp çukurları ve depolama haznelerinin işlev ve kullanım amaçlarının belirlenmesidir.

Komana'nın 12. – 13. yüz yılları temsil eden tabakaları beklendiği üzere son derece yoğun kültürel ve doğal oluşum/değişim süreçlerine maruz kalmıştır. Yine de geçmiş dinamikler ve günümüzde elimizde olan arkeolojik buluntu arasındaki bağın kurulması bakımından kontekstler çeşitli derecelerde bilgi barındırmaktadır. Bu argümandan yola çıkarak çalışmanın üçüncü amacı arkeolojik tabakalarda bulunan çeşitli derecelerde temsile sahip verinin ayırt edilmesi ve arkeolojik tabakaların oluşumunda etkisi olan kültürel ve doğal süreçlerin belirlenmesi, yerleşimin nasıl terkedildiği ve geride kalan bulguların nasıl yorumlanması gerektiğinin anlaşılmasıdır. Bu hedef var olan arkeolojik kontekst ile geçmiş dinamikler arasındaki boşluğun doldurulabilmesi ve özellikle sağlıklı bir mekânsal/konumsal analizin yapılabilmesi için olmazsa olmaz bir koşuldur.

Bu doktora tez çalışması giriş ve sonuç bölümleri dahil 7 bölümden oluşmaktadır. 2. Bölüm Komana'nın tarihsel coğrafyasının tanıtılması ve 12.-13. yüz yıllarda ortaya çıkan sosyo-ekonomik dinamiklerin irdelenmesine ayrılmıştır. 19. yüzyıl seyyahlarının kayıtlarından son yıllarda gerçekleştirilmekte olan yüzey araştırmaları ve kazı çalışmalarına kadar yapılan araştırmalar, Hamamtepe arkeolojik alanındaki kazılan sektörler, alanın stratigrafisi ve doğal çevresi ile ilişkili olarak bulunduğu konum anlatılmaktadır.

3. Bölümde mekânsal/konumsal analizin teorik ve metodolojik altyapısı irdelenmektedir. Arkeolojik tabakalara olan bakış açıları, yapı ve materyal arasındaki konumsal ilişki, arkeolojide istatistiksel ve sayısal yaklaşımlar ve istatistiksel verinin değerlendirilmesi ve yorumlanması tartışılmaktadır.

4. Bölümde gerçekleştirilen doktora çalışmasının yöntemleri tanımlanmaktadır. Kazı yöntemi, örnekleme stratejileri, verinin tanımlanması ve sayısallaştırılması, kontekstlerin ayrımı, verinin analiz ve yorumlanma yöntemleri tanıtılmaktadır. 4. Bölümde ayrıca çalışma alanının sınırları, mekânsal/konumsal yapı ve birimler, çalışmanın ilk safhalarında yöntemin belirlenmesi için gerçekleştirilen pilot çalışmalarının uygulama ve sonuçları, buluntu grupları ve tabakaların tarihlemeleri hakkında tanımlamalara yer verilmektedir.

5. Bölümde tabakalardan ve toprak örneklerinden elde edilen veriler mekan ve kontekstler bazında tartışılmaktadır. İlk olarak toplanan tüm veri, ardın da verinin toplandığı tabaka ve toprak örneklerinin hacimleri hesaplanarak hacimsel bazdaki veri tablo ve grafikler yardımı ile analiz edilmektedir. İkinci olarak ise hacimsel olarak hesaplanan veriler bilgisayar destekli yazılım programı kullanılarak seçilen malzeme grupları arasında Uygunluk analizine (Correspondence Analysis) sokulmuştur. Üçüncü

olarak da yine hacimsel olarak hesaplanan veri üzerinde Coğrafi Bilgi Sistemleri (GIS) yazılımı kullanılarak yerleşim içi ölçekte dağılım sorgulamaları gerçekleştirilmiştir.

6. Bölümde mekânsal analiz sonuçları tartışılmakta ve Komana' nın kronolojik ve coğrafi konumlar göz önünde bulundurularak, çağdaşı olan arkeolojik yerleşimler arasındaki yeri belirlenmeye çalışılmaktadır.

Son bölümde ise yapılan doktora çalışmasının sonuçları, araştırma sırasında karşılaşılan kısıtlamalar ve araştırmanın gelecekteki hedefleri anlatılmaktadır.

Yukarıda belirtilen amaçlara ulaşabilmek için benimsenen yaklaşım, var olan tüm arkeolojik verinin mümkün olduğunca bir araya getirilerek sonuç değerlendirmelerine ulaşmak, cevaplanacak olan araştırma sorularına daha sağlıklı ve resmin bütününü görerek cevap bulmaktır. Arkeolojik çalışmalarda çoğu zaman malzeme grupları konunun uzmanları tarafından ayrı ele alınmakta, tüm verinin bir araya getirilerek değerlendirilmesi projelerin sonraki safhalara bırakılmaktadır. Gerçekleştirilen bu çalışmada kazılar sırasında arkeolojik tabakalardan elde edilen verilerin tümünün değerlendirilmesi hedeflenmiştir. Bu yaklaşım ile seramik, metal, cam, özel buluntular gibi kültürel malzemeler, hayvan kemikleri (zooarkeolojik) ve bitki kalıntıları (arkeobotanik) bir araya getirilerek analizler gerçekleştirilmiş ve değerlendirme yapılmıştır.

