Ministère de l'Education Nationale
L'Université Valahia Târgovişte
Faculté de Sciences Humaines

ANNALES

D'UNIVERSITÉ VALAHIA TARGOVISTE

SECTION
d'Archéologie et d'Histoire

TOME XIV
Numéro 2
2012

Valahia University Press
Târgovişte

Annales d'Université Valahia Targoviste Section d'Archéologie et d'Histoire publie des mémoires originaux, des nouvelles et des comptes-rendus dans le domaine de l'archéologie préhistorique, de l'histoire du moyen âge, de l'environnement de l'homme fossile, de l'archéologie interdisciplinaire et de patrimoine culturel.

Revue indexée B+ par CNCSIS et B par CNCS - Roumanie

Indexée dans:

AWOL, FRANTIQ, LAMPEA, SCRIBD, DAPHNE

Tout ce qui concerne la Rédaction des *Annales d'Université Valahia Targoviste Section d'Archéologie et d'Histoire* doit être envoyé à: mcarciumaru@yahoo.com, www.annalesfsu.ro

ISSN: 1584-1855; ISSN (online): 2285 – 3669

Annales d'Université Valahia Targoviste,
Section d'Archeologie et d'Histoire,
Tome XIV, Numéro 2, 2012, p.29-45
ISSN: 1584-1855;
ISSN (online): 2285–3669

The pottery from the Bronze Age settlement of Timisoara – "Fratelia". A general statistical approach

*Andrei Stavilă**

*University „Valahia" Târgovişte, PhD School, 35, Lct. Stancu Ion Street, No. 35, 130105, Târgovişte, Dâmboviţa County, Romania, e-mail: andreigolo@yahoo.com.

Abstract: The proposed study aims the presentation of statistical results of ceramics analysis from Timişoara-"Fratelia" archaeological site. The pottery, saved from the 25 researched dwellings, was analyzed according to our own methodology, mentioning here the singularity of this type of analysis on shards belonging to Cruceni-Belegiš culture. Such analysis need to mainstream, on representative samples, considering the need for standardization of speech, correlation of such statistical data and the possibility to identify potential patterns which can characterize the pottery of this ethnical-cultural manifestation.

Key Words: pottery, statistics, Bronze Age settlement, Cruceni-Belegiš culture, Timişoara – „Fratelia"

Introduction

The ceramic material, examined by us, comes from „Fratelia" archaeological site, situated in one of Timişoara's district which name was mentioned above. During two campaigns of archaeological excavation, between 1976-1978, Florin Medeleț, archaeologist in charge, identified a settlement and a flat cremation necropolis belonging to Cruceni-Belegiš culture. According to the excavation journal the site was located in the courtyard of Precast Enterprise and TCMT store, identified with some confinements by us, as the area between South Railway Station of Timişoara and Bujorilor Street, (coordinates: 45 ° 42 '50 "N 21' 30" E, 88 m alt.) (Fig. 1, 2).

Historiography, mentions only punctual references about Bronze Age discoveries in the point called „Fratelia", most of them regarding the findings discovered inside the necropolis (see, M. Gumă, 1993; M. Gumă, 1995; Fl. Gogâltan, 1993.), so the ceramic material analyzed is the result of the research of 25 dwellings (known as L. I- L. XXV) dispersed in five excavated sections. Archaeological features of the settlement were identified during the campaign of 1977, and were concentrated mostly in Trench A. Internal stratigraphic situation, artifacts found here, as well as the relations between features and necropolis will be analyzed in other detailed study which is in print.

Methodology

Statistical results were obtained by analyzing the 6948 shards, specifying for each of them a variety of elements considered by us to be relevant to obtain both a database and an analysis based on clusters for being highlighted the potential constants and variables that characterize the material.

Firstly we created a data base model establishing its query criteria (Fig. 3). From this point of view, our database was provided with 16 query criteria each with a number of other sub criteria that we will discuss in the lines below.

The internal structures of our database includes a series of general criteria which has an informative purpose regarding the order number of the shard (Nr. Crt.), the date when the shard was collected (Date) or the belonging features (Features).

Fig. 1 – The possible position of Bronze Age archaeological site from Timişoara – „Fratelia" identified on Google Earth satellite image (blue frame with red outline – the possible perimeter of the archaeological site).

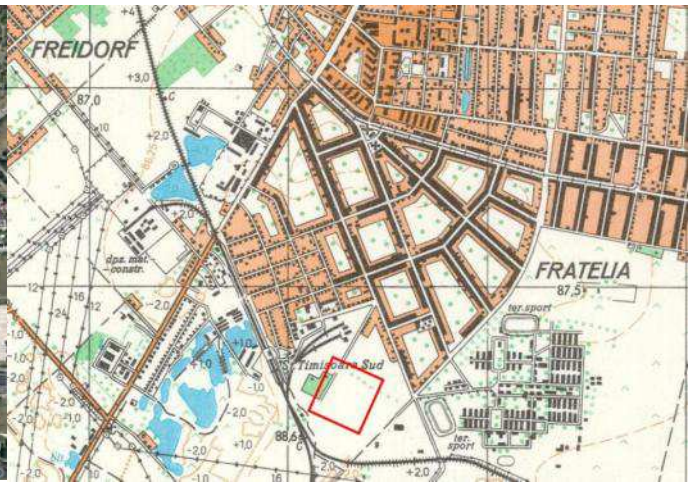

Fig. 2 – The possible position of Bronze Age archaeological site from Timişoara – „Fratelia" identified on topographic map (Direcţia Topografică Militară, 1975, topographical map, scale 1:25000, sheet 34-79 C-d (Giroc); red border - the possible perimeter of the archaeological site).

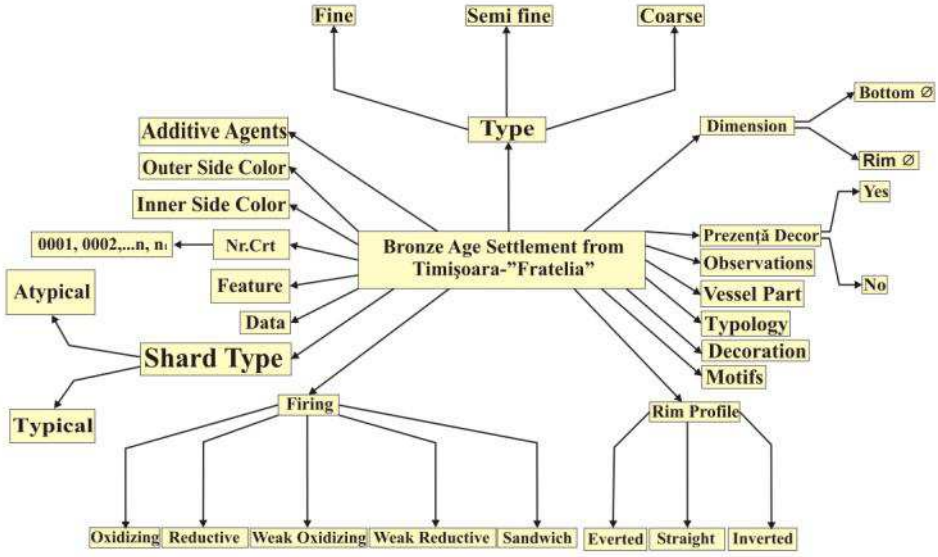

Fig. 3 – The data base structure presenting the classes and the subclasses of query operation.

In addition to these, were defined specific criteria of ceramic analysis, describing the nature, micro fabric, vessel morphology or size. A first classification of ceramic fragments took into account two variables, Atypical or Typical elements, included in the Pottery Type category.

Category that defines the types (Types) has three main groups which design the Fine, Semi fine and Coarse classes. The inclusion of ceramic material in one of the three categories was based on naked eye observation of specific shards characteristics. In the fine category were included the ceramic fragments whit clayey aspect of pulp, fine-grained and those who were not characterized by having different aspects of the clay, observed with the naked eye. Semi fine category includes shards in which was possible to determinate whit naked eye if other components, especially arenitic, were used. From our point of view, this kind of elements has up to 20 % participation on clayey content. In the Coarse category were included ceramic fragments which, obviously, contain inside the paste a large amount of arenitic compounds determined by naked eye (C. Ionescu, L. Ghergari, 2006).

Firing technique is evidenced by Firing criteria, the sub criteria being designated by categories oxidizing, weak oxidizing, reductive, weak reductive and sandwich category. The term "weak oxidizing" was used by us to describe the shards which have two areas with different characteristics observed in the rift, in which could be seen more than 50% of the paste fired under continuous presence of oxygen in the firing chamber and probably lack of a constant temperature, determined to appear black or gray areas on the inner or outer surface of the vessel. Taking into account the weak reductive firing, the process mentioned above, follows the description for weak reductive term (Fig. 4B).

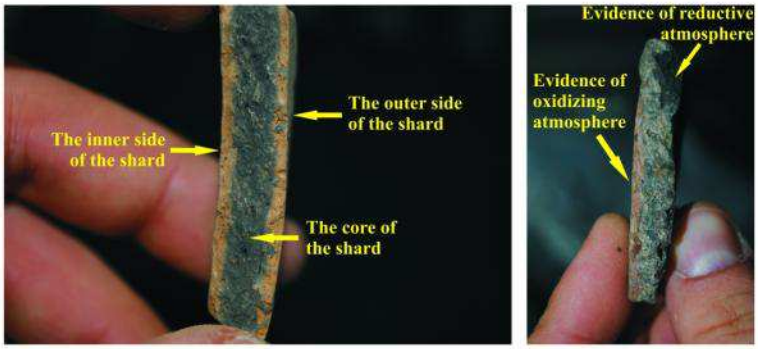

Fig. 4 – Exemplification of sandwich firing type (A) and weak reducible firing type (different scales).

