MODES OF PRODUCTION IN THE EARLY NEOLITHIC: FOENI-SALAŞ

By

GENE SENIOR

A Thesis
Submitted to the Faculty of Graduate Studies
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Department of Anthropology
University of Manitoba
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Of

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Abstract

Little is known about the intra-settlement mode of production of early agricultural (Early Neolithic) communities in southeast Europe. The hypotheses tested in this study look at whether the predominant socio-economic organization of households was geared towards communal production, wherein members of society work cooperatively to sustain the society, or whether the mode of production is more domestic, with each household fending for itself in terms of economic production.

Data from the Early Neolithic settlement of Foeni-Salaş in southwest Romania are used to test the hypotheses. In order to determine the mode of production, repetition of artefacts within and between houses is studied. The study assumes that if the classes of material remains found in the Early Neolithic pit loci are different from locus to locus, then the hypothesis, that a communal mode of production was utilised, may be supported. If it is found that materials are duplicated within the Early Neolithic pit loci, then it may be concluded that a domestic mode of production was in place.

The research suggests that three of the loci at Foeni-Salaş (pit houses 7, 23 and 24) have similar proportional frequencies for various artefact classes and types. The nature of the remains suggests that these three loci might have been used as more than just sleeping areas and may represent industrial locations for the production of textiles. Two pit houses (loci 10 and 41) do not appear to have been used in this fashion and may have been secondary work areas. Loci 7, 23 and 24 probably represent the residences of nuclear family units, while Loci 10 and 41 may have been communal working areas used by members of the extended household unit. It is concluded based upon the patterning of

artefact frequencies in the pit loci at the site that activities at the site were organized using a domestic mode of production.

Preface and Acknowledgements

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CHAPTER 1 – Early Neolithic Social Organization according to the Spatial Distribution of Artefacts

I. Introduction to the Problem

The Early Neolithic period in the Northern Balkans (6100-5100 BC, calibrated) represents a time of great cultural, technological and socio-economic change. Concomitant with a change in culture and social structure, the Early Neolithic Period is a key transitional stage in cultural evolution. This era of transformation is defined by the appearance of food-producing economies, pottery production, and the use of ground stone tool technology (Childe 1957; Manson 1990: 71) as European cultures shifted from a hunter-gatherer lifestyle toward one of food production. The domestication of plants and animals is generally considered to be one of the most distinctive features that separates the cultures of the Early Neolithic from the earlier Mesolithic hunting, fishing and food-gathering cultures (Childe 1957).

Most research on the earliest of Early Neolithic European cultures has focused upon the southern Balkans (Greece, Macedonia, and southern Bulgaria) or central Europe. Lying immediately north of the climatic divide between Mediterranean and central Europe, the central Balkans of southeast Europe is the first region in Europe with a temperate environment to experience the consequences of the spread of food production from the Mediterranean littoral (Garašanin 1979; Tringham 1971; Whittle 1985; Greenfield 1994). Whether the spread of food production represents the migration of communities or the diffusion of technology from the Mediterranean is still a matter of much debate.

Little is known about the intra-settlement spatial organization of the earliest agricultural communities. Such data has been difficult to analyze since few sites have

been spatially excavated with appropriate recording methods. Most excavations and studies of Early Neolithic sites have been concerned with chronology (Ehrich 1977; Arandjelović-Garašanin 1954; Gimbutas 1974, 1976; Srejović 1972, 1979). Additionally, the data from excavations of actual settlements have not been collected or disseminated in such a manner as to allow systematic intra-settlement spatial analysis for the reconstruction of Early Neolithic social organization. Only a few excavations (Gimbutas 1974, 1976; McPherron and Srejović 1988; Srejović 1972; Srejović and Letica 1978) have yielded data that is potentially useful for questions relating to socio-economic organization (Greenfield 1993) and, in particular, the intra-settlement spatial organization of early Neolithic settlements. However, in many of these cases, the area of excavation is small and the excavations are characterized by poor recording of the spatial distribution of artefacts, poor recovery of all materials (bone and plant remains, in particular), and slow rates of publication (Greenfield 1994). This has inhibited systematic testing of most intra-settlement hypotheses using previously existing data.

Given that the location and nature of activities within a site is defined in part by socio-economic and social organization (Carr 1984), the spatial patterning of material remains and features within settlements should provide information that would allow archaeologists to investigate the socio-economic structure of archaeological communities.

Recently, within the Central Balkan region of southeast Europe, a single site has been excavated where the data was acquired with a fine recording resolution – specifically, the Early Neolithic site of Foeni-Salaş in southwestern Romania. The objective of this thesis is to enhance the understanding of Early Neolithic intra-settlement social organization through the study of the spatial patterning of artefacts from this site. The Early Neolithic

levels of occupation at Foeni-Salaş are typified to an Early Neolithic culture group known as Starčevo-Criş culture (6100-5100 BC, calibrated). The objective of this thesis, while complicated by formation and taphonomic processes, should allow the construction of an aggregate statement about Early Neolithic mode of production at the site level.

II. Previous research on intra-site patterning in the Early Neolithic

Research in the regions to the north and south of the central Balkans has yielded a large amount of information concerning community structure - Linear Bandkeramik in central Europe (Bogucki 1988), Karanovo I in central Bulgaria (Bailey 1999), and Sesklo culture groups in Greece (Demoule and Perlès 1993). The community structure in these regions, as evidenced by material remains, is different than that found in the study area.

During the Early Neolithic period in central Europe, permanent settlements were associated with structures known as long houses and a particular style of pottery (Linear Bandkeramik). There is clear evidence of clusters of houses within settlements that may indicate the presence of more than one closely related domestic unit within a settlement (Grygiel and Bogucki 1997: 174-175).

In Mediterranean Europe, long-term permanent villages consist of closely-spaced small rectangular houses (Demoule and Perlès 1993). There is no clear evidence, however, that housing units are clustered, as all houses are equally spaced. Most houses seem to be relatively small and activities duplicated from house to house. There does not appear to be specialization between individual housing units.

The situation in the intermediate region, the central Balkans, is quite different. In this area the remains of living quarters are represented by circular pits. This stands in contrast

to the rectilinear structural arrangements found at other similar sites in southeast Europe. It is postulated that during the Early Neolithic in the central Balkans, people lived in semi-subterranean houses rather than in above ground rectilinear houses (Whittle 1996). Some archaeologists (Jongsma 1997; Jongsma and Greenfield 2001; Greenfield 2000; 2001) have recently investigated the question of Neolithic spatial organization. They have adequately demonstrated that structures of Early Neolithic cultures in the central Balkans are characterized by pits, organized within a settlement in a circle or semi-circle around a larger pit. Previously, little was known about the functional nature of the various pits: whether they were used for residences, storage, disposal or ritual purposes. Jongsma (1997) has demonstrated that the large pits containing Early Neolithic debris are probably semi-subterranean dwellings. The central objective of this investigation is to examine the pit houses of Foeni-Salaş to ascertain the nature of the use of space within this Early Neolithic site and how it relates to production.

III. Hypotheses

A. General Hypotheses

Tringham (1983) argues that Early Neolithic settlements in southeastern Europe were organized around a single-household, or domestic, mode of production wherein production is geared to the requirements of a family unit for the sole benefit of the producers (Sahlins 1972: 77). Some research in Europe has been productively directed at the archaeological definition of such units (Ammerman et al. 1988; Bogucki and Grygiel 1981). In an analysis of the Mesolithic site of Lepenski Vir, for instance, it is argued that each structure at the site was occupied by a single nuclear family unit. This argument is based upon the similarity in the form and contents of each structure (Chapman 1989). No

attempts at such analyses have been conducted beyond the narrow confines of the Iron Gates area in southeastern Europe.

In contrast to Chapman's findings, Dennell (1985) suggests that settlements in the early agricultural period should be organized along communal rather than household lines (Dennell 1985: 167; Sahlins 1972). Organization of production beyond the household allows separate families to share resources, thereby allowing access to more than just the products of their own labour (Dennell 1985: 167). This typically takes place through productive specialization. Productive specialization is rarely found among hunter-gatherers and is more typical of more complex food producing societies (Sahlins 1972).

There is some tentative evidence for both of these patterns in the study area. Based upon data from neighbouring regions and from Mesolithic sites in this region Chapman (1989) implies the presence of a domestic mode of production. A settlement, with a large central pit house containing different debris than smaller pit houses surrounding it, would imply some communal activities. In this context, patterns suggesting specialized domestic functions can be expected. Since there have been no systematic spatial comparative analyses of the contents of pit houses, it is impossible to ascertain which of these patterns may have prevailed at the site in question.

B. Specific Hypotheses

Within the archaeological site, pits of various shapes and sizes have been discovered. If each large pit represents the archaeological remains of a house, as Jongsma (1997) believes, then it may be possible to formulate specific hypotheses and test implications for both of the above models.

If the pits were part of a single larger socioeconomic unit as represented by an extended family or community, then the distribution of artefacts will be different. If the material remains in each pit are not repeated, but rather, complementary, then it may be inferred that each pit represents a specialized unit within a larger extended social grouping that shared or pooled resources. Such a situation can be interpreted as representing a communal mode of production. If the material remains in all pits at the site are duplicated, it may be determined that each pit represents the residence of a single nuclear family. This can be further interpreted as representing a domestic mode of production. A household made up of a nuclear family unit is self sufficient, meaning that one should expect a uniform distribution of certain artefacts within each house.

One way to test for mode of production is to identify the nature of activities within and around each structure. If the household activities represented by artefact distributions are specialized, then they likely relate to a communal mode of production. If activities are generalized as implied by the artefact distribution, then a domestic mode of production is indicated.

IV. Methodology - Spatial patterns within an archaeological context

The goal of spatial analysis in archaeology is to understand the cultural use of space as it provides an analytical framework for investigating archaeological remains. In looking for an underlying structure in a spatial pattern, archaeologists make a distinction between patterning (as seen in the spatial distribution of items on a map) and structure (the abstract organizing principles that are held responsible for generating a given pattern) (Kintigh and Ammerman 1982: 33). Discerning patterns amongst cultural materials can

give archaeologists insight into how objects are used, and also allows for deductions to be made about how space is used and structure organised (Kent 1987: 48).

Archaeologists have borrowed the method and techniques of spatial analysis from other disciplines (Carr 1984; Wandsnider 1996) such as botany and geography. Some early attempts to find patterns in dense layers of material were accomplished by tracing clusters of materials from archaeological field maps onto plastic mylar sheets. These were then layered to show distribution patterns deeper than one archaeological level. In the 1970s, archaeologists began to use computers to perform statistical analyses of the spatial distribution of remains across sites (e.g. Whallon 1973). These early analyses were impeded in part by the processing power of the computers available, and the statistical methods used. In recent years, new levels of technology have become available resulting in a debate over the best methodology (refer to Carr 1984; Kintigh 1990; Wandsnider 1996 for methodological discussions).

In terms of intra-site patterning and the archaeological record, archaeologists tend to be concerned with the analysis of the spatial distribution of things within a narrowly dated layer of an archaeological site (Ferring 1984: 116). The density of archaeological materials in many settlements presents a distinct problem for the archaeologist interested in studying spatial patterning. The maps resulting from excavations are frequently too crowded to be easily read. The use of computer systems that incorporate statistical operations enable the archaeologist to wade through the muddle of information that is contained on analogue (paper) maps.

Advances in computers, software and excavation techniques along with new statistical methods have, in theory, made it a fairly straight-forward matter to distinguish patterns in

artefact distributions and the correlation of artefacts and features within a site. The statistical techniques used for analysis of spatial patterns can be divided into two groups: those based on grid counts and those based on point data. Each is useful in its own way, but for this particular study, only grid count data will be used.

V. Data

In order to investigate the spatial organization of an Early Neolithic community, a site must meet a specific set of analytical criteria. First, the site must contain a relatively undisturbed and discrete Early Neolithic settlement, with well-preserved features and artefacts. Second, it should contain a single Early Neolithic layer within the settlement area. Third, the site should be extensively excavated with detailed mapping of feature and artefact distributions. Fourth, there should be a compiled database containing information about the various household artefact categories. Only one site from this region and dating to this period meets all of these criteria: Foeni-Salaş, in Romania.

A. The Site

Foeni-Salaş is located in the steppes of SW Romania (Banat). It was excavated by Dr. Haskel J. Greenfield (University of Manitoba) with Dr. Florin Draşovean (Museum of the Banat) for three seasons (1992-94). The site is 3 km north of the modern village of Foeni, approximately 3 km from the border of Serbia. The site lies on a low natural mound located on a flat alluvial plain between the Timiş and Bega rivers (Greenfield and Draşovean 1994: 46-47).

Over the course of the excavations, the remains of a small (80m x 100m) Early Neolithic (Starčevo-Criş) settlement were uncovered. Ceramic painted wares from the site are typologically dated to the earliest phases of the Early Neolithic Starčevo-Criş

tradition of the Banat (Greenfield and Draşovean 1994). There was little sedimentary overburden and the site was well-preserved.

Several Early Neolithic structures were initially identified by a proton magnetometer, surface collection, test trenching, and soil coring. The central portion of the site consisted of six semi-subterranean structures. Five of the structures were arranged in a semi-circle around a larger central structure. The central structure is in an open plaza and there may be evidence of a possible stockade within this plaza. (Greenfield and Jongsma n.d.; Jongsma and Greenfield 2001).

B. Chronology

Based on the ceramic data, there were six occupation periods at Foeni-Salaş: The Early Neolithic occupation (Starčevo-Criş culture) is the earliest level found at the site (5500-5200 BC, calibrated, on the basis of radiocarbon dating of bones from this level). The site was briefly occupied by the Starčevo-Criş culture for an indeterminate length of time, probably no more than a year or two (H. Greenfield, pers. comm.). The site was then abandoned until the Eneolithic (Baden culture), where it was occupied only briefly prior to being abandoned again until the Middle Bronze Age (Vatina culture). The site was in use again in the Early Iron Age (Halstatt culture). Following this occupation, it was once again deserted until the Late Roman/Dacian period (4-5th century AD), finally to be re-occupied in the Medieval period (11-12th century AD).

The Early Neolithic layer of Foeni-Salaş is the best preserved, as it is the deepest and was therefore least likely to be disturbed by later agricultural ploughing. Most deposits from later periods were disturbed by Medieval and Modern ploughing (Greenfield and Draşovean 1994).

C. Previous Research of the Site

The large Early Neolithic pit features on the site are suggested to be contemporaneous (H. Greenfield, pers. comm.). The pits are connected by a single stratum, and features are regularly spaced across the excavated portion of the site without overlapping (Greenfield and Jongsma n.d.; Jongsma and Greenfield 2001). Jongsma (1997) found that architectural daub fragments were concentrated in these pits and scarce in other parts of the site suggesting that the Early Neolithic pits were residential features. Jongsma's study concluded that certain pits were the remains of semi-subterranean dwellings and were distinct from refuse pits.

It has been noted that faunal remains at the site of Foeni-Salaş suggest a local economy heavily reliant upon pastoralism (Greenfield and Draşovean 1994: 73). If the dominant economic practice was indeed pastoralism, it is likely that the site was not a fully sedentary settlement (Greenfield and Draşovean 1994: 84) and the people living at this site were more dependent on livestock than those at other Early Neolithic sites in South-Eastern Europe. Foeni-Salaş may have been a temporary stop as part of the annual round of movements in the search for pasture for domestic stock. Indeed, Jezik's (1999) analysis of the botanical remains found little evidence for agricultural production at the site.

D. Data - Maps and Databases (ceramic, faunal, etc)

Excavations at Foeni-Salaş recorded the exact provenance of all artefacts and features. Daily journals describe the excavations, and detailed maps indicate feature and artefact locations in 2-dimensional space.

Dr. Haskel Greenfield, the primary excavator at Foeni-Salaş, compiled a database of information relating to the site and the artefacts recovered. At present, databases exist for almost every aspect of the site from fauna and flora to the weight of daub fragments recovered within the 1 x 1 metre excavation trenches. Analysis of the remains was divided between the two national teams. The Canadian group was responsible for the analysis of the faunal, floral, daub, lithic, and architectural remains. The ceramic analysis was to be conducted by the Romanian contingent. Unfortunately, their analysis was never completed.

Initially, ArcView 3.2, a GIS program from ESRI, was used in conjunction with a digitizing tablet to digitize the floor plans from the site. The spatial information provided by this process was to be used for statistical tests. The information contained within the Excel databases was meant to be used in conjunction with the spatial map data in order to assess the use of space at the site. Unfortunately, the maps only contain a small amount of information about the artefacts recovered. For example, we know the spatial distribution of the ceramic remains but not their typological-functional affiliation. As a result the spatial analysis will not include ceramic typological information and will be based on the data contained in the Excel spreadsheets.

VI. Conclusion

This thesis will undertake the spatial analysis of archaeological remains from the Early Neolithic site of Foeni-Salaş in SW Romania. The goal of the analysis is to test hypotheses concerning the nature of social organization within this site. The results will enable us to begin to place Foeni-Salaş within the scope of other known communities from this period.

In order to answer the questions posed by this thesis, tests will be employed to define discrete activity areas based upon artefact densities in the pit houses at the site and deduce cultural behaviour based upon the distribution of activity areas at the site.

Analysis of the spatial patterns of artefacts at the site will determine whether or not features identified as pit houses represent communal households. Differences in hypothesized patterns may be related to the mode of production of which there are two likely options: the communal mode of production and the domestic mode of production.

Some broadly defined activity areas that may be identified at Foeni-Salaş include cooking areas (hearths, ovens), food processing/butchery areas and storage areas (including pits for storage and), living and sleeping areas (house floors), burial (cemeteries and individual graves), refuse disposal (pits and middens) and material culture production (textile, ceramic, lithic and bone tool manufacturing, etc.). This thesis will attempt to clearly define whatever activity areas are visible in the archaeological record.

This thesis should add greatly to the body of knowledge that exists for the region. Currently, archaeologists working in the Balkan region can only make vague statements about site structure for the Early Neolithic period. Increasing our understanding of site structure and the household mode of production for this period will only serve to benefit archaeological pursuits for all periods in the region.

CHAPTER 2 - The House, Household Cluster, and Household Function

I. Introduction

Humans are creatures of patterns and live patterned lives. Cultural behaviour and the material resulting from cultural activities are patterned and inter-linked because "culture, behaviour and cultural material are not discrete entities independent of one another" (Kent 1984: 12; Kent 1987: 3).

The distribution patterns created by particular behaviours divide space and the way that space is divided can tell us a great deal about a society. In order to interpret the meaning of patterns made through past human behaviour, it is necessary for archaeologists to understand the relationships among the various facets of human systems and their material manifestations in the present (Kent 1987: 2; Oswald 1984: 295).

Intra-site studies are necessary because they document the distributions of archaeological remains generated by different activities and formation processes. They also allow archaeologists to bridge the gap between the archaeological record and past behaviour (Carr 1984: 103). In the absence of a living system, information about people and their culture can be inferred through analogy from the remnant patterns of their material culture. From the patterns of material culture, one may be able to interpret social structure and behavioural patterns. The way that space is organized within an archaeological site can be determined by studying a number of things including the division of space into activity areas (Binford 1986; Galanidou 2000: 244).

This chapter explores the theoretical background of the nature of social and economic organization in communities, comparable to early agricultural villages. This thesis

focuses on the issue of whether the houses at Foeni-Salaş were occupied by a single large extended family unit, or by a series of more independent nuclear family units. In order to test for these alternatives, the two possible community types must first be defined.

This chapter will first characterize the household as it exists in living society, then define the archaeological house – the remnants of houses that archaeologists recover in the process of excavation – and the concept of the household cluster. How the household cluster relates to activity patterning at the site will be the final topic for discussion.

II. Domestic Mode of Production vs. Communal Mode of Production

The term 'mode of production', initially coined by Karl Marx, refers to the way a society goes about producing the necessities of life (goods and services, such as food, housing, etc.). The mode of production consists of the forces and relations of production and the term is most often applied within capitalist systems (Sahlins 1972).

In this discussion, the focus will revolve around what anthropologists have defined as the *domestic* mode of production. The domestic mode of production is the organization of economic production and consumption within the household (Sahlins 1972). Within the domestic mode of production, there are several variants that reflect the scale of households, ranging from large extended to small nuclear. In non-specialist economies, each type is involved in the full range of subsistence related activities. A large extended household will have many more people, and hence more loci of activities than found in small nuclear family size households.

III. Households

At the theoretical level, the household is composed of three elements:

- material elements, which include the dwelling, activity areas, and possessions;
- social elements, which include the demographic unit including the number and relationship of the members; and
- behavioural elements, which include the activities the household performs (Wilk and Rathje 1982: 618).

The household is made up of the house (dwelling) and individuals living with in it. The household, itself, is a unit of economic and social cooperation. In all activities, members of a household will cooperate as a single economic and social unit (Wilk and Rathje 1982: 620). A household may include any related or unrelated individuals who share living arrangements (Schwimmer 2004). Co-resident family members generally pool resources and co-resident families generally form households (Bender 1967).

The household may be considered to be the basic unit of production and reproduction in early farming communities (Wilk and Rathje 1982: 618). The core of the household was probably the family unit but there may have been other individuals participating in its activities (Bogucki 1988: 10). For example, households in agrarian societies often include distant relatives.

IV. The Living House

The house is the hub or focal point for everyday domestic activity. The house and its architectural framework fulfil a number of roles in all societies. It can be argued that the house at the very least, organizes, regulates and delimits contact between individuals (Byrd 2000: 66). The house is organized as an extension of the symbolic system of a culture (Hodder 1991). On a societal level, the house may be considered a representation

of the actions, beliefs and socio-economic organization of the people living in a community.

The house or built structure is important because it "provides a focus for spatial analysis aimed at gaining insights into social organization, how social relations are reiterated, and how community organization changes over time" (Byrd 2000: 66). Bailey (1996) defines the house as a "conspicuous, spatial focus of systems of selected activities through time" suggesting that a house should be defined as more than a shelter; that it may have alternative functions such as that of workstation for textile processing and animal butchery (Bailey 1996: 148). The physical house does not need to be separated from the material inventory that fills it. This material, together with the frame and those living within the house could have served to create a sense of identity through shared repeated behaviour, a sense of place through multiple reoccupations and a sense of time through alignment with the behaviour of ones predecessors (Whittle 1988: 21). By analysing the form, size, and distribution of houses and their contents, it is possible to increase our understanding of the behaviour of the occupants.

While a living structure may have served as a shelter for its occupants, the house, as an architectural entity, is an ideal unit for archaeological analysis. By its very nature, the house can be easily isolated and studied.

V. Approaches to Studying the Household – The Household Cluster

> I am convinced that fundamental clues to the character of activities, the labour organization employed in their execution, and the anticipated use of a location in terms of the overall subsistence-settlement system, are coded into the organization of site structure (Binford 1983:145-146).

Anthropologists tend to study the mode of production in society through first-person observation of the culture in question. Archaeologists, on the other hand, do not have the luxury of looking directly into the past so they are relegated to drawing conclusions about behaviour based upon the material remains of past peoples. While anthropologists study living societies and can visibly see and study households and other social units, archaeologists must define such units from the material record. There are immense difficulties in relating material remains to activities and ultimately to demographic units, but in practice this is achieved through the use of specific knowledge relating to economy and subsistence. This knowledge is derived through spatial analytical studies of domestic remains and used to infer what, if any, household units were present at a site. In order to understand the location of material remains in the archaeological context, one must understand the behaviour responsible for the patterning as the spatial organization of activities in the ethnographic context underlies the initial organization of debris in the archaeological context (Brooks and Yellen 1987:64).

Since archaeologists are forced to rely on the material remains of a culture to make conclusions about social organization, a method must be used that allows a natural progression from analysis of archaeological material to statements about social organization. The household cluster concept permits this to happen.

The *household cluster* (Figure 6) is defined as the archaeological representation of the household. The household may be considered to have been the equivalent of a residential group that occupied a single house (Bogucki 1988: 10). Since archaeologists cannot directly study the household they instead refer to household cluster as the archaeological representation of the household. The household cluster consists of archaeological

remains, while a household consists of a group of people who interact and perform certain activities. Through analysis of the archaeological data, "archaeologists can reconstruct the composition of prehistoric households, compare the activities carried out by household members, and study the relations between different households" (Winter 1976: 25).

The household cluster is represented by features associated with the domestic activities of the house occupants. The household cluster will generally consist of "the house and all the surrounding storage pits, burials, ovens, midden, drainage ditches, and features that can be reliably associated with that same household" (Flannery 1976: 5). The household cluster allows archaeologists to put features and artefacts in context. This concept helps make the material remains of past cultures understood as manifestations of a particular segment of society (Winter 1976: 25). Through analysis of the archaeological household cluster data, it may be possible to reconstruct the composition of prehistoric households, compare the activities carried out by household members, and study the relations between different households.