Arkeolojik kazılarda cevaplanmak istenen araştırma soruları çoğu zaman ortak da olsa uygulanan yaklaşım ve yöntem farklılık göstermektedir. Genellikle gözlem yoluyla sonuç ve değerlendirmelere ulaşılırken, istatistiksel yaklaşımlar ulaşılan sonuçların daha sağlam temellere oturtulması ve daha bilimsel bir çerçevede ele alınmasına katkıda bulunmaktadır. Gerçekleştirilen bu çalışmada, bu yaklaşım ile birlikte, kazılarda toplanan bulgular sayısal ve istatistiksel veriye dönüştürülmüş, malzeme gruplarının mekânlar ve kontekstlerdeki dağılımı belirlenmiştir. Ayrıca, özellikle kültürel malzemenin çok fazla parçalanmış olarak ele geçirilmesi ve in situ malzeme ile yok denecek kadar seyrek durumda karşılaşılması, malzeme gruplarının dağılımında parça sayısı ve ağırlıklarının ölçülmesi gibi yöntemlerin kullanılmasını gerekmektedir. Tanımlanan mekânları dolduran tabakalarda belirlenen malzeme yoğunluklarının hesaplanmasında kaldırılan kazı toprağının hacmi hesaplanmış (parça sayısı/m^3) (gr./m^3) ve mekanların kıyaslanmasında ortak bir istatistiksel altyapı oluşturulmuştur. Ocaklar, çöp çukurları ve yanık alanlardan alınan toprak örneklerinden elde edilen veriler için de hacimsel hesaplamalara başvurulmuştur (parça sayısı/litre) (gr./litre).

İstatistiksel verilerin hazırlanması aynı zamanda mekanlar ve kontekstler arasında dağılımları anlaşılmaya çalışılan malzeme gruplarının azlık-çokluk ölçüleri ve birbirleri arasındaki orantısal farklılıkların belirlenmesi ile birlikte ortak bir zemin oluşturmakta ve kıyaslamaların yapılabilmesine olanak sağlamaktadır.

Çalışmada seramik, metal, cam ve kemik obje gibi kültürel malzemelerin yerleşmedeki işlevsel kullanımlarının değerlendirilmesinin yanı sıra, bu tip malzemelerin üretiminin bu tez çalışmasının kapsamına giren mekanlarda gerçekleştirilip gerçekleştirilmediği anlaşılmaya çalışılmış ve ayrıca yerleşmenin bütünü için kanıtlar gözlemsel olarak da değerlendirilmiştir. Yerleşimin ekonomisi, mekanların ve işlevsel yapıların (ocak ve çöp çukuru) kullanımı için son derece önemli olan arkeobotanik ve zooarkeolojik verilere çalışmada yer verilmiştir.

Arkeolojik kazılarda toplanarak istatistiksel veriye dönüştürülen bulgular çalışmanın kapsamı içinde bulunan sekiz oda ve tanımlanan çok sayıda ocak ve çöp çukuru temel alınarak incelenmiştir. Odaların, ocakların ve çöp çukurlarının içlerinde barındırdığı malzeme grupları belirlenmiş, karakteristik dağılım özellikleri ortaya çıkarılmıştır. Mekânsal analizlerin gerçekleştirilmesi için grafik ve tablolar, arkeolojide sıkça kullanılan Uygunluk Analizi (Correspondence Analysis-CA) ve yine arkeolojide yerleşmeler arası, yerleşme içi ve yapı içi gibi çeşitli ölçeklerde kullanılan Coğrafi Bilgi Sistemleri-CBS (Geographical Information Systems-GIS) gibi bilgisayar destekli yazılım gerektiren analitik araçlar kullanılmıştır. Bu araçlar sayesinde ulaşılan sonuç ve değerlendirmelere, bu tez çalışmasının analiz sonuçlarının tartışıldığı bölümde yer verilmiştir. Ayrıca, kullanılan bu analitik araçların neden ve nasıl kullanıldıkları da anlatılmıştır.

Komana ve civarı Moğol istilasına kadar, 11.-13. yüz yıllar arasında önce Danişmendliler ardından da Selçuklular tarafından yönetilmiştir. Moğolların ardından Eretna Beyliği bölgeye hakim olmuş ve 14.yüzyılda Osmanlı Devleti Anadolu'da siyasal birliği sağlayana kadar varlığını sürdürmüştür. Danişmend ve Selçuklu dönemi özellikle Hamamtepe höyüğünün üst tabaklarında ortaya çıkarılmış ve kazı çalışmaları sonucunda yerleşimin bir sur duvarı ile çevrelendiği ve surun dış bölümünde de yerleşimin yayıldığı anlaşılmıştır. Yerleşimin dışındaki alanlar daha çok evsel alanları temsil ederken surun iç kısmında bulunan mekanlarda işlev bakımından farklılar gözlemlenmiştir. Danişmend ve Selçuklu yerleşmesinin organizasyon ve işleyişinin anlaşılması ve yerleşmenin arkeolojik ve tarihsel bir bağlamda çağdaşı olan yerleşmelerle kıyaslanması amacıyla surun merkez bölümünde belirlenen birbirine komşu 8 odada mekânsal analiz gerçekleştirilmiş ve üretim ve tüketim davranışları, tabakaların oluşum süreçleri ve mekan fonksiyonları belirlenmiştir. İstatistiksel ve mekânsal analizeler Komana'nın Ortaçağ'ının anlaşılmasına katkıda bulunmuştur. Ayrıntılı olarak analiz edilen 8 odanın dışında tüm yerleşmeden elde edilen veriden de faydalanılmıştır.

