STUDIA HERCYNIA XXII/1, 77–95

Late Iron Age Ceramic Manufacturing along the Maritsa River in the Northwestern Rhodope Mountains. A Characterization from Emporion Pistiros

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ABSTRACT

In the history of archaeology of ancient Thrace, the analysis of indigenous ceramics has received less attention than other archaeological material, especially imported Greek wares. In recent years however, more archaeologists have begun intensively analyzing these ceramics in an attempt to further understand external influences on the manufacturing and consumption practices of ancient Thracians. The purpose of this article is to describe recently excavated, locally made ceramics from an inland market site known as emporion Pistiros. Although this site has a long history of archaeological excavation, this article utilizes diagnostic sherds excavated during the field school campaigns of the Balkan Heritage Foundation between 2013 and 2016, which are hitherto unanalyzed. Through the use of a systematic cataloguing and analysis system this article attempts to present characterizations about these ceramics from the Late Iron Age in the Northwestern Rhodope Mountains, which will result in a typological system for use at the site as well as cross-site comparisons.

KEYWORDS

Bulgarian Thrace; Late Iron Age; indigenous ceramics; technological choices.

INTRODUCTION

Ceramics are one of the most common objects found at archaeological sites due to their ability to break easily and be replaced often, but they are also virtually everlasting through time, making them important to evaluations of stylistic and technological choices that were influenced by individuals and groups within the society (Quinn 2013). In the research presented here ceramics are understood and used as important indicators of cultural identity and cultural change.

In the history of archaeology, ceramics have served as a primary medium for studying archaeological groups (Biehl – Gleser 2003). Throughout archaeological investigations of ancient Thrace, imported Greek ceramics have been commonly analyzed and until now the different aspects of the local ceramics, especially hand made ceramics, from sites in Southwestern Bulgaria during the Late Iron Age (circa 7th–2nd century BC) have only been discussed in limited publications. Although there have been regional surveys and documentations of archaeological sites in the region (Sliwa – Domaradzki 1983; Chankowski – Gotzev – Nehrizov 2004), Bouzek (2007) noted that there has never been a systematic analysis of hand made ceramics from the region during this time period. In the case of ancient Thrace, some of the large tempered, poorly fired, hand made, and undecorated sherds have been set aside in favor of studying the more fine wares, imported Greek wares, or wheel made pieces created in Greek colonies by Greek immigrants to the area.

This paper presents an overview of an important Late Iron Age site in Bulgaria and details preliminary characterizations of the locally produced ceramics. The site, known as Pistiros,[1] is located at the northern base of the Rhodope Mountains in western Bulgaria. The site is dated to the Late Iron Age and has been interpreted as the location of an emporion or market center where Greeks and local Thracians lived together. As an inland exchange center with a mixed population, the site presents interesting possibilities for the study of ceramic manufacturing in the region and the impacts of cross-cultural interactions during the Late Iron Age.

From over thirty years of excavation at this site there have been several attempts to characterize the local ceramics including several publications about the wheel made grey ware or monochrome pottery (Domaradzki 2002; Bouzek – Domaradzka 2008b), but the hand made vessels have received less attention. This will be the first attempt to catalogue, analyze, and date a representative sample of the ceramic assemblage of both hand made and wheel made vessels to reveal patterns and possibly show the results of interaction with Greeks.

THE SITE OF PISTIROS

The Polish archaeologist Mieczysław Domaradzki led the first archaeological excavations conducted at the site of Pistriros from 1988 until his premature death in 1998. The international character of the project has been carried on, the excavations are still ongoing and entered

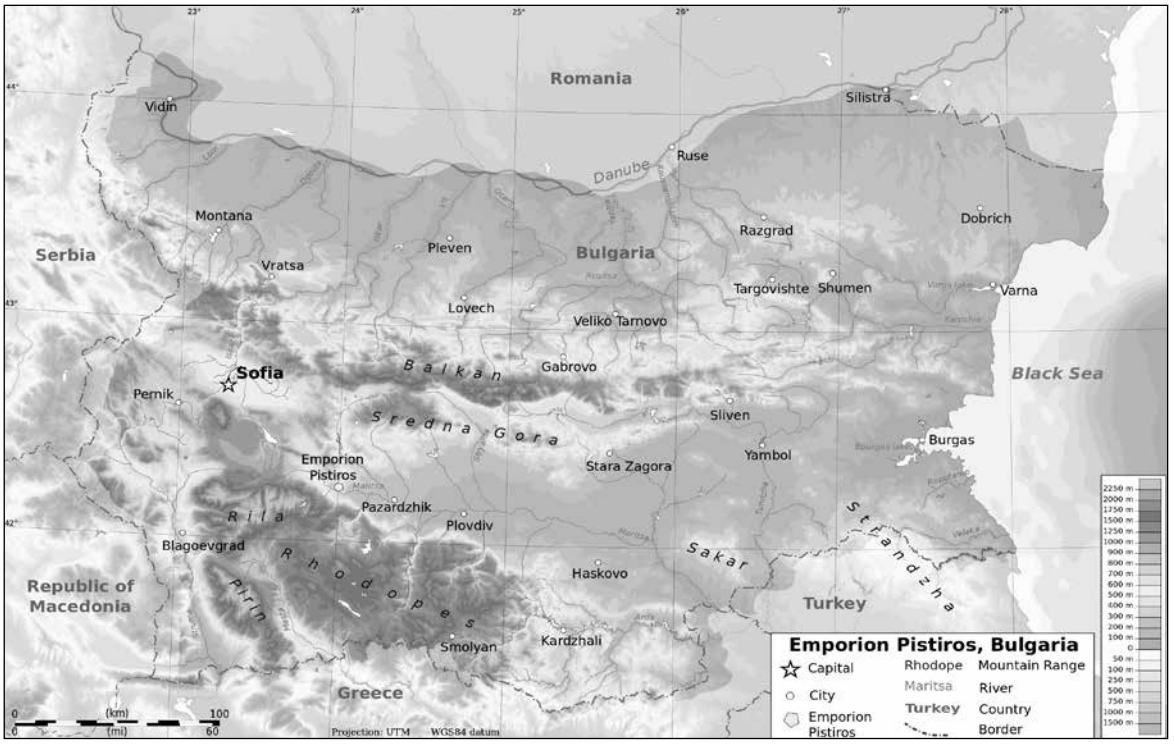


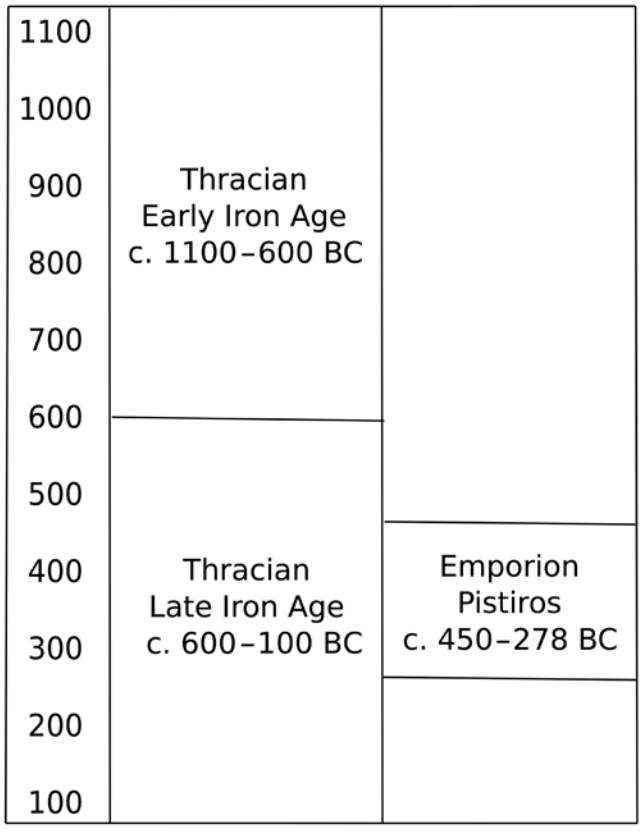
Fig. 1: Map of modern Bulgaria with the location of Pistiros labeled.

