NEOLITHIC SETTLEMENTS ON BALKAN
a comparative study between Durankulak and Sitagroi
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ABSTRACT

Näslund, C. 2009: Neolithic Settlement, A comparative study between Durankulak and Sitagroi, Uppsala University.

This thesis examines the Neolithic settlements in Durankulak, Danube, north of Bulgaria and Sitagroi in Greek Macedonia at the time when human life went from nomadic and hunting to well organized, agriculture and settled. As a background I present facts about the chronology, I will look for similarities and differences in the climate and the environment of the settlements and then I make a comparison based on the material findings. The facts, analyses and artefacts give a base for understanding the daily life in Durankulak and Sitagroi. By comparing the settlements I will investigate if the Neolithization was a homogenous process on Balkan or if there are differences that indicate external inputs from several directions.

Keywords: Durankulak, Sitagroi, Spondylus, Danube, Drama, Dobruzha, Neolithization
1. INTRODUCTION
The Balkan Peninsula is a crossroad in Europe where people always have met and mixed. There are influences from all directions and it is an excellent area for studying the life of the first farmers.

The transmission when humans went from being nomadic gathering-hunting-people to be settled farmers is an important period in the prehistoric Europe that began on Balkan. This period is characterized by the building of houses, an increase in the production of ceramic and the knowledge of metalwork. The agriculture production intensifies with large-scale cultivation of wheat and barley stored in large vessels and permanent silos. Monumental settlement, architecture and the disposal of the dead in small, unmarked cemeteries also mark this period. There is also intensification in expressing personal and group identity that can be seen from items of personal adornments made of exotic materials such as Spondylus and metal such as copper and gold. New species of animals and plants are noted and there is a new way of organizing the daily life.¹

1.1 Aim
The aim of this thesis is to investigate if the environment and climate affected the Neolithization process on Balkan. I will do so by investigating the archaeological data from two well dated and published excavations; Sitagroi, on the plain of Drama in the south of Balkan and Durankulak, at the Dobruzha plain where Danube meets the Black Sea.

It will be interesting to observe if it can be revealed what the climate and the environment was like during the Neolithization process by looking at the similarities or differences in the daily life between these two areas. My questions are; what differences can be observed between the Neolithic settlements in Sitagroi and Durankulak? Can the similarities and differences be explained by the climate, vegetation and/or geological conditions? The purpose of this paper is to describe the conditions under which the Neolithic people lived in Durankulak (Hamangia culture I-IV) and Sitagroi (Sitagroi culture I-III) by comparing the food, architecture, burials, pottery, figurines, chipped stones, Spondylus and metal. I will furthermore consider this in the context of the vegetation, climate, environment and fauna for each place during this time.

¹ Bailey 1998.
1.2 Previous Research

The Balkan is a well documented area where archaeologists are excavating, publishing and discussing their own country in their own language, but there are few or no comparing studies where scientists look outside the borders of the present countries in this area. Example where parallels are made in specific fields can be seen in Sitagroi II where Elster and Renfrew discuss the metal artefacts from several places in the Balkan Peninsula, but it does not include any overall reasoning.²

The 1960s active research about Neolithic Balkan during to Demoule and Perlés under two influences: on one side the Germanic “historicocultural” tradition that focused exclusively on chronology and cultures with little anthropological perspective, on the other the Anglo-Saxon tradition, which focused on individual sites, emphasizing economic and environmental reconstructions.³

In this thesis I will make a first study between two micro-areas, today located in two countries, excavated and studied in different ways. The overall material about artefacts and conditions on the two sites are found in the excavation reports Durankulak, Band II, die prähistorischen gräberfelder von Durankulak, Teil 1⁴ and Teil 2⁵ by Henrietta Todorova and Excavations at Sitagroi, A prehistoric Village in Northeastern Grease, Volume I⁶ by Renfrew and Gimbutas as well as Elster and Renfrew’s Prehistoric Sitagroi: Excavations in Northeast Greece, 1968-1970. Volume 2: The Final Report⁷.

Douglass W. Bailey’s Balkan Prehistory, Exclusion, incorporation and identity⁸, is a study of the area at this time that I have used as a background. Another important source is Jean-Paul Demoule and Catherine Perlés, The Greek Neolithic: A New Review⁹, where the authors discuss five phases in the Greek Neolithic and the present state of research.

Other literature, articles and reports I have used are presented in each chapter.

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² Renfrew et al. 1986, 482.
³ Demoule & Perlés 1993, 356.
⁴ Todorova 2002a.
⁵ Todorova 2002b.
⁶ Renfrew et al. 1986.
⁷ Elster & Renfrew 2003.
1.3 Method and materials

I made my research by visiting Durankulak and Sitagroi. I travelled around the plain of Drama and I lived on the Dobruzha steppe. I have also seen some of the artefacts at museums and had the possibilities to take part of photos and notes from the Durankulak excavation for this thesis. I have been able to use the Nordic Library in Athens and libraries at the American Institute, Sofia, the Historical Museum in Yambol and Kabyle, Carolina Rediviva, Uppsala and Medelhavsmuseet in Stockholm. I have also visited the museums in Sliven, Varna, Sofia, Dobrich, Drama and Thessaloniki. To learn more about the chronology at Balkan I visited the mogila in Karanovo.

Pollen analysis and reports about climate changes provide facts about what the surrounding area and the weather was like in the Neolithic time period. I have been searching among the latest published articles, reports and discussions for information that are presented in each chapter.

The Balkan Peninsula can be defined as an area surrounded by water; the Adriatic Sea in the west, The Mediterranean Sea in the south, the Black Sea in the East and the Danube River being the northern boundary. This is a large area to investigate and I have therefore chosen to concentrate on the northeastern part represented by Durankulak, on Dobruzha and
at a Mediterranean site, Sitagroi at the Drama plain. There are 670 kilometres between the
two places which are separated by the Balkan Mountains and the Rhodope Mountains and
there could be differences in the past and present climate and flora/fauna (fig 2).

This study is about two micro-regions without taking into account the boarders and
countries that exist there today. This method is used in *The Corrupting Sea: A Study of
Mediterranean History*\(^\text{10}\) by Peregrine Horden and Nicholas Purcell where they write the
history of the Mediterranean in a way that is not yield to imperial or romantic stereotypes and
broaden the history of the Mediterranean with disciplines such as anthropology, ecology and
ethnography. I have used their theory that The Mediterranean Sea consists of micro-regions
with similar or different climate and surrounding nature and accept their conclusion that there
are differences in the environments that make it impossible to see a big area as one unit.

In this study I have chosen to analyze the data thematically and analyze the different
components of the system of a culture such as food, architecture, burials, pottery, figurines,
chipped stone, *Spondylus* and metal. I will not analyse the functions nor if these artefacts
reflect social, gender or chronological structures which is beyond the target of this paper. I
will only observe the differences seen between Sitagroi and Durankulak.

The period of investigation is 5500-4500 BC and I have decided to compare Sitagroi I-
III with Hamangia I-IV. According to Henrietta Todorova they correspond in time and both
these cultures are well dated by radiocarbon analysis.\(^\text{11}\) This is a period of time when the first
farmers settled in Sitagroi and Durankulak. Early finding of metal occurs and an increase is
seen in the ceramic production.\(^\text{12}\) It is an interesting phase in the European history that
involved major changes for the humanity.

Comparing the sites on Balkan is difficult because there are no similarities between the
archaeological ways of working. According to Douglass W. Bailey it is due to linguistic
problems in the area and archaeological geographies with the modern borders of political
nation-states.\(^\text{13}\) There are also international differences how the research is published where
political constraints have contributed to the difficulty of aligning the modern study of what
were homogeneous archaeological entities. There are differences between the regions in the
quality and quantity of publications and in the degree of detail and it is important to
understand the geographic and chronological relationships of the cultural constructs.

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\(^{10}\) Horden & Purcell 2000.
\(^{11}\) Todorova 2002a, 36, 49, 310f, 318, Willis 1994, 771.
\(^{12}\) Todorova 2002a, 128.
\(^{13}\) Bailey 2000, 12.
Some of these general problems are applicable in this study. The excavation report from Durankulak is focused on graves because the cemeteries are larger than any other in the Balkans at this time or before.\textsuperscript{14} In Sitagroi, on the other hand, no graves have been found which is common in northern Greece where there are cremation burials found in the buildings under the floors or in pots.\textsuperscript{15} These differences in context are also notable in the chapter about pottery. The Sitagroi ceramic are analysed and organized although, the pottery found in Durankulak are treated as grave gifts and there is no possibilities to compare the findings without going back to the artefacts. The architecture in Durankulak is very well preserved compared to Sitagroi where almost nothing of the buildings remains due to fire.

Finally, this study will be performed in a holistic way to present a picture of the daily life in Sitagroi and Durankulak.

2. CHRONOLOGY

One of the main problems with comparing studies related to the Balkan Peninsula is the chronology; each country has its own way of structuring and naming its cultural periods. The chronological discussion is greatly limited and the main objectives of the Sitagroi project were to clarify the chronological position of the Balkan Late Neolithic and Chalcolithic periods (Tabl 3) and their relation to the Aegean. The results were revolutionary for the whole of south Eastern Europe and have been discussed repeatedly.\textsuperscript{16} In the thesis I will avoid local sequences of phases such as the Mesolithic, the Neolithic and the Early Bronze Age and instead use the C\textsuperscript{14} absolute dating when it is possible. In the case other scientists have C\textsuperscript{14} BP dating I have used Reimere \textit{et al.}\textsuperscript{17} and Stuiver \textit{High-Precision Radiocarbon Age Calibration for Terrestrial and Marine Sampled}\textsuperscript{18}, to convert to calibrated years. All dates should be seen only as approximations of the true ages.

Lolita Nikolova have made an important work with Balkan Chronology in \textit{“The Balkans in Later Prehistory, Periodization, Chronology and Cultural Development in the Final Copper and Early Bronze Age (Fourth and Third Millennia BC)"} and has also kindly assisted me with facts and contacts for this thesis (tabl 1). Nikolova discuss the term “Bronze Age”, which she in her periodization system use as describing structures connected with the earliest

\textsuperscript{14} Bailey 2000, 198ff.
\textsuperscript{15} Bailey 2000, 194.
\textsuperscript{16} Andreou \textit{et al.} 1996, 589.
\textsuperscript{17} Reimer \textit{et al.} 2004, 1054ff.
\textsuperscript{18} Stuiver \textit{et al.} 1998.
appearances of the arsenic bronze, as in Durankulak. She notes that other authors use the term proto Bronze for the same horizon.19

Tabl I. Nikolova subdivision of Neolithic at Balkan based on C14 dates: 20

<table>
<thead>
<tr>
<th>Phases</th>
<th>Typical</th>
<th>Calibrated years BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Neolithic IA</td>
<td>Monochrome pottery</td>
<td>6200-5800</td>
</tr>
<tr>
<td>Early Neolithic IB</td>
<td>White painted pottery</td>
<td>5750-5520</td>
</tr>
<tr>
<td>Early Neolithic III (EN IIB)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Early Neolithic chronology end 5530-5480 with Karanovo II.*

<table>
<thead>
<tr>
<th>Phases</th>
<th>Typical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late Neolithic I</td>
<td>Innovating, biconical ceramic, earliest Vinca and Hamangia.</td>
</tr>
<tr>
<td>Late Neolithic II</td>
<td>Karanovo I, early Vinca, Earliest Boian, Hotnitsa, Gradeshnitsa, Hamangia.</td>
</tr>
</tbody>
</table>

*Neolithicum end 5000-4900 BC.*

<table>
<thead>
<tr>
<th>Phases</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Early Copper Age</td>
<td>Later Vinca and Boian, late Hamangia, Gradeshnitsa, Slatino, Sitagroi.</td>
</tr>
</tbody>
</table>

Slavchev, on the other hand, thinks that the Neolithic period in Bulgaria can be roughly divided into two early Neolithic phases approximately 6000-5450 BC and a late Neolithic phase lasting until 4900 BC. It is followed by the Chalcolithic or Copper Age, which for Bulgaria corresponds to the dating approximately 4900-3800 BC. For some regions in Bulgaria there is a still-debated middle Neolithic period, dated to 5450-5300 BC. The Chalcolithic is the period in which copper was used, as well as stone tools. This term is used by scholars of the prehistory of Bulgaria and Anatolia and correspond to the late Neolithic in Greece.21

The Late Neolithic is the time period where destruction levels are found; and there are shifts in settlements and a spread of black, burnished ware. The hypothesis is that there was a migration from Anatolia to the Balkans at the beginning of this period and that this also was a period of territorial expansion when central and eastern Macedonia and Thrace were settled.22

19 Nikolova 1999, 5.
21 Slavchev 2008, 34.
22 Demoule & Perles 1993, 387f.
The settlement in Durankulak was first occupied from 5000 to 4200 BC by inhabitants belonging to the Hamangia culture.\textsuperscript{23} It has been found by the Black Sea coast in Romania and Bulgaria, in the surroundings of the Danube River and the Dobruzha\textsuperscript{24} area but it is only in Dobruzha and its surrounding areas in the south where this independent development of the Hamangia culture can be seen (Tabl 2).\textsuperscript{25}

The excavation report gives the following dating for the Hamangia culture:

\textit{Tabl 2. Absolute chronology in Durankulak from C\textsuperscript{14} analysis.}\textsuperscript{26}

<table>
<thead>
<tr>
<th>Period</th>
<th>Hamangia</th>
<th>Calibration periods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Late Neolithic</td>
<td>Hamangia I</td>
<td>5250/5299-5000/4950 cal. BC</td>
</tr>
<tr>
<td></td>
<td>Hamangia II</td>
<td>before 5000/4950</td>
</tr>
<tr>
<td>Beginning Chalcolithic</td>
<td>Hamangia III</td>
<td>4950/4900-4650/4600 cal. BC</td>
</tr>
<tr>
<td>Middle Chalcolithic</td>
<td>Hamangia IV</td>
<td>4650/4600-4550/4500 cal. BC</td>
</tr>
</tbody>
</table>

Chapman dates the beginning of the Hamangia culture to as late as 4800 BC.\textsuperscript{27}

\textit{Tabl 3. This study adopts the absolute chronological scheme described in the most recent review of northern Greek prehistory.}\textsuperscript{28}

<table>
<thead>
<tr>
<th>Period</th>
<th>Calibration years BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle Neolithic</td>
<td>5800/5600-5400/5300 BC</td>
</tr>
<tr>
<td>Late Neolithic</td>
<td>5400/5300-4700/4500 BC</td>
</tr>
<tr>
<td>Final Neolithic</td>
<td>4700/4500-3300/3100 BC</td>
</tr>
</tbody>
</table>

The Sitagroi excavation brought to light five phases dating from the Late to the Final Neolithic and the Early Bronze Age. Calibrated radiocarbon moved back the Neolithic phases to the period 5500-3500 BC and the Early Bronze Age dates to the period 3500-2200 BC. While the chronological data harmonized well with the hypothesis of an early southeast European chalcolithic and was in irreconcilable conflict with the traditional view of the equivalence of Troy with Vinca and Gumelnitsa cultures, it was early made clear that Sitagroi phase III had numerous resemblance with Gumelnitsa culture in Bulgaria (Tabl 4).\textsuperscript{29}

Calibrated radiocarbon dates indicate that the occupation of the settlement began as early as 5500 BC and ended as late as 2200 BC.\textsuperscript{30} Radiocarbon data give a satisfactory

\begin{itemize}
\item \textsuperscript{23} Todorova 2002a, 35.
\item \textsuperscript{24} Also seen as Dobrogea, Dobrudja, Dobrudza, Dobruja, Dobrudscha, Dobroudja, Dobrudska, Dobruzda, Добруджа, Transliteration from Institute for Bulgarian Language, BAS, http://transliteration.ibl.bas.bg.
\item \textsuperscript{25} Krauss 2006, 67.
\item \textsuperscript{26} Todorova, 2002a, 69; Todorova, 2002a, 67; Bozilova & Tonkov 1998, 143.
\item \textsuperscript{27} Chapman 2000, 238.
\item \textsuperscript{28} Triantaphyllou 2001, 7.
\item \textsuperscript{29} Renfrew \textit{et al.} 1986, 477.
\item \textsuperscript{30} Elster & Renfrew 2003, xxxi.
\end{itemize}
absolute chronology for Sitagroi, except for the end of phase III and the beginning of phase IV, of which there are no samples available and the dating could be up to three centuries earlier.\textsuperscript{31} Renfrew dated the stage between Sitagroi III and IV to 3500-3100 BC but we lack evidence of the absolute date. Lolita Nikolova think there is two possible datings of the beginning of Sitagroi IV; 3400-3000 BC or 3300-3000 BC. Sitagroi IV represents the later EB I in the northern Aegean.\textsuperscript{32} The excavation report gives the following dating for the phases in Sitagroi:

\textit{Tabl 4. Calibration of radiocarbon determinations at Sitagroi}\textsuperscript{33}

<table>
<thead>
<tr>
<th>Phase</th>
<th>Radiocarbon year BC</th>
<th>Calendar year BC</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>4600-4300</td>
<td>5500-5200</td>
</tr>
<tr>
<td>II</td>
<td>4300-3800</td>
<td>5200-4600</td>
</tr>
<tr>
<td>III</td>
<td>3800-2700</td>
<td>4600-3500</td>
</tr>
</tbody>
</table>

Slavchev modelled \textit{terminus post quem} for Phase III with the dating 4710-4550 BC (68.2\% prob.) and notice that Sitagroi Phase III is poorly dated in its later levels.\textsuperscript{37}

In summary there are still uncertainties in the chronology of Balkan. It is not clear when the Hamangia culture occurred but there is a reasonable dating to 5250/5200 BC. At Sitagroi it is unclear when phase III change into phase IV which is not important for this thesis because I will do the research up to the time period 4500 BC.

\textit{Tabl 5. Comparing phases and absolute dating between Durankulak and Sitagroi:}

| Hamangia I | 5250-5000 (5440-5290)\textsuperscript{38} | Sitagroi I | 5500-5200 |
| Hamangia II | 5000              | Sitagroi II | 5200-4600 (4800)\textsuperscript{39} |
| Hamangia III | 4950-4650  | Sitagroi III | 4600-3500 (4710-4550)\textsuperscript{40} |
| Hamangia IV | 4650-4550       |                |            |

There are no exact parallels between the phases in Sitagroi and Durankulak but I think it is sufficiently similar for a comparing study and my aim is to study development in general

\textsuperscript{31} Renfrew \textit{et al.} 1986, 478.
\textsuperscript{32} Nikolova 1999, 191.
\textsuperscript{33} Elster & Renfrew 2003, xxvii, Table 1.
\textsuperscript{34} Chapman 2000, 237.
\textsuperscript{35} Andreou \textit{et al.} 1996, 586.
\textsuperscript{36} Chapman 2000, 237.
\textsuperscript{37} Slavchev 2008, 109.
\textsuperscript{38} Nikolova 1999, 191.
\textsuperscript{39} Andreou \textit{et al.} 1996, 586.
\textsuperscript{40} Slavchev 2008, 109.
between these two sites (Tabl 5). There are no possibilities to have more exact data for this period and I have to accept these differences.