Kinet Höyük, Samsat, Gritille, Anaia/Kadıkalesi, Gözlükule, Tios, Yumuktepe, Korucutepe, Hasankefyf, Kubad-Abad, Amorium, Daskyleion/Hisartepe, Tille Höyük, Aşvan Kale, Taşkun Kale, Tyana/Kemerhisar, Çadırhöyük, Beycesultan, Kınık Höyük gibi Komana'nın çağdaşı olan ortaçağ yerleşmelerinden elde edilen veriler Komana'yı 11.-13.yüz yıllarda bir konuma yerleştirmeye yardımcı olmuştur.

Bu bölümde arkeolojik veri ışığında Komana'da bulunan meknaların işlevleri, endüstriyel ve evsel aktiviteleri temsil eden davranışlar tartışılmaktadır. Bu çerçevede yemek hazırlığı, tüketim ve atık gibi evsel davranışlar ve seramik, metal, cam, kemik ve tekstil üretimine dair belirteçler irdelenmektedir.

Bu çalışmanın amaçlarından biri kısa süreli ya da tek bir aktivite sonucu oluşan malzeme dağılımlarının tespit edilmeye çalışılmasıdır, diğeri ise oluşum süreçlerinden son derece fazla etkilenmesine rağmen dolgu tabakalardan mümkün olduğunca fazla bilgi elde edebilmektir. Bu strateji ile tabaklardan elde edilen veri ile kapalı kontekstler olarak tanımlanan ocaklar, çöp çukurları ve depolama haznelerinden elde edilen bulgular birbirinden ayrı olarak ele alınmıştır. Örneğin, mekan içini dolduran tabakalardan elde edilen seramik parçaları sınırlı miktarda bilgi barındırırken çöp çukuru veya ocak içinden elde edilen kömürleşmiş bitki kalıntıları bu yapısal öğelerin son kullanımı hakkında daha detaylı ve in situ bilgi sunmaktadır.

Arkeolojik verinin bağlamsal ayrımı mekan ve ocak, çöp çukuru gibi işlevsel yapıların kullanımı hakkında daha detaylı bilgi sağlarken, dolgu tabakalardan elde edilen daha çok parçalanmış halde bulunan materyaller mekan işlevleri ve yerleşimin geneli hakkında daha genel çıkarımlarda bulunmaya yardımcı olmuştur.

Arkeolojik verinin bağlamsal ayrımı ayrıca bazı malzeme gruplarının neden belirli noktalarda ve daha az parçalı durumda toplandığının açıklanmasında faydalı olmuş ve daha dar, kapalı ve iyi korunan alanlardan elde edilen malzemeler bu çıkarımı desteklemiştir.

Kapalı kontekstler tek bir aktiviteyi ya da daha kısa aralıklarla gerçekleştirilmiş aktiviteleri temsil etmesi bakımından son derece önemlidir, ve her bir kapalı kontekstin ayrı ayrı analiz edilmesi aktiviteye dair izlerin anlaşılmasına katkıda bulunmaktadır. Örneğin, iki ocak yapısında çok miktarda hayvan kemiği tespit edilmiştir. Bunlardan, VII no'lu odada bulunan F66 ocağının içinde 137 tavşan, 100 koyun-keçi, 13 kuş kemiği tanımlanırken, VI no'lu odada bulunan F10 ocağının içinde 175 balık, 168 kuş, 38 tavşan ve 60 koyun-keçi kemiği ortaya çıkarılmıştır. Her iki örnekte de kemiklerin çok azında yanık izlerine rastlanmış ve bu durum kemiklerin ocağın soğuk olduğu bir zamanda içerisine atıldığına işaret etmiştir. Bu denli yoğun miktarda hayvan kemiğinin ve alanda tespit edilen tüm fauna göz önüne alındığında seyrek rastlanan türlerin ocak içerisine atılmış olması oldukça önemli bir bilgi sunmaktadır. Tespit edilen bu hayvan kemiği konsantrasyonu mekânların son kullanımında yapılan bir av ziyafetinin artıklarını ya da yerleşimin terkedilmesinin ardından ya da ocak yapılarının işlevlerini yitirmelerinin ardından, tek tip bir beslenme alışkanlığının kısa aralıklar sonucu oluşan çöp atık noktaları olarak değerlendirilebilir. Ayrıca, toprak örneklerinden ayrıştırılan ağır çökeltiler (heavy residue) balık, kemirgen ve büyük hayvanların son derece küçük olan kemikleri gibi, gözle görülemeyen türlerin tespitinde son derece yardımcı olmaktadır.

VIII no'lu mekanda bulunan F34 çöp çukurunda büyük çoğunluğunu koyun-keçi sesamoid kemiğinin oluşturduğu 290 adet hayvan kemiği, 191 kuş, 17 tavşan, 15 balık, çok sayıda kemirgen, tam bir kedi iskeleti, böcekler ve mineralleşmiş yaklaşık 2000 adet üzüm çekirdeği, karpuz, böğürtlen ve incir çekirdekleri, yeşilimsi ve küllü bir toprak yapısı içinde tespit edilmiştir. Ayrıca çukurda parçaları büyük ve birleştirilebilir sırlı tabaklar, pişirme kap ve kapakları ve altın simle işlenmiş koyu mavi bir parfüm şişesi parçalanmış halde bulunmuştur. Tabanı ana kaya olan ve su tutma özelliği bulunan çukurdan elde edilen verilerin tümü bir araya getirildiğinde işlevinin lağım çukuru olduğu anlaşılmıştır.