A. The community or site

In order to investigate community or intra-site patterns, one must first define the community. It may be fair to say, that the Foeni-Salaş site is similar to other nearby early agricultural societies that were self-sufficient in terms of food production. These societies were often organized into small villages with relatively sparse population density (Chapman 1989; Flannery 1972; Sahlins 1972; Service 1971).

B. Activity areas

The fundamental character of intrasite patterning is explicitly viewed as the result of activities conducted at a site (cf. Binford 1986: 98). Within a site, space will be divided among various activities according to the culture and the predominant socio-economic organization (Binford 1986). The division of space within a site and within a household results from behaviour and activity organization. The patterning observed in a living site and in the archaeological record is the result of the repetitive nature of activities at specific locations. When activities are continually carried out in a specific area, discrete zones of certain cultural materials will develop. These zones are referred to as activity areas. An activity area can be defined as a place within a site where a limited set of tasks was performed with a limited set of artefacts (Rigaud and Simek 1981: 200; Binford 1986: 148).

An activity can be defined as an integrated set of tasks performed in an uninterrupted sequence (Binford 1986: 147). Since activities within a site are structured by the socio-economic/ethnic composition of a settlement and by the nature of the procurement and processing tasks, the activities and the resulting patterns that they create will be good indicators of social organization. It is expected that when activity areas are reflected in an artefact distribution, there should be clusters of materials at the activity locations and the cluster contents should reflect the activities performed (Simek 1981: 59). In order to define activity areas, archaeologists tend to look for artefact-class co-occurrence. These co-occurrences of artefacts are referred to as an activity set and are closely related to behaviour (Simek 1981: 60).

C. The Archaeological House

Features in the archaeological house may include storage pits, hearths, ovens, post-holes, roasting pits and sleeping platforms, sitting benches, etc. Additionally, a range of artefacts may be found in association with the archaeological remains of a housing structure. The nature of these remains is generally dependent upon activities that took place within the house and in the area immediately adjacent the house.

D. Limitations of the Approach

In the archaeological record, the remains of the house and materials associated with its occupants will be affected by a wide range of actions including disposal of debris, burial and preservation biases (Brooks and Yellen 1987: 64). Additionally, natural formation processes enhance the gap between ancient activities and their modern visibility in the archaeological record (Brooks and Yellen 1987: 98).

The spatial organization of activities and behaviours that take place at a living site can partly account for the organization of debris in the archaeological context. In many cases, the complex relationships among activities must be considered in light of a wide range of factors affecting the relationship between activities and debris disposal. Burial and the differential preservation of artefacts, combined with taphonomic processes have made it difficult for previous studies to develop models to explain the relationship between the original deposits made in the living site and the archaeological record (Brooks and Yellen 1987: 64).

It is assumed that tool kits employed in certain activities have patterned distributions that may indicate discrete activity areas (Rigaud and Simek 1981: 200), yet the analysis of intra-site spatial patterns is complicated by the fact that different groups or individuals may use the same common space for different activities. In order to define activity areas,

we must identify relationships between artefacts that differentiate one activity from another.

VI. Conclusions - The Early Neolithic house and household

In Early Neolithic societies in Southeast Europe, two house types have been defined: surface and pit houses (Greenfield 2000; Jongsma 1997; Jongsma and Greenfield 2001). At the site of Foeni-Salaş, only pit houses have been identified. This is typical of the Starčevo-Criş culture area, but stands in strong contrast to the other Early Neolithic cultures from surrounding regions (central Europe and southern Balkans), which typically have rectilinear surface houses.

Rectilinear surface dwellings typically comprise the housing structure for many cultures that are contemporaneous with the early Neolithic at Foeni-Salaş. In Greece, Bulgaria and Central Europe, surface structures are the norm (cf. Bailey 2000, Perles 2001), but in the Starčevo-Criş culture area there is little evidence for structures of this type. Instead, an abundance of pits are found on Early Neolithic sites. Most local culture historians have long recognized that these pits represent the remains of pit houses (e.g. Bogdanovic 1988; Garašanin 1983; Srejović 1972). Pit houses are structures where the vast majority of their size is below ground. They usually have an overlying above ground superstructure made of organic material such as reeds, wood, and thatch. The walls of pit houses are sometimes covered in clay or daub. (Gilman 1987: 548; Jongsma 1997: 32).

At the site of Foeni-Salaş, there is no evidence for Early Neolithic surface houses. This conclusion is based upon observations made both during excavation and by spatial analysis of daub remains (H. Greenfield, pers. comm.). It is currently, very clear that the type of house used in the Early Neolithic of the central Balkans is a pit house. With the

house form defined, it is possible to begin to reconstruct the behavioural nature of households. The goal of this thesis is to conduct an archaeological test of the mode of production at the site in order to study the similarities and differences between households in terms of architecture (including size and nature) and associated material culture. The next chapter will describe some of the various Early Neolithic cultures belonging to the region and how they are perceived to have settled across the region.

CHAPTER 3 – Early Neolithic of the Northern Balkans and the Starčevo Culture

I. Introduction - Early Neolithic in the Balkans

The northern half of the Balkan Peninsula is an essential region for understanding the spread of economies with increased dependence on domesticated animals and crops. It bridges the geographical gap between the southern Balkans and central Europe. Early farming cultures spread into the southern Balkans from the Near East, and subsequently into the rest of Europe. Two streams of early farming cultures spread from the southern Balkans into the rest of Europe: the Cardial Culture complex that spreads along the Mediterranean, and the Karanovo I-Kremikovci-Anza-Starčevo-Körös- Criş that spreads northwards into central Europe. In this discussion, we will focus on the latter cultural complex since Foeni-Salaş belongs to this cultural group.

By 6500 BC, domesticated plant and animal dependent food production had spread from the Near East, whence it began, into the Aegean and southern Balkan Peninsula (Greenfield 1993; Milisauskas 2000; Tringham 1999). This is the beginning of the Early Neolithic in Europe. The Early Neolithic is the period in which sedentism, the production of ceramics, and food production (both the cultivation of plants and the breeding of livestock) originated. The earliest farming communities in the southern Balkans continued the Near Eastern tradition of relying upon domesticated wheat and barley, and sheep and goat (Childe 1957; Benać et al. 1979; Bogucki 1988; Manson 1990; McPherron and Srejović 1988).

By 5900 BC, archaeological cultures with Neolithic stone technologies, pottery, and economies relying on domesticated animals and plants first appeared in the northern half

of the Balkan Peninsula (McPherron and Srejović 1988). This is a transition region between the Mediterranean and the central European climatic zones. The shift toward agricultural production in the region required the re-adaptation of previously domesticated crops and animals from Greece. With the spread northwards into a more temperate climatic zone, local domesticates, including cattle and pigs (Bökönyi 1974; Greenfield 1993), became a more important part of the agricultural economy.

There are various theories as to the origins of the early farming cultures of southeastern Europe. The introduction of agriculture is generally understood to have resulted from either diffusion - the adoption of foreign practices by local hunter-gatherer communities - or migration, the arrival of an intrusive population in the area (Srejović 1988). It is still unclear if agriculture came into the region through physical movement of people or the expansion of ideas, techniques and tools related to agriculture and stockbreeding and to avoid the diffusion/migration debate, it can be simply stated that the expansion of early farming cultures from the Near East into Europe was the result of ideas and/or people moving (Tringham 1972: 68).

II. Macro-regional Culture Groups

A distinction can be made between the Early Neolithic cultures of the southern portion of the Balkans, with a Mediterranean climate, and those of the northern region of the Balkans, with a temperate central European climate.

In the South Balkan region bordering the Mediterranean, the first known cultures of the Early Neolithic period are the Proto-Sesklo or Sesklo groups. The Sesklo site Thessaly typifies this culture (Perles 2001). The North Balkan cultures do not all fall under a single comprehensive cultural designation and are generally known as the

Karanovo I-Kremikovci-Anza-Starčevo-Körös-Criş culture group (Tringham 1971: 73; cf. Gimbutas 1976). Each is a slightly different regional variant of similar material cultural assemblages. The Karanovo culture existed in central Bulgaria, the Kremikovci in southwestern Bulgaria, and the Anza (Anzabegovo-Vršnik) in Macedonia. The Starčevo culture was present in most of eastern Yugoslavia, the Criş existed in Romania, and the Körös in southern Hungary (Gaul 1948; Ehrich and Bankoff 1990; Manson 1990: 77; Tringham 1971). In this thesis, the focus will be on the Starčevo-Criş culture since this is the cultural complex found at Foeni-Salaş.

III. The Starčevo-Criş Culture

Starčevo-Criş represents two contemporary culture groups (Starčevo representing the Early Neolithic of modern Serbia, and Criş representing a very similar culture group occupying south and south-west Romania). These cultures are among the earliest food producing communities (domesticated plants and animals) in a temperate climatic zone (Greenfield 1993).

The site under analysis, Foeni-Salaş, is considered to be a transition site between the two cultural complexes. Foeni-Salaş has been dated to ca. 5500-5200 BC, the middle phase of the Starčevo-Criş culture. It is on the northern edge of the Starčevo distribution. Most scholars involved in the excavation and analysis of remains treat it essentially as part of the Starčevo cultural complex.

A. The Criş

Criş sites are found in the southern and southwestern parts of Romania. The type-site of the Criş culture is Crişanovo, east of the Pannonian plain in the Transylvanian region of western Romania (Dumitrescu 1983). The Criş culture is assumed to have existed

approximately at the same time as the Starčevo culture because they share very similar material cultures. The earliest Criş sites in Romania are Gura Baciului (Vlassa 1976), Ocna-Sibiu (Paul 1981), and Circea (Nica 1977) and are all thought to be contemporary to the Starčevo I phase.

The Criş culture group is assumed to exist between ca. 5950-5200 BC, although few radiocarbon dates are available for the culture. There are no reliable dates for establishing chronological contemporaneity between Starčevo and Criş sites (Dumitrescu 1983: 20), with the exception of Foeni-Salaş on the border between Romania and Serbia (Greenfield and Draşovean 1994). The two cultures appear to be part of a cultural continuum across geographic space, and will be treated as a single culture. Romanian archaeologists typically call any site with Starčevo type material culture as Criş if it is found with the modern national boundaries of Romania. In reality, the Criş culture is not distinctive until Transylvania or Oltenia are reached (Garasanin 1983; Tringham 1972).

B. The Starčevo

The Starčevo culture group is located primarily within the borders of Serbia (an area also known as the Central Balkans). The culture is found in a variety of environments, including the lowlands of Pannonia in the north and the deep river valleys of the more mountainous areas to the south. The name of the Starčevo culture is derived from the archaeological site Starčevo-Grad, on the northern bank of the Danube, 20 km east-northeast of Belgrade (Fewkes et al. 1933; Ehrich 1977; Benac et al. 1979; Manson 1990: 73).

The Starčevo culture approximately dates from 5900-5100 B.C. (Manson 1990). Occasionally, the literature indicates that it begins at 6100 B.C., but the earliest dates are

associated with Anza-Vršnik culture sites far to the south. The culture is divided into three or four phases (depending upon the interpretation chosen by various scholars – see the chronology below).

C. Geographic Distribution

The Starčevo culture is distributed over a wide geographical area and evidence for these Early Neolithic settlements has been found in eastern Croatia, eastern Bosnia, Serbia, south Pannonia, Transylvania and the Iron Gates (Manson 1990: 73-75). The southern border of the culture group extends toward the Morava-Vardar watershed. Its westernmost periphery is the site of Obre I in Bosnia. The northward periphery is toward the Tisza River and as far to the north-west as the Drava drainage between Lake Balaton and Drava (Ehrich and Bankoff 1990: 380). The northeast edge extends into the Criş culture area at the edge of Transylvania and over the Iron Gates in Oltenia. It is the Pannonian region in which Foeni-Salaş is found.

D. The Environmental Context for Foeni-Salaş

Pannonia, also known as the Carpathian Basin or Great Hungarian Plain, is an area of flat lowlands. These interconnected lowland plains are approximately 400 km in diameter and surrounded on all sides by mountain ranges. These include the Bohemian Mountains, Moravian Heights, Carpathian Mountains, Serbian uplands, Dinaric Mountains and the Alpine Mountains (Greenfield 1986).

Several rivers run through the plain, including the Sava, Drava, Tisza, Körös, Mures, and Timiş. All of these rivers drain into the Danube River.

The Banat is an important subregion of Pannonia. It comprises that portion of the middle Danube drainage bordered by rivers on all sides. The extent of the Banat is

demarcated on the north by the Maroş River, on the south by the Danube, on the west by the Tisza and on the east by the foothills of the Western Carpathian mountain range (Greenfield 1986).

The mountains of Serbia are found to the south of Pannonia. These rise into the Dinarics along the Adriatic coast. Topographically, this region is characterized by low rolling hills and broad plateaus in the north and north-west, and high mountains in the south, east, northeast and west. These topographic features separate the Banat from the surrounding regions. Serbia's mountain ranges are devised by several large and small rivers and their tributaries. Several major river systems cut through the region including the Morava which is the last southern tributary feeding the Danube prior to the Iron Gates. These join with the Danube in the Pannonian Plain before cutting through the Iron Gates on the way to the Black Sea (Greenfield 1986: 38-43).

To the east of Pannonia are the Carpathian Mountains. Where the Danube flows through the Carpathians, a series of gorges, narrow mountain passes and small basins (known as the Iron Gates, or Djerdap) connects the Pannonian and Oltenian Plains (Greenfield 1986: 44).

To the northeast of Foeni-Salaş lies Transylvania. It is an upland plateau, separated from the lowlands of Pannonia by a low series of hills.

IV. Starčevo-Criş Chronology

The cultural chronology of the Starčevo and Criş cultures is somewhat problematic (cf. Ehrich and Bankoff 1990; Manson 1990, 1995; Tasić 1992). There is a lack of well documented Starčevo-Criş stratified sites. Unlike cultures such as Karanovo, Anza, and Obre (Boyadziev 1995; Gimbutas 1974, 1976) that have chronologies based upon

seriation developed from well stratified tell sites, there is no single stratified Starčevo-Criş site that can be used to create a basic chronology for the culture as a whole. As a result, relative dating techniques cannot be used to determine the cultural sequence at Starčevo-Criş sites.

With the advent of radiocarbon dating archaeologists are less dependent upon stratified sites and seriation to develop cultural chronologies. The Starčevo-Criş cultural chronology however, remains a challenging issue. Chronologies and ceramic typologies established for one region, even with the use of radiocarbon dates, do not apply equally in all regions. To date, there are very few radiocarbon dates and very few stratified sites. The result of this regional disparity is a tendency for typologies to be based on type ceramic sequences with little or no attention paid to absolute chronology (Manson 1990: 66). Several attempts at developing a unified cultural chronology based upon radiocarbon dates have all been unsuccessful. Those chronologies developed by Gimbutas (1982), Ehrich and Bankoff (1990), Manson (1990) all have their detractors. As a result, no single cultural chronology has been developed for this region that is widely accepted.

In fact, the radiocarbon dates from the site of Foeni-Salaş (Greenfield and Jongsma n.d.) – a site that is stylistically associated with the Starčevo culture – fall at the younger end of the dates proposed by Manson (1990) and others, but is stylistically earlier. As a result, it is contended that the entire Starčevo chronological system must one day be revised from top to bottom (Jongsma 1997: 73).

V. Settlement Patterns (regional and site)

A. Settlement Location

Initial settlement and farming in Europe was dictated in no small part by environmental factors such as climate, soil, and forest cover (Barker 1975, 1985: 95; McPherron and Srejović 1988). Early Neolithic settlement in the study region is limited to a fairly small range of locations that are generally found in clusters dispersed along sloping plains, terraced slopes and the edges of rivers and streams (Whittle 1986: 13-151). Starčevo sites are generally situated on river terraces or gentle slopes near streams or springs or on rises near swamps and marshes (Barker 1985: 96, Manson 1990: 81).

Settlement distributions in these areas occur in a variety of types. For example, a linear arrangement of sites overlooking valleys is found in the narrow flood-plains in Pannonia, while a clustering pattern is found among the flood plains (Sherratt 1982: 303). Most sites in this region are found on high areas presumably to avoid annual flood cycles (Barker 1985: 99; Kosse 1979; Sherratt 1983). Seventy percent of the Early Neolithic settlements are located on the flood-plains of rivers, and on islands within these flood-plains (Ehrich 1965: 413; Horvath 1989: 85).

B. Settlement Spacing

Settlements in the northern Balkans are spaced further apart than the tell settlements of the southern Balkans (Barker 1985; 1975; McPherron and Srejović 1988; Barker 1985: 95). In the Morava and Sava river valleys, Starčevo sites tend to be spaced 7 to 10 km (Whittle 1986: 49). This pattern seems to extend beyond the river valleys and into the hill country of Serbia (cf. Bankoff and Winters 1982; Chapman 1990), however little is known about settlement spacing for the Pannonian area.

C. Site Size

The size of sites varies extensively both between and within regions occupied by the Starčevo culture. Information from different Early Neolithic Starčevo sites in the area around Serbia show a size range from 0.2 ha at the site of Golobok-Rimskibunar to 12 ha at Kruševo-Čelopek. Stream-side sites vary in size from 0.2 to 8.8 ha and those found on hill slopes range from 1.5 to 10 ha (Chapman 1990: 28; Jongsma 1997: 80).

In contrast, Greenfield contends that many Starčevo site sizes are inflated because most analyses do not take into account lateral displacement of features over time. The displacement of features specifically refers to the fact that settlements shift over time. The entire site should not be counted, only the area of contemporary occupation. At Blagotin, Vinča and Foeni-Salaş, for example, site size is fairly small – (Greenfield 2000; Greenfield and Jongsma n.d.).

From the few sites with large spatial excavations, it appears that Early Neolithic sites "tend to be modest and simple, reflecting a short-term occupation" (Jezik 1998: 83). At Foeni, Blagotin, and Vinča, it is clear that each contains a small circle of contemporary pit houses distributed around a larger central pit house (Greenfield 2000; Greenfield and Jongsma). At Divostin, seven pit house structures were recovered, but their spatial relationships are as yet uncertain (McPherron and Srejović 1988). Nearly all Early Neolithic sites contain hearths and ovens either in or outside of house structures. At Foeni-Salaş, they are found within the houses (H. Greenfield, pers. comm.).

D. Pit Dwellings

Pit dwellings, the focus of this thesis, are dug into the Pleistocene loess. Sizes vary and the shapes may range from oval to trapezoidal (Bogdanović 1988: 35-38) and contain features, including ovens, hearths and storage pits, and artefacts.

Entrances to houses are by a ramp located on the side of the house (Manson 1990). Walls were made of wattle and daub but the floors of these structures have shown no evidence of lining or plastering and roofs were most likely simply wooden coverings (Bogdanović 1988).

Evidence of these types of dwellings have been found in many Early Neolithic sites, particularly Starčevo-Körös-Criş sites such as, Gora Bacului in Romania (Vlassa 1976), Donja Branjevina, Golukot in Yugoslavia (Srejović 1988), and Transdanubia in Hungary (Makkay 1978).

VI. Material Inventory

A. Pottery

Pottery style is a major indicator used to discriminate amongst culture groups of the Early Neolithic. Starčevo pottery is divided up into three categories: coarse, medium, and fine wares.

At all sites of the Starčevo type, coarse wares predominate (Manson 1990: 119). This pottery contains chaff, mica, sand and occasionally small pebbles. The chaff and other organic material are understood to have been added as temper while the sand, mica and pebbles are believed to have been present as accessories in the raw clay material. Coarse and medium wares feature incised and impressed ornamentation. Incising, while less common, generally takes the form of a net-like pattern across the vessel body. Impressed designs appear to have been made with fingertips and fingernails (Manson 1990: 124).

Medium wares are tempered with less chaff than coarse wares. The surface of the pottery is covered by thick, red or white slip paint before firing in either red, black or white patterns (or a combination thereof). Medium wares are similar to the coarse wares

featuring incised and impressed ornamentation but the walls are thinner. Polishing of the surface occurs after firing (Manson 1990).

Fine wares contain the least amount of chaff and other organic material, resulting in a fine surface finish. The surface has a slip of the same clay or contains a wash that has been polished or burnished (Tringham 1971: 79). Some fine wares were burnished and left unpainted but the majority were painted (Manson 1990: 124). These artefacts have the same general form as coarse and medium wares. The most significant difference amongst all types of wares appears to be the thickness of the walls and surface treatments (Manson 1990: 120). The ceramic wares range from simple bowls to pedestaled bowls and bomb-shaped or globular pots. These pots often have short flaring or cylindrical necks and low disc or flat bases (Tringham 1971: 79).

B. Non-ceramic clay items

Aside from making ceramic wares such as pots and saucers, clay was used to make a number of other utilitarian items such as loom weights, net weights and spindle whorls. These items are often found in Early Neolithic sites in the region and are described in more detail below.

1. Loom Weights:

These items are used to weigh down the hanging warp to provide tension in textile manufacturing. They are the first evidence of loom use to become visible in the archaeological record (Barber 1991: 82).

2. Net Weights:

These are similar in form to the loom weights. They were however, always fired, and do not tend to occur in the archaeological record in houses. Unless they had just come out

of the kiln, net weights are generally found close to the water where they would have been used.

C. Stone Tools

Stone tools typical of Starčevo-Criş and related contemporary groups come in two basic varieties – chipped stone and ground stone. Chipped stone tools that are found in Early Neolithic assemblages consist of flakes or microlithic blades that display little or no retouching and are never longer than 6 cm. These blades were most likely used for cutting, sawing, scraping, shaving for materials such as bone, wood, meat and skin. Antlers with slots were found at the site of Valea Raii in south-west Romania. It is hypothesized that these were most likely for the insertion of blades allowing the tool to be used as a sickle (Tringham 1971). The ground stone tools are flat ground trapezoid stones that may have been used as an adze or axe. These have been found all over the Balkans and central Europe. Ground stone tools may have been used as woodworking implements such as cutting down trees and even in the manufacture of pit houses. By the middle Neolithic these tools become more refined (Tringham 1971: 75).

D. Figurines

Plastic art is rarely recovered from early Neolithic sites but statuettes with elongated necks and other types (Garašanin 1979: 92) have been found. Anthropomorphic, zoomorphic, and other more abstract types of figurines have been recovered. Figurines have extended necks with bodies present in stubby figures, or exaggerated breasts with low parts of the torso bell shaped, such as the "Venus of Starčevo" (Garašanin 1982: 102). Popular motifs were female figures hybridised with bird forms. Buttocks were exaggerated with the long body of a bird (Tringham 1971: 83).

VII. Conclusions

Early farming cultures spread from the Near East into the European Mediterranean littoral, and subsequently northwards into central Europe. The northward movement of early farming cultures into the northern Balkans is documented archaeologically through a number of culturally similar Early Neolithic cultures including Proto-Sesklo, Karanovo I, Kremkovci, Anza, Starčevo, Körös, and Criş. The Starčevo-Criş cultures falls into the centre of this cultural continuum. These cultures were the first in Europe to adopt plant and animal domestication. Similarities in ceramic styles can be used to link these culture groups together. The next chapter will look at Foeni-Salaş – an archaeological site located at the northern edge of the Starčevo-Criş distribution.

CHAPTER 4 - The Site of Foeni-Salaş

I. Introduction

Foeni-Salaş is a multi-period site on the western edge of the Romanian Banat. The site is located on the border between the Starčevo and Criş culture areas, and while the culture is referred to as the Starčevo-Criş culture for discussion purposes, the site considered to be in the Starčevo tradition. Foeni-Salaş appears to be one of the earliest settlements of this culture in this part of the Romanian Banat region, as the only other known Starčevo-Criş settlements nearby at the modern villages of Unip, Parța and Guilvaz are from the later (IIB or III) phases of the Starčevo-Criş culture.

It appears the site was occupied for a relatively short time of only ca. 100 years in the Early Neolithic (H. Greenfield, pers. comm.). It was briefly reoccupied during the Eneolithic and Middle Bronze Ages. After this time, it was abandoned until the Early Iron Age. The site was deserted yet again until the late Roman/early Medieval period in the 4th and 5th century AD, and finally occupied during the 12th century AD. It has been abandoned ever since.

The Foeni-Salaş site has been described as an "exceptional example of a single phase Early Neolithic agricultural settlement" in the Balkans (H. Greenfield, pers. comm.). While the later strata at the Foeni-Salaş site are highly disturbed, the layer belonging to the Early Neolithic period remained, for the most part, intact until excavation (H. Greenfield, pers. comm.).

Because the site is located on a low mound in the midst of agricultural fields, and because it consists of a single, thin occupation horizon, large scale excavation at the site

was relatively straightforward. The method used to excavate at the site was devised to best reveal the distribution of artefacts and structure.