3. NEOLITHIZATION PROCESS

Neolithization is the spreading of domesticated animals and the knowledge of agriculture that could be defined in evolutionary stages. Cultivation is an activity and domestication is a genetic status evolved from cultivation involving soil preparation, sowing seeds and adding fertilizers. It is a human strategy to manipulate the soil and the composition of plants. This is a process with multiple-stages working towards intensifying the production and increasing a single field of crops. The result is increasing productivity of the land, a larger production, to be able to feed more people and to provide possibility for trade. The initial domestication of animals has been described as a willing partnership where reproduction was isolated from the wild. Domestication can be defined as breeding and living conditions being controlled by humans when a limited number of individuals are removed and isolated from their wild population. The result of this artificial selection is a bottleneck effect with a reduction in genetic diversity.

I. Hodder has the theory that the origin of agriculture was a metaphor and not only a mechanism where the wild were created and tamed symbolically. People settle because it gave positive values in opposition to the wild, the dangerous and the unstructured. According to Hodder the house provided both structure and continuity that could be seen in repeated replastering and by building new houses above old ones.

The Balkan Peninsula was linked to the eastern Mediterranean through movements of people, alliances and exchange that played a vital role in the transmission of domesticated species of animals and plants. The most common theory is that agriculture spread with migration into uncolonized areas when people moved from one community to new settlements, taking with them a suite of crops. There is always a physical transport of stocks of the domestic grain crops into areas outside the natural range of their wild progenitor species. It is commonly believed that the exogenous origin of domesticated plants and animals is from the territory of modern Turkey, Iran and the east Mediterranean coast, involving the river valleys and the sea costs.

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42 Anderung 2006, 9, 20.
44 Archibald 1998, 3.
45 Colledge et al. 2005, 151.
What this process looked like is discussed and several theories have been presented in which European archaeologists have been motivated by regional politics, territorial boundaries, nationalism and/or ethnic identities. The increase of archaeological information on Neolithic settlement has also given basis for new hypotheses.\textsuperscript{46}

The traditional view of the transition of the European Neolithization process is that agriculture first began in the Near East and then spread in a route from Turkey via Crete and the Greek mainland up to modern Macedonia and Serbia and north to the Danube. This opinion was first developed by V. G. Childe in the \textit{Danube in prehistory}.\textsuperscript{47} Demoule and Perlés also suggest an island-hopping route from the east Mediterranean coast to Greece, arguing that navigation had been known since the Late Pleistocene and is demonstrated over the whole Mediterranean area. They also see a clear difference between the sites in Turkish Thrace and the absence of sites in Greek Thrace and Macedonia.\textsuperscript{48} The land-route from northern Turkey across the Hellespont and to the Maritsa valley has always been dubious, because of the lack of sites in the Bulgarian southeast corner and the northwest corner of Turkey although this has been a military zone for a long period of time and archaeological exploration in the area has been sparse.\textsuperscript{49}

\textit{MtDNA} analysis among cattle made by C. Anderung provides a number of theories for the introduction of the domesticated cattle into Europe. A Mediterranean route that maybe included Africa and was extended to the Iberian Peninsula, another following the Danube into central Europe and there is also the theory that aurochs were locally domesticated. \textit{MtDNA} analysis indicates that the domesticated cattle in Europe originate from the Near East rather than local domestication of aurochs. After the introduction of the domesticated cow there was hybridisation with local aurochs and the cows and today’s cattle descend from Anatolia as well as European aurochs.\textsuperscript{50}

Krauss sees livestock and farming as a start of a new cultural evolution that is first located in the south Balkan mountain and then follows the rivers to the north. The process moved in a crescent from Anatolia, the South Eastern Balkan Peninsula, through Thessaly, south of Macedonia, over Thrace to Danube. He also discusses whether the Neolithization

\begin{thebibliography}{99}
\bibitem{Price2000} Price 2000, 27f.
\bibitem{Childe1929} Childe 1929.
\bibitem{DemoulePerle1993} Demoule & Perlé 1993, 365.
\bibitem{Price200029} Price 2000, 29.
\bibitem{Anderung2006} Anderung 2006, 27ff.
\end{thebibliography}
process was a colonisation coming from the south or if it was a transformation from earlier cultures.  

After the excavation in Durankulak Todorova concluded that the first phase of the Hamangia culture did not originate from Anatolia. She pictured a model for the Neolithization in Dobruzha and in the Danube Valley that is different from the rest of the Balkan Peninsula where there was a later Neolithization of the sub-Neolithic population. Todorova confirms wide contacts with other cultures, mostly in an East-West direction in the early phases. Hoddinott considered that proficient farmers with a social structure was crossing Balkan, on foot or by sea without mentioning any origin, drawn by the fertile lowlands of south Eastern Europe, and spread along the north Aegean coast into eastern Macedonia, onto the Thracian Plain and further north to the Danube Delta.  

Later studies indicate that there were two preferred routes where agriculture advanced into Europe, a Mediterranean route and a Danubian route. Scientists that have studied divergent mtDNA lineages of goats in the Early Neolithic period confirm these two main waves for the initial advancement of the Neolithic culture. The Danubian is dated to approximately 7190 BC and the Mediterranean route to approximately 7030 BC.  

Ron Pinhasi from the Department of Biological Anthropology at the University of Cambridge has suggested “a new model for the spread of the first farmers in Europe” where he noticed that the Mesolithic groups in Europe are morphologically diverse and that no visible patterns of affinities can be observed. The conclusion in this study is that the origin of the first farmers that colonized Europe was from central Anatolia and not from the Near East. The suggestion is that they arrived in South East Europe through western Anatolia, and not by sea travelling through the Greek islands. The homogeneity among these first farmers implies a lack of admixture between them and hunter-gatherers and supports an initial logistic dispersal without admixture. The conclusion is that here there were two expansions where the first one was without admixture and was more rapid than that of the subsequent phases.  

Paleobotanical analyses confirm the spreading of plants from the Near East, primarily North-westwards, along the Danube- Rhine axis and then across Europe. In the Danube basin

51 Krauss 2006, 63.  
52 Todorova 2002a, 357.  
54 Francois et al. 2008, 10.  
55 Fernández et al. 2006.  
56 Pinhasi 2003, 11.  
57 Pinhasi 2003, 41f.
there was a high explanatory power of thale cress58 a group of weeds that accompanied the spread of agriculture into Europe. This shows that the Danube area was an important waypoint on the route followed by the spread of agriculture with the range of 0,6-1,3 km/year.59 The most significant changes occurred on the Dobruzha plain that became rich in settlements of various cultures. 60 Durankulak is the only place where there is evidence for the opening up of the canopy or cereal cultivation before this time. The wide variety of species involved makes it unlikely that any form of selective arboriculture was in process.61 The often suggested location of the Near East appears to have even less evidence of large refugial populations. Willis conclusion is that small populations of the types recorded in full glacial sequences probably existed in the Balkans. These populations were most likely located in micro environmentally favourable areas such as south facing slopes and humid higher ground.62

The speed of the spread of agriculture at Balkan is also discussed. D. Fuller and S. Colledge tend to see this development as a part of a short and broad spectrum revolution. Their opinion is that a domestication processing would have taken perhaps 1500-2000 years and the whole evolutionary process from gathering wild wheat to agriculture dependent on fully domesticated wheat might have taken closer to 3000 years.63 This is the same rate, 0,6-1,3 km/year that R. Pinhasi use when he conclude that it may have taken around 100 generations for the Neolithic transition to reach north-west Europe.64 On the other hand Nikolova think there was a very rapidly spread of the first farmers and that it took part over a wide area. She assumes radiocarbon dates from Macedonia and Rumania shows a fast spread during the last two centuries of the 7th century-first century of the 6th millennium BC. Her conclusion is that it took some 150 years to cross a territory of at least 550 km.65

3.1 Neolithization in summary

Sedentism, the process when people went from the nomadic life style of hunter-gatherer to year round settlement, is complicated. If the idea of living in one place emerged from development in a tribe, if it was a migration or a barter of goods with travellers, is not clear.

58 Arabidopsis thaliana is a plant used as a marker for agriculture.
59 Fernández et al. 2006.
60 Slavchev 2008, 34.
61 Willis 1994, 783.
62 Willis 1994, 773.
63 Fuller & Colledge, 2007.
64 Pinhasi et al. 2005.
65 Nikolova et al. 2005, 45.
Todorova suggest that the first inhabitants in Durankulak were proto Neolithic people already living in the area. Renfrew mentions that Bulgarians coming from the north inhabited Sitagroi. Still there is no clear evidence of the origin of the people living in neither area. The environment in Sitagroi and Durankulak are quite similar and both settlements are situated on plateaus near fresh water and close to the Sea. There are possibilities of fishing in sweet and salt water and in the surrounding areas there are forests with animals for hunting. Another fact in common for the two settlements is that the areas are fertile, Sitagroi from alluviations from the Angitis River and Durankulak because of the overflowing of the Danube. It is interesting to notice that both of these micro areas, after more than seven thousand years, still are fertile and used for agriculture.

4. ENVIRONMENT

The Balkan Peninsula is a highly complex region in terms of geology, topography, climate, tectonic activity, and vegetation. The Balkans has the richest diversity of plant-life, 6530 species, compared to other areas in Europe. The main reason for such a rich flora is that many tertiary species have survived the ice age. Both Sitagroi and Durankulak are today agricultural landscapes with small, sleepy villages. It is impossible to know for certain how the nature looked like in the Neolithic time, but pollen analyses and remains of animal bones can give an idea.

The Holocene transition resulted in the immediate expansion of woodland throughout the Balkans; the dominant taxon in Greece was oak and in Bulgaria dominated the birch woodland. The dominant tree species varied from place to place but there was a large amount of similarity in the overall composition with taxa such as oak, hazel, lime and elm.

There was a major vegetation change between 6840-5900 BC and after that hornbeams appear and increase in the woodland around Philippon. The same scenario is seen in Durankulak more than 700 years later. The lack of evidence for these types of trees before the expansion has often led to the suggestion that migration from southerly refuges was an important factor. In Philippon the dominance of oak in woodland is also reduced by the increased abundance of hazel, elm, and ash. Climatic modelling suggests that there was no major climatic change but instead continuous small changes. A gradual maturation of the soils gave a competitive edge to a number of taxa that were present in the forest. Thus

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66 Willis 1994, 770.
67 Willis 1994, 786.
68 Willis 1994, 779.
environmental change such as depletion or maturation of soils has only taken place in the northern part of the Balkans and not in the southern part.  

The development of the present landscape occurred around 5000 BC at Durankulak with a reduction in mixed oak woodland and an increase in grasses. This type of transformation occurred more than three thousand years later at Philippi with a reduction in woodland with oak and an increase in olives and grass families. The present day landscape at Sitagroi was formed after 3100 BC. The first signs of disturbance were a reduction in the density and the diversity of the woodland with an increase of open ground species such as herbaceous and grasses. Ribwort plantain and new trees like walnuts, chestnut, sycamore tree, olive and beech trees are common. It is supposed that the ancient Greeks/Romans imported them, except for the beech, for their valuable resources.

4.1 The Dobruzha Plain

Dobruzha, in ancient time named Kleinskythien, is a big steppe on a plateau, raising 30 m high; stretching from the Danube delta to Albena. The west and the north have the lowest altitude where Danube and the delta can be found; in the east is the Black Sea. The Dobruzha plain has numerous lagoons and marshes and densely forested islands. The landscape represents a typical steppe where water is scarce and with very little rainfall which make it one of the driest places in Bulgaria. The soil in the Danube Delta is fertile and offers excellent possibilities for agriculture. Dobruzha is today named the Granary of Bulgaria and farmers grow wheat, fodder and technical crops on the steppe. Permanent flooding has enriched the soil and made it calcareous but also vulnerable to erosions.

Most of the former forest stands have been cleared for agriculture and there are only fragments of forests preserved, composed mainly of oak, lime, ash, maple and hornbeam. A reed formation dominated by common reed is developed mainly on the western and southern shores of the lake. Neolithic agricultural way of life often led to a large-scale forest clearance. For communities dependent on extensive herding a settlement in floodplain regions guaranteed the supplies of bulk forage required by keeping ruminants.

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69 Willis 1994, 781f.
70 Willis 1994, 784f.
71 Slavchev 2008, 34.
72 Krauss 2006, 34 ff.
73 Bozilova & Tonkov 1998, 142.
The landscape combination of mixed oak forests and marshy, periodically flooded, terrain on the shore of lakes and along river valleys adjacent to the sea, were favourable for the establishment of settlements.  

4.1.1 Durankulak

Lake Durankulak is the most northern lake on the Bulgarian coast and occupies two deep ravines in the Northeast Dobruzha, near Danube (Fig 3). The lake is 5.2 km long and with a width that varies between 0.2-2 km. The maximum dept is 4 meter and the lake level is approximately 40 cm above the level of the Black Sea. It is separated from the Black Sea by a 100-200 m wide sand strip and in stormy weather water from the Black Sea is penetrating the lake; the sand strip is washed away and subsequently forms again (Fig 4). The water in the lake is essentially fresh water though slightly brackish, rich in carbonates, with high pH and does not experience oxygen deficits. There are two islands in the South Western part of the lake, the largest reaches a height of 9 meter and occupies 1.8 ha. According to seismologists the region of Durankulak is the most seismically active in Bulgaria. The soils around the lake and near the sea are carbonate-rich and consist of eroded chernozem with medium water and nutrient-holding capacity.

On Dobruzha there have been extensive findings of wild fauna with forest animals such as red deer, roe deer, wild pig, and wildcat and at the edge of the forest animals such as brown

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74 Chapman & Dolukhanov 1997, 222.
75 Bozilova & Tonkov 1998, 141f.
76 Boyadziev 2004, 10.
77 Chernozem from Russian: Black earth. Dark, heavy, wet soil with a deep and rich humus horizon.
78 Bozilova & Tonkov 1998, 142.
bear, fox and hare could be found. In the open steppe landscape resided wolves, badgers, wild ass and lions.79

Considering the 14C data from Durankulak, the palaeoecological record probably starts with the transitional period between the Chalcolithic and the Bronze Age, a period associated with a decrease in occupation and invasions of steppe nomads. It appears that the lake level rose after the Chalcolithic period because the burials from this time are partly situated under the modern water surface.80 From 5500-5300 cal BC the dominating plants were goosefoot, miscellaneous tribes and couch species along with scattered stands of oak, hazel and elm that formed patches of herb xerothermi steppe vegetation.81 At that time the vegetation surrounding the lake were dominated by plants from the goosefoot family. It can be assumed that the local vegetation resembled a xerothermic (characterized by heat and dryness) steppe dominated mainly by herbs but with scattered groves of oak, hazel, elm, lime and birch in the ravines and valleys. After 4000 BC oak and other deciduous trees such as elm and lime are assumed to have greater importance. Deciduous trees were spreading and the physiognomy of the vegetation cover was gradually transformed into a forest-steppe. A similar transformation from open steppe with groups of trees to a forest-steppe started earlier at ca 4800 BC.82

Fig 4. Durankulak settlement with the Black Sea to the East.

4.2 Plain of Drama

The plain of Drama is built up from outwash fans spreading from the mountains.83 It is flat and abruptly encircled by rather spectacular mountains. The plain is a lime-stone-floored graben, which has sunk in relation to the surrounding upland, it is ellipsoidal in shape and the longer axis being about 50 km aligned northwest to southeast and the width is about 15 km (Fig 5). The altitude of the plain is about 50-80 meter and the fringing alluvial fans rise to

79 Krauss 2006, 44.
81 Todorova 2002a, 311.
82 Bozilova & Tonkov 1997, 143.
83 Grieg & Turner 1974, 178.
over 200 meter. The plain lies within the drainage basin of the Angitis River, which enters the plain by a spring.84

Today there is very little natural vegetation on either the plain of Drama or the surrounding hills (Fig 6). The trees are mainly acacias and the major crops are wheat and tobacco. There is substantial evidence to suggest that the natural vegetation of the area was oak woodland.85 Recent research has revealed that the prehistoric environment of Macedonia differed significantly from that of today. The coastline of Central Macedonia have changed substantially where the great rivers flow into the gulf of Thessaloniki as a result of the combined effects of alluviation, deltaic progradation and the sea level changes. After the late glacial steppe, trees re-colonised the landscape and a deciduous oak forest dominated the lowlands by the Early Neolithic. Between the 7th and 3rd millennium BC the forest changed in composition with an expansion of conifers in the uplands and the extension of the forest to the lowlands. Possible causes of such changes in vegetation include the impact of climate and the migration of species from glacial refugia.86

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84 Renfrew et al. 1986, 25.
85 Renfrew et al. 1986, 41ff.
Most of the alluvial fans existed before approximately 4600-4100 BC. The primary fans were formed before the settlement period, though some of the secondary fans were still in active evolution during or after the period of prehistoric settlement. In contrast to the alluvial fans, most of the other areas of alluvium seem younger than the tells.\textsuperscript{87} An extensive area of alluvium is also found close to the former lake of Philippi.\textsuperscript{88} During the fieldwork at Sitagroi pollen analysis was taken without a result, instead there are diagrams from Philippi, which is nearby.\textsuperscript{89}

6500-2500 BC represents a period when the Philippi region was densely covered by a mixed-oak forest, probably comprising a mosaic of slightly differing kinds of woodland with stands of mainly oak on heavier soils, elm and lime on damper land and with perhaps some glades where trees had fallen down giving sufficient light for the growth of hazel and ash.\textsuperscript{90} The Drama plain remained relatively wooded. Erosion and alluvialition from the Strymon and the Angitis rivers have been noted. The geomorphologic evolution of the lakes and marshes at the bottom of the basins is not yet clearly understood and human habitation in relation to this part of the plains is still unclear.\textsuperscript{91}

Preliminary pollen diagrams dated to 5850±50 BC show that the oak forest was well established in the area, that the tell was probably well wooded throughout the occupation and that man was having a comparatively little effect on this wooded environment.\textsuperscript{92} Over one hundred collections of charcoal were found and 25 were picked out for analysis. Oak is the most frequent type but also ash was found as well as chestnut and hornbeam.\textsuperscript{93} There are relatively high values for umbellifers such as adonis, knapweed and burnet noted in pollen analysis dated to 5300/5500-4140 BC. Trees are represented by oak, hornbeam, hazel with values below 5% while elm and lime reach 2%. Furthermore, single pollen grains are recorded from alder and willow.\textsuperscript{94}