III no'lu mekanda bulunan ana kayaya oyularak oluşturulmuş Fx2 çöp çukurunda 342 kuş ve 138 tavşan kemiği, 121 adet karbonize olmuş tahıl tanesi, 211 adet çoğu birleştirilebilir sırlı seramik ve 241 gr cam parçası (en yoğun bulunduğu konteksttir) tespit edilmiştir. Çukurda oluşan malzeme kompozisyonu oldukça çeşitlilik göstermiştir. Kuş ve tavşan kemiklerinin konsantrasyonu tek bir aktivite sonucu ya da kısa aralıklı bir atık davranışını göstermektedir. I no'lu mekanda bulunan ana kayaya oyularak oluşturulmuş F08 çukurunda 110 kuş, 27 tavşan, 195 sırlı seramik parçası, 227 pişirme kabı parçası ve 244 adet depolama kabı parçası tespit edilmiştir. Oldukça iyi izolasyona sahip bu iki çukur gerçekte bir tahıl ya da sıvı depolama haznesi olmasına rağmen yerleşmenin son zamanlarında bir çöp alanı olarak kullanılmış olabilir.

Komana'da ortaya çıkarılan kapalı kontekstler, seramik ve cam gibi buluntuların daha büyük parçalar halinde bulunmaları bakımından potansiyel alanlardır. Ayrıca, kapalı kontekstler belirli buluntu gruplarının bir arada bulunduğu ve kısa süreli aktiviteler sonucu oluşan atığı temsil etmektedirler. Komana'da seramik kaplar çok az sayıda bütün olarak ele geçirilmiştir. Daha çok dar boşluklara sıkışarak dış etkilerden korunmuşlar ve şans eseri günümüze kalmayı başarmışlardır.

Komana'da ocak ve çukurlardan alınan top örnekleri sayesinde, bitki türleri ve içerisinde bulundukları yapılar ile olan ilişkileri belirlenebilmiş ve yapıların işlevleri hakkında çıkarımlarda bulunmak mümkün olmuştur.

Ateşle ilişkisi olan ocaklar (örneğin içerisinde yanık olarak tespit edilen 125 tahıl, 100 baklagil ve 21 üzüm çekirdeği bulunan F49 ocağı) ve kül atılmış çukurlar (örneğin içerisinde yanmış 553 tahıl, 99 baklagil ve 62 üzüm çekirdeği bulunan F33 çukuru) gibi kontekstlerde yanık tahıl, baklagil ve meyve kalıntıları her zaman bulunmaktadır. Mineralleşmiş üzüm ve meyve kalıntılarına ise daha çok su tutma özelliğine sahip ana kaya tabanlı çukurlarda rastlanmaktadır (örneğin 1924 adet üzüm çekirdeği içeren F34 lağım çukuru) ve bir kaç durumun dışında tahıl kalıntıları hiç bir zaman mineralleşmiş olarak tespit edilememiştir.

Komana'da bulunan sikkeler çeşitlilik göstermekte ve 11.-13. yüz yıllar aralığında tarihlenmektedir. Danişmend ve Selçuklu tabakaları seramik buluntular göz önüne alındığında 12.-13. yüz yıllara tarihlenmektedir. 11. yüz yıl sikkelerinin yüz yıllık bir süre içinde dolaşımda olduğu ön görülmektedir (örneğin 1059 yılına tarihlenen bir Bizans sikkesinin 12. yüz yıl ortasında dolaşımda olması mümkündür). Benzer bir durum Moore tarafından Tille Höyük'te ve Mitchell tarafından Aşvan Kale için tartışılmaktadır. Ayrıca Aşvan Kale'de sırlı seramiklerin dekorasyonunda Selçuklu ve Pers etkileri görülmektedir. Seramik ocaklarının üretimi, 11. yüz yıllara tarihlenen sikkelerin varlığına rağmen 12.-13. yüz yıllara tarihlenmektedir. Aşvan Kale'nin Selçukluların hakimiyetinde olmasına rağmen seramik atölyelerinde çalışan ustaların Hıristiyan oldukları Mitchell tarafından önerilmektedir. Bu da açıkça gösteriyor ki Bizans ve İslami sikkelerin eş zamanlı olarak geçerli olabilir ve daha geç tarih veren seramikler ile birlikte bulundukları tabakalar doğrudan karışmış olarak değerlendirilmemelidir. Bu durum Tille Höyük, Aşvan Kale ve Komana için böyledir.

Komana'da endüstriyel üretimin var olup olmadığının anlaşılabilmesi amacıyla bir çok araştırmacı tarafından kabul görmüş belirteçler göz önünde bulundurulmuştur. Komana'da toplanan veriler seramik, metal, cam, kemik obje ve tekstil üretimi gibi çağdaşı olan arkeolojk alanlarda da tespit edilen ve Ortaçağda zanaat ya da endüstriyel üretim olarak kabul edilen aktivitelerin var olup olmadığının anlaşılabilmesi için sorgulanmıştır.

Seramik üretimine dair belirteçler analiz edilmiştir. Henüz bir seramik fırını tespit edilememiş fakat seramik üretiminde kullanılan üçayaklar ve üretimin bir aşamasını temsil eden bisküviler seramik üretiminin varlığının güçlü kanıtlarıdır. Benzer kanıtlar Kinet Höyük, Samsat, Aşvan Kale, Korucutepe, Taşkun Kale, Anaia (Kadıkalesi), Hasankeyf gibi 12.-13. yüz yıl çağdaş yerleşmelerde de tespit edilmiştir.