1 Before the discovery of the Vetren inscription, which lists the rights and privileges guaranteed by the Thracian King to Greeks living at the site in 1990 (see e.g. Chankowski 1999), the site, most commonly referred to as Pistiros, was called Adzhiyska Vodenitsa. Although the name of the site remains debatable, through this article it will be referred to as 'Pistiros'.

their 30th year with the 2018 field season. The results from the archaeological investigations from the international teams are combined into site report publications.[2] Beyond these edited site reports there are also publications in numerous conference volumes and journals.

The location of Pistiros is in the southern central portion of the modern-day Bulgaria near the town of Vetren in the Pazardzhik province (**Fig. 1**). The site is located about 150 km from the North Aegean coast and separated from it by the Rhodope Mountains (Chiverrell – Archibald 2009). Pistiros is located along the Maritsa River, or ancient Hebros River, which runs from the northeastern edge of the Aegean Sea, at the divide of modern Greece and Turkey, into western Bulgaria.

The site has been dated to circa 450 BC to 278 BC (Bouzek – Domaradzka 2008a), and it is important to note that it was created under the tutelage of Thracian kings based on the Vetren Inscription (Graninger 2012) (**Tab. 1**). It is the only known site that was created with the will of an Odrysian king in Odrysian territory (Bouzek – Domaradzka 2008a). The site was attacked by the Celts in 279/278 BC as shown by a coin hoard, which had 552 silver and gold coins minted by Philip II, Alexander III, and the diadochs including the last issue by Lysimachus (Bouzek – Domaradzka 2008a). Pistiros was modestly rebuilt and continued to function as a small scale smelting workshop before it was abandoned in the first half of the second century BC after a natural disaster (Tsetskhladze 2000).



Tab. 1: Chronological table depicting the estimated period of the Early Iron Age and the Late Iron Age in Thrace with the chronological position of Pistiros noted.

2 The first, called *Pistiros I Excavations and Studies,* was published in 1996 and the volumes have continued through the current volume, *Pistiros VI* produced in 2016.

CERAMIC ANALYSIS OF LATE IRON AGE THRACE

A BRIEF REVIEW OF CERAMIC ANALYSIS STUDIES OF ANCIENT THRACE

The state of archaeological ceramic analysis in Bulgaria is inconsistent across the country and between different historical groups producing the ceramics. For example, the Greek colonies along the Black Sea receive a great deal of attention, which results in publications, conference presentations, and larger scale comparisons of local and foreign materials (e.g. Bouzek 1990; Tsetskhladze 1998; de Boer 2002). Materials from central and eastern Bulgaria are usually more highly published than the material from western Bulgaria, which may be due to less archaeological excavations in the area or lack of published studies from past years.

The most commonly analyzed ceramics from Bulgaria are Greek imports and what has been termed Thracian Grey Ware. The Greek materials are often privileged at archaeological sites as they testify to Greeks living in the area or the importation of Greek ideas, and possibly present an easier system for dating due to the massive corpus of available comparisons from the Greek mainland and islands (e.g. Bouzek 1994; Bozkova 2014). Wheel made ceramics found in colors ranging from greys to light browns have been termed grey ware, monochrome ware, or Thracian Grey Ware. This Thracian Grey Ware has been highly theorized and linked to Anatolian and Aegean influences both in terms of design and manufacturing (e.g. Nikov 1999; Bouzek – Domaradzka 2008b; Madzharov 2006).

The hand made ceramic material from the Iron Age generally, has been the subject of analysis in terms of decoration, which is usually focused on the much more identifiable characteristics of incised lines and stamped patterns characteristic of the Early Iron Age (circa 13th–9th centuries BC). The comparisons of designs across different regions in central and eastern Bulgaria has been analyzed several times (e.g. Nikov 2001; 2011). Finally, the hand made ceramics of the Late Iron Age has been the topic of at least one dissertation from Sofia University St. Kliment Ohridski by Veneta Hanzhiyska in 2006. This dissertation presents the only large-scale attempt to classify and create a typology for Thracian hand made ceramics from the Late Iron Age but focuses on southeastern Bulgaria. Hanzhiyska published a supplement to the dissertation, with typology drawings (Hanzhiyska 2007) and an analysis of hand made ceramics from excavations at Kozi Gramadi Peak (Hanzhiyska 2012). In addition, Hanzhiyska published a review of Thracian Late Iron Age hand making techniques and material usage analysis (Hanzhiyska 2010). In this review she points out to the limited analysis of Late Iron Age ceramics beyond typological comparisons. She noted that the most common additives to clay were quartz sand and mica. Vessels are often made using a pinch-pot method with secondary shaping that may have taken place on a wheel after its introduction. Most importantly, she noted changes in clay formula, finishing, and shape, which occurred sometime during the second half of the fourth century BC following trends toward urbanism in Thrace, the creation of craft centers in urban areas, and the use of the pottery wheel to increase production rates (Hanzhiyska 2010).

At Pistiros specifically, there have been several publications about the ceramic materials, but they tend to focus on the wheel made grey ware or Thracian Grey Ware (e.g. Domaradzki 2002; Bouzek 2007; Bouzek – Domaradzka 2008b), imported Greek ceramics (e.g. Archibald 1996; Bouzek 2007; Bouzek *et al.* 2007; Petrova 2018), and other specific vessel forms and functions outside the utilitarian hand made vessels at the site (e.g. textiles – Bouzek 1996; Matys, A. 2013 or lamps – Boháč 2002; Matys, M. 2013). The current research presents attempts to combine the analysis of wheel made grey ware vessels and the utilitarian hand-made vessels to show the way that vessel forms, functions, and manufacturing may have been borrowed or contrasted with the different techniques.

Although there have been several publications about ceramics from Pistiros (e.g. Domaradzki 2002; Bouzek 2007; Bouzek – Domaradzka 2008b), a few about the handmade vessels of Late Iron Age Thrace (e.g. Hanzhiyska 2007; 2010), and some analyses of indigenous-Greek relationships (e.g. Archibald 1998; Domaradzka 2005; Bouzek *et al.* 2009) a systematic analysis of these ceramics in relation to interaction has not been fully explored. The final goal of this research will be to fill in the gap between manufacturing processes often divided by hand and wheel techniques in an attempt to better understand the consumption of ceramics and influence on ceramic technological choices during the Late Iron Age in Bulgaria.