Vegetation change as a result of this arable and pastoral farming would be expected, but there is no such evidence on the Philippi diagrams at this stage. Although Sitagroi is possibly too far away from Philippi for its own vegetation history to be realistically recorded there. It seems that the Neolithic farmers in this region did not have a dramatic impact on the land, and they appear to have left the dense oak forest in favour of the thinner woodland, which must

\textsuperscript{87} Renfrew \textit{et al.} 1986, 29.
\textsuperscript{88} Renfrew \textit{et al.} 1986, 26.
\textsuperscript{89} Greig & Turner 1974, 177.
\textsuperscript{90} Greig & Turner 1974, 183.
\textsuperscript{91} Andreou 1996, 586.
\textsuperscript{92} Renfrew \textit{et al.} 1986, 45.
\textsuperscript{93} Renfrew \textit{et al.} 1986, 59.
\textsuperscript{94} Todorova 2002a, 310.
have existed along the courses of rivers where there was easier access, and perhaps better hunting.\textsuperscript{95} Therefore the fact that the occupation on the tells did not involve much exploitation of the forests even by the smaller population groups might be due to that there was enough open land already available along the river courses. Pollen analyse show that changes towards deforestation occurred first in the later 4\textsuperscript{th} millennium.\textsuperscript{96}

4.2.1 Sitagroi

The Sitagroi tell is situated in the plain of Drama, on the left bank of the Angitis River, 68 meter above the sea level, where the lowland limestone area meets with the alluvium. The general lineation suggests that it may be controlled by a fault. A convex slope leading down to the river terrace where the Angitis is incised into the alluvium to a depth of about 5.5 meter marks the edge of the lowland limestone. There is a possibility that a spring once existed a few hundred meters northwest of the site. There is a stratum about 2.5 m above the river that contained classical sherds, dating to around 300 BC which is an evidence that the alluvium is much younger than the tell. The hypothesis is that a slow aggradation process may have taken place from before the 4\textsuperscript{th} millennium BC to after 300 BC.\textsuperscript{97}

The Sitagroi area belongs to an ecologic region more like Balkan than Greece in nature and it provides a more favourable environment for example the red deer and other dense forest species.\textsuperscript{98} The fauna identified from the animal remains reflects the environment of the site and wild animals and the wild species of Sitagroi are found in at least three different habitats. The aurochs and fallow deer are forest steppe animals that seldom enter a wet environment, although fallow deer can live in semi-swampy forests along rivers. The roe deer are true forest animals that live in the culture steppe where there are small stands of trees. The much larger red deer provide strong competition in a similar environment. These species lived in the drier parts of the Drama Plain, probably in the foothills close to the mountains. With the supposed increase in forestation in the second half of the occupation other species arrived on the plain as indicated by their occurrence in greater numbers. As a summary, the wild fauna identified at Sitagroi suggests an environment very similar to the rest of the Balkans, as proven by the high ratio of forest animals in the sample. Nevertheless, the occurrence of fallow deer, a typically southern species, indicates a somewhat drier climate than that of the

\textsuperscript{95} Greig & Turner 1974, 183ff.
\textsuperscript{96} Nikolova 1999, 23.
\textsuperscript{97} Renfrew \textit{et al.} 1986, 30.
\textsuperscript{98} Renfrew \textit{et al.} 1986, 80 ff.
inner Balkans. And yet most parts of the Drama Plain were certainly wetter than in recent times as can be seen from the presence of beaver.99

5. CLIMATE
The climate has always been important for human living and climate changes have been taken as evidence for movements and sometimes for new innovations. The climate on the Balkans depends on its geographical position, the relief of the landscape and the closeness to the extensive coastline. The mountains, accounting for over 60% of the surface, further complicate the picture by causing large-scale altitudinal variations in both precipitation and temperature.100 Two climate zones can be distinguished; Sitagroi which is situated in the Mediterranean zone (climate zone 8 with minimum temperature -12/-7°C)101 and the rest of the Balkans (zone 7 with temperatures down to -18/-12°C), including Durankulak, which is situated in the temperate lowland and upland zone.102

The northern parts are cut off from the influence of the Mediterranean and receive a predominantly continental climate with cold winters (January maximum temperature is approximately 3°C), warm summers and high annual rainfall (up to 2000 mm/year) with maximum precipitation occurring in May-June. The south of the Balkans has a Mediterranean climate characterised by hot, dry summers and mild winters (January maximum temperature approximately 9-14°C) and with a maximum precipitation occurring in November-December.103

During the last interglacial and full glacial period, Balkans was not affected by the inland ice, permafrost, tundra, arctic desert or forest tundra. From 16 000 BP the European ice-sheets began retreating in the presence of the warmer conditions and the sea-levels in the Aegean and Black Sea rose to within 25-40 m of their current levels. The western and northwestern coasts of the Black Sea have the present shoreline that lies 100-150 m from the position it had during the late Pleistocene.104

99 Renfrew et al. 1986, 71.
100 Willis 1994, 770.
101 According to Köppen; Köppen climate classification is one of the most widely used climate classification systems, developed by Wladimir Köppen, Germany, around 1900. http://www.blueplanetbiomes.org/climate.htm (controlled 2009-07-12).
102 Nikolova 1999, 23.
103 Willis 1994, 770.
104 Bailey 2000, 18f.
The climatic change that resulted in the expansion of mixed deciduous woodland occurred before 8830 BC, at most sites, with great variations between regions.\textsuperscript{105} Bailey noticed that Balkan upper Palaeolithic was a long period containing little significant internal change and that the Mesolithic period may have existed here but is not seen for the reasons that cave and mobile art has not appeared and because there has been a loss of sites due to the sea-level raising.\textsuperscript{106} Changes in climate and flora and fauna were gradual and not dramatic and occurred in the seasonality of the climate. The first significant erosion of the soils started between 5900-3800 BC. There are two suggested reasons for this erosion, climatic change and anthropogenic disturbance. Around 4900 BC winters had become significantly cooler and the summers warmer. Willis suggests that there was soil deterioration rather than climatic change or anthropogenic disturbance that enabled the expansion of some trees species between 6400-3800 BC.\textsuperscript{107}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{image}
\caption{The opening of the Bosphore Strait was important for the Aegean and the Black Sea.}
\end{figure}

### 5.1 Cold winters

The Dobruzha area is comparatively dry in comparison to the rest of Bulgaria and the coast has large temperature differences and low precipitation.\textsuperscript{108} In the winter strong winds blow away the thin snow cover and so contribute to the freezing of the soil.\textsuperscript{109} In the Dobruzha area there are extreme differences in the temperature, from -22°C in the winter to 36°C in the summer and the precipitation is 500-550 mm a year.\textsuperscript{110}

The warmer and more humid weather of today characterized the climate during the

\begin{footnotesize}
\begin{itemize}
\item \textsuperscript{105} Willis 1994, 774.
\item \textsuperscript{106} Bailey 2000, 36.
\item \textsuperscript{107} Willis 1994, 783.
\item \textsuperscript{108} http://omda.bg/engl/history/selishte19_engl.htm.
\item \textsuperscript{109} Bozilova & Tonkov 1998, 142.
\item \textsuperscript{110} Krauss 2006, 38.
\end{itemize}
\end{footnotesize}
period 7500–4500 BC. The “climate optimum” occurred between 6200 and 5800 BC with a yearly average temperature, about 3-3.5° C higher, and it is obvious that the flora and fauna of those times were similar to the present Mediterranean ones.\(^{111}\) In contrast Todorova place the climate optimum between 4200 and 3800 BC and suppose that there was an increase of water volume and a raise of the water level in the course of a resulting drop in salinity in the Black Sea.\(^{112}\) According to the results from the cemetery at Durankulak and through evidence from pollen analysis Todorova place the beginning of the postglacial ingressions into the Black Sea, in relation to the World Ocean, at around 4300 BC.\(^{113}\)

Analysis in Transdanubia indicates that the maximum forest cover occurred 8200 BC (uncalibrated) and was reversed around 3000 BC. Pollen analyses show a massive expansion of beech when the climate slowly turned and grew unambiguously colder in Central Europe.\(^{114}\)

Between 7500–7000 BC, the Black Sea was an interior lake, with a higher salt level than normal fresh water lakes, and it was much lower situated, approximately 100 meters below the ocean, or the Mediterranean Sea of today. When the Bosporus Strait opened, maybe as a result of telluric movements, strong earthquakes and/or the continents derive, the salty water from the Mediterranean Sea rapidly flowed into the Black Sea (Fig 7). The process might have taken a few years, making the two sea levels equal and covering a huge territory with water.\(^{115}\)

This event has a “flood” theory by W. Ryan and W. Pitman\(^{116}\) that argue that Danube was the Noah’s Flood, mentioned in the Old Testament in the Bible. They date this catastrophic scenario to between approximately 7200 BC and approximately 6000 BC. P. Dimitrov and D. Dimitrov also support the flood theory.\(^{117}\) On the other hand, Professor Eric Olausson, Gothenburg University, means that it was melting ice that raised the global sea levels and that the leaking of seawater into the Black Sea was a very slow process. Perhaps it could have occurred between 9000 BC to 5-3000 BC when the Black Sea had reached its present sea level, around 150 m higher than the old level.\(^{118}\)

There are also multiple investigations conducted by marine geologists and recent multidisciplinary research that confirm the occurrence of multiple fluctuations and migrations.

\(^{111}\) Haimovic 2007, 293.
\(^{112}\) Todorova 2002a, 185.
\(^{113}\) Todorova 2002a, 357.
\(^{114}\) Chapman & Dolukhanov 1997, 222ff.
\(^{115}\) Haimovic 2007, 292.
\(^{116}\) Ryan & Pitman 1999.
\(^{117}\) Dimitrov & Dimitrov 2004.
\(^{118}\) Olausson 2000.
of the Black Sea coastline. It is though quite obvious that the migrations of the shoreline proceeded at a sufficiently slow rate (2.5-5 cm/year) and were restricted nearly exclusively to the present-day continental shelf and could therefore not have had any direct effect on prehistoric groups. The general trend of the transgression in the Black Sea was controlled by the rise of the water volume in the global ocean due to the post-glacial melting of major ice-sheets. At the same time, the secondary and tertiary fluctuations might have been caused by factors such as tectonically processes. An important factor was the discharge of rivers flowing into the Black Sea, which presently is estimated to 310 km$^3$ of fresh water annually.\textsuperscript{119}

The period when Hamangia cultures lived in Durankulak includes several significant rises in sea-level culminating at 4600 and 4200 BC, when the sea level rose to more or less the present level. This means that the expansion of farming settlements covering the Northwestern coastal area continued with an environment of increasing humidity and a rising of the sea level. The main features of present-day relief were formed 4500-3200 BC in the coastal area.\textsuperscript{120}

5.2 Mediterranean climate

The climate of northern Greece is a modified Mediterranean regime with long, hot summers and a total rainfall of 400-600 mm. The lowest winter temperature is in January with 9-10º C.\textsuperscript{121} Cores from Macedonia indicate an ongoing reforestation process and the presence of climax woodland of oak, elm, ash, lime and hazel. Pine woods could be found on the slopes. Macedonia has substantially higher rainfall than most of Greece. Data from primarily palynological sequences from northern Greece indicate that the climate was quite similar to that of today.\textsuperscript{122} Samples used for pollen analysis were taken in conjunction with the Sitagrooi excavation, but these did not contain any pollen. Instead analysis was made from Philippi that showed to be suitable for pollen analyses and radiocarbon dating. The palynological studies do not contain any indications about the climate or any changes in the weather in this area at this time.

As the prehistoric vegetation was almost the same as the vegetation we can expect to find in the area today, it is likely that there was a marginally more Mediterranean climate here during this period.\textsuperscript{123} There are sediments from northern Greece analyzed for stable isotopic

\textsuperscript{119} Slavchev 2008, 36f.
\textsuperscript{120} Slavchev 2008, 38.
\textsuperscript{121} Greig & Turner 1974, 177ff.
\textsuperscript{122} Demoule & Perlès 1993, 359f.
\textsuperscript{123} Renfrew et al. 1986, 51.
that reflect periods of rapid climate fluctuations and significant transitions around 5280 BC and 4160 BC. This trend correlates well with multiple marine records as well as with hydrological changes recorded in the Black Sea. Periods of maximum aridity occurred at 5280-4900 BC and at 4160-3570 BC.\textsuperscript{124}

The preliminary results of the investigation of the plain of Rhodope, north of Sitagroi, conducted by the Ephoreia of Komotini and the University of Thessaloniki, offer additional reasons for the general scarcity of prehistoric sites in the area. A eustatic rise in the sea-level can be observed as well as a large-scale alluviation in deltaic areas and along floodplains. Geomorphological changes may also have rendered large parts of the lowlands making them unattractive for occupation during certain periods of the prehistoric past.\textsuperscript{125}

Changes in the climate can only be inferred indirectly from the palynological record of changing vegetation. During the Early Holocene, temperatures must have risen quite markedly and by the 5\textsuperscript{th} millennium BC, summers in the uplands may have been warmer than today with more humid conditions.\textsuperscript{126}

Sitagroi is situated in an alluvial land area which is changing over time. 1916 there was two lakes in the area that are drained today and the entrenched to the river Angitis has changed. Most of the alluvial deposits were formed before 4600-4100 BC. Probably the primary fans were formed before the settlement period but there were secondary fans in active evolution during the settlement.\textsuperscript{127} There are indications of a slight change in the lake level and it is suggested that the area are undercut by streams and that the tells have been about 2-3 m higher than present time. Renfrew’s conclusion is that there is no evidence for a climate change but it is likely that the lake level was rising during the settled period and this have resulted in an increase in sedge communities around its edge.\textsuperscript{128}

5.3 Comparing the environment and the climate
The environment was designed by the climate and there is evidence of climate changes on the Balkan Peninsula. Most researchers talk about small changes. Furthermore there is supposed to have been a climate optimum in Durankulak. Modern analyzing methods could give better information and more research is needed. Most suggested is that the climate was close to that of the present and that there were no dramatic changes during this time. People settled in

\textsuperscript{124} http://adsabs.harvard.edu/abs/2007AGUFMPP31A0180C (controlled 2009-02-14).
\textsuperscript{125} Andreou 1996, 591.
\textsuperscript{126} Triantaphyllou 2001, 9.
\textsuperscript{127} Renfrew \textit{et al.} 1986, 29.
\textsuperscript{128} Renfrew \textit{et al.} 1986, 52f.
Sitagroi had probably a smoother climate than the people that lived in Durankulak where the summers were hot and dry and the winters were hard and cold. It is also clear that the sea levels were raising in both areas and that the edge of floods and seas have moved. In Sitagroi this can be seen in the alluvium and in Durankulak in the rising of the water levels in the Black Sea and in the Danube River.

6. FOOD
One of the most noticeable signals of cultural identity is food. How it is produced is a central issue for all humans. Remains of animal bones are evidence of what meat could be served but it has to be taken into account that the remains from fish and young animals has disappeared and no difference can be seen if the animal was sacrificed in a cult or killed for food. Which crops that were grown on the fields have been mapped by pollen analysis, as in Durankulak or in analysis of wet sieved material which was the case in Sitagroi.

The inhabitants of these settlements went from food-gathering to food-producing which had primarily two consequences for the daily life. First are the new sources of human nutrition and second are the organization and the techniques that are required for the production of food. It is clear that there is a new suite of animals and plants in the Balkan settlements introducing new components to the kitchen. The changes in the domestic fauna seem unlikely to be due to a climatic change alone. Animal husbandry can have been affected by cultural changes, as reflected by the archaeological data.

According to Colledge, Conolly and Shennan farming life began between 7000-5500 BC in the Balkans, They made a study emphasizing the uniformity of the cereal component of the early farming sites and the fact that it was a narrowly focused agriculture. There are three cereal founder crops introduced after 6500 BC; einkorn, emmer, and hulled barley and later the free-threshing wheat was added as well as durum wheat and/or bread wheat and naked barley. It has been suggested that the grain, pulse harvest, straw and husks were used as fodder for hibernate animals.

On southern Balkans hibernate animals were probably not a major problem unlike for the northern parts where the winter was stronger. There are differences between species such as for example that wheat can tolerate and thrive in a wide variety of soils and climatic

129 Bailey 2000, 131f.
130 Renfrew et al. 1986, 70.
131 Colledge et al. 2005, 137ff.
conditions, the wild barley is more drought resistant than the wild wheat and wild einkorn can grow in drier conditions than wild emmer. There was spelt that was resistant to fungus and damp and cold weather as well as naked wheat such as durum and hulled barley. Legumes are also introduced together with pulses such as peas, beans, vetches and lupins that appeared frequently and grasses like lucerne and clover. There is no evidence for any dramatic increases in the intensity of cultivation until after 5500 BC when the simple plough is introduced around 4000 BC. There are arguments indicating the use of simple wooden or antler ploughs for breaking up heavier, but richer, soils from the beginning of 5th millennium BC.  

There were no novel species, plants or animals introduced after 5500 BC as there had been before. Animal bones deposited in a settlement context show that sheep, goat, wild and domestic cattle, wild and domestic pig and red deer account for the majority of animal remains. Caprines got their genetic makeup by humans some 10 000 years ago. They can survive the harshest climates and have the ability to adapt to different environmental conditions. Sheep can possibly have been taken through trading routes during ancient times. Iberian sheep are indicating a Mediterranean trading route and sheep from Caucasus have been linked to North Europe and the Near East. It is most probable that the trading route went via the Mediterranean Sea, either over the water or by the coast. Pigs are descending from the wild boars that are widely spread. Pigs are adaptable and may have been drawn to human settlements. They have over time been kept under loose control which means that hybridisation was common. Domestications of pigs are supposed to be local and pig farming could have come under human control in more than one place during different times in prehistory.  

Wild aurochs was still hunted when domesticated cattle were kept. The finds of aurochs bones decline substantially. Anderungs conclusion is that cattle domestication was a complex and long process happening at different times and in different locations.

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133 Bailey 2000, 177ff.
136 Anderung 2006, 43.
6.1 Donkey for dinner
The Durankulak settlement provides useful domestic information that may assist in the reconstruction of human dietary trends during the Neolithic and Eneolithic in this region. Wild and domesticated animal species have been discovered and provide an ecological picture; *domesticated species* were cattle, swine, sheep, goat and dog; *wild species* were red deer, roe deer, wild boar, wild horse, wild ass, rabbit, badger, wolf, birds, turtle and fish. There is some evidence for the presence of lion, beaver and bear in small quantities. Krauss means that domestication of sheep, goats and pigs comes from Thessaly. For communities dependent on extensive herding a settlement in floodplain regions guaranteed the supply of bulk forage required for keeping ruminants. Animals were grazed together on small islands and when the pasture ran out they changed island. Sheep keeping was usually of minor significance in the river environment.