Sandwich firing was used to describe a situation where the rift of the shard showed a color structure consisting in three distinct areas (outer side of the shard, core and inner side of the shard) according to the example of Fig. 4A, thereby often was encountered the situation when the vessel walls were characterized by different colors due to an oxidant firing, again the core was black, being less common the reverse situation in which the core has a specific color due to the oxidizing firing. This case represents the result of obtaining a certain temperature for firing which could not be maintained long enough to fully penetrate the walls. The core of pottery is privy for oxidation due to the outer layers already burned that hinder the flow of oxygen (H. Klusch, 1981; D. Anghel, 2000).

A very important criteria is the rim morphology (Rim profile), defining in this way three rim profiles, as followed: inverted, evasion and straight. Based on these a primary relative dating was ensured, invasive rims appearing only on the second phase of Cruceni-Belegiš culture.

Typology criteria, means the designation of the main forms found inside archaeological site. Fragmentary ceramic materials has often determined difficulties making typological affiliation of shards, so the general categories of Cruceni-Belegiš culture types as amphora, cup, bag bowl, oven vessel, porringer, bowl and so on,

without subtypes, were used.

Has been also defined criteria such as Interior Color, Exterior Color, Vessel Part, Decor, Motive or Size, which, in our acceptation, does not require a detailed explanation but only a summarize mention.

Cruceni-Belegiš culture. A brief presentation

Cruceni-Belegiš culture depicts the most representative ethnical-cultural manifestation of Late Bronze Age in Banat region, being illustrated by a series of discoveries representative within its spreading area. In addition to the area mentioned above, this culture spreads also in Srem, Bačka and Eastern Slavonia. In the case of Banat, historiography provides an exception for the northwest corner of the region which is controlled by the bearers of Tumular Culture (*Hügelgräberkultur*). In Banat region, most illustrative findings of Cruceni-Belegiš culture we meet at: Cruceni (M. Moga, 1964, M. Moga 1965; K. Horedt 1967; O. Radu 1970, O. Radu 1973; S. Morintz 1978), Peciu Nou (Fl. Medeleţ 1995; M. Gumă 1993; M. Gumă 1995; Fl. Medeleţ, Al. Szentmiklosi 2003; Fl. Gogâltan 2004), Timişoara „Parcul Central" (M. Gumă 1993), „Pădurea Verde" (M. Petrescu-Dâmboviţa 1977; M. Gumă 1993; Al. Szentmiklosi, Fl. Draşovean 2004), „Fratelia" (M. Gumă 1993; Fl. Gogâltan 1993; Fl. Medeleţ 1995) or Voiteg/Voiteni (G. El Susi 1990a; Fl. Medeleţ 1995a; M. Gumă 1993; M. Gumă 1997; M. Muntean 1997; Al. Szentmiklosi 1998, L. Măruia *et all.* 2011).

Defined in a wide area, the culture experiences a range of terminological issues, mainly related to its research progress. N. Tasić is the first delimiting cultural elements of this ethnical-cultural manifestation designating them through the term Belegiš group (B. Brukner *et all*. 1974). Serbian archaeologists will use for a long time the notions of Belegiš group/culture, becoming often used in the Serbian historiography (Al. Szentmiklosi, 2010). For the Romanian territory, the archaeologist S. Morintz (1978), is correctly summarizing, for the first time, the characteristic elements of the culture that we discuss about.

Initially, Cruceni-Belegiš materials were assigned as belonging to a late stage of Vatina culture (M. Garašanin 1973; B. Hänsel 1968; S. Foltiny 1967), or designated by the terms Vatina culture, late Pecica-Vatina group, Belegiš-Bobda group, Bobda II-Susani-Belegiš II or even Belegiš II- Gáva (see the discussion in detail in Al. Szentmiklosi, 2010).

The initial opinion on the formation of culture referred to a synthesis of cultural elements belonging to Periam culture, Pecica culture, Otomani culture, and Gârla Mare culture, grafted on a background represented by Vatina culture (O. Radu, 1973). Research has shown that cultural manifestations of Cruceni-Belegiš type have formed on a strong Vatina cultural background to which were added elements of Liztenkeramik type of Gumtransdorf-Drassburg cultural group (Fl. Gogâltan 1993; M. Gumă 1997; N. Tasić 1988; Al. Szentmiklosi 2006) and inlaid ceramic elements of Szeremle type (Al. Szentmiklosi, 2006). Other cultural elements, involved in the formation of this culture, are manifestations of Tumular Culture. The last mentioned cultural manifestation was bordering the north area of Cruceni-Belegiš culture, thereby limiting the development in this direction but also through contacts taken (see C. Kacsó 1992; Al. Szentmiklosi 2004-2005; Al. Szentmiklosi 2002-2003), participate in its defining. In addition to the above mentioned cultural contacts, we also want to specify the Urnfield cultural influences with which Cruceni-Belegiš culture was contemporary (Al. Szentmiklosi, 2006).

Chronologically, Cruceni-Belegiš culture entirely occupies the interval between Bz. C-D phases and the evolution may be extended to Ha A phase, according to the modified system of P. Reinecke, but the first manifestations can be found starting with Bz. B_2 phase. Cultural development is divided into two phases (Cruceni-Belegiš I-II), this division being made especially, besides some stratigraphical observations, on differences in ornamentation of the vessels, so, if for the first phase are documented decorations made by pseudo-cord impressions, for the second phase of culture, decorations made by fluting are characteristic (M. Gumă, 1993).

The typology of first phase is characterized by globular or biconical urns with cylindrical or curved neck, cups and mugs with handles easily canted, porringers and bowls with conical aspect and the rim slightly invasive. Along with pseudo-corded decoration in the repertoire of ornaments, can be found protrusions and incisions (M. Gumă, 1995). The second phase is characterized in typological terms by urns with biconical aspect, decorated by conical protrusions and flutes (S. Forenbaher, 1988). Also we meet mugs

and cups, but in their case decorations are less present.

According to M. Gumă (1995), the evolution of Cruceni-Belegiš culture ends in Banat region with the appearance of Bobda II and Susani cultural groups, those making the transition to the first Iron Age. Cruceni-Belegiš culture, with the emergence of new cultural realities in the Banat region, will experience a regionalization taking part in the individualization of so called transition groups to the first Iron Age, in which will be found either in terms of strong influences, either will serve as formation ground of them (M. Gumă 1995; A. Lazló, 1994, O. Leviţki, 1994).

Results and Discussions

In order to capitalize the analysis of ceramic material belonging to the Bronze Age settlement from Timişoara – „Fratelia", there were used statistical elements evidenced by: simple descriptive statistics, charts, correlation of metric attributes items, correlation or dispersion diagrams of data or calculation of the correlation coefficients and linear regression. Also, it should be mentioned that the statistics presented below are a representative sample for a strictly intra-site analysis of ceramic material, so this have no relevance to a particular area, circumstances generated by several factors as would be: the singular character of the data, position of the settlement in the culture spread area and even the research degree of the analyzed settlement, the results being conditioned by the character of preventive excavation practiced at Timişoara – „Fratelia".

According to the general data describing the type of ceramic fragments (Fig. 5), it can be seen that they are within in a normal situation encountered in most archaeological sites. As normal, percentage of atypical pottery is considerably higher than the typical one, so within the pale of archaeological site studied by us the situation concerning atypical and typical pottery is presented as a report with an approximate value of 1 to 2. Under these conditions, for each typical ceramic fragment you can find two atypical ceramic fragments.

The general statistics of types (Fig. 6) presents an interesting situation, given the increased number of vessels of fine varieties, these totaling 2656 shards which compared to the total number of fragments analyzed represents 38%, outnumbering the other types, if they are treated individually. The other species have similar weights approximately close to each other, so we have 32 % for coarse species and 30 % for semi fine species.

Additive agents' analysis revealed four classes in paste preparation, so according to the chart (Fig. 7) the most spread category is represented by sand, this being present in 3340 cases. The wide use of the sand is explicable if we consider the natural geographical conditions of the site, this mineral being found easily, in his natural state, as alluvial material of hydrographic network which characterizes the area in the proximity of the site, but even as a mineral component of clay coming from its extraction areas. When analyzing the distribution of additive types based on ceramic types we notice that sand is present in all three classes and is defining fine ceramics type, while participation in other ceramic types is lower (Fig. 8).

Broken shards, as well as association between sand and broken shards, were constituted as additives specific to coarse and semi fine ceramic (Fig. 8). According to statistics it is found to be an often practice the reuse of scrap or obsolete vessels as additive. One single ceramic fragment was determined as having chaff as additive in paste. Due to data lack, we cannot be certain that this is a constant feature of Cruceni-Belegiš ceramics.

Firing of pottery was generally well exploited since prehistory, given that temperature, control of atmosphere inside the oven and control of air circulation were properly handled. Statistical indicators presented in the chart of firing types (Fig. 9), reveals mathematically speaking a peak in regard to reductive combustion (2260 shards) and a balance in the oxidative combustion (1467 shards), sandwich combustion (1705 shards), and weak reductive combustion (1344 shards). A clear minimum is observed for weak oxidizing combustion type which is present through the 171 shards. If reductive burning does not require a very high technological effort, being necessary only unicameral ovens or horizontally combustion chamber, for oxidative firing the technology necessitated, in order of achieving this, presumes a certain degree of knowledge, which involves advanced installation and strict control of air circulation.