THE CURRENT CERAMIC PROJECT AT PISTIROS

The material analyzed in this research comes from collaboration with the Balkan Heritage Foundation in coordination with the Bulgarian Site Director A. Gotsev and his team. The Balkan Heritage Foundation has been organizing archaeological field schools for international stu-

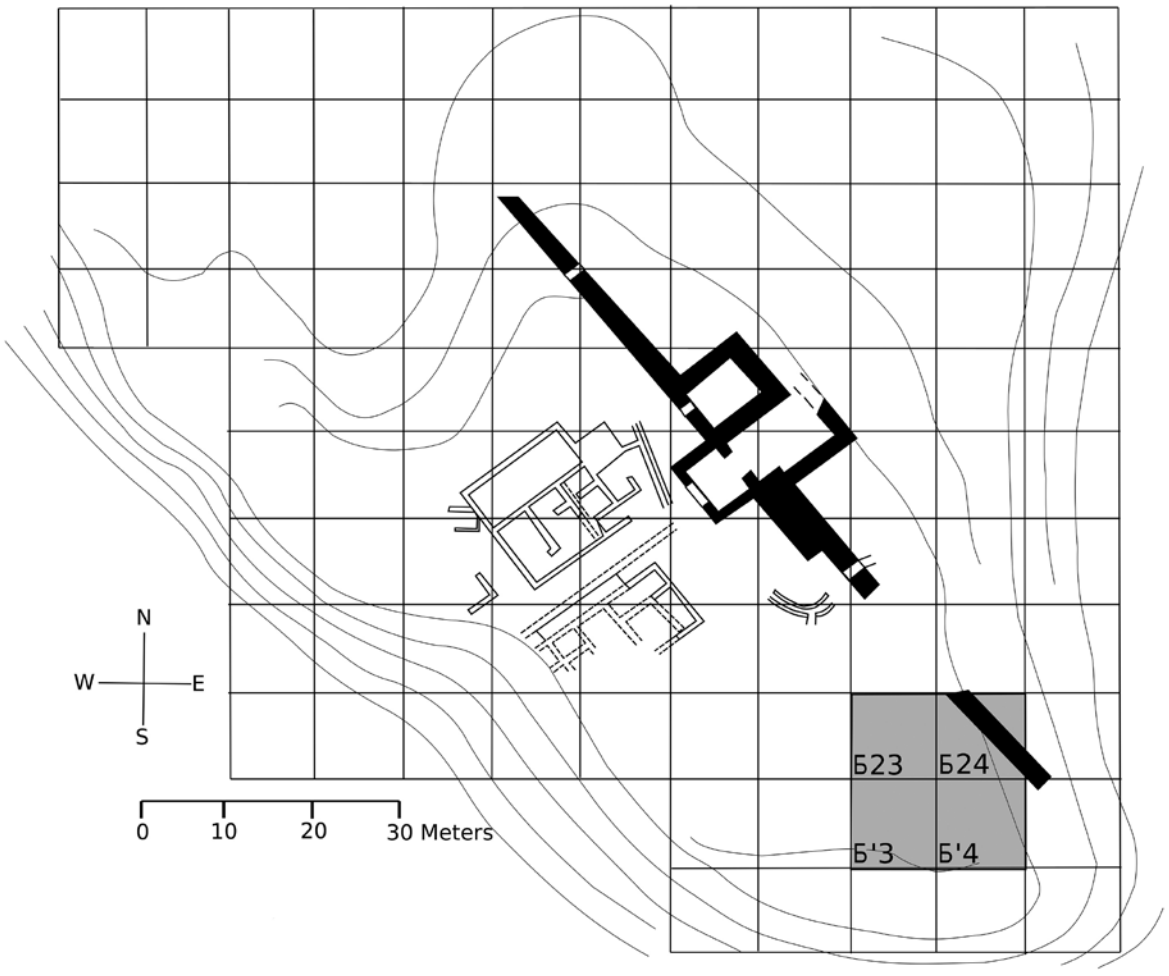


Fig. 2: Pistiros site map with the numbered grid system and known excavated structures. The area of interest to this paper is outlined in grey (adapted by the author from a map from the Archaeological Museum "Prof. M. Domaradzki").

dents at Pistiros since 2012 (Annual Reports in "Archaeological Discoveries and Excavations": Gotsev – Petrova 2013; 2014; 2015; Gotsev – Petrova – Taneva 2016; 2017). The excavated area includes units Б23, Б24, Б'3, and Б'4, which are located inside of, and adjacent to, the fortification wall on the eastern side of the settlement (**Fig. 2**). The units are established on a 10×10 m grid with baulks between units and several units such as Б'3 divided into smaller sections. The excavations are carried out systematically following either arbitrary or natural levels based on the characterization of the soils and their contents. Material culture is collected seperately from different levels and features while special finds such as coins or spindle whorls are bagged separately. Material is washed on site, fragments divided into categories, and recorded. Finally, only the diagnostic material is transported to the Archaeological Museum "Prof. M. Domaradzki" in Septemvri, Bulgaria where it is stored.

Until 2016 the local ceramics from these excavations have only been catalogued based on the number of fragments pertaining to different ware types and diagnostic feature. Although useful, this information does not allow for the creation of typological comparisons or detailed statistics about information such as rim shape and decoration. During the 2016 field season a small pilot project was conducted using 116 excavated fragments from the 2014 season. The goal was to catalogue, photograph, and draw all of the fragments to show if a typological comparison was possible and to demonstrate the existence of local ceramics. The results showed the need for further analysis.

The first phase of research in the 2017 study was the systematic cataloguing of all of the collected diagnostic ceramic fragments. Based on a visual analysis of each ceramic sherd there are 15 criteria subsequently filled out. The categories include vessel portion, possible vessel form, manufacturing technique, clay color (interior, exterior, temper), temper size, firing temperature, post-manufacturing burning, measurement (thickest at location, thinnest at location), diameter of rim or base, and general comments.

METHODOLOGY AND PRELIMINARY CHARACTERIZATION OF CERAMICS

The following section presents preliminary characterizations of the ceramics based on statistical evaluations of different aspects such as clay color, composition, vessel form, and decoration. The primary statistics presented here represent descriptive statistics based on measures of frequency, variation, and tendency. These results were then used to conduct correlation tests between variables, which are called attribute analysis (e.g. Biehl – Gleser 2003). Future research will further include multivariate statistical analysis, and horizontal and vertical dispersion analysis. The typology of vessels, contextual analysis, and chronological characterizations are forthcoming, but the characterizations here are important for understanding the collection as a whole.