Animal remains from graves and funerary banquet areas are first observed in Durankulak and show that animals were placed as funeral gifts. There are about 700 bones of 11 species from both domesticated and wild animals discovered in 49 graves and the funerary banquet areas (Tabl 6). Only cranial fragments and teeth are usually in good preservation at present depending on the taphonomic conditions and the obvious regularity of placing only heads, and sometimes only teeth, in the graves. In the Neolithic period the European ass was present in a majority of the graves, in 74 graves of 116. In the Eneolithic there were findings of ass in only five of 15 graves and in the later period the ass started to be replaced by cattle.

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137 Honch et al. 2006, 1493.
140 Todorova 2002a, 316.
Tabl 6. Distribution of the bone remains, number of individuals in Durankulak.  

<table>
<thead>
<tr>
<th></th>
<th>Domestic</th>
<th>Total</th>
<th>Phase I</th>
<th>Phase II</th>
<th>Phase III</th>
<th>% of all</th>
</tr>
</thead>
<tbody>
<tr>
<td>animals</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cattle</td>
<td></td>
<td>52</td>
<td>2</td>
<td>50</td>
<td>37.7</td>
<td></td>
</tr>
<tr>
<td>Dog</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Pig</td>
<td></td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>Sheep/Goat</td>
<td></td>
<td>25</td>
<td>1</td>
<td>24</td>
<td>18.1</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>82</td>
<td>0</td>
<td>4</td>
<td>78</td>
<td>59.4</td>
</tr>
<tr>
<td>Wild</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wild cattle</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Broad-hoofed horse</td>
<td></td>
<td>3</td>
<td></td>
<td>3</td>
<td>2.2</td>
<td></td>
</tr>
<tr>
<td>European wild ass</td>
<td></td>
<td>43</td>
<td>1</td>
<td>4</td>
<td>38</td>
<td>31.2</td>
</tr>
<tr>
<td>Red Deer</td>
<td></td>
<td>6</td>
<td></td>
<td>6</td>
<td>4.4</td>
<td></td>
</tr>
<tr>
<td>Roe Deer</td>
<td></td>
<td>2</td>
<td></td>
<td>2</td>
<td>1.4</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>56</td>
<td>1</td>
<td>4</td>
<td>51</td>
<td>40.6</td>
</tr>
</tbody>
</table>

There is one individual of Aurochs, Brown Bear and Grey Partridge. One pig, one sheep/goat and two ass are registered in phase I-II in the excavation report, whilst here I have noted them in Phase II.

Around 60 % of the animal bones found were domestic animals and about 40 % were from wild, hunted animals. In Durankulak long-horned cattle with large teeth are found, typical for the steppe cultures of the northern Black Sea coast. The number of findings indicate that a large amount of these bulls were slaughtered after the maturation stage and so young that they probably were used for meat and not for milk. The bones from sheep and goats are small in size, typical for the period. There are two or maybe three findings of dog bones corresponding to the morphology of domesticated dogs. The present of domesticated pig is not proved with certainty and its absence might be related to a rite or it might have been because the open habitats are not suitable for the wild boar and the domestic pig husbandry was little practiced.

The hunting species, ass and deer, presupposes that there was a large open landscape that dominated the environment. Woodland must have been poorly represented except for red deer, brown bear and ultimately pig that are indicators for forest. Wild boar is usually an indicator of a marshy habitat, rather than for a wooded one and it was rarely hunted in this area. Red deer in general is an indicator of forest or a mosaic type of landscapes. Hunting was important for the inhabitants and they were highly specialised to kill the wild ass which was

141 Todorova 2002a, 313 f.
142 Bos taurus.
143 Bos primigenius.
144 Todorova 2002a, 322.
145 Todorova 2002a, 317.
the most important meat resource. The second most important animal for hunting was the red deer.  

The wild European donkey (Fig 8) was rather widely spread at the end of the Neolithic in south eastern Europe and it is stated that the ass lived in the territory south of 45 degrees latitude. It was adapted to dry and warm steppes and can be considered a Mediterranean species but seemed to be very frequent on the Dobruzha. It was quite a primitive eqvid with some inherited characteristics, and morphologically similar to the Stenon horse from Villafranchian. It was sized as a nowadays domesticated donkey whose characters might have been partly inherited. The wild donkey disappears as a species after the ending of the Hamangia culture. The climate changes might have had a role in this but the humans might also have had their part in the eradication.  

Isotopic data from Durankulak suggest that the population utilised an almost exclusive terrestrial, C₃-based diet with differential inputs of terrestrial meat sources. Protein in the diets was derived from terrestrial sources, with a predominance of animal products and a minority of the population utilising any marine resources. There are five analysis that are different from the rest of the population where enriched ¹³C values indicate the consumption of marine resources, but it is possible that millet also was an important part of their diet. Stable isotope evidence suggests there were little to no diachronic or sex-based differences in diet at Durankulak.

The paleobotanic studies of the lagoon in Durankulak reconstruct the variability of plant species in the southern part of Dobruzha and provide the possibility to restore a part of the general paleoecology in the region. High peaks for goosefoot and chicory reflect the temporarily abandonment of arable land. Pollen analysis dated to 5300/5500-4140 BC is dominated by herb pollen, constituting 80-95% of the samples.

From the first phase of occupation palaeoethnobotanical finds comprise seed of barley, two types of wheat, emmer, millet, green bristle grass, sheep’s sorrel, soapwort and lentil. Walnuts and chestnuts are also represented. The primary anthropogenic indicators are of corn, barley and emmer that are accompanied by ribwort plantain, knotgrass, nettle and docks.

In the next interval, dated from approximately 4140 BC there are no pollen grains found and oak is still the most common tree together with hornbeam.

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146 Todorova 2002a, 323.
147 Haimovici 2007, 299.
149 http://omda.bg/engl/history/selishte19_engl.htm (controlled 2008-09-03).
150 Todorova 2002a, 310f.
6.2 Breeding bulls

The Sitagroi fauna is of particular importance because of special geographical site features, situated on the border between the Mediterranean and the Balkan regions.

Among the 34 473 bones from Sitagroi, at least 32 species have been identified, with five belonging to the domestic fauna (Tabl 7). The latest are diagnostically found in the fully developed Neolithic of Southwest Asia and the temperate European belt. The artiodactyls species are predominant among the ungulates with two representatives; the chamois and the fallow deer. Both initially occur as sub fossils from Greece, with the fallow deer being conspicuously absent from the European mainland.151

The quantitative composition reveals interesting changes in the fauna during the site occupation when the remains of wild animals become more common during the last phase. The increasing occurrence of pigs and wild animals during the last centuries of the Neolithic is a frequently observed trend.152

The number of wild animals compared to the domesticated ones is very small and indicates that hunting was of secondary value in the Sitagroi economy.153

Tabl 7. Number of identified specimens in Sitagroi:154

<table>
<thead>
<tr>
<th>Sitagroi</th>
<th>Domestic</th>
<th>Wild</th>
<th>Wild %</th>
</tr>
</thead>
<tbody>
<tr>
<td>I-II</td>
<td>7 574</td>
<td>351</td>
<td>4.4</td>
</tr>
<tr>
<td>III</td>
<td>120 189</td>
<td>939</td>
<td>7.2</td>
</tr>
</tbody>
</table>

Most of the transitional individuals between wild and domesticated species are found in phase I-III (Tabl 8). It is suggested from the presence of mostly adult and mature aurochs individuals that man tried to capture the immature wild cattle, since they could be tamed and the adults were killed when they were attempting to protect their young. Among the small-sized cattle three dwarf individuals appear in phase I and are probably the earliest recorded in Europe.155

Wild animals are rare findings at Sitagroi and they must have been taken primarily for fur, feathers or antler, rather than as a dietary staple or even as a complementary meat...
resource. The domestic crops and animals were productive enough to make hunting unnecessary or too costly.\textsuperscript{156}

\textit{Tabl 8. Domestic and wild animal species: Estimated number of individuals at Sitagroi:}\textsuperscript{157}

<table>
<thead>
<tr>
<th>Domestic</th>
<th>Total</th>
<th>Phase I</th>
<th>II</th>
<th>III</th>
<th>% of all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>471</td>
<td>80</td>
<td>126</td>
<td>265</td>
<td>28.7</td>
</tr>
<tr>
<td>Dog</td>
<td>30</td>
<td>4</td>
<td>12</td>
<td>14</td>
<td>1.8</td>
</tr>
<tr>
<td>Pig</td>
<td>289</td>
<td>41</td>
<td>100</td>
<td>148</td>
<td>17.6</td>
</tr>
<tr>
<td>Sheep/Goat</td>
<td>696</td>
<td>116</td>
<td>218</td>
<td>362</td>
<td>42.4</td>
</tr>
<tr>
<td>\textit{Total}</td>
<td>1.486</td>
<td>241</td>
<td>456</td>
<td>789</td>
<td>90.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Wild</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Aurochs</td>
<td>20</td>
<td>4</td>
<td>7</td>
<td>9</td>
<td>1.2</td>
</tr>
<tr>
<td>Badger</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0.2</td>
</tr>
<tr>
<td>Birds</td>
<td>8</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>0.5</td>
</tr>
<tr>
<td>Fallow deer</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0.3</td>
</tr>
<tr>
<td>Fox</td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>0.3</td>
</tr>
<tr>
<td>Hare</td>
<td>11</td>
<td>2</td>
<td>4</td>
<td>5</td>
<td>0.7</td>
</tr>
<tr>
<td>Red deer</td>
<td>52</td>
<td>6</td>
<td>8</td>
<td>38</td>
<td>3.2</td>
</tr>
<tr>
<td>Roe deer</td>
<td>13</td>
<td>3</td>
<td>3</td>
<td>7</td>
<td>0.8</td>
</tr>
<tr>
<td>Turtle</td>
<td>5</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>0.3</td>
</tr>
<tr>
<td>Wild boar</td>
<td>31</td>
<td>5</td>
<td>5</td>
<td>21</td>
<td>1.9</td>
</tr>
<tr>
<td>\textit{Total}</td>
<td>154</td>
<td>25</td>
<td>35</td>
<td>94</td>
<td>9.4</td>
</tr>
</tbody>
</table>

\textit{There is one, two or three individual of Beaver, Brown Bear, Bustard, Carnivora, Chamois, Cyprinidae, Fish, Goosander, Gray-leg Goose, Griffon Vulture, Lesser Mole Rat, Mallard, Marten, Pike, Quail, White-fronted Goose, Wild Cat and Wolf.}

In phase I, approximately 5500-5200 BC, there is an extremely low wild animal ratio compared with a high number of domestic species ratio. Less than 50 \% are Caprovinos and there are a high frequency of cattle and pig. Bones from dogs are recovered infrequently. During Phase II, approximately 5200-4600 BC, the sheep and goat ratio, and particularly that of pig, increased. In Phase III, approximately 4600-3500 BC, the wild fauna increased which probably can be explained by the premonitory signs of a climate change that begins in phase IV. Animals of the dense forest, red deer and those of the wet swampy environment such as wild boar, tripled their frequency in this phase.\textsuperscript{158}

Chamois occur at the beginning of phase III and lived in the mountain range surrounding the Drama Plain and so the inhabitants had to travel a long distances to hunt

\textsuperscript{156} Demoule & Perlés 1993, 361f.
\textsuperscript{157} Renfrew \textit{et al.} 1986, 69.
\textsuperscript{158} Renfrew \textit{et al.} 1986, 67ff.
them. It can be inferred that Chamois was regarded as a “noble” animal, highly prized for its horn-cores rather than as a meat source.159

There is little doubt that domestic cattle were the most important meat animals for Sitagroi’s inhabitants and bull finds are well represented in all phases.160 The presence of pig represented around 15% of the ratio of domesticated animals in Macedonia, 17% in Thessaly and at Sitagroi the proportions are close to 20%. These are quantitative differences that could have been due to environmental conditions.

The existence of wooden areas favours the maintenance of herds, which grazed freely. At the same time, wherever morphological details permit distinction, it is observed that sheep were more numerous than goats.161

*Table 9. Ratios of sheep and goat:*162

<table>
<thead>
<tr>
<th>Phase</th>
<th>Sheep %</th>
<th>Goat %</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>94,9</td>
<td>5,1</td>
</tr>
<tr>
<td>II</td>
<td>82,0</td>
<td>18,0</td>
</tr>
<tr>
<td>III</td>
<td>80,0</td>
<td>20,0</td>
</tr>
</tbody>
</table>

Sheep and goat are both domesticated animals, corroborated by the lack of wild characteristics in the horn-cores. Sitagroi goats are generally of small-to-medium sizes. The sample is too small to determine any change in size during settlement life. Goat age group ratios indicate two functions, their use as meat and their use for milk.163

In the first four phases, a population of small sheep, corresponding to sheep in sites in the Balkans and in the Carpathian basin, is evidence of this. They were smaller than the early domestic sheep in southwest Asia.164 Since there is strong evidence that wool sheep appeared in the Near East in the 6th millennium, it is likely that in the early phases both meat- and wool-producing individuals were kept. Caprovides could be used for secondary products as milk/cheese and the wool for making textiles. Evidence for this is spindle-whorls and loom weights for textile productions and sieves for dairying. At Sitagroi sieve fragments are frequent in phase III.165

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159 Renfrew & Gimbutas & Elster 1986, 87.
160 Renfrew *et al.* 1986, 71ff.
161 www.therafoundation.org/articles/environmentflorafauna/animalandhumandietinprehistoricaegean (controlled 2009-03-10).
162 Renfrew *et al.* 1986, 76.
163 Renfrew *et al.* 1986, 81.
164 Renfrew *et al.* 1986, 79.
165 Bailey 2000, 183.
Wild boar lived around the site and is one of the three most hunted animals, appearing in all phases. Domesticated pig is the only mammal that has been used solely as a meat animal and it is an important meat source in all phases. The age distribution demonstrates that in the overwhelming majority the animals are killed before reaching the end of their second year.

Red deer is the most frequent wild species in phase I - IV. The dense forest environment that surrounded the site in the initial agriculture phase provided an ideal habitat for the species. The large quantity of meat that a red deer yields was an incentive for the hunter and the antlers served as raw material for making tools.166 Fallow deer is the second most frequent cervid of Sitagroi. In the South of the Balkan Peninsula this species was very important for all the facets of human society.167 There are antler fragments from roe deer and whole antlers, in comparatively high numbers, proving that they were used as important raw material for tool making. Only mature roe deer are represented in all phases. The bone remains occur in their normal distribution and indicate that the killed animals were taken to the settlement in their entirety, which is quite understandable since a roe deer seldom weighs more than 20 kg.

Five bones from wildcat and one fragment from a marten are present in phase III. The badger is represented in all phases and the brown bear are along with the fox, the most common wild carnivore present. There are only two poorly preserved fish bones that indicate that the subfossil avifauna was very similar to the present-day ornithofauna. Bird bones are extremely fragmentary and therefore only a very small percentage has been identified.168

Six large and several smaller skull fragments of dogs were found at the excavation. The smallest being a spiz size, one dwarf dog, a humerus, from phase II and the largest size skull of that of the Airedale terriers. The majority of dog bones are broken which suggests that they were eaten. The theory of using the dog as a hunting companion is unsupportable, since hunting is not an important aspect of Sitagroi life. It is likely that dogs were also used for herding or as watchdogs.169

Pollen diagrams from Phillipi indicate that there were little signs of any vegetation other than natural undisturbed woodland in this area. The reason could be that Sitagroi is too far away from Phillipi. The lack of cereals findings could also be explained by the fact that they

166 Renfrew et al. 1986, 80 ff.
167 Haimovici 2007, 298.
168 Renfrew et al. 1986, 90 ff.
169 Renfrew et al. 1986, 86.
were commonly parched to facilitate threshing and the accidental carbonization of a proportion of the grains.\textsuperscript{170}

Instead wet sieving results provide information about the crops. Samples were collected from storage and rubbish pits, around hearths and postholes as well as inside and outside structures.

The smallest number of seed was found in phase I including the twin-grained form of einkorn wheat that was the most numerous crop type followed by emmer wheat in small quantities. There are also small findings of bread wheat, oat and barley grains. Of the pulse crops the bitter vetch was the most numerous. Grass seeds also occur such as brome grass and some unspecified wild grasses. Weed seeds are typical for cultivated land and the most numerous were fat-hen followed by black bindweed, knot grass, speedwell, goosegrass and dock. Wild fruit samples included cornelian cherry and nuts from pistachio and wild almond.\textsuperscript{171}

Einkorn wheat was in phase II still the most frequent finding together with emmer wheat. There are also examples of club wheat, barley, lentils, vetch, peas and chickpea. Examples of Cornelian Cherry and almond are found and new are findings of grape pips. In phase III einkorn wheat was still the most numerous cereal crops. Emmer wheat is also noticed.

Bread/club wheat was present only in phase II. From phase II and onwards it seems that barley was an important crop even if small quantities also was found in phase I. The same applies to the vetch that seems to have been important. Large samples of pea are found in phase II and III but are not a major crop component.

The plain around Sitagroi supported a wide variety of cereals and pulses, while the hillsides provided wild nuts and fruits for collection.\textsuperscript{172} It is striking how little use there was of wild plants and animals.\textsuperscript{173}

6.3 Comparing food

One of the major results of sedentism can be seen at the dinner table. From being dependent on foraging people had the meat stores living in stables and grazing around the settlement. It is not possible to know exactly what diet people had during this period because of losses in the material. For example bones of newborn lambs and piglets are usually poorly

\textsuperscript{170} Greig & Turner 1974, 192.
\textsuperscript{171} Elster & Renfrew 2003, 2f.
\textsuperscript{172} Elster & Renfrew 2003, 11ff.
\textsuperscript{173} Demoule & Perlès 1993, 360.
preserved and smaller fish remains are inevitably lost. There are also problems with identifying if an animal is killed as a sacrifice or as food. There are analyses made in both these areas that can give quite a good picture of what kind of dinner that was served. When the people in Sitagroi were more focused on breeding, the inhabitants of Durankulak still depended on hunting. The wild ass was absolutely the most important hunted animal if we do not believe that flocks of asses where living half domesticated or domesticated around the settlement. If we presume that they were domesticated the people in Durankulak also focused on breeding. There are more species found at Sitagroi which might be due to better conditions for preserving the remains than could be found in Durankulak or because there were more species living on the Drama Plain than on Dobruzha because of the milder climate.

Pigs, sheep and goats are together with the bulls more common in Sitagroi whereas pigs were an important meat source which nearly did not exist in Durankulak. There is also evidence of several wild boars being hunted in Sitagroi and no such findings exist in Durankulak which could be explained by differences in the environment.

Red deer are the most common hunted animal at Sitagroi and the second most common, after the ass, in Durankulak. Fallow deer is the second most hunted animal in Sitagroi and the antlers were used as tools. This raw material was not available in Durankulak where fallow deer did not exist. Fox is the most common carnivore found in Sitagroi while it does not appear at all in Durankulak where instead there are findings of lions and wolves which are not seen in Sitagroi. Life could have been harder in Durankulak, with lions and wolves being common in the forests, than in Sitagroi, where the fox was the most common carnivore.