Komana'da metal üretimine belirteçler analiz edilmiş ve detaylı çalışılan 8 oda elde edilen veriler yetersiz kalırken komşu açmalarda güçlü kanıtlara ulaşılmıştır. Özellikle cüruf ve küçük küre biçiminde üretim artıkları alınan toprak örnekleri sayesinde tespit edilmiş fakat alanın genelinde henüz bir metal ocağı ve eritme potası bulunamamıştır. Komana'nın çağdaşı olan Kinet Höyük'te metal ocakları ve Komana'da bulunan küçük cürufların benzerleri tespit edilmiştir.

Komana'da cam bilezikler, kadeh ve şişe gibi cam eserler de bulunmaktadır. Zaman zaman cam üretim atığı olan parçalar tespit edilse de henüz bir üretim alanı tanımlanamamıştır. Çağdaşları arasında bulunan Anaia'daki (Kadıkalesi) cam üretimi ve Tyana 'daki (Kemerhisar) cam bilezik üretiminin ölçeğinde bir üretim organizasyonu henüz Komana'da tespit edilememiştir.

Tabakalarda kemik objelere sıkça rastlanan Komana'da üretime dair belirteçler aranmıştır. Zooarkeolojik verilerde yapılan sorgulamalarda obje üretimi için işlenmiş ve ön hazırlık aşamasında bulunan kemikler tespit edilmiştir. Var olan objeler ile birlikte yarı işlenmiş kemiklerin bulunması üretime dair bir kanıttır. Yerleşmenin belirli bir bölgesinde kemik üretimi için ayrılmış bir mekan tespit edilemezken bu iş için özel bir yer ayrılmasına gerek duyulmadığı da göz önünde bulundurulmuştur. Benzer kanıtlar ovicaprid metapodialarının hammadde olarak tespit edildiği ve bir ticaret merkezi olan Anaia' da bulunan kemik terazi aparatları yerel üretim olarak önerilmiştir. Komana'nın çağdaşı olan birçok yerleşmede kemik objelerin varlığı son derece yaygındır.

Komana'da hayvancılık zooarkeolojik veriler aracılığıyla anlaşılmaya çalışılmıştır. Detaylı analizi yapılan 8 mekândan elde edilen verilere göre 56% ile en fazla küçük baş hayvancılık (ovicaprid) yapıldığı anlaşılmıştır. Koyun türünün varlığı yün üretimi için ihtiyaç duyulan hammaddenin sağlanması açısından önemlidir. Tabakalardan bulunan çok miktarda kemik ağırşak, iğne, düğme ve pişmiş toprak ağırlıklar yün ve tekstil üretiminin yerleşimde yapıldığını göstermiştir. Fakat üretimin evsel mi yoksa endüstriyel ölçekte mi yapıldığına halen cevap aranmaktadır. Evangelia Pişkin'in Komana'nın 12.-13. yüz yıl tabakalarında bulunan hayvan kemikleri üzerinde yaptığı incelemede yaşam sürelerini analiz etmiş ve küçükbaş hayvan grubunun 17%'sinin 4 yaşın üzerinde kullanıldığını belirlemiştir. Bu sonucu küçük ölçekli süt ve yün üretimi olarak değerlendirmiştir.

Detaylı analiz edilen 8 mekanda ve diğer komşu açmalarda yiyecek hazırlığı, tüketimi ve atığı gibi evsel aktiviteler yeterli ölçüde kanıtlanmıştır. En önemli bulgu tüm mekanların birden fazla ocak ve çukur gibi işlevsel yapı kalıntılarına sahip olmasıdır. Analiz edilen odalardan hiçbirisi konut alanı olarak tanımlanmamıştır. Fakat nerdeyse tüm ocak ve çöp çukurları ve elbette tabaka dolgusundan, yiyecek hazırlığı ve tüketimi ile ilişkili olduğu düşünülen bitki kalıntıları ve hayvan kemikleri bulunmuştur. Bu yiyecek üretim alanı bir evsel birim ile ilişkilendirilemezken Komana'da ticari nedenlerle şehri ziyaret edenlerin ya da üretimde rol alan işçilerin yiyecek ihtiyaçlarının giderilmesine yönelik bir işleve sahip olduğu şeklinde değerlendirilmiştir.

Bitki kalıntıları arasında arpa ve buğdayın çoğunluğunu oluşturduğu tahıllar, mercimek, bakla, fiğ, fasulye ve nohut gibi türleri içeren baklagiller ve büyük çoğunluğunu üzümün oluşturduğu fakat kavun, karpuz, elma, incir, yabani çilek türleri gibi birçok meyve türü yer almaktadır. Ayrıca çok sayıda yabani tohum toprak örneklerinde tespit edilmiştir. Bitkiler arasında en önemli bulgu varlığı ispat edilen pirinç olmuştur, fakat miktar olarak çok azdır. Toprak örneklerinden elde edilen bitki çeşitliliği oldukça zengindir ve bu beslenme alışkanlığının oldukça iyi olduğunu göstermektedir.

Ocakların büyük çoğunluğunda yanmış bitki kalıntısının bulunması ve isli pişirme kaplarının mekânlarda yeterli miktarda bulunması, ocakların pişirme amaçlı kullanıldığını, alınan örneklerin boş çıkması durumunda ise ocağın son kullanımdan sonra temizlendiği ve bir daha kullanılmadan önce işlevini yitirdiği göz önünde bulundurulmuştur. Ocakların hemen yakınında bulunan çöp çukurlarının kül ve yanık bitki kalıntıları içermesi de pişirme aktivitesi sonrası içi temizlenen ocakların içeriğinin bu çukurlara atıldığı göstermiştir. Alınan toprak örneklerinin ağır çökeltisi (heavy residue) ayrıca incelenmiş ve ocakların seramik, metal ya da cam üretiminde rol alıp almadıkları da analiz edilmiştir. Analizler sonucunda ocakların içeriğinde herhangi bir endüstriyel kalıntıya rastlanmamıştır. Bu durum ocakların işlevlerinin yemek pişirme ile sınırlı olduğunu açıklamaktadır.