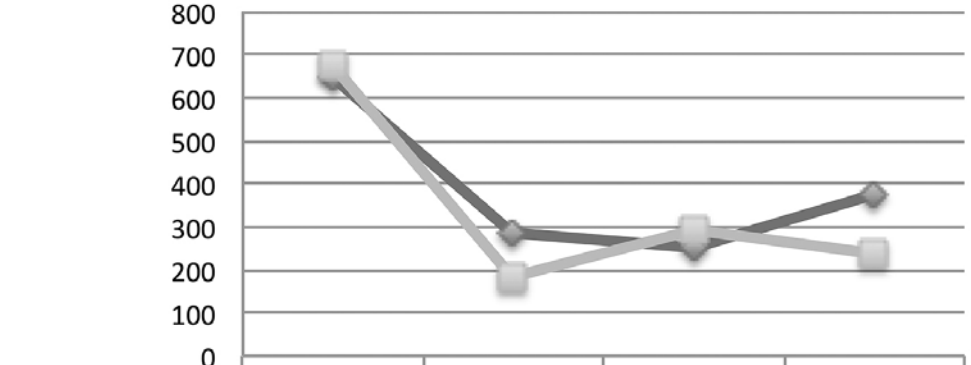
To date, there are 2,947 catalogue entries in the database. The material comes from four 10×10 m units – Б23, Б24, Б'3, and Б'4 (**Fig. 2**) excavated from the earliest year in 2013 through the most recent available material from 2016. These four units account for a small portion of the entire site, but the material was available for analysis, recently excavated, and generally well-documented, which made this initial analysis viable for a later comparison with previously excavated materials in other areas of the site. The number of catalogue entries does not reflect all of the material excavated from these units. The non-diagnostic fragments, such as undecorated body sherds, were noted for color, manufacturing technique, and possible vessel form; then set aside. Only the diagnostic pieces were stored at the local museum. Finally, the catalogue represents more than 2,947 individual sherds because fragments that could be

reconstructed were catalogued together as a single entry in the database. Thus, if there were three rim fragments that fit together and represented a single vessel they were catalogued together with a comment about how many fragments were represented.

MANUFACTURING TECHNIQUE

The first category presented here distinguishes ceramics based on whether they are hand made or wheel made, which provide two major groupings for further analysis and each of the following categories will be subdivided into the hand made and wheel made. The primary means of vessel manufacturing are hand making and wheel throwing although there is a variation, which combines the two methods – hand made vessels that are then wheel finished. Based on the development of certain styles within ceramics during the Iron Age it has been hypothesized that the potter's wheel was introduced in Thrace during this time and was likely the result of Greek or Anatolian interaction (Nikov 2001). During the Late Iron Age, the pottery wheel became incorporated into manufacturing techniques across Thrace.

Pistiros is an example of a Late Iron Age site that accepted the invention of the pottery wheel and used it to either finish hand made vessels or to create wheel made vessels with new complicated profiles and thinner, more uniform walls. The majority of ceramics excavated at the emporion appears to fit into the categories of hand made or wheel made with several limited exceptions that combine the techniques. These usually are sherds from hand made vessels that have been smoothed on a wheel or have had slip applied on a wheel. In total, there were 1,392 wheel made ceramics sherds (47 %) and 1555 hand made ceramic sherds (53 %) (**Tab. 2**). At this point it has been impossible to identify the exact hand making method utilized but it is likely that the coil method used elsewhere in ancient Thrace was also practiced at the emporion. The wheel made ceramics on the other hand included imported amphorae, black slip, and red figure Attic pottery that was easily distinguished from local pottery and not included in the evaluation of locally produced pottery.



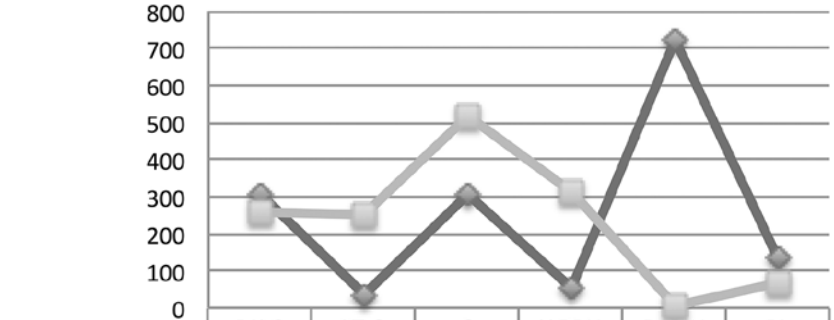
	Rims	Bases	Handles	Bodies
Hand Made	647	284	250	374
Wheel Made	673	183	295	241

Tab. 2: Distribution of diagnostic vessel pieces (rims, bases, handles, and body fragments with decoration) that have been grouped within hand made and wheel made manufacturing techniques.

CLAY COLOR

In terms of clay color, the material has a wide range of diversity. The clay colors are compared and recorded based on the universal Munsell Soil Color Charts. The colors range from very dark grey to light grey and from dark red brown to light yellow brown. For the sake of statistical analysis of trends similar colors with the same names, but from different categories, such as 7.5YR 4/1 (Dark Gray) and 10YR 4/1 (Dark Gray) were grouped based on the color. In this article the ceramics were categorized into six different categories of color – black (BL), dark grey (DK G), light grey (LT G), grey (G), yellow brown (Y BRN), and red brown (R BRN) (**Pl. 1/1**).

Based on these color categories it is self-explanatory that most of the ceramics from Pistiros fall within a grey category (**Tab. 3**), which correlates directly with wheel made ceramics as previously identified as 'grey ware' (Domaradzki 2002). However, the color of the clay was calculated for the interior, exterior, and clay paste of each shard to show differences in color based on firing techniques. The secondary factor working on the clay coloring is the conditions of the firing including the temperature, duration, and amount of oxygen allowed into the firing chamber. The result of the firing temperature is much more obvious on the hand-made vessels used for utilitarian purposes. Many show the results of quick, low temperature firings that leave the exterior of the ceramic lighter in color with a dark core. The other main method shows a lack of oxygen that results in a darkened exterior with a slightly lighter core. However, variation in temper materials, postproduction use, and disposal may also affect the clay color. Further analysis of the ceramic clay makeup through thin sectioning will allow for definite representations of the different firing techniques from the site.

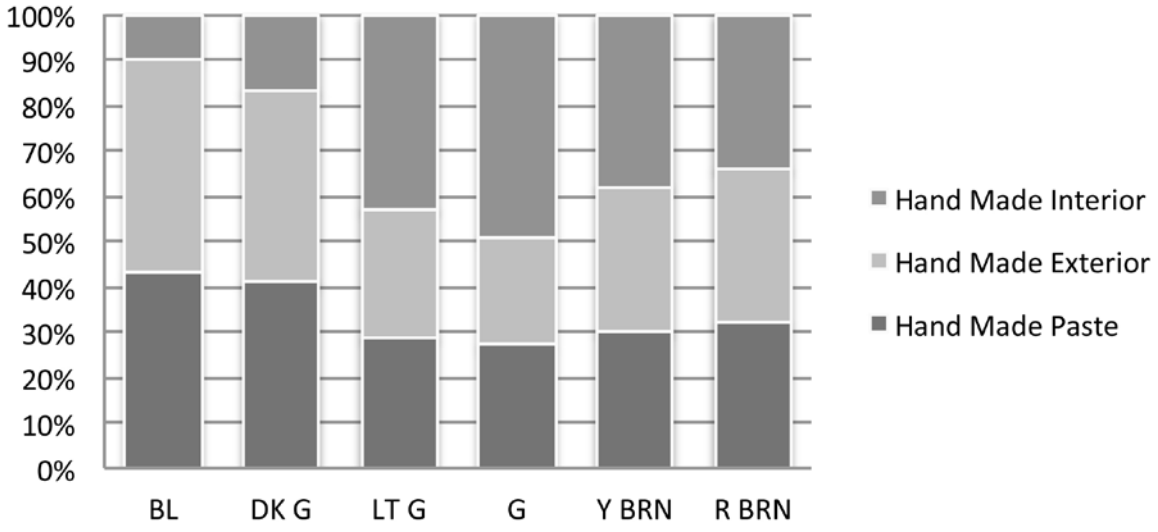


	DK G	LT G	G	Y BRN	R BRN	BL
Hand Made	304	36	303	55	720	137
Wheel Made	258	252	518	314	5	65

Tab. 3: Distribution of clay colors (dark grey – DK G, light grey – LT G, grey – G, yellow brown – Y BRN, red brown – R BRN, and black – BL) from the external portion of the fragments that have been grouped within hand made and wheel made manufacturing techniques.