There are differences between the cultivated plants found at the two sites; einkorn is most frequently found at Sitagroi and do not appear in Durankulak where on the other hand wheat is found which only appear in small quantities in phase II at Sitagroi. Emmer and lentils are found in both areas as opposed to pea that only occurred at Sitagroi. Other species that are found only in Durankulak are goosefoot, chicory, millet, green bristle grass, sheeps sorrel and soapwort. In Sitagroi there are findings of oat, bitter vetch, fat-hen, black bindweed, speedwell and goosegrass which are not represented in Durankulak. Even fruits and nuts differ; walnuts and chestnuts are found in Durankulak while pistachio, almond, cherry and wild grape were grown in Sitagroi.
7. THE EARLIEST SETTLEMENTS

The Neolithic was about the regularization of living, literally the domestication of humans and animals. There would have been no time for thoughts about the formation identity. When the landscape was tied down, bounded and contained, then the need would have arisen to solidify the dimensions of what it meant to be a person, to be linked to a particular place.\textsuperscript{174} The old life style was replaced by a new which displayed very little continuity with its antecedents, as it appears to have been connected with utterly different cultural traditions. Actually it was the beginning of a new historical cycle enveloped in the middle and lower Danube, the North Western coastline of the Black Sea, Macedonia and Northern Greece. The formation of this system was a complicated process of interaction between cultures from all of these regions, and what is more – from all of the Circum-Pontiac zones – from the Middle of Europe to Caucasus.\textsuperscript{175}

Tell villages arose out of a social landscape; far from being stable it was full of movement and alive with impermanent activity areas and short-lived settlements. In this context, tells may have appeared as symptoms of people’s increasing desires and needs to make permanent, visible statements of continuities in occupation and residence.\textsuperscript{176} Buildings became larger and contained more internal divisions from 5500 BC. Some people marked the boundaries within and between buildings and other continued to build pit-huts.\textsuperscript{177} Most of the long-lived tell villages were abandoned after 4000 BC which is most evident in the lower Danube where the most dramatic changes in building strategies were taking place.\textsuperscript{178} From a landscape of terraces and slopes dotted with small collections of temporarily occupied, simple pit-dwellings and surface structures the river and stream plains were increasingly marked with permanent villages.\textsuperscript{179} Early farming communities regularly drew upon the material culture, such as the use of artefacts. When households, lineages or whole communities wished to emphasise the totality of their social relations, they expressed this in material form where we can see remnants as sherds, ornaments, polished stone axes, grave groups or house assemblages. Through the 5\textsuperscript{th} millennium BC, tell-living spread and led to more complex social worlds where different kinds of persons emerged as a result of these changes. It is, for example, likely that craft

\textsuperscript{174} Slavchev 2008, 65.
\textsuperscript{175} Merpert 1993, 5f.
\textsuperscript{176} Bailey 2000, 175ff.
\textsuperscript{177} Bailey 2000, 153.
\textsuperscript{178} Bailey 2000, 240.
\textsuperscript{179} Bailey 2000, 154f.
specialists and long-distance specialists emerged in this period in the Balkans. In the second half of the 5th millennium BC people were working together in small, well established villages that had grown up over a long period of time, over generations. By the end of the millennium the Balkans was a vibrant place, perhaps de most dynamic part of Europe at this time.

7.1 Hamangia communities
In the scientific literature it is the conventional view that the development of the Balkan-Danube area took place in one of the deepest shifts of ethnocultural character and that it was directly linked to complex events that involved a number of areas in Central and Easter Europe. This cultural transformation was extremely prominent and revealed by all the accessible parameters as site topography, settlement structures, house construction, stone industry and metallurgy. The complex nature of the change occurred while preserving the minimal number of the traits of succession in all the appropriate parameters of the preceding cultural communities. The early agricultural Balkan-Danube zone and the continuity of its cultures were drastically shattered.

The Dobruţa territory were first populated by Neolithic people at the end of the 6th millennium BC and the Durankulak settlement had commenced by approximately 5400-5300 BC. The Hamangia culture, date from the middle of the 6th millennium to the middle of 5th millennium BC, is the first manifestation of the Neolithic life in Dobruţa, developed above all at the end of the Neolithic. As the brass artefacts are rather few Haimovici considered it a Neolithic culture. Hamangia people were small-scale cultivators and plant collectors who made pottery, herded and hunted animals.

There is no absolute date for evaluating the Hamangia phase I depending on the absence of stratigraphic links between the Hamangia sub-phases where habitation sites have only one cultural level and cemeteries only offer occasional, fortuitous, similarities where a later grave cuts an earlier one. A reconstruction of the population show that there were about 348 persons living at Durankulak in phases I-II and that there was a population increase in phase

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181 Bailey 2000, 1.
182 Merpert 1993, 5f., Gurova 2006, 1, 12.
183 Bozilova & Tonkov 1998, 143.
184 Haimovici 2007, 293.
185 Bailey 2005, 58.
III to 530 persons and finally in phase IV there were less inhabitants in Durankulak than in phase I; according to the graves.\textsuperscript{187}

Radiocarbon dating of a core from lake Durankulak enables the tracing of vegetation development and human occupation from approximately 5500-5300 BC and onwards.\textsuperscript{188} This fits well with an increase of the production of buildings and a development of the economy between 5500-3600 BC which can be seen in the changes in burial and expressive material culture.\textsuperscript{189}

Archaeopalynological\textsuperscript{190} records indicate a second development during the time period 3500-3000 BC when stock rearing appears to have dominated the managing of the land.\textsuperscript{191}

Copper, gold, some high quality varieties of stone, shells from \textit{Spondylus} and \textit{Dentalium}, obsidian, quartz, lazulite and other types of material gained more and more significance in the trade of raw materials between the separate regions. The analysis of the archaeological data defines a new social configuration where certain geographic regions are ahead of others in their development. In short, the stone-copper epoch in the Bulgarian land areas may be considered as a “civilization that is distinguishable from the Neolithic” with differences such as a higher standard of living and the new socio-cultural organization”.\textsuperscript{192}

7.2 Massive settlements

Northern regions of Greece supported the earliest proto-humans in the southern Balkans. The Macedonian history begins approximately 6000 BC; here there is a lack of written records and one have to depend entirely upon remains of material and analogies with other cultures in similar stages. The archaeological records are often fragmentary and absolute chronology is tenuous.\textsuperscript{193}

The land area covered by the village was surprisingly small. Unlike some of the earlier tells in Greece, these appear cramped, with buildings butted up tightly to each other, which suggests that almost all activities, such as grinding grain, took place indoors. Except for narrow path- and alley-ways, there was little open space available between the structures.\textsuperscript{194}

\textsuperscript{187} Todorova 2002a, 63.
\textsuperscript{188} Bozilova & Tonkov 1998, 141.
\textsuperscript{189} Bailey 2000, 153.
\textsuperscript{190} Archaeopalynology is the study of pollen grains and spores found in archaeological deposits.
\textsuperscript{191} Bozilova & Tonkov 1998, 141.
\textsuperscript{192} Ivanov & Avramova 2000, 16.
\textsuperscript{193} Borza 1990, 59.
\textsuperscript{194} Bailey 2000, 159.
Field surveys on the Drama plain revealed a significant increase in the numbers of settlements utilizing a greater variety of landscape areas from the end of the 6th to the middle of the 5th millennium BC. After this period followed a phase of aggregation of settlements into fewer, but larger, villages, as Sitagroi, that was established at 5500 BC. There is a remarkable increase noted in the numbers of settlements from 5400/5300 BC and onwards while the size of some sites can be identified as massive even by Aegean standards.

Sitagroi was a place for initial colonization; while there is no indication of earlier occupation on the Drama plain. Renfrew make the conclusion that the first occupants had a Balkan origin. Initial farming colonists may have expanded down the Maritsa Valley or along the Struma River.

The phase I settlements were situated in areas termed prime sites and the available territory was divided up among the various communities. These types of settlement sites would be situated close to water allowing the development of riverine environments where fish could be caught and plots of crops could be planted on alluvial soil. There would be light-soiled land nearby and the uplands were preferred as it offered hunting of animals. At the Drama plain all these requests were fulfilled. In phase II there is a considerable expansion of the number of settlements, the most likely reason for this development is an increase in the intensity of agricultural land use and a greater production of food. In phase III there is a greater richness and Renfrew draw the conclusion that Sitagroi in this phase went from an area of habitation for families to being a village providing a number of services.

In northern Greece continuity can be found at many of the established tells, although over all fewer sites were in use. At Sitagroi there is a reoccupation, with larger houses, at 3500 BC after a break between phases III and IV.

8. ARCHITECTURE

The architecture used on Balkan during this period provide plenty of information about the way the villages were organized and what the daily life looked like for the inhabitants. For example the need for protection is reflected in the way the houses were built.

197 Renfrew et al. 1986, 479.
198 Renfrew et al. 1986, 133ff.
From the middle of the 7th millennium BC people across the Balkans began to build permanent and semi-permanent structures. This change did not appear at the same time across all Balkans and it did appear in different regions and in several combinations.\textsuperscript{200}

The most common material for house construction was wood in combination with mud, clay, straw, twigs and dung while stone was rare and used only in some areas. Regardless of the used materials most of the earlier buildings were single-roomed structures, later buildings had a more complex interior.\textsuperscript{201} In some regions the construction of loose aggregations of pit-huts continued and in others important changes occurred such as the first appearance of tell villages.

From the middle of the 6th millennium BC the buildings were larger and contained more internal divisions. Houses were made of more durable materials and they increasingly became the focus of a wider range of activities practised in the same place over longer periods of time.\textsuperscript{202}

8.1 Houses of stone
The village in Durankulak were well-organized aggregations of buildings of substantial size with several rooms. They were coherently laid out settlements built according to a plan that was repeated over successive generations of house reconstructions. Buildings were rectilinear and large, narrow paths separated individual houses, which stood alone or abutted by other buildings. The structures were robust and made of large wooden posts sunk into foundation trenches and joined together with wooden planks or branches covered with mud or clay. In all building horizons, except for in the earliest ones, buildings were internally divided into separate, mainly rectilinear, rooms. Most buildings contained one oven; some of them had several ovens in separate rooms. Grinding-stones appear frequently as well as low clay platforms and benches built along the insides of the room walls. Pits for permanent storage facilities were dug into the floors. There is also during this time period a concentration of increasingly large pottery vessels, some with capacities up to 200 litres.\textsuperscript{203}

The Hamangia culture settlements were usually located on the southern slopes and plateaus where they were protected from the cold winter winds and situated close to fresh water sources.

\textsuperscript{200} Bailey 2000, 39.
\textsuperscript{201} Bailey 2000, 263.
\textsuperscript{202} Bailey 2000, 153.
\textsuperscript{203} Bailey 2000, 157.
There are 52 known settlements in the Danube area inhabited by the Hamangia culture. The earliest stage of the Hamangia culture was named "Blatnitsa" after the old name of today’s Durankulak. The first settlements were round or oval-shaped pits dug in the terrain, up to 1,50 meter deep and with a diameter of up to 3,50 meter with the entrances usually facing the South. Some of them contained remains of ovens or hearths situated at the periphery of the construction or outside it. During the later stages the dwellings became bigger in sizes 4,00 x 5,50 x 7,00 meter or more.\textsuperscript{204} Around 4700/4600 BC the stone architecture (Fig 9) was already in general use and became a characteristic phenomenon in the late Hamangia culture and can bee seen as evidence of settlement differentiation.\textsuperscript{205} The structures refer to the phases III and IV and the only other region in Europe where massive stone architecture has been found is in Thessaly but the stone structures of the Dimini culture do not chronologically precede this. Therefore Boyadziev make the conclusion that the stone structure technique originated in the region of Durankulak, maybe because the paleoecological conditions of the soil, with a very thin layer of loess, made it impossible to dig postholes.\textsuperscript{206}

The most frequent buildings were houses with two rooms. The oven was placed in the northern room and often a grindstone was found next to it. Some houses had hearths in the southern part or on the porch. The buildings were rectangular and reaching up to 20-25 meter in length and were orientated in a North-South direction. The dwellings had sometimes a megaron layout: the long walls were projected before the southern wall where the entrance usually was placed, so that a kind of a porch was formed at the front, under the roof. Supplementary outbuildings in a light structure were at times added to the main houses. They were used for kitchen activities or as “farm sections”.\textsuperscript{207} The big buildings were generally situated in the centre of the settlement; the central structure in Durankulak occupied an area of 166 m\textsuperscript{2} which excludes the notion of social egalitarianism.\textsuperscript{208} Solid two-storey buildings are found, 5-VII and 8-VII, the first one has the

\textsuperscript{204} Slavechev & Ivanov 2004, 143f.
\textsuperscript{205} Todorova 2002a, 12; Honch \textit{et al.} 2006, 1495.
\textsuperscript{206} Boyadziev 2004, 10f.
\textsuperscript{207} Boyadziev 2004, 7.
\textsuperscript{208} Ivanov & Avramova 2000, 16.
dimensions 22 x 9.50 meter and was divided length-wise into two parts by a solid wall with a stone foundation which also served to support the structure of the second floor, which consisted of thick cleft timbers, arranged parallel to each other along the width of the building. Smaller twigs and branches were thrown over them and everything was plastered with a clay layer. The roof was a light structure, most probably made of reed. There are also findings of burnt pieces of plaster with marks of reeds. The floors were regularly plastered with well-refined clay; over 50 plaster layers have been recorded, the inside of the walls had also been repeatedly plastered and reliefs and painted ornamentation were found. Most of the houses were inhabited for a long period of time and had been repaired and reconstructed several times.\textsuperscript{209}

Differences in construction technique and also in the exterior and interior design of the buildings have been noted both between the separate building levels and within the same level. Combination of clay and stone applied with various techniques has been recorded. There are also posts/poles, which were not rammed into the ground which constituted the skeleton of the wall on the second floor.\textsuperscript{210}

8.2 Destroyed by fire

In Greek Macedonia, during the second half of the 7th millennium BC, people erected rectangular post-framed houses. A ditch surrounded the early aggregation of the buildings and it is suggested that people thought it physically necessary to demarcate the particular area that they deemed suitable for living. In northern Greece the structures were made of timber with mud and clay and neither stone foundation nor mud blocks were used.\textsuperscript{211} These houses, mainly small and rectangular, were similar throughout the Balkans but the details of construction vary, even within a site, and there is a lack of standardization. Furthermore the internal features and cooking structures are remarkably varied.\textsuperscript{212} There are relatively permeable households with cooking facilities set in open courtyards, which are characteristic for villages in this time. Later the households are indeed more isolated and enclosed within private yards. Examples of this type of households are found in some villages.\textsuperscript{213}

\textsuperscript{209} Boyadziev 2004, 8ff.
\textsuperscript{210} Boyadziev 2004, 1ff.
\textsuperscript{211} Bailey 2000, 46ff.
\textsuperscript{212} Demoule & Perlès 1993, 370ff.
\textsuperscript{213} Halstead 1999, 84.
Sitagroi was destroyed by fire and findings from the area consist only of postholes, the remains of a floor with a baked hearth and a burnt wall.\textsuperscript{214} No substantial parts of buildings or features were found, except for a number of hearths, pits and the occasional wall of pisé or posts.\textsuperscript{215} In general it is difficult to recognize structures and buildings because of this but the few architectural remains indicate the use of rectangular timber-post framed houses, constructed from vertically placed tree trunks and branches, coated in the interior and exterior with clay mixed with hay. Food preparation constructions were found in their interior.\textsuperscript{216}

The only timber technology at Sitagroi, recognized from a charcoals analyse, is that of splitting planks radically from the log with wedges. There is a finding that appears to be part of such a plank, a 2,5 cm thick and at least 8,6 cm wide split from the outer part of an oak, at least 40 cm in diameter. Large timbers are likely to be structural parts of buildings, especially as they are associated with major destructions. The smaller material may come from furniture or firewood, but the possibility that some of it, too, may be structural is supported by the frequent wormholes in material of all diameters, but only in destruction contexts.\textsuperscript{217}

8.3 Comparing architecture

The climate together with the environment together gave the prerequisites for the building of the settlements. Since the houses in Sitagroi were built of wood and the settlement was destroyed by fire it is difficult to draw conclusions of what it looked like. The houses in Durankulak, on the other hand, were built of stone and are well preserved and give a good picture of what the village looked like. Similarities between the sites are the lack of standardization; there are no standard as to how to build a house. Both places were also inhabited for a long time, according to the numerous findings at Sitagroi and to the many layers of plasters and rebuilding found at Durankulak. The stone architecture in Durankulak gave a better protection against harsh weather although Sitagroi had a smoother and milder climate and was not so dependent of well built constructions for protection. The differences in the building technique could also be explained by the soil conditions; there are no possibilities to dig postholes in the hard ground in Durankulak.

\textsuperscript{214} Renfrew \textit{et al.} 1986, 456ff.
\textsuperscript{215} Andreou \textit{et al.} 1996, 589.
\textsuperscript{216} Elster & Renfrew 2003, 304.
\textsuperscript{217} Renfrew \textit{et al.} 1986, 62.
9. BURIALS

Great variation in the burial methods can be noted across the Balkan Peninsula. In the south the burials are often found in pits outside the buildings or indoors under the floor.\(^{218}\) This general pattern with no separate cemeteries outside the villages illustrates that funerary rituals seem to have occurred in the family context and was not meant for the integrating of the community.\(^{219}\)

On the contrary there are 586 rich graves found from the Hamangia phase I-III in Durankulak.\(^{220}\) Radiocarbon dates suggest that the cemetery was in use for at least 500 years, from the early- to the mid-5\(^{th}\) millennium BC.\(^{221}\) Nearly 50% of them contained offerings such as ceramic vessels, adornments made of *Spondylus* and *Dentalium* shells, and beads made of the tooth bulbs of reindeer, idols and tools.\(^{222}\) There are men, women, children and cenotaphs burials that tell us that differences between individuals were expressed and that the function of these cemeteries was expressions of community unity.\(^{223}\)

Abrupt changes in the character of material culture and its deposition mark the 5\(^{th}\) millennium BC. Striking was both the use of new and existing materials to make novel visually expressive objects and the deposition of the deceased in extramural cemeteries. As with the trans-regional patterns in construction of the built environment, people practised distinct local traditions of material expression and extramural inhumation. Extramural cemeteries appear mainly in the lower Danube and in eastern Bulgaria with special manifestations along the Black Sea coast.\(^{224}\)

Without any doubt, in the North East Bulgaria, the most complex social arena for hierarchy/status legitimization was the mortuary domain where the most complex and sophisticated sets of objects became grave goods. Another complex social arena was the *ritual paraphernalia*.\(^{225}\)

9.1 Comparing burial rites

Cemeteries can be considered necessary when many people live together in a limited area. The big cemetery in Durankulak and the lack of graves at Sitagroi is an interesting difference

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\(^{218}\) Bailey 2000, 116ff.