Kinet Höyük, Yumuktepe, Amorium, Mezra Höyük, Gri Virike, Kilisetepe, Daskyleion, Beycesultan ve Gritille gibi Komana'nın çağdaşı yerleşmelerde de ocaklar ve pişirme kaplarının birlikte bulunduğu mekanlar mutfak alanları olarak tanımlanırken, ocak, depolama haznesi ve çöp çukuru kontekstlerinden elde edilen arkeobotanik veriler ile desteklenmiştir. Komana'da olduğu gibi tahıllar, baklagiller ve üzüm gibi ekonomik bitki türleri arkeobotanik verilerin ana içeriklerinin oluşturmaktadır. Yine Serçelimanı batığından elde edilen arkeobotanik veriler ticari taşıması yapılan zengin meyve çeşitliliğini göstermiş ve Komana'da var olan meyve türleri ile paralellikleri anlaşılmıştır.

Komana'da seramik kadar yoğun olarak bulunan bir diğer buluntu grubu da hayvan kemikleridir. Bitkiler ile birlikte Komana toplumunun besin kaynağı olması nedeniyle son derece önemli bilgilere ışık tutmaktadırlar. Temel ekonomik türler koyun ve keçi (ovicaprid) (51%), sığır (29%) ve domuzdur (5%). Bu türlerin yanı sıra kuş (tavuk, keklik v.b.) (8%) ve tavşan (5%) tüketilirken toprak örneklerinden elde edilen veriler balık tüketiminin de hatırı sayılır miktarda olduğunu göstermiştir.

Gritille, Korucutepe, Yumuktepe, Kınık Höyük gibi Komana'nın çağdaşı olan yerleşmelerde edilen zooarkeolojik veriler aynı türlerin farklı proporsiyonlarda olduğunu göstermektedir. Bu elbette doğal çevrenin sunduğu şartlar ve yaşayan toplumun beslenme tercihlerinden kaynaklanmaktadır.

Sonuç olarak bitki ve havyan kemiği verileri Komana'da yoğun miktarda yiyecek aktivitesini göstermektedir.

Komana'nın çağdaşı olan arkeolojik yerleşmeler ile arasında materyal kompozisyonu, evsel ve endüstriyel üretim ve tüketim aktiviteleri gibi bir çok ortak nokta görülmektedir. Kimi yerleşmeler endüstriyel fonksiyonları ile öne çıkarken kimisinde evsel kontekstler ön plana çıkmaktadır. Mekanlar ile ilişkili olarak ocaklar, çöp çukurları, materyal kültürün mekânsal ve konumsal dağılımları ortak özellikler göstermesi sayesinde, yerleşmelerin işleyişi ve organizasyonları hakkında ortak belirteçlerin yaratılmasına olanak sağlamaktadırlar.

Ayrıca Komana diğer yerleşmeler ile genel yerleşme karakteri bakımından kıyaslanmıştır. Her yerleşmenin kendine özgü stratejik konumu, ticaret, üretim, askeri, idari ya da evsel gibi bir ya da birden çok işlevi ve yerleşim içi organizasyonunun olduğu görülmektedir. Her yerleşmenin işlevi yakın çevresinde sahip olduğu jeopolitik konumu, ticaret ve iletişim hattı üzerinde bulunması, tarımsal ve pastoral kaynak potansiyeli, orman, maden ve su kaynakları gibi faktörler sayesinde şekil almaktadır.

Komana 'da elde edilen bulgular çağdaşı yerleşimlerde elde edilenler ile karşılaştırılmıştır. Bu yerleşmelerin ortak özelliği çoğunluğunun bir sur yapısına ve stratejik bir öneme sahip bir pozisyonda olmalarıdır. Stratejik önemlerini ticaret merkezi, üretim merkezi, yol ve nehir hattı üzerinde bulunma, askeri ve yönetim merkezi olma gibi durumlardan almışlardır. Fırat nehri havzasında bulunan Aşvan Kale, Taşkun Kale, Gritille Höyük, Tille Höyük, Samsat, Lidar Höyük, Korucutepe, Dicle hazasında yer alan Hasankeyf, sahil kesiminde bulunan Kadıkalesi, Tios, Kinet Höyük ve Anadolu'nun iç kesimlerde bulunan Amorium, Kubad-Abad, Çadırhöyük, Daskyleion, Tyana gibi ve daha bir çok yerleşim gerek tabakalarda bulunan malzeme, gerek üretim ve tüketim alışkanlıkları ile benzerlik göstermektedir. Bu doktora tez çalışmasının tartışma bölümünde (bknz. Chapter 6. Discussion) Komana'da elde edilen sonuçlar diğer çağdaşı olan yerleşmeler ile benzerlik ve farklılıkları bakımından karşılaştırmalı olarak tartışılmıştır.