The ceramics were thus first divided based on the manufacturing technique in an attempt to reveal changes in clay acquisition, preparation, and firing between the different manufacturing techniques. Overall 1,886 fragments of all ceramics catalogued are grey (64 %), 501 fragments are yellow brown (17 %), 530 fragments are red brown (18 %), and 30 fragments are black (1 %) (usually burnt and the original color is unrecognizable).

The hand made ceramics showed the greatest diversity of colors showing a diversity of factors involved in the manufacturing as well as a lack of specified practices or uncontrollable firing, resulting often in the so-called sandwich effect. The descriptions of clay color were thus subdivided based on the interior, exterior, and clay paste to show the factors involved in firing, post-manufacturing use, and deposition. The interior of hand made ceramics included 9 % black, 20 % dark grey, 2 % light grey, 19 % grey, 4 % yellow brown, and 46 % red brown. The exterior of the hand made ceramics was similar with 9 % black, 20 % dark grey, 2 % light grey, 18 % grey, 4 % yellow brown, and 47 % red brown. The interior clay showed slightly more consistency with the main colors being grey and red brown – 2 % black, 9 % dark grey, 3 % light grey, 35 % grey, 5 % yellow brown, and 46 % red brown (**Tab. 4**).

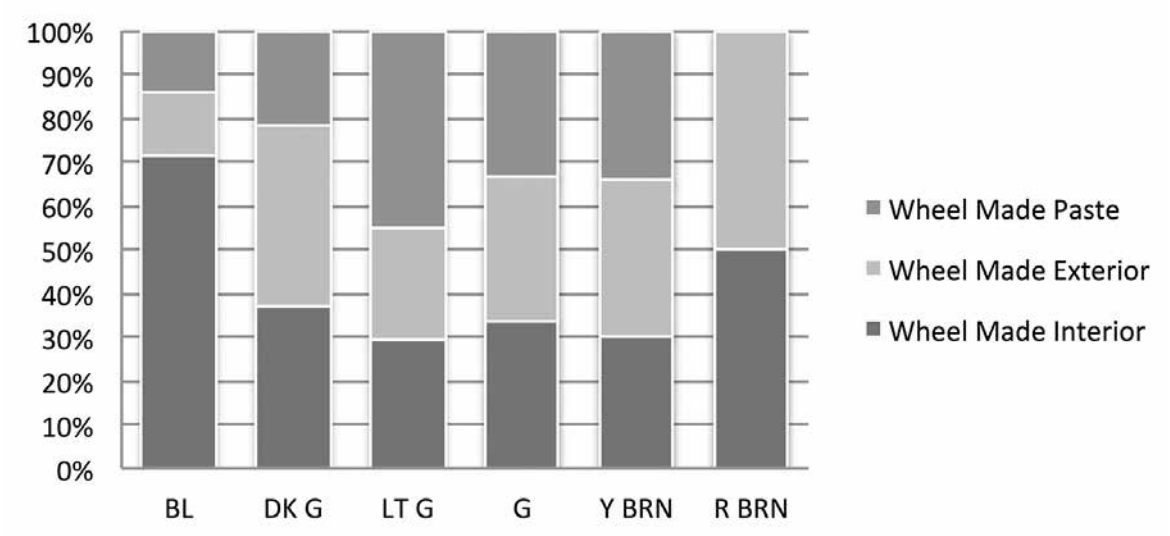


Tab. 4: Distribution of clay color categories for hand made vessels base on the interior, exterior, and clay paste of each sherd analyzed.

The differences between interior and exterior or clay paste and exterior are evidence of the firing environment. When clay paste is grey it reveals that carbon organics were burnt creating a reduced oxygen environment. The reason for light or dark exteriors also depends on the amount of oxygen or lack thereof. An equal coloring shows a quick firing or a slow equally heated burning and differences between interior and exterior may show that vessels were stacked together obscuring the access of oxygen and heat to the inside of the vessel (Orton – Hughes 2013).

In contrast to the hand made ceramics, the wheel made ceramics show much for consistency usually of grey clays. As it will be discussed later, the clay temper was also finer leading to the comparisons with previous descriptions of Thracian Grey Ware (e.g. Domaradzki 2002; Bouzek 2008b) possibly linked to Greek and Anatolian ceramic manufacturing techniques (Nikov 1999). Again, the wheel made ceramics were divided into observations about the interior, exterior, and clay paste although the divisions were much more uniform and predictable than the hand made ceramics. The interiors consisted of 5 % black, 19 % dark grey, 17 % light grey, 36 % grey, 23 % yellow brown, and not applicable for red brown (less than 1 %). The exteriors consisted of 1 % black, 21 % dark grey, 15 % light grey, 36 % grey, 27 % yellow brown, and not applicable for red brown (less than 1 %). Finally, the clay paste included 1 %

black, 11 % dark grey, 26 % light grey, 36 % grey, 26 % yellow brown, and not applicable for red brown (0 %) (**Tab. 5**).

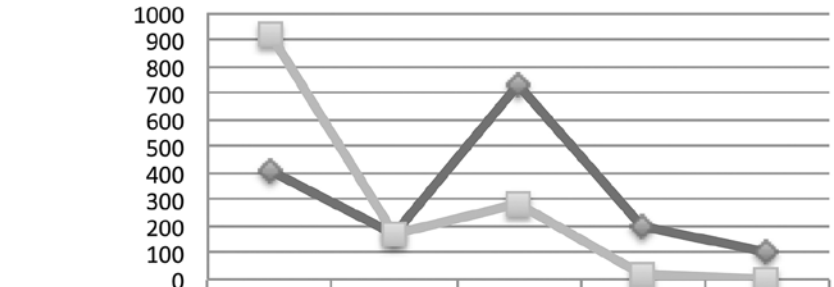


Tab. 5: Distribution of clay color categories for wheel made vessels base on the interior, exterior, and clay paste of each sherd analyzed.

CLAY COMPOSITION

Ceramics are made up of a base clay and added temper material such as sand or grog (fragments of previously fired clay) to strengthen the vessel, prevent shrinkage during firing, and provide certain characteristics such as ability to withstand temperature or hold liquid. This basic recipe varies widely based on the chemical composition of clays, the desired vessel function, and form. In terms of the composition, the vessels at Pistiros generally correlate to the manufacturing technique. The sizes of temper have been divided into five categories (based on Horejs 2010) – small temper ranges from less than 0.5 mm to 1.0 mm, medium temper ranging from 1.0 mm to 2 mm, large temper greater than 2 mm, and two categories that represent a mixture of temper sizes, either small-medium or medium-large. In total, 1,945 fragments of the material exhibit small temper (66 %), 295 fragments have small–medium (10 %), 472 fragments have medium (16 %), 205 fragments have medium–large (7 %), and 30 fragments have large temper only (1 %) (**Tab. 6**).