\(^{219}\) Demoule & Perlès 1993, 385.

\(^{220}\) Todorova 2002b, 14.

\(^{221}\) Honch *et al.* 2006, 1495.

\(^{222}\) Ivanov & Avramova 2000, 18.

\(^{223}\) Bailey 2000, 208.

\(^{224}\) Bailey 2000, 193.

\(^{225}\) Gurova 2006, 12.
which can be explained by the organization of the society. At Durankulak the death and taking care of the body was an official ritual where grave gifts were important and above all, new materials and prestige objects were buried together with the dead. At Sitagroï, on the other hand are burials probably more a family concern and the dead is still a part of the family and there is no need to integrate the community.

10. ARTEFACTS

There is a need for selection behind the artefacts and here is presented artefacts that are found in both Durankulak and Sitagroï. It is necessary to take in account that the findings in this two areas are from different contexts; grave context in Durankulak and findings from the settlement in Sitagroï. Despite the difference in context the artefacts give a picture about the daily life and give answers about trading and local processing.

10.1 Pottery

The dominant focus of research in pottery, how it has been made and decorated, has formed the basis for the culture-history approach that dominates the prehistory of Balkans. Some pottery was imported to the areas of present day Bulgaria, such as the black-on-red style from Dikili Tash. As a long-distance trade goods ceramics would obviously be exotic and maybe a prestige goods like Spondylus and metal.

Early potteries are often dismissed as poorly because they were made with short firings, perhaps as a result of shortages of fuel. The simple shapes and the way pots were made without careful finishing also suggest haste and instead it was being decorated by bright colours, incision and idiosyncratic lugs and handles.

Balkans was in active interactions with areas from the Black Sea to the Velika Morava River and from the Carpathians to the Aegean. A standard ceramic system was established which serve the agricultural, stockbreeding communities. For at least 400 years there was only a slow evolution of the graphite ceramic style, maybe because innovations were mainly concentrated on metal ware and on the emergence of a new system of prestige items manufactured of gold.

226 Bailey 2000, 76.
228 Pullen 2001, 321ff.
229 Nikolova 1999, 309.
At the beginning and middle of the 5th millennium BC, graphite decoration was rare but existed, along with the more common inlaid linear decorated wares. On the Bulgarian Black Sea coast, deep black-surfed wares painted with manganese oxide pre-dominated and inlaid white and red-paste ornamentation were common.\textsuperscript{230}

10.1.1 Lidded vessels

Ceramic findings in the Danube Delta are vast and the total quantities of ceramics found on a typical tell excavation is measured in tons rather than kg. It is a curious fact that there are relatively few instances of the deposition of what is commonly known as hoards on Bulgarian Chalcolithic tells.\textsuperscript{231}

In the Danube area the earliest pottery appears sporadically in the middle of the 7th millennium BC. It was monochrome, reddish- or yellowish-grey. At the transition to the 6th millennium BC there are larger vessels in larger numbers.\textsuperscript{232} In the late 5th millennium began an era of prosperity and artistic achievement. In the west, neighbouring influences were growing stronger and various cultures maintained a basic homogeneity.\textsuperscript{233}

The ceramic at Durankulak was burnt in an open oven at a low temperature, from 400\textdegree{} C. Todorova compartment this pottery, without exception, as belonging to the category ceramic of high quality. It is always very well formed and has a carefully polished, decorated or undecorated upper surface.\textsuperscript{234} There are pots with a lid that sometimes are designed with a neck and a human head, such as a spherical formed pitoi from phase III (Fig 10)\textsuperscript{235}. The decoration consists of engraved white lines, meanders and cir circles. Other examples of phase III findings are an anthropomorphic lidded vessel, a bottle-like vessel with dotted decorative patterns and a shallow cannelure. Stands get common from phase IV at the same time as the bottles that

\begin{figure}[h]
\centering
\includegraphics[width=0.5\textwidth]{Fig10.png}
\caption{Anthropomorphic lidded vessel from Hamangia III.}
\end{figure}

\begin{footnotesize}
\textsuperscript{230} Bailey 2000, 226f.
\textsuperscript{231} Gaydarska \textit{et al.} 2004, 11.
\textsuperscript{232} Bailey 2000, 88.
\textsuperscript{233} Hoddinott, 1981, 15.
\textsuperscript{234} Todorova 2002a, 82.
\textsuperscript{235} Todorova 2002a, 96.
\end{footnotesize}
were common in the early phases nearly disappears. Bowls are found in all phases but there is a change in the design in phase IV when the contours get sharper.236

10.1.2 Grey lustre

Ceramic pyrotechnic occur in Greece after the middle of the 7th millennium BC. The earliest pots were small, rare and decoration was scarce. At the beginning of the 6th millennium BC the shapes became more complex and larger and decorations in regional style appear.237 The increase in the importance of jars at the end of the 6th millennium BC has been interpreted as an increase in emphasis on food storage. An increase in vessel capacity in the second half of the 5th millennium BC is even more striking and suggestive.238 A higher firing temperature was used, above 800°C, greater collections were made and the decorations were more varied, such as painting, scraping and incising. It is clear that graphite was applied to the surface of pottery by painting, as brush strokes can be seen in the decoration.239 In Thessaly brown-red motives on a light background are common.240

Polychrome effects were made easier by using new pigments such as manganese and graphite that did not need a three-stage firing, as was needed when using iron oxides, to achieve a black paint on a light background. Two trends are seen in the broadening of stylistic interaction spheres; black-burnished and matt-painted ceramics. There were specific styles with restricted distributions as the red-burnished and black-and-white ceramics. Generally the ceramics was local. This is called a “nested” distribution pattern or more restricted distributions. Later in this period, when settlement density reached its maximum, there was an intense interaction and exchange.241

Both rural and rusticated wares were found in smaller quantities in phase I. There are biconcave bowls, open dishes and plates, knob and prong handles, applied pellets, feet and pedestal bases. Grey Lustre Ware is uniform except for the thickness that varied between 3-6 mm. Bowl shapes are predominantly open, rarely rounded and nearly always carinated. Approximately 80 % of the potsherds recovered from Gray Lustre ware are bowls. Deep bowls with wide diameters could well be communal vessels rather than individual bowls. Rounded bowls are the most common shape for all bowls in phases I and II, some with finer

236 Todorova 2002a, 92ff.
240 Bailey 2000, 81.
241 Demoule & Perlès 1993, 392f.
lustrous coating on the inside or a coarse, buff ware on the outside. Jars have a cylindrical neck, constricted-neck, beaded-rim and hole-mouth. Handles are greatly varied in shapes with nearly all types defined.\textsuperscript{242} The emergence of graphite-decorated pottery in the 5th millennium BC is striking because of its better quality; the decoration was visually powerful which is in line with other novelties of expressive material culture. Robert Evans studied the ceramics from Sitagroi phase III and compared it with other parts of the Balkans. At Sitagroi graphite decoration was among the most frequent ones and Evans found that the single most characteristic feature across almost all of the regions at this time was the presence of graphite-decorated pottery. He found close parallels between Sitagroi and local sites, with eastern Macedonia and Greek Thrace. In the south the only similarities were in black-on-red painted wares from sites in Thessaly.\textsuperscript{243} The pottery from Sitagroi I and II represent a stable ceramic tradition with nearby sites on the Drama Plain and have close similarities with the widespread Vinca and Veselinovo/Karanovo III cultures. Some of the biconcave bowls in phase I are very large in diameter, 30-40 cm. Sieve fragments were recorded in Sitagroi I although they appear to have become a more important form in Sitagroi III. Tripod altars have been recorded from Sitagroi I and II.\textsuperscript{244}

There is homogeneity in the shapes of phases I and II. Sitagroi II is defined by the presence of "black-topped" and "rippled" pottery along with a variety of distinctive painted wares highlighted by "graphite" and "black-on-red" ceramics.\textsuperscript{245} The painted ware is striking in its range of fabrics and motifs, unpainted wares, including Gray Lustre and Rural from phase I. The motifs grow more sophisticated; the fabric remains fine and thin throughout phase II. Biconcave bowls are straight-sided and never sinuous as in phase I.\textsuperscript{246}

Especially in phase III a very rich decoration is noted and the manufacturing is technically advanced. It is distributed over an extensive area that possibly indicates the existence of long-distance exchange networks.\textsuperscript{247} Rolled-rim bowls appears, in agreement with the Balkan sequence, at Sitagroi III.\textsuperscript{248}

\textsuperscript{242} Renfrew \textit{et al.} 1986, 346f.
\textsuperscript{243} Todorova 2002a, 406f.
\textsuperscript{244} Renfrew \textit{et al.} 1986, 363ff.
\textsuperscript{245} Andreou \textit{et al.} 1996, 586.
\textsuperscript{246} Renfrew \textit{et al.} 1986, 351ff.
\textsuperscript{247} Andreou \textit{et al.} 1996, 591.
\textsuperscript{248} Demoule & Perlès 1993, 399.
10.2 Figurines

The most emerged expression in the Balkans after 6500 BC are the thousands of anthropomorphic figurines made of fired clay. These idols were not a novelty but the number increased and decoration occurred at this time. Scientists from many fields have discussed these figurines for several years. Marija Gimbutas write in *Sitagroi 1* that the figurines are sacred objects that personify the goddesses. She thinks that they could have served as fertility charms and that they in general were sacred images of divine entities. The figurines are also discussed by Douglass W. Bailey who has been studying them from all over Balkan and compared them with the perception of the human body.

Chapman discusses the fragmentation of these figurines and its purpose. He believes that many of these objects comprised a profusion of anthropomorphic figurines but there were also human vessel lids (face-lids), anthropomorphic bellies and feet which assumed the symbolic form of the human body, in the same way as the fragments of a vessel stood for the disparate body parts of a disarticulated skeleton. In the case of the Hamangia group, figurine fragmentation could result in changes in the gender of the figurine. For example if the typical complete figurine was hermaphrodite with a long neck, then breaking of the neck left two parts with different genders; a male neck and a female body. The active use of fragment enchainment in Hamangia communities betokens the importance of material culture in the constitution of gender relations.

Slavchev argues that figurines were at the core of a physicality of being which became visible in new conceptions of corporeality. The body became the key to understanding identities and relationships in the world. Therefore, the function of the figurines, if they had a function, is that they were philosophies about being human.

10.2.1 Adorned idols

Previous work on South Eastern European archaeology has failed to interpret anthropomorphic figurines correctly. According to Bailey there is no archaeological evidence to support a ritual function of them in Bulgaria, although they are deposited in both

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249 Bailey 2000, 95.
250 Bailey 2000, 229.
251 Renfrew & Gimbutas 1986, 225ff.
settlements and burials. Todorova makes the conclusion in the excavation report that figurines are objects loaded with strong magical forces and they could have been an attribute for the priests.

The figurine is a symbol of a robust woman, physically healthy with indicated genitals, strong legs and breasts but with the head and the arms often missing. Some of the figurines are adorned with rings and necklaces. The typical idol in Durankulak have a strong geometric physique with a tiny chest, long neck and broad and triangular under body (Fig 11). 

Ivan Vayssov mentioned in Dobrudja 9, 1992, that the figurines have an Anatolian influence; Anatolian prototypes are a millennium older than the Hamangia culture. Similar figurines have also been found in Thessaly, Pelagonia and the Southwestern Bulgaria.

Spondylus and figurines are characteristic for the Hamangia culture unlike other Neolithic communities in Balkan. It could be a symptom of a less anchored existence and a life-style that involved movement across and through landscapes, maybe as a part of managing grazing animals. The majority of figurines from this area are, in contrast to examples from most other cultures, deposited in the mortuary arena. A close look at the categorisation indicates that the Hamangia figurines are not a conservative and stable group; they possess considerable variability in its form and a marked dynamism in the gender characteristics. Past studies have noted that the female characteristics have been distinctive and predominant.

The figurines from Durankulak are striking in their simplicity and their lack of surface treatment. They have the arms spread, a long neck and a triangular head, or no face or head. One figurine has two horizontal and curving lines from the pubic triangle and a short vertical slit on the body that suggests that it is female. The other three figurines have no sexually identifiable body parts; through two of them have small protuberances on their chests that could be interpreted as breasts.

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255 Bailey 1994, 323.
256 Todorova 2002a, 259ff.
257 Bailey 2005, 60f.
258 Chapman 2000, 75.
259 Bailey 2005, 60f.
Some of the idols found in the graves were not fired and some were found outside the graves which might have been as a result of that they were a part of the ritual and made especially for this funeral. In the necropolis there are five burials with idols excavated, all from Hamangia phase III.²⁶⁰

Hamangia figurines are almost devoid of any individual characteristics that could be used to distinguish them from one another but in some cases the figurines have copper bands wrapped around the neck or the arm.²⁶¹

10.2.2 Female figurines
There have been numerous interpretations of the Neolithic female figurines from Thessaly (Fig 12). Some archaeologists have interpreted them as the “Mother Goddess”, the Goddess of fertility, and the “Magna Mater” which are the residence of all immortals implying the actual Gods of the Mount Olympus. The association of the female figurine with earth, maternity and fertility is usually assumed, although the nature of the association is rarely specified. Usually, the Mother Goddess is simply taken as symbolizing fertility. Whatever the interpretation of these figurines may be, the great number of such symbols found in excavations all over Greece shows their importance in every day life.²⁶²

Figurines can be either a symbol or a direct copy of nature and have natural characteristics. They cannot be characterized as decorative, more as ugly, badly shaped and sometimes gargoyle sculptures. The sex is indicated through the engraving of genitals, and in some cases breasts can indicate the sex of female figurines. Hair, face and characteristics or clothing, which is almost absent, cannot be considered as representative of a particular sex. Apparently the only decorative element is the engraving of the inguinal area. This obese woman indicates that this probably was people’s idea of good health.²⁶³

The figurines are predominantly schematic without any details of the human body. Only 10% of the figurines are naturalistically rendered; the belly and the buttocks are schematized. In phase II and phase III are some figurines miniatures without arms and legs; many with a flat base, a tiny and truncated torso and incised with symbols encrusted with crushed white shell or red ocher. In most cases the head has been broken off

²⁶⁰ Ivanov & Avramova 2000, 18f.
²⁶¹ Bailey 2000, 232f.
²⁶² Christopoulou-Aletra et al. 2006, 1113f.
²⁶³ Christopoulou-Aletra et al. 2006, 1113.
and lost. In phase III graphite- and black on red painting occur and a similar sophistication can be seen over the entire Balkan Peninsula at that time.  

Figurine findings from Sitagroi are documented as increasing from 8 pieces in phase I, 93 in phase II and to 136 in phase III. After this there are few findings and Marija Gimbutas see the decrease between phase III and IV as one of the most dramatic changes in art and religion in prehistoric Europe. These sculptures are made of clay, except one that is made of greenstone. Most of them come from an unknown context such as levels of habitation debris and not from in situ locations. Gimbutas make the conclusion that most of the figurines came from house or shrine areas, some were close to ovens where they could have been placed on benches or altars. The figurines have either a flat base so they can stand or they were seated on stools or thrones. Half of all the schematized figurines have perforations through the shoulder or diagonally across the body, probably used for inserting attachments. Perforations at the sides of the head are also frequent and leave no doubt that they are intended for earrings even if no one has been discovered. Pubis is often indicated as well as the navel and there are some torsos with youthful breasts. Several heads are found that were modelled with eyes, lips and a nose in relief. There is one small figurine with a pointed face and with the hair in a ponytail.

10.3 Chipped stone
All over southeast and central Europe were lithic industries based on the technology of producing flakes or blades with roughly parallel edges and dorsal spines struck from prismatic cores. The fluorescence of the flaked stone industry on Balkan in the late 5th and 4th millennia BC is mirrored in almost every other aspect of cultural behaviour including population growth and settlement nucleation, increased rate of production and development of technology. There was an exploitation of flint sources that must have involved a complex organization of the labour force and an increasing and intensifying of the production. This can be seen in how blanks were selected by size and shape and in the relatively large quantities of raw material that were processed.

After 6500 BC large, standardized blades appear of flint produced with pressure flaking. This development can be linked with changes between the ceramic phases. Similarities between non-ceramic and ceramic phase lithics assemblage is important and can be examined

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264 Renfrew et al. 1986, 226.
265 Renfrew et al. 1986, 225ff.
266 Elster & Renfrew 2003, 90.
267 Elster & Renfrew 2003, 124.
in both the Danube area and northern Greece. It could be presumed that there was a long-distance trade in lithics that implies a more complex relation between communities than is usually supposed.

10.3.1 Local origin

During the Chalcolithic period, North East Bulgaria and particularly in the Razgrad and Shumen regions the major centres for the exploitation of high quality flint outcrops arose. The manufacture of standardized flint production including big and super-blades took place in this region. The presence of flints amongst prestige grave goods is significant and in comparison with other grave goods, the flint implements possess a pronouncedly dualistic semantic position because of their profound and inherent role in everyday life.

There are 64 findings of chipped stone from phases I-III that is reduced to 27 in phase IV. Nikolay Similov have studied them and made macroscopic analysis. Similov defines eight varieties of flint, all from the Dobruzha area under the name les silex brun-jaune. Flint of the type Radingrad-Topchi is dark yellow coloured and was made with excellent technological features. For superblades with a length up to 30 cm a wax-brown flint was used from the River Kriva Reka.

Volcanic rocks such as basalt and andesit were found with 24 artefacts from phases I-III and 11 from phase IV. Petrographic analysis indicates the origin of the Burgas-Yambol region which is the same area that was the origin for the honey flint and some of the obsidian that was found at Sitagroi. This is confirmed by the finding of a piece of marble coming from this region. There is a change in which sources that are used in phase IV when common flint from Dobruzha disappears and there is a doubling of the import from the sources in Razgrad.

There are two basic flaking methods; indirect percussion flaking and pressure flaking. The technique used in phases I-III was; blade flaking by indirect percussion, 28,6%, by pressure device 2,0%, by long chest crutch 10,2%, by indirect flaking 32,6% and by short crutch pressure 26,6%. There are no indications or findings that confirm the use of copper bits for making flint tools.