II. Site location and physical characteristics

A. Location

The prehistoric Foeni-Salaş settlement is located in the Timiş county, in the province of Banat, Romania. The site is 3 km north of the modern village of Foeni, a similar distance to the Serbian border, and 45 km southwest of the provincial capital of the Banat, Timişoara. The coordinates are (approximately) 45°31'N, 20°52'30"E (Greenfield and Draşovean 1994). Along the north edge of the site, an asphalt road runs between the villages of Ionel and Foeni.

B. Size and Physical Geography

The site of Foeni-Salaş is situated on a low natural hill which emerges about 5m above the Timiş River (Timişat) and the flood-plain surrounding it. The Timişat is a tributary of the Timiş river, that flows past the site. The hill is a portion of the remnant loess terrace which makes up the boundary of this flood-plain (Greenfield and Draşovean 1994).

The site at Foeni-Salaş, in its entirety, is relatively small: approximately one half of a hectare. The portion of the site which contains the Early Neolithic settlement accounts for about 2000m^2. The Early Neolithic settlement faces south, oriented toward an old oxbow, or palaeochannel of the Timişat. This slow-moving stream circled the southern and eastern sections of the site in prehistoric times, but has since straightened and lies approximately 100m to the east of the site. The site slopes steeply on the east and south faces toward the oxbow, but gently on the north and west faces towards the cultivated fields.

III. Local Environment

A. Surrounding Environment

The hill on which Foeni-Salaş sits is a large and flat alluvial plain, bordered by the Timiş and Bega rivers of the Banat. The Banat Plain is the southeastern-most portion of the Pannonian Plain. Pannonia is the (politically neutral) term for the vast plain between the Dinaric, Alpine, and Carpathian mountain ranges, and is also known as the Great Hungarian Plain (Greenfield 1986; Jongsma 1997).

The Banat plain is divided into several zones based on relief and altitude. Foeni-Salaş falls into the zone termed the Timiş plain, which encompasses the flood-plains of the Moravisa, Bržava, Bega, and Timiş rivers (Zăvoinanu 1979: 23-28). This Timiş plain has an average altitude of approximately 80 m asl, and is characterised by a high water table and a gentle slope down to the southwest. As a result, the rivers flood frequently and wetlands were prevalent in this region until their 19th century channelling and draining. Previously waterlogged areas are rich agricultural land today (Greenfield and Draşovean 1994).

B. Soil and vegetation

The soils of the Foeni-Salaş region were formed by a fluctuating water table, and are hydromorphic (Greenfield and Draşovean 1994). Soils are a sandy loamy clay mixture, with loess from the Pleistocene below. The sand makes for rapid drainage of water on the site; however, the presence of clay allows the soil to become baked solid when exposed briefly to the sun (Jongsma 1997). Capillary action can cause soil saltiness if no drainage occurs, resulting in lost fertility (Greenfield and Draşovean 1994: 47).

Due to modern agricultural practices, the draining of surrounding wetlands, and the removal of ribbon forests along watercourses, the region's natural vegetation has all but disappeared. The site is located in the centre of a field of corn (*Maize*). Along the fields edges grow *Medicago* (alfalfa), *Papaver rhoeas* (poppy), *Chenopodium album* (fat hen), and *Typha latifolia* (cattail) (Jongsma 1997; Jezik 1998).

IV. Chronology

A. Relative chronology

On the basis of relative frequency and presence/absence of ceramic stylistic elements, Foeni-Salaş has been dated to the second phase of the Starčevo-Criş culture (IIA and IIB) (Greenfield and Draşovean 1994; Greenfield n.d.: 20-21). Stylistic evidence suggests that this site is contemporary with nearby Timişoara-Fratelia, Cuina Turcului I, Gura Baciului, Ocna-Sibiu II and Lepenski-Vir IIIA (Lazarovici 1984: 62; Paunescu 1979; Srejović 1972; Vlassa 1980).

B. Absolute chronology

Five animal bones from two Early Neolithic features (loci 7 and 10) at Foeni-Salaş were radiocarbon dated. Based on the radiocarbon dates, it is believed that the site was occupied for a relatively short time period, during the first half of the 6th millennium BC (Greenfield and Jongsma n.d.).

V. Excavation Strategy and Methodology

A. History of Research and Excavation

Most districts along the Romanian/Yugoslavian border have not been investigated thoroughly for archaeological sites. In 1975, the first survey in this region of Banat

occurred, and a number of settlements and tumuli were discovered by Florin Medelet (Thracology Institute, Timişoara, Romania). Construction of a pumping station for natural gas in 1986 spurred an initial salvage study, directed by Florin Draşovean (Museum of the Banat, Timişoara), which uncovered eleven archaeological sites from a variety of periods (Greenfield and Draşovean 1994: 48).

During 1991, twenty-five percent of the county of Timiş was field-walked, and by 1992, the total number of discovered archaeological sites in this region was 16. One of these sites was an Early Neolithic, Starčevo-Criş site, which has become known as Foeni-Salaş. The remainder were Medieval, Late Iron Age La Tène, Early Iron Age Halstatt, Bronze Age, Chalcolithic Baden, and Late Neolithic Petreşti and Vinča sites.

From 1992 to 1994, a team directed by Haskel Greenfield and Florin Draşovean excavated the site. Botanical, faunal, daub, stone and spatial analyses were conducted by students and/or specialists of the Canadian team, under Greenfield. The Romanians, under Draşovean, provided permits, logistical support, and student volunteers, and were responsible for the ceramic analysis.

B. Taphonomic issues

Two major taphonomic agents caused disruption at Foeni-Salaş. The site has been subjected to severe rodent activity. Rodent tunnelling has blurred distinctions between strata and transferring artefacts downwards by as much as 50cm. It was observed that the rodents had a preference for highly organic soils. Post holes were incorporated into rodent burrows, and the edges of the Starčevo-Criş pits were riddled with burrows (Greenfield and Draşovean 1994; Jongsma 1997). A concerted effort was made to separate material disturbed by rodents wherever possible. Despite these disturbances, few

Early Neolithic artefacts were found outside of the pit loci. There appears to be very little smearing of the artefacts from their original pit context.

Ploughing, both modern and ancient, is another important agent of taphonomy at Foeni-Salaş. Ancient ploughing is suspected in locus 4, which is relatively continuous over the site. Modern ploughing has also disturbed the site since the land was drained in the 19th century. Shallow ploughing twice a year has disturbed the site down to 30 cm below surface. More recently, a plough which extends 50 to 60 cm below the surface has been implemented, and the effects could be seen clearly in several locations (Greenfield and Draşovean 1994).

C. Research strategy

The stated purpose of the excavation was to reconstruct the internal social and economic organization of a single settlement of an Early Neolithic site (Greenfield and Draşovean 1994). It was therefore necessary to map the spatial distribution of *in situ* features and artefacts using a systematic approach in order to understand the relationship between different types of features and associated artefacts.

Each of the strata was excavated to expose large sections so that artefacts and structural distributions could be recorded spatially. Excavation was done according to the natural soil horizons, leaving all artefacts in situ and drawing and photographing each horizon (Greenfield and Jongsma n.d.).

D. Site surface survey

An intensive surface survey was implemented at Foeni-Salaş in order to determine the extent of the site, the richness of deposits, and to locate subsurface features. Methods used include surface collection, magnetometer, and soil auguring.

Prior to any subsurface investigation, a surface collection established that Foeni-Salaş is a multi-period site. It indicated where Starčevo-Criş period "hot-spots" may be found. The results were useful in each of the years of investigation and were correlated with other subsurface reconnaissance techniques, such as auguring and magnetometer.

In 1992, the magnetometer survey was used as an aid to decide where to place trenches. It was not used in 1993 because of malfunctions in the equipment. In 1993 and 1994, soil auguring was most useful for establishing the location of surface features. The cores were also useful in establishing a general pan site stratigraphic sequence.

E. Excavation and recovery methodology

The site was initially divided into a grid system encompassing the entire mound, and some of the surrounding surface. The intention was to ease and speed the location of any feature or deposit for incorporation in GIS-based analytical systems. Large (20 m x 20 m) blocks were subdivided into smaller trenches (5 m x 5 m). Each trench was further divided into quadrats (1 m x 1 m). Blocks were designated by a number, trenches by a letter, and quadrants by a number (Jongsma 1997).

After the removal of the surface layer using shovels and picks, the sediment was excavated by trowel in arbitrary levels of 10 cm, except where obvious changes in soil stratigraphy (texture and/or colour) were observed. In most cases, quadrats were excavated down to culturally-sterile soil: Pleistocene loess or the post-Pleistocene humus immediately above the loess (Loci 12 and 5, respectively). Plans were drawn and photographs taken at every excavation level. When artefact concentrations were encountered, all large remains were drawn to scale on trench plans and elevations were taken of the bottom of that level or cut (Greenfield n.d.: 8).

Each major stratigraphic unit is called a locus and was assigned its own locus number. When differences in soil types, both inside and outside of features and artefact concentrations were noted, each unit was separately excavated and designated as a locus. Although some loci may extend across the entire site the locus system, makes it possible to correlate similar stratigraphic units across the site while still in the field (Greenfield n.d.).

Soil was sieved, in the 1992 season, using a 0.5 cm mesh which, due to clogging, was replaced in subsequent years with a 1cm mesh. Soil from deposits deemed to be culturally important (such as fireplaces and pits) was collected and sieved, and sampled for flotation. Burnt soil and charcoal traces were also collected for flotation and radiocarbon dating (Jezik 1998; Jongsma 1997).

VI. Major deposits by period

In this section, the characteristics of each of the major loci will be discussed according to their period of creation.

A. Pan-site horizons

There were five stratigraphic horizons (strata) at Foeni-Salaş that extended across the entire site. These five strata were cut by various features from different periods.

Locus 1 – Modern plough zone;

Locus 4 – Medieval plough zone;

Locus 2 - Starčevo-Criş horizon;

Locus 5 - Initial post-Pleistocene humus horizon; and

Locus 12 - Pleistocene loess horizon.

Each will be described in turn because they are relevant for our understanding of the distribution of Early Neolithic remains. Often they disrupt the Early Neolithic deposits and distribution of remains.

B. Modern / Modern Plough Zone.

The modern plough zone is called Locus 1. This layer is 30 cm thick, with dark brown soil. The material found in locus 1 is a mixture of cultural debris from all periods present at the site, including Early Medieval (11-12th century), Late Roman period (3-5th century AD).

C. Medieval Plough Zone

Medieval, Early Iron Age (Halstatt), Eneolithic and Starčevo material was found mixed together in Locus 4, immediately beneath the modern plough zone. It appears that the artefacts found in this horizon were mixed and their accompanying deposits were destroyed by later medieval ploughing. A major feature within the later Medieval occupation layer is a fortification ditch that has been labelled Locus 8. This ditch runs in an East-West direction across the site and turned north-south at the west edge of the site.

D. Starčevo-Criş

Locus 2 is the Starčevo-Criş cultural horizon found outside of structures and pits. It is the first cultural horizon on the site. This is a pan-site Starčevo-Criş horizon. The density in material in this locus is low in comparison to that found in pits and features.

E. Pleistocene and Post-Pleistocene

The entire site is underlain by two Pleistocene and Post-Pleistocene deposits. Both are culturally barren. The Pleistocene deposit is composed of a coarse loess and is known as

Locus 12. The Post-Pleistocene layer is the initial humus to be formed on the site and is called Locus 5. It contains a low frequency of Starčevo-Criş ceramics that found their way into the deposit as a result of by rodent activity and other natural processes. Locus 5 is stratigraphically beneath Locus 2 which is the Starčevo-Criş cultural horizon outside of the structures and pits.

VII. Temporal Distribution of Activities

All of the Starčevo-Cris features appear to be south facing, as though the features were constructed to face the old river channel which ran along the south and eastern sides of the site. The loci are also concentrated toward the southern half of the site.

Six pit houses belonging to this period were identified. Five of the pit houses are small and are arranged in a semicircle around the perimeter of the site (Loci 7, 10, 24, 41, and 50). In the centre of this circle is a large pit house (Locus 23). Around the large pit house is relatively open space with low densities of remains. All of the smaller peripheral pit houses are nearly equidistant from the centre of the open space. Given that the pits are equally spaced from the center and do not overlap in any way, they are believed to be contemporary (Greenfield and Jongsma n.d.).

Several deposits were located within the central area of the Early Neolithic settlement. These included a small storage pit (Locus 25), and a large high density surface concentration of ceramics and daub (Locus 51) and a low density concentration of ceramics and daub (Locus 53). At the centre of the Early Neolithic settlement, located along the southern edge of the site, there is a possible corral (Locus 52).

The Early Neolithic Starčevo-Criş pit loci will be described below in order to set the scene for the activity area discussion that is to follow.

Locus 7 - This pit was found in trench 131F. Within this pit were three separate strata, referred to as loci 14, 16 and 17. Locus 17 represents the initial basal occupation. Then the pit is abandoned and filled with locus 16 refuse. Locus 14 probably represents the final period of the pit, as it existed after site abandonment. The structure appears to enclose a trapezoidal area of approximately 5m x 4m (n-s: e-w).

Locus 10 - This locus is a trapezoidal shaped pit similar to Locus 7, and is found in trenches 149L and 150I. The locus is stratigraphically below Locus 4 and cut into Locus 5. This locus is believed to represent a one-time occupation and use.

Locus 23 - This is the largest pit house found at the site. Located in the centre of a circle of pit houses, Locus 23 is a large circular structure with several superimposed internal strata. The basal horizon (levels 8-10) contained a large dome-shaped oven and a central fire pit. Levels 6-7 were filled with fallen roof and post-occupational debris. Levels 4-5 were heavily mixed with later EIA material probably because of EIA ploughing activities. A later Early Iron Age fire pit (also known as Locus 23 hearth) and a Medieval period fortification ditch (Locus 8) destroyed part of this locus.

Locus 24 - This Starčevo-Criş pit house complex is trapezoidal in shape, with a fire pit at the southern end. The centre of the pit house complex was disturbed by an Early Iron Age pit (Locus 30) and a small Eneolithic pit on the southwest edge.

Locus 41 - This is a Starčevo-Criş pit house complex. This locus was badly disturbed by Locus 44. A few postholes were noted along with and the presence of a central fire pit. This locus appeared to contain much lower level of debris, unlike the other Starčevo-Criş pits found at the site.

VIII. Conclusions

Foeni-Salaş appears to be an Early Neolithic settlement occupied for a short period of time. The site has a single and very thin occupation level. None of the Early Neolithic structures cut into or disturb each other and there is little build-up of remains or deposits outside of the pit houses. The Starčevo-Criş dwellings seem to have been abandoned relatively soon after construction because as there is no stratigraphic accumulation of occupation debris above the basal level.

The inhabitants did not invest much time in building their living quarters. The floors of these pit complexes were not plastered or elaborately finished, but simply dug into the well-drained Pleistocene loess deposit beneath the basal horizon. There is a lack of immovable storage facilities such as clay ovens and large storage pots (Greenfield n.d.; Greenfield and Draşovean 1994).

CHAPTER 5 – Method of Analysis

I. Introduction

Analyzing the material remains and patterning within a site is often referred to as either within-site or intra-site spatial analyses. These analyses can provide insights into formation processes and can help archaeologist's bridge the gap between the archaeological record and past behaviour (Carr 1984: 103). From the patterns of material culture, it is hoped that societal structure and behavioural patterns can be discerned.

II. Spatial analysis in archaeology

A fundamental problem with spatial analyses in archaeology is that there is a dichotomy between the identification of spatial patterns and the interpretation of those patterns. Visual techniques of analysis can often determine gross spatial patterning in archaeological remains but there are drawbacks to this method. Visual methods are time-consuming and often cannot be reproduced. "There is no guarantee that two teams of analysts, perhaps guided by different research interests, will detect the same patterns" (Simek and Larick 1983: 166). These visual or intuitive approaches to spatial analysis, while they are very problem-oriented, are also hindered by a limited capacity for information processing.

For decades, archaeologists have borrowed quantitative measures of spatial patterning from other fields and disciplines. Human geography and ecology have been two of the predominant providers of computer-assisted quantitative techniques proposed for the study of spatial patterns in artefacts and features within archaeological sites (Kintigh and Ammerman 1982: 32). The problem with borrowing techniques from other disciplines is that they are created in the first place to analyze entirely different subjects. With

statistical methods in particular, they do not generally allow the researcher to incorporate qualitative data into the analysis (Kintigh and Ammerman 1982: 32). The result is that many quantitative methods are replicable, efficient and have the capacity to process large volumes of data but are hindered by their rigid implementation and lack of cognitive ability (Ammerman, Kintigh and Simek 1987: 211). While summary statistics such as nearest neighbour analysis can reduce a distribution of points to a single statistic that can then be used to characterize the distribution as either: random, clustered or uniform (Simek and Larick 1983: 166), these methods often do not lend themselves to pattern interpretation.

A. General approach to spatial analysis

Since culture is patterned, it follows that behaviour must be patterned. The way that space is organized within an archaeological site can be determined by studying a number of elements including the size, nature and location of hearths, sleeping areas, refuse disposal pits, and the division of space into activity areas (Galanidou 2000: 244; Binford 1986).

Whether or not the patterning visible in the archaeological record may be interpreted directly is a matter of some debate. In fact Schiffer (1987: 10) states that the patterns of past activities represented by archaeological remains cannot be read directly as relating to particular events and/or activities. Events subsequent to the creation of the initial patterns may mar the evidence and transform its nature.

Over the course of days and years, taphonomic processes - agents of disturbance within the archaeological record – may change the spatial location of artefacts. For example, one object from a toolset might have stayed in approximately the same place it

was initially deposited, whereas another related object might have been kicked or tossed or otherwise moved into another totally different place. Schiffer (1987), Kent (1984, 1987) and Carr (1984) all address taphonomic issues yet ultimately conclude that patterns may be found that are indicative of tool kits.

B. Polythetic Sets

Within the confines of a site, activity areas may overlap (cf. Carr 1984: 120-131), creating "polythetic sets." In the behavioural realm, polythetic sets can indicate, on one hand, that a single tool may have had multiple purposes and may have been used in combination with several different sets of tools. On the other hand, a single tool may have had multiple purposes and been used in different activities (Carr 1984: 121). Polythetic sets may also be derived from processes that have nothing to do with the activities posed. The set may have developed through formation processes and disturbance of the archaeological record or from processes of recovery and analysis (Carr 1984: 122).

C. Activity Areas

Activity organization has often been seen as a primary source of artefact spatial patterning. Activity areas have two relevant dimensions of variation – spatial discreteness and content (Rigaud and Simek 1991: 200). This analysis will focus on content part of this dimension as the spatial element is controlled for by the use of loci in determining the minimal unit of analysis.

Activity areas in the living system are defined by activities carried out within a certain locale. Since behaviour is not directly observable in the context of an archaeological site, the identification of activities must be based on site content and context. Below are

described some of the activities "observed" by Kent Flannery in House 1 at Tierras Largas:

- activity: cutting and scraping – represented by utilized chert and obsidian flakes
- activity: sewing and basketry production – represented by bone needles
- activity: production of cutting tools: represented by waste flakes
- activity: production of hunting tools – represented by stone projectile point
- activity: cooking and food consumption – represented by animal bones and fragments of cooking pots (Flannery 1976: 27)

Areas where these activities are seen in the archaeological record are not defined by clustering, but by the presence of certain artefact classes.

Since individual artefacts may or may not have been used in a particular activity, it may be preferable to conceptualize activity areas based upon "toolkits". A toolkit is a group of tools that is used to perform a particular activity or groups of activities within a fairly discrete area (Hennebury 1999: 57). Toolkits are co-occurring artefacts, both tools and debitage, which can be grouped together based upon their presumed usage (Binford 1983: 147). The location of toolkits within a site may be interpreted as evidence for the location of specific activities. Cannon (1983) supports this methodology, suggesting that "the diversity of artefact types present in an assemblage is most directly and consistently a function of the presence or absence of specialized activities".

Absolute and proportional frequencies are both valid in these types of studies. A simple determination of the number of artefact types related to specific cultural behaviours is a commonly used means for determining behavioural inferences from material culture (Cannon 1983: 791). Proportional frequencies can also be used, but may

be misleading depending upon how they are calculated. If a proportional frequency is calculated based upon a subset of the artefact assemblage, the results will be different than when the proportional frequency is calculated upon the complete assemblage count. Each calculation provides a different insight into assemblage variability.

III. Techniques of spatial analysis

Over the last several decades there has been an increasing interest in the study of formal or quantitative methods of archaeological spatial analyses. This interest stems in part from the quantitative evaluation of archaeological research patterns (Kintigh and Ammerman 1982: 31). Spatial analysis has come of age and the days of searching for patterns by hand have been superseded by computer-aided methods. These methods allow both analysis and display of patterning within sites, which can be a great aid when multiple patterns exist and even overlap. In fact, the density of archaeological material is often too high for patterning to be noticed during excavation and the resulting maps are difficult to read due to the clutter of artefacts (Hivernal and Hodder 1990: 97). The one problem with computer driven methods is that information pertaining to context is not used. There is a certain human element that is needed when studying culture. The contextual information available to a human analyst such as the environment, geography and especially human behaviours can all be used in analysis but there is no way to quantify much of this information.

> "In 'traditional' quantitative approaches to spatial analysis, the problem context does not play a significant role in the formation of statistical measures or in their evaluation" (Kintigh and Ammerman 1994: 32).

But, if this contextual information is essential for the recognition of complex patterns, there must be a way to incorporate it into a rigorous methodology.

A. Choice of appropriate statistical method

The choice of statistical method should be suited to the research questions being addressed. To that end, the use of comparative models is a factor that is often stressed. These models are often based upon ethno-historic or ethnographic information (Hennebury 1999: 63) and given the right kind of data, these models are very useful. In the case at hand, the data is not sufficient to create comparative analogies. Part of the fascination with this time period in cultural terms is the fact that little is known of it. The way of life of these early people is unknown. Their economic mode of production and many other things is unknown.

There are two basic methods for the analysis of artefact distributions. These two methods are basically differentiated by their unit of measure. There are those methods that deal with data collected by the grid square (quadrat analyses), and those that use point provenance data. Greenfield and his crew collected both point provenance and quadrat data during the excavation of Foeni-Salaş. The point provenance data however, have severe flaws that hinder their analytical value. These data were not systematically recorded, largely due to labelling errors made in the field during the collection of the data. The maps drawn to represent the location of artefacts do not contain all of the descriptive data necessary to link the artefacts back to fuller descriptions within other the databases containing information for the site. Thus, for this thesis, only quadrat data will be used.

The quadrat data set has been entered into MS Excel™ spreadsheets. These spreadsheets were generated from the various analyses conducted by the project specialists (bone, daub, botany, lithic, etc.). Only the ceramic spreadsheet is incomplete since the specialists neither completed the analysis nor turned over their data.

The spreadsheet data, organized according to locus and excavation level, is more useful for analysis than the digitized spatial data. The drawback to this data is that it is only spatially referenced to a 1x1 m quad that was the standard minimal excavation and recovery unit. A brief discussion will follow in order to assess the value of various quantitative methods to the problem at hand.

Grid count analyses often take the raw counts of artefacts within an arbitrarily defined unit and compare them to the counts that would be expected were the artefact distribution random and these are tested for significance. Two grid count methods have been commonly used by archaeologists in the past: the Poisson Method and the Dimensional Analysis of Variance.

The Poisson Method is one of the oldest methods for detecting non-randomness in the arrangement of artefacts in a study area. This method is based on the fact that "when a random arrangement of items is overlaid with a grid of quadrats of sufficiently small size such that the chance of occurrence of an item in a quadrat is very small, the frequency distribution of number of cells with *n* items will approximate a Poisson distribution" (Carr 1984: 140). One of the drawbacks to this method is that the size of the grid selected for sampling of the artefact counts will greatly affect the results. Grid count methods can be used to identify cluster locations and these methods are also replicable if the same sized grid is used (Hennebury 1999: 67). The Poisson approach has a number of technical

problems and problems of concordance with the nature of the archaeological record that make it a poor choice for the task at hand (see Carr 1984 for a detailed explanation of issues pertaining to this method).

The Dimensional Analysis of Variance technique was originally developed by plant ecologists and was introduced to archaeology by Whallon (1973). The Dimensional Analysis of Variance attempts to assess the arrangement of artefacts within a study area using multiple grid systems with cells of differing sizes, shapes and orientations in order to find a grid system for which the clustering of artefacts is most significant (Carr 1983: 145). Artefact counts and the size of the area of analysis affect analyses using this method. The use of grouped cell counts to calculate correlation coefficients among artefact types, according to Carr (1983), is not the most preferable approach to defining correlations among types. Because of the small number of artefacts recovered at Foeni-Salaş, and other issues with the method, Dimensional Analysis of Variance cannot be used and is not used in this thesis.

Both of the methods outlined above are severely constrained in their usefulness to the current study by small artefact counts and small areas of investigation. For the Dimensional Analysis of Variance, grouping together of artefact classes into toolkits does not improve the utility of the statistic. Since the data available for analysis in this research do not lend themselves to rigorous analysis using any of the standard archaeological grid count approaches, a more simple observational method will be applied. The results of this observation analysis, as well as the results of a Chi-square goodness of fit test will be presented in the following chapter.

B. Steps to the analysis

The basic thesis question (social organization in early Neolithic villages) requires that the analysis be an inter-locus analysis. This is an analysis of the contents of the various Early Neolithic loci (exterior and interior) across the site in order to determine if the distributions of artefacts are repeated between loci. Little or no repetition of artefact types, would be taken to indicate a more communal mode of production and reproduction. Repetition of artefact types indicating repetition of activity areas in or around each pit house would support the null hypothesis.

The focus will be on comparing the artefact distributions found within the various Early Neolithic pit house complexes at the site. The data from the intervening exterior Early Neolithic space between pits (Locus 2) will not be included in this analysis simply because there is so little of it. These simply represent low level randomized surface scatters. Most Early Neolithic artefacts found within Locus 2 tend to be within one or two metres of the pit features. For the analysis, these artefacts have been included in the artefact counts.

The inter-locus data will be analysed based upon the proportions of artefacts in each locus. There are a limited range of artefacts available for analysis from the site. This does not mean that there were originally more (except ceramics). It reflects the paucity of remains at the site. Hence, there will be limited types of analyses. The artefacts classes and types to be analysed include:

- Figurines (altars, anthropomorphic, zoomorphic)
- Weights by type (loom, net, bola, loaf weights, spindle whorls)
- Bone tools (awls, handles, punches, scoops, scrapers, spatulae, rubbers)

- Stone tools by type - (flakes, blades, cores, ground stone axes/adzes, grinding stones)
- Construction daub will not be analyzed since Tina Jongsma (1997) has already done this

The assemblage will be quantified according to the following terms:

- Absolute frequency (raw values);
- Proportional frequency (percentages of artefact type across the site – unadjusted) – e.g. loom weights in a pit as a proportion of all loom weights on the site.
- Proportional frequency (percentages of artefact type adjusted for pit size) – same as above but corrected for pit size.

The above calculations are based on and demonstrate inter-pit differences. These were deemed more appropriate than within pit proportions for this analysis, which were not calculated due to the nature of the activities under analysis. The within pit proportions would be skewed because certain activities require a greater number of items for the activity to be performed than others.

The analysis will be conducted in two parts: an artefact analysis describing the location and significance of the various artefacts; and, an activity analysis where artefact classes are groups together into "toolkits".

Calculations for the artefact analysis include the following steps:

- Calculate number of artefacts based upon pit size (result is artefact quantity per metre square)
- Convert the artefact quantities into percentages per metre square

Certain artefacts are theorized to have been used for certain activities at the site. In some cases it is believed that more than one artefact group or type may have been employed in a particular activity. In cases where it is believed that more than one was artefact class or type contributed to a particular task, the artefacts have been grouped together and their contribution has been averaged in order to roughly determine the frequency of activity occurrence in various Early Neolithic loci at the site. The activities and associated artefact classes and/or types used in toolkit definitions are summarized below:

- textile manufacturing - bolas, net weights, loom weights
- chipped stone manufacturing - blades, cores, flakes
- leather/basketry manufacturing - awls, punches, chipped stone
- food preparation - scoops, bone scrapers, spatulae
- lighting - altar legs
- spinning - spindle whorls
- grinding activities - all grinding stones
- hafting - bone hafts and handles

After the initial analyses are performed, a Chi-square goodness of fit test will be performed to test if there are significant differences between the pit contents. The null Hypothesis (Ho) for the Chi-square test is that there is no significant difference between the frequencies of artefacts from house to house. Hence, there are no statistically observable differences between houses. The Alternative Hypothesis (Ha) states that there is a significant difference in the frequencies of artefacts between houses. A confidence level of 0.05 will be used with k-1 degrees of freedom. Evidence for the null hypothesis

would provide support for the domestic mode of production, while the alternate hypothesis would support a communal pattern.

It is hoped that this research may identify where activity areas exist. This information may support the hypothesis that society was communally organized at Foeni-Salaş. The location of individual tools and groups of tools that are classified into toolkits is essential. It is recognized, however, that discovering discrete activity areas will be complicated by taphonomic disturbances.

IV. Conclusion

Kent (1990: 6) defines functionally restricted activity areas as loci where related functions are performed in contrast to multipurpose areas where disparate activities take place. Domestic areas are generally better suited for archaeological study because they generally contain a more limited range of potential activities. Fortunately for this exercise, the household is considered to be the basic unit of organization in Early Neolithic society. As such, the dwelling where domestic functions are expected to have taken place is an excellent choice for study. If the model for the inter-relationship between sociopolitical organization and the built environment is valid, it ought to be possible to predict sociopolitical organization of a group by knowing its architecture and the use of space (Kent 1990:7).

In this chapter, the methods used in this analysis have been outlined and summarized. In the next chapter, the data will be analysed and discussed.

Chapter 6 - Analysis of Early Neolithic Artefact Distributions

I. Introduction

This chapter will describe the analysis of various artefact types from Foeni-Salaş. The analysis hinges upon the hypothesis that different artefact frequencies within the loci represent different activities. It is hypothesized that if the frequencies of artefact distributions are different between the Early Neolithic pit loci, and the pit contents are unique, then the activities conducted within the loci are different and complementary. This would support the hypothesis that the mode of production at the site was communally organized. If this pattern cannot be demonstrated, and the pit contents are similar, the hypothesis should be rejected and the null hypothesis should be supported – that there is no perceptible difference between Early Neolithic pit loci. This would suggest a domestic mode of production at the site.

There are several limitations to the analysis. One limitation of the analysis is that all artefact categories recovered during excavation were not available for inclusion. The most glaring absence is that of ceramics. As noted earlier, the ceramics were not subjected to a typological or functional analysis. The only analysis conducted on these artefacts was a temporal categorization. Another limitation to the analysis is the overall paucity of remains in certain categories, both in number and in their spatial distribution. A prime example is that of figurines and bone tools, of which there were very few. This limits the discussion of range of variation for these items. Additionally, all figurines and altars were incomplete. One further limitation in this analysis is that it does not consider unmodified animal bones.

This analysis assumes that the various pit loci were occupied at the same time and became part of the archaeological record at the same time. The artefact classes chosen for analysis are deemed to be the most relevant for uncovering of activity area patterning at the site. The artefacts have first been divided into material categories that include: formed daub (or weights), lithics, figurines and bone tools. Within each category, there are several sub categories, or types, that are defined based on material characteristics and manufacturing technique. These are described in their respective sections of this chapter.

Only the data from within the Early Neolithic pit house loci will be presented in order to focus on the question at hand. The data will be reviewed in order beginning with the peripheral pit loci in number order, and finishing by examining the material from the central pit, Locus 23, in order to determine if there is any perceptible pattern in the distribution of formed artefacts within the Early Neolithic houses.

Two analyses were conducted, one for the distribution of individual artefact groups in Early Neolithic pit loci at the site, and a second for the distribution of activity areas based upon the distribution of artefact classes deemed to contribute to activity-related toolkits. For the artefact analysis, the distribution of artefacts within the Early Neolithic loci is examined and discussed. The activity area analysis depends upon the results of the artefact analysis. Artefact classes and types are categorized into toolkits so that cross-site activity patterns might be discussed. Table 9 describes the artefact classes and types that are believed to have contributed to the activities described in the activity analysis.

The data for the artefact analysis will be presented and discussed according to the absolute frequencies (raw counts), artefact proportions between pits, and artefact proportions between pits with adjustments made to account for the varying sizes of the pit

loci. The "adjusted percentages" represent percentages per square metre. After the artefact and activity analyses are complete, the results will be compared to the results of Chi-square tests. By looking at the proportion of the artefact inventory belonging to certain activity groups found in each pit locus, one should be able to determine whether or not the household was involved in a particular activity. In theory, a proportion should be less influenced by extraneous factors such as length of occupation. The household's artefact inventory related to a particular activity will be greater where the activity is performed (Cannon 1983: 787).

II. Artefact analysis

A. Formed daub artefacts

In the immediate vicinity of Foeni-Salaş, there is a dearth of stone outcrops. As a result the inhabitants appeared to have made many objects from a local clay source. It is also likely that clay was used to make many objects as the unfired clay is much more malleable than stone and easy to form into specific shapes. The daub artefacts described in this section are collectively termed "formed daub weights". All of the formed daub artefacts are fired. That is, they have either been baked in a kiln or some sort of a high temperature fire.

Several categories of the formed daub weights have been identified and recorded from the excavations at the site. These include a variety of objects that are effectively weights of one type or another. Some of the weights have very recognizable functions based upon archaeological literature. These include spindle whorls, loom weights, stoppers, and net weights (Barber 1991, Tringham and Stevanović 1990). These functions are based upon

the shape and size of the artefacts. The artefacts described in this section are shown in Figures 10&11.

Spindle whorls are used for spinning the short fibres of the raw materials (bast fibres including flax, hemp and possibly wool) together to make thread. Ethnographically and historically spindle whorls are "round and perforated discs, with or without a definite thickening in the middle" (Tringham and Stevanović 1990: 327).

There are several types of weights found at the site, but those termed "loaf weights" are unique. These artefacts look like a poorly risen loaf of bread. Some are decorated (e.g. finger impressions), and others are not. It is thought that these objects might have been used to weigh down the skins or thatch that is presumed to have covered the roofs of the Early Neolithic pit structures (Barber 1991: 97).

A second weight type that occurs at the site and is not perforated, resembles a "bola" in shape (see Figures 10 & 11). The bola weights appear to have had a string or thong wound around them. These weights were initially believed to have been used in hunting and were thus named bolas. As the frequency of wild animal bones on the site is extremely low, it is more likely that the weights called bolas were not used for hunting but as a type of loom weight. Similar weights have been found at an Early Neolithic site in Bulgaria (Barber 1991: 98).

There are a variety of weight forms found at the site that have one perforation. These include spheres and squashed spheres/discs and cones. These are called either loom weights or net weights. Although most of the weights with a single perforation were likely used along with a warp loom, the initial typological analysis refers to some of the weights as net weights. The assumption that the weights were used for (fish) netting has

been discarded because the weights do not meet the expectation (other than pure form) of a net weight. Carrington-Smith (1975: 104) points out that net weights are normally stored in a boat – not in a house.

In other studies of such materials, the general assumption is that the function of all perforated weights was the same - to provide tension on a warp loom. This is suggested by analogy with similar clay weights found at other sites such as Gomolava (Tringham 1971: 84) and Tiszajénő (Selmeczi 1969; Tringham and Stevanović 1990: 334). The spatial clustering of the perforated weights at these other sites supports their interpretation as loom weights (Tringham and Stevanović 1990: 334, Barber 1991: 98).

In addition to the daub artefacts that have been categorized for analysis, there are a few unique weights that do not fit into any of the typological categories. These artefacts are largely ignored in this analysis.

1. Locus 7 analysis

- The one object identified as a "stopper" is found in Locus 7. This object is bell-shaped with a flat bottom.
- Of the bolas, 49 are found in Locus 7 (unadjusted percentage=86%, adjusted percentage=90%).
- The spindle whorl artefact class has 57 artefacts in Locus 7 (unadjusted percentage=81%, adjusted percentage=81%).
- For the loom weights, 18 artefacts were recovered from Locus 7 (unadjusted percentage=26%, adjusted percentage=46%).
- Only 5 net weights were recovered from Locus 7 (unadjusted percentage=5%, adjusted percentage=11%).

- The least represented formed daub category in Locus 7 is that of the loaf weights. There were 10 loaf weights recovered from the locus (unadjusted percentage=4%, adjusted percentage=10%).

The number of spindle whorls would indicate that this structure may have been an important centre for spinning. Considered as a group, the bolas, net weights and loom weights would support the possibility that weaving and textile manufacturing may have taken place in this locus. The loom weights found in Locus 7 represent the largest concentration (per square metre or otherwise) found in any locus on the site.

2. Locus 10 analysis

- The greatest representation of daub artefacts in Locus 10 belongs to the spindle whorl category. There are 10 spindle whorls are found in this locus (unadjusted percentage=14%, adjusted percentage=16%).
- A small number of bolas (n=2) are found in Locus 10 (unadjusted percentage=3%, adjusted percentage=4%).
- There were 6 loaf weights recovered in Locus 10 (unadjusted percentage=3%, adjusted percentage=7%).
- Compared to other loci, the number of net weights (n=2, unadjusted percentage=2%, adjusted percentage=5%) and loom weights (n=1, unadjusted percentage=1%, adjusted percentage=3%) found in Locus 10 are minimal.

Spinning activities may be represented in this locus by the spindle whorls. Otherwise, the counts of each formed daub category in Locus 10 were minimal compared to most of the other loci.

3. Locus 24 analysis

- The greatest overall representation of daub artefacts in this locus comes from net weights. There were 26 net weights recovered from this locus (unadjusted percentage=24%, adjusted percentage=35%).
- Of the loaf weights found on the site, there were 52 found in Locus 24 (unadjusted percentage=23%, adjusted percentage=33%).
- There were 14 loom weights recovered from this pit (unadjusted percentage=20%, adjusted percentage=22%).
- Bolas and spindle whorls are quite under-represented in Locus 24. There were 4 bolas (unadjusted percentage=7%, adjusted percentage=5%) and 3 spindle whorls (unadjusted percentage=4%, adjusted percentage=3%) recovered.

In this locus, there is a fairly large number of loaf weights (n=52). This may indicate that there was some need for weighing down the superstructure covering. The number of loom and net weights may suggest that textile manufacturing activities took place in Locus 24. The data suggest that Locus 24 was not a major centre for any other particular activities as it does not dominate any category of formed daub artefact class.

The number of artefacts found in this locus may be slightly misleading due to the intrusion of Locus 30. Locus 30, an Early Iron Age feature, truncates the full extent of Locus 24 and may have introduced non-Early Neolithic artefacts to the Early Neolithic assemblage of Locus 24.

4. Locus 41 analysis

All formed daub artefact types in Locus 41 are quite sparse. The locus contains a total of 3 formed daub artefacts. One net weight and two loaf weights were identified. This

locus is not believed to be associated with any activity involving the use of formed daub artefacts.

5. Locus 23 analysis

- When sorted according to type, the greatest representation of daub artefacts in Locus 23 is that of loaf weights. There were 158 Loaf weights recovered from Locus 23 (unadjusted percentage=69%, adjusted percentage=47%).
- The count of net weights in this locus is 73 (unadjusted percentage=68%, adjusted percentage=47%).
- The loom weights found in this locus have a count of 37 (unadjusted percentage=53%, adjusted percentage=28%).
- There is no evidence of spindle whorls in Locus 23.
- Only 2 bolas were found in Locus 23 (unadjusted percentage=3%, adjusted percentage=2%).

It would appear that textile manufacturing may have taken place in this locus. As well, the presence of the loaf weights may suggest that the superstructure was such that it required weights to keep it in place.

6. Formed Daub Discussion

The quantities of bolas and spindle whorls found in Locus 7 set it apart from the rest of the loci in terms of formed daub artefacts. Looking at the raw numbers and percentages, it appears that these artefacts were likely of great importance to whatever activities took place in this locus.

In Locus 10, the spindle whorl category dominates the formed daub artefact classes and the quantity recovered is second only to Locus 7.

Locus 24 has fairly moderate amounts of net weights, loom weights and loaf weights. The most significant formed daub artefact in this locus appears to be the loaf weights, the function of which is unclear. It would seem that the activity associated with net weights played a large role in Locus 24.

Locus 41 does not have a significant amount of any class of formed daub artefact.

In Locus 23, there are significant amounts of net weights and loom weights but no spindle whorls. Loaf weights are also in the majority for the formed daub assemblage in this locus.

According to the formed daub evidence, it appears that Locus 23 was probably a major textile manufacturing area. Other textile manufacturing areas may have been located in Locus 7 and Locus 24. This may indicate that textile producing activities are complementary across the site.

Due to the paucity of fish remains recovered during excavation it may be suggested that net weights have been incorrectly categorized and may in fact have functioned as a form of loom weight. A similar argument can be made for the bolas. The spare amount of wild animal bones recovered from the site does not indicate that hunting was an important economic consideration. It is likely that the bolas were employed in textile production.

The non-diagnostic loaf weights are predominantly found in loci 23 and 24 with a lesser number of them found in Locus 7. A large number of these weights were also recovered from Locus 2, the exterior living horizon of the Early Neolithic occupation of the site. Further research into the actual use of these weights is necessary before any concrete interpretations can be made.

B. Lithics

The lithic assemblage can tell us a great deal about the behaviours or activities that took place in the loci at the site. Dinan (n.d.) has provided a detailed analysis of the remains, but without regard for spatial context, the focus of this study. The most comprehensive means of understanding the activities represented by the stone tool assemblage is through microwear analysis. Unfortunately, such an analysis has not been performed on the lithic assemblage. Hence, we are left with no option but to infer artefact function based upon morphology.

In the absence of microwear analysis, morphology may be interpreted to suggest that certain activities took place, such as woodworking, roof manufacturing, basketry, leather manufacturing, and food preparation. Confounding this analysis, is the fact that many of the lithic items found in the loci may in fact have had multiple uses. It has been noted elsewhere that Neolithic peoples attempted to maximize the return of usable blades and flakes in order to reduce the absolute quantity of raw materials that had to be brought to the site (Voytek 1990: 446).

Aside from simple actions such as scraping and cutting, it would be exceedingly difficult to reconstruct all of the actions for which a stone tool might have been used. In fact, many of the chipped stone artefacts (such as the blades) were likely not tools themselves but components, inserted into hafts to make composite tools (Voytek 1990).

Based upon the categories determined by Dinan (n.d.), the lithic artefacts have been divided into two broad categories: chipped stone and ground stone. The chipped stone artefacts are further categorized into the following types: cores, blades and flakes. Similarly, the ground stone artefacts are categorized into axes/adzes and grinding stones

(upper and lower). For the purposes of the analysis, the upper and lower grinding stone types have been grouped together to simplify analysis as the quantities recovered were quite small and the implied functions are the same.

1. Chipped Stone Artefacts

It is possible to suggest a variety of functions for each of the lithic types under analysis. In this case, raw material is ignored (e.g flint vs. obsidian). Obsidian is very rare at the site and most of the lithics are made from river gravels (Dinan n.d.). The categories discussed below are regularly used in studies from this region (e.g. Voytek 1990; Radovanović 1996).

- Lithic cores may suggest where tools were made and where the raw materials were stored and/or worked initially. Cores are representative of an early stage in chipped stone tool manufacturing.
- Flakes from chipped stone manufacture can indicate where tools are manufactured, and where they may have been briefly used and subsequently discarded.
- The blades found at Foeni-Salaş were likely used in composite tools. Composite tools are made using several different components. In this case, the tools made using chipped stone blades may have been used as sickles or hafted at the end of a handle and used as knives.
- Sickles would likely have been used for harvesting cereals. They might also have been used for such tasks as for other regular tasks such as gathering reeds for roofing or to make baskets (Moore 1978).

- Most of the blades recovered at Foeni-Salaş did not have any sickle gloss. Sickle gloss is a term used to describe the residue left on blades used in agricultural processing activities. This might happen for example if a blade was used as part of a harvesting tool.

2. Ground Stone Artefacts

There are two types of ground stone tools found within the Early Neolithic context at Foeni-Salaş. They are: a) grinding stones used for processing of food grains or pigments, and b) axes/adzes used for wood chopping and shaping.

Several different varieties of grinding stones were found. They are variously described within the database as "Grinding stone - lower", "Grinding stone - upper" and simply, "Grinding stone." For the purpose of analysis they have been combined under the category "Grinding stone - all". The grinding stones are believed to have functioned as a grinding surface for organic (wild or domesticated plant seeds) or inorganic substances such as pigments (Spears 1990: 500-501).

3. Locus 7 analysis

- There were 2 cores recovered from Locus 7 (unadjusted percentage=29%, adjusted percentage=43%).
- Of the flakes, there are 6 found in Locus 7 (unadjusted percentage=15%, adjusted percentage=24%).
- Of the blades recovered at the site, 5 were located in Locus 7 (unadjusted percentage=19%, adjusted percentage=35%).
- Of the grinding stones, 4 were found in Locus 7 (unadjusted percentage=17%, adjusted percentage=29%).

According to the lithic data, it appears that some sort of grinding may have taken place in this locus.

4. Locus 10 analysis

- Only 1 core was found in Locus 10.
- Locus 10 was found to have 6 Early Neolithic flakes (unadjusted percentage=15%, adjusted percentage=27%).
- Only 1 Early Neolithic blade is found in Locus10.
- No grinding stones were found in Locus 10.

5. Locus 24 analysis

- There was 1 core recovered from Locus 24 (unadjusted percentage=14%, adjusted percentage=13%).
- Locus 24 has 7 flakes (unadjusted percentage=18%, adjusted percentage=17%).
- Only 1 blade was found in Locus 24 (unadjusted percentage=4%, adjusted percentage=4%).
- Of the grinding stones 3 were found in Locus 24 (unadjusted percentage=25%, adjusted percentage=27%).

The only activity that may have taken place in Locus 24 according to the lithic assemblage is that of milling or grinding.

6. Locus 41 analysis

- No cores are found in Locus 41.
- In Locus 41 there were only 2 flakes found (unadjusted percentage=5%, adjusted percentage=10%).

- In Locus 41, 2 blades were found (unadjusted percentage=7%, adjusted percentage=17%).
- Only 1 grinding stone was found in Locus 41 (unadjusted percentage=8%, adjusted percentage=18%).

The scant lithic remains recovered from Locus 41 suggest that that few if any lithic related activities took place in this locus.

7. Locus 23 analysis

- Three (3) of the cores are found in Locus 23 (unadjusted percentage=43%, adjusted percentage=19%).
- Of the flakes, 18 are in Locus 23 (unadjusted percentage=46%, adjusted percentage=21%).
- The number of blades found in Locus 23 is 17 (unadjusted percentage=35%, adjusted percentage=65%).
- The only end scraper from an Early Neolithic pit locus was found in Locus 23.
- One of the adze/axe tools was recovered from Locus 23.
- A total of 6 grinding stones were found in Locus 23 (unadjusted percentage=50%, adjusted percentage=26%).

Several agriculture-related lithics are found in Locus 23. In fact, half of all grinding stones found in Early Neolithic loci are found in this locus. When adjusted for the size of the pit however, it appears that grinding stones were fairly evenly distributed across the Early Neolithic loci. Of the chipped stone material found in the Early Neolithic pit loci, most comes from Locus 23. Almost half of the total number of cores at the site were found in this locus which may explain the relatively greater number of blades and flakes

also recovered from this pit. This locus is much larger than most of the Early Neolithic pits which may contribute to the greater amount of chipped lithic materials.

8. Lithics Discussion

A number of lithic objects were found at the site. They were however, far fewer in number than many other Early Neolithic assemblages from the region (Greenfield pers.comm). It appears that the low number of lithics is primarily due to the environmental context of the site – there are no readily available lithic sources. The other Early Neolithic sites with higher frequencies of lithics tend to be found in close proximity to naturally occurring lithic outcrops, such as at Blagotin (Greenfield, n.d.) and Lepenski Vir (Radovanović 1996).

Since the role of the chipped stone artefacts in activities cannot be precisely determined, for the sake of analysis all chipped stone categories have been combined into one group. The result of this combination show that the greatest number of chipped stone artefacts occur in Locus 23, followed by Loci 7, 24 and 10 and the least number of chipped stone artefacts occur in Locus 41.

A total of 14 cores are associated with Early Neolithic loci (including Locus 2) but only half are found in the Early Neolithic pit loci. In fact, almost half of the cores were found in Locus 23 which may explain the relatively greater number of blades and flakes also recovered from this pit. In all, 52 blades were recovered from the site, but again, only half of them occur in the pit loci. A similar pattern occurs when one looks at the frequency of flakes recovered in the Early Neolithic loci. No great number of flakes was recovered from any of the pits. Many more flakes occur outside of the Early Neolithic loci than within them, although flakes are found in every Early Neolithic locus. Only 39

of the 72 flakes were recovered from within the context of the pits. The only chipped stone artefact identified as other than a flake or a blade were two circular scrapers. One was found in Locus 23 and the other in Locus 2, well away from the Early Neolithic loci. This locus is much larger than most of the Early Neolithic pits which may contribute to the greater amount of chipped lithic materials.

