OBSIDIAN, TRADE AND SOCIETY IN THE CENTRAL ANATOLIAN NEOLITHIC

A Master's Thesis

by
FEVZİ VOLKAN GÜNGÖRDÜ

Department of

Archaeology and History of Art

Bilkent University

Ankara

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OBSIDIAN, TRADE AND SOCIETY IN THE CENTRAL ANATOLIAN NEOLITHIC

The Institute of Economics and Social Sciences
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FEVZİ VOLKAN GÜNGÖRDÜ

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I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for degree of Master of Arts in Archaeology and History of Art

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Assistant Prof. Dr. Thomas Zimmermann
Supervisor

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for degree of Master of Arts in Archaeology and History of Art

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Assoc. Prof. Dr. İlknur Özgen
Examining Committee Member

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for degree of Master of Arts in Archaeology and History of Art

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Assistant Prof. Dr. Jan-Krzysztof Bertram
Examining Committee Member

Approval of the Institute of Economics and Social Sciences

Prof. Dr. Erdal Erel
Director

ABSTRACT

OBSIDIAN, TRADE AND SOCIETY IN CENTRAL ANATOLIAN NEOLITHIC

Güngördü, Fevzi Volkan

M.A., Department of Archaeology

Supervisior: Asst. Prof. Dr. Thomas Zimmermann

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The major scope of this thesis was a reappraisal of obsidian and trade connections in the Central Anatolian Neolithic, to what degree external relations shaped and altered the cultural setting of a community, and what other items can be identified as key agents in this multiregional interaction sphere. For that reason, well published model sites were chosen to investigate these issues. Major focus was then set on obsidian, with major sources located in Central Anatolia, indeed an ideal item to trace interregional relationships. Furthermore, the value of other items like flint, metals and certain small finds were reviewed to achieve a comprehensive picture of the mechanisms on Neolithic trade and exchange, and its effects on society and settlement policy.

ÖZET

ORTA ANADOLU'DA NEOLİTİK DÖNEMDE OBSİDYEN, TİCARET VE TOPLUM

Güngördü, Fevzi Volkan

Yüksek Linsans, Arkeoloji Bölümü

Tez Yöneticisi: Asst. Prof. Dr. Thomas Zimmermann

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Bu tezin asıl amacı, Orta Anadolu Neolitiğinde obsidyenin ve ticaret ilişkilerinin rolünü, dış ilişkilerin toplulukların kültürel bağlamlarını ne derece belirlediğini ve değiştirdiğini ve bu çok bölgeli etkileşim dünyasında başka hangi maddelerin anahtar rolünü üstlendiğini araştırmaktır. Bu nedenle, bu sorunları irdelemek için iyi yayınlanmış model yerleşimler seçilmiştir. Daha sonra ana vurgu Yakın Doğu için ender bir madde olan, ana kaynakları Orta Anadolu'da bulunan ve aslında bölgeler arasındaki ilişkilerin izini sürmek için ideal bir madde olan obsidyenin üzerine konulmuştur. Ayrıca, çakmaktaşı, metaller ve belli başı küçük buluntuların değerleri de araştırılmış ve bu sayede Neolitik dönem ticaret ve madde değişimlerinin ve toplumlar ile yerleşim politikaları üzerindeki etkilerinin bütüncül bir resminin çizilmesine uğraşılmıştır.

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CHAPTER 1

INTRODUCTION

Central Anatolia obtains a special place within the vivid discipline of Near Eastern Neolithic Archaeology, since it has not been identified as being a significant area for the Neolithic period in the first half of the 20th century. Before the 1950's, it was generally assumed that Central Anatolia had not been settled before the Bronze Age. Seton Lloyd, for instance, asserted that the Neolithic period is restricted to the north by the range of the Taurus and the fringes of the Syrian plain, and that no communities settled down there before the beginning of the Early Bronze Age (Lloyd, 1956: 53, Düring, 2006: 8).

However, with the second half of the 20th century, the importance of Central Anatolia for Neolithic period became more and more obvious. Between 1950 and 1970, prehistoric studies on the Pre-Bronze Age sequence of Central Anatolia were carried out by mainly two British scholars: James Mellaart and David French. The former excavated at Hacılar between 1957 and 1960 and at Çatalhöyük between 1961 and 1965. David French, also affiliated with the British Archaeological Institute at Ankara, worked at Can Hasan I and III between 1961 and 1967. All these sites with their architectural features and artifact assemblages contributed substantially to our understanding of the early and advanced Neolithic (Düring, 2006: 8).

Following these initial discoveries in the Konya plain and Southern Central Anatolia, the suspicion arose that some important Neolithic settlements might also be revealed in Cappadocia. Between 1964 and 1966, the Cappadocia region was surveyed by Ian Todd (Todd, 1980: 22), with an ever growing number of sites excavated until recent times. Here, the site of Köşk Höyük is another hallmark for understanding Neolithic activities in Central Turkey. Excavated between 1983 and 1991 by Uğur Silistireli, the Köşk Höyük expedition is currently maintained by Aliye Öztan after his sudden death (Öztan, 2007: 223, Düring, 2006: 9).

Moving further to the northeast, Aşıklı Höyük represents the major early Neolithic Centre of Central Anatolia. In 1989, Ufuk Esin initiated excavations at Aşıklı, dated to the Pre-Pottery Neolithic period with a densely clustered settlement type, intramural burials and many burial gifts (Duru, Özbaşaran, 2005: 15, Esin, Harmankaya, 2007: 268-269). In the immediate vicinity of Aşıklı, the small hamlet of Musular was unearthed by Mihriban Özbaşaran (Özbaşaran et al, 2007: 277-278, Düring, 2006: 10); the Kömürcü Kaletepe obsidian workshop, located likewise in the volcanic Aksaray basin, and a key feature for our thesis, was excavated by Nur Balkan Atlı, Didier Binder and Marie-Claire Cauvin between 1996 and 2003 (Balkan-Atlı, Binder, 2001: 1, Düring, 2006: 10). Finally Tepecik-Çiftlik, excavated since 2001 by Erhan Bıçakçı, contains both Late Neolithic and Chalcolithic layers (Bıçakçı et al., 2007: 238, Düring, 2006: 10).

While research activites in the Cappadocian region were intensified, the Çatalhöyük expedition was resumed in the Konya plain in 1993 under the directorship of Ian Hodder, backed by an international excavation team. The new expedition attempts to get the maximum amount of information with different excavation, documentation and sampling techniques (Düring, 2006: 10, Hodder, 2007: 313-320, Cessford, Carter, 2005: 306).

For this thesis, these particular sites -Aşıklı Höyük, Musular, Kömürcü Kaletepe, Tepecik-Çiftlik, Köşk Höyük and Çatalhöyük- were chosen as "model sites", since their sufficient publication portfolio helps to efficiently evaluate their finds and architectural features. Different materials like obsidian, metal beads, clay or bone idols, and the –at least in Central Anatolian contexts, as it seems- so far rather "marginally" discussed flint, will be technologically and typologically surveyed regarding their significance for the emergence -and eventual spatial shifts- of a multiregional trade and exchange network.

That said, Central Anatolia is an important region for a variety of important raw materials that were consumed at least since Neolithic times. The Cappadocia region, for example, hosts substantial obsidian sources (Todd, 1980: 30), a much sought material for tool making due to its ideal knapping qualities (Moorey, 1994: 64). Most significant, however, is the "fingerprint quality" of obsidian, since it is geochemically possible to identify its specific source and track down the movement of prefabrics and finished objects over sometimes considerable distances (Andrefsky, 2000: 41-42).

One major task will be to reevaluate the role of obsidian in context with selected Central Anatolian Neolithic sites, to understand the (shifting) dynamics of interregional relationships between Central Anatolia and remote Near Eastern and Mediterranean regions like Syria, the Levant, Cyprus, and Central Anatolia.

Conclusively, by means of a careful reevaluation of the material record of selected Central Anatolian Neolithic sites, its consumption and interregional distribution, it is attemped to reappraise interactions between Central Anatolia and other neighboring or remote regions, also attempting to sketch non material based interregional transfer like the communication of certain technical skills.

Finally, the results are tested whether they could serve as jigsaw pieces to understand the social grouping in larger Central Anatolian Neolithic communities.

CHAPTER 2

GEOGRAPHICAL SCOPE OF THE THESIS

Central Anatolia offers an ideal area for studying the interregional relationships in the Neolithic period, since it hosts a growing number of well excavated and published “model sites”, illustrating the cultural significance of Central Anatolia as being more than only a mere brigde that passively channels interaction between East and West. The region of Central Anatolia is bound at the north by Artova, Çorum and Çankırı, at the south and southeast, Karaman, Niğde and Çankırı, and at the west, Ankara and Konya (Todd, 1980: 18). Central Anatolia is bordered by two mountain ranges; in the south by the Taurus and in the north by the Pontus Mountains (Düring, 2006: 4).

Two arid regions, The Konya Plain and the Tuz Gölü plain, are contrasted by Beyşehir region and the Cappadocian plateau, which are wetter areas with an average 450mm/yr precipitation rate (Kuzucuoğlu, 2002: 38).

Despite the fact that Central Anatolia is a large area, the scope of this thesis is limited primarily to the Konya plain and the region of Cappadocia (Figure 1), last but not least due to the fact that Central Anatolian Neolithic sites indeed only occur so far in Konya plain and the region of Cappadocia (Düring, 2006: 5).

Between the 9^{th} and mid 7^{th} millennium BC, South Central Anatolia was dry and humidity was increasing while the vegetation remained steppe and desert steppe. In the second part of the 7^{th} millennium BC a forest expansion has been attested. In the 6^{th} millennium BC humidity increases in the Konya plain, and vegetation grows on forested slopes. Vegetation in the Cappadocia region shows a general variability of woodlands and open grasslands (Kuzucuoğlu, 2002: 43-45).

CHAPTER 3

TRADE

One major aspect of this thesis is to critically review the external relations of selected Central Anatoltian sites. Therefore, a brief overview on selected common theories about trade and exchange policies should be provided, keeping in mind that the absence of writing systems makes it often difficult to reveal the true nature, intensity and scope of these contacts (Renfrew, 1969: 151). Some of the following models are sure enough highly arbitrary, and should - in the context of this thesis- be understood as a humble theoretic backdrop and not a golden path to reveal the mechanisms of Neolithic enterprise.

Trade is an integral and indispensable part of the human evolution and human behavior (Mauss, 1990: 71-78, Oka, Kusimba, 2008: 3), since it paves the way for innovation and progress through social interaction. People learn new ideas, new attitudes or new techniques from other people. Agriculture, for example, appeared independently in different parts of the world. Sure enough there are different reasons for the appearance of agriculture such as environmental change, population pressure or limited regional interaction between hunter-gatherers and foragers. But people are supposed to mainly learn new economic strategies from different social groups as a result of interregional migration (Asouti, 2006: 87).

(Archaic) trade, however, as “the mutual appropriative movement of goods between hands” defined as a reciprocal activity, involves two people, two social groups or more, with agreement being a necessity and as an appropriative movement (Renfrew, 1993: 6).

Trade must be satisfactory for all sides, since it literally happens “between hands” (Renfrew, 1969: 151, quoting Polyani). Regarding the absence of today’s technology, in prehistoric times all the members involved in the trade activity physically “see” each other. As a matter of fact, with the archaic form of trade not only materials or commodities are exchanged, but also people from different cultures interact with each other. This might lead to a reshaping of a culture as a final consequence (Oka, Kusimba, 2008: 1).

An important issue that will echo in our synthesis chapter is the theory of intervening opportunity: here, a competition between two or more trader groups using common sources makes some groups look for new trade strategies, if the trade process is not satisfactory for them anymore. This theory shows that trade does not have a solid character, and that strategies are changeable regarding the overall conditions (Bradley, 1971: 347-348).

A likewise well known commonplace is the political dimension of trade, like treated by Marx with political economy as the ruling of wealthy that generated inequality (Hirth, 1996: 204). This is complementary to the anthropological perspective that indicates unequal access to wealth and the power (Hirth, 1996: 205), condensed to a society divided into elites and labourers. Production and exchange are then two sides of the same coin which is controlled by elites (Hirth, 1996: 207). The identification of elites and labourers in prehistoric times, however, is a difficult issue.

Traditionally, archaeologists agree that elaborate architecture, or “prestige goods” like obsidian, copper or marble, can be significant features, assuming that who resides in or possesses one of them also obtains a high position in society. According to Polanyi, long distance trade and the control of this organization require a central political organization (Hirth, 1996: 207). Although it is sure enough difficult to talk about something like a central political organization in the Pre-Pottery Neolithic, one has to accept the fact that the obsidian trade between Anatolian and Levant continued for several thousand years (Cauvin, 2000: 93). That said, at least some kind of administrative institution that control this trade mechanism seems to be plausible.

Referring to his studies on Melos Island in the Mediterranean, Colin Renfrew finally distinguishes between different “organizational zones”, basically sites that can be defined as a “supply zone” where materials were found, and a “contact zone” where items were exchanged (Oka, Kusimba, 2008: 8). For our thesis focus, Central Anatolia could be the conclusively be defined as a supply zone, since obsidian resources are located there.

Ultimately, Renfrew introduced some well-known models to explain cultural change (The invasionist, diffusionist, and evolustionist model, see Renfrew, 1969: 152). For our task, however, the “cultural process” model looks most attractive, since it emphasizes the crucial role of trade in the overall process. In this particular approach, proficient and favourable exchange encourages production, which eventually becomes more efficient and specialized. Trade further on establishes contact between communities and the physical swap of ideas through personal communication. So trade produces new request to finally generate new commodities (Renfrew, 1969: 153-154).

Finally, the trafficking of materials surely coincides not only with the spread and adaption of “foreign” customs, architecture, and settlement patterns (Bar-Yosef and Belfer-Cohen, 1989: 65), but even profound manifestions like new belief systems (Cauvin, 2000, 25-32). Such a groundbreaking change is suggested for the PPN B period, and with trade as a motor and catalyser, elements of the “Neolithic lifestyle package” were diffused to Western Asia, triggering off acculturation (Adams et al. 1974: 240; Asouti, 2006: 88).

CHAPTER 4

OBSIDIAN: DEFINITION AND ARCHAEOMETRICAL APPLICATIONS

To locate materials that are unique to some specific regions, but absent as a raw material in other regions, however present in the archaeological record, is the most prominent method to understand the mechanisms of trade and cultural communication between remote regions in prehistoric times. Obsidian, whose origin can be determined with various scientific analysis methods (*infra*), is a common and well researched item to understand the multifaceted relationships between Neolithic cultures. Obsidian, known in literature since Pliny's Natural History and named after a Roman Obsius who eventually recognized it in Etiopia, is a type of glass which emerges in course of volcanic activity (Figure 2) (Balkan-Atlı, 2008: 191). The chemical configuration of obsidian, actually a derivate of our known glass with 70% silicon dioxide, is related with rhyolite and granite, and contains also large amounts of non-silicious materials such as quartz (Balkan-Atlı, 2008: 191; Whittaker, 1994: 69). The immediate, yet rapid cooling of molten rock after a volanic eruption, as in Pleistocene periods or winter months, is the main prerequisite for the emergence of obsidian (Whittaker, 1994: 69). The global occurance of substantial obsidian deposits is limited to Hawaii, Japan, Iceland, Hungary, Italy, Greece, Turkey, Armenia, Ethopia, Mexico, Ecuador, Arizona and New Mexico (Balkan-Atlı, 2008: 191).

Obsidian is generally black or green in color (Moorey, 1994: 63-64). These colors result from the oxidation state of the chemical elements within the very small minerals. For instance black color is related with magnetite. If the obsidian is very much oxidized, then the glass may include hematite, which gives obsidian a reddish color. If volcanic glass contains iron, it tends to have a greenish sheen (Balkan-Atlı, 2008: 191).

In nature we see obsidian in large massive flows, particularly as lumps or beds in rhyolite flows. Extracting pieces of obsidian from an original deposit is rather difficult, which is the reason why prehistoric knappers gathered material from secondary sources such as talus slopes and streambeds. In these places knappers could get “secondary” chunks or nodules due to the eroding of the original source (Whittaker, 1994: 69).

Pending its geologically determind quality, obsidian is an ideal raw material, preferrably for tool production. Since it is more delicate than many other materials and provides a fine cutting edge, it is easier to produce the desired form, for instance a blade or arrowhead, hunting equipment or butchering tools (Moorey, 1994: 64).

Listed below is the common vocabulary of obsidian production techniques and shapes.

Bevelled:	Defines a tool edge which is modified by the removal of a series of flakes in order to manufacture a desired edge angle.
Biface:	Biface is a tool that contains two surfaces which get together to form a single edge which identify the tool. Both faces generally have flake scars which are located at least half-way across the face.
Bifacial thinning flake:	These kind of flakes are removed with biface cutting. Generally they have a significant platform which is rounded or ground.
Bipolar flake:	A bipolar flake is a detached piece that is formed by compression forces. Bipolar flakes usually contain signs of impact on opposing ends and have compression rings which are moving it two directions toward one another.
Bipolar technology:	A technique of resting the objective piece on an anvil and striking it with a hammer to split or remove a detached piece.
Blank:	A blank is a detached piece which can be transformed into a specific tool.
Collateral flaking:	Removal of expanding flakes which are separated from the lateral margins of an objective piece at right angles through the longitudinal axis.
Conchoidal fracture:	Defines the manufacturing of smooth convexities or concavities, which is like clamshell after fracturing.
Conchoidal flake:	A conchoidal flake has the features of conchoidal fracture. They have a dorsal and ventral surface.
Core:	A core is a mass of rock that shows the marks of detached piece removal. Cores are like a source for detached pieces.
Core tool:	Actually this is a core, but used as a tool for chopping, cutting or other activities. It is not a source for detached pieces.
Debitage:	These are the detached pieces which are discarded during the reduction process.

Detached piece:	A piece of rock which is removed from an objective as a result of percussion or pressure. These are often referred to as flakes, spalls, chips, and debitage.
Diagonal parallel flaking:	The process is similar to parallel flaking however the flakes are removed at an oblique angle to the piece edge.
Microlith:	A microlith is a small blade which is basically geometric in form used for composite tools.
Parallel flaking:	A method of striking with a percussor to detach flakes from an objective piece. Different methods of percussion flaking using different kinds of percussors tend to produce distinctive detached pieces.
Pressure flaking:	In this process a detached piece is removed by pressing rather than percussion.

(Andrefsky 2000: XXI-XXVII)

The history of scientific obsidian studies is a fairly recent subject in archaeology. Early endeavours comprise macroscopic observations, density measures and mass spectrometry, all applied to define source groups and establish a link between possible sources and artefacts. At the end of the 1960s and the beginning of the 1970s, X-ray fluorescence and Neutron Activation Analysis were intruduced to obsidian studies, here already applied to highlight interregional exchange, trade patterns and interaction. Since the 1980s, obsidian studies are generally increased, and maintained with considerable intensity in any part of the world were obsidian occurs (Shackley, 2008: 199).

Geochemical analysis techniques are applied to characterise obsidian. These techniques provide the identification of the elemental composition of the artifacts, and give the proportion of varied elements such as barium, sodium, manganese, or dysprosium in the sample. These elements provide the “fingerprint” that allows to determine where the raw material for the artifacts comes from (Andrefsky, 2000: 41-42, Leute, 1987: 101), hence the key issue to identify and reconstruct the travelling of volcanic glass.

There are different geochemical analysis techniques: Each of them provides a different type of information but also each of them requires a different kind of sampling. Some techniques scan only on the outer surface, other approaches require the destruction of the whole sample (Andrefsky, 2000: 42). Their brief description should suffice to render an impression of their capabilities and limitations.

4.1 X-Ray fluorescence spectrometry (XRF)

This technique only evaluates the surface of the sample, since it penetrates it just about 200 microns. Sometimes samples are crushed to powder in order to analyze the whole sample, not only the surface of it (Andrefsky, 2000: 42).