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268 Bailey 2000, 124f.
269 Demoule & Perlès 1993, 383f.
270 Gurova 2006, 2ff.
271 Топчи, situated in the northeastern part of Dobruzha, bordered by the regions of Ruse, Silistra, Shumen and Targovishte.
272 Situated north of Shumen.
273 Todorova 2002a, 208ff.
274 Todorova 2002a, 214ff.
The flint of lower quality are supposed to have a local origin without bigger concretions. There are mostly irregular blades of medium size where 30% have the character of household manufacturing. The initial stages of reduction of the raw material may have taken part at the site of the extraction and only the pre-cores were brought to the settlement. This production was part of the everyday activities of the people. Superblades based on finest quality flint and almost the entire cycle of the reduction sequence was made in workshops in the region of Razgrad and Shumen, at a distance of 90-120 km from the site. There is also a production of bladelets, based mainly on grey-black flint from meso-local and local outcrops, found close to the necropolis outside the settlement. The major contribution in the overall production reaches almost 60%. It also holds traits of a household manufacturing but part of the blades are blanks for fabricating microliths that might be connected with pressure techniques. 12% of the blades come from more distant specialized workshops.\textsuperscript{275}

Without exception all points have the long inclined truncation on their left. There are two groups that can be distinguished according to their dimensions; small artefacts without precision and with a length varying between 15-17 mm and bigger artefacts with more symmetry, which are between 27-29 mm long. Small blades and bladelets dominate and they are mostly used as tools, predominant are the ones made for cutting meat and working hide and there is only one sickle insert.\textsuperscript{276}

The types of flint blades found at Durankulak prove that the Hamangia culture preserved a distinct tradition. The presence of such similarities in several other assemblages from this region constitutes one of the arguments in favour of the greater role the local population played in the process of neolithization. In the flint material there is no re-organization of the production, widening of the contacts or continuing of entrenchment of the social hierarchy.\textsuperscript{277}

\subsection*{10.3.2 Honey flint}
Six basic categories of lithics assemblage were identified, macroscopic observations of colour and structure were carried out and the raw material was categorized as obsidian, quartz, honey flint, opal, chert and pebble flint. Obsidian makes up over 90% of the used tools, the nearest sources of obsidian are on the island of Melos, 550 kilometres to the south of Sitagroi. In phase I there is only one used and unretouched blade of obsidian and quartz and rock crystal

\textsuperscript{275} Todorova 2002a, 220f.
\textsuperscript{276} Todorova 2002a, 223.
\textsuperscript{277} Todorova 2002a, 219ff.
pieces constitute 40% of the total assemblage. Especial for Sitagroi I is the low number of usable blanks and used tools, 15% and 11% respectively.  

“Honey” flint (Fig 13) is one of the finest quality findings and occurred in the Sredna Gora mountain range. It constitutes one-third of the utilized tools in phase I and two-thirds in phases II and III. During the middle 5th and 4th millennium BC “Honey” flint was distributed over a large area and played a crucial role in the trade of lithic assemblages. There is no doubt that the flint from phase I was obtained from outcrop sources at least 200 kilometres away. During phases II and III this flint was connected with people whose pottery represents a variety of the Maritsa/Gumelnitsa culture. The longest blades date to phases II and III, rarely exceed 5 cm and only one blade approaches 15 cm in length which is the common length closer to the source area. How the distribution of this flint took place is not clear and it can only be noted that certain changes in the use of the honey-brown flint took part. Resharpening was virtually absent in phase I and there was a strategy of maximizing the utilization of the available raw materials and to use every part of the perimeter of a blank. In phases II and III the lithic assemblage is characterized by an explosive increase in the utilization of honey-brown flint brought to Sitagroi from northeast Bulgaria. Until phase IV, the imported high-quality flint was practically the sole material used for edges and exclusively in the manufacture of composite cutting-and-scraping tools. Characteristic of all phases were that the cores were used as an available source of raw material until they were exhausted. There is no change in the size of the blades during the period, apart from a small increase in width, length and thickness in phases II and III. There is also a tendency toward standardization of the tool dimensions in both phases.

Chalcedony is a local material that occurs in smaller, dispersed outcrops and is used in all occupation phases. Chets is used for small tools in lesser quantities than Chalcedony, originateted from an unknown outcrop. There are generally a high proportion of unused blanks in phases II and III and furthermore there are a high proportion of used blanks in phase I. This may reflect the availability of raw materials. One striking features of the tool

278 Elster & Renfrew 2003, 82ff.
279 Средна гора, the area is rich with non-metallic raw materials and has also been proved as the oldest copper mines in Europe, 5000-4000BC. http://imgu.bg/geoarchmin/materials/51Nenov.pdf.
280 Elster & Renfrew 2003, 84ff.
assemblage is the uniformity of utilization. In the majority of the blanks, 60-66%, only one edge was used. Double-edge tools made for cutting more resistant material was common in phase I, tools for scraping and cutting material of medium and greater resistance mainly occur mostly in phase III and were exclusively from honey-brown flint. There are more blades that were used for cutting than for scraping.

In phases II through to IV there is a relatively large percentage of unretouched sickle blades, in phase I there are fewer. In the conclusion of the excavation report Ruth Tringham, is concluding that there was a cultural change that is reflected in the flaked stone tools. 283

10.4 Spondylus

Rings made of Spondylus (Fig 14) are widespread in big quantities all over the Aegean and the Balkans. 284 Spondylus is a big family of molluscs with more than 100,000 living species that have been important for humans for a long period of time and which can be found in archaeological deposits around the world. The evaluation is often difficult since the shells are greatly modified in the process of the artefact manufacture and it is hard to see the differences between *Glycymeris* and *Spondylus*. 285 The archaeologists should be careful when identifying shells of Spondylus as they are naturally dark brown but as a result of polishing become white. They can be mistaken for small shell fragments belonging to other species of sweet or saltwater origin. Spondylus shells are stratified and similar to the trunk trees the yearly layers are visible. 286

The highest concentrations of *Spondylus* artefacts are found along the Black Sea coast and upstream the Danube River. Although there are no Spondylus in the Black Sea at present there is still a possibility that the mollusc existed there during the period 6th-5th millennia when the temperature of the Black Sea was higher than today. 287 This is an area of science where a lot of research is ongoing and new reports are constantly published. These shells are used in jewellery, as grave goods, in ritual contexts, in pot making and maybe as payment when trading. Marcel Mauss discuss barter in the book *The Gift* 288 and conclude that there are no gifts but instead there is always an exchange where the recipient

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283 Elster & Renfrew 2003, 84ff.
284 Elster & Renfrew 2003, 338.
285 Dimitrijevic & Tripkovic 2006, 238.
286 Haimovici 2007, 296.
287 Dimitrijević & Tripkovic 2006, 247.
288 Mauss 2002, 6ff.
has to return the value of the “gift”. Such transactions could have been performed between Sitagroi and Durankulak in the cases of flint, *Spondylus* and metal. Chapman endorses the idea of trading with new and exotic raw materials and believes that *Spondylus* can be properly identified as one of the first goods to be transported on Europe’s long distance exchange route.  

Bailey also assumes that *Spondylus* was an Aegean mollusc and presents the theory that the concentration of *Spondylus* fragments at Dimini show that this site was an important hub in a long-distance exchange network. Furthermore Demoule and Perlès also assumed that the *Spondylus* artefacts in Bulgaria have its origin in the Aegean which supports the theory of *Spondylus* being a long distance exchange goods.  

C. Renfrew termed the “*Spondylus* route” a prestige chain form of exchange, an indication that Neolithic communities sought exotic goods to confer status on their bearers and that they had an Aegean origin. C. Williams and M. Séférides studies indicate the likelihood of local or regional consumption zones based upon different shell ornament forms. They claim that *Spondylus* did not live in the Black Sea and that the shells had been brought from the Aegean Sea to the Danube area. Similarly Slavchev thinks that *Spondylus* and *Glycymeris* were currently local in the Mediterranean, especially in the Aegean and the Adriatic, because of the warm water temperature and its medium salinity. He mentions the possibility of a Black Sea origin but says that analytical and ecological evidence does not support this opinion.  

In contrast a team from the Faculty of Biology at the University of Iasi in Rumania under the direction of Sergiu Haimovici has recently been mapping the distribution of *Spondylus*. Today their habitats are in the eastern Mediterranean Sea, as well as the Aegean and Adriatic Sea. It is known that some Romanian cultures used artefacts made of *Spondylus*  

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Fig 14. Typical *Spondylus* ring found in Durankulak.
guederopus and that fragment of the shell occur in all Hamangia sites.\textsuperscript{294} Haimovici believes that it is obvious that earlier scientists were not familiar with the importance of the climate optimum on the European continent when the flora and fauna changed in the Black Sea area, when its water was warmer and, almost certain salted, which made it a possible habitat for the Spondylus. After the end of the optimum climate some Mediterranean species disappeared or became sporadic in the Black Sea.\textsuperscript{295} Todorova thinks that isotope analysis prove that the bivalve Spondylus was living in the Black Sea during the climate optimum\textsuperscript{296} which indicates that the Spondylus in Durankulak lived in colder water than the ones found at the Mediterranean Sea and Haimovici agree with Todorova on this point.

There were differences in the ways Spondylus were processed and there is a distinction between the choice of the right and the left valve of the shell for making rings. The right valve is heavier and more compact. On the other hand, the intact artefact was manufactured from the left valve, on which the natural red colouring is more vividly preserved.\textsuperscript{297} At Dimini the left valves were used exclusively to make small rings while right valves were broken down into smaller parts to make beads and pendants. This was not the case in the Black Sea zone, where massive right-valve rings were characteristic for the Hamangia group and slender left valve rings typified the Copper Age.\textsuperscript{298}

10.4.1 Shells from the Black Sea

During this time period a greater variability can be seen in the wealth and in the prestige goods of burials. The most significant is the Spondylus, heavy ornaments in pendants, wide bracelets and large beads changed into thin, finely worked bracelets and small beads.\textsuperscript{299} There is a clear diachronic trend towards increasing ring fragmentation in the Black Sea Neolithic and in the Eneolithic at Durankulak.\textsuperscript{300}

The Clycymiris established in the Black Sea was bigger in the time of the climate optimum than it is today. In phase I-II there are three findings of bracelets and in phase III there are nine.\textsuperscript{301}

\textsuperscript{294} Haimovici 2007, 294f.
\textsuperscript{295} Haimovici 2007, 296.
\textsuperscript{296} Todorova 2002a, 185.
\textsuperscript{297} http://www.unizd.hr/Portals/20/Ifantidis.pdf (controlled 2008-11-23).
\textsuperscript{298} Slavchev 2008, 151.
\textsuperscript{299} http://www.unizd.hr/Portals/20/Ifantidis.pdf (controlled 2008-11-23).
\textsuperscript{300} Slavchev 2008, 145.
\textsuperscript{301} Todorova 2002a, 178.
A total of 22 Early Hamangia graves contained *Spondylus* ornaments, representing 11% of all graves and bracelets were deposited in 13 of them.\(^{302}\) The male graves are in a strong majority and as an example there are an adult male buried in grave 611 that have a shell bracelet on the right arm and a shell-bead belt, *Spondylus* beads at the shoulder and a necklace of *Spondylus* and malachite beads. The high level of *Spondylus* ornament deposition continues in the Late Hamangia phase. An important practice affecting many shell biographies was fragmentation of these rings. This was not the case in Durankulak where it was more common with unbroken rings. There have been re-fitting exercises at the cemeteries but not a single example has been found of ring fragments re-fitting with other fragments.\(^{303}\) In phase I-II are 354 findings of *Spondylus* that increase to 2348 pieces in phase III-IV. The same trend can be seen with the bracelets that were 23 in phases I-II and increased to 54 in phases III-IV.\(^{304}\)

Differences in the size and form of the bracelets have led to various opinions about their modes of wearing. Several *Spondylus* bangles are ranging in interior diameter from 6,5 to 8,7 cm and are large enough to fit an adult wrist, arm or ankle. Bangles made of *Glycymeris* have an inside diameter of 4,5 to 5 cm and are too small to have been used by adults. Most scholars prefer to interpret them as annulets or ring-pendants. There are several examples with an open perforation at the hinge, which could have served as suspension. Smaller circles may have been produced as children’s bangles or have been given to a young person and never been removed. Very small circles may have been hair ornaments as can be seen on figurines. Archaeological evidence for such fashion comes from tombs where shell bangles are found in the area of the skull where they apparently had been attached to the head and/or to the ears. Perforated segments might not have belonged to bracelets at all but to plaques attached to the arm, the wrist or to the hair. It could have been

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\(^{302}\) Slavchev & Ivanov 2004, 68.<br>\(^{303}\) Slachev 2008, 157.<br>\(^{304}\) Todorova 2002a, 122; 202.
sewn onto garments or linked into a diadem as in Durankulak. Another parallel with Durankulak is a group of 22 buff *Dentalia* (Fig 15) reconstructed as a chain.\textsuperscript{305}

### 10.4.2 Production centre

Sitagroi has produced the largest known group of Neolithic/Chalcolithic shell bracelets, annulets and beads in the Aegean region.\textsuperscript{306} The Sitagroi shell rings constitutes at present one of the most detailed published descriptions of *Spondylus/Glycymeris* ornaments.\textsuperscript{307} Renfrew sees similarities with shell and stone bangles between Sitagroi and Durankulak. For example, there are band-shaped bangles from phase III at Sitagroi where the same has been found at the cemetery of Durankulak.\textsuperscript{308}

At Sitagroi 170 pieces of *Spondylus* bracelets have been found and 16 are made of *Glycymeris*, the earliest example of *Spondylus* from phase I. These well worked pieces show that people were attracted by the interplay of materials, forms and colours. Of the pendants found at Sitagroi 90% is of shell with stylistic variability that imply flexibility in function. The majority of the pendants are nicely shaped valves of mollusc perforated at or near the umbo. In phase III 75% of the perforated shells are smaller specimens of *Glycymeris*; reflecting a shift to smaller types from the large *Glycymeris* that was used for bracelets/annulets in phase II.\textsuperscript{309}

The techniques of manufacture were uncomplicated and more based on knowledge than sophisticated tools and installations. The occurrence of unfinished performs of both beads and bracelets and various recognized stages of manufacturing are observations that point to the hypothesis that Sitagroi was a production centre.\textsuperscript{310} There are few examples of contexts in which the making of *Spondylus* ornaments is documented; one in Sitagroi III, from which export of bracelets and beads is claimed to have taken place.\textsuperscript{311}

There is an interesting differentiation in the treatment of *Spondylus* and *Glycymeris* through time. In phase II the two species are chosen interchangeably for bracelets/annulets, although a taste for *Spondylus* is apparent. In phase III the number of *Spondylus* is dramatically increasing and there are few findings of *Glycymeris*. Many fragments can be reconstructed as bangles, elliptical in shape, with sections varying from curvilinear to

\textsuperscript{305} Elster & Renfrew 2003, 340ff.
\textsuperscript{306} Elster & Renfrew 2003, 336ff.
\textsuperscript{307} Slavchev 2008, 140.
\textsuperscript{308} Elster & Renfrew 2003, 347.
\textsuperscript{309} Elster & Renfrew 2003, 348.
\textsuperscript{310} Elster & Renfrew 2003, 336ff.
\textsuperscript{311} Gaydarska et al. 2004, 29.
rectangular at different points of the circumference. Other segments from phase II and III have single or double perforations drilled at one preserved end, perhaps in order to be connected with other similar elements in link-type bracelets. Many of the rings have colourful areas in pink, orange, red, purple, grey or brown, which have a chromatic effect against the main cream-white of the shell body. There is a remarkable standardization of the final forms beyond the limitations of the raw material; larger specimens of *Spondylus* were systematically sought after. The upper, thinner, valve of the mollusc was preferred for annulets; the width and thickness of the band at the point most distant from the hinge that was given a distinct rectangular shape.

Fragmentary conditions of most bracelets/annulets are a common phenomenon in all northern Aegean sites and the reason for this has been lively discussed. Most fragments from Sitagroi have been shattered in the prehistory and in several assemblages of phase III, 312 where there is only one possibly complete example of *Spondylus* and three of *Glycymeris*. Nine *Spondylus* fragments were burnt. There is a theory by Tsuneki that the shell rings were broken and discarded during manufacturing but experimental replications showed that it must have been laborious enough to cause accidental breakage. 313 Another explanation from Halstead is that this destruction was made by privileged families that would restrict the valuable shell ornaments from circulation for a limited accumulation of complete ornaments in “elite” hands. Cultures in the Indus Valley wear these ornaments today; men use amulets, children bear them for protection and beauty and women have them throughout life as adornments and to ensure the well being of their families. Being highly personalized, a woman’s shell bangle is broken up when her husband dies. 314

66% of the ornaments are beads and occur in a variety of sizes and shapes where the straight cylinder is predominant. Most of them are rather small, except for the *Dentalia* that measure up to 2 or 3 cm in length. Shell beads are mostly made of Spondylus, but there is also *Cerastoderma* where the thick right valve was systematically used. There is uniformity which points to skilled manufactures and even beads that are found in groups are off different types and materials. Annular and narrow cylindrical beads were very common and have the same shape as beads of copper and gold in Durankulak. *Dentalium* is natural “ready to use” and is generally long beads, 1,5-2 cm, with a cylindrical and hollow form. These shells are found in phase II, as for example a collection with 22 pieces. Decoration of beads is unusual, there are

312 Elster & Renfrew 2003, 338ff.
313 Tsuneki 1989, 8, 15.
314 Halstead 1993, 603ff.
one from phase I that are painted in graphite and one from phase III that is decorated with incised spirals. The technique of decoration is derived from ceramic manufacturing.

Barrel beads is a small group from phase III that includes some of the finest workmanship in *Spondylus*. From the same phase are two “buttons”, rectangular, conical at the upper part and with V-shaped holes that are a distinctive Neolithic/Chalcolithic class of shell objects. Very special from this phase is a piece of excellent workmanship; the star of *Spondylus*, which is different from all other such finds from other sites.\(^{315}\)

### 10.5 Metal

From the late 6\(^{th}\) millennium BC mining and processing of copper were major developments in southern and central Europe. The earliest copper objects were simple, cold-hammered trinkets, made into hooks and rolled beads. At the middle of 5\(^{th}\) millennium BC copper production and deposition took place in central and eastern Bulgaria and copper was found throughout the Balkans.\(^{316}\) The traditional and generally accepted view about copper metallurgy was that the significant developments in the Late Neolithic of Balkans were due to civilizing influences from the Early Bronze Age Aegean. Radiocarbon dating gives an alternative view that the Balkan Copper Age occurred earlier than the Aegean and that metallurgy in the Balkans was probably a product of local invention.\(^{317}\)

Gold objects occur as an exception in later Balkan prehistory despite that the earliest gold artefacts in the world belong to the eastern Balkans.\(^{318}\) Most gold objects were small and attached as ornamentation especially around the face and hands or to clothing. Gold is less frequently found than copper and most gold objects have been found in a grave context at the Black Sea coast.\(^{319}\)

#### 10.5.1 Fragments

Metal findings from this period are rare and there are only four findings of copper beads in phase I-II and three in phase III. However there is no increase in numbers during this period.\(^{320}\) From phase III-IV there are 1259 copper rings and 23 bracelets found in grave

\(^{315}\) Elster & Renfrew 2003, 340ff.
\(^{316}\) Bailey 2000, 209ff.
\(^{317}\) Bailey 2000, 219.
\(^{318}\) Elster & Renfrew 2003, 301.
\(^{319}\) Nikolova 1999, 287ff.
\(^{320}\) Todorova 2002b, 159.
context. During this period people began processing the metal and there was a growing craftsmanship and structures for trade were built up. Todorova suppose that the metal was traded over the sea; along the western Black Sea coast and on the Danube at the 5th millennium BC.