Within Locus 7 and Locus 23, blades are more highly represented than elsewhere and may be indicative of reed or thatch cutting for roof manufacturing, food preparation or basketry activities. Both loci also feature high rates of occurrence of other lithic artefacts including cores and flakes and stone tools associated with woodworking (axe and adze).

Many of the ground stone lithics associated with agricultural processing are found in Locus 23 suggesting that this pit may have been used for grain or pigment grinding. It is important to note that the only large domed oven found on the site was found in Locus 23. The remains of a second smaller oven were found in Locus 7.

C. Figurines and other ritualistic items

In this section, a variety of baked clay artefacts are discussed. These items are variously described as amulets, altars, labrettes (a form of personal decoration), miniature pots, anthropomorphic and zoomorphic figurines. Some of these items are believed to have had either a ritualistic function or served as personal adornments. The objects referred to as amulets may also have been used as bobbins, shuttles or loom pieces (Tringham and Stevanović 1990: 334).

- Altars are generally assumed to have had a ritual purpose (Gimbutas 1974; Stanković 1993). They may have been a tool of worship where offerings were made. This identification has been revisited recently and it is now suggested that

it is just as likely that they had a more everyday use as a method for lighting the Neolithic houses. The altars may have been a receptacle that held a combustible fuel that, when paired with a wick, provided light. Lighting devices such as these are known from later historic periods in SE Europe and from ethnographic contexts as well (Manson 1990:118; Tringham and Stevanović 1990:344).

- Labrettes are named based upon their similarity in form to objects that were used (ethnographically) as a personal body ornament. These are commonly found on Neolithic sites from the region (Tringham and Stevanović 1990).
- Miniature containers (such as the miniature pot noted in the analysis) may have had ritual significance (as offerings), or they may have been toys made by or for children (Tringham and Stevanović 1990:347).
- A variety of anthropomorphic and zoomorphic figurine fragments made of daub clay were found at the site. There is a long standing discussion as to whether they represent ritual or play objects, which is almost impossible to distinguish. All Neolithic figurine fragments are treated here as if they were used for ritualistic activities (Manson 1990: 119).

A total of 10 figurines or figurine parts were identified in deposits immediately surrounding some of the Early Neolithic pit loci. This area is known as Locus 2, the exterior living horizon of the Early Neolithic occupation of the site. Artefacts in this area were categorized as being found in Locus 2, but are best considered part of the neighbouring Early Neolithic pit loci as almost all of them are all found within 1 metre of the pit loci.

- A zoomorphic figurine leg, 2 altar legs and a labrette are found near Locus 24.

- An altar leg is found near Locus 7.
- A labrette and an altar leg are found near Locus 23.

A few are *not* near any Early Neolithic pit loci. These include 5 altar legs, 3 labrettes, and 2 zoomorphic figurine pieces. The artefacts that are found within one metre of the Early Neolithic pit loci have been combined with the contents of the pits in order to facilitate discussion.

1. Locus 7 analysis

- Locus 7 has two altar legs.

2. Locus 10 analysis

No figurine artefacts were recovered from this locus.

3. Locus 24 analysis

- Locus 24 has 1 anthropomorphic figurine leg and 2 zoomorphic figurine fragments (type unknown), 1 labrette and two altar legs

4. Locus 41 analysis

No figurine artefacts were recovered from this locus.

5. Locus 23 analysis

The greatest number of figurine pieces found in an Early Neolithic pit loci, were found in Locus 23. A total of 7 pieces were found here. Three of these pieces are identified as labrettes, two as altar legs, one is described as a handle, and the sole miniature pot found on the site was recovered from this locus.

6. Figurines Discussion

Items hypothesized to have ceremonial function are found in only three of the Early Neolithic pit loci at Foeni-Salaś: 7, 23, and 24. No ceremonial objects were found in association with loci 10 and 41. Altar leg fragments are found distributed equally among the loci – 7, 23 and 24 suggesting that lighting was necessary in these loci. Locus 7 and Locus 23 contain artefacts associated with weaving and food preparation and the only two loci with good evidence for hearths and ovens.

Of the figurine pieces found at the site, all of the anthropomorphic and zoomorphic figurine fragments are found in and around Locus 24. This may indicate that this locus either had some ritualistic significance or (if the figurines were actually childrens toys), may indicate an area frequented by children.

The miniature pot found in Locus 23 is a unique piece that is unlike any others recovered on the site. It has been hypothesized by other archaeologists studying southeastern Europe that miniature objects such as this pot may have been either toys made for children or the result of children learning to produce ceramics themselves (Tringham and Stevanović 1990).

D. Bone tools

Bone tools are indicative of a variety of activities. They may indicate the location of clothing, basketry, and ceramic manufacturing activities (Russell 1990). A basic morphological analysis of the bone tools was undertaken by Greenfield (n.d.-A). Unfortunately, use wear analysis was never completed on the bone tools. Hence, this analysis is based upon the assumption that morphology is indicative of function.

Bone tools were made from a variety of animal bones and antlers, including domestic and wild animals (sheep, goat, red deer, etc.). A number of morphological types have been defined. These include the following categories, along with their implied functions:

- Awls are believed to have been used for piercing hides, leather and fabric in the process of clothing manufacturing, or in pottery decoration (Russell 1990:527).
- Handles probably represent the remains of hafted chipped stone knife blades/flakes. They are believed to have had sickle or knife blades hafted onto them.
- The artefact described as a Punch is probably a thick awl. It has heavy polish and the tip is battered.
- The Rubber may be a pottery polisher. A high degree of polish is often used to determine if a bone piece was used as a pot polisher. No particular bone element is preferred for these tools (Russell 1990: 531).
- The Scoops are spoon-like objects and may have been used during food preparation or serving.
- The Scraper is thought to have been used in the food preparation process, for scraping the inside of pots. This item is flattened and polished on one side.
- The Spatulae were probably used for food preparation and serving. Other suggested uses include mixing of pigment or other substances, scraping flour off grind stones and polishing or decorating pottery (Russell 1990: 533).
- There are a large number of polished bone fragments that were thought by Greenfield to be fragments of tools or otherwise culturally modified bones. These are not included in the analysis since their function could not be determined.

There are a variety of types of modified bones that were used for personal ornamentation. Only one type was present in the Early Neolithic pit loci and it is referred to as a pendant.

1. Locus 7 analysis

Several types of bone tools were found in Locus 7. They include the following:

- 1 pendant or game piece – This is the only example found in the Early Neolithic pit loci.
- 7 awls (unadjusted percentage=29%, adjusted percentage=51%)
- Of handles, only 1 was found in Locus 7 (unadjusted percentage=20%, adjusted percentage=45%).
- The only item identified as a punch is in this locus.
- There was 1 scraper found in Locus 7 (unadjusted percentage=50%, adjusted percentage=77%).

The awls found in the locus may indicate activities where the piercing of hides, leather and fabric was required as well as basketry or possibly pottery decoration. The punch might have been a large awl. The scraper is believed to have been used in food preparation. The one handle that was found may be associated with the chipped stone artefacts. The raw frequencies for the bone artefacts are quite low. As a result, the percentages for these groups shift quite a bit when adjusted to take the size of the pit into account.

2. Locus 10 analysis

Very few bone artefacts were found in this locus. They include:

- 1 Awl/handle

- 2 Spatulae (unadjusted percentage=50%, adjusted percentage=65%)

3. Locus 24 analysis

Few bone tool items were found in Locus 24. Two awls (unadjusted percentage=8%, adjusted percentage=9%) and two items identified as spatulae were found in the pit (unadjusted percentage=50%, adjusted percentage=35%).

4. Locus 41 analysis

Locus 41 contained the least number of bone tools. Only one awl and one scoop were found in the pit. The purpose of the scoop is unclear but it might have had some purpose in food preparation or service.

5. Locus 23 analysis

- Of the bone handles found at the site, 4 are found in Locus 23 (unadjusted percentage=80%, adjusted percentage=54%).
- Fourteen (14) of the awls found in the Early Neolithic pit loci came from Locus 23 (unadjusted percentage=58%, adjusted percentage=30%).
- The one object identified as a Rubber or pot polisher is found in Locus 23.
- Of the scoops, 5 are found in this locus (unadjusted percentage=83%, adjusted percentage=55)
- One of the two scrapers found at Foeni-Salaş were found in Locus 23 (unadjusted percentage=50%, adjusted percentage=22%)

The high number of scoops, awls and handles found in Locus 23 is somewhat unusual at the site. Locus 23 clearly dominates in terms of activities related to the use of these types of bone tools. It is likely that Locus 23 was a centre for a number of activities and

the bone tool assemblage suggests that hide or leather work and/or basket making activities might have been carried out here. There is some possible indication for ceramic manufacturing based upon the presence of the bone rubber. The bone awls, while likely used for hide or leather piercing and basketry, may also have been used for ceramic decoration. Finally, the high percentage of bone scrapers and scoops suggests that food preparation and/or serving was carried out in this locus.

6. Bone Tools Discussion

In general, the number of bone tools or ornaments in any locus is quite low. Loci 7 and 23 have similar collections of artefact types.

Awls that might have been used in either leather working or basketry occur in Locus 7 and Locus 23 as well. Handles that might have had blades attached to them also occur in these loci but not in others. Taking this into consideration with the fact that the highest concentrations of cores and blades also occur here suggests that there is some correlation between the objects which may support a replication of certain types of activities at the site.

Food preparation and or serving activities likely occurred in Locus 23 as 5 scoops were recovered. One scoop is found in Locus 41 may represent a serving function. Spatulae are found in loci 10 and 24 and may have had a serving function. The presence of two spatulae along with grinding stones in Locus 24 may suggest that the spatulas were used in food or pigment preparation. However, two spatulae are also found in Locus 10 but they are not accompanied by grinding stones. This may indicate that the items are not related.

The pendant or game piece is described in the database as a vertebra with a lot of polish. The description of the artefact is suggestive of gaming pieces found elsewhere in the world such as native gaming pieces found in some First Nations collections in North America (http://www.nps.gov/knri/teach/games.htm).

III. Activity area analysis

Two analyses are undertaken and described in this chapter: the analysis described above looks at the relative frequency of the different artefact classes and types found in the Early Neolithic pit loci at Foeni-Salaș. Now that the artefact analysis is complete and some observations about the distribution of artefacts and possible activities associated with them have been made, a basic activity area analysis will be conducted. The analysis below will describe the location of activities within the Early Neolithic pit loci based upon the artefact distribution. The activity area analysis will use the results of the artefact analysis by combining several of the artefact categories into activity related toolkits. The artefacts composing the toolkits are described in Table 9.

A Chi-square goodness of fit test was performed on the pit contents to determine if the observed differences in the proportional frequencies of the artefacts was significant. The results of the analysis are shown in Tables 12 to 21. The principle concern of Chi-square analyses is that the sample size be large enough. A general rule of thumb adopted by Drennan (1996) is to insist that no expected value be less than 1 and that no more than 20% of the expected values be less than 5 (Drennan 1996: 197). As the quantities of Early Neolithic artefacts recovered from the site are quite sparse, a multiplication factor – different for each pit – was used to place the contents of the pits all on the same level as Locus 23. The extremely low counts of ritual objects exempted them from use in the Chi-

square analysis. The multiplication factors and final artefact counts used in the Chi-square analyses are shown in Table 22.

The results of the Chi-square analyses show that there are three pits whose test statistics equal or exceed the critical value of 0.05. Therefore the null hypothesis for the Chi-square comparisons between Loci 7, 23, and 24 cannot be rejected. In other words the frequencies of artefacts in the categories of daub, bone and lithic in Loci 7, 23, and 24 are not significantly different. For comparisons between all other loci, the Chi-square test showed that there is a statistically significant difference among the frequencies of the artefact categories for the other tests. Therefore, the null hypothesis for the Chi-square tests is rejected in these cases. The test proves that the artefact contents of loci 7, 23 and 24 are more similar to one another than different. In contrast, the contents of loci 10 and 41 are different from each other and all of the other pit loci. The implications of this will be further discussed in the final chapter.

The final part of the analysis depends upon the visual inspection of the artefact proportions shown in Tables 10 and 11. Determining the location of activity areas will be done using a very simple methodology. First, certain functions have been assigned to artefacts based upon the artefact morphology. The relationships between artefact function and activities was previously outlined in Chapter 5. Activities that may be determined from the artefact assemblage include: textile manufacturing, chipped stone manufacturing, hide and leather working and/or basketry, food preparation/serving, spinning, grinding and hafting.

Some activities at the site are only represented by one artefact class which makes the effort of determining the importance of the activity in the locus quite basic. In cases such

as textile manufacturing, chipped stone manufacturing, hide and leather working and/or basketry, and food preparation the activities are represented by more than artefact class. In order to account for activity areas requiring the analysis of multiple artefact classes and types, an average of all combined types required for an activity has been calculated. The results of these calculations are shown in Tables 10 and 11.

A. Locus 7 activity analysis

According to the figures in Table 11, Locus 7 dominates in all activity categories except two. According to the artefact proportions calculated in this table, Locus 7 appears to have the highest rate of occurrence for the following activities: textile manufacturing, chipped stone manufacturing, leather and/or basketry production, spinning and grinding activities. Although food preparation and hafting activities are represented by artefact distributions in this locus, they occur with greater frequency in other loci. According to the data in Table 10, when the artefact classes are not adjusted to account for the size of the pits, Locus 7 only dominates in spinning activities. Since there is ample evidence that other activities took place in this locus, it is obvious that the results of the calculations may be misleading.

B. Locus 10 activity analysis

According to the data in Table 11, food preparation appears to be the only dominant activity in Locus 10. Many other activities are represented in the locus according to the artefact distributions, but none are as greatly represented as food preparation. Two activities that are not represented in Locus 10 include lighting and grinding. Although lighting is not an activity *per se*, it would be expected to be represented in every pit locus that was covered during use. In Locus 10, the absence of artefacts associated with

grinding is odd considering the presence of the items associated with food preparation/serving.

C. Locus 24 activity analysis

In Locus 24, all activities except for hafting are represented by the artefact distributions. No particular activities appear to have taken place predominantly in this locus. The proportion of artefacts associated with grinding appears to be almost constant whether looking at Table 10 or Table 11. The percentages adjusted for the size of the pit and the unadjusted percentages both come out to approximately 26%. Overall, this locus is not the most highly represented in terms of grinding but the constant proportion is interesting.

D. Locus 41 activity analysis

No activities have high proportions associated with Locus 41. All activities are represented to a lesser degree in this pit with the exception of spinning and hafting. These activities are not represented at all.

E. Locus 23 activity analysis

Locus 23 is the largest Early Neolithic pit locus found at the site but when the artefact proportions are adjusted according to the size of the pit, it appears that many activities were not carried out in this area with the greatest frequency. According to Table 11, only hafting appears to have been predominantly carried out in this locus when the figures are adjusted for the size of the pit. Many other activities including textile manufacturing, chipped stone manufacturing, leather and/or basketry production and food preparation all appear to have occurred in this pit but not at as great a level as in Locus 7.

When the unadjusted proportions are considered, Locus 23 appears to take on greater importance in terms of activities carried out at the site. Because of its size, Locus 23 appears to be the dominant location for all activities excluding spinning. There is no evidence of spinning activities in this pit.

F. Activity area discussion

It is clear that the results of the activity analysis change quite significantly, when the artefact percentages are adjusted to account for the varying size of the pits. The material inventories of Locus 7 and Locus 23 are fairly similar in breadth and scope, suggesting that the loci might have been occupied by individual nuclear family units. The contents of the loci, however, are not identical and activities believed to have taken place in the pits are different enough that an alternative conclusion might be drawn. Based upon the analysis of activity areas it appears that Locus 23 was a centre for most activities on the site as the activities represented by the artefact assemblage recovered from it are quite wide ranging.

Locus 7 or Locus 23 dominate in the activity area analysis in every way, depending upon whether one is examining the raw or the adjusted counts. As noted above the breadth of their contents is similar, and when the size of the pits is taken into consideration, the dominant pit switches from Locus 23 to Locus 7. The reasons for this are unclear but may have to do with craft specialization requiring a task specific space. The activities that predominantly occur in Loci 7 and 23 are related to clothing manufacturing. It might be suggested that the loom frame was large enough that the activity was performed in a separate location from many of the other activities at the site.

This is not to say that the looms were not portable. The types of looms used in the Early Neolithic were easy enough to take down and move (Barber 1991).

Locus 24 contains similar objects to Locus 7 or 23. It appears that similar activity sets may have taken place in Loci 7, 23 and 24. Although the highest proportions for these activities appear to occur in either Loci 7 or 23 (depending on the method used for the analysis), because of the nature of the proportions used, the analysis tends to skew in favour of supporting a single locus as the most important even though the same activities may take place in multiple loci. If the same activities did take place in these three loci, it can be stated that repetition does occur among the Early Neolithic loci – although not all of them. Based upon the data, it appears that Loci 7, 23, and 24 might have been used as industrial locations for the production of textiles. Loci 10 and 41 may have had been used for purposes such as sleeping or food preparation.

IV. Conclusion

Although six Early Neolithic pits were discovered at Foeni-Salaş, the activity area analysis suggests that the greatest range of activities took place in Locus 7 and Locus 23. Items associated with textile manufacturing occur in high frequencies in both loci. The items classified as bolas are not well defined in the archaeological record for the region and they might have been used in a similar fashion to those artefacts classified as loom weights. If this is the case, then it might be suggested that both loci 7 and 23 were centres for textile manufacturing. It may be that the type of textile manufacturing that took place in Locus 7 required the use of the weights shaped as bolas. The activities performed in Locus 7 may have been part of a specialized activity such as textile manufacturing for a specific purpose. Another possibility is that the process of weaving in Locus 7 may have

been done by a group of people who had a different method of textile manufacturing. One noticeable difference between Loci 7 and 23 is the absence of spindle whorls in latter. This is particularly odd as there is no archaeological precedent for spindle whorls to occur in areas that are spatially segregated from weaving (M. Lawall, pers. comm.). As noted above, many of the activities recognized as taking place at Foeni-Salaş appear to have occurred most frequently in Loci 7 and 23. Activities that were observed to occur predominantly in these loci include: chipped stone manufacturing, food preparation, basketry, some form of textile manufacture, possibly ceramic manufacturing (based upon the presence of the bone rubber.

Spinning is a complementary activity to weaving but it is highly portable and does not require a spatially distinct area for it to be carried out. The activities performed in Locus 10 and Locus 41 such as food preparation and grinding may have been performed by cooperative members of an extended household.

Locus 10 does not appear to have been frequently used for any archaeologically observable activities although spinning and food preparation is represented by the artefact remains. No activity frequencies are very high for Locus 41. Although several artefacts classes are represented in Locus 41, no specialization of activities appears to have taken place. In the next chapter, I will more closely examine the meaning of these results as they relate to the hypotheses presented earlier.

Chapter 7 - Conclusions

I. Introduction

In this chapter, the results of the analyses described previously will be discussed as they pertain to the hypotheses formulated in the introduction. Additionally, the significance of these results and their implication for our understanding of Early Neolithic spatial organization will be discussed.

The objective of this thesis is to study the spatial patterning of artefacts and features from an Early Neolithic site in order to enhance our understanding of Early Neolithic intra-settlement social organization and mode of production. The site chosen for study is Foeni-Salaş in southwest Romania. It is the only excavated Early Neolithic site from the region with detailed spatial data. The only lacuna in the database is the absence of a ceramic typological analysis. Otherwise, all other data forms are present and available for analysis.

In order to determine what activities might have taken place, it is necessary to analyze the spatial distribution of material remains at the site. This sort of analysis has never been attempted with material from Early Neolithic sites in this region of southeast Europe. The first task required in order to complete this study was the definition of house form and location. This task was undertaken by Jongsma (1997; Jongsma and Greenfield 2001) and six Early Neolithic pit houses (loci) were identified and during the excavations. Five of those loci were excavated.

By identifying the pit loci as the remains of Early Neolithic households we can create hypotheses about the activities that took place within the pits. It is theorized that the distribution of artefacts at the site may be categorized into one of two possible patterns.

These patterns, and their potential for increasing our understanding of the socio-economic organization of Early Neolithic sites, are discussed next.

II. Activity area distribution model

Within an archaeological site, it is known that space will be divided among various activities according to the culture and the predominant socio-economic organization (Binford 1986). Tringham (1983) hypothesized that Early Neolithic settlements in southeastern Europe were organized around a domestic mode of production wherein production is geared to the requirements of a family unit for the benefit of the producers (cf. Sahlins 1972: 77). Some research in Europe has been productively directed at the archaeological definition of such units (Ammerman et al. 1988; Bogucki and Grygiel 1981) using a variety of methods. In an analysis of the Mesolithic site of Lepenski Vir, for instance, it is argued that based upon the similarity in the form and contents of each structure, each structure at the site was occupied by a single nuclear family unit (Chapman 1989). In contrast, Dennell (1985) proposes that settlements in the early agricultural period were organized along communal rather than household lines (Sahlins 1972) allowing households to have access to more than just the products of their own labour (Dennell 1985: 167).

The hypothesis states that if the material remains in each pit are found to be complementary (ie. different from one another), then each Early Neolithic pit loci must represent a specialized unit within a larger extended social grouping that shared or pooled resources. A cooperative situation such as this may be interpreted as representing a communal mode of production. If it is found that materials are duplicated in all Early Neolithic pit loci at the site, then the null hypothesis may be supported. This would mean

that each pit represents the residence of a single nuclear family unit, and the socio-economic organization of the site may be interpreted as having a domestic mode of production.

In order to test for mode of production this research attempted to identify the nature of activities within each pit locus. If activities are generalized as implied by the artefact distribution, then a domestic mode of production may be indicated. If the household activities represented by artefact distributions are specialized, then they likely relate to a communal mode of production.

III. Foeni-Salaş: results

The built environment provides the context and focus for the social relations of production – especially the domestic mode of production (Tringhan and Krstić 1990: 607). In order to understand the household mode of production, artefact remains were classified first according to type and then grouped according to activity. It appears that at Foeni-Salaş Loci 7, 23 and 24 have similar artefact class distributions. The nature of the artefact assemblages in these loci likely indicates that they represent the main habitation areas at the site. This observation is particularly interesting as the only preserved ovens found at the site are located in Loci 7 and 23. The remaining Early Neolithic pit loci (10 and 41) have different contents suggesting that they were used for different purposes than the others. The actual number of artefacts found in Loci 10 and 41 is quite low making interpretation of their use quite difficult. It may be that these loci these were secondary work areas used for specific tasks, but little more than that can be said with conviction.

The results of these analyses are supported by the Chi-square goodness of fit test. For the Chi-square tests, the null hypothesis is accepted for comparisons of the pit contents of

Loci 7, 23, and 24. The Chi-square statistics demonstrate any difference among the contents of these pit loci can be accounted for by chance. For Loci 10 and 41 however, the null hypothesis is rejected by the Chi-square statistics. The alternate hypothesis is accepted: the differences between these pits and the others cannot be explained by chance.

Although the artefact distributions in Loci 7, 23 and 24 are similar in content, they become less similar when examined from an activity analysis perspective. The number of spindle whorls in Loci 7 and 24 set them apart from Locus 23. Although Locus 23 does not have any evidence for spindle whorls, it does appear to have been a centre for a great number of tasks including textile manufacturing. The greatest number of loom weights and net weights is found in this locus.

Other Early Neolithic loci at the site including Loci 10, 24, and 41 all display lower artefact counts than Loci 7 and 23 and do not appear to have been centres for any particular activities. Food preparation and serving activities were noted in Loci 10 and 24 but the frequency of artefact occurrence relating to this activity is lower than that found in Locus 23. In Locus 41, although a number of activities are represented by the artefact assemblage, there is no convincing evidence for activity specialization.

Locus 23 is centrally located within the site. It is larger than all of the other pit houses found at the site and as a result contains a great number of certain artefact classes. When the artefact proportions are adjusted to account for the size of the pit, the importance of Locus 23 shifts and Locus 7 appears to take on a greater importance for certain activities. Due to the nature of the analysis however, this shift simply confounds the results and make them difficult to interpret. Simply looking at the raw numbers for the various

artefact classes in the pits provides a better indication of the activity distribution at the site.

The differences between Loci 7, 23 and 24 are not great, especially in terms of textile manufacturing. Although the relative proportions of the artefacts in the loci change depending on the method of analysis, it cannot be stated with conviction that the activities taking place in these loci were different as the activity analyses are inconclusive. The fact that activities appear to be repeated in some of the loci may be due to overlapping artefact classes. As noted in Chapter 5, polythetic sets often complicate spatial analyses. In this case, it may be that the tool kits represented by the artefact remains may contain artefacts that over lap in function. Additionally, while the location of artefacts may indicate activity area locations, the patterns recovered from the archaeological context may not reflect their original nature.