We notice the community knowledge of the two firing technologies and also the preference for the reductive one this having a share of 33% in the data. Although, having a good quality,

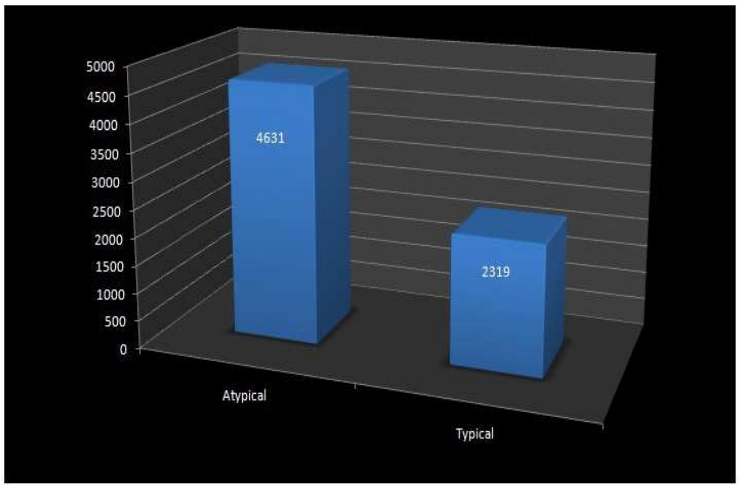

Fig. 5 – Typical – Atypical ratio within analyzed shards.

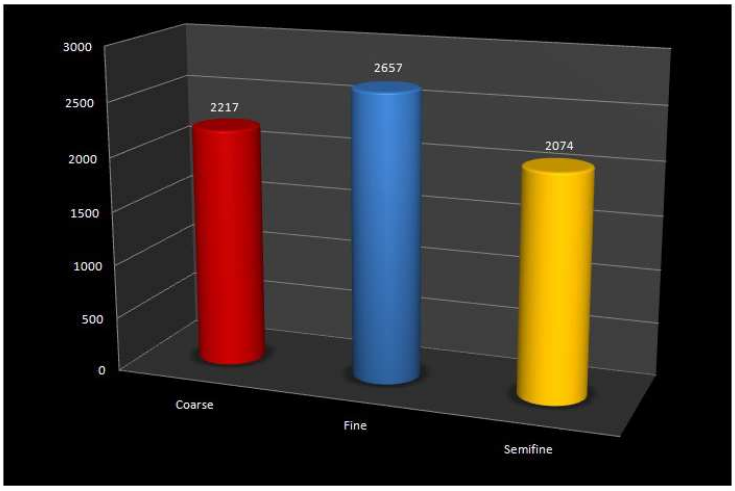

Fig. 6 – Shard type ratio determined by analyzing the shards

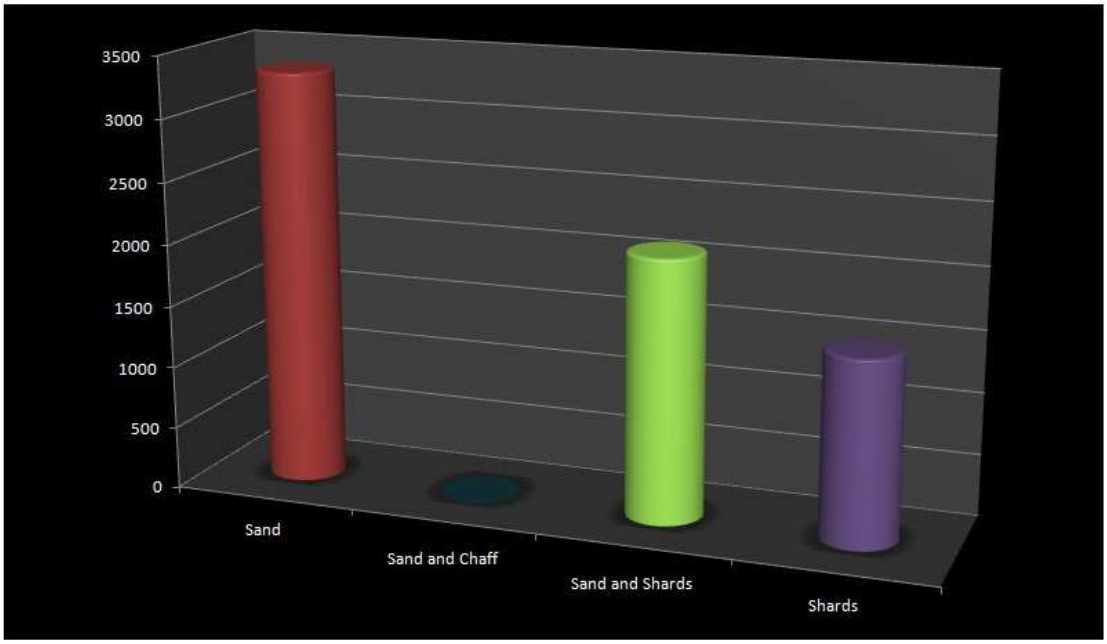

Fig. 7 – Additive agents' ratio used in preparing the shard paste.

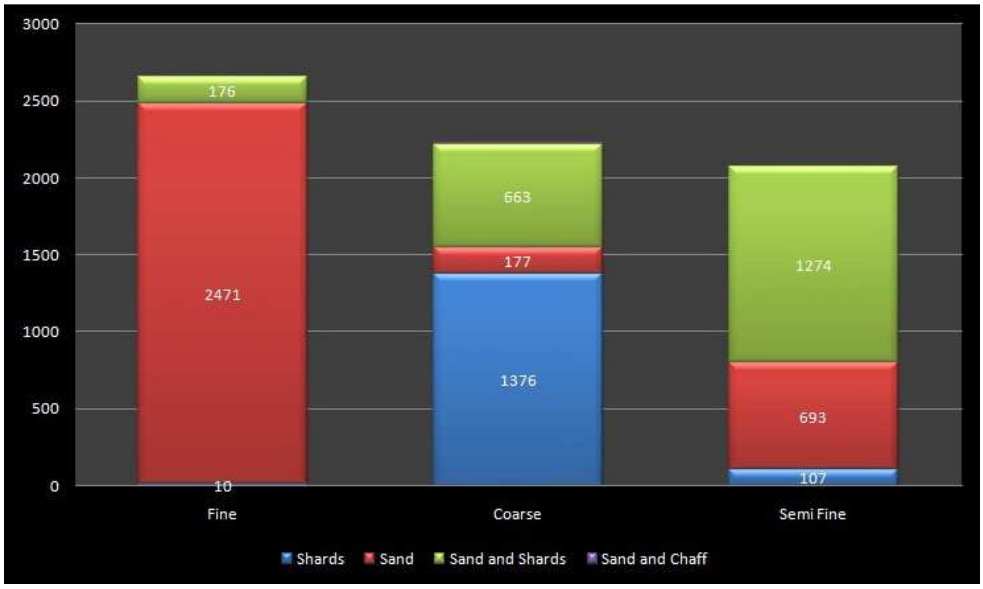

Fig. 8 – Additive agents' distribution by shard type

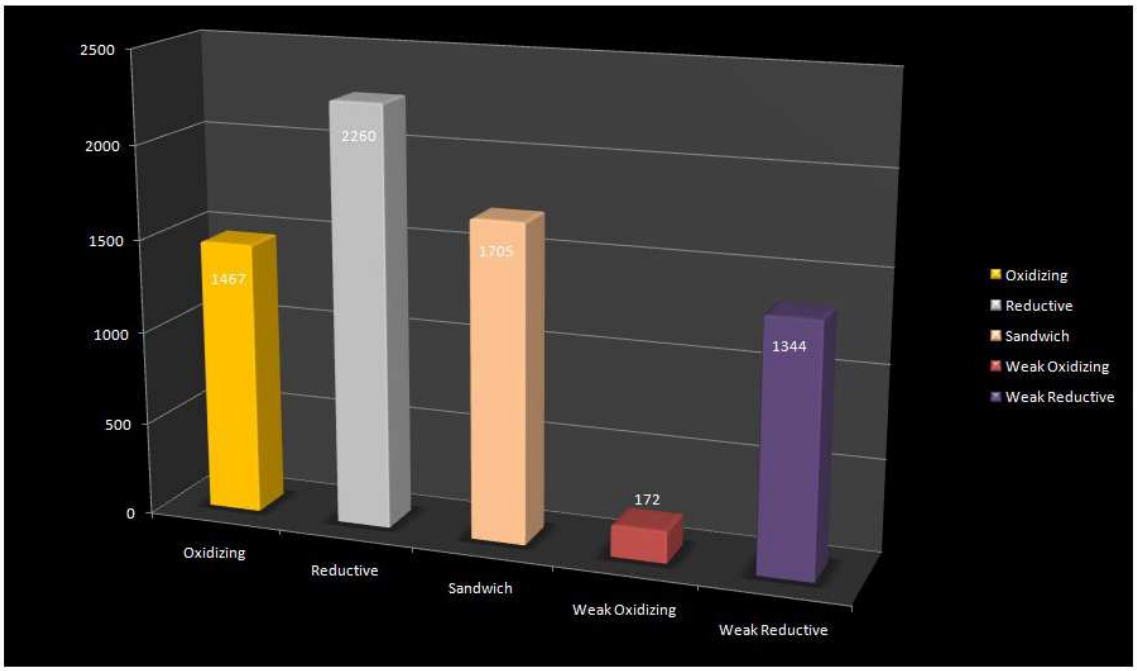

Fig. 9 – Firing technique ratio encountered in the shards analyze

shards which presents sandwich burning type is quite numerous totaling 1705 pieces, representing 25% of total, and reflecting, in theory, technological flaws evidenced by not keeping temperature to a constant level in the combustion chamber. Poor oxidative and reductive burns have smaller weightings in data, with 2 %, respectively 19 %, indicating, again, possible technological flaws, position in which vessels were burned or willful opening of oven holes.

Depending on the firing technique, have resulted specific colors, so under firing – outer color / inner color ratio we find a normal state of facts (see Fig. 10 and Fig. 11). An anomaly in the data is the inclusion of the purple color (have been sighted six fragments of this type), the cause of this fact being the overcoming of normal temperatures, thus pottery passed in phase of vitrification.

The presence of dark and light brown color within the ceramics analyzed is one that falls within the typical color encountered in ceramics belonging to Cruceni-Belegiš culture. Technologically speaking, this occurs in the context of the presence of iron oxides in clay content that exceeds 3%, and also being a result of possible lack of sufficient air circulation or the presence of gas mixtures that leads the color to mix on the surface of the same vessel. In the case of the Bronze Age settlement from Timişoara- „Fratelia", the common mixture of colors is between dark yellow color and different shades of brown colors.

The colors corresponding to oxidizing firing are well represented related to this, so orange color is present in 816 cases where this nuance is found inside the vessel, respectively 1047 cases where this nuance is found outside the vessel and with regard to specific colors of reductive combustion type black and gray colors hold a number of 3467 situations found inside the vessel and 2463 situations found outside the vessel. Clear statistical share of the black and gray colors, confirms, in our opinion, once again the preference for a specific technological process.

In the analysis chart presenting parts of a vessel (Fig. 12) it can be observed that, within the investigated site, prevails major units that define the main parts of a vessel, regarding to this the rim fragments are very well represented (1000 shards), vessel walls (678 shards) and vessel bottoms (328 shards). Less representative are the specific elements of vessels morphology as handles (38 shards) or protomas (18 fragments), often these being specific only to certain types of vessels.

Statistical results relating to vessels shapes typology render the characteristic image of a Cruceni-Belegiš settlement (Fig. 13). In this regard, the most common forms encountered in this settlement are: amphorae (526 shards), cup (343 shards), bowl (128 shards) and porringer (52 shards). The types of vessels mentioned above represent a constant in all settlements and especially in the Cruceni-Belegiš culture necropolis, in this case more than suggestive is the opinion of Fl. Medeleţ, who notes that the amphora, the noggin and the bowl forms a "trinity of vessels" (Fl. Medeleţ, 1995, p. 294) in terms of funerary furniture.

The few shards included in typological class of pots confirm once more the rarity of this type of vessel, especially for the second phase of culture, both within settlements and necropolises.

The 116 fragments of oven vessel, most of them coming from the lower parts of this type of vessel, confirm also for this settlement a fairly intense use of this vessel type. A good analogy in Banat area, for this typological unit is represented by the pyraunos from Deta- „Dudărie" (unpublished archaeological material, kindly information Al. Szentmiklosi).

The singular presence of colander fragment (see O. Radu, 1972) and the 9 pieces of lobately vessel represents reminiscences of the Vatina background on which Cruceni-Belegiš communities have formed.

Rim profile is an important element of relative chronological framing, so the rim passed on to the inside indicates their inclusion in the second phase of culture. In our analysis (Fig. 14) we mention a few rim inversions (84 shards) to the detriment of straight and everted rims summing up 1288 shards. Reported to typological elements (Fig. 15) we observe a broad distribution of everted and straight rims to almost all types of vessel, when inverted profile is found strictly for bowls and dishes.

The decor is an important element in ceramics analysis, based on that may be observed influences, imports and a number of other factors characteristic for a civilization. Observations that can be drawn from the chart of the relationship between decoration and vessels types (Fig. 16 a and b) are related to the large number of decorations assigned to fragments whose

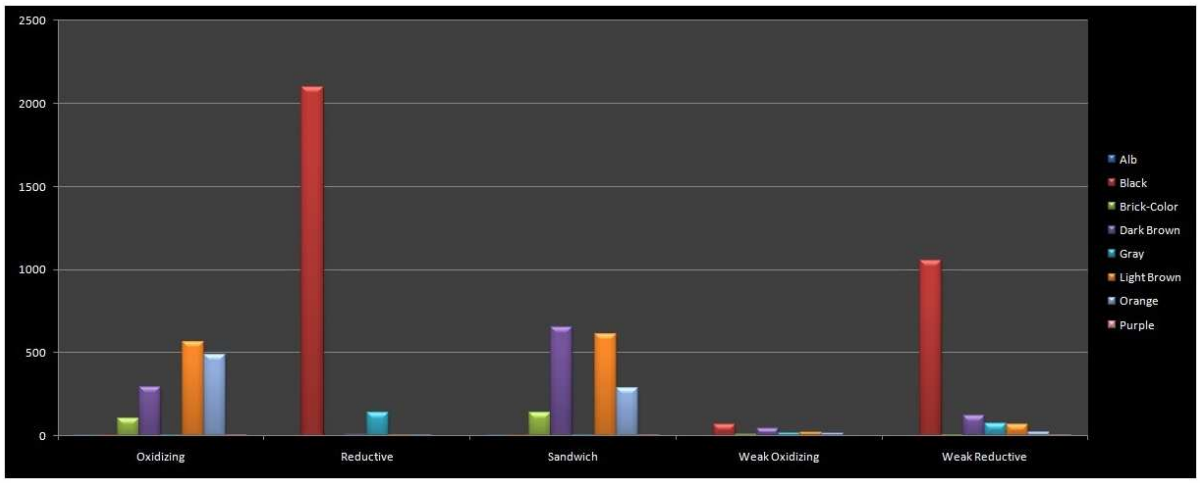

Fig. 10 – Inner side color type distribution by firing type.

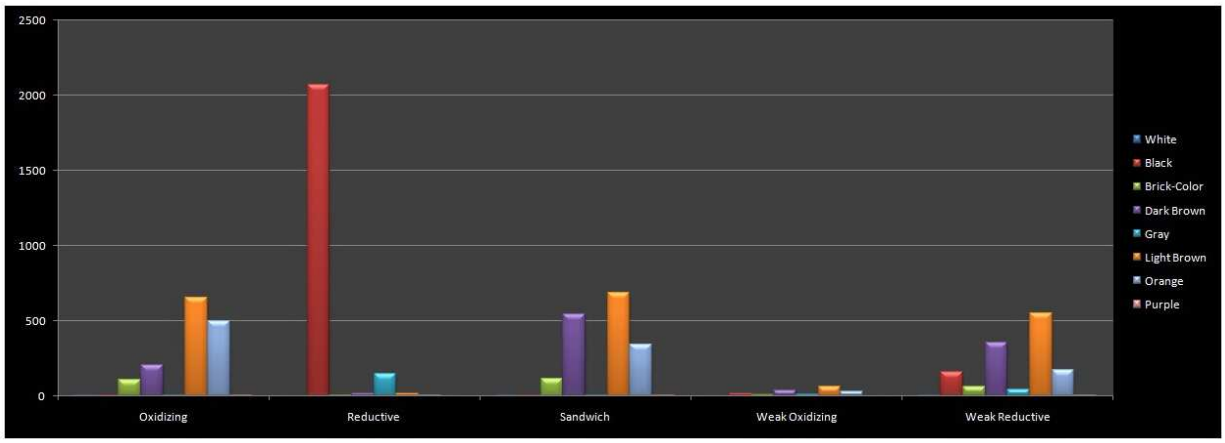

Fig. 11 – Outer side color type distribution by firing type.

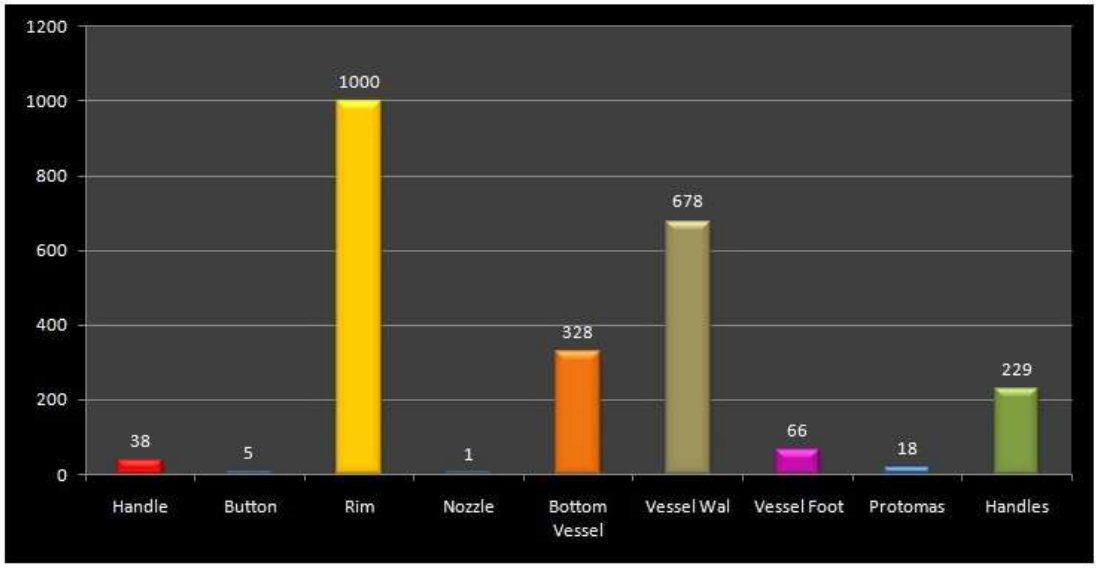

Fig. 12 – Vessel parts distribution.

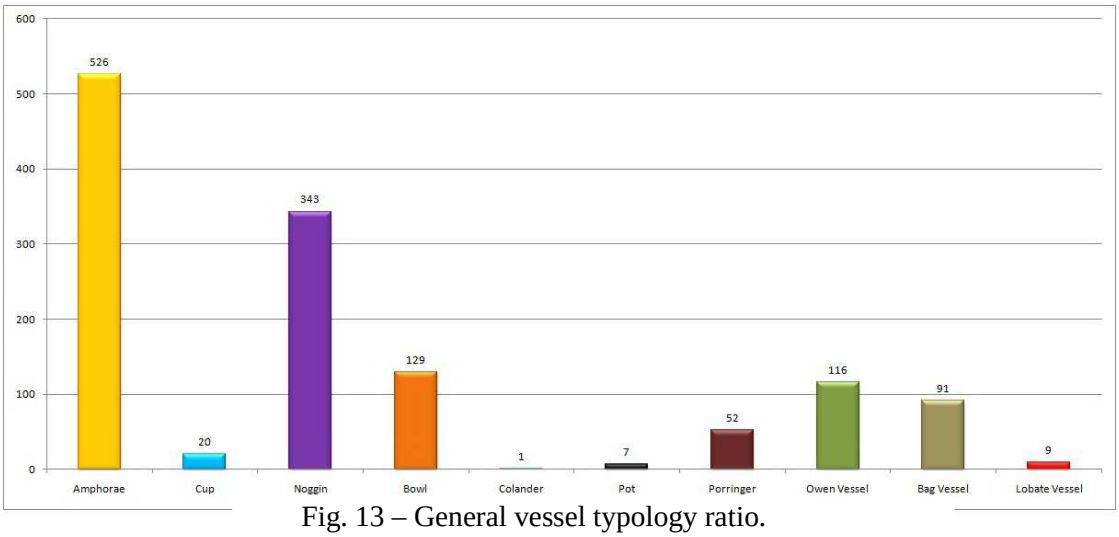

Fig. 13 – General vessel typology ratio.

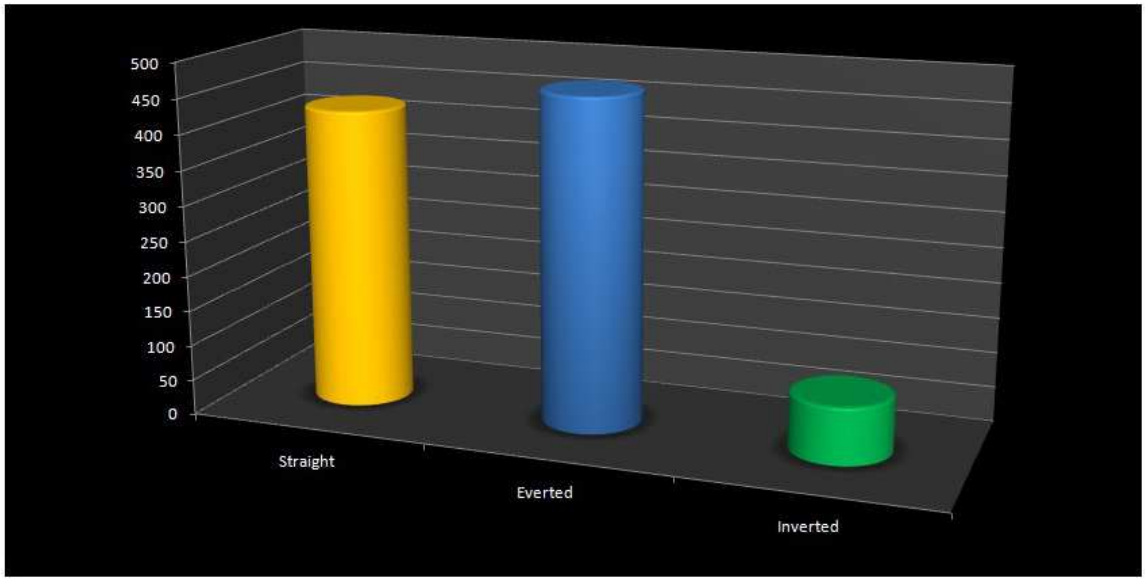

Fig. 14 – Rim morphology quantification within the ceramic material analyzed.

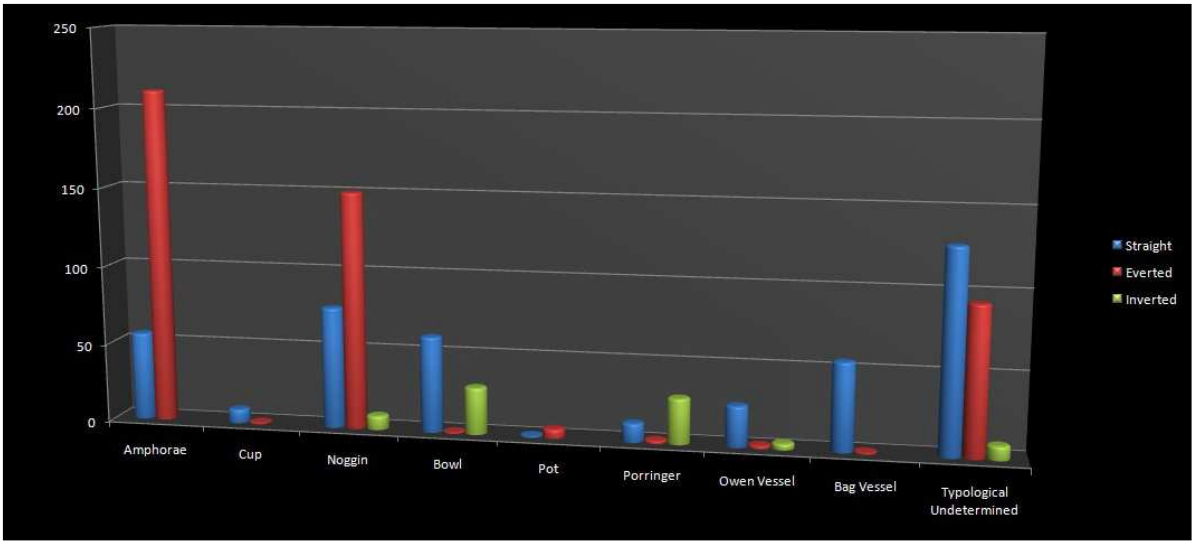

Fig. 15 – Rim type distribution by vessel typology.

typological class could not be determined, due to pronounced fragmentation of ceramics being analyzed. In terms of decorations' distribution is noted that incision prevails as a means of decoration, this holding a maximum representativeness in the category of shards that could not be determined typologically.

Regarding typological assignments, incision has an increased frequency in amphora and cup class, this technique of decoration being specific

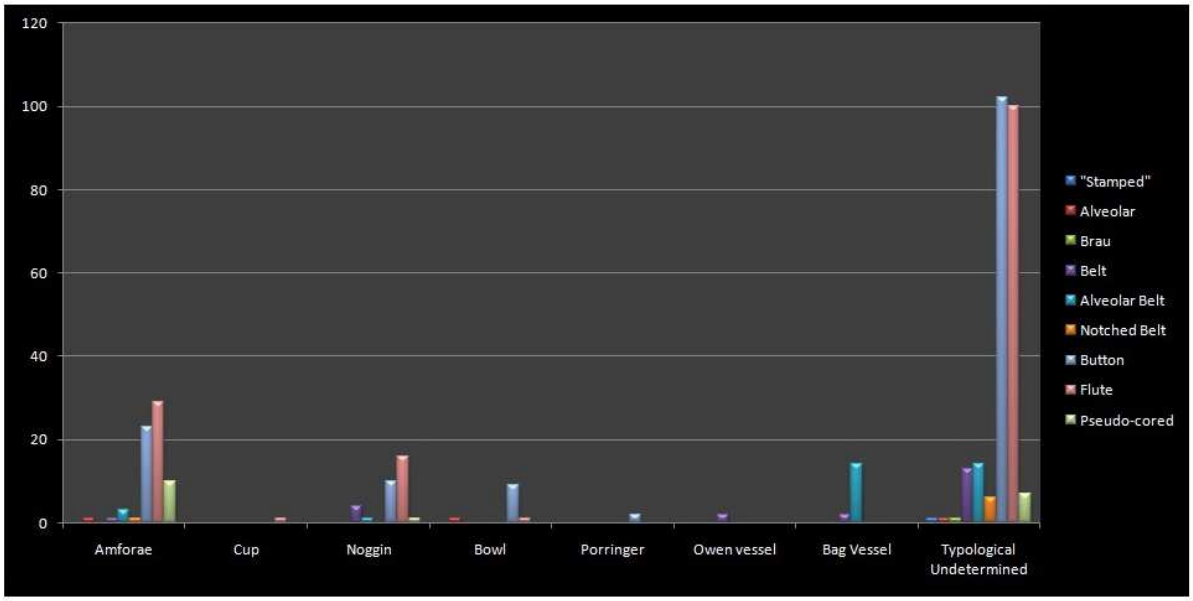

Fig. 16a – Decoration type distribution by vessel typology.

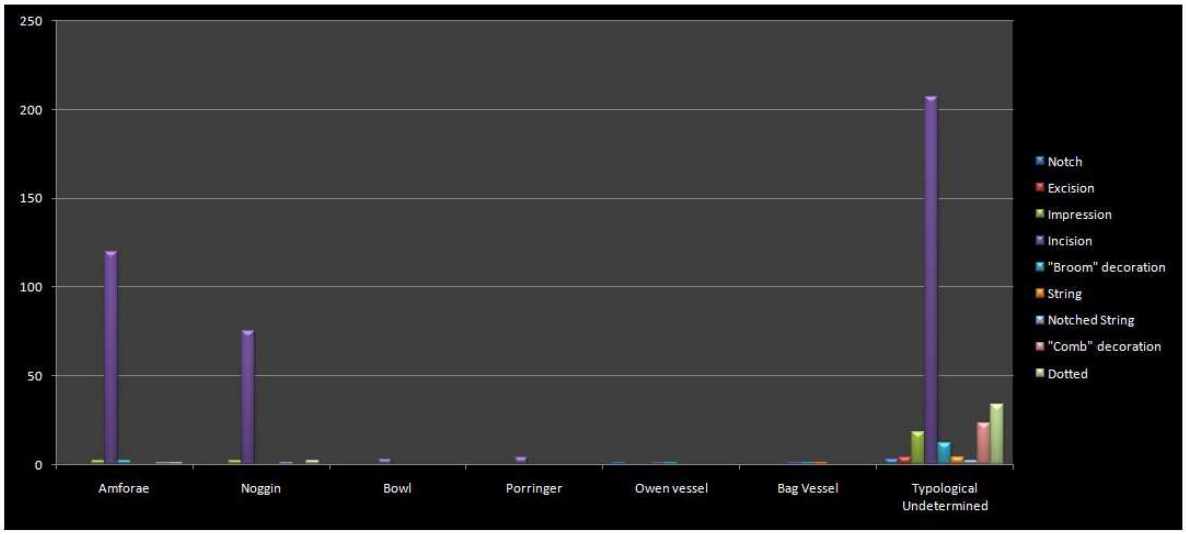

Fig. 16b – Decoration type distribution by vessel typology.

for the first phase of culture evolution (M. Gumă, 1997) .

Difining for the first phase of the culture is the pseudo-corded decoration, but within the results achieved is present in the case of only 18 shards typologically located on amphorae and cup and a set of 7 shards wearing this type of decoration could not be determined. A fairly

mean frequency we encounter in the fluted decoration, being found in 147 cases, its spread compared with the typology is not very generalized this being found on amphorae (29 shards), cups (1 shard), mugs (16 shards) and bowls (1 shard). Unfortunately 100 shards bearing this decoration could not be determined.

Interesting are the exceptions that can be observed in the chart, confirming some relationships with surrounding ethnical-cultural manifestation and also reminiscences of Vatina culture, but especially influences that have shaped Cruceni-Belegiš civilisation.

In terms of relations with other cultures, we can talk about the existence of an import from Žuto Brdo-Gârla Mare area, this fact being argued through the identification of a shard decorated with concentric circles made by stamping, noted by us in the data base "stamped" decoration. The closest evidence of relationships between Cruceni-Belegiš culture and Žuto Brdo-Gârla Mare culture are certified at Deta-"Dudărie", Foeni-Gomila Lupului II (Al. Szentmiklosi, 2005) and Cruceni-"Módosi út" (Al. Szentmiklosi, 2010)

Another disturbance that does not fit into the typical decors of Cruceni-Belegiš type is the presence of ornamentation designed by "broom" decoration (Besenstrich), as well as with comb (Kammstrich). These types of decoration belong to earlier periods of Vatina culture and represents individual findings in the settlement. This kind of decoration it was found by us trough field research at Aluniş, Becicherecu Mic, Firiteaz, Munar or Seceani (unpublished material, kindly information L. Dorogostaisky *et alii*). Decors with a lower frequency in the analysis are represented by of dotted ornamentation, simple, notched or dimpled belts, cufflinks or impressions.

Motives present on the analyzed ceramic fragments tally with the ornamentation manner (Fig. 17), thus as a result of incised decoration we encounter a wide representation of arches, motif identified on 187 shards. A widespread motive is represented by incised strip identified on 137 shards or incised line encountered in 86 cases. Less present are garlands with only 30 shards or angular motives outlined through presence of triangles retrieved in only 19 cases. Regarding slit strip, typically for the second phase of Cruceni-Belegiš culture, they have a poor representation totaling 19 fragments, of which only 4 can be attributed to a typological species that is amphorae.

Emphasizing within the statistics as anomaly, given to its singularity, anthropomorphic motive appears in the case of a protomas on which is stylized a human face.

Charts which present the distribution of rims and bottoms diameters (Fig. 18) are probably the most conclusive data obtained by pottery analysis, calculations being based solely on numbers, compared to the other categories were data was obtained by quantifying the presence or absence of certain characteristics. Comparative analysis of vessel rims and bottoms diameter, by overlapping the two sets of data values, revealed their classification in the sample value of 4 cm to 10 cm in terms of data representativeness. Decrease of representativeness it is documented in both cases as rim and bottom vessel diameter value increases. Verification of a possible correlation between size diameter of bottoms and rims vessel was made possible by creating a chart (Fig. 19) in this sense. Given, however, the random collection of data and the impossibility of measuring the two parameters in the same ceramic piece and inequality of values related were obtained inconclusive results regarding the correlation of the two parameters analyzed, as a result it may observe an agglomeration of representation points from chart on axis designating rim diameter. At the same time the wide dispersion of points, as well as Pearson coefficient, R^2= 0,0362, indicates a weak data correlation (Fig. 19).

Distributed by rim profile, the three sets of data obtained behave, in statistical terms, slightly different (Fig. 20). Between the first two charts concerning everted and right rims profile there is a similarity meaning that representativeness of the data is increased on sample value between 4 cm and 13 cm and as the diameter size increases representativeness is decreasing. An opposite case is observed within the graph for the invasive rims. The first observation to be drawn from the chart which presents invasive rims is the less representative data sample presence of two value peaks with increased representation which characterizes the size of 10 cm and 17 cm and "fragmentation" of the data within the graph.

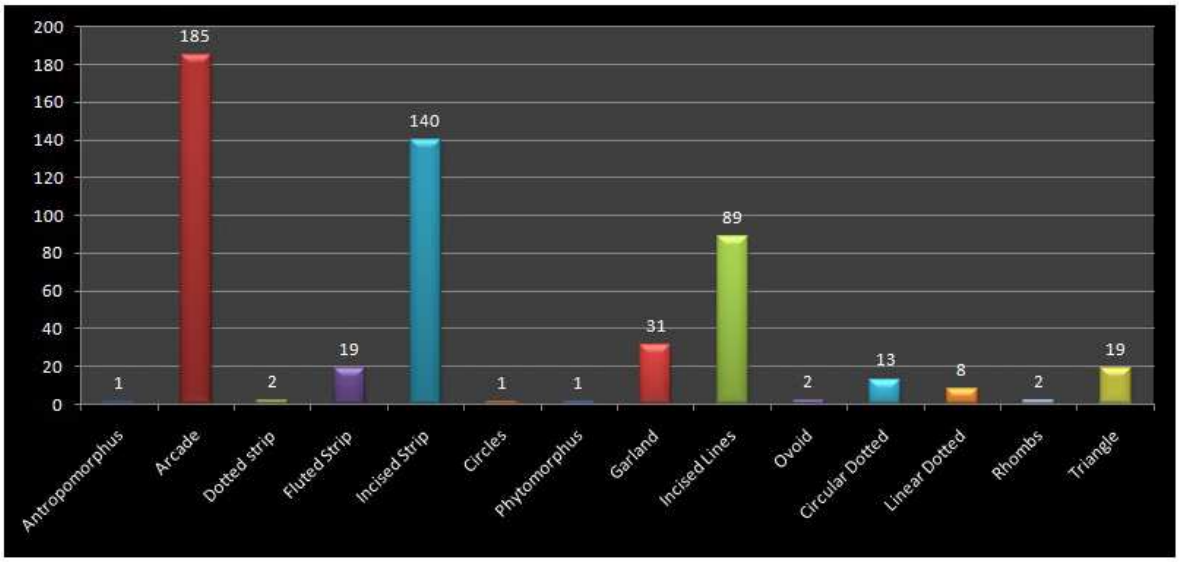

Fig. 17 – Motifs type ratio resulted after the use of decoration techniques.

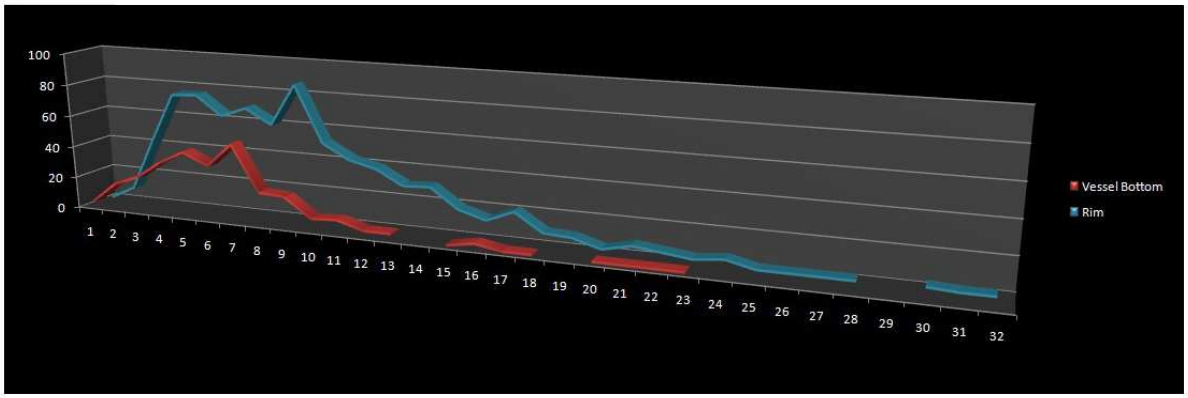

Fig. 18 – Rim and Bottom vessels diameter dimension ratio.

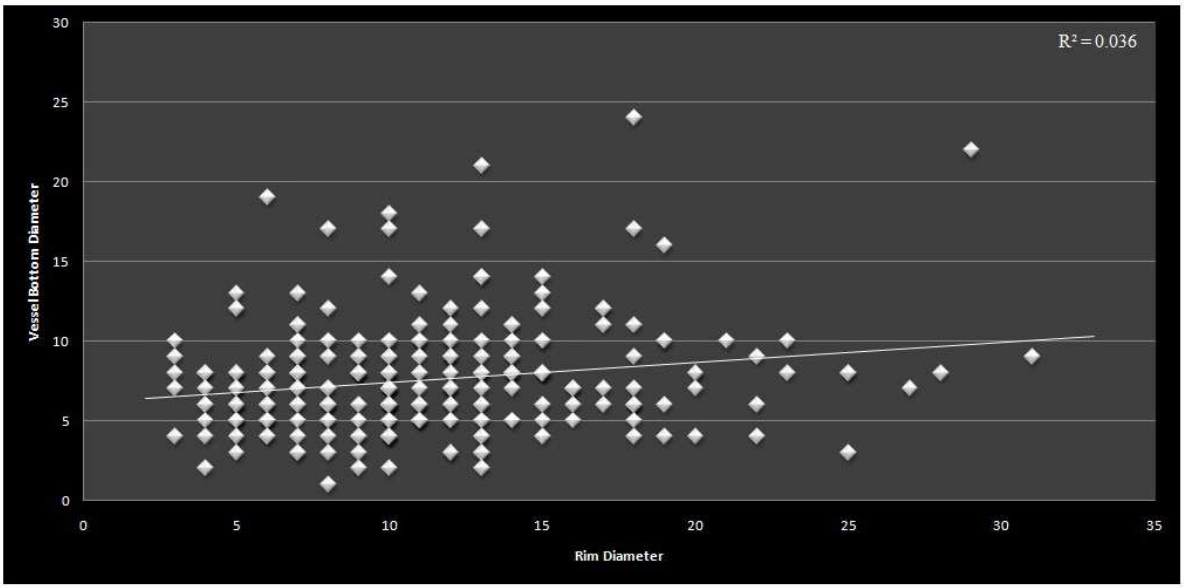

Fig. 19 – Correlation chart of rim and bottom vessel diameters (white line – linear regression trend).

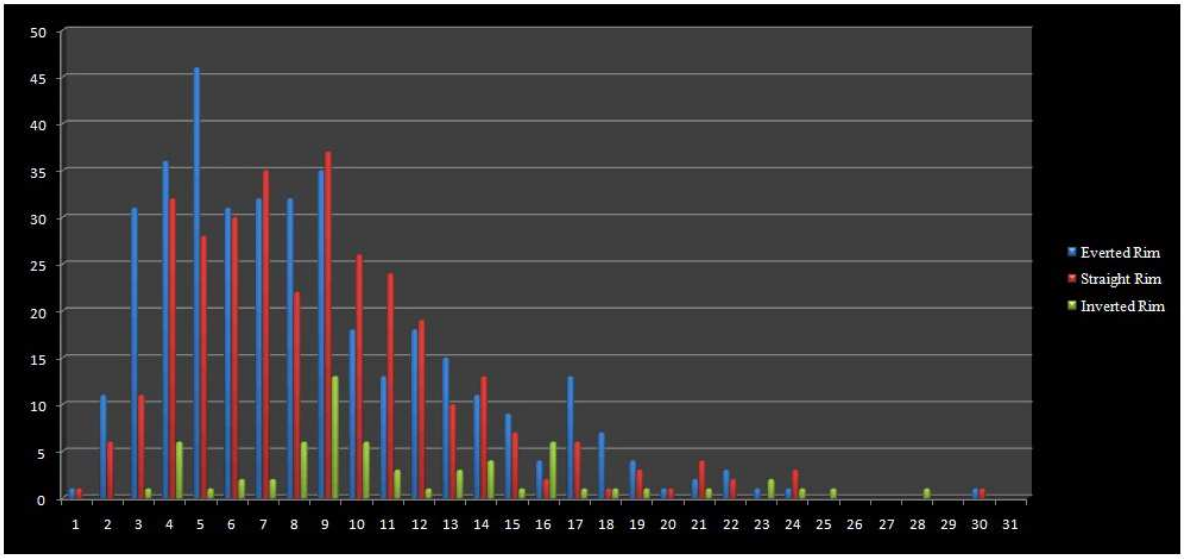

Fig. 20 – Flared, straight and inverted rim ratio by diameter dimensions.

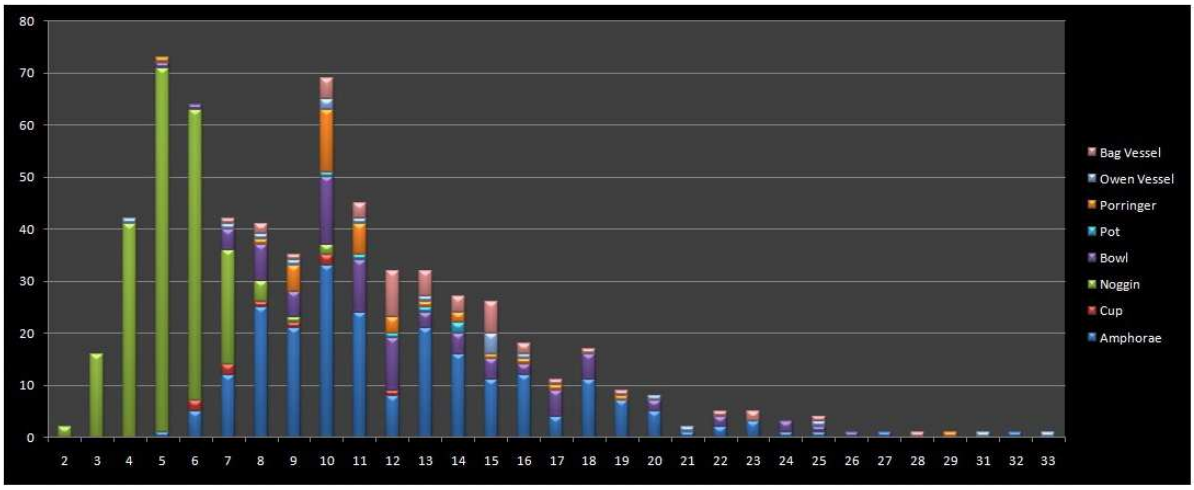

Fig. 21 – Vessel typology distribution by rim diameter dimensions.

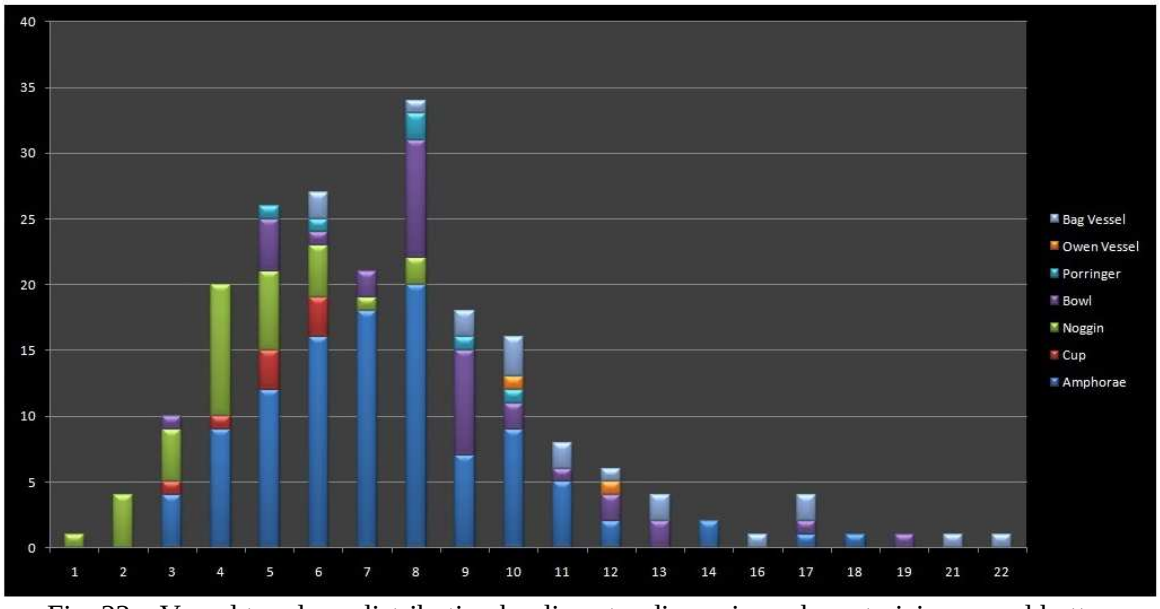

Fig. 22 – Vessel typology distribution by diameter dimensions characterizing vessel bottom

The distribution of rim and bottom dimensions by typology (Fig. 21 and Fig. 22) suggests an interesting distribution. There are observed balanced correlations in terms of size, so noggins, both, in bottoms and rim dimensions cases occupy the interval of small sizes, between 2 cm and 7 cm. Amphorae presents a high representativeness in the interval of sizes covered by the values designated by 5 cm to 16 cm for rims and 4 cm to 11 cm for vessels bottom. Also bowls have increased representation in 8 cm and 10-12 cm class, the bottom of this type of vessel having representation in classes designated by 5 cm, 8cm and 9 cm. This fact indicates that this vessel morphology is characterized by smaller bottoms in terms of rim bottom ratio. Other categories have smaller sample representation.

For reasons of publishing space, results presented above represent a summary of shard analysis made by us; our entire research will be presented in a future monographic study.

Conclusions

The statistical analysis of the pottery from the settlement of Timişoara-"Fratelia", presently represents a singular case. A first conclusion, drawn from this paperwork, refers to the impossibility of connecting the results presented to other analysis of this kind in order to obtain more conclusive data. The intra-site analysis, by presenting the general results and by comparing them in terms of archaeological complex, was the only research instrument in this case.

The relevance of such research, even in the absence of a basis for comparison, it is given by the synthesis of information obtained, which provided the opportunity to highlight both the "anomalies" and the constants of the archaeological site. Important information was obtained regarding the technology used in firing pottery, observing the preference to burn this in a reductive manner. Also, by analyzing decoration, was identified the import coming from the Žuto Brdo-Gârla Mare area or the presence of some shards belonging to the early stages of Vatina culture. There were also identified and quantified the typological classes, decorative and motifs classes that characterize Bronze Age ceramics coming from this site. In terms of size, it was found that the data are characterized by a high representation of small and medium rim and bottoms diameter (4 cm to 10 cm), their frequency decreasing as the diameter values increase.

In our opinion, for an augmentation of data that can be extracted from the statistical results presented, it is necessary to be undertaken pottery analysis for other sets of material of this kind framed to the Cruceni-Belegiš culture in order to achieve correlation series or other advanced statistical methods of analysis.

BIBLIOGRAPHY

Anghel D., 2000, *Influenţa condiţiilor de ardere asupra ceramicii*, Buletinul Cercurilor Ştiinţifice Studenţeşti, Arheologie-Istorie-Muzeologie, 6, 2000, p. 171-173.

Brukner O., Jovanović B., Tasić N., 1974, ***Praistorija Vojvodine***, Institut za izucavanje istorije Vojvodine, Novi Sad, 561 p, 11 t.

El Susi G., 1990, *Ofrande animale din necropola de incineraţie de la Voiteg (jud. Timiş)*, Thraco-Dacica, Tomul XI, 1-2, p. 249-252.

Foltiny S., 1967, *Neue Angaben zur Kenntnis der urnenfelderzeitlichen Keramik im südlichen Teile des Karpatenbeckens*, Apulum. Acta Musei Apulensis, Tomul VI, p. 49-71.

Forenbaher S., 1988, *On „pseudoprotovillanova" urns in Yugoslav Danube Area*, Opuscula Archaeologica, 13, 23-41, p. 23-41.

Garašanin M., 1973, ***Praistorija na tlu SR Srbije***, II, Srpska književna zadruga, Beograd, 700 p., 69 t., GN 845 .Y8 G22.

Gogâltan Fl., 1993, *Materiale arheologice aparţinând culturii Cruceni Belegiš*, Tibiscum. Studii şi comunicări. Etnografie. Istorie, p. 63-74.

Gogâltan Fl., 2004, *Bronzul mijlociu în Banat. Opinii privind grupul Corneşti-Crvenka*, în Cedică V., Rogozea P., (red.), ***Festschrift für Florin Medeleţ. Zum 60. Geburtstag***, Editura Mirton, 2004, 368 p., p. 79-154.

Gumă M., 1993, ***Civilizaţia primei epoci a fierului în sud-vestul României***, Editura S.C. Melior Trading S.R.L, Bucureşti, 311 p., 110 pl., ISBN 973-95349-5-3.

Gumă M., 1995, *The end of the Bronze Age and the beginning of the Early Iron Age in south-western Romania, western Serbia, and north-western Bulgaria. A short review*, Thraco-Dacica, Tomul XVI, 1-2, p. 99-137.

Gumă M., 1997, ***Epoca Bronzului în Banat. Orizonturi cronologice şi manifestări culturale***, Editura Mirton, Timişoara, 260 p., 7 fig., 85 pl., ISBN 973-578-272-3.

Hänsel B., 1968, ***Beiträge zur Chronologie der mittleren Bronzezeit im Karpatenbecken***, I, Editura Habelt, Bonn, 279 p., 4 fig., 50 pl., 30 hărţi, ISBN 978-3-7749-0862-1.

Horedt K., 1967, *Problemele ceramicii din perioada Bronzului evoluat în Transilvania,* Studii şi comunicări. Muzeul Bruckenthal. Sibiu, 13, p. 137-156.

Ionescu C., Ghergari L., 2006 - Corina Ionescu, Lucreţia Ghergari- *Mic glosar de termeni geologici utilizaţi în studiul ceramicii arheologice*, în Cercetări Arheologice, XIII, 2006, p. 452

Kacsó C., 1992, *Descoperirile din epoca bronzului de la Felnac. Contribuţii la cunoaşterea culturii tumulare în Banat,* în Symposia Thracologica, 9, p. 97-98.

Klusch H., 1981, *Consideraţii critice pe marginea necesităţii respectării tehnologiei tradiţionale în prelucrarea ceramicii populare tradiţionale,* Studii şi comunicări de istorie a civilizaţiei populare din România, 1, 1981, p. 255-261.

Lazló A., 1994, ***Începuturile epocii fierului la est de Carpaţi***, Editura S.C. Melior Trading S.R.L., Bucureşti, 315 p., 80 fig., 13 pl., 3 hărţi, ISBN 973-95349-9-6.

Leviţki O., 1994, ***Cultura hallstattului canelat la răsărit de Carpaţi***, Editura S.C. Melior Trading S.R.L., Bucureşti, 225 p., 78 fig., ISBN 973-95349-10-4.

Măruia L., Micle D., Cîntar A., Stavilă A., Bolcu L., Borlea O., Ardelean M., 2011, ***ArheoGIS. Baza de date a patrimoniului arheologic cuprins în Lista Monumentelor Istorice a judeţului Timiş. Rezultatele cercetărilor de teren***, Editura BioFlux, Cluj-Napoca, ISBN 978-606-8191-23-2.

Medeleţ Fl., 1995, *Câmpurile de urne funerare din Banat. Unele probleme ale ritului şi ritualului funerar la tracii nordici timpurii de la sfârşitul epocii bronzului şi începutul epocii fierului,* Acta Musei Napocensis, 32, 1, p. 289-302.

Medeleţ Fl., Szentmiklosi Al., 2003, *Peciu Nou, com. Peciu Nou, jud. Timiş. Punct: Bociar*, Cronica Cercetărilor Arheologice – campania 2002 (2003), p. 227-228.

Moga M., 1964, *Muzeul regional al Banatului*, Revista Muzeelor, 3, p. 294-296.

Morintz S., 1978, ***Contribuţii arheologice la istoria tracilor timpurii. Epoca bronzului în spaţiul carpato-balcanic***, *Vol. I,* Editura Academiei Române, Bucureşti, 216 p.

Muntean M., 1997, *Consideraţii antropologice asupra unor oase calcinate provenite dintr-o necropolă de la Voiteni, judeţul Timiş, datată la sfârşitul epocii bronzului*, în Analele Banatului. Serie Nouă, 5, p. 27-30.

Petrescu-Dâmboviţa M., 1977, ***Depozite de bronzuri din România***, Editura Academiei Republicii Socialiste România, Bucureşti, 390 p., 403 pl., 10 hărţi.

Radu O., 1970, *Asupra unui mormânt de incinerare de la Cruceni*, Tibiscus, 1, p. 19-23.

Radu O., 1972, *Cultura „Vatina" în aşezarea de epoca bronzului de la Corneşti, jud. Timiş*, Tibiscus, 2, p. 35-38.

Radu O., 1973, *Cu privire la necropola de la Cruceni (jud. Timiş)*, Studii şi Cercetări de Istorie Veche, Tomul 24, 3, p. 503-520.

Szentmiklosi Al., 1998, *Câteva morminte plane de incineraţie de la sfârşitul epocii bronzului din hotarul comunei Voiteni*, în Analele Banatului. Serie Nouă, 6, p. 197-208.

Szentmiklosi Al., 2002-2003, *Un mormânt de incineraţie aparţinând culturii Cruceni-Belegiš descoperit la Şag (jud. Timiş). A cremation grave belonging to Cruceni-Belegiš culture discovered at Şag (Timiş County)*, Analele Banatului. Serie Nouă, X-XI, p.81-92.

Szentmiklosi şi Draşovean Al., 2004, ***Arta prelucrării bronzului în Banat***, Editura Solness, Timişoara, 133 p., ISBN 973-729-017-8.

Szentmiklosi Al., 2004-2005, *Materiale aparţinând culturii Cruceni-Belegiš descoperite în hotarul localităţii Dragşina (jud. Timiş). Materials belonging to the culture Cruceni-Belegiš discovered in the boundaries of the locality of Dragşnia (Timiş County)*, Analele Banatului. Serie Nouă, XII-XIII, p. 111-126.

Szentmiklosi A., 2006, *The relations of the Cruceni-Belegiš culture with the Žuto Brdo-Gârla Mare culture*, Analele Banatului. Serie Nouă, XIV, vol. I, p. 229-270.

Szentmiklosi, Al., 2010, Consideraţii privind terminologia utilizată în definirea culturii *Cruceni-Belegiš*, Banatica, 20, 1, p. 67-127.

Szentmiklosi, Al., 2010a, Locuirea de tip Cruceni-Belegiš de la Cruceni-Módosi út (jud.

Timiş). Sondajele arheologice din anii 1997 şi 1999, Banatica, 20, 1, p. 293-306.

Tasić N., 1988, *Bronze und ältere Eisenzeit aus Gomolava*, Gomolava Symposium, p. 47-58.