During the XRF scanning, the sample is irradiated by an X-ray beam. This irradiation excites electrons to a high level. After that electrons settle back and emit a secondary of fluorescent X-rays. These X-rays yield characteristic wavelengths of different elements. While measuring the intensity of X-rays at different wavelengths, it is possible to evaluate concentration of different elements in the sample, minding the eventually changing surface characteristics in different areas (Andrefsky, 2000: 42-43).

4.2 Particle included X-ray emission analysis (PIXIE)

PIXIE technique is very similar to XRF, since they are based on the same kind of electron excitement and emission. Here the beam only focuses on a relatively small area, and not the entire surface. One has to polish the surface of the sample carefully to get reliable results, eventually doing harm to the surface of the sample (Andrefsky, 2000: 43).

4.3 Electron microprobe analysis (EMPA)

This application is considered to be the most comfortable method of elemental analysis, since one can manage to analyse single crystals without any destruction of the rock's texture. It is furthermore possible to apply this technique to a complete artifact or a sample from an artifact. During the EMPA processing, the sample is scanned with an electron beam which causes the mineral to emit secondary X-rays, measured in the same manner as with X-Ray Fluorescence (Andrefsky, 2000: 43).

4.4 Instrumental neutron activation analysis (INAA)

In this technique the sample is irradiated in a nuclear reactor by an extended neutron bombardment. It this process some elements undergo nuclear reactions, producing radioactive isotopes and an amount of gamma photons. This technique is non destructive but useless for big specimens, however a high accuracy is guaranteed (Andrefsky, 2000: 43).

4.5 Inductively coupled plasma emission spectroscopy (ICP)

While applying ICP, a solution of the sample is heated to about 6.000 degrees until it is transformed to plasma. The solution is injected into argon and heated with a radiofrequency coil. The emission spectrum is analyzed in order to show the elements and their relative concentrations. Its advantage is that the procedure requires only 00.3 g of sample (Andrefsky, 2000: 44).

4.6 Atomic absorption spectroscopy (AAS)

In the process of AAS, the sample is crushed, put into a solution and sprayed into a flame with the compounds in the sample separating their atoms. The light spectra of the characteristic wavelength of the element can be evaluated according to the flame colours, revealing the concentration of each element (Andrefsky, 2000: 44).

CHAPTER 5

OBSIDIAN SOURCES IN ANATOLIA

Near Eastern obsidian deposits have a rather clearly defined distribution pattern. All the obtainable sources in Turkey, the Caucasus and some Aegean islands are clustered in areas with ancient volcanic activity (Figure 3). In our case, Caucasian sources are less relevant for Near Eastern Neolithic studies due to the fact that these sources were used predominantly within the limits of Transcaucasia, albeit a few exchanges happened with the neighboring regions. Hence, Anatolia and its obsidian deposits are the key areas for studying Neolithic interactions (Chataigner, Poidevin, Arnaud, 1998: 518).

In terms of location, obsidian sources in Anatolia can be separated into several different groups: Central Anatolia, Southeastern Anatolia, Northeastern Anatolia, Northern and Western Anatolia. Colin Renfrew attempted to classify Anatolian obsidian sources regarding their element composition and concentration (Renfrew, Dixon, Cann, 1966: 33):

Group 1: This group, which can be further subdivided into three subgroups, comprises sources in Cappadocia (Karakapu-Hasan Dağ, Acıgöl) and East Anatolia (Kars), and contains a high percentage of Barium and low or sometimes moderate percentages of Zirconium (Renfrew, Dixon, Cann, 1966: 33).

Group 2: High barium (200ppm) and low zirconium (30ppm) are the features of group 2b. This group is represented in the source of Çiftlik in Cappadocia (Renfrew, Dixon, Cann, 1966: 33).

Group 3: This cluster contains generally higher zirconium and barium rates, and is related with northeastern Anatolian sources (Renfrew, Dixon, Cann, 1966: 33).

Group 4: This group contains barium less than 30ppm and zirconium up to 1000ppm. In the Near East it has 3 sub-groups; 4c is related with Nemrut Dağı deposits and 4f is represented by Karnıyarık Kepez in Cappadocia (Renfrew, Dixon, Cann, 1966: 33-34).

In Central Anatolia, obsidian outcrops are located in the provinces of Nevşehir, Niğde and east and south-east of the south end of the Tuz Gölü (Figure 4) (Todd, 1980: 30). Kaleiçi, Acıgöl, Güneydağ, Kocatepe-Acıgöl and Hotamış Dağ are the known obsidian sources in the Acıgöl area (Todd, 1980: 30), with the 25-16 million year old Acıgöl and Çiftlik deposits being the geologically oldest obsidian beds in Anatolia (Ercan, Şaroğlu, Kuşcu 1994: 506).

Obsidian sources in the Göllü Dağ region (Niğde, Melendiz plain) are known from the Kömürcü Köyü area, Sırça Deresi and Kayırlı (Todd, 1980:33).

Chemical analyses show that Göllü Dağ obsidians can be separated into two groups (Chataigner, Poidevin, Arnaud 1998: 525); Göllü Dağ-East contains domes and dome-flows, which were diffused to numerous archaeological sites in Syria and Levant (Chataigner, Poidevin, Arnaud, 1998: 525), but also used by the Aşıklı Höyük community itself in the 8th millennium BC. With the beginning of pottery use (6.000-5.000 BC), Göllü Dağ obsidians were widely diffused to places such as Çatalhöyük and Mersin. After 5.000 BC, we witness a shift to the west of Anatolia, for instance the Marmara region (Fikirtepe, Pendik and Ilıpınar) and the Aegean littoral (Sivri Tepe) (Chataigner, Poidevin, Arnaud, 1998: 525). Few examples from Cyprus (six specimens from Khirokitia, dated to about 7.700 BC) provide furthermore evidence for maritime trade (Figure 5) (Renfrew, Dixon, Cann, 1968: 325).

Göllü Dağ-West obsidian, on the contrary, has a limited diffusion because of its lower quality (it fractures easily), albeit some examples were found in Aşıklı Höyük (Chataigner, Poidevin, Arnaud, 1998: 526).

Nenezi Dağ (Acıgöl district) (Todd, 1980:34) bears a high dome with a large obsidian flow on its western bank. We have many examples from Turkey, Cyprus and Israel where obsidian of this particular source was identified (Figure 5), (Chataigner, Poidevin, Arnaud, 1998: 523-524).

Hasan Dağ also has some, however highy poisonous Barium-rich obsidian sources (Karakapı and Tahtayayla) (Ercan, Şaroğlu, Kuşcu, 1994:506), but these deposits were obviously never exploited in prehistory (Chataigner, Poidevin, Arnaudi 1998: 526).

(South)east Anatolia has likewise rich obsidian sources (Figure 6) which were used by many Neolithic communities (Figure 7) (Chataigner, Poidevin, Arnaud 1998: 529).

In the Bingöl area obsidian is generally gray and black, rarely green and red in color. Çatak, Alatepe and Çavuşlar regions are the important obsidian bends in this area (Ercan, Şaroğlu, Kuşcu, 1994: 506).

Geochemically, Bingöl obsidians can be separated into two groups, namely Calc-alkaline and per-alkaline sources (Chataigner, Poidevin, Arnaud, 1998: 529). Calc-alkaline sources extend almost all the way throughout Turkey. On the contrary, per-alkaline specimens are found only in the region of Bingöl and Nemrut Dağı (Cauvin, Chataigner, 1994: 529). Bingöl calc-alkaline deposits were widely diffused: Hallan Çemi examples are dated to 10.600 BC, and in 10.300 BC Middle Euphrates sites such as Cheikh Hassan and Mureybet, and Tell Aswad in the Damascus region contain Bingöl calc-alkaline obsidians. In 9.600 BC, Bingöl calc-alkaline examples were diffused to the Zagros region such as Shimshara, Jarmo and Ali Kosh. Bingöl calc-alkaline examples were found in the Middle Euphrates and the upper Mesopotamia- Zagros region until the Halaf Period (ca. 6.500-5.500 BC). After this period this source was likely supplanted by another eastern Anatolian source. At about 6.000 BC, Bingöl calc-alkaline examples diffuse into the Levant such as Byblos and Abu Zureig. Afterwards, this source reappeared again in the upper Euphrates area (Değirmentepe), with its presence attested as far as Uruk in southern Mesopotamia (Chataigner, Poidevin, Arnaud, 1998: 529).

In contrast, Bingöl per-alkaline deposits have again a limited diffusion. In 7.600 BC, the upper Tigris region (Çayönü) and upper Euphrates (Cafer Höyük) revealed some Bingöl per-alkaline examples (Chataigner, Poidevin, Arnaud 1998: 530). Some specimens are reported from Cafer Höyük (Malatya province, dated to 7.300-6.500 BC) which were archaeometrically analyzed, revealing that all examples are from Bingöl (Bigazzi, et al.1998: 83). Çayönü examples show that they are both from Bingöl and Lake Van obsidian sources (Bigazzi et al. 1998: 83). The diffusion of those is traceble in northwestern Iraq until 6.600 BC, with Magzalia being a reference findspot. In Yarim Tepe II and the middle Euphrates (Tell Halula), the diffusion continued until the late 6th millennium BC. In 4.000 BC, on the upper Euphrates, Değirmentepe (cf. *supra*) yielded Bingöl per-alkaline examples (Chataigner, Poidevin, Arnaud, 1998: 530/532).

Continuing or survey of East Anatolian obsidian deposits, Nemrut Dağı volcanic glass sure enough counts amongst the most prominent sources in prehistory. It remained to be an active volcano until AD 1441, so far the latest volcanic eruption in Anatolia (Ercan, Şaroğlu, Kuşcu, 1994: 505).

Nemrut Dağı obsidian has been identified at many archaeological sites from the Neolithic to the Bronze Age. Reviewing the evidence from southwest Syria (Tell Aswad), the diffusion of the materials started in about 8.300 BC (Chataigner, Poidevin, Arnaud, 1998: 533). Nemrut examples are present also in the northern Zagros (Paleolithic Shanidar and Epipaleolithic Zarzi). In Anatolia, Çayönü, Cafer Höyük and Hallan Çemi also contain Nemrut examples. In the Jordan valley and the Levantine coastal zone, Nemrut obsidians are found around 4.500 BC, such as in Munhata and Abu Zureig (Chataigner, Poidevin, Arnaud, 1998: 533). Southern Mesopotamia (Ubaid and Larsa) yielded likewise Nemrut obsidian, with single artefacts reaching as far as the western banks of the Persian Gulf (Chataigner, Poidevin, Arnaud, 1998: 533).

Sources that were mainly, if not exclusively used only locally include the geochemically still not very well attested Süphan Dağ obsidian (Ercan, Şaroğlu, Kuşcu, 1994: 505; Chataigner, Poidevin, Arnaud, 1998: 534) and volcanic glass from Ziyaret Dağı (with at least few specimens attested in Upper Mesopotamia), all of them located in the vicinity of Van Gölü (Chataigner, Poidevin, Arnaud, 1998: 534).

Northeastern Anatolia also has some obsidian sources, mainly located in the vicinitiy of Erzincan, Erzurum, Pasinler, Sarıkamış, Kars and İkizdere (Figure 8) (Ercan, Şaroğlu, Kuşcu, 1994: 506; Chataigner, Poidevin, Arnaud 1998: 526). These sources were exploited by Chalcolithic and Early Bronze Age communities of the Bayburt and Erzurum areas, such as Sos Höyük, Pulur, Büyük Tepe and Gundulak. (Chataigner, Poidevin, Arnaud, 1998: 529).

Northern Anatolia also yielded some obsidian sources which are located north and northwest of Ankara, namely Yağlar, Sakaeli-Orta and so-called Galatia-X (Figure 9) (Chataigner, Poidevin, Arnaud, 1998: 520; Bigazzi, Poupeau, Yeğingil, Bellot-Gurlet, 1998: 74). The Galatian-X source is not a source that is spatially identified, hence its odd designation. Eight chips of worked obsidian, lacking further archaeological context, had been collected on the surface near the village of Güdül, 40 km. northwest of Ankara (Bigazzi, Pouoeau, Yeğingil, Bellot-Gurlet 1998: 86). According to XRF and INAA analysis, these eight samples bear chemical features are clearly different from all the other Anatolian obsidian sources (Keller, Bigazzi, Pernicka, 1994: 545). The chemical composition of the Güdül artefacts testifies to a homogenous group which shows that this Galatia-X source is clearly distinguishable from the two other Galatian sources, like Yağlar and Sakaeli-Orta (Keller, Bigazzi, Pernicka, 1994: 549). Galatia-X possibly derives from the Galatian volcanic complex, but has not been recognized yet, since it is possibly buried under alluvium or it has been exhausted through exhaustive exploitation (Bigazzi, et. al.1998:, 1998: 86).

Yağlar and Sakaeli-Orta sources were used by some Neolithic villages in the Marmara focus, such as Fikirtepe, Pendik and Ilıpınar (Chataigner, Poidevin, Arnaud, 1998: 523).

There are some small deposits in Kütahya, Kalabak Valley (near Eskişehir) and Foça (north of the İzmir) (Figure 10). The deposit samples indicate that these sources are not good for tool making (Chataigner, Poidevin, Arnaud, 1998: 523), since they are too much fragile (Bigazzi, et. al.1998: 1998: 74).

Some obsidian sources are also known from regions neighboring Anatolia. Aegean obsidian sources are located in Melos, Antiparos and Gilai (Figure 11), with Antiparos deposits presumably not having been exploited in prehistoric times. Gilai obsidian source has a restricted distribution in Middle Bronze Age or later eastern Aegean and Cretan communities. Analyses show further on that Troia and Beşiktepe obsidians are related with the source of Adhamas on the Cycladic island of Melos (Pernicka et. al.1994: 515).

Finally, the Caucasus bears some obsidian sources, namely Arteni, Atis, Gutansar, Spitaksar, Choraptor, and The Sjunik group (Bazenk, Sevkar, Satanakar) (Figure 12) (Keller et. al. 1996: 70-72). Almost exclusively used by Transcaucasian communitites, few exceptions prove that Chalcolithic Arslantepe and Tal-e Malyan in Southern Iran benefitted from Caucasian obsidians (Keller et al.1996: 75).

In the following chapters, the chronology, architecture and artifact assemblages of selected “model sites” referred to in the introductionary chapter will be presented and discussed, to provide the material foundation for further discussions concerning lithic technologies, trade and social issues. Our survey starts with Aşıklı Höyük, a large Pre Pottery settlement in the Aksaray district. Musular, the Kömürcü-Kaletepe workshop, Tepecik-Çiftlik, Köşk Höyük and Çatal Höyük then follow a similar descriptive pattern.

CHAPTER 6

AŞIKLI HÖYÜK

6.1 Location

Aşıklı Höyük is located in the province of Aksaray, approximately 25 km southeast of the provincial center (Figure 1) (Esin, Harmankaya, 1999: 117).

6.2 Geographical Setting

The Melendiz valley is known as a fertile and varied environment. The site was subject to erosion due to the impact of the Melendiz River especially at the northern, eastern and southern edges of Aşıklı Höyük. Today Aşıklı Höyük is sized 4ha, but it was possibly larger in the Neolithic (Düring, 2006: 72).

6.3 Stratigraphy and Chronology

Layers	Phases	Estimated calibrated dates BC
1	-	7.500-7.400
2	2a-b-c-d-e-f-g-h-ı-j (10)	8.000-7.500
3	3 a-b-c (3)	8.200-8.000

Aşıklı Höyük Stratigraphy (Düring, 2006:73)

The stratigraphy of Aşıklı Höyük consists of three main layers, which are named 1-3 from top to bottom. Layers 2 and 3 have some multiple building phases that are indicated by letters (Düring, 2006: 73; Esin, Harmankaya, 1999: 118).

Top soil agricultural activities disturbed Layer 1, which presumably destroyed most of its archaeological features (Esin, Harmankaya, 2007: 257). Layer 2 then bears the main cultural features of the Aşıklı Höyük Pre-pottery Neolithic culture (Düring, 2006: 73; Esin, Harmankaya 2007: 118-119). A flood horizon separates Layer 2 from Layer 3, which has similar building remains as Layer 2. The last two additional excavation seasons revealed a number of oval buildings under Layer 3, sub-phase C (Layer 3 has three sub-phases which are called a, b and c). However, it is not clear whether these oval buildings belong to Layer 3 or they indicate a new layer (Layer 4) (Düring, 2006: 73).

Although we have three main layers at Aşıklı Höyük, an additional settlement part was found next to the Melendiz River. This part must have been affected by a sudden flood due to the fact that it was inundated by a deep layer of gravel (Esin, Harmankaya, 1999a: 103). The architecture does not differ at all from Aşıklı Höyük's main layers. The inhabitants of Aşıklı probably left this area after the flood, and moved to the area where Aşıklı is located (Esin, Harmankaya, 2007: 256).

The accumulated 47 radiocarbon samples put Aşıklı Höyük 8.200-7.400 BC, hence the Pre Pottery Neolithic B (Düring, 2006: 73).

6.4 Architecture

A recently published reappraisal of Aşıklı Höyük's architecture (Düring, 2006) highlights the complex and sophisticated manner of Aşıklı's clustered rectangular mudbrick dwellings: Streets and alleys divide the settlement into blocks, while the clustered small domestic loam buildings (Esin, 2000: 22-24; Esin, Harmankaya, 2007: 268) remain in contrast to large monumental complexes, differing in many aspects like measurement, the number of rooms, internal courtyards, building technique and used materials (Figure 13-14-16) (Düring, 2006: 76; 101-102; Esin, Harmankaya, 2007: 263). Most significant are painted floors in building "T" (Figure 15), a rather unusual feature for domestic loam structures (Esin, Harmankaya, 2007: 263). Midden areas do also exist, containing the usual range of flaking debris, bone tools or other garbage, but are not published in detail yet (Düring, 2006: 76-77; Esin, Harmankaya, 2007: 258-262).

6.5 Burial Practices

Concurring with the general Neolithic tradition, the burial custom of Aşıklı Höyük is intramural. That said, with about 400 building units excavated, just 70 burials were found, which hardly represent the overall population that once lived here. There is no uniform burial position; sometimes individuals were buried in hocker, sometimes in dorsal position (Esin, Harmankaya, 1999: 126; Esin, Harmankaya, 2007: 265). Remarkable indeed are the results of physical anthropology, revealing that some bodies were fired before they were buried. Since wooden fragments were associated with some burials, this situation might indicate that the bodies were buried just after they were exposed to fire (Özbek, 1993: 201-208, Özbek, 1994: 27-28). This firing custom has been identified both for male, female and children skeletons. Some examples show evidence for trepanation. Most enlightening is the observation that some deformations on female skeletons were identified on the neck and the backbones. Due to the fact that there are no deformation traces attested at male skeletons, the impression is rendered that females worked in hard conditions, like being obliged to carry heavy loads already at a young age (Özbek, 1993: 201-208, Özbek, 1994: 27-28).

6.6 Fossil Records

Animal bones and plant remains associated with Layer 2 testify to a subsistence that is still based on hunting and gathering. Although some domesticated plant examples are reported, the percentage of them is rather small (Esin, Harmankaya, 2007: 266).

6.7 Chipped Stone Industry

The chipped stone industry of Aşıklı Höyük mainly consists of obsidian. This is not surprising, since the mound is placed in a region rich in obsidian resources (Balkan-Atlı 1994: 209, Düring, 2006: 75).

Nenezi Dağ and Kayırlı obsidian sources supply the whole obsidian demand of Aşıklı Höyük. It seems like that the obsidian has been taken and brought to the site in the form of blocks, while the knapping itself was done at Aşıklı Höyük (Esin, Harmankaya 2007: 266, Balkan-Atlı 1994: 209, Düring, 2006: 75). However, the determination of the Aşıklı type cores at Kayırlı and also Nenezi Dağ show us that the knapping process was also performed at these places, probably to avoid an extra weight and guarantee an easier transportation (Esin, Harmankaya, 2007: 266).

Aşıklı Höyük yielded two types of cores. The first is classified as the "opposed platform core" with two striking platforms on opposite sites, which is common in Aşıklı Höyük (Figure 18). Opposed platform cores were used for the production of blades by hard percussion technology. Neither pressure technique nor indirect percussion was identified in the knapping procedure. The other type is called "single striking platform core", which has a pyramidal shape (Figure 18). These cores were used for flakes (Balkan-Atlı 1994: 209, Esin, Harmankaya, 2007: 266, Düring, 2006: 75).

Microliths occur in varied forms, such as obliquely truncated bladelets (Figure 19: 9,11,14,16), pointed bladelets (Fig.7:10), rarely notched or denticulated bladelets (Figure 19: 15) in shapes of small triangles and lunates (Figure 19:1-8,12,13) (Balkan-Atlı, 1994: 215).

Arrowheads (see Figure 19 for an impression of their typological range) and piercing tools (Figure 20: 1-2) are fairly rare (Balkan-Atlı 1994: 215, Esin, Harmankaya, 2007: 266), while scrapers are the most abundant tool type in Aşıklı Höyük (Balkan-Atlı 1994: 215, Esin, Harmankaya 2007: 266). They can be categorized as simple end scrapers, double scrapers, semi-circular scrapers, and circular scrapers (Balkan-Atlı, 1994: 215).

Blades with steep, crossed or alternating retouch (cf. Figure 21), however small in percentage, also are attested at Aşıklı. (Doube-) truncated examples are rare, generally they are obliquely truncated (Figure 21: 1, 2, 5-7) (Balkan-Atlı, 1994: 221).

Although they are scarce, we also have some burin examples such as transverse burins (Figure 22: 8) and dihedral burins (Figure 22: 5) (Balkan-Atlı, 1994: 221).

The cores, microliths, points, piercing tools, scrapers, blades, and burins in Aşıklı Höyük testify to a considerable variety of lithic equipment. Microliths indicate that people retained some old Epi-Palaeolithic traditions (Binder, 2002: 83, Esin, 1994a: 87). The increment of the scrapers in Aşıklı Höyük from the old levels to the new levels show us the hunting and leather working activities increased periodically which seems to be related with a general increase of the Aşıklı Höyük's population (Esin, 1999a: 105). The overall impression of Aşıklı Höyük's lithic is that of a rather modest housework production (Binder, 2002: 84).

6.8 Small Finds

Burial gifts comprise necklaces and bracelets which contain pierced beads. These beads are made of copper, deer teeth semi-precious or simple stones (Figure 17) (Esin, 1999b: 27).

12 annealed copper beads (Figure 23) prove that native copper and malachite were used at Aşıklı Höyük for the production of the beads. Special studies indicate the so-called re-crystallistation of "twin structures" in native copper, which proves that annealing (the application of heat to ease the shaping of metal) was indeed carried out at Aşıklı Höyük as an experimental approach to metalwork. (Esin, 1999b: 29, Esin, 1995: 67).

Copper sources are known from Central Anatolia with deposits at Menteşe, Bakırlık, or Sızma (Esin, 1999b: 29), but located at least 250 km far from Aşıklı Höyük. However, Ufuk Esin suggests another source, "Bakır Çukuru" (Copper Hole), located only about 40 km southwest of Aşıklı Höyük, which might be –pending analytical studies of its chemical composition- a good candidate for the copper Aşıklı was supplied with. (Esin, 1999b: 29).

6.9 Non-Local Materials

Aşıklı Höyük contains a stone plaque that has been found near the northeastern section of the excavation. The external surface of this plaque was decorated with "V" and "O" symbols (Figure 24). (Esin, Harmankaya, 2007: 269; Stordeur et al. 1996: 1-2). Due to its utmost significance to illustrate interregional connections, this item will be discussed separately in our Synthesis Chapter.

CHAPTER 7

MUSULAR

7.1 Location

Musular is located in Central Anatolia, Aksaray province, Gülağaç district, Kızılkaya Village (Figure 1) (Özbaşaran, 1999: 148). It is situated very close, only 300/400m west of Aşıklı Höyük (Özbaşaran, 2000a: 129).

7.2 Geographical Setting

In contrast to Aşıklı Höyük, Musular is a flat settlement. It is located above a volcanic tufa rock formation. The Melendiz stream, whose ancient riverbed is unknown, today flows between Aşıklı and Musular (Duru, Özbaşaran, 2005: 18). Musular is about 220 x 120 m in size (Kayacan, 2003: 3) and was heavily affected by modern agricultural activities (Özbaşaran, Endoğru, 1998: 200, Özbaşaran, 2000b: 47).

7.3 Chronology

Musular revealed Pre-Pottery Neolithic, Pottery Neolithic and Early Bronze Age materials. The Pre-Pottery Neolithic of Musular is radiocarbon-dated to the mid 8^{th} millennium BC (Özbaşaran et al., 2007: 274), the -due to erosion and modern agriculture- badly preserved pottery Neolithic, pinned down with only one single 14C-date, hovers with some uncertainly within the final quarter of the 6^{th} millennium BC (Özbaşaran et al. 2007: 278, Özbaşaran, 2000b: 131).

7.4 Architecture

The Pre-Pottery Neolithic architecture of Musular consists of weakly preserved buildings A and the better conditioned units N and Z, together with some rock-cut and built channels (Figure 26) (Özbaşaran et al, 2007: 274).

Building A, however, is the most significant dwelling at Musular, since it revealed floors covered with red painted lime plaster, whose spatial scattering actually helped identifying the original plan of the building (Figure 27). Building A is furthermore constructed on a sloping section of the bedrock, but the east part of the building stands on filled soil. Exactly this sloping ground might have caused drainage problems, so various channels had been carved into the bedrock around the building to challenge this problem (Duru, Özbaşaran, 2005: 18, Özbaşaran et al, 2007: 274-275).

The remaining built channels, however, may not have been associated with any precipitation, but some kind of activity while hiding animals, which might have taken place in the building itself, where liquids like blood and water to wash the floor had to be disposed efficiently. (Duru, Özbaşaran, 2005: 18-19, Özbaşaran et al., 2007: 275).

To the east of the Building N, a hollow part in the bedrock containing animal bones in abundance was obviously used as a midden area or dumping spot. The area near the Building T at Aşıklı could have been used in a similar manner (Duru, Özbaşaran, 2005: 19).

7.5 Chipped Stone Industry

The chipped stone industry of Musular is –once again- mainly obsidian (Figure 28) (Özbaşaran et al, 2007: 275, Kayacan, 2003: 3), with six different colour clusters, ranging from transparent to black with smokey stripes (Kayacan, 2003: 3)[1].

Analyses revealed that type 1 and 2 come from the Kayırlı source of the Göllüdağ, which is 30 km southeast of Musular. Type 3 and 4 come from Nenezi Dağ which is 20 km east of the site. All the types have been used all the levels of Musular, but type 1 and 2 is more abundant at the earliest level (Kayacan, 2003: 6). These different types also affect the obsidian technology of Musular: Göllüdağ examples are more fragile and sharper than Nenezi examples. Because of that, the former had been mainly used to produce small blades. On the contrary, Nenezi examples have been used for big and thick blades (Özbaşaran et al, 2007: 275).

Technological List	Number	%	
Flakes with natural surface	392	9.07	
Flakes without natural surface	2240	51.89	
Total flakes			%60.96

[1] 1- Transparent, 2- Smokey Grey, 3- Striped Green, 4-Green Opaque, 5- Striped Grey, 6- Black with Smokey Stripes

Uni-directional cores	2	0.046	
Bi-directional cores	3	0.069	
Exhausted, amorfical cores	14	0.32	
Total cores			%0.335
Opening platform	5	0.11	
Tablet	7	0.16	
Debitage surface correction pieces	2	0.046	
Frontal crested blades	100	2.31	
Lateral blades with frontal			
Crested blades	122	2.82	
Lateral blades with posterior			
Crested blades	36	0.83	
Total crested blades			%5.96
Blades with natural surface	98	2.27	
Unidentified blades	43	0.99	
Upsilon blades	93	2.15	
Uni-directional central blades	591	13.69	
Bi-directional central blades	512	11.86	
Unidentified central blades	56	1.29	
Total central blades			%28.99
TOTAL	4316	%100	

Table 1: Technological List (Kayacan, 2003: 6).

The rareness of flakes with natural surfaces and the opening platforms indicate that the obsidian blocks had been pre-formed before they were brought to Musular. Blades themselves comprise different groups such as crested blades, lateral blades and central blades. The central blades have 3 different types; uni-directional central blades which have thick and straight profiles, and bi-directional central blades which are thin and have twisted profiles. Cores are also rare and examples are all sections of the cores were used, which obstructs further insight into the applied knapping techniques (Kayacan, 2003: 7, Özbaşaran et al., 2007: 275).

Typological List	Number	%
Scrapers	132	53.01
Arrowheads	54	21.68
Borers	1	0.40

Burins	2	0.80
Splintered pieces	11	4.41
Retouched blades	14	5.62
Retouched flakes	36	14.45
TOTAL	250	%100

Table 2: Typological list (Kayacan, 2003: 7).

The above typological list of the chipped stone industry comprises scrapers, highly standardized arrowheads, borers, burins, splintered pieces, retouched blades and flakes (Figure 29). The huge amount of the scrapers, however, indicate that some sort of hide processing was predominantly carried out at Musular. (Kayacan, 2003: 7, Özbaşaran, et al, 2007: 276, Duru, Özbaşaran, 2005: 22-23).

In contrast to obsidian, flint is extremely rare in Musular. Only 30 pieces out of 10.000 chipped stone examples are flint. They are of yellowish green color and of good quality (Figure 30). The absence of knapping wastes or flakes might indicate that all flint examples were produced outside of Musular (Kayacan, 2003: 6, Özbaşaran et al, 2007: 276).

7.6 Pottery

Although not essential for the scope of this thesis, a few words should be said about the pottery from Musular. Ceramics are represented by about 1.500 pieces and can be separated roughly into two phases. Some of them belong to the Late Neolithic period and the others dated to an even later phase, possibly the Early Bronze Age. The Neolithic pottery of Musular is of course handmade, bowls and pots are predominant (Özbaşaran et al. 2007: 279-280).

7.7 Fossile Records

Studies on animal bones show a dominance of the cattle (57%). Sheep and goat follows (39.1 % and 10.47%), other animals (horse, reed deer, boar, dog/wolf) remain inferior in number. The dominance of cattle might indicate that Musular was used for activities before and after hunting (Duru, Özbaşaran, 2005: 22).

CHAPTER 8

KÖMÜRCÜ-KALETEPE OBSIDIAN WORKSHOP

8.1 Location

The Kömürcü-Kaletepe obsidian workshop, no regular settlement but a feature exclusively related to the exploitation and processing of obsidian, is located in Central Anatolia near the city of Niğde, Göllüdağ province, Kömürcü village (Figure 1) (Balkan-Atlı et al. 1999: 3).

8.2 Geographical Setting

Kömürcü-Kaletepe is placed on the northern slope of the Göllüdağ, on a rhylotic formation which has an altitude of 1.600 m and measures 4 hectares (Figure 31) (Balkan-Atlı, Binder, 2001: 1).

8.3 Stratigraphy

"Sector P" is a workshop, whose 5 layers are dated to the Pre-pottery Neolithic period (Balkan-Atlı, Binder, 2007: 218):

1st Layer: A layer of red soil with 10 cm thickness.

2nd Layer: A gray-yellow accumulation, which is dated to Late Pre-Pottery Neolithic.

3rd Layer: A yellow accumulation, which is dated to 8.300-8.200 BC.

4th Layer: Another accumulation that could not be dated.

5th Layer: This layer contains obsidian blocks and Middle Paleolithic features.

6th Layer: Rhyolite bedrock.

8.4 Chipped Stone Industry

The main reason for excavation was the huge amount of naviform bidirectional cores (Figure 32) found during surveys. This core style is specific for Kaletepe, and has not been found in any other Anatolian Neolithic site. These naviform cores have long and narrow triangular sections, with two oblique and one flat striking platforms opposed to each other (Figure 32). They also have a crested back, with the debitage surface running parallel (Balkan-Atlı, Binder, Cauvin, 1999: 138).

These cores were used in the process of bidirectional blade production, a practise demanding high expertise (Balkan-Atlı, Binder, 2007: 219, Balkan-Atlı, Binder, 2001: 8-9). In this process, the main purpose is to produce a long standard pointed blade (Balkan-Atlı, Binder, 2001: 12). Kaletepe itself does not have many examples of these long standard pointed blades, indicating that these blades were probably produced for trade. These blades were then used for the production of arrowheads -one of the most important items in the Neolithic- shedding some light on the potential of these prefabriced products in the trade network (Balkan-Atlı et al. 1999: 6-7).

Prismatic blade production is the other special technique observed at Kaletepe, which is also performed on bifacial pre-forms as bidirectional blade production. Following Binder and Balkan-Atlı, the purpose of this production is a serial manfacturing of prismatic blades, which are 75mm long, 11m wide and 3mm thick. Although the prismatic blade production looks easier than the bifacial blade production, this technique also requires a certain amount of proficiency (Balkan-Atlı, Binder, 2001: 12, Balkan-Atlı, Binder 2007: 219).

CHAPTER 9

TEPECİK-ÇİFTLİK

9.1 Location

Tepecik-Çiftlik is a mound located south of the Central Anatolian Plateau, southwest of the Cappadocia region, near modern Niğde, in the region of Çiftlik (Figure 1) (Bıçakçı, Faydalı, 2002: 29, Bıçakçı et al., 2007: 237).

9.2 Geographical Setting

Tepecik-Çiftlik is situated to the southwest of an enclosed plain, which is called Çiftlik or Melendiz Plain. In the Pleistocene period, there was a crater lake on the same spot as the modern plain. In the beginnings of the Holocene period, this crater lake was filled by ashes due to the volcanic eruptions and was turned into a plain, surrounded by mountains, namely today's Melendiz Mountain, Keçiboyduran Mountain, Küçük Hasandağ, and Hasandağ, as well as Göllüdağ in the north. The Melendiz plain is irrigated by a number of rivers, which originate from the Melendiz Mountain (Bıçakçı et al., 2007: 237, Bıçakçı, 2001: 26-27).

The location of Tepecik-Çiftlik is important because of the fact that it is placed near the Cappadocian obsidian sources such as Kömürcü, Kayırlı, Bitlikeler, Nenezidağ, Bozköy-İbliz and Sırça Deresi which is just 8.5 km far from Tepecik Çiftlik (Bıçakçı, Faydalı, 2002: 29).

9.3 Stratigraphy and Chronology

Tepecik-Çiftlik's stratigraphy indicates three main archaeological periods: Late Neolithic, Early Chalcolithic, and Middle Chalcolithic. C^{14} results of Tepecik-Çiftlik have not been released yet, however the archaeological material this site can be dated to between the mid 7th millennium BC and the mid/ end of the 6th millennium BC[2] (Bıçakçı et al., 2007: 247). The Middle Chalcolithic period is represented by layer 2. The 3rd layer is corresponding with the Early Chalcolithic period, layer 4 and 5 have been dated to the Late Neolithic period (Bıçakçı et al., 2007: 238).

9.4 Architecture

Although the Late Neolithic period is restricted to Layers 4 and 5, the architecture of the period is mainly represented by Layer 4, with the architectural remains of Layer 4 unfortunately being badly preserved. However, the southwest edge of a building called "AL" has been found (Figure 33). Further scattered building remains comprise unit "AL", "AM" and "AJ". (Figure 33) (Bıçakçı et al., 2007: 240-241, Bıçakçı et al., 2008: 484-485).

The area which is enclosed by a wall contains obsidian tools, their wastes and flakes and also animal bones. Due to these archaeological materials the excavator

[2] The absence of C^{14} results still casts some doubt on the overall accuracy of the proposed relative dating sequence.This also applies to Köşk Höyük which is another "Late Neolithic-Early Chalcolithic" site in the Cappadocia region (Schoop, 2005: 133-134).

defines this place as an activity area reserved mainly for knapping (Bıçakçı et al., 2007: 241). A similar housework or knapping activity can also be assumed for a building located in trench 16I (Figure 33) (Bıçakçı et al., 2007: 241).

Layer 5 is the oldest layer of Tepecik-Çiftlik, which is also dated to the Late Neolithic Period. Unfortunately, only some badly preserved, presumably open-air fire-places have been discovered (Bıçakçı et al., 2007: 241).

9.5 Burial Practices

Coinciding with Neolithic funeral customs, the burial practice of Tepecik-Çiftlik is intramural. Skeletons have been found mainly in hocker position. In some graves, burial gifts such as small jars or small beads were attested (Bıçakçı et al., 2007: 240).

9.6 Ceramics

In Tepecik-Çiftlik, the earliest layers already belong to the Pottery Neolithic. An increasing usage of organic temper has been identified in the entire layers of Tepecik-Çiftlik. In the Late Neolithic period, closed and open vessels without handles are common (Figure 34). The main pottery group consists of open-fired, mottled wares, although dark colored, black burnished wares are also known from the same context. Although not abundant in number, some imported examples were also found. They are black burnished and do not contain any organic temper (Bıçakçı et al., 2007: 242).

Some relief pottery with figural designs depicting animals and humans, hence resembling those of Köşk Höyük (*infra*) (Figure 35) was recovered in the "Chalcolithic" Layers 2 and 3 (Bıçakçı et al., 2007: 243, Bıçakçı, 2002: 139).

9.7 Chipped Stone Industry

The Tepecik-Çiftlik chipped stone industry is largely obsidian, with a marginal number of flint examples. Arrowheads have been identified in all layers (Figure 36), with bipolar cores used as prefabrics for them. The production process of the blades indicates two different approaches: the first technique requires some craft specialization. These blades might have been produced in workshops near the obsidian sources, with the shape finalized at Tepecik-Çiftlik. The second production technique, however, does not seem to require special proficiency, since these blades were produced rather coarse (Bıçakçı et al., 2007: 243-244).

Bifacial tools have also been found in Tepecik-Çiftlik. All examples belong to layer 5, the Late Neolithic period. Similar examples, commonly defined as pre-forms of spears, have been identified in Çatalhöyük-Doğu, Kaletepe, Kayırlı and Nenezi (Bıçakçı et al., 2007: 244).

9.8 Small Finds

In Tepecik-Çiftlik, common bone tools like awls and pins are amongst the small find assemblages. More elaborate items like figurines made from wild horse or donkey phalanx bones, rings and beads have also been found (Figure 37) (Bıçakçı et al., 2007: 245-246).

In Layer 5, one clay seal with spiral decoration was unearthed (Figure 38). Similar examples are known from many contemporary sites (Bıçakçı et al., 2007: 248).

These small finds are likewise significant in the context of Central Anatolian interregional relationships, and will be discussed further below.

CHAPTER 10

KÖŞK HÖYÜK

10.1 Location

Köşk Höyük is located near Niğde, in the center of the Bor Plain, northwest of Bahçeli (Figure 1) (Öztan, 2007: 223).

10.2 Geographical Setting

The site is placed on the northern slope of a limestone outcrop, at approximately 1.100 m altitude. The many water sources in the vicinity of Köşk Höyük must have been the main reason why people decided to settle here, as well as the agriculturally favorable soil of the Bor Plain, and sure enough the obsidian sources near Köşk Höyük (Öztan, 2002: 55, Öztan, 2007: 223).

10.3 Stratigraphy and Chronology

Köşk Höyük was mainly settled from Late Neolithic to the Early Chalcolithic period[3]. Layer 1 is dated to the "Early Chalcolithic". The Late Neolithic period is represented by layers between 2 and 5. On the south of the hill, Late Iron, Late Hellenistic, Roman and Medieval layers have also been attested (Öztan, 2002: 56, Öztan, 2007: 223-224).

10.4 Architecture

Late Neolithic architecture is represented in context with Layers 2 and 5. Lime stone is the common building material in all Neolithic/ Chalcolithic layers, which is hardly surprising, since Köşk Höyük is located on a limestone hill. (Öztan, 2007: 224).

In the Late Neolithic period, buildings have rectangular, square and sometimes trapezoid plans (Figure 39-40). Each building has at least two rooms, four is the maximum number. Each building contains a hearth and a 45-60 cm high bench, with the latter being filled with soil, covered with plaster, and located generally in the bigger room of the building (Öztan, 2002: 56, Öztan, 2007: 224). Each building possesses rectangular or square shaped small rooms for storage purposes. In Layer 3, one building contains a stone ladder which has four stairs (Öztan, 2007: 224).

Buildings were built very closely to each other, with narrow alleys and small open spaces, some used as middens, separating them. A burial found in Layer 3

[3] The dating of the Late Neolithic period of Köşk Höyük is a still problematic issue (Schoop, 2005: 133-134).

between two buildings can probably be taken as an indication that these midden areas were used also for burying individuals (Öztan, 2007: 225).

An extraordinary feature is a wall paiting found on the west wall in a multiple room building in layer 3 (Figure 41). The central scene consists of a big animal (possibly a deer), some people painted in dancing position, running, walking or standing are grouped around this animal. Red color was used for animal, while red, yellow, black and white colors were used for people, with some of them adorned with triangular shaped dresses, a scene that reminds one of wall paintings of Çatalhöyük. (Öztan, 2007: 224-225).

10.5 Burial Practices

Most information about burial practices at Köşk Höyük comes from layers 2 and 3. Generally, earth graves, jar graves, or both combined are found inside the buildings, placed under the benches or under the walls. In most cases, burials belong to the children or babes. Only two adult burials have been found in Layer 2 and 3, hardly rendering a holistic picture of Köşk Höyük'actual population in Neolithic times (Öztan, 2002: 57; Öztan, 2007: 225-226).

A truly surprising feature is the revival of the Near Eastern plastered skull custom (Figure 42). After the soft tissue deteriorated, facial details like eyes, nose and ears were re-shaped with clay. Sometimes black stones are used for the pupil of the eye, with the eyebrows represented as a straight line or a sickle shaped dent. After the plastering process some skulls have been painted with ochre. These plastered skulls were displayed either on the benches were buried underneath them (Öztan, 2007: 226).

10.6 Ceramics

Köşk Höyük Neolithic pottery handmade, and can be classified into 3 main groups (Öztan, 2007: 227).

Even not high in number, Köşk Höyük also contains anthropomorphic and zoomorphic pottery, tentatively designed for ritual purposes (Figure 43). In layers 2 and 3 one anthropomorphic and in layer 3 five zoomorphic examples have been found. (Öztan, 2007: 228).

The most significant pottery type of the Köşk Höyük has, however, relief decoration: Men, women and also animal figures such as bull, cow, donkey, deer, gazelle, leopard, turtle, fish and snake figures were depicted in hunting and reaping scenes (Figure 44-45) (Öztan, 2002: 58, Öztan, 2007: 228-229).

These examples with relief decoration can be compared with similar vessels from Tepecik-Çiftlik, probably indicating a continuity of this tradition into the advanced Chalcolithic (Bıçakçı et al., 2007: 243, Bıçakçı, 2002: 139).

10.7 Chipped Stone Industry

The obsidian stone industry of the Köşk Höyük can be observed in the 2 main levels and in 1 transitional level. Layer 5, which is the earliest layer, does not give much information because the quantity of the chipped stone examples is not sufficient for discussion. Layer 4, can be identified as the initial Late Neolithic period. Oval shaped, parallel retouched arrowheads are characteristic here (Figure 46), as well as trapezoid shaped blades and "Y" shaped upsilon blades (Öztan, 2007: 231).

Layer 3 contains massive cores, flakes (with some of them used as scrapers), blades, retouched and unretouched arrowheads, and flint spearheads (Figure 46) (Öztan, 2007: 231).

Layer 2 and 1 do not provide much information on the chipped stone industry because, with some arrowheads as an exception, layer 2 only contains broken blades, bladelets and small cores. Arrowheads indicate a high proficiency in terms of their fabrication details (Figure 46) (Öztan, 2007: 232).

That aside, the Köşk-Höyük chipped stone industry also shows some older Pre-Pottery Neolithic features (such as “upsilon” shaped blades and retouched arrowheads), and suggests a continuity from the Pottery Neolithic to the Early Chalcolithic. Some techniques, such as the frontal tips and back ends of some retouched blades are however comparable with many Near Eastern Neolithic and Chalcolithic sites (Öztan, 2007: 231-232).

10.8 Small Finds

Köşk Höyük also contains different types of small finds such as stone beads, bracelets, and bone beads. In layer 3 and 2, stone, clay and bone stamp seals have also been found. They have small lugs, and a rectangular, triangle, or square shaped surface, sometimes adorned with geometric decorations (Öztan, 2007: 230).

Köşk Höyük also contains some human figurines, which seems to have a genetical relation with the figured pottery tradition described above (Figure 47). Clay, marble, limestone, and calcite examples have been found in Köşk Höyük, pebble was used for an early figurine painted with ochre. Male figurines were represented naked, female ones were dressed (Öztan, 2002: 58-59, Öztan, 2007: 229-230).

CHAPTER 11

ÇATALHÖYÜK

Any proper introduction to this settlement is doomed to be sheer redundancy, since this place is for sure one of the most famous –others may say infamous?-, however most hotly debated prehistoric sites in the Old World. Even though, if the early stage of the Central Anatolian Neolithic is best displayed with Aşıklı Höyük, its developed phases are greatly preserved and researched at Çatalhöyük. Nevertheless, they both do also show certain elements like architectural traditions that prove continuity throughout the millennia.

11.1 Location

Çatalhöyük is located in the Central Anatolian Konya plain (Figure 1). It consists of two artificial mounds, with the west mound dated to the Chalcolithic period and the east mound dated to the Neolithic Period (Hodder, 1999: 158, Carter, Shackley, 2007: 437).

11.2 Geographical Setting

Çatalhöyük measures about 13 hectars, and rises approximately 17.5m above the surrounding plain (Düring, 2006: 132).

During the Neolithic period, Çatalhöyük was placed at the centre of the active alluvial fan of the Çarşamba River. The water level of this river was increasing regularly in spring due to the melting of the snow in the Taurus Mountains (Düring, 2006: 132).

Rosen and Baird assert that the area where Çatalhöyük is located was not a favorable area, neither for defensive purposes nor for hunting, or providing a suitable environment for agriculture. However, its proximity to water sources yielded sediments for the construction of the buildings and also reeds for matting and as a construction material for the roof. Moreover, Çatalhöyük's proximity to the water sources might be significant for the transportation of timbers (Hodder, 2005: 8).

Most recently the common impression that Çatalhöyük was not a favourabe place to dwell and carry out agriculture was challenged by Bleda S. Düring, stating that despite the undoubtedly difficult living conditions people were exposed to in a swampy environment, farming was still manageable to guarantee to survival of a large community, eventually through deliberately desiccating areas for growing crops (Düring, 2006: 133).

11.3 Stratigraphy and Chronology

The occupation at Çatalhöyük East was started at the end of the Pre-Pottery Neolithic period and continues throughout the Neolithic period (Hodder, 2007: 313).

According to C^{14} results Çatalhöyük can be dated between 7.300-6.800 BC (between the layers XII-II) (Düring, 2006: 146). Four earlier levels ("Pre XII"), might coincide with the final Pre-Pottery Neolithic (Hodder, Cessford, 2004: 19).

11.4 Architecture

Çatalhöyük occupation contains well-preserved mudbrick houses which are densely clustered (Figure 48). There are a few or no streets identified, the entrances to the houses were located on the roofs (Hodder, Cessford, 2004: 20-21). The settlement pattern itself comprises three main features, namely loam buildings (a larger number of them adorned with wall paintings, plastered bucrania and relief decorations, which are the foundation of the site's international fame), enclosed open areas and unbounded open spaces (Düring, 2006: 159).

Since Çatalhöyük buildings were cleaned carefully before they were abandoned, they rarely contain the usual rich range of artefacts. Outside areas such as middens however generally provide a rich crosssection of different materials (Düring, 2006: 175, Hodder, 2007: 316).

Çatalhöyük buildings were usually built on the top of the pre-existing older dwellings, which seems reasonable due to the rareness of stone as a building material. The walls of the older building were then used as a substructure (Düring, 2006: 171, Hodder, 2007: 314). Also the positions of internal features like ladders, ovens or hearth changes over time with the evolution of one building unit (Düring, 2006: 164).

The still popular idea of Çatalhöyük being some kind of "religious centre" largely owes to James Mellaart's definition of many buildings as shrines. Significant for this dwelling type are wall paintings, plaster reliefs of "deities", animals and animal heads, benches with horns and bull pillars, cult statues, human skulls which set up on the platforms (Düring, 2001: 9-10). Such a definition, however, is difficult to maintain, so as a convincing separation between shrines and domestic buildings (Düring, 2001: 10). For instance, "shrine" 10 is a richly decorated building which was rebuilt a number of times, contains 32 burials, while "building" 1 also contains 60 burials (Cutting, 2005: 158-159). Additionally, in levels V, VI and VII, nine buildings were defined as "shrines" by Mellaart due to their rich adornments. However in these levels there more buildings which are likewise splendidly decorated and they have a long occupation history, but they were not defined "shrines" (Cutting, 2005: 164).

A recent alternative approach argues that buildings containing "distinguished" features like pastered installations and alike might be rather defined as "ritually elaborate buildings" (Düring, 2006: 217), probably enhancing not the ritual but the actual social status of its inhabitants, a thought that was also applied to selected building complexes at Aşıklı Höyük.

11.5 Burial Customs

The burial customs of Çatalhöyük are a problematic issue due to the lack of sufficient reliable records (Cutting, 2005: 163, Düring, 2003: 4). After James Mellaart initial preliminary reports in *Anatolian Studies* (1961; 1963; 1964; 1966) and a monograph of the site in 1967, two physical anthropologists studied the skeletal remains from the 1960ies excavations (Düring, 2003: 4-5). The burials were found mainly beneath interior platforms, which are generally located in the northwest corner of the large rooms of the buildings. Mellaart points out that the adults were generally buried beneath the northeastern platforms, while there was not a specific place for juveniles. Mellaart also mentions intentional gender differences, as the northeastern corner platforms belonging to males, as opposed to a larger platform located immediately south of it belonging to females. He also reports various burial gifts such as obsidian mirrors, daggers, points, necklaces, bone hooks and spatulas, rings and spoons, proposing an intentional gender difference in burial gifts. Weapons would be then generally associated with males, and jewellery with females[4]. As an extraordinary feature, one plastered skull is mentioned (Düring, 2003: 2-3, Hodder, 2007: 317-318, Mellaart, 2003: 161-164). The major obstruction for further study is now that that the results of Ferembach and Angel are not consistent with each other, providing entirely different total numbers of burials registered (Düring, 2003: 6).

That aside, so far no comprehensive publications on the burials excavated in the campaigns led by Ian Hodder is available. (Düring, 2003: 12).

11.6 Chipped Stone Industry

The lithic industry of Çatalhöyük is a comparably well studied subject. Conolly's articles and also recent studies by Carter, Shackley and Cressford provide comprehensive information on the lithic industry of Çatalhöyük.

The chipped stone fabrication at Çatalhöyük is –once again- mainly obsidian. Its debitage can be classified into 9 different categories, namely flakes, prismatic

[4] Düring warns that Mellaarts interpretations were published before any physical anthropologists studied on the skeletons (Düring 2003: 2-3).

blades, non prismatic blades, crested blades, core rejuvenation blades, blade cores, flake cores, shatters, and chips (Conolly, 1999a: 792).

He also categorizes 6 broad types which are recurrent forms: projectile points and bifacially worked pieces, flint daggers, obsidian mirrors, large retouched obsidian flake scrapers, pieces with crushed edges, retouched blades and retouched flakes. Furthermore, at least three production strategies exist in Çatalhöyük: Flint and obsidian flake production, flint and obsidian percussive blade production, and obsidian prismatic blade production (Conolly, 1999a: 793):

There are two main obsidian sources that satisfied the obsidian demand of Çatalhöyük, which could be identified as East Göllüdağ and Nenezi Dağ. A flake from Building 1 indicates that also the West Acıgöl source in Northern Cappadocia was exploited by the inhabitants of Çatalhöyük (Carter, Shackley, 2007: 442, Cessford, Carter, 2005: 305).

Two important observations can be made for the chipped stone industry of Çatalhöyük: First of all, the percentage of the prismatic blades in Çatalhöyük changes suddenly. Even they were used in Çatalhöyük in a small quantity, with level VI an increased consumption of this type of artefacts have been identified (Conolly, 1999a: 796-798). Secondly, no special place for knapping activity has been identified at Çatalhöyük. All excavated buildings contained several hundreds of pieces of obsidian, while the midden areas contain even thousand of fragments. However, projectile points and prismatic blades are mainly found in the buildings that could be defined as "ritually elaborate buildings" (Cessford, Carter, 2005: 310, Conolly, 1999a: 798).

Flint daggers in Çatalhöyük are still unique, testifying to an otherwise not observed level of proficiency. The absence of any cores might further indicate that these objects could be imported items. The most famous example, which was found associated with a burial from level IV, has a bone handle carved in the shape of a coiled snake (Figure 49) (Conolly, 1999b: 42).

11.7 Small Finds

Çatalhöyük contains various types of small finds made of metal, bone, clay and organic materials such as seals, bracelets, awls, and beads (Düring, 2006: 156). Stone and clay figurines are a predominant and elsewhere much discussed issue, however not explicitly relevant for our considerations. Their frequency and typological variability, however, is indeed astonishing.

Highly significant is the use of of metal in different physical states. Analyses of ochre samples indicate a deliberate mixing of iron oxide pigment with other sediments. Mortimore asserts that iron oxide pigment has been painted or mixed with a soft lime plaster of calcareous sediment, which consists of high level of calcite and some clay minerals (Mortimore et. al., 2004: 1187-1188). Level IX and VII revealed trinkets and ornaments made of cold hammered and annealed (?) copper and lead. Moreover, blue pigment, produced by grinding copper ore, and green malachite was used to paint skeletons (Yener, 2000: 23-25). These finds and features prove that Çatalhöyük another early site, passing the threshold of experimental metallurgy (Craddock, 2000: 155, Cessford, Near 2005: 179).

CHAPTER 12

SYNTHESIS – DISCUSSION OF MATERIALS, TECHNOLOGIES AND ARCHITECTURE

In this chapter, an attempt is made to evaluate and contextualise the previously discussed materials, technologies and architecture in terms of their role in highlightening aspects of trade and society in Neolithic Central Anatolia. In terms of its scope, this thesis owes much to the preponderance of obsidian in current scientific discussions, hence the (re)evaluation of chemical analyses, which is enormously helpful to understand the movement of raw materials or finished items. The technological dimension of obsidian has an equal value, since the observation of specific production techniques observed on lithic material might be an indicator of interregional contact. Finally, a reappraisal of social issues might shed some light on possible social stratification scenarios of Central Anatolian Neolithic societies. Any peculiarities in architecture, and associated archaeological finds might point to phenomenon that is related to in rank, profession of prestige.

Archaeometrical observations

The chemical configuration of obsidian, and also the proportion of these different elements help us to identify the origin of an obsidian source, because its composition is unique for each and every deposit worldwide (Andrefsky, 2000: 41-42, Leute, 1987: 101).

Central Anatolian obsidian was found in Syria, Levant and also in Cyprus. For instance Göllüdağ obsidians, dated to 8.300-7.600 BC cal., have been identified in the Euphrates Valley, Mureybet, Cheikh Hassan, Jerf el-Ahmar and also in the Southern Levant. Also Jericho yielded some obsidian pieces which belong to the Central Anatolian Göllüdağ obsidian source. The Cypriot Neolithic site of Khirokitia also contains some Göllüdağ obsidians which are dated to 7.700 BC (Chataigner, Poidevin, Arnaud, 1998: 523-525, Renfrew, Dixon, Cann, 1968: 325). Moreover, Kömürcü obsidians have been identified in some Syrian Pre-Pottery Neolithic B sites such as Dja'de (9.052-8.525 BC), Mureybet (9.220-8.800 BC) and Halula (9.200-8.600 BC) (Balkan-Atlı et al. 2000: 46, Balkan-Atlı, Binder, 2001: 14). In addition to these Syrian sites, Kömürcü obsidians are also found in Cyprus (Shillourokambos, PPN B). According to Laser Ablation (LB), Inductively Coupled Plasma (ICP) and Mass Spectrometry (MS) analyses, all examples stem from the Central Anatolian Kömürcü source (Balkan-Atlı et al. 2000: 46, Balkan-Atlı, Binder, 2001: 14, Briois, Gratuze, Guilaine, 1997: 105).

In order to discuss the reasons for the movement of the Central Anatolian obsidian to the remote regions mentioned above, first of all it is necessary to envisage the diffusion of Near Eastern obsidian sources. All the obsidian sources are indeed located in Turkey, the Caucasus and some Aegean Islands (Chataigner, Poidevin, Arnaud, 1998: 518). Therefore obsidian is a rare material for the Near East, only to be found in few regions with ancient volcanic activity like South Central Anatolia and the East Anatolian Bingöl focus. This rareness makes obsidian an attractive and much sought raw material. That aside, its attractive black color, together with its ideal flaking or knapping qualities makes it very suitable for tool production. These should be the major reasons that lead to establishing a network between Central Anatolia, Syria, Levant and Cyprus.

Technological aspects

Lithic production techniques change from region to region. In that context, the identification of a technique in a certain area which is peculiar for a different region is significant to trace interregional connections. In addition to that, some innovative changes in production techniques and the recognition of these pioneering changes in different regions also might point to interregional relationships.

The Kömürcü-Kaletepe obsidian workshop yielded evidence for two different production techniques, namely bidirectional blade production and prismatic blade production. These techniques were carried out to produce different tools. For instance long standart pointed blades which are essential for the arrowhead production, were manufactured by the bidirectional blade production technique. (Balkan-Atlı, Binder, Cauvin, Faydalı, 1999: 6-7). Since Kaletepe does not have many examples of these long standard pointed blades, an exclusive preparation for trade is the most reasonable hypothesis (Balkan-Atlı et al. 1999: 6-7). Bidirectional blade production is indeed known from Syria and Levant[5]. However, the Kaletepe style is rarely found in these regions. The only examples that resemble this lithic production style are reported from Dja'de (Balkan-Atlı, Binder, 2001: 12, Balkan-Atlı, Binder, 2007: 220). According to Binder and Balkan-Atlı, Dja'de is the only site which revealed blades prepared in a style similar to Kaletepe bidirectional production. The overall rareness of the Kaletepe style, together with similar

[5] The sites are not mentioned by Binder and Balkan-Atlı.

examples exclusively recorded at Dja'de might be an indicator of a special contact with Kaletepe and Dja'de in this obsidian exchange process.

The second production technique of the Kömürcü-Kaletepe obsidian workshop is the prismatic blade production. This technique is also performed on bifacial pre-forms as bidirectional blade production. The purpose of this production is a serial, standardized production of prismatic blades, which are 75mm long, 11m wide and 3mm thick (Balkan-Atlı, Binder, 2001: 12, Balkan-Atlı, Binder, 2007: 219). Prismatic blade production is likewise unknown in any other find spot in Central Anatolia. Even if Çatalhöyük has some prismatic, pressure-flaked examples, they differ profoundly from the Kaletepe specimens in terms of shapes and formats. On the other hand, prismatic blades have been identified in Syria and Cyprus (Balkan-Atlı et al. 2000: 46, Balkan-Atlı, Binder, 2001: 14).

At Dja'de, examples similar to Kaletepe prismatic productions were revealed. Here, analyses testify to the use of obsidians of the Kömürcü deposits, which were utilized in Dja'de and dated to the transitional level from Early PPNB to the Middle PPNB (Balkan-Atlı et al. 2000: 46, Balkan-Atlı, Binder, 2001: 14).

Mureybet and also Tell Halula contain Kömürcü obsidisans, with all examples dated to the Middle PPNB (Balkan-Atlı et al. 2000: 46, Balkan-Atlı, Binder, 2001: 14).

In addition to these Syrian sites, the Cypriot site Shillourokambos yielded some examples which are similar with Kaletepe prismatic blade production (Balkan-Atlı et al. 2000: 46, Balkan-Atlı, Binder, 2001: 14).

Binder and Balkan-Atlı mention that bidirectional blade production is not a highly standardized technique in Syria, and that the Kaletepe style is rarely identified. Prismatic blade production, however, is unknown for flint in Syria and exclusively observed at imported obsidian blades (Balkan-Atlı, Binder, 2007: 220). The existence of type similar to Kaletepe bidirectional blade production at Dja'de might be an indicator of a particular connection with Kaletepe and Dja'de in this obsidian exchange process. The absence of prismatic blade production for flint examples in Syria might root in the possibility that this prismatic blade production is a special technique performed by Kömürcü-Kaletepe obsidian workshop knappers. Therefore it is possible that the Syrian flint knappers did not know this technique or they knew but they did not prefer this specific technique.

The crucial point now is that Kömürcü-Kaletepe production techniques are not identified in Central Anatolia. However, in Syria and Cyprus, these production techniques are known from imported obsidian blades, and chemical analyses of these obsidians testify to the use of Central Anatolian Kömürcü obsidian. However, there is no indication of any specific site which acts as a special production or distribution hub in this trade process except the obsidian workshop of Kömürcü-Kaletepe.

Early Metallurgy

Similarities between production techniques are not only restricted to obsidian. Also the autopsy of earliest metal reveals similar phenomena. The Aceramic Neolithic site of Çayönü, located in Southeastern Anatolia (Diyarbakır region), produced rich evidence for early copper objects. A total 658 worked pieces of malachite and copper are reported, with beads forming the largest bulk[6] (Özdoğan, M., Özdoğan, A. 1999: 16-17). However, a variety of tools, produced from the same "pure", yet only slightly contaminated copper, like copper awls, borers and a number

[6] 464 examples are defined as malachite and 28 examples are copper.

of hooks is also found in Çayönü (Özdoğan, M., Özdoğan, A. 1999: 21). Two different production techniques were identified on Çayönü copper objects. The first technique is a derivative of lithics treatment: here the malachite was crushed by groundstone tools and then perforated by flint borers. With the second technique, the native copper was first hammered into sheet metal and then rolled into objects (Yener, 2000: 21). Both cold hammering and annealing –a decisive innovation since people recognized that the application of heat enhances flexibility and malleability of the matter- are observed at Çayönü (Esin, 1995: 62). (Yener, 2000: 22). Apart from Çayönü, also the Central Anatolia Aceramic Neolithic site Aşıklı Höyük contains copper objects. The copper objects of Aşıklı Höyük can be classified as small beads, broken pieces of beads and ore fragments (Esin, 1999b: 27). According to metallurgical analyses, both native copper and malachite are used at Aşıklı Höyük, and both cold hammering and annealing are identified (Esin, 1995: 67).

If we now compare Aşıklı Höyük and Çayönü in terms of metalworking techniques, both sites indeed have similarities. In both Aşıklı and Çayönü, malachite and copper is used together with cold-hammering and annealing. Ufuk Esin assumes that the knowledge of annealing is a conscious, however independent invention for both Aşıklı Höyük and Çayönü (Esin, 1995: 67). This statement should be challenged here, since it is indeed possible that this specific knowledge how to treat and manipulate copper ores is an indicator for relationships between these two different regions. Taking the Kaletepe prismatic blade production technique as an example, which is also identified in a number of Syrian Aceramic Neolithic sites, evidence suggests that not only materials but also production techniques were shared between two different regions, a hypothesis that might gain further proof if more than only the estimated 10% of Aşıklı Höyük will be excavated.

Artifactural travel and social issues

The following subchapter centers on small finds from different regions other than obsidian which represent comparable characteristics, making them possible indicators for cross-cultural contact.

One of the most prominent, unique objects in the Anatolian Neolithic is a stone plaque from Aşıklı Höyük. The external surfaces of this plaque are decorated with “V” and “O” symbols. Since the by far closest parallels are known from Syria Ufuk Esin suggested that during the obsidian trade process also other materials like this stone object were exchanged (Esin, Harmankaya, 2007: 6-7). Central Anatolian obsidian is indeed known from e.g. Jerf el-Ahmar (Figure 25) (Chataigner, Poidevin, Arnaud 1998: 525-526), with the C^{14} results obtained there indicating a time span between 9052-8525 BC cal. (Stordeur et al.1996: 1).

However, Aşıklı Höyük is dated between 8200-7400 BC cal., which corresponds with a PPN B sequence and points to a roughly 300 years difference between “oldest” Aşıklı Höyük and “youngest” Jerf el-Ahmar (Düring, 2006: 73). Because of this difference, it is difficult to state any direct connection between these sites with certainty. However, one possibility to explain the presence of an imported PPN A item is that the obsidian trade process between Central Anatolia and Syria was established already in earlier stages of the Neolithic period. Therefore, this plaque might have moved to Central Anatolia before Aşıklı Höyük was founded as a PPN-B centre. One hypothetical development might have been that Aşıklı was established as a centre to control the processing and distribution of this exchange between Central Anatolia and the southbound regions (Syria and Levant) which emerged already several centuries before. As soon as the exchange proved to be satisfying for both parties, it is might have be seen essential to establish a permanent settlement in Cappadocia region where the obsidian sources are located.

Apart from Aşıklı Höyük, Tepecik-Çiftlik contains two different materials which are important for the recognition of Central Anatolian interregional relationships. The wild horse or donkey's special phalanx bones are used to produce figurines at Tepecik-Çiftlik. Similar examples are known from Northern Syria at Dja'de and from Romania at Cuina Turcili (Bıçakçı et. al, 2007: 245-246). Moreover, in layer V, one clay seal, which contains a spiral decoration, was found. Similar examples are known in many sites such as Halula (PPNB), Çatalhöyük (6.700/6.600 BC), Ulucak (5.900/5.800 BC), Sesklo (5.900/5.800 BC), and Porodin and Kovaçevo (5.500 BC) (Lichter, 2005: 68-69).

The overlapping of the diffusion maps of Phalanx idols, spiral decorated stamp seals[7] and the Central Anatolian obsidians provide a possible support for our thesis (Figure 50). These three different materials are identified in Central Anatolia and Syria. Phalanx idols and stamp seals are also identified in Western Anatolia, the Greek Mainland and the Balkans. In our opinion, these three different materials illustrate that during the obsidian trade process stamp seals and phalanx idols, whose possible functions are beyond the scope of this thesis, also moved between Central Anatolia and Syria, and likewise connected regions further west with the Anatolian plateau, making them part of the Central Anatolian interaction sphere.

Finally, in addition to obsidian, bone idols, stone plaques and stamp seals, the presence of the flint objects in Central Anatolia is a phenomenon that deserves closer attention. All the Central Anatolian Neolithic sites contain flint, however in rather

[7] Admittedly, spiral decoration is a simple motive that can be used independently in different areas, however regional similarities between different objects should still be considered as proof for possible connections.

small quantities. Reported as an “imported item” in all sites reports, no statement is made on its possible origins (Özbaşaran et al, 2007: 275, Kayacan, 2003: 3, Bıçakçı et al., 2007: 243-244, Conolly 1999a; 792).

In contrast to Central Anatolia, flint is the main raw material for the chipped stone industry in Syrian and Levantine sites. Even if these sites contain obsidian, it is very small in quantity compared to flint (Pernicka, Keller, Cauvin 1997: 113, Kozlowski, 1999: 90).

The importance –and possible prestigious value- of flint in Central Anatolia is likewise well illustrated with the flint daggers of Çatalhöyük. These examples indicate a high proficiency and the absence of any cores suggests that these objects indeed must have been imported items (Conolly, 1999b: 42).

The dominance of flint and the occurrence of the Central Anatolian obsidian in Syrian and Levantine sites indicate the possibility that all flint examples which were found in Central Anatolia might be indeed “foreign” materials. In that context, with obsidian presumably considered a prestige item for Syrian, Levantine and Cypriot communities, flint in return might have a prestigeous value for Central Anatolian Neolithic societies.

Especially the Çatahöyük flint daggers as outstanding items are of great value for reconsidering technical aspects as well social issues. A fine-grained tabular flint was used for these daggers. Because of that characteristic of flint, it can be labeled as imported raw material, a hypothesis that is supported by the absence of any cores. The technical characteristics of these flint daggers, like parallel retouch knapping technique in combination with an elaborately designed bone handle, are unseen elsewhere in greater Anatolia in this period. These observations make it not too farfetched to define this artefact as an exclusive prestige item. Conclusively, this single item nicely illustrates the possible exclusive (and likely prestigeous!) value of flint as opposed to the affluent presence of obsidian – hardly a prestigious working material for Central Anatolian communities, but much sought and desired by Syrian, Levantine and Cypriot communities. Further studies on the still largely obscure flint issue in the Anatolian (Pre-Pottery) Neolithic will probably further illuminate the status and origin of flint in mainly obsidian-processing Central Anatolian Neolithic societies.

Lastly, one crucial subject is the occurrence of local Central Anatolian Neolithic sites and the consecutive altering of the obsidian trade routes. The gradual decrease in exporting Central Anatolian obsidian to Syria and the Levant from the 8^{th} millennium BC is concurrent with the strengthening of the sedentary habitation in Central Anatolia. Local Central Anatolian sites seem to have started to exploit their local obsidian sources and consequently Levantine and Syrian Neolithic sites head towards the Southeastern Anatolian obsidian sources (Asouti, 2006: 109, Cauvin, 2000: 93). The eastbound shift of obsidian trade, reviving the exploitation of sources in the Eastern Anatolian Bingöl region and their exchange with the Syro-Levantine focus might coincide with Central Anatolian PPN B communities being occupied with tasks and duties that leave no distinctive trace in the archaeological record, like the production and distribution of easily perishable materials like cloth an alike, or – alteratively- the major occupation of the inhabitants of centres like Aşıklı still has to be revealed through resuming the expedition.

Finally, in Central Anatolian Neolithic contexts some particular architectural features provide a possible hint to identify complex societies. Aşıklı Höyük building complexes differ in many points from the domestic loam buildings, comprising measurements, the number of the rooms, internal courtyards, and also building techniques and building materials (Esin, Harmankaya, 2007: 263, Düring, 2006: 101-102).

The crucial point is now why there are some significant differences between these buildings. It is indeed possible that some building complexes in Aşıklı Höyük are built for a special function. The function of these complexes, however, is a controversial issue.

According to Ufuk Esin, these complexes belong to the elite part of the Aşıklı Höyük society, in terms of certain differences serving as indicators of an elaborate social stratum (Esin, Harmankaya, 2007: 263-264). Bleda Düring evaluates Ufuk Esin's statement, arguing that the courtyard "HV" is the only place that several hundreds of people come together. However, the estimation of the overall population of Aşıklı Höyük goes into thousands[8], consequently leaving only a small part of the population that can come together in this open space. Conclusively, these several hundreds of people who come together in this courtyard might be the representatives of different social groups in Aşıklı Höyük (Düring, 2006: 105-106).

Düring also comments on the ritual purpose of these buildings. For instance, Çayönü and Nevali Çori have some special buildings which contain stone sculptures and sacrificial slabs which are secure indicators for ritual activity. However, the Aşıklı Höyük building complexes did not produce any comparable materials (Düring, 2006: 105-106).

[8] Only 10% of Aşıklı Höyük is excavated and 400 buildings are found. This proportion is the main source for the estimated population of Aşıklı Höyük (Esin, Harmankaya, 2007: 265, During, 2006: 101)

That aside, these significant differences between the building complexes and the domestic loam buildings could then be the indication of a special function of these complexes. The absence of any ritual based materials makes any statements on a ritual based function for these complexes difficult. But as already mentioned, if the population of Aşıklı Höyük comprised several thousand inhabitants, a social mechanism must have existed to guarantee the functioning of this society. If such a mechanism does not exist, chaos would be an unavoidable consequence. In such a social mechanism, some powerful members, possibly belonging to a higher ranked group within the Aşıklı community, must have provided the security and the continuity of the society.

In the context of building complexes at Central Anatolia, the site of Musular also must be taken into account (Özbaşaran, 2000a: 129). Musular is defined as a part or a satellite site of Aşıklı. According to Özbaşaran, Musular had been chosen deliberately by Aşıklı people as a gathering place for hunting and the activities after hunting such as sharing of meat. The high percentage of cattle bones in fossil records and the high quantity of scrapers in the chipped stone industry seem to support her statement (Özbaşaran et al, 2007: 277-278).

Building A is likewise significant in that context. It has a square plan and contains some benches on eastern, western and southern parts of the building. In addition, this building contains a hearth which is placed at the northern end of the east bench. The floors have red painted plaster. With these features, Building A is comparable with Aşıklı Höyük's building complex T. They both have red painted floors, benches, hearths and an identical scheme (Duru, Özbaşaran, 2005: 18, Özbaşaran et al. 2007: 274-275).

Conclusively, this site could have been chosen deliberately by Aşıklı people as a gathering place not only for for hunting and activities that follow this endeavour, like further carving up the animal cadaver, but probably other community-enhancing activities that leave no distinctive trace in the archaeological record.

Finally, another tought should be spent on Kömürcü-Kaletepe, to touch again on social issues that are not based on architecture or prestige goods. This obsidian workshop represents two different production techniques which are require a high knowledge, so this expertise might indeed testify to professional knappers as a social class (Balkan-Atlı, Binder, Cauvin, Faydalı, 1999: 7, Balkan-Atlı, Binder, 2001: 151). Moreover, according to Binder and Balkan-Atlı, this production is enormously time-consuming, so the question arises how the knappers supplied their own necessities when they were literally “knapping all the time”. This question indicates that there must have been other people who provided all the necessities of the knappers, suggesting the emergence of a profession (and social class?) of knapping specialists (Balkan-Atlı et al, 1999: 7, Balkan-Atlı, Binder, 2001: 15).

CHAPTER 13

CONCLUSION

The major scope of this thesis was a reappraisal of obsidian and trade connections in the Central Anatolian Neolithic, to what degree external relations shaped and altered the cultural setting of a community, and what other items can be identified as key agents in this multiregional interaction sphere. For that reason, model sites were chosen to investigate these issues due to their size and availability of published material.

Major focus was then set on obsidian, a rare material for Near East, with the main sources located in Central and East Anatolia. This rareness is thus the main reason for both the interregional relationships of Central Anatolia between Syrian, Levantine and Cypriot Neolithic cultures and the occurrence of Neolithic sites in Central Anatolia. The reappraisal of the geochemical analyses from some Syrian, Levantine and Cypriot Neolithic site confirms that Central Anatolian obsidian was deliberately moved to these regions.

In addition to the archaeometrical dimension, studies on special knapping techniques and obsidian workshops also proved the assumption of a dynamic core region in the Aksaray district, specialising in peculiar knapping techniques. Studies on different knapping styles from some Syrian and Cypriot Neolithic sites point testifies to the existence of obsidian tools abroad which are knapped in "Kaletepe style". The correspondence of geochemical analysis which indicates that Kömürcü obsidians moved to Syria and Cyprus with technical similarities reinforce the theorum of vivid interregional connections of Central Anatolia in the Neolithic period.

In that context, the value of other items in the process of interaction was reviewed. For instance a stone plaque from Aşıklı Höyük, Phalanx idols and spiral decorated stamp seals from Anatolia, Northern Syria, the Greek mainland and the Balkans indicates that Central Anatolia a bridge to link western, south and southeastern Neolithic cultures.

Flint, lastly, should be given the attendance it deserves in future studies. Even if minor in quantity, flint occurs in all the Central Anatolian Neolithic sites. Despite the fact that all flint materials are referred to as imported items, the absence of any statement on the origins of these flints is a noteworthy issue, especially since flint is the main raw material for the chipped stone industries of Syrian Levantine and Cypriot Neolithic sites, while obsidian is a rare in these regions. More detailed studies on that issue are a much desired endeavour for the future.

Early metallurgy likewise reinforces the assumption of a dynamic relationship between Central Anatolia and its neighboring regions. Similar treatment of solid copper items indicates a transfer of experimental yet innovative technologies between Central and Sourtheast Anatolia.

Consequently, Central Anatolia represents a complex Neolithic "melting pot" and has therefore to be defined not only as a region bridgeing western and southern Neolithic cultures, merely channeling the flux of technologies and ideas, but rather as an arena with considerable innovative potential.

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APPENDICES

FIGURES

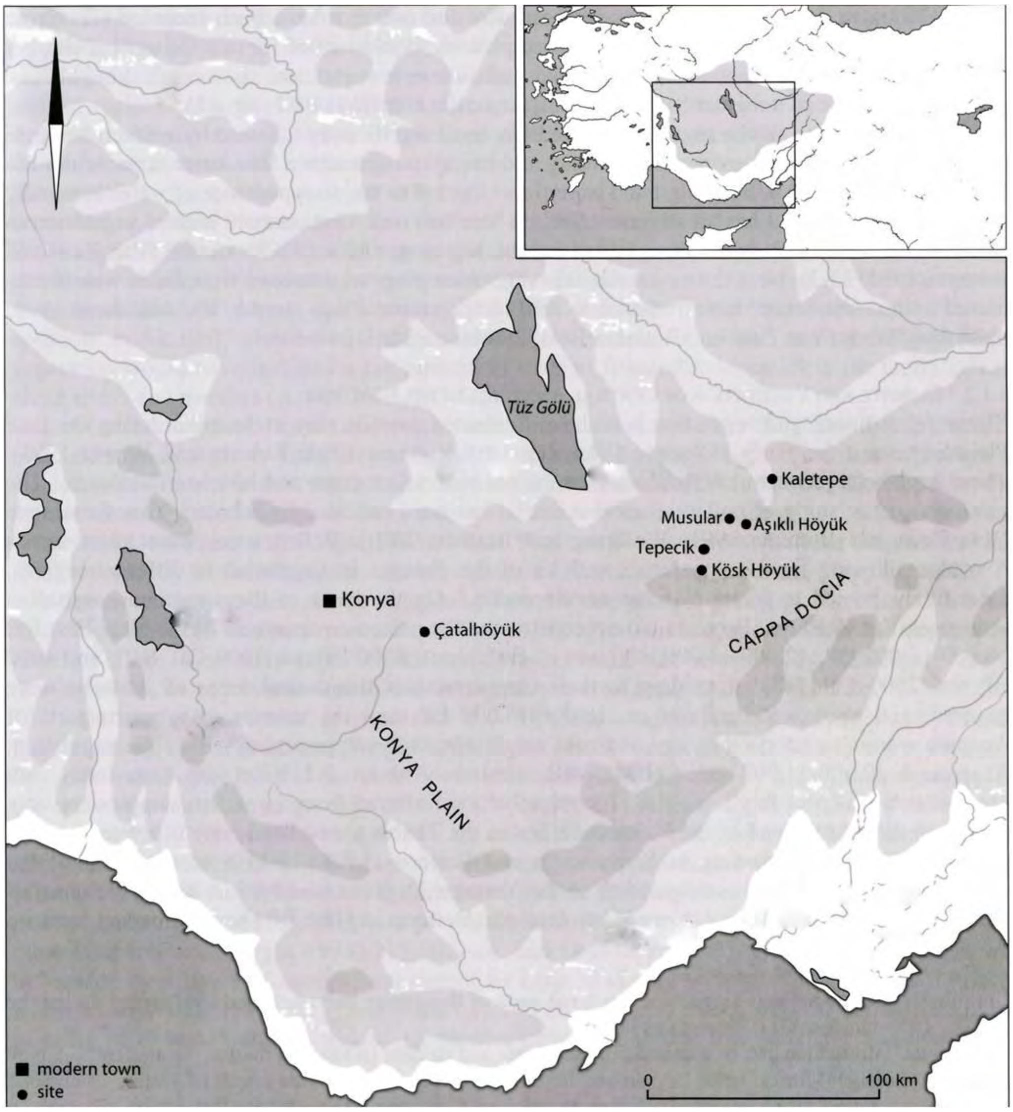

Figure 1. Map of Central Anatolian "model sites" mentioned in the text (Düring, B. S. 2006).

Figure 2. Obsidian (Balkan-Atlı, N. Didier, B. 2007).

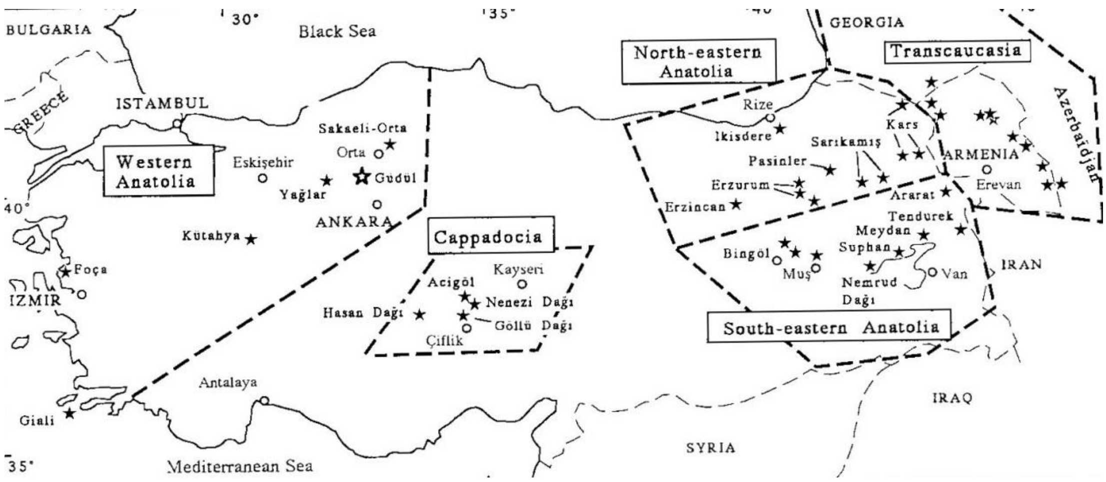

Figure 3. Location of the main obsidian sources in Anatolia and Transcaucasia (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

Figure 4. Central Anatolian Obsidian Sources (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

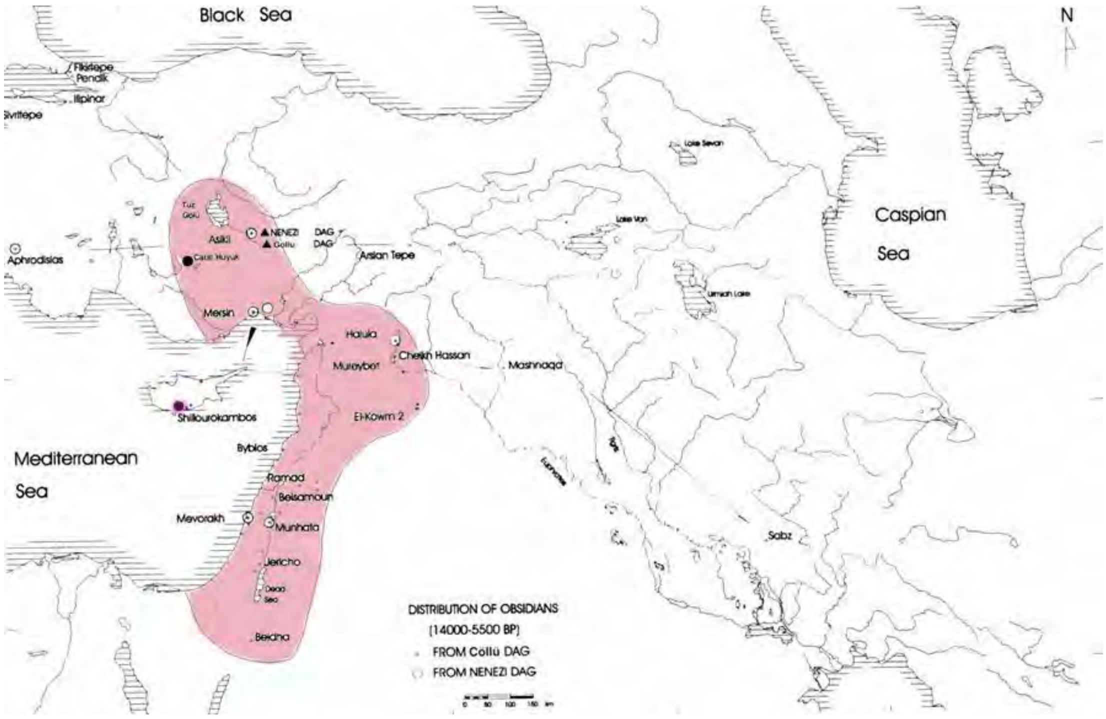

Figure 5. Distribution of Obsidian from Göllü Dağ and Nenezi Dağ (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

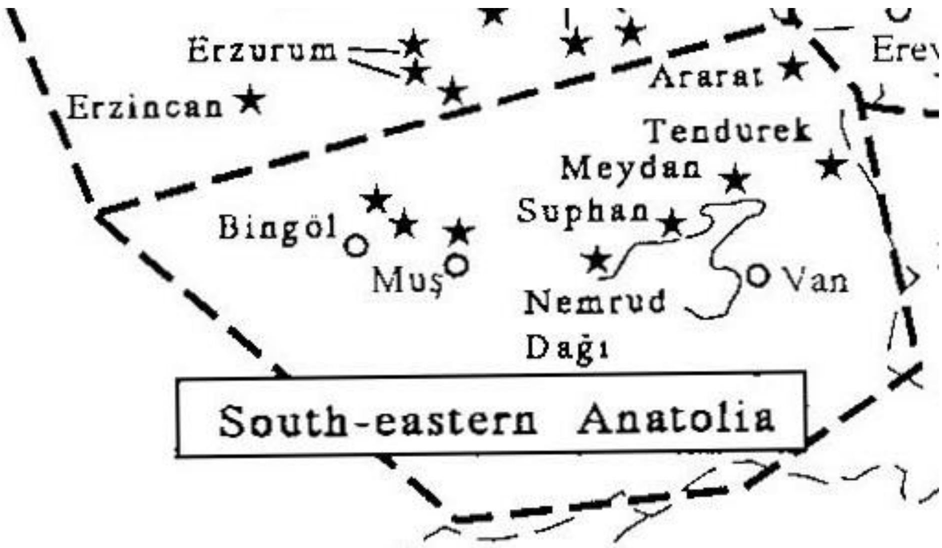

Figure 6. South-eastern Anatolian Obsidian Sources (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

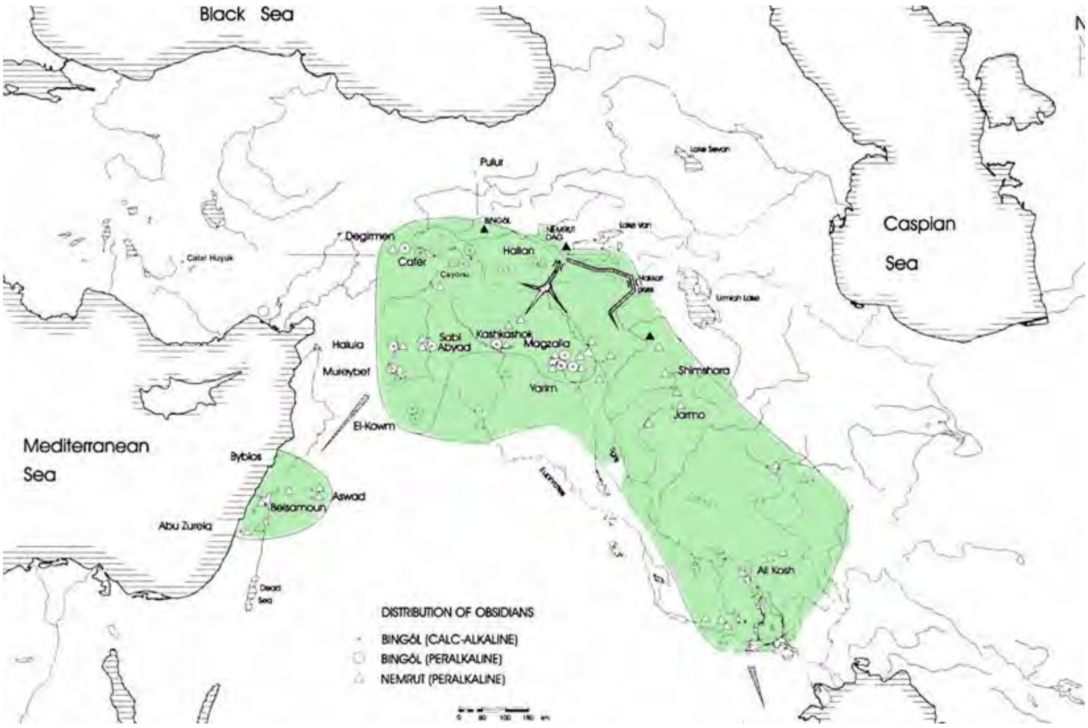

Figure 7. Distribution of Southeastern Anatolian obsidians (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

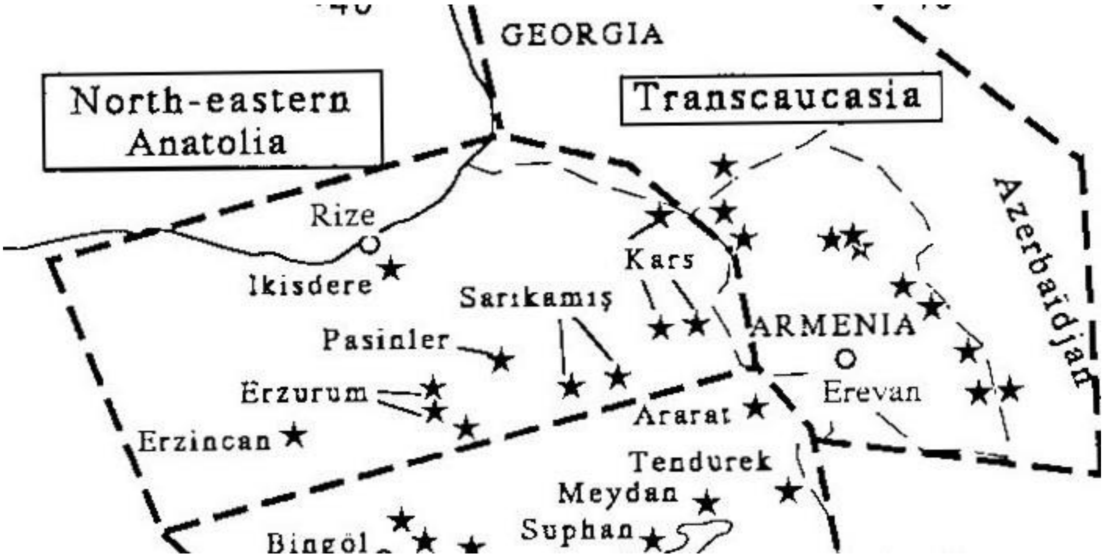

Figure 8. Northeastern Anatolian Obsidian Sources (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

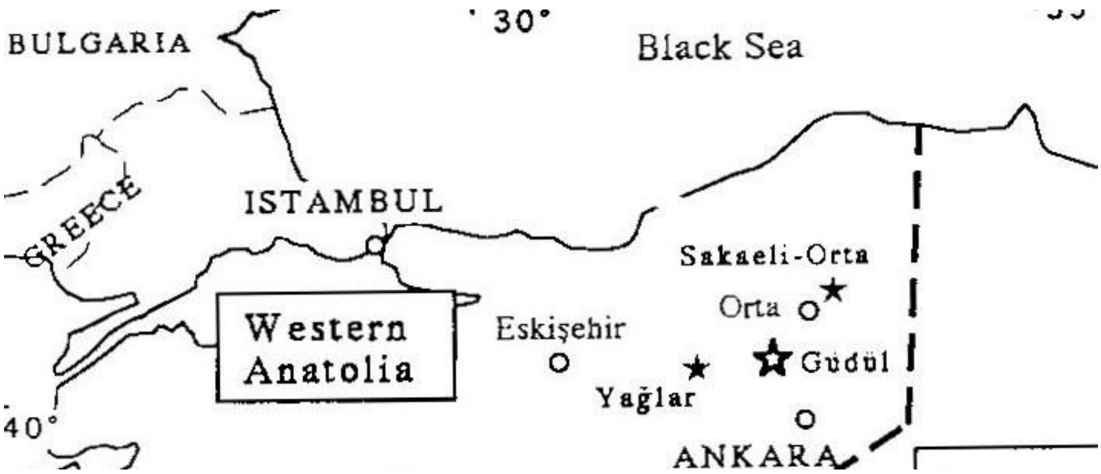

Figure 9. Northern Anatolian Obsidian Sources (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

Figure 10. Western Anatolian Obsidian Sources (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

Figure 11. Aegean Obsidian Sources (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

Milos, 2. Antiparos, 3. Giali

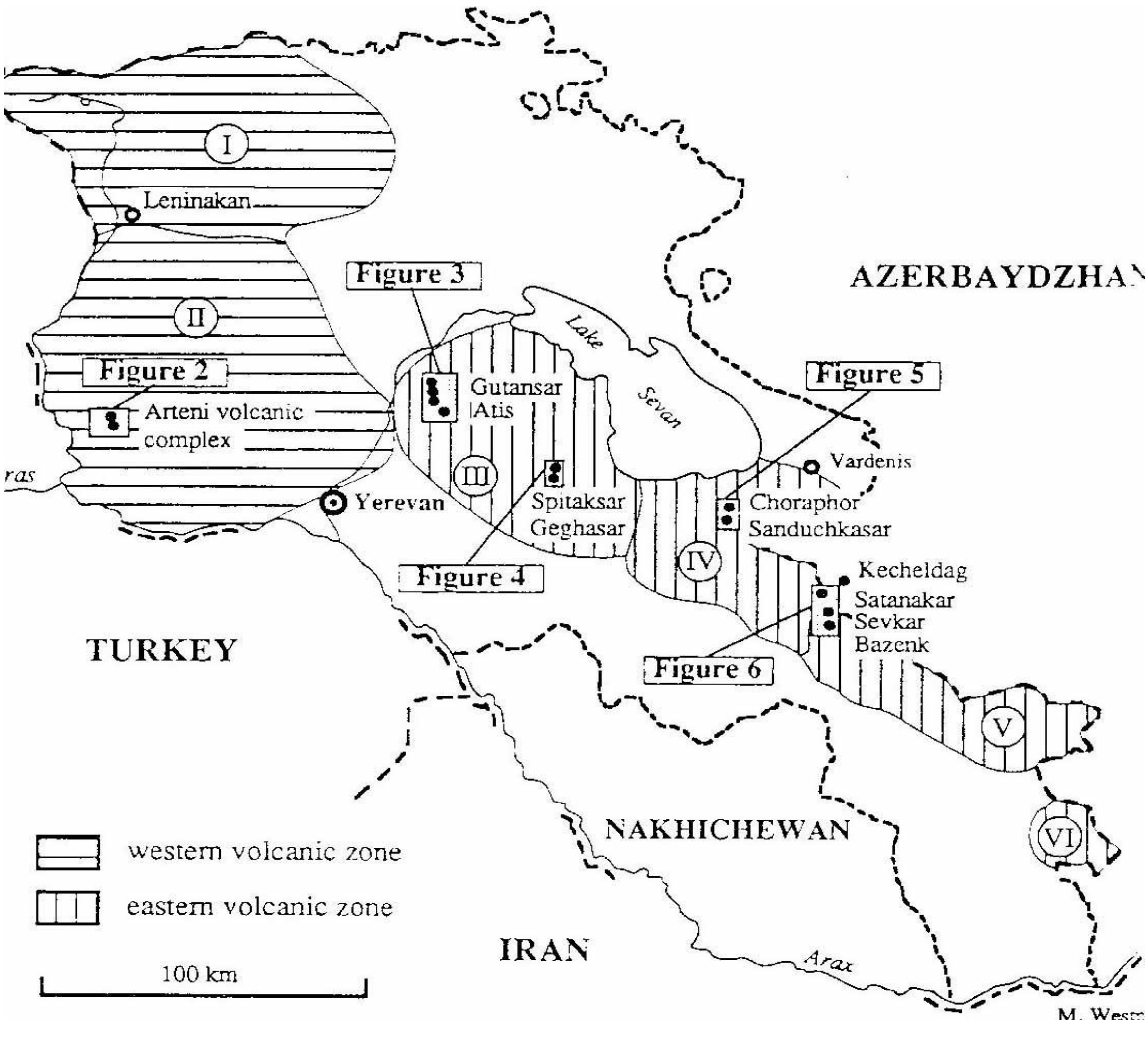

Figure 12. Caucasian Obsidian Sources (Chataigner, C., Poidevin, J.L., Arnaud, N.O. 1998).

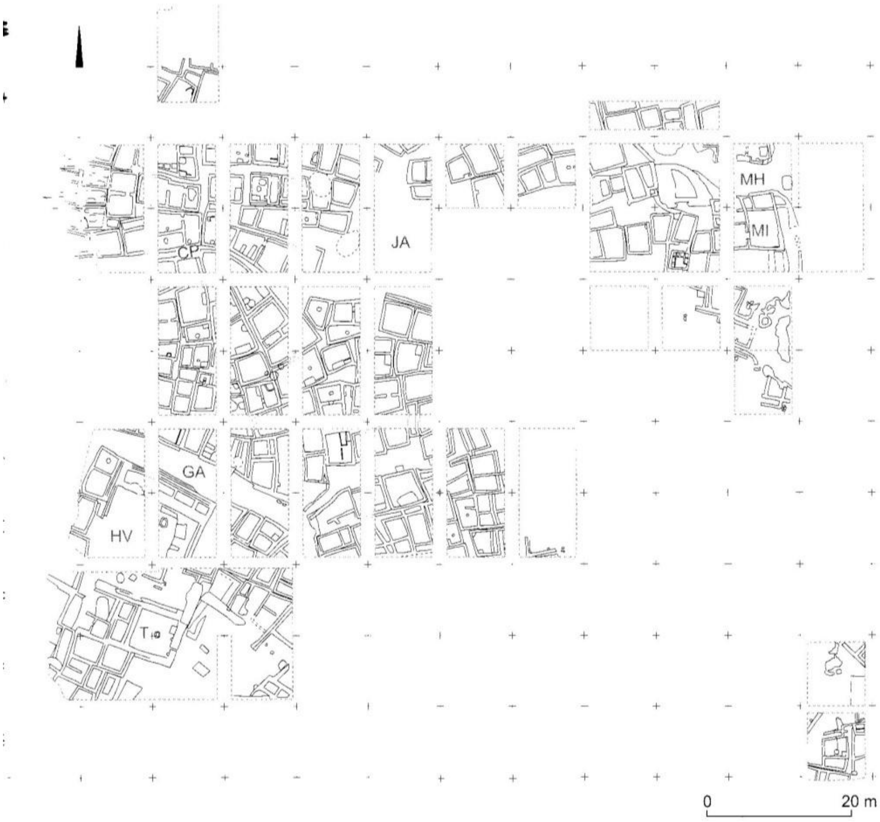

Figure 13. Building Complexes of Aşıklı (Düring, B. S. 2006).

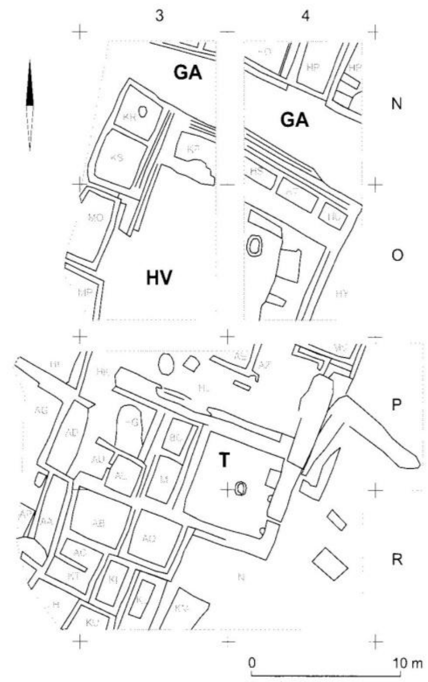

Figure 14. Building complex HV and T (Düring, B. S. 2006).

Figure 15. Red Painted Floor from Courtyard T (Esin, U., Harmankaya, S. 2007).

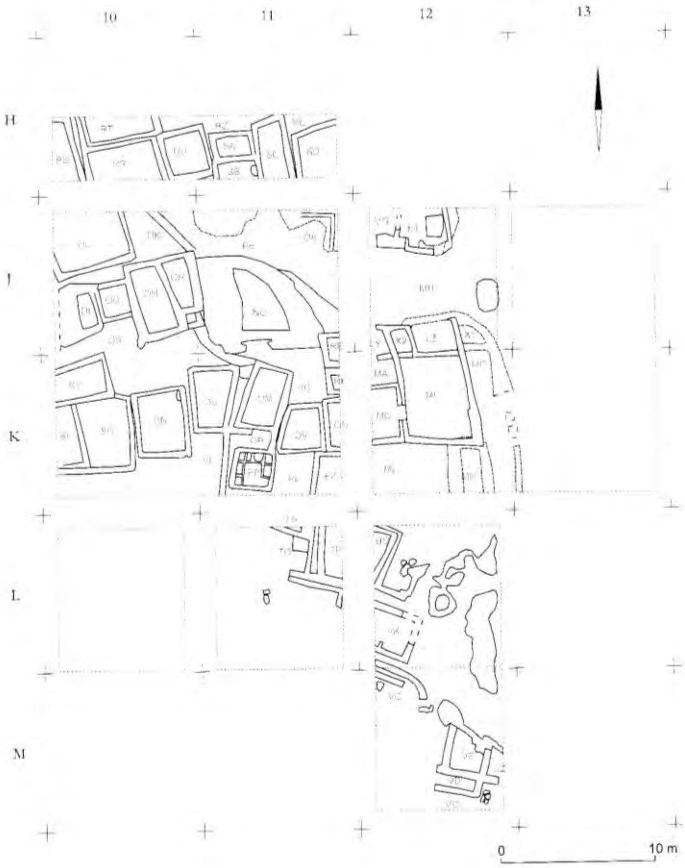

Figure 16. Building Complex MI (Düring, B. S. 2006).

Figure 17. Burial Gifts from Aşıklı (Esin, U., Harmankaya, S. 2007).

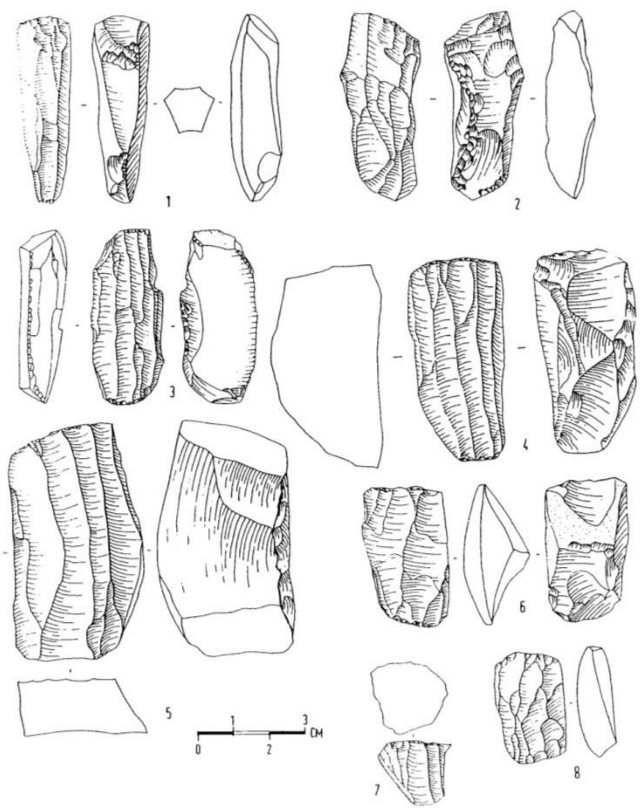

Figure 18. Aşıklı Höyük Core examples: 1-6, 8. opposed platform cores, 7. Pyramidal core (Balkan-Atlı, N. 1994).

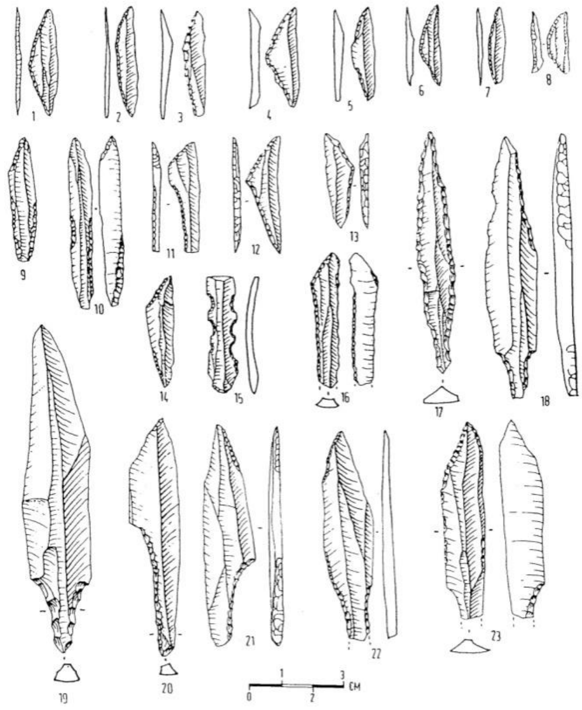

Figure 19. 1-6. Microliths, 17-23. Arrowheads (Balkan-Atlı, N. 1994).

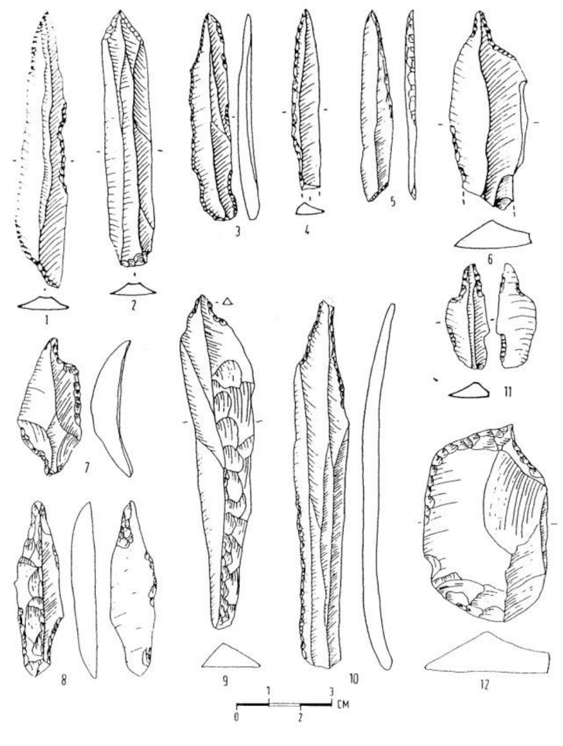

Figure 20. 1-5. Pointed Blades, 6-12. Piercing Tools (Balkan-Atlı, N. 1994).

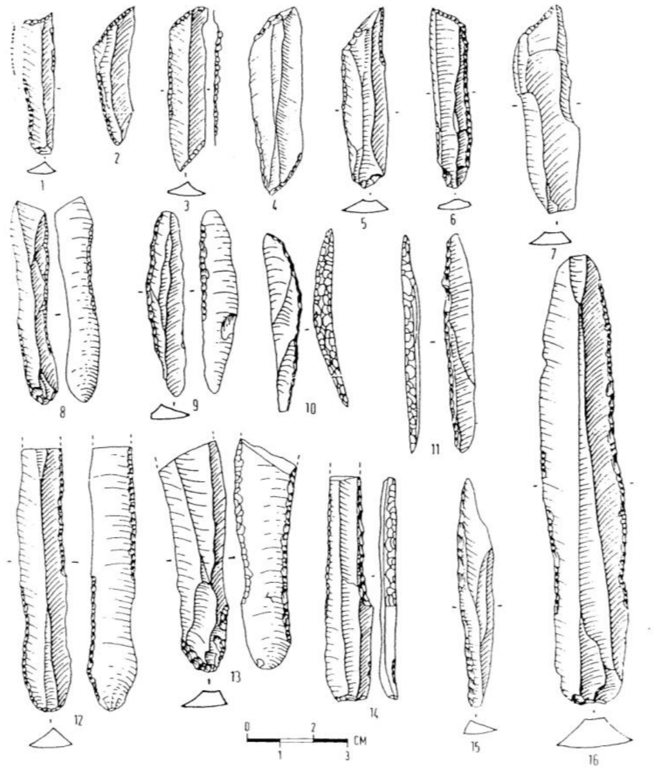

Figure 21. 1-7. Truncated Blades. 8-9/12. Alternately Retouched Blades, 10. Crossed Retouched Blade. 11-14,15. Steep Retouched Blades. 16. Retouched Blade (Balkan-Atlı, N. 1994).

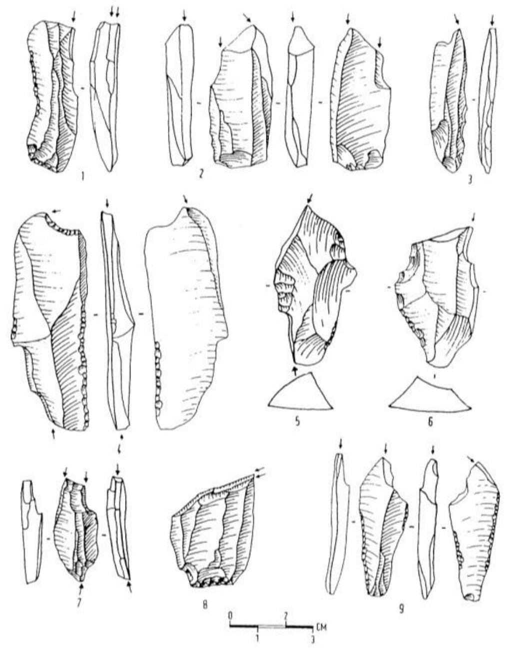

Figure 22. Burins (Balkan-Atlı, N. 1994).

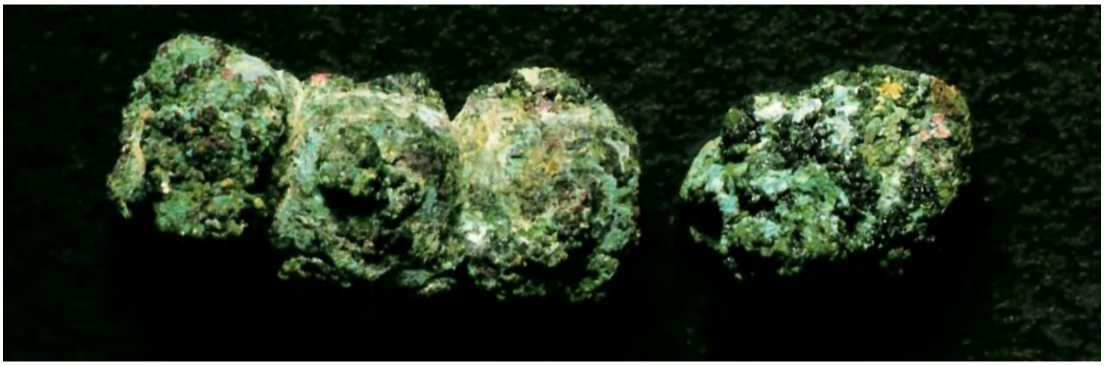

Figure 23. Copper Beads from Aşıklı (Esin, U., Harmankaya, S. 2007).

Figure 24. A Stone Plaque from Aşıklı (Esin, U., Harmankaya, S. 2007).

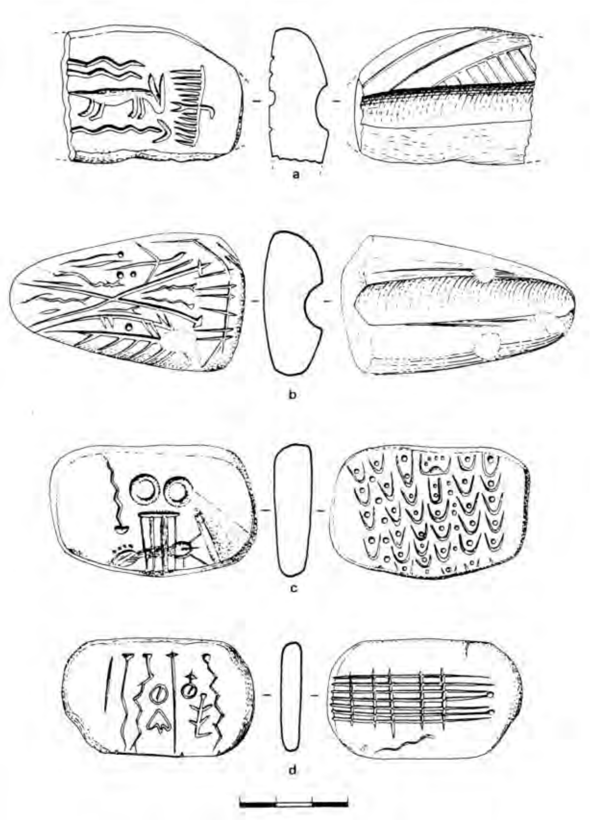

Figure 25. Stone Plaques from Jerf el-Ahmar (Stordeur, D., Jammous, B., Helmer, D., Willcox, G. 1996).

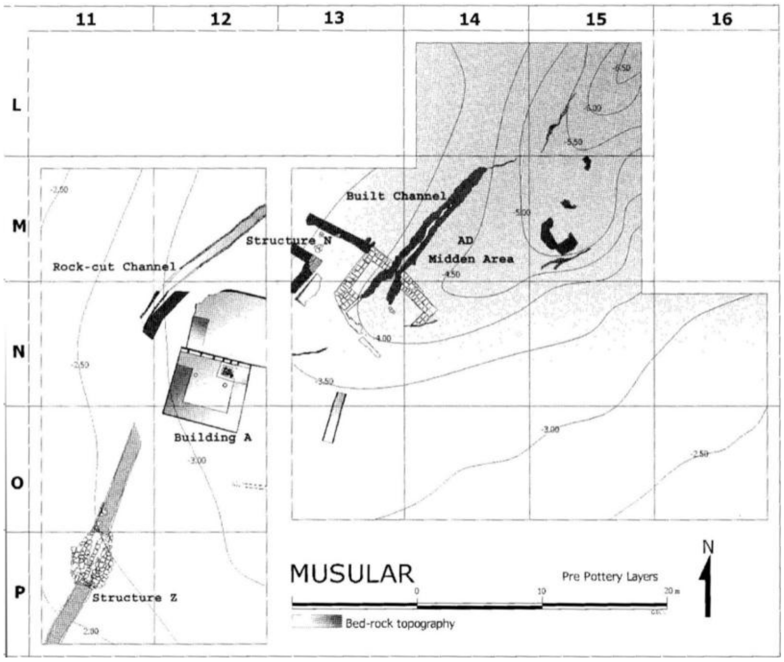

Figure 26. The Plan of Musular (Duru, G., Özbaşaran, M. 2005).

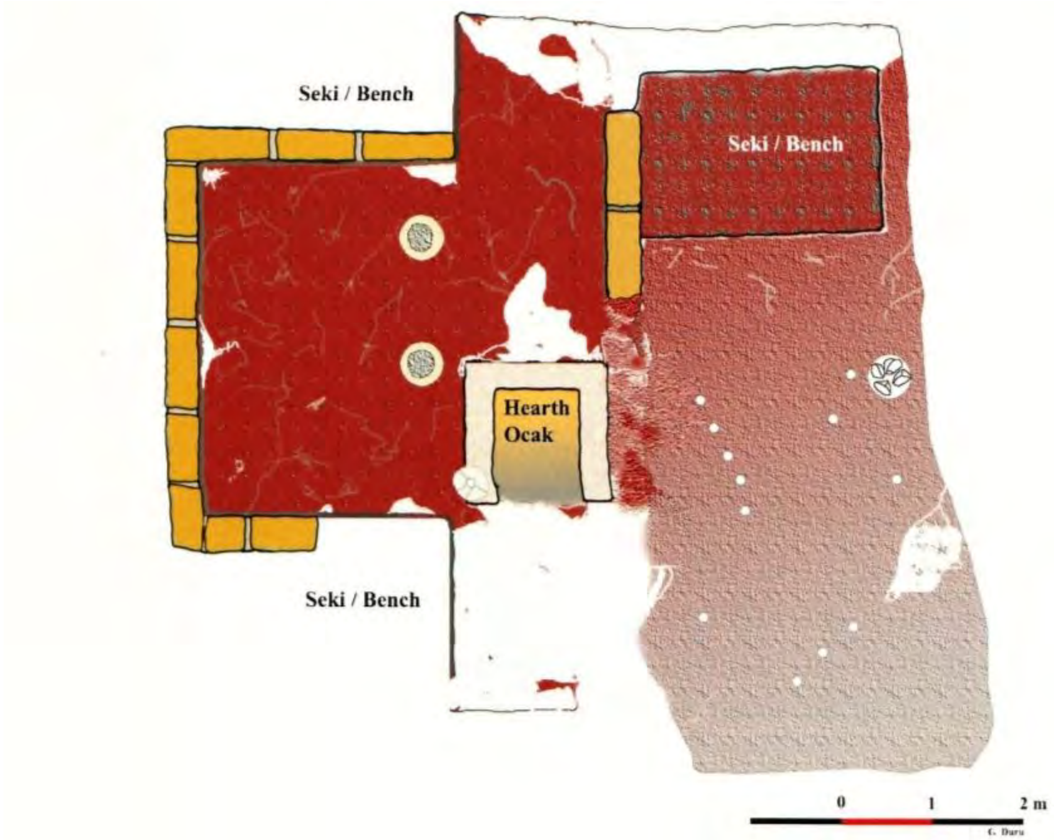

Figure 27. The Plan of the Building A (Özbaşaran, M., Duru, G., Kayacan, N., Erdoğdu, B., Buitenhuis, H. 2007).

Figure 28. Arrowheads from Musular (Özbaşaran, M., Duru, G., Kayacan, N., Erdoğdu, B., Buitenhuis, H. 2007).

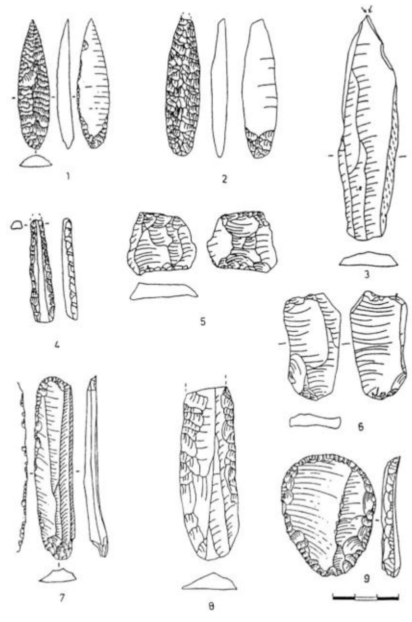

Figure 29. Musular Obsidian Tools: 1-2. Arrowheads, 3. Burin, 4. Borer, 5-6. Splintered Pieces, 7-8. Retouched Blades,). Scrapers. (Kayacan, N. 2003).

Figure 30. Flint Blades from Musular (Özbaşaran, M., Duru, G., Kayacan, N., Erdoğdu, B., Buitenhuis, H. 2007).

Figure 31. Kömürcü Kaletepe (Balkan-Atlı, N. 2000).

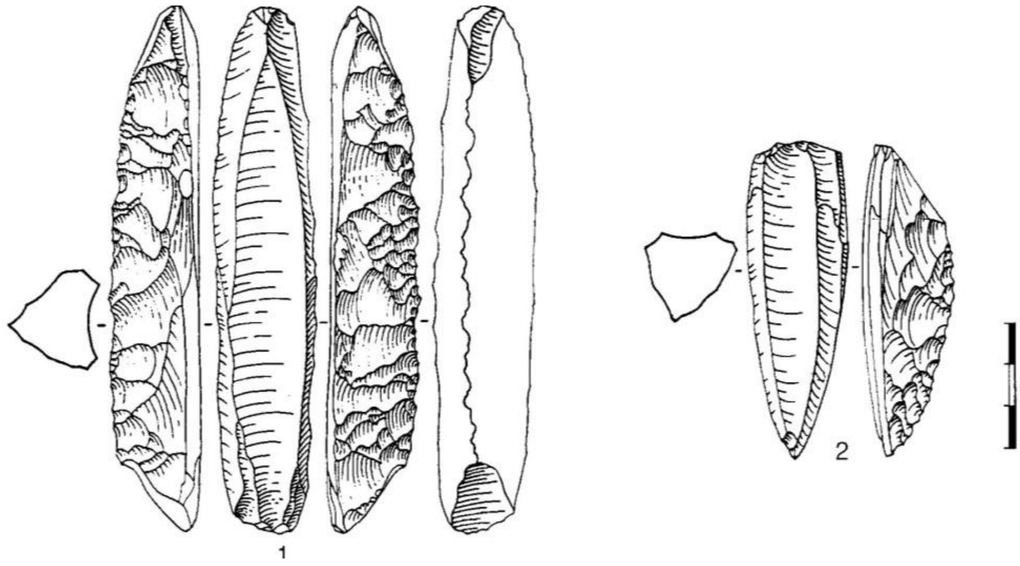

Figure 32. Kaletepe Naviform Core and Unipolar Core (Balkan-Atlı, N. Didier, B., Cauvin, M-C. 1999).

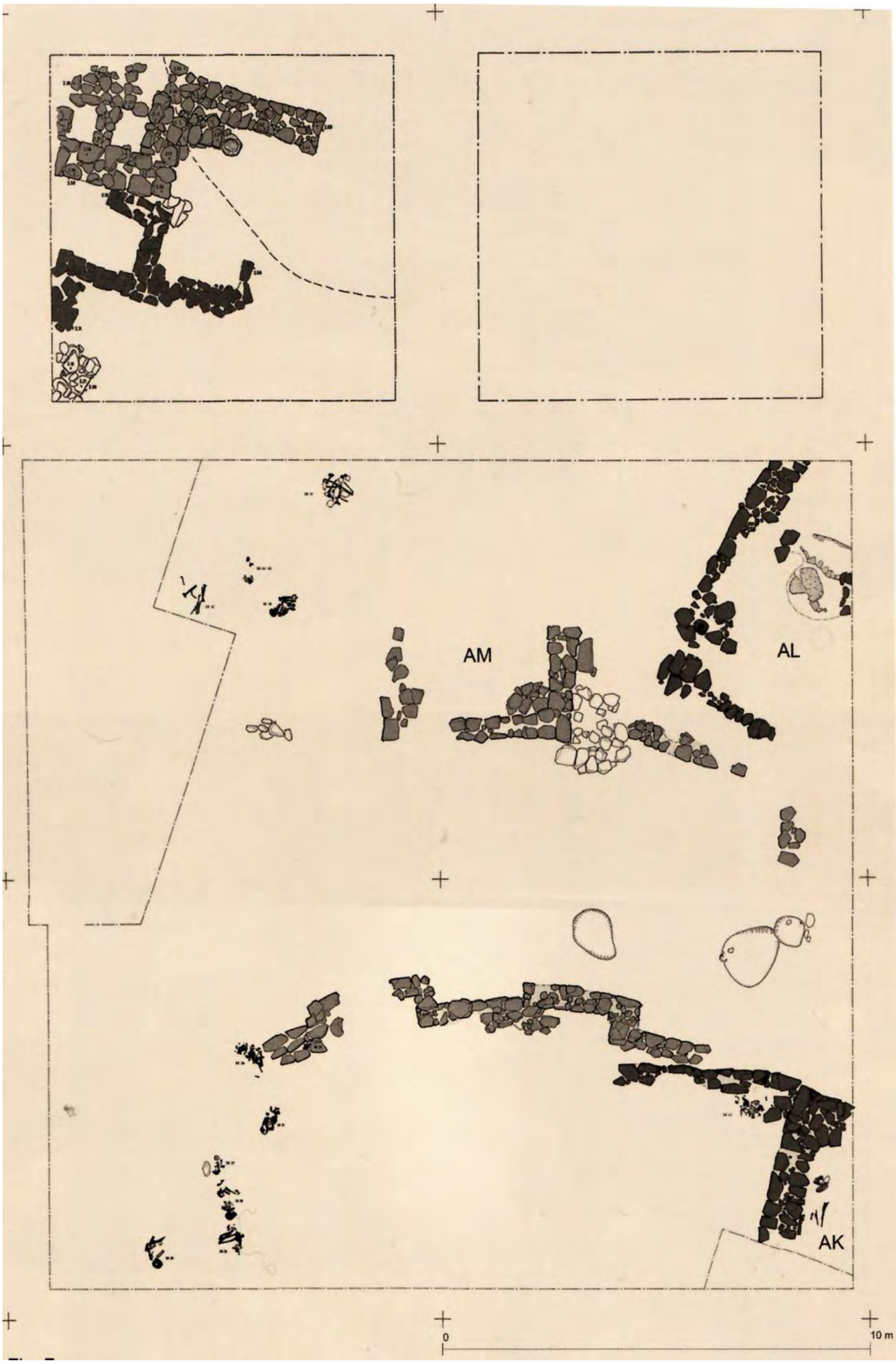

Figure 33. The Architecture of Tepecik-Çiftlik (Bıçakçı, E., Altınbilek-Algül, Ç., Balcı, S., Godon, M. 2007).

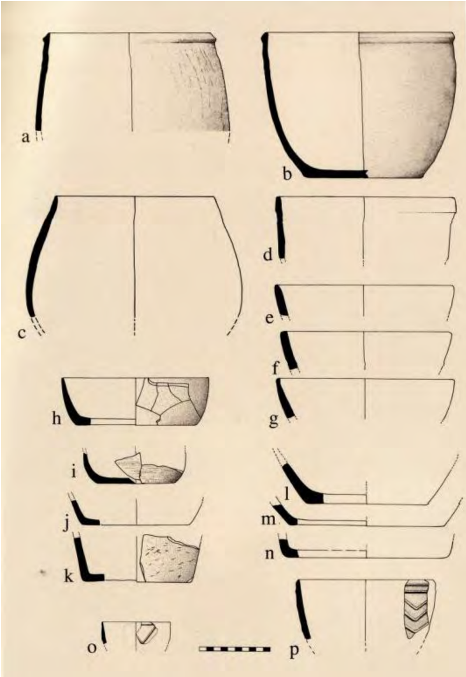

Figure 34. Neolithic Pottery (Bıçakçı, E., Altınbilek-Algül,Ç., Balcı, S., Godon, M. 2007).

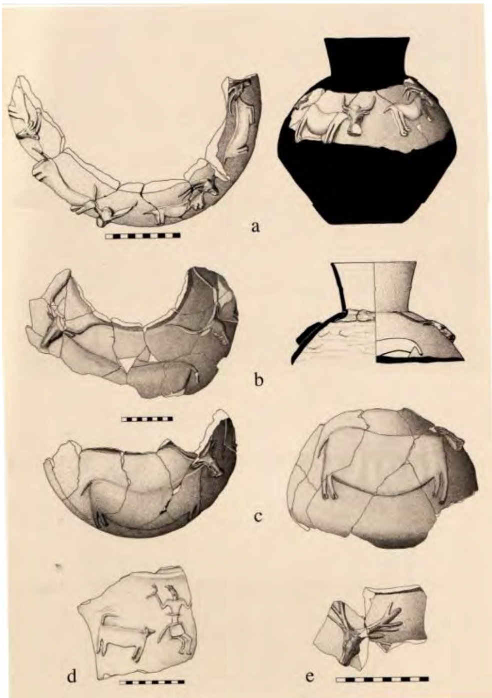

Figure 35. Chalcolithic Period Figured Pottery (Bıçakçı, E., Altınbilek-Algül, Ç., Balcı, S., Godon, M. 2007).

Figure 36. Neolithic Period Arrowheads (Bıçakçı, E., Altınbilek-Algül, Ç., Balcı, S., Godon, M. 2007).

Figure 37. Bone Idols (Bıçakçı, E., Altınbilek-Algül, Ç., Balcı, S., Godon, M. 2007).

Figure 38. Stamp Seal (Bıçakçı, E., Altınbilek-Algül, Ç., Balcı, S., Godon, M. 2007).

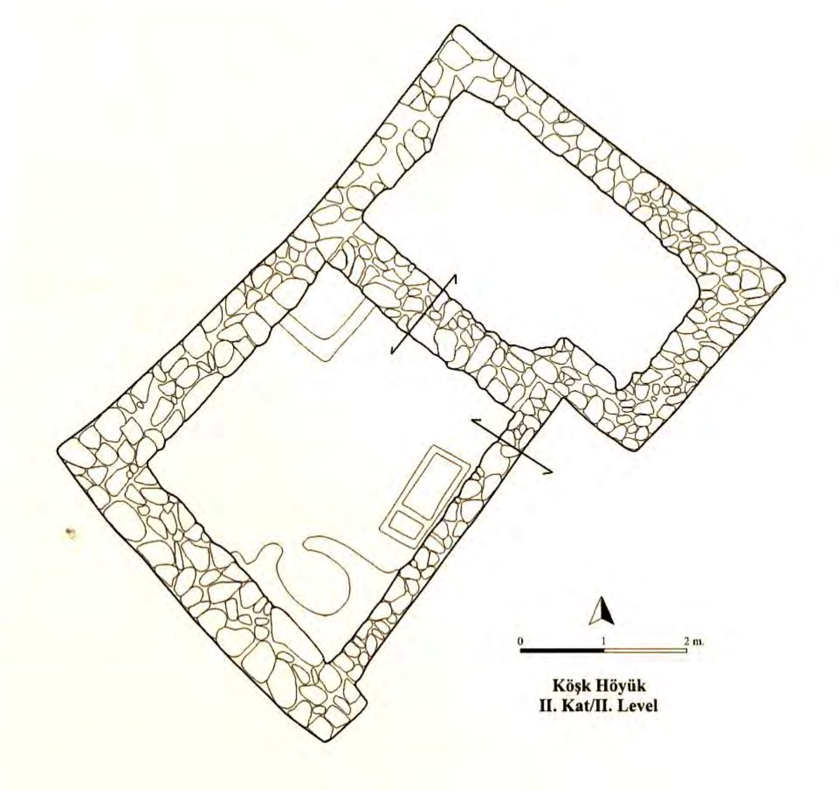

Figure 39. Köşk Höyük House Plan, Layer 2 (Öztan, A. 2007).

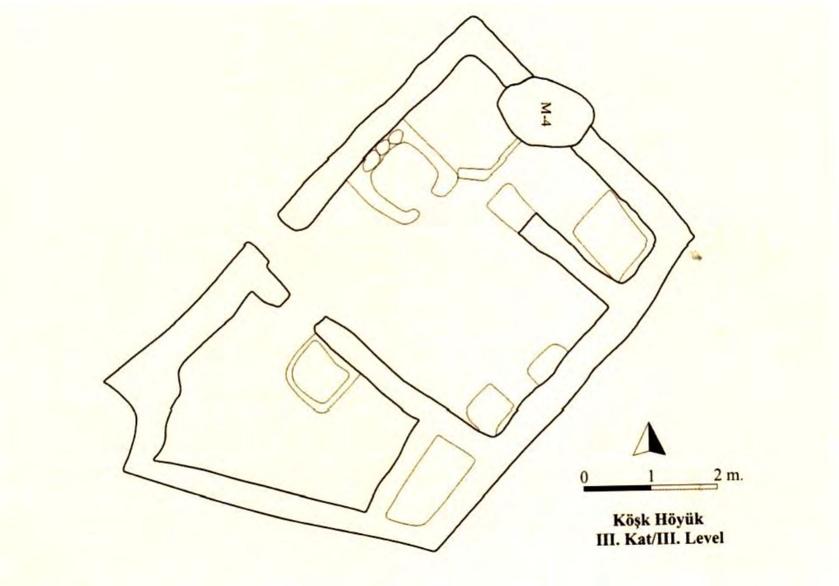

Figure 40. Köşk Höyük House Plan, Layer 3 (Öztan, A. 2007).

Figure 41. Wall Painting (Öztan, A. 2007).

Figure 42. Plastered Skulls (Öztan, A. 2007).

Figure 43. Anthropomorphic Pottery (Öztan, A. 2007).

Figure 44. Figured Pottery (Öztan, A. 2007).

Figure 45. Figured Pottery (Öztan, A. 2007).

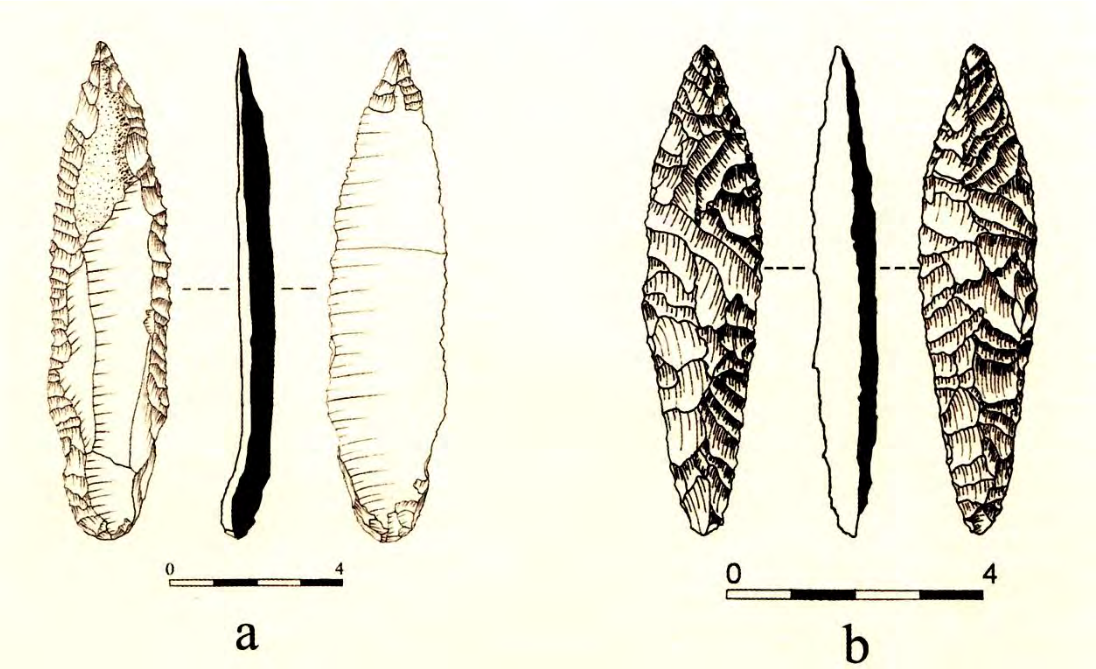

Figure 46. a. Spearhead from Layer 3, b. Arrowhead from Layer 1(Öztan, A. 2007).

Figure 47. God and Goddess Figurines (Öztan, A. 2007).

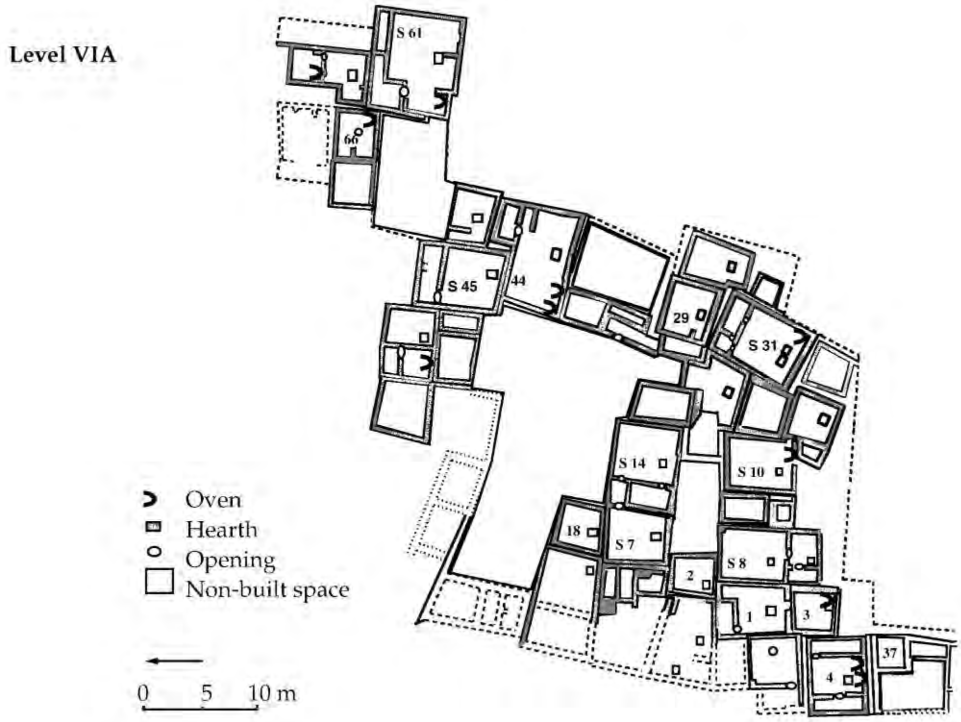

Figure 48. Plan of the Level VIA (Düring, B. S. 2001).

Figure 49. Flint Dagger (Conolly, J. 1999a).

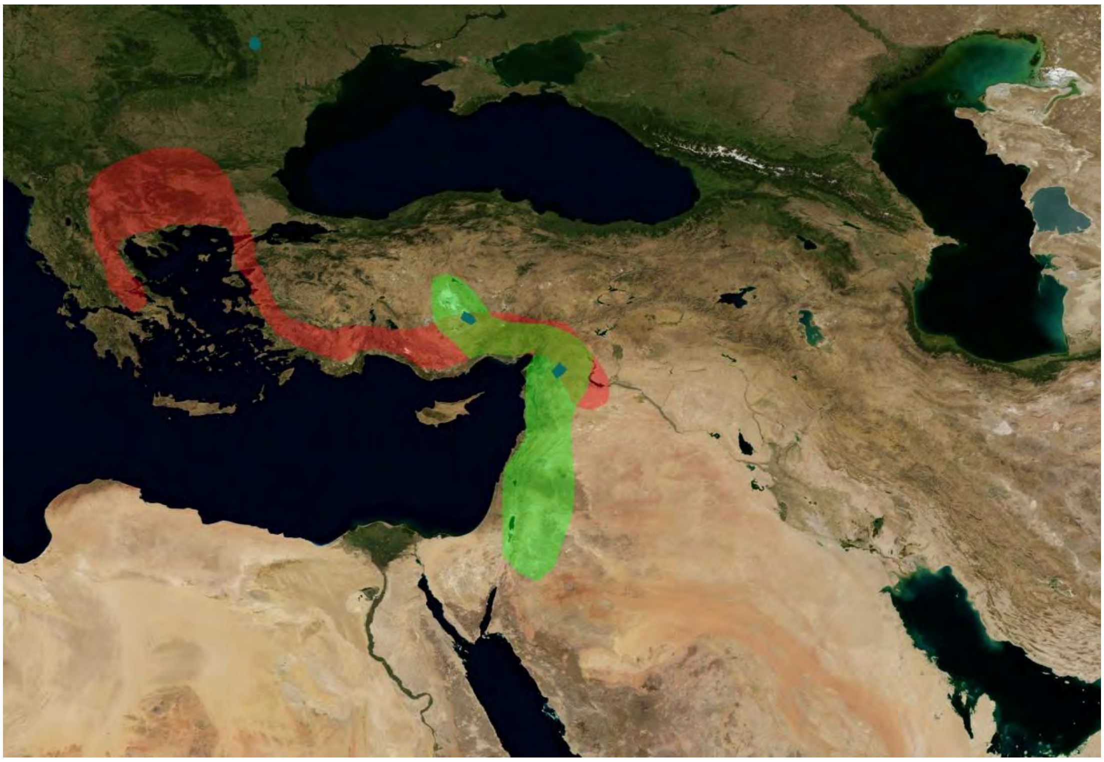

Figure 50. Map of the diffusion areas of the Central Anatolian Obsidians (green color), Phalanx Idols (blue color) and Spiral Decorated Stamp Seals (red color).