IV. Conclusion

Previous analyses of the artefacts found in Early Neolithic deposits from the region have not addressed the implications of their spatial distributions. Most go no further than to simply describe the artefact types found in the period at the site, and the focus is usually on a single artefact category at a time. None examine the interrelationship between artefact categories or go so far as to connect artefact locations with past behaviour (Rasson 1988).

The spatial distribution of artefacts at the site suggests that certain domestic functions were repeated in a number of areas at the site. This implies that activity organization at the site was likely organized along a domestic mode of production and that at least three of the pits represent the residence of a single nuclear family. This evidence would support

the site as having a predominantly domestic mode of production put forth by Chapman (1989). While certain communal activities may have taken place at the site, the three pit loci with the best preserved artefact sets appear to share activity sets.

The data analysis supports the hypothesis that the mode of production during the Early Neolithic at Foeni-Salaş was based upon a domestic pattern (Sahlins 1972). The contents of three pit loci are statistically very similar, indicating repetition of activities between structures. While this pattern has been proposed for the region and period by others, this is the first time that it is clearly demonstrated using the artefact frequencies from houses in a settlement.

V. Suggestions for further research

Although this research has proved to be useful in distinguishing between domestic and communal modes of production at the site of Foeni-Salaş, further research into the intra-site spatial distribution of artefacts at Early Neolithic sites must still be conducted. The results of the spatial analysis of artefacts at Foeni-Salaş suggest that the socio-economic organization is based upon a nuclear household unit as the activities represented by the artefact assemblage recovered from within the pit loci appear to be repeated in several pits.

The nature of the faunal assemblage at the site of Foeni-Salaş is predominantly domesticated yet the results of botanical analysis (Jezik 1997) suggests that horticulture at the site was not a major focus during the Early Neolithic. This sets Foeni-Salaş apart from the generally accepted economic predisposition of other Early Neolithic sites which are often defined in part by domesticated plants. Further study of the materials from this

site may yield information to explain the apparent lack of evidence supporting horticultural dependence.

In order to further determine the nature of economic production and support the conclusions drawn in this research the following areas of study might be considered:

Bone butchering analysis: It might be useful to know the spatial distribution of butchered animal remains (related to cuts of meat). Faunal analysis may further support conclusions drawn here.

Ceramic analysis: Ceramic manufacturing at the site was extensive in the Early Neolithic period at the site, based upon the plethora of remains recovered during excavation. A study of the types and forms of ceramic remains may further support the conclusion that the site was communally organized.

The lithic use-wear analysis would benefit this analysis by assigning more useful activity categories to the chipped stone lithic remains recovered from the loci.

Finally, an analysis of the spatial distribution of botanical remains compared to the distribution of grinding stones may support the argument that these items were used together.

Maps and Figures

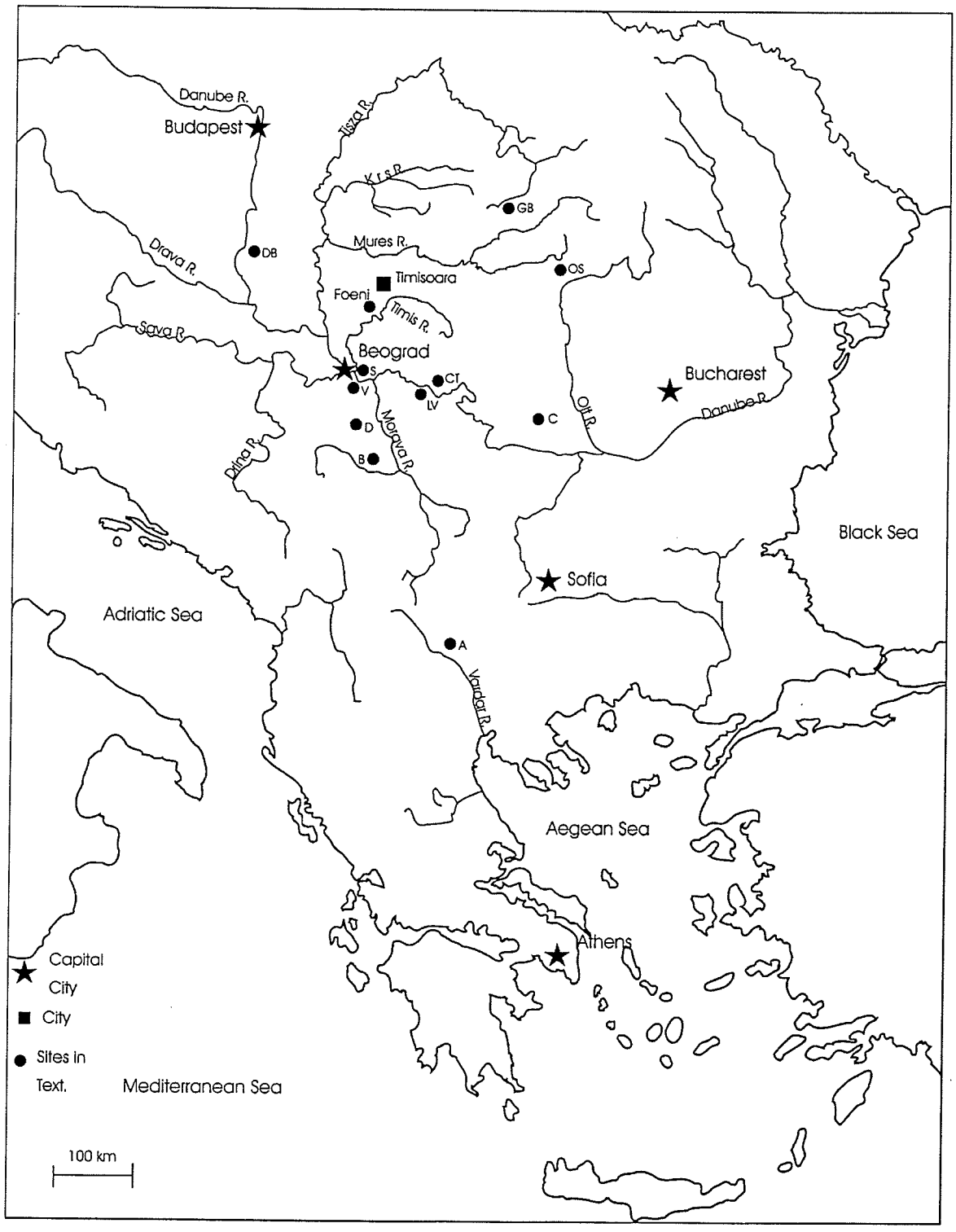


Figure 1. Map of southeastern Europe showing location of some Starčevo-Criş related sites noted in the text.

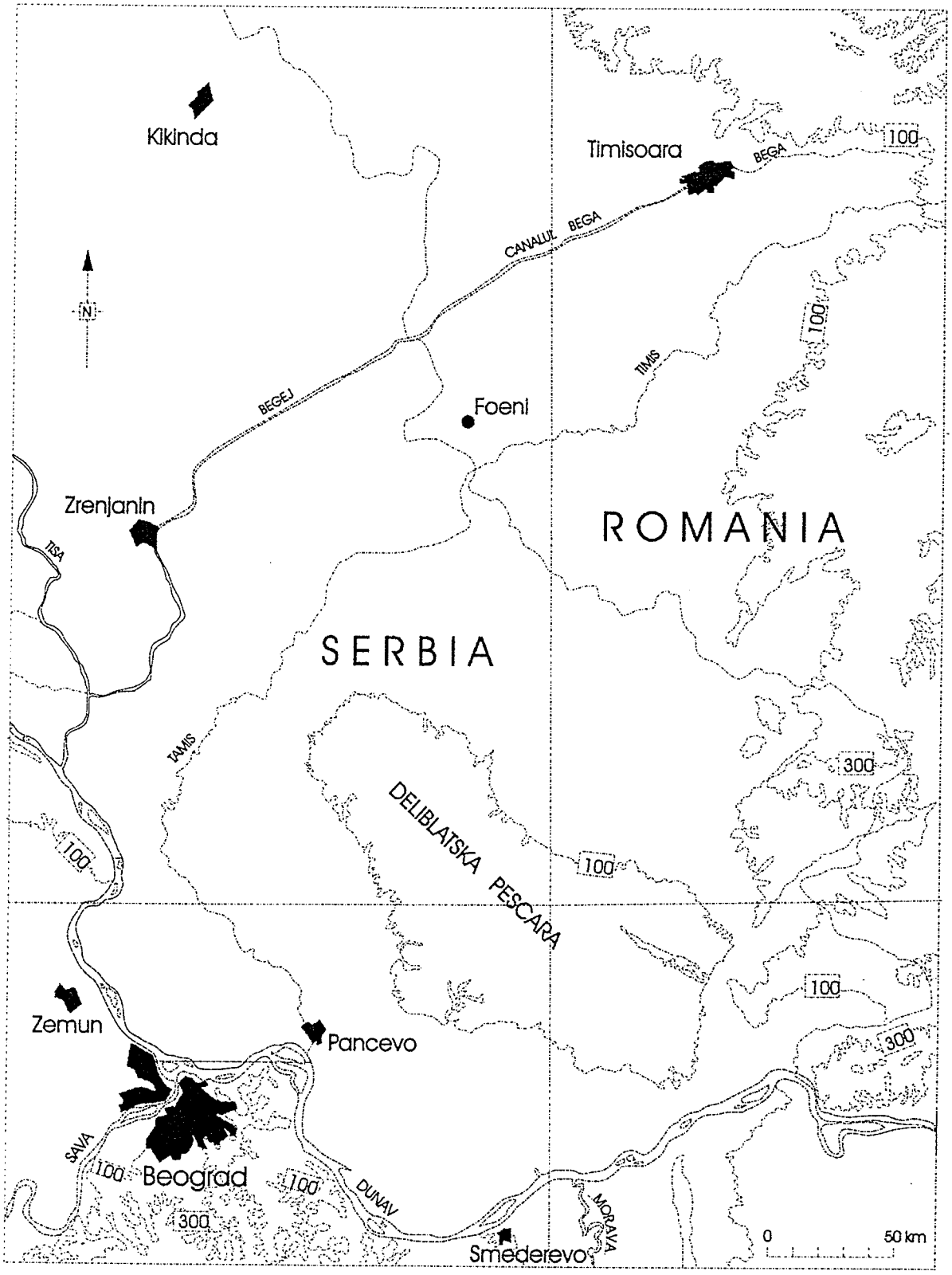


Figure 2. Map of the Banat region in Serbia and Romania (SE Pannonia), showing the location of the village of Foeni in relation to major landforms in the immediate region.

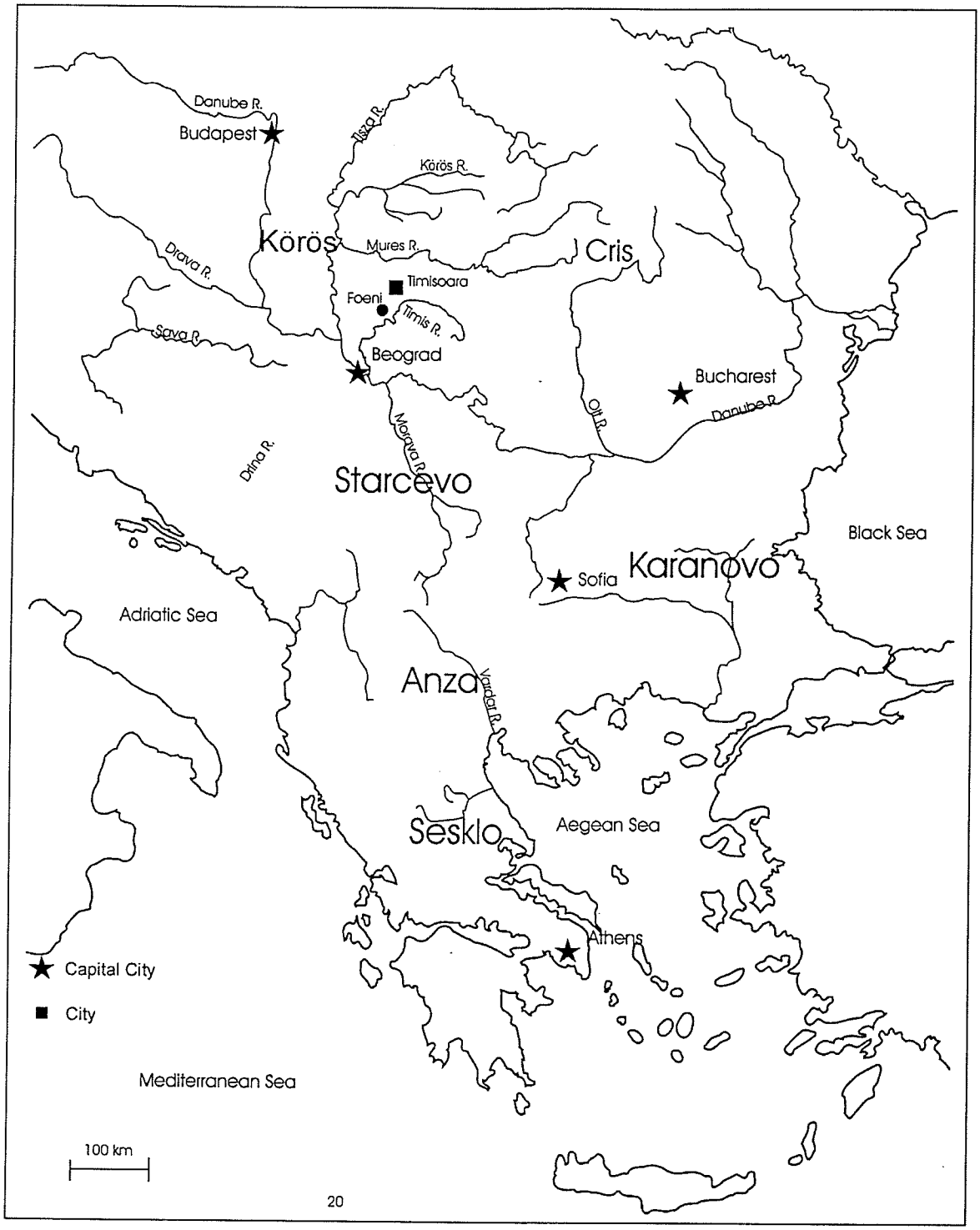


Figure 3. Map showing the geographic distribution of Early Neolithic southeast European culture groups.

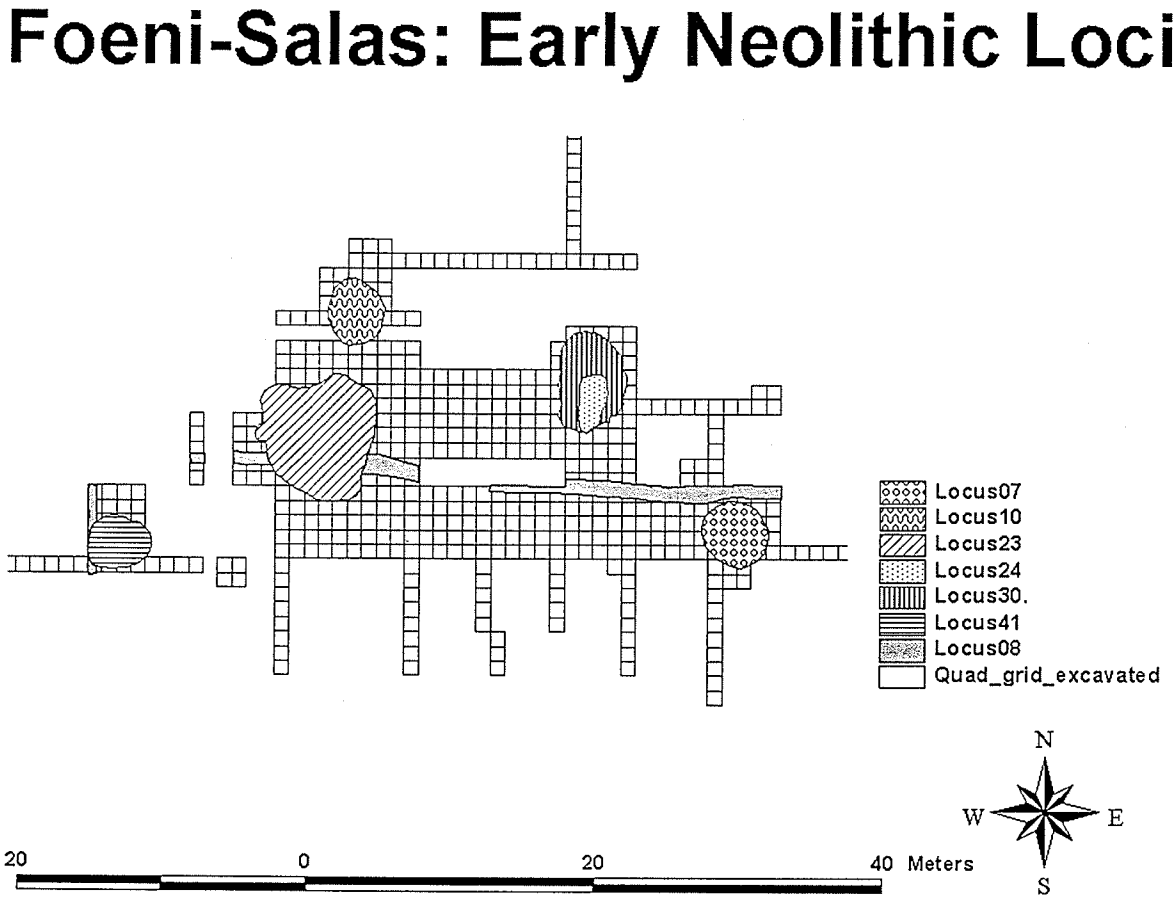


Figure 4: Map of the Foeni-Salaş site, illustrating the five pit house loci.

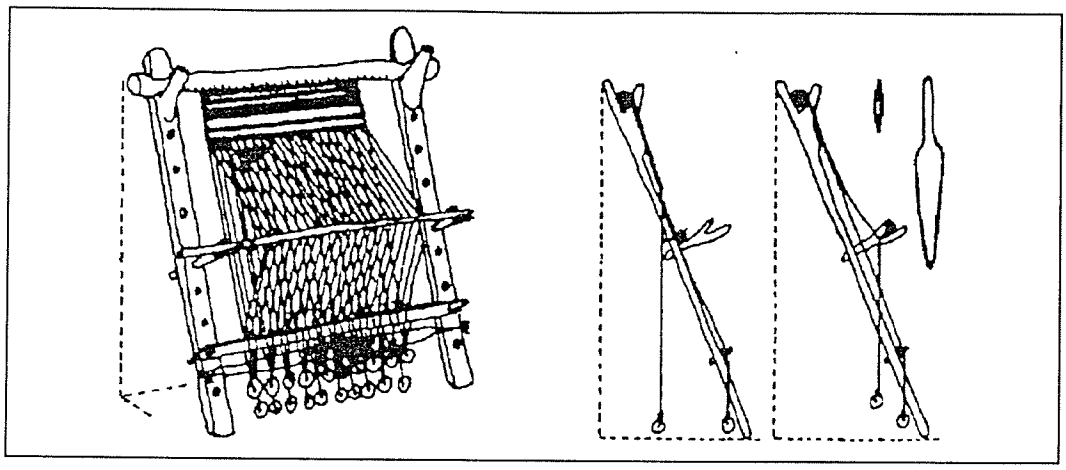


Figure 5. Warp-weighted loom (Geiger 1979: fig.ii: 10-11)

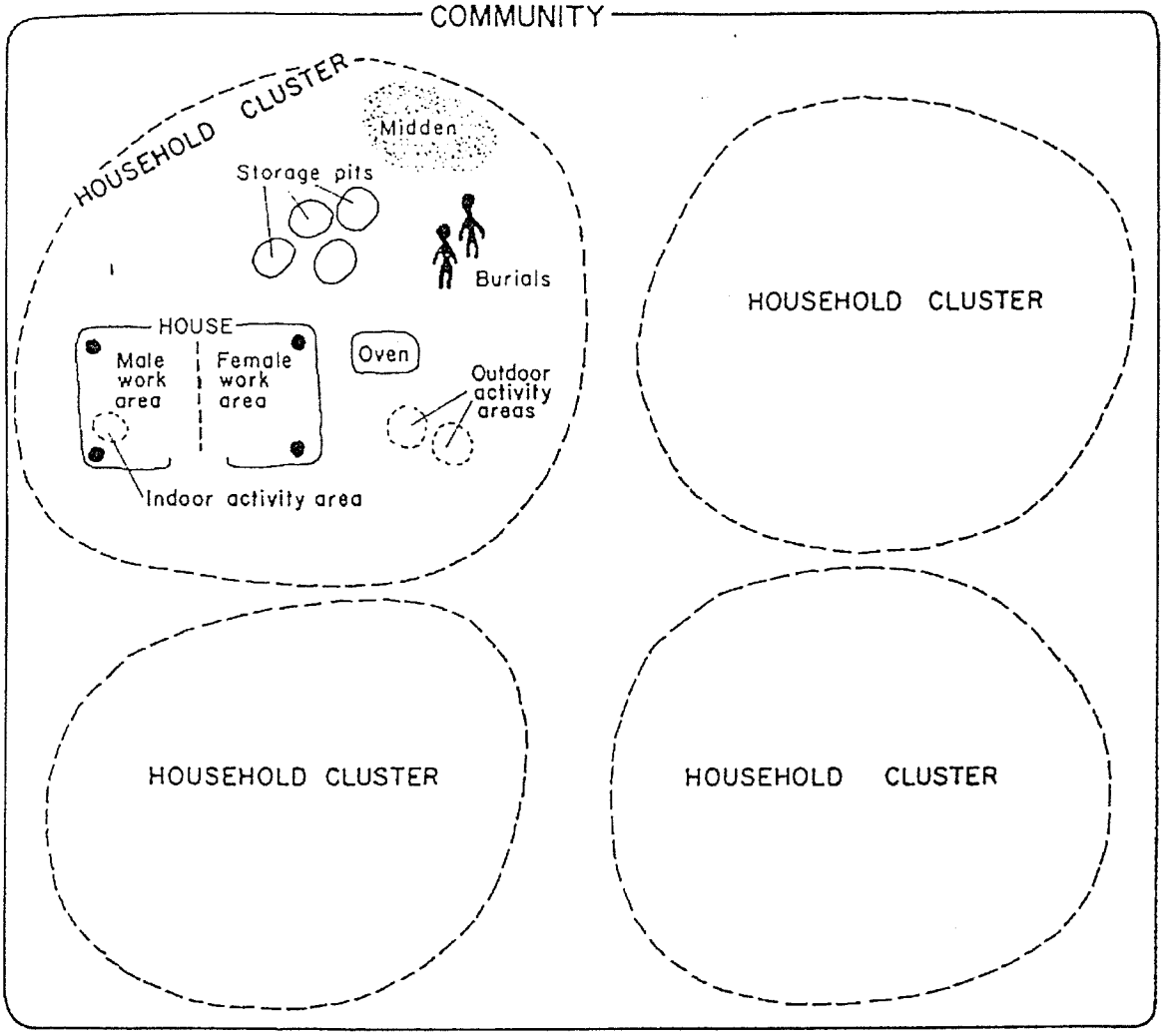


Figure 2.18 Diagram showing the relationship between the analytical levels of activity area; feature; male or female work area; house; household cluster; and community.

Figure 6: Household Cluster Image from (Flannery 1976: 45)

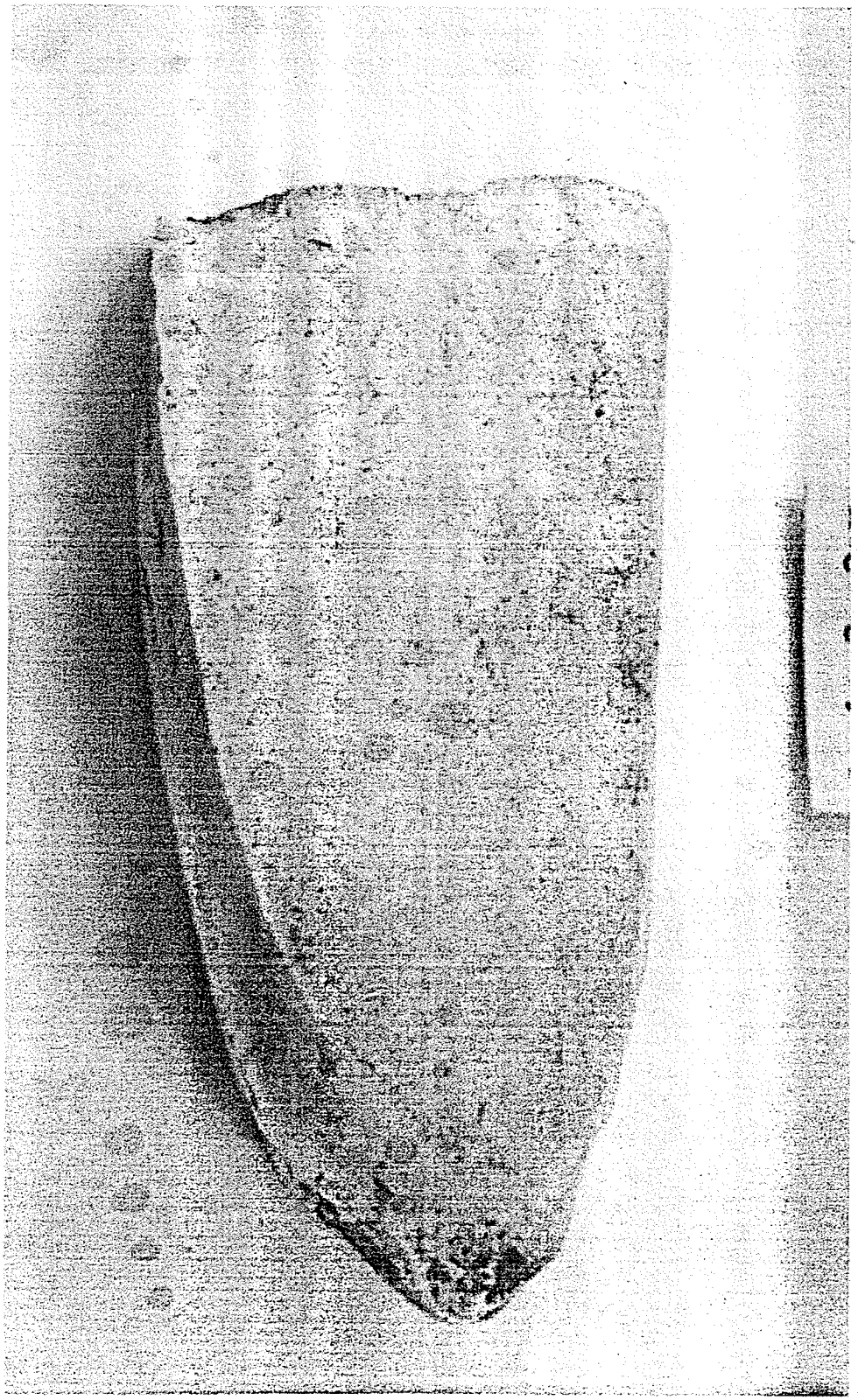


Figure 7: Axe; a representative ground stone tool from the Foeni-Salaş site.

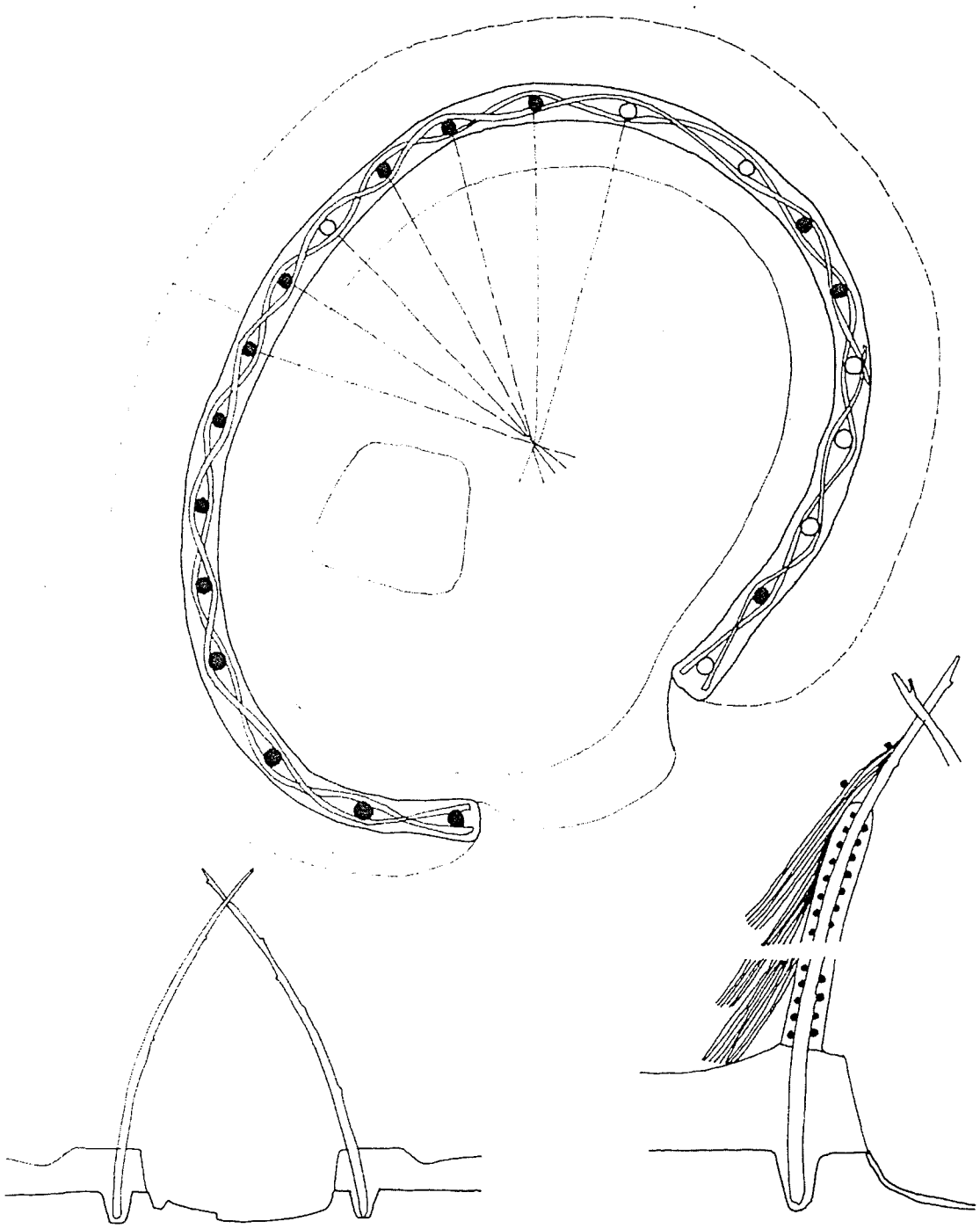
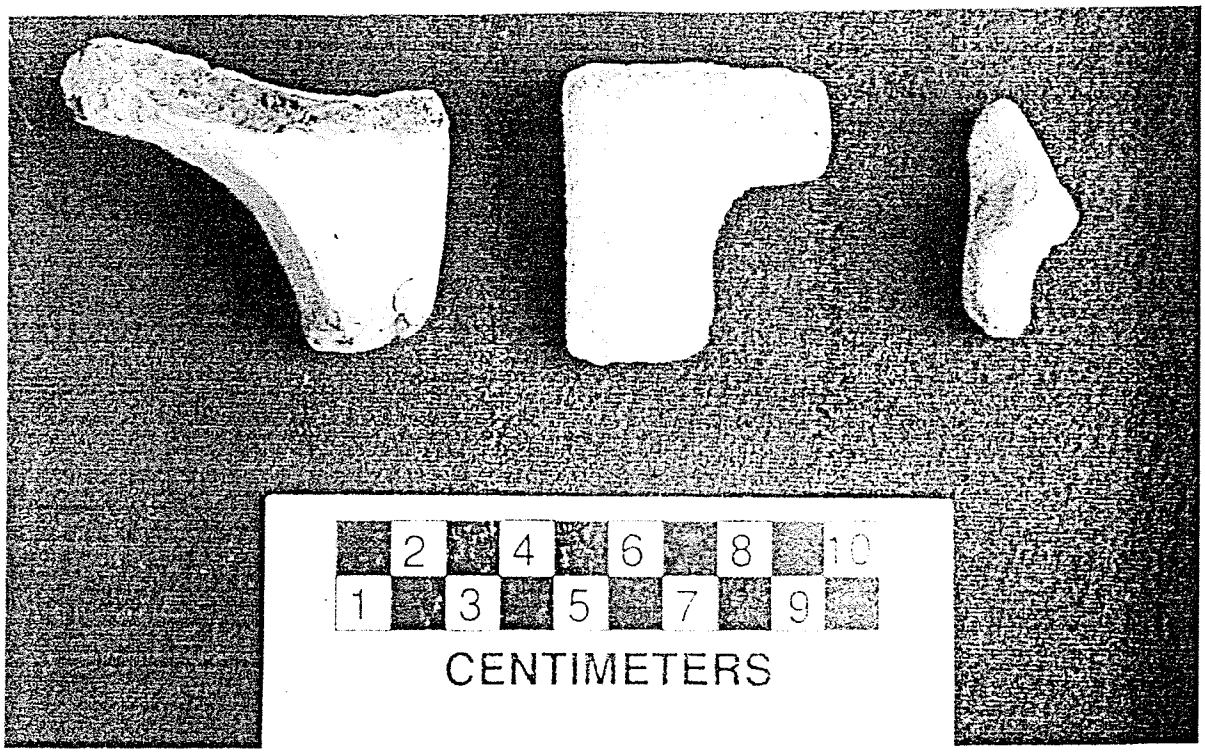


Figure 8: Hypothesised reconstruction of the superstructure of a Divostin Early Neolithic pit house (Bogdanović 1988).



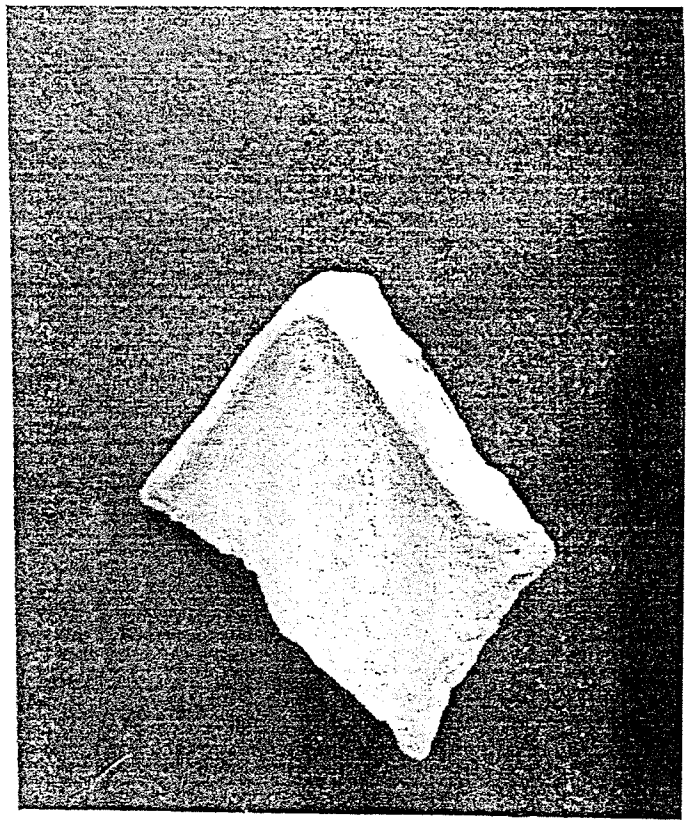
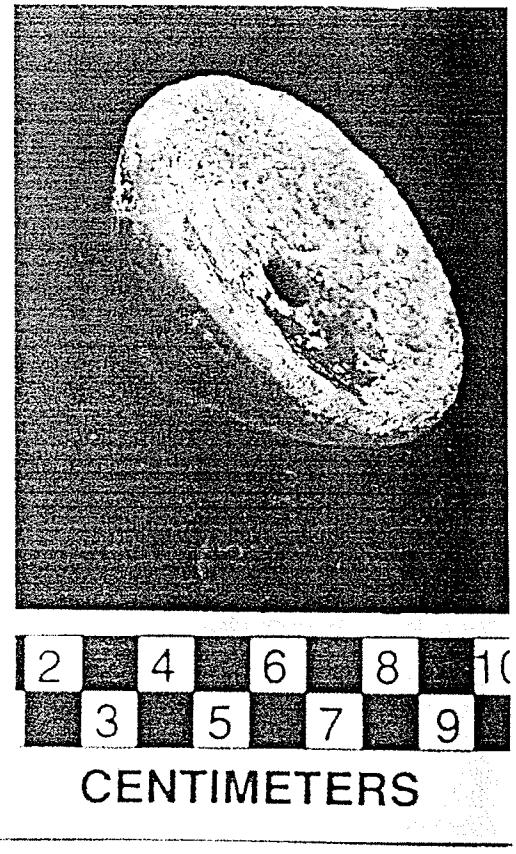
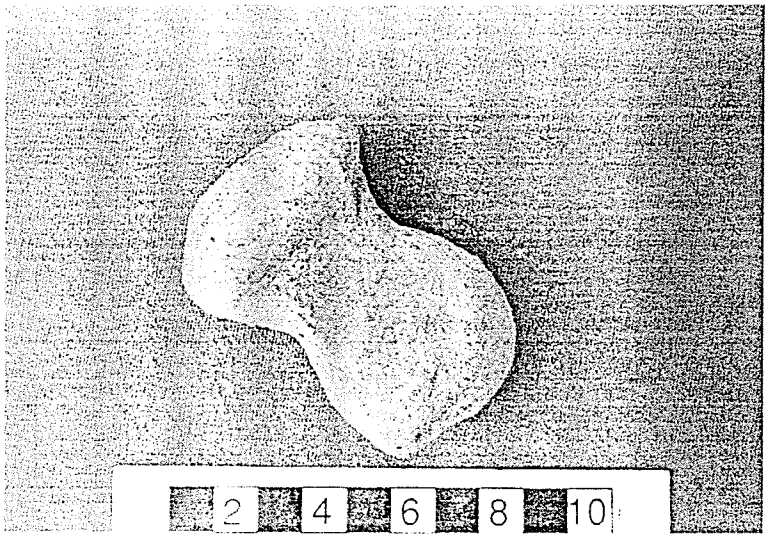
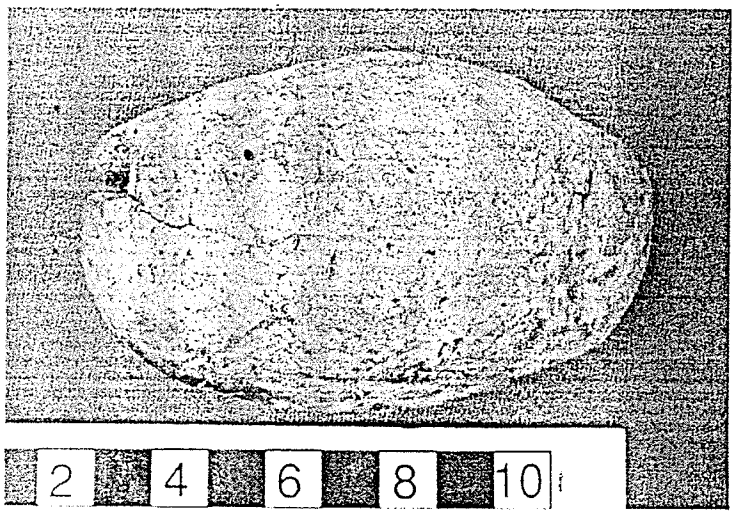


Figure 9: Altar legs (above) and altar top from the Foeni-Salaş site.







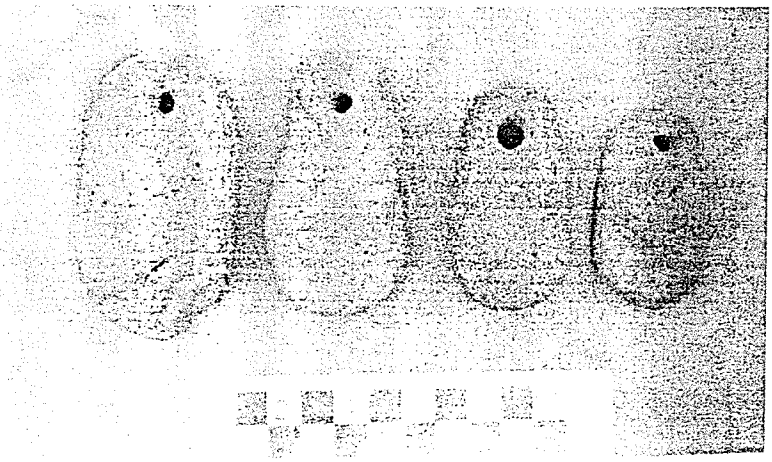


Figure 10: Representative formed daub artefacts from Foeni-Salaş (clockwise from above): spindle whorl, bola, net weight, loom weights.

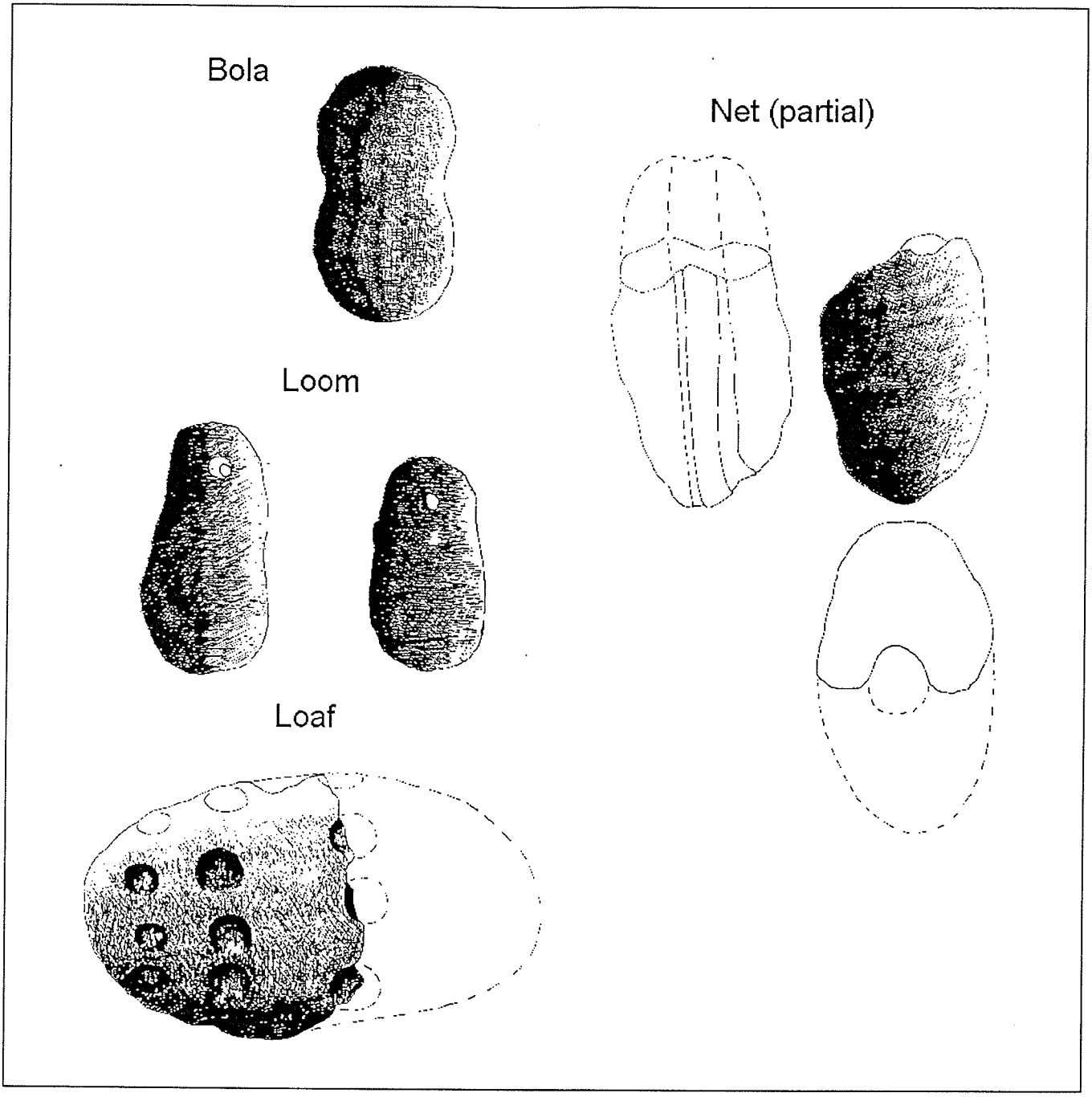


Figure 11. Some daub weights recovered from Foeni-Salaş.

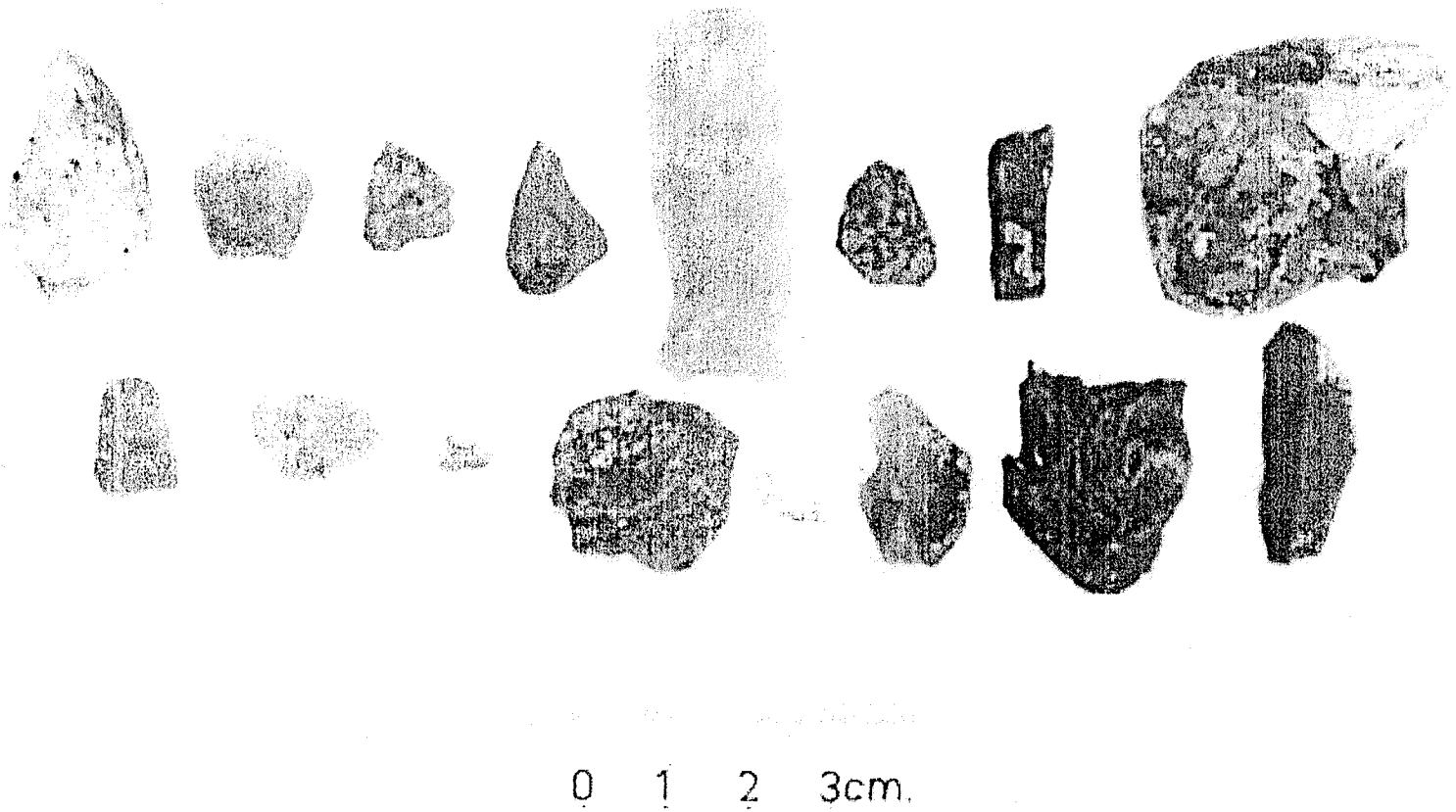


Figure 12: Representative chipped stone tools from Foeni-Salaş, including flakes, blades and cores.

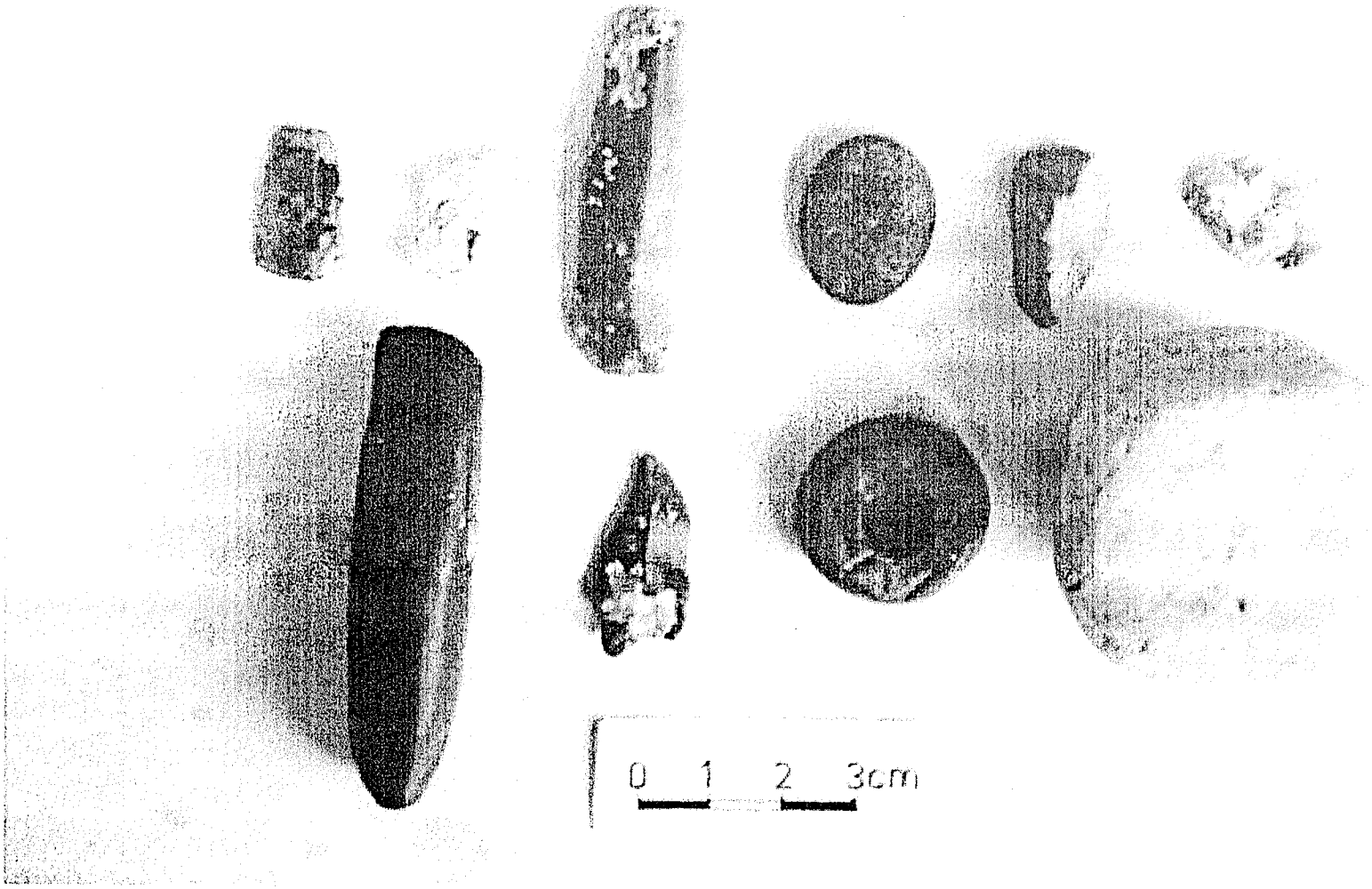


Figure 13: Lithic artefacts from Foeni-Salaş showing representative blades (ie, upper right) and grinding stones (lower right).

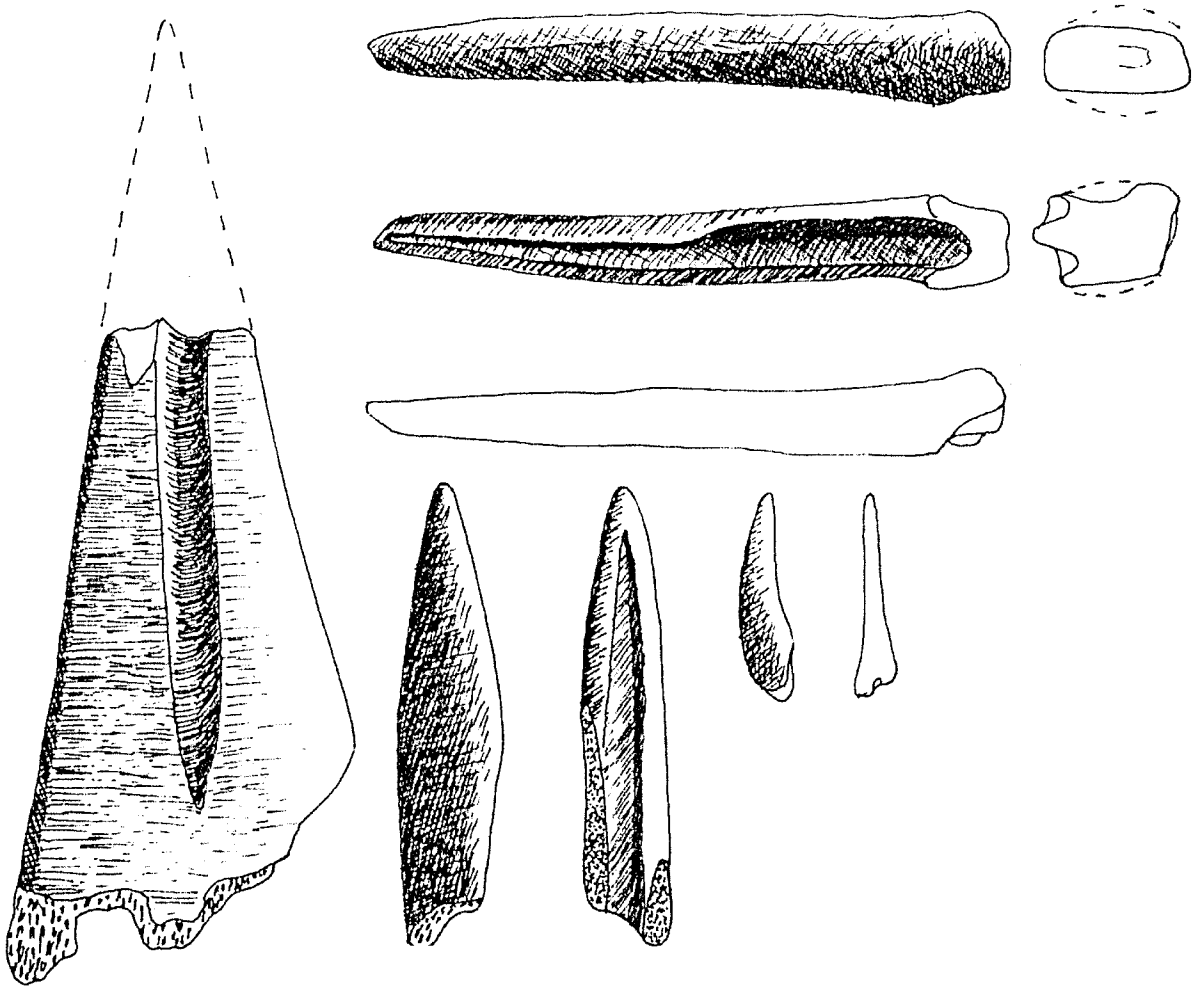


Figure 14: Representative bone tools from the site Foeni-Salaş, including awls or punches and scrapers.

Data and Tables

BONE Raw Counts Type specific	Locus07	Locus10	Locus23	Locus24	Locus41
Pendant? Game piece?	1	0	0	0	0
count per sq. m.	0.0625	0	0	0	0
Pierced_ornament	0	0	0	1	0
count per sq. m.	0	0	0	0.038462	0
Awl	7	0	14	2	1
count per sq. m.	0.4375	0	0.259259	0.076923	0.076923
Awl/Handle	0	1	0	0	0
count per sq. m.	0	0.071429	0	0	0
Handle	1	0	4	0	0
count per sq. m.	0.0625	0	0.074074	0	0
Pierced	0	0	1	1	0
count per sq. m.	0	0	0.018519	0.038462	0
Punch	1	0	0	0	0
count per sq. m.	0.0625	0	0	0	0
Rubber	0	0	1	0	0
count per sq. m.	0	0	0.018519	0	0
Scoop	0	0	5	0	1
count per sq. m.	0	0	0.092593	0	0.076923
Scraper	1	0	1	0	0
count per sq. m.	0.0625	0	0.018519	0	0
Spatula	0	2	0	2	0
count per sq. m.	0	0.142857	0	0.076923	0
Total Count	11.6875	3.071429	26.48148	6.153846	2.153846

Table 1. Bone data. Raw counts and counts per square metre.

BONE

Percentages by Square Metre Type specific	Locus07	Locus10	Locus23	Locus24	Locus41
Pendant? Game piece? (unadjusted)	100%	0%	0%	0%	0%
% per sq. m.	100%	0%	0%	0%	0%
Pierced_ornament (unadjusted)	0%	0%	0%	100%	0%
% per sq. m.	0%	0%	0%	100%	0%
Awl (unadjusted)	29%	0%	58%	8%	4%
% per sq. m.	51%	0%	30%	9%	9%
Awl/Handle (unadjusted)	0%	100%	0%	0%	0%
% per sq. m.	0%	100%	0%	0%	0%
Handle (unadjusted)	20%	0%	80%	0%	0%
% per sq. m.	46%	0%	54%	0%	0%
Pierced (unadjusted)	0%	0%	50%	50%	0%
% per sq. m.	0%	0%	33%	68%	0%
Punch (unadjusted)	100%	0%	0%	0%	0%
% per sq. m.	100%	0%	0%	0%	0%
Rubber (unadjusted)	0%	0%	100%	0%	0%
% per sq. m.	0%	0%	100%	0%	0%
Scoop (unadjusted)	0%	0%	83%	0%	17%
% per sq. m.	0%	0%	55%	0%	45%
Scraper (unadjusted)	50%	0%	50%	0%	0%
% per sq. m.	77%	0%	23%	0%	0%
Spatula (unadjusted)	0%	50%	0%	50%	0%
% per sq. m.	0%	65%	0%	35%	0%
Percentages of Total	24%	6%	53%	12%	4%

Table 2. Bone data. Percentages unadjusted and adjusted according to pit size.

DAUB WEIGHT
Raw Counts

Type specific	Locus07	Locus10	Locus23	Locus24	Locus41
Bola	49	2	2	4	0
count per sq. m.	3.0625	0.142857	0.037037	0.153846	0
Net weight	5	2	73	26	1
count per sq. m.	0.3125	0.142857	1.351852	1	0.076923
Loaf	10	6	158	52	2
count per sq. m.	0.625	0.428571	2.925926	2	0.153846
Loom weight	18	1	37	14	0
count per sq. m.	1.125	0.071429	0.685185	0.538462	0
Spindle whorl	57	10	0	3	0
count per sq. m.	3.5625	0.714286	0	0.115385	0
Stamp	1	0	0	0	0
count per sq. m.	0.0625	0	0	0	0
Total Count	148.6875	22.5	275	102.8077	3.230769

Table 3. Daub weight data. Raw counts and counts per square metre.

DAUB WEIGHT
Percentages by Square Metre

Type specific	Locus07	Locus10	Locus23	Locus24	Locus41
Bola (unadjusted)	85.96%	3.51%	3.51%	7.02%	0.00%
% per sq. m.	90.17%	4.21%	1.09%	4.53%	0.00%
Net Weight (unadjusted)	4.67%	1.87%	68.22%	24.30%	0.93%
% per sq. m.	10.84%	4.95%	46.87%	34.67%	2.67%
Loaf (unadjusted)	4.39%	2.63%	69.30%	22.81%	0.88%
% per sq. m.	10.19%	6.99%	47.71%	32.61%	2.51%
Loom weight (unadjusted)	25.71%	1.43%	52.86%	20.00%	0.00%
% per sq. m.	46.49%	2.95%	28.31%	22.25%	0.00%
Spindle whorl (unadjusted)	81.43%	14.29%	0.00%	4.29%	0.00%
% per sq. m.	81.11%	16.26%	0.00%	2.63%	0.00%
Stamp (unadjusted)	100.00%	0.00%	0.00%	0.00%	0.00%
% per sq. m.	100.00%	0.00%	0.00%	0.00%	0.00%
Percentages of Total	26.93%	4.07%	49.80%	18.62%	0.59%

Table 4. Daub weight data. Percentages unadjusted and adjusted according to pit size.

FIGURINE Raw Counts Type specific	Locus07	Locus10	Locus23	Locus24	Locus41
Altar leg	1	0	1	0	0
count per sq. m.	0.0625	0	0.018519	0	0
Handle	0	0	1	0	0
count per sq. m.	0	0	0.018519	0	0
Miniature pot	0	0	1	0	0
count per sq. m.	0	0	0.018519	0	0
Labrette	0	0	2	0	0
count per sq. m.	0	0	0.037037	0	0
Figurine leg	0	0	0	1	0
count per sq. m.	0	0	0	0.038462	0
Zoomorphic	0	0	0	1	0
count per sq. m.	0	0	0	0.038462	0
Total Count	1	0	2	2	0

Table 5. Figurine data. Raw counts and counts per square metre.

FIGURINE
Percentages by Square Metre

Type specific	Locus07	Locus10	Locus23	Locus24	Locus41
Altar leg	100.0%	0.0%	100.0%	0.0%	0.0%
(unadjusted)					
% per sq. m.	6.3%	0.0%	1.9%	0.0%	0.0%
Handle (unadjusted)	0.0%	0.0%	100.0%	0.0%	0.0%
% per sq. m.	0.0%	0.0%	1.9%	0.0%	0.0%
Miniature pot	0.0%	0.0%	100.0%	0.0%	0.0%
(unadjusted)					
% per sq. m.	0.0%	0.0%	1.9%	0.0%	0.0%
Labrette	0.0%	0.0%	200.0%	0.0%	0.0%
(unadjusted)					
% per sq. m.	0.0%	0.0%	3.7%	0.0%	0.0%
Figurine leg	0.0%	0.0%	0.0%	100.0%	0.0%
(unadjusted)					
% per sq. m.	0.0%	0.0%	0.0%	3.8%	0.0%
Zoomorphic	0.0%	0.0%	0.0%	100.0%	0.0%
(unadjusted)					
% per sq. m.	0.0%	0.0%	0.0%	3.8%	0.0%
Percentages of Total	100.0%	0.0%	200.0%	200.0%	0.0%

Table 6. Figurine data. Percentages unadjusted and adjusted according to pit size

LITHIC Raw counts Type specific	Locus07	Locus10	Locus23	Locus24	Locus41
Blade	5	1	17	1	2
count per sq. m.	0.3125	0.071429	0.314815	0.038462	0.153846
Core	2	1	3	1	0
count per sq. m.	0.125	0.071429	0.055556	0.038462	0
Endscraper - circular	0	0	1	0	0
count per sq. m.	0	0	0.018519	0	0
Flake	6	6	18	7	2
count per sq. m.	0.375	0.428571	0.333333	0.269231	0.153846
Axe/Adze	1	0	1	0	0
count per sq. m.	0.0625	0	0.018519	0	0
Grinding stone - all	2	0	6	3	1
count per sq. m.	0.125	0	0.111111	0.115385	0.076923
Total Count	16.875	8	46	12	5

Table 7. Lithic data. Raw counts and counts per square metre.

LITHIC Percentages Type specific	Locus07	Locus10	Locus23	Locus24	Locus41
Blade (unadjusted)	19.2%	3.8%	65.4%	3.8%	7.7%
% per sq. m.	35.1%	8.0%	35.3%	4.3%	17.3%
Core (unadjusted)	28.6%	14.3%	42.9%	14.3%	0.0%
% per sq. m.	43.0%	24.6%	19.1%	13.2%	0.0%
Endscraper - circular (unadjusted)	0.0%	0.0%	100.0%	0.0%	0.0%
% per sq. m.	0.0%	0.0%	100.0%	0.0%	0.0%
Flake (unadjusted)	15.4%	15.4%	46.2%	17.9%	5.1%
% per sq. m.	24.0%	27.5%	21.4%	17.3%	9.9%
Axe/Adze (unadjusted)	50.0%	0.0%	50.0%	0.0%	0.0%
% per sq. m.	77.1%	0.0%	22.9%	0.0%	0.0%
Grinding stone - all (unadjusted)	16.7%	0.0%	50.0%	25.0%	8.3%
% per sq. m.	29.2%	0.0%	25.9%	26.9%	18.0%
Percent of total	18.8%	8.9%	51.2%	13.4%	5.6%

Table 8. Bone data. Percentages unadjusted and adjusted according to pit size.

Activity	**Category - Classified object**
Basketry Mfg.	Bone tool – Awls Lithic – Blades
Chipped Stone Mfg.	Lithic - All chipped stone artefacts
Food Preparation	Bone tool - Scoops, Scrapers, Spatulae
Grinding	Lithic - Grinding stones
Hafting	Bone tool – Handles
Leather/Hide Working	Bone tool – Awls Lithic – Blade, Core, Flake
Spinning	Formed daub – Spindle Whorls
Textile Manufacture	Formed daub – bola, loom weight, net weight

Table 9. Artefact classes and types associated with activities.

Artefact % per locus

Activity	Locus07	Locus10	Locus23	Locus24	Locus41	Total	Artefacts used
textile mfg	30.8%	2.1%	**47.9%**	18.8%	0.4%	100.0%	bola, net, loom
chipped stone mfg	18.1%	11.1%	**52.8%**	12.5%	5.6%	100.0%	core, flake, blade
leather mfg/basketry	21.6%	8.2%	**53.6%**	11.3%	5.2%	100.0%	awls, punch, chipped stone
food preparation	8.3%	16.7%	**50.0%**	16.7%	8.3%	100.0%	scoop, scraper, spatula
lighting	**33.3%**	0.0%	**33.3%**	**33.3%**	0.0%	100.0%	altar legs
spinning	**81.4%**	14.3%	0.0%	4.3%	0.0%	100.0%	spindle whorls
grinding activities	16.7%	0.0%	**50.0%**	25.0%	8.3%	100.0%	grinding stones
hafting	20.0%	0.0%	**80.0%**	0.0%	0.0%	100.0%	bone handles

Table 10. Artefact percentages per locus when combined for activity area analysis. Percentages in **bold** represent the highest percentages for that activity.

Artefact % per square metre

Activity	Locus07	Locus10	Locus23	Locus24	Locus41	Total	Artefacts used
textile mfg	**51.7%**	4.1%	23.8%	19.5%	0.9%	100.0%	bola, net, loom
chipped stone mfg	**29.9%**	20.7%	25.5%	12.5%	11.5%	100.0%	core, flake, blade
leather mfg/basketry	**35.1%**	14.8%	27.4%	11.4%	11.4%	100.0%	awls, punch, chipped stone
food preparation	13.3%	**30.4%**	23.6%	16.4%	16.4%	100.0%	scoop, scraper, spatula
lighting	**52.3%**	0.0%	15.5%	32.2%	0.0%	100.0%	altar legs
spinning	**81.1%**	16.3%	0.0%	2.6%	0.0%	100.0%	spindle whorls
grinding activities	**29.2%**	0.0%	25.9%	26.9%	18.0%	100.0%	grinding stones
hafting	20.0%	0.0%	**80.0%**	0.0%	0.0%	100.0%	bone handles
figurine - ritual?	0.0%	0.0%	0.0%	100.0%	0.0%		zoomorphic, figurine leg

Table 11. Artefact percentages per square metre when combined for activity area analysis. Percentages in **bold** represent highest percentage for that activity.

Chi-square test of Independence

	Locus7	Locus10				
Daub	473	81	0	0	0	
Bone	37	12	0	0	0	
Lithic	54	31	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

Chi square	df	p <	Cases (n)
25.3050	2	0.0000	688

Table 12. Chi-square goodness of fit test between artefact totals for Loci 7 and 10. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus7	Locus23				
Daub	473	270	0	0	0	
Bone	37	26	0	0	0	
Lithic	54	46	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

Chi square	df	p <	Cases (n)
3.8580	2	0.1450	906

Table 13. Chi-square goodness of fit test between artefact totals for Loci 7 and 23. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus7	Locus24				
Daub	473	206	0	0	0	
Bone	37	12	0	0	0	
Lithic	54	25	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

Chi square	df	p <	Cases (n)
0.8410	2	0.6570	807

Table 14. Chi-square goodness of fit test between artefact totals for Loci 7 and 24. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus7	Locus41				
Daub	473	12	0	0	0	
Bone	37	8	0	0	0	
Lithic	54	21	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

1 cells (16.7%) have an expected frequency less than 5

Chi square	df	p <	Cases (n)
76.3050	2	0.0000	605

Table 15. Chi-square goodness of fit test between artefact totals for Loci 7 and 41. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus10	Locus23				
Daub	81	270	0	0	0	
Bone	12	26	0	0	0	
Lithic	31	46	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

Chi square	df	p <	Cases (n)
10.0700	2	0.0070	466

Table 16. Chi-square goodness of fit test between artefact totals for Loci 10 and 23. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus10	Locus24				
Daub	81	206	0	0	0	
Bone	12	12	0	0	0	
Lithic	31	25	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

Chi square	df	p <	Cases (n)
18.4380	2	0.0000	367

Table 17. Chi-square goodness of fit test between artefact totals for Loci 10 and 24. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus10	Locus41				
Daub	81	12	0	0	0	
Bone	12	8	0	0	0	
Lithic	31	21	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

1 cells (16.7%) have an expected frequency less than 5

Chi square	df	p <	Cases (n)
16.2860	2	0.0000	165

Table 18. Chi-square goodness of fit test between artefact totals for Loci 10 and 41. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus23	Locus24				
Daub	270	206	0	0	0	
Bone	26	12	0	0	0	
Lithic	46	25	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

Chi square	df	p <	Cases (n)
3.3150	2	0.1910	585

Table 19. Chi-square goodness of fit test between artefact totals for Loci 10 and 24. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus23	Locus41				
Daub	270	12	0	0	0	
Bone	26	8	0	0	0	
Lithic	46	21	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

1 cells (16.7%) have an expected frequency less than 5

Chi square	df	p <	Cases (n)
47.9760	2	0.0000	383

Table 20. Chi-square goodness of fit test between artefact totals for Loci 23 and 41. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Chi-square test of Independence

	Locus24	Locus41				
Daub	206	12	0	0	0	
Bone	12	8	0	0	0	
Lithic	25	21	0	0	0	
	0	0	0	0	0	
	0	0	0	0	0	

1 cells (16.7%) have an expected frequency less than 5

Chi square	df	p <	Cases (n)
60.9470	2	0.0000	284

Table 21. Chi-square goodness of fit test between artefact totals for Loci 24 and 41. Artefact frequencies are adjusted by a multiplication factor depending upon locus size – see Table 22 for loci sizes and multiplication factors.

Locus	Area (m)	Mulitplication factor			
Locus 7	16	3.375			
Locus 10	14	3.857143			
Locus 23	54	1			
Locus 24	26	2.076923			
Locus 41	13	4.153846			
DAUB					
Using multiplication factors					
Type specific	**Locus07**	**Locus10**	**Locus23**	**Locus24**	**Locus41**
Bola	165.375	7.714286	2	8.307692	0
Net weight	16.875	7.714286	73	54	4.153846
Loaf	33.75	23.14286	158	108	8.307692
Loom weight	60.75	3.857143	37	29.07692	0
Spindle whorl	192.375	38.57143	0	6.230769	0
Stamp	3.375	0	0	0	0
Total Count	**473**	**81**	**270**	**206**	**12**
BONE					
Using multiplication factors					
Type specific	**Locus07**	**Locus10**	**Locus23**	**Locus24**	**Locus41**
Pendant? Game piece?	3.375	0	0	0	0
Pierced_ornament	0	0	0	2.076923	0
Awl	23.625	0	14	4.153846	4.153846
Handle	3.375	3.857143	4	0	0
Pierced	0	0	1	2.076923	0
Punch	3.375	0	0	0	0
Rubber	0	0	1	0	0
Scoop	0	0	5	0	4.153846
Scraper	3.375	0	1	0	0
Spatula	0	7.714286	0	4.153846	0
Total Count	**37**	**12**	**26**	**12**	**8**
LITHIC					
Using multiplication factors					
Type specific	**Locus07**	**Locus10**	**Locus23**	**Locus24**	**Locus41**
Blade	16.875	3.857143	17	2.076923	8.307692
Core	6.75	3.857143	3	2.076923	0
Endscraper - circular	0	0	1	0	0
Flake	20.25	23.14286	18	14.53846	8.307692
Axe/Adze	3.375	0	1	0	0
Grinding stone - all	6.75	0	6	6.230769	4.153846
Total Count	**54**	**31**	**46**	**25**	**21**

Table 22. Data used in Chi-square tests – totals of adjusted artefact frequencies per locus.

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