Sonuç olarak, 12.-13. yüz yıllarda Komana'da yoğun üretim ve tüketim faaliyetleri tespit edilmiştir. Bu son derece canlı ve dinamik dönem arkeolojik tabakalarda gözlemsel olarak da fark yaratmaktadır. Komana Yeşilırmak kıyısındaki pozisyonu, ticaret ve haberleşme hattı üzerindeki konumu, verimli tarım alanları ve arkeolojik kanıtlara dayanarak üretimin merkezi, ve varlığı tespit edilmiş ithal malları göz önünde bulundurursak bir ticaret merkezi idi. Arkeolojik kanıtlar Komana'nın henüz ne büyüklükte bir yerleşme olduğunu ya da bir kent olup olmadığını söylemek için yeterli değildir. Fakat Danişmendname'de Komana'nın (Sisiyye) büyük bir kent olduğu, içerisinde sayısız rahip bulunan kale gibi bir kiliseye ve kentin etrafında da 360 kiliseye sahip olduğu, geçirdiği bir sel felaketinin ardından kentin çoğunluğunun yok olmasına rağmen geriye 500 evin kaldığı gibi anlatılar yer almaktadır. Epik ve abartının da içinde barındığı bu eser her ne kadar taraflı ve dolaylı aktarımlarla dolu da olsa, az da olsa bir gerçeklik içermelidir. Ayrıca Hamamtepe'nin yaklaşık 200 metre kuzeyindeki düzlük alanda gerçekleştirilen jeofizik araştırmalar sonucunda içeresinde bir çok ocak ve yanık allan bulunan basit yapılar tespit edilebilmiştir. Bu çalışma sayesinde Komana yerleşmesinin yalnızca Hamamtepe'de bulunan sur ve surun hemen yakınındaki alan ile sınırlı olmadığı anlaşılmıştır. Ayrıca Danişmendname'de bahsedilen çok sayıda kilisenin fiziksel kanıtlarına Komana'nın içinde yayıldığı vadinin tabanı ve yamaçlarında rastlanmaktadır. Tüm bu kanıtlar aslında Komana'nın 12.-13.yüz yıllarda oldukça geniş bir alana yayılan büyük bir kent olduğu hipotezini güçlendirmektedir.

Komana'nın yerleşme özellikleri ve çok disiplinli bir çalışma sonucu elde edilen arkeolojik verilerin ışığında, Komana'nın 12.-13.yüz yıllarda kendi ihtiyaçlarını karşılayabilecek potansiyele sahip bir kent olduğu söylenebilir.

Komana 'da gerçekleştirilen arkeolojik kazıların başından itibaren surlu yerleşmenin merkezinde ortaya çıkarılan çok sayıda ocak ve çöp çukurunun bulunduğu mekanların işlevi hep bir soru olmuştu. Özellikle mekânlarda yoğun olarak ortaya çıkarılan ocakların ne için kullanıldıklarının cevaplanması çok önemliydi ve içerdikleri ve hemen etrafında bulunacak arkeolojik buluntuların ocakların işlevleri hakkında bilgi vermesi beklenmişti. Birbirine komşu odalardan oluşan bu yapı kompleksi ilk etapta atölye alanı olarak öngörülmüştü. Bu nedenle, özellikle üretime dair kanıtlar bu hipotezin test edilmesi için önem verilmiştir.

Sonuç olarak, birbirine komşu 8 odada uygulanan mekânsal analiz ve içerdikleri toprak örnek olarak alınarak incelenen ocak ve çöp çukuru gibi yapılardan elde edilen veriler sayesinde bu mekânların öncelikle yemek hazırlama ve buna bağlı aktiviteler için kullanıldıkları anlaşılmıştır. Bu sonuca varmada mekan dolgularından elde edilen yoğun miktarda seramik, bitki ve hayvan kemiği ve özellikle ocak ve çukur kontekstlerinde bulunan yanık bitki kalıntıları etkili olmuştur. Ayrıca, detaylı analiz edilen 8 mekanda üretime dair kanıtlar oldukça yetersizdir, fakat komşu açmalarda ve arkeolojik yerleşmenin diğer bölümlerinde güçlü kanıtlar tespit edilmiştir. Metal cüruflar, seramik üretimi artıkları ve üçayaklar Komana yerleşmesinin geneli adına üretimin güçlü kanıtları olmuştur. Yukarıda belirtilen bulgular Komana'nın çok fonksiyonlu bir yerleşme olduğu önerilebilir. Yerleşmenin bütününe bakıldığında savunma duvarı, Yeşilırmak'ın kıyısında bulunması, önemli bir ulaşım ve ticaret yolunun üzerindeki konumu ve sahip olduğu verimli tarım arazileri ve hayvancılık için elverişli koşulları ile birlikte Komana 11.-13.yüz yıllar arasındaki Anadolu'daki yerleşim tiplerine oldukça uygun görünmektedir.

Kazılar sırasında, tabakalarda yapılan gözlemler, dolgu tabakalar ve ocak, çöp çukuru gibi kontekstler arasında davranış sonucu oluşabilecek malzeme dağılımlarının belirlenebilmesi için bir potansiyel olduğuna kanaat getirmişti. Mekânsal ve istatistiksel analiz sonuçları yapılan gözlemlerin boşa çıkmadığını kanıtladı. Ocak ve çöp çukurları son aktivite izlerini daha detaylı olarak anlamamızı sağlarken tabaklardan elde edilen malzemeler yerleşme hakkında daha genel sonuçlara ulaşmamızı sağlanmıştır.