Between the hand made and wheel made vessels there is an obvious diversity in temper size, but there are also exceptions. In terms of the hand made vessels specifically, the majority of the vessels were made with small-medium and medium-large temper while there were a few with small temper particles. The hand made ceramics consisted of 26 % small temper, 47 % medium temper, 6 % large temper, 8 % small-medium temper, and 13 % medium-large temper. On the other hand, the majority of the wheel made vessels with grey clay were small temper or finer so that the individual temper size was immeasurable without further testing. The wheel made ceramics consisted of 66 % small temper, 21 % medium temper, 0 % large temper, 12 % small-medium temper, and 1 % medium-large temper. This characterization appears across different excavation units and through different excavation layers showing that local potters were able to manufacture small temper vessels by hand or by the potter's wheel.



	Small	Small - Medium	Medium	Medium - Large	Large
Hand Made	410	169	727	198	99
Wheel Made	923	169	285	15	0

Tab. 6: Distribution of temper sizes (small, small-medium, medium, medium-large, and large) that have been grouped within hand made and wheel made manufacturing techniques.

FINISHING TECHNIQUES

The Late Iron Age collection from Pistiros shows that burnishing or polishing remained an important part of ceramic finishing, but new techniques of slip application and a technique often referred to as glazing were adopted as shown by the results of this analysis. Although the term glaze applies to modern ceramic technologies, the term has been traditionally used to describe the gold and silver colored shiny slip type applications or polishing of vessels in Thrace so it has been utilized here and implies the application of slip that was then polished. Planned archaeometric testing will reveal if the 'glazes' are added or if the clay was just polished and what material was used to make such a color.

In the entire collection the most common finish is silver glaze with 219 sherds or 8 %, burnishing with 155 sherds or 5 %, and least representative gold glaze with 67 sherds or 2 %. However, the majority of the sherds (2,506 fragments or 85 %) remained unfinished. Within the hand made ceramics there were less finished fragments than the wheel made ceramics. The hand made ceramics included 92 % unfinished, 1 % burnished, 1 % with a silvery finish, less than 1 % with a gold finish, and 6 % with a slip finish, while the wheel made ceramics consisted of 68 % unfinished, 10 % burnished, 10 % with silvery finish, 5 % with gold finish, and 7 % with a slip finish (**Tab. 4**).

RIM AND BASE FORMS

A simple typology of rim and base forms was created to allow quick identification and naming of each type. These descriptive shapes will be used later to aid in vessel form identification. In total, there were ten main rim shapes that characterize the angle and shape of the rims – curved inward, triangular interior, inside incline, straight, double rounded, triangular exterior, straight outward, angled upward, outside decline, and curved outside (**Fig. 3**). On the other hand, there are four main base shapes, which relate to the way that the vessel wall meets the base of the vessel – straight foot, curved foot, flat foot, and ringed foot (**Fig. 4**).

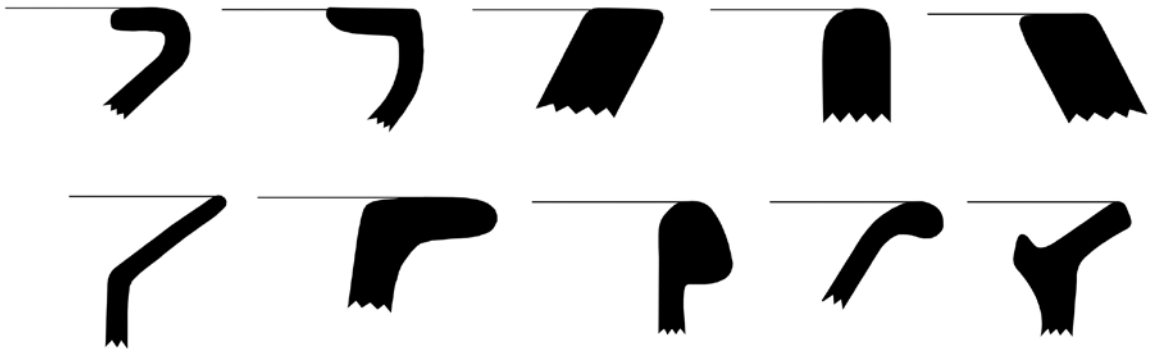


Fig. 3: Limited typology of rims forms. Top (from left to right) – CI: curved inward, TI: triangular interior, II: inside incline, ST: straight, and OD: outside decline. Bottom (from left to right) – AU: angled upward, SO: straight outward, TE: triangular exterior, CO: curved outside, and DR: double rounded.

Fig. 4: Limited typology of base forms. From left to right – SF: straight foot, FF: flat foot, CF: curved foot, and RF: ringed foot.

In a comparison of all of the fragments catalogued the most common (235 fragment or 50 %) base form is the ring foot base that has an applied ring around the base, which is only found on the wheel made ceramics. The second most common (154 fragments or 35 %) was the straight foot in which the vessel wall connects smoothly to a flat base, which is characteristic of the hand made vessels. Within the hand made collection 49 % have straight bases, 7 % have ring foot bases, 7 % have curved foot bases, 23 % have a flat foot, and 14 % are undefined. The abundance of straight foot bases shows that the hand made bases were made simply. This structure parallels the making technique that utilizes a flat disc attached to the bottom of a vessel made from rings, coils, or slabs. The divide is then smoothed together by hand and can result in uneven margins. In determining the vessel form it becomes difficult, as many of the hand made vessels possess these bases. On the other hand, the wheel made vessels are divided into 6 % straight foot, 82 % ring foot, 3 % curved foot, 1 % flat foot, and 8 % undefined. This shows that the wheel manufacturing technique that was most often employed was ring footed bases where the clay on the base is carved to thin it before firing making the vessel lighter and less prone to breakage during firing. Again, this is a common technique, which makes it difficult to identify the vessel forms from the bases alone.

Rim shapes are often more useful in determining the vessel forms and functions. In terms of hand made ceramics 74 % were straight rims and all other types made up less than 4 % per each type. The straight rim has the same problems in identifying vessel form as the straight bases because many of the hand made vessels possess this rim but the most common is the pot, which can be found in multiple sizes and is the most widely used shape in the repertoire (see

typology from Handzhiyska 2007). In the wheel made vessels, 39 % were curved inward, 11 % were straight out, 11 % were angled upward, 8 % were straight rims, and all others accounted for 5 % or less for each type. In terms of the rim shapes the most common is the plain straight rim in which the vessel wall comes to an abrupt end without any flare, added shape, or curvature. These make up 43 % (565 fragments) of the collection and are usually square or rounded on top (**Fig. 5**). The second most common (289 fragments or 22 %) is the curved inward rim where the tip of the vessel wall is rolled inward into the vessel and is common on wheel made bowl and lid shaped vessels (**Fig. 6**). The two major rim and base shapes show the diversity between the hand made and wheel made ceramics with the hand made vessels having the simpler shapes and the wheel made highlighting features only possible on a wheel. An in-depth typology of vessel forms and functions will be addressed in forthcoming publications.

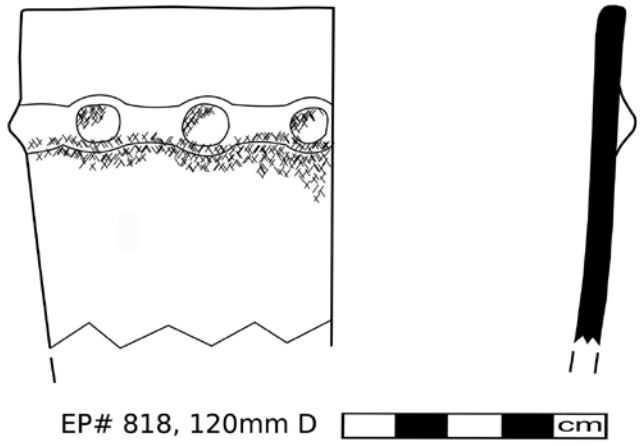


Fig. 5: Hand made small sized pot with a raised plastic band decoration from Pistiros: an example.

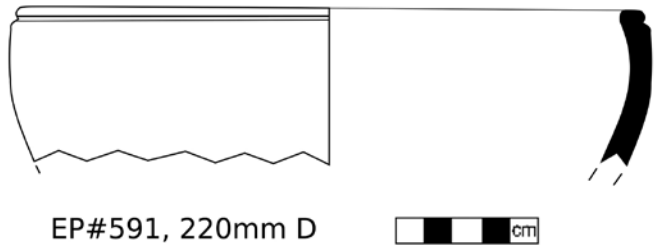


Fig. 6: Wheel made grey bowl from Pistiros: an example.

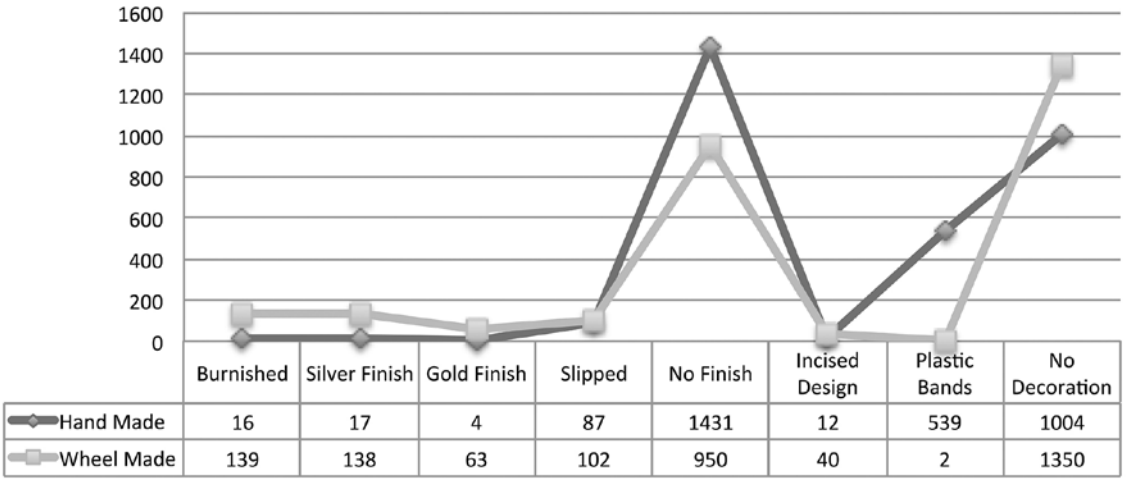
DECORATION

During the Early Iron Age incised geometric patterns and designs were often found on decorated ceramics (Nikov 2011) but by the Late Iron Age the incised decorations became much less representative. Although the Rhodope Mountains region continued to have geometric motifs during the Late Iron Age, also called 'Tsepina' pottery (Georgieva 2003), this assemblage produced very little incised designs. At Pistiros, the only incised lines are located just

below and parallel to the rim on wheel made bowl shaped vessels. In total, there are 52 sherds with an incised line, which accounts for only 2 % of the entire collection. In the hand made collection there was only 1 % with incised lines and 3 % in the wheel made collection.

On the other hand, the most common hand made decorations are many different representations of applied raised bands or plastic bands, either rounded or triangular on top. Although there are several undisturbed bands in the collection most have vertical or horizontal slashes, grooves, or rounded imprints spaced along the band (**Fig. 7**). The bands are usually displayed as a singular strip around a vessel but there are also examples of patterns made from crossed bands and occasionally the decorative band includes handles. There are 337 hand made sherds and only two wheel made sherds with these decorative bands accounting for 11 % of the collection while 2,556 sherds or 87 % of the collection is undecorated (**Tab. 7**). The bands are only found on the hand made fragments for this dataset. It is possible that the slight variations between the bands represent different workshop's designs.

Fig. 7: Example of hand made ceramic with a decorative band and a double knob handle tilted toward the top of the vessel from Pistiros.



	Burnished	Silver Finish	Gold Finish	Slipped	No Finish	Incised Design	Plastic Bands	No Decoration
Hand Made	16	17	4	87	1431	12	539	1004
Wheel Made	139	138	63	102	950	40	2	1350

Tab. 7: Distribution of vessel finishes (burnished, silver, gold, slipped, or none) and decorations (incised, plastic bands, or none) that have been grouped within hand made and wheel made manufacturing techniques.

DISCUSSION OF RESULTS

The characterizations of Late Iron Age indigenous ceramics from Pistiros presented in this article remain preliminary as cataloguing, archaeometric analysis, and excavation continue. However, there are several correlations that can be addressed in this early stage that help to characterize the collection and make it a usable comparison with other archaeological sites in Thrace. As shown in the previous section it is easiest to divide the vessels into the two major categories of wheel made and hand made to show the different correlations (**Tab. 8**).

Manufacturing Technique	Color	Temper Size	Surface Treatment	Decoration	Form and Function
Hand Made Ceramics	– variety of colors with red brown common – different colors in different locations shows uneven firing – grey paste common	– predominantly medium sized particles – larger particles are present	– limited surface treatments	– various types of raised plastic bands with serrations are common – very few designs with incised lines	– most common rim form speaks to pots – vessels seem to be more utilitarian such as cooking and storage
Wheel Made Ceramics	– limited number of colors with variations of grey common – more uniform in color between different locations showing more even firing – darker interiors than exterior may speak to vessel stacking in a kiln during firing	– predominantly small or fine particles – particles range from small to medium with few larger particles	– burnished or glossy glaze like finished are more likely on wheel made pieces	– more incised decorations in the form of a single line around the rim – very few with raised plastic bands – much fewer decorations on wheel made pieces	– most common rim form speaks to bowls – vessels seem to be tableware rather than cooking vessels

Tab 8: A comparison of hand made and wheel made vessels from Pistiros based on features discussed in the text.

In terms of wheel made ceramics from this assemblage the majority of the clay possesses a finer or small-grained temper, which helps to aid the manufacture of thinner walled vessels. The changes brought around by the wheel also allowed for the diversification of vessel shapes. In the previous hand-made vessels the amount of diversity was limited by the temper particles and the vessels likely had multiple purposes. However, the wheel made vessels have specific profiles that help to create a more diverse typology of vessels. These fine tempered vessels with more complex profiles tend to be fired to grey or light grey with several exceptions of a light brown. This shows that the ability of the craftsmen had changed to create more systematic colors through firing and decrease the amount of uncertainty. Although there are a couple examples in the collection, the amount of raised plastic decorations is almost non-existent on the wheel made pottery. This style of production speaks to the desired products of the consumers, which was different than the possibilities, or desires, of potters making hand-made vessels. Through time this diversity may speak to the presence of workshops making

grey ware ceramics (Bouzek 2007) while individuals producing hand made ceramics for the household, but this analysis will come with further research of the data.

In terms of the hand made ceramics, there is much less consistency in all aspects of the manufacturing. The temper of these vessels ranges from small bits to quite large inclusions that naturally lead to thicker profiled vessels. The shapes of vessels become more simplistic in the shape of different sized pots used specifically for cooking purposes and showing their use through post-manufacturing firing and alteration. However, there was maintenance of tradition in terms of the raised plastic band decorations because they are seen throughout the entire assemblage and appear as common applications to hand made vessels elsewhere in Thrace (e.g. Handzhiyska 2007). The analysis of the hand made and wheel made assemblages together begins to present a picture of how and why different ceramics were made and used at Pistiros.

These characterizations reveal a wide range of diversity in the manufacturing techniques employed by potters during the period. The conclusions of this preliminary research reveal that the Thracian potters working during the Late Iron Age continued some traditions such as segmented plastic band decorations while also adopting new technology. Although only hypothesized prior to archaeometric analysis it is likely that traditional methods of clay preparation and vessel shaping coexisted with new development such as the potter's wheel. While the diversity of vessel shapes and functions also reveals the influence of foreign interactions in the area.

RESEARCH OUTLOOK

The topic of research focuses more broadly on changes in manufacturing and consumption of ceramics during the Iron Age, which correlates with intense interaction with Greek peoples in ancient Thrace. At this point in this research, Pistiros was selected to serve as the first case study. The site is a unique inland exchange site, instead of the colonies along the north Aegean coast and Black Sea, which also experienced intense interaction between indigenous Thracians and Greeks. Chronologically, the site presents a period in which the changes that marked the transition from the Early to Late Iron Age including Greek interaction and the pottery wheel were no longer new within Thracian society. The demise of the site was also before the rise of the Roman Empire, which allows it to represent a pristine Late Iron Age site without later influences and makes it a good comparison for future analysis of the transition between the Early and Late Iron Age. It was also intriguing due to the availability of newly excavated, under studied material, alongside the long history of previous excavation and interpretation, which allowed for the selection of a site with such interaction.

At this point it is possible to make distinctions between the manufacturing styles broadly categorized into wheel made and hand made vessels. The differences in manufacturing technique reveal also differences in clay preparation, firing parameters, form and function of vessels. Although this may seem like different techniques can be easily grouped, the results show differences in finishes and decorations but also crossed over between techniques. These differences and similarities show that some traditional elements continued while new ideas about manufacturing also impacted production. The results presented in the previous section only present a portion of this site, but the results show that further study including past excavation materials by international teams remains of key importance to both interpreting the ceramics at Pistiros as well as the broader region of Thrace.

The future of this research aims to further document and analyze the diversity of ceramics from Iron Age Thrace and how such developments, through time, were affected by cultural relationships with non-Thracian groups. The next phase of this research attempts to create a typology and chronology of the ceramics from Pistiros and beyond, which may be used to compare changes in the transition to the Late Iron Age and during the Late Iron Age based on cross-cultural interaction in inland Thrace.

ACKNOWLEDGEMENTS

This research was conducted as part of my PhD dissertation and was made possible by the generous support of the Fulbright-Hays Program, the American Research Center in Sofia, Lambda Alpha, and the Mark Diamond Research Fund at the University at Buffalo. Thank you to Pistiros Site Director Ass Prof Dr Alexey Gotsev, Balkan Heritage Program Director Dr Angela Pencheva, and the Archaeological Museum "Prof. M. Domaradzki". I am grateful to my colleagues at the University at Buffalo and my family for their critiques, edits, and comments along the way.

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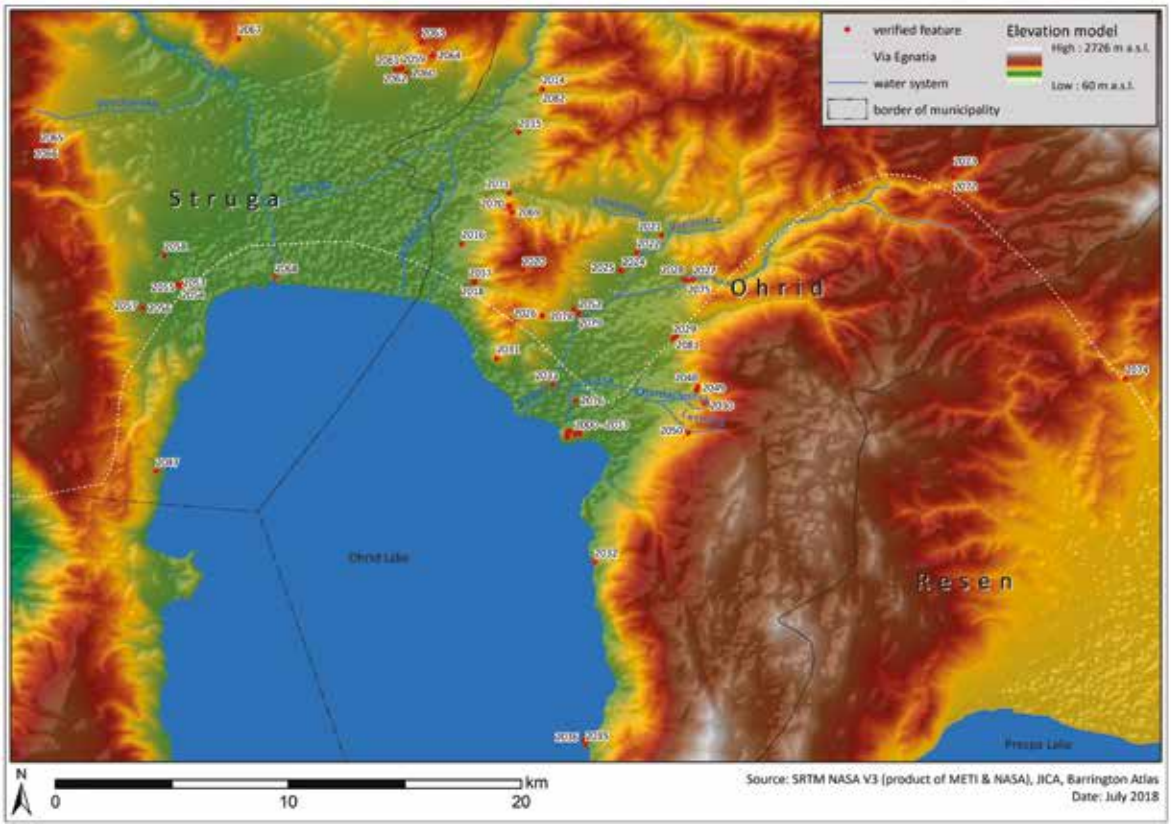
Pl. 1/1: Emporion Pistiros sherds representing the color scale, from left to right – Grey, Red Brown, and Yellow Brown.



Pl. 2/1: Features verified during the first-year field work, combined with the route of *Via Egnatia* and the original river bed of the Sateska River (map by B. Weissová, *Via Egnatia* according to the Barrington Atlas).