The absence of a copper-working record suggests that ore processing and copper tool moulding took place away from the village. Analysis of the metal from phase III supports an origin from the West Pontiac area.

10.5.2 Copper beads

The metal objects at Sitagroi were recognized as being among the earliest found in the Aegean world. It is supposed that knowledge how to process metal came to the Aegean from the north, especially during phase III where the figurines and pottery show a Balkan inspiration. There is no evidence of metalworking in phase I. The earliest evidence for metallurgy are presented at Sitagroi phase II but they are not convincing because the copper beads that were found are not mentioned in the first volume of the final report where the earliest metalwork is attributed to phase III.

The metal material from Sitagroi is analysed in the later 1960s using a first generation microprobe analyzer that had neither the levels of precision nor the sensitivity that current systems provide. Therefore only tentative conclusions are possible and there are no data that point to any known source of the raw materials or where the processing took place. There are 36 sherds from phase III found in a deposit which have copper fragments on the surface. Renfrew and Elster see this as evidence for melting and presumably casting of copper in Sitagroi. The absence of slag from the layers where the sherds were found seems like a reasonably clear sign that the copper was smelted elsewhere and brought to the site in metallic form. This is also a conclusion made by Demoule and Perlés that the melting was of already smelted pieces obtained by trade, maybe from northern Balkan where metallurgy was more developed. Melting of copper need about the same temperature as burning figurines and graphite ware and we know ovens for this purpose existed in Sitagroi.

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321 Todorova 2002a, 201.
322 Todorova 2002a, 128.
324 Todorova 2002a, 140.
325 Todorova 2002a, 140.
327 Elster & Renfrew 2003, 302.
328 Demoule & Perlés 1993, 402.
Some copper objects from phase III contained traces of sulfur which indicate production from sulfide ores with incomplete oxidation during the matt blowing stage. There is also one sample of copper slag that could be an indicator for on-site copper smelting. Metal pins were produced of a specialized and probably socially controlled craft. There are three pins made of copper from phase III with intact elaborated heads.\textsuperscript{328}

From phase II are four metal objects found, two completely corroded and no intentional alloying in the object is analyzed. One gold bead and eleven small copper objects were dated to phase III where there is no other evidence of extensive metal technology. Most of the metal objects and small fragments were almost invariably recovered from the sieves.

X-ray Fluorescence Analyses show a low concentration of impurities in the metal from Sitagroì which permit the hypothesis that native copper was used, other specimens show much higher impurity levels and may be the product of smelting. Some of the artefacts prove evidence of casting and others of cold working and annealing.

Later observations indicate that the origin of the copper used at Sitagroì came from a wide variety of sources, four samples have a suggested provenance from Burgas and others were from the Cycladic Island, the Rhodope Mountains and Lavrion. Although the sample size is small and it is suggested that the samples from phase III are originated in Bulgaria. Elster and Renfrew believe it seems permissible to see Sitagroì in phases II and III as being on the periphery of the Balkan-Carpathian metallurgical province. There is a gold bead from phase III made as a cylinder with a big hole which gives it a ring-like shape that, according to Elster and Renfrew, also shows influences from Balkan.\textsuperscript{329}

10.6 Comparing the artefacts

It is necessary to take in account that the findings in these two areas are from different contexts; grave context in Durankulak and findings from the settlement in Sitagroì. Despite the difference in context the artefacts give a picture about the daily life and give answers about trading and local processing.

Making pottery of good quality was done in both Durankulak and Sitagroì. But it is problems to compare them without taking part of the artefacts. Clear is that Durankulak had its own style with carefully polished pots, often with a lid and sometimes in an anthropomorphic form. In Sitagroì were the grey lustre ware dominating most often as bowls. According to the excavation reports the ceramics was burnt in an open oven at a low temperature in

\textsuperscript{328} Elster & Renfrew 2003, 354.
\textsuperscript{329} Elster & Renfrew 2003, 302ff.
Durankulak and in higher firing temperatures at Sitagroi. The same pyrotechnic was used when making the figurines that appear in both areas. The figurines appear in both areas and in Durankulak in a grave context and findings from Sitagroi came from an unknown context and are supposed to come from houses or shrine areas. In both cases the figurines have jewellery; wrapped copper bracelets/necklace in Durankulak and perforations in the heads, maybe for earrings, at Sitagroi. Clay is the most common material and the figurines are always fleshy and natural in their characteristics. Figurines are found in all phases at Sitagroi; increasing in numbers from phase II. At Durankulak figurines appear first in phase III and there are only five of them compared to 237 from Sitagroi during this period. Comparing the figurines is difficult because they are not found in the same context. One thing is clear though, being fat must have been the ideal body complexion in both places.

Honey flint was one of the most common types of lithic in Sitagroi and it was taken from sources at the Sredna Gora Mountain in eastern Rhodopes, the same area Durankulak took their volcanic stones from. Local stones are used as Chalcedony and Chets in Sitagroi. Approximately 30 % of the flint tools In Durankulak where made on site by local flint of lower quality. Although there are also “imported” prestige tools of flint found in Durankulak that are supposed to be processed outside the settlement, closer to sources of specialized workshops. It is common that the local flint was made in into small and simple tools in the settlement and that the bigger tools of better quality were imported.

Imported or local is a dispute about Spondylus. It is clear that Spondylus ornaments were produced at Sitagroi but as to Durankulak there is an ongoing debate about the origin of the molluscs. If there was Spondylus only in the Mediterranean Sea it could be a sign that there was a trade in this area where flint and metal was paid with shells. On the other hand there are large findings of Spondylus by the Black Sea coast and Danube and there is no sign of import of neither flint nor metal from this area to Aegean. Altogether there is evidence of local production but also of import from places relatively far away from both of the sites.

The small quantity of metal that is found in both Sitagroi and Durankulak makes it difficult to draw any conclusions and it is first in phase IV at Durankulak a large increase in the number of copper rings can be noticed. Todorova supposes that it was during this period a craftsmanship and structures for a metal trade were formed. From the same time period there are findings of potsherds with copper fragments on the surface from Sitagroi. As there are no copper slag it is supposed that there had been a re-melting of already smelted pieces maybe imported from the northern Balkan. The copper in Durankulak is decided by analysis results
to be from the West Pontiac area and Bulgaria. The Cycladic islands, Rhodope Mountains and Lavrion are supposed as the origins of the metal in Sitagroi.

11. THE DAILY LIFE IN DURANKULAK

We are coming from the south with the Black Sea outstretched below the steep cliffs to the right. The landscape is flat and when the sun rises the village of Durankulak emerges in the daylight. There is smoke coming from the ovens, the small lake lies clear like a mirror, there is noise coming from the cattle in the stables and the donkeys in the surrounding area are neighing. Maybe there is also a barking dog outside the monumental stone house in the centre.

The first people from the Hamangia I culture settled in Durankulak around 5300 BC. It is still a secret where they came from and how they got the knowledge to build two store houses of stone. Durankulak must have been a nice place to live in and the Hamangia culture stayed here for around eight hundred years despite the fact that the climate in Durankulak was hard with cold winters and temperatures down to 22°C below zero and summers with temperatures up to 36°C. The extreme shifts in temperature made it important to have shelter against both cold and heat. According to laboratory analysis there were no dramatic changes in the climate or in the sea level when the Hamangia culture lived in the Dobruzha area. After the opening of the Bospore strait there was a slow ongoing rising of the sea level that culminated 4600 and 4200 BC when the Black Sea had reached its present level.

Pollen analysis implies that people cultivated the land and that they were keeping farm animals. Earlier theories talk about a Neolithization process coming from Greece and heading to the north of Europe. On the other hand recent DNA analysis from goats open up a new direction for this process where agriculture expanded from the north of Anatolia by the Black Sea coast towards the Danube River. Another theory is that this development took part in a local area without influences from the outside. In the excavation report Todorova draw the conclusion that it was proto-Neolithic people that first settled in Durankulak. Furthermore, the origin of the animals and crops is still not clear, if they were brought there with emigrants, if they were used in barter or if they had survived the iceage and always had had their habitats here.

This was maybe the perfect place to be settled on with the fertile plateau, close to the Black Sea and with a beautiful lake rich with fish on the doorstep. The surrounding area was a mixed oak forest with scattered groves of hazel, elm, lime and birches in the valleys where the
asses and deer’s could be hunted. Herbs dominated the steppe and round the lake plants from the goosefoot family dominated the vegetation.

The Hamangia culture was small-scale cultivators, plant collectors, who made pottery and was herding and hunting animals. A reconstruction calculates that there were about 348 people living in Durankulak when they first settled with an increase to 530 persons in phase III. It was a dramatic change in life style when humans went from living in small pit dwellings to building big two store houses of stone. Around 4700 BC the stone architecture was in use and there are monumental and robust houses up to 25 meter in length and two-story houses with several rooms. Inside the inner walls were dividing the houses into smaller rooms with plastered floors and walls, which sometimes were decorated with relief’s and ornaments. The houses were frequently renovated and in some cases there were over 50 layers of plaster. Inside the house there could be one or more ovens. On the outside some of the houses had porches at the front and outhouses with a lighter construction that may have included kitchens or stables for the animals. The roof was most probably made of reed. The village in Durankulak was well organized and built according to a plan with narrow alleys between the houses. The biggest building that measured 166 m² was situated in the centre.

Burial rituals seem to have been important for the inhabitants in Durankulak. The cemetery was used during at least 500 years and there were 586 graves excavated, almost all of them with rich grave gifts. Pottery findings are common with a carefully polished surface, decorated and of very high quality and in some cases they are made as anthropomorphic figurines. The pottery is made at a low temperature, from 400º C with a technique that is also used when making figurines. The typical idol in Durankulak has a strong geometric physique with a tiny chest, long neck and broad and triangular under body. They are sometimes adorned with rings and necklaces and often the arms and heads are missing. The figurines are variably in form and are mainly sexless, even if the female figurines are dominating. The figurine findings are from graves and in some cases they are buried beside the skull.

30 % of the flint findings are of a lower quality and are predominantly irregular blades of medium size with the character of household manufacturing. This production was a part of the everyday activities of the people. Superblades based on finest quality flint were made in workshops in the Razgrad and Shumen regions, at a distance of 90-120 km from the site. There are also findings of volcanic rocks such as basalt and andesit where petrographic analysis indicates an origin from the Burgas-Yambol region south of the Black Sea coast. Something happened with the local sources used in phase IV as the flint from Dobruzha disappears and there is a doubling of the import from Razgrad.
There could also have been local processing of shell ornaments at the settlement. Due to the large numbers of findings it is a possibility that the shells originated from the Black Sea. If so, the theory that Spondylus was the first “money” used in trading or barter is not valid because there was no need for an import. The uses of the shell rings are unclear. They could have been made as adornments or as gifts to the dead as a part of the cult. As they probably were prestige goods this could be an indication for a society with a hierarchy. The small beads have been reconstructed as chains and put together to belts. It is also reasonable to think that the beads were sewn on to clothes and this is the only evidence there is for weaving and the use of textile.

Metal findings are rare and there are only four findings of copper beads in phase I-II and three in phase III. From phase III-IV there are 1259 copper rings and 23 bracelets found in a grave context. During this period people began processing the metal and a growing craftsmanship can be noticed. Analysis of the metal from phase III supports an origin from the West Pontiac area. The absence of a copper-working record suggests that ore processing and copper tool moulding took place away from the village.

The most common meat on the plates was from cattle, secondary and unique are the large volume of meat from the wild ass that is supposed to have been hunted. I am not so sure about this though, on the contrary I believe that flocks of asses searched for contact with the humans, primarily for grazing the crops in the fields. Possible evidence for this is the rapid eradication of the species that could be due to that they were easy to catch. In and around the settlement were sheep and goats and some pigs. For hunting, the red deer was the most common trophy followed by the broad-hoofed horse and the roe deer and the possibilities were good for fishing in the lake or in the Black Sea. It is also suggested that the Spondylus and other shells were used as a delicacy.

On the fields wheat, emmer and millet were grown and so there were possibilities for making breads and there were lentils which could be served with the meat.

12. THE DAILY LIFE IN SITAGROI
We arrive by foot from the north and when the sun goes down Sitagroi village can be seen as a shadow on the bank of the Angitis River. There are lights coming from the fires and we can notice the smell of grilled meat in the air. There are noises from children playing and pigs grunt when looking for garbage around the long houses made of wood. In the outskirts of the settlements hammering is heard from the manufacture of the Spondylus rings and flint tools.
The Drama plain is flat and encircled by mountains. A mixed-oak forest with stands of elm and lime cover the area and in some of the glades there are hazel and ash growing. Roe deer and the larger red deer reside on the foothills of the mountains. The Fallow deer, a typical southern species, can also be seen here which indicates that there is a dryer climate here than in the inner Balkans. The climate on the Drama plain was a modified Mediterranean regime with long and hot summers and rainfall of about 400-600 mm and mild winters.

Sitagroi was established around 5500 BC and was a massive settlement. There is no indication of earlier occupation in the area and Renfrew suggests that the first occupants in Sitagroi had a Balkan origin. The post-framed houses they built were small and rectangular, of varying construction types and with a ditch surrounding the building. The wooden constructions were coated in the interior and exterior with clay mixed with hay. The kitchen was in some cases located inside the house and in others it was placed in an open courtyard. Later on the households became more isolated and even enclosed in private yards.

Pottery in smaller quantities has been found from the beginning of the first phase and is of both rural and rusticated wares. In absolute majority are grey lustre wares of good quality and with powerful painted decorations. Clay was also used in idols which are found in large numbers. Most of them are made schematically without any details and found in an unknown context. Many of the Sitagroi figurines have a flat base and some of them are encrusted. In most cases the head has been broken off. Half of all the schematized figurines have perforations through the body or in the head which are probably used for attachments and earrings.

The lithic assemblages from Sitagroi are largely imported. There were obsidian from the island of Melos and honey flint was obtained from outcrops sources at least 200 kilometres away from the site. It can be noted that this was an important and costly raw material because it was used and resharpened until it was exhausted. At the same time small tools made of local materials such as chalcedony and chets are found in high proportions. Unused blanks may reflect the availability of these materials and that the processing was local.

Spondylus ornaments are with no doubt processed in Sitagroi which is proved by the finds of unfinished performs of both beads and bracelets. Fragmentation is a well known phenomenon in all northern Aegean sites and in Sitagroi most of the fragments have been shattered in the prehistory. There are also findings of beads made of several types of shells and it can be presumed that they were sewn on to textiles or put together to chains, belts and other adornments.
Among the earliest findings of metal in the Aegean world was found in Sitagroi. It can be questioned if it is from phase II because it is not mentioned in the first volume of the final report. There are confirmed findings of potsherds from phase III with metal on the surface that most probably have been used to re-melt copper imported from some other place. The absence of slag confirms this theory. The metal in Sitagroi has according to later observations an origin from a wide variety of sources such as Bulgaria, Cycladic Island, Rhodope Mountains and Lavrion.

There is absolutely no doubt that the most common meat served in Sitagroi was beef. In phase I-II when people had access to domesticated animals, the hunting almost terminated. It then increased again in phase III. Except for bulls numerous pigs, sheep and goats were herded outside the settlement. The carnivores that are present in the bone material are wildcat, marten, badger, brown bear and foxes.

On the small fields around Sitagroi einkorn was grown which was the most numerous grain followed by emmer wheat in small quantities. An increase is seen in the number of both grains and species over time. Brome grass, fat-hen, black bindweed, knot grass, speedwell, goosegrass and dock were also present in the vegetation. The dessert could be collected in the mountains and consisted of cherries and almonds. In phase II wild grapes also occur.

13. CONCLUSION

Differences can be observed in the nature, the landscape and the climate between the two areas. The climate was harsher in Durankulak and less species have been found here compared to Sitagroi. On the other hand, there are a lot of similarities which can explain why the sites were chosen as places for settling. They are both situated on plain’s that are fertile, there are sweet water resources available and the Durankulak lake and the Angitis River made fishing possible. In the surrounding area there was forest where deer’s could be hunted and the two sites are close to the sea. It can be supposed that there was open land which was easy to cultivate. In Sitagroi the alluviation from the river enriched the soil and in Durankulak overflowing of the land had the same effect.

The environment gave a natural limitation to what food could be seen on the tables but it could also be supposed that traditions and culture provoked the differences. In Sitagroi breeding was the absolute most important source for meat and hunting nearly disappeared. Cows, sheep and pigs were grazing around the settlement in large numbers, increasing from phase I to III. Interesting is that there were wild aurochs found in the same period that there were domesticated bulls. Cattle were also in the majority in Durankulak but sheep occur first
from phase II and in small numbers. There are only three findings of pigs in phase II-III. As to the number of pigs the environment be the explanation. The presence of wild boar in Sitagroi and none in Durankulak might indicate that the living conditions might have been better for pigs in Sitagroi. On the other hand people in Durankulak were eating the European wild ass in big quantities, nearly at the same ratio as cows. Traditionally the ass is considered a wild animal and the Hamangia people were hunting them. My theory is that these donkeys searched the company of humans and therefore they were easy trophies and that this also was the reason for them being eradicated. On the fields around Sitagroi einkorn was the most important plant compared to Durankulak where wheat and emmer were growing. The natural condition affected the cultural development and can be seen in the remains, first there was a much more complex architecture with stone bases in Durankulak which could be a result of the harsher climate and also because the ground was not appropriate for digging stolpholes. Second is the lack of graves in Sitagroi and the big cemetery in Durankulak. This may be due to the willingness to make the death a community rite in Durankulak and the tradition to keep the dead person in the family in Sitagroi. It could also be that the cemetery in Sitagroi was located far away from the site and is not yet found. According to the artefacts there are similarities in the way simpler products such as small tools, pottery and figurines are made in the two sites. Products that need craftmanship were imported as is seen with the big tools and perhaps also the metal. *Spondylus* are frequently findings that obviously were made in Sitagroi and which originated from the Aegean Sea. The origin of the *Spondylus* adornments in Durankulak is debated where one school believe that they have been imported from the Mediterranean Sea. Other biologists and archaeologists mention that during the climate optimum the *Spondylus* lived in the Black Sea and was local for Durankulak. This is an important question; if the Spondylus were imported they may have been a part of barter or trading. If not, there is no evidence for a long distance exchange.

The time period I have investigated was before metal were processed in larger quantities but there is no doubt that knowledge and an interest for metal existed but the findings are sporadic and fragmented and no conclusions can be drawn from them. Finally, my general conclusion is that knowledge about the natural conditions is important for interpreting prehistoric sites. In these two micro areas there are differences that could be connected with the natural surroundings. There is a need for more research with a deeper comparative study between Sitagroi and Durankulak. Moreover there are information from other micro regions in for example Anatolia and the centre of Bulgaria that could complete the picture.
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