Dolgu tabakalarda arkeolojik malzemelerin daha parçalı ve bağlamını kısmen yitirmiş olarak bulunması terk etme sonrası süreçlerin arkeolojik tabakalanma üzerinde olan etkisini gözler önüne serdi. Ayrıca, mekânsal analiz, istatistiksel veri ve kazılar sırasında yapılan gözlemler sonucunda yerleşmenin deprem, yangın, savaş gibi ani bir olay neticesinde terkedilmediği anlaşılmıştır. Bu nedenle, aşamalı olarak terkedilen ve uzun süre kültürel ve doğal süreçlerin etkisinde kalan yerleşmede, kapalı kontekstler dışında, in situ buluntulara çok az durumda rastlanmıştır. Sonuç olarak geçmiş ile günümüz arasındaki boşluğun doldurulması daha da zorlaşmıştır.

Gerçekleştirilen bu doktora tez çalışması sırasında bazı zorluk ve kısıtlamalarla da karşılaşılmıştır. Kazıların ilk yıllarında toprak örneği alınmayan bazı kontekstler, alınan örneklerden bazılarının yıkama işlemi sırasında (flotation) hacimlerinin ölçülmemiş ve analiz kapsamına giren 8 odadan bazılarının tamamen kazılarak ortay çıkarılmamış olması bu kısıtlamaların başında sayılabilir. Bu kısıtlamalar, doktora tez çalışmamda eksik veri olarak karşıma çıkmasına rağmen, var olan veri üzerinde gerçekleştirilen analizler oldukça yeterli olmuştur ve güçlü sonuçların önerilebilmesine olanak sağlamıştır. Ayrıca, yerleşmenin tamamının henüz ortaya çıkarılmamış ve yapıların birbiri arasındaki ayırımların yapılamamış olması ve mekan giriş ve çıkışlarının belirlenememesi nedeniyle ne yazık ki Access analizi yapılamamıştır.

Henüz bölgenin tamamı için seramikler üzerinde detaylı tipolojik bir çalışma yapılamadığından minimum kap sayısı (MNV-minimum number of vessels) gibi istatistiksel hesaplamalar yapılamamıştır, fakat yine de seramik buluntuların işlevlerine göre bir gruplama yapılarak parça sayısı ve ağırlıkları hesaplanarak tabaklardaki yoğunlukları belirlenmiş ve genel sonuçların çıkarılmasında oldukça faydalı olmuştur.

Ayrıca, çok fazla korozyona uğramış durumda ele geçirilen amorph metal buluntular üzerinde işlevsel bir analiz yapılabilmesi çok faydalı olurdu, çünkü bazı parçalar korozyonlu olmasına rağmen formlarını kısmen korumaktaydılar (örneğin bıçak, kanca, halka v.b.).

Yapılan bu doktora tez çalışması Komana'nın işlevi ve organizasyonunun anlaşılması için henüz bir başlangıç aşamasıdır. Gelecekte yapılacak çalışmalarda, daha fazla veri toplanacak ve mekânsal/konumsal analizin sınırları genişletilecektir. Yerleşmedeki üretim aktiviteleri hakkında destekleyici yeni veriler sağlanacaktır. Komana'da kullanımı ve üretimi tespit edilen sırlı seramiklerin kaynak analizleri, yerel üretim ve ithal malların daha iyi anlaşılabilmesine olanak sağlayacaktır. Detaylı bir seramik tipolojisine Komana Arkeolojik Araştırma Projesi'nin yakın planlı takviminde öncelik verilecek ve böylece kapların kullanımı ve ticari faaliyetler hakkında yeni veriler ortaya çıkacaktır.

Metal cüruflar üzerinde gerçekleştirilecek arkeometrik analizler, Komana'da metal üretimine dair yeni bulgular sağlayacaktır.

Surun dış bölümündeki yerleşmede daha çok evsel kullanım tespit edilmiştir. Yerleşmenin bütününün anlaşılması için sur duvarı tamamen ortaya çıkarılacak ve sur dışı alanlarda yapılan çalışmaların sayısı artırılacaktır.

Komana'nın işlevi ve organizasyonunun ortaya çıkarılmasının yanı sıra, yerleşmenin terkedilme nedenleri, tam olarak iskan edildiği zaman aralıkları ve Selçukluların bölgedeki hakimiyetinin sosyo-ekonomik etkileri halen cevap bulması gereken sorulardır. Bu araştırma konularına da yanıt aranacaktır.

APPENDIX F: TEZ FOTOKOPİSİ İZİN FORMU

TEZ FOTOKOPİSİ İZİN FORMU

ENSTİTÜ

Fen Bilimleri Enstitüsü	
Sosyal Bilimler Enstitüsü	x
Uygulamalı Matematik Enstitüsü	
Enformatik Enstitüsü	
Deniz Bilimleri Enstitüsü	

YAZARIN

Soyadı : Tatbul
Adı : Mustafa Nuri
Bölümü : Yerleşim Arkeolojisi Anabilim dalı

TEZİN ADI (İngilizce) : IDENTIFYING MEDIEVAL KOMANA IN THE 12th-13th CENTURIES THROUGH SPATIAL ANALYSIS OF ARCHAEOLOGICAL DATA WITH A MULTIDISCIPLINARY APPROACH

TEZİN TÜRÜ : Yüksek Lisans [ ] Doktora [x]

1. Tezimin tamamından kaynak gösterilmek şartıyla fotokopi alınabilir. [x]
2. Tezimin içindekiler sayfası, özet, indeks sayfalarından ve/veya bir bölümünden kaynak gösterilmek şartıyla fotokopi alınabilir. [ ]
3. Tezimden bir (1) yıl süreyle fotokopi alınamaz. [ ]

TEZİN KÜTÜPHANEYE TESLİM TARİHİ: