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Content

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TECHNNO-TYPOLOGICAL AND FUNCTIONAL CONSIDERATIONS CONCERNING THE CHIPPED STONES MATERIALS FROM CRISTIAN I SETTLEMENT (EARLY NEOLITHIC – STARČEVO-CRIȘ I)

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Abstract: *The Starčevo-Criș lithic assemblage discovered in Cristian I site was analyzed in order to determine the technical behavior of Early Neolithic communities. It was observed a difference between chipped local rocks in comparison with those brought from long distances. Also, the analysis highlighted some aspects of the tool functionality.*
Keywords: *Early Neolithic, lithic materials, tools, technical behavior, raw materials.*

The site from Cristian I (Sibiu County) was discovered due to the preventive archaeological excavations from the project "Orăștie-Sibiu Highway", being localized on Cibin's River valley. The archaeological excavations were concretized by the identification of a prehistoric habitation, framed in the Early Neolithic period - Starčevo-Criș I culture. The context of the discoveries and also a part of the archaeological materials was published in several studies about the site from Cristian I (Luca *et al.* 2012; Luca *et al.* 2013a; Luca *et al.* 2013b; Luca *et al.* 2014; Luca *et al.* 2014a).The discoveries made on Terrace I determined its interpretation as being the sacred zone of the habitation, framed in phase IA of Starčevo-Cris culture, with monochrome pottery, representing the first wave of the Neolithic migrations towards Transylvania and dwelling L_1 (C_{40} – one of its rooms) from Terrace II, in Starčevo-Criș I B-C phase (Luca *et al.* 2012; Luca *et al.* 2014).

The lithic chipped ensemble from Cristian I settlement comprises a number of 524 lithic pieces. Considering the very large spread of the excavated area, the number of lithic materials seem to be a reduced one, but their repartition on the excavated surface is not uniform (tab. 1, fig. 1). The majority of the chipped products, 84% from the entire material were discovered in C_{40}, which is a large sized

dwelling compressing several huts. The next ponder have the pieces from C_{10} (9%), the rest being percentages under 4%. It can be said that the zone for chopping the lithic material, but also for using the tools, as it will be pointed out in the analysis, was located in C_{40} while in C_{10} it is being surprised o small sequence of processing some categories of rocks.

Considering the high percentage for pieces in C_{40}, the general characteristics for the lithic industry from the settlement are being determined by the component of this dwelling but, as it will be pointed out following, there are some differences between the features.

The majority of the remains are splinters (40%), followed by wastes and crackers (34%), the characteristic elements of chopping areas. The blades represent only 9% for the entire. This is the reason why the general component of the lithic industry from Cristian should be discussed considering the category of products from other sites with Starčevo-Criş level, where the percentage of blades is always majority (possible selection on spot of the materials from the excavation).

The lithic raw materials used are very diverse: *flint* (39%), *chert* (22%), *silicolite* (9%), *chaille* (8%), jasper, obsidian, radiolarit, quartz, grit stone etc. (tab. 2, fig. 1). In the case of the flint, there can be differenced some types, but the predominant is the Balkan flint (or flint from pre-Balkan platform as it is mentioned in the literature) light brownish or yellowish (*silex miel; yelow-honey flint)*, seldom having in its consistency whitish spots (Gurova 2005; Gurova 2008). In the last period, this type of flint benefited of a special attention, considered to be an important element in understanding the neolithisation of south-eastern Europe (Kozłowski 2004; Kaczanowska, Kozłowski 2008; Biagi, E. Starnini 2010; Biagi, Starnini 2013; Gurova, Bonsall 2014). The dynamics of Neolithic is, among others marked by the circulation of the raw materials and the component of the lithic inventory. This is the reason why, the high percentage of *Balkan flint* in the settlement from Cristian I can provide interesting information considering the technical behaviour of Starčevo-Criș from Transylvania. In what concerns the provenience of this type of flint, even though it represents distinct characteristics, it has to be taken into consideration that some flint varieties are similar, even though they came from different regions (Nițu, Tulugea, 2011).

Analyzing the general compose of the ensemble, one can notice that the majority of the debit products are made of splinters (40%), followed by wastes and crackers (34%), characteristic elements for the chopping areas. The blades represent only 9% from the collection and the little blades 4%, but they were chopped only from some rocks categories.

Considering the distribution of the lithic material, the collection was studied considering the sections and features from where they came. The high difference from a technological point of view reported to the raw materials that were used determined us to analyze the pieces considering this aspect. The chopping methods were adapted to each type of rock, considering the granulation and homogeneity. The

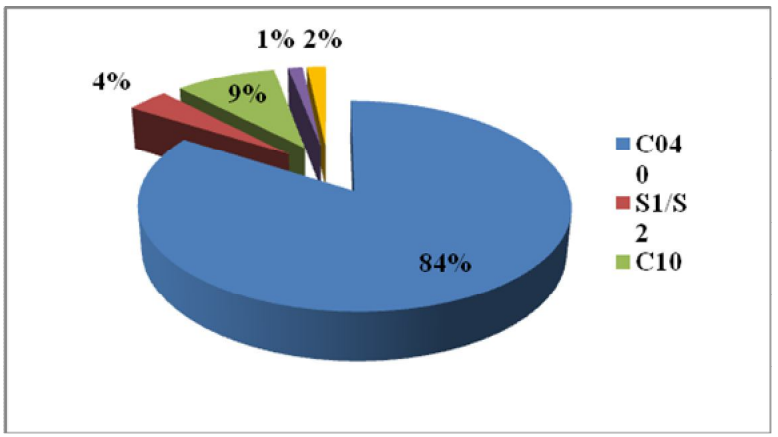
chert presents, in some cases, mediocre properties, this thing being more visible on the cortical and sub-cortical zones, while the *chaille*, jasp and flint are more adequate to the chooping process.

Sections and features (C)	S_1 /S_2	S_3 /S_4	C_{10}	C_{15}	C_{24}	C_{37}	C_{40}	C_5	C_6	C_7	C_{20}	S_8	Total
Splinters	5		13		1	1	187	1			1	2	**211**
Blades	4				1		39						**44**
Small blades	1		2				20						**23**
Nucleus	1		1		2		5						**9**
Wastes, crackers	8		22	1	2		146						**179**
Others	1	1	10		1		43		1	1			**58**
Total	**20**	**1**	**48**	**1**	**7**	**1**	**440**	**1**	**1**	**1**	**1**	**2**	**524**

Table 1. General component of the lithic material from Cristian I settlement.

Sections and features (C)	S_1/ S_2	S_3 /S_4	C_{10}	C_{15}	C_{24}	C_{37}	C_{40}	C_5	C_6	C_7	C_{20}	S_8	Total
Flint	9		16		3		174			1			**203**
Chert	4		6		1	1	96	1					**109**
Chaille	3			1			35		1			1	**41**
Silicolite	1		16		1		38					1	**57**
Jasp	1		1				24						**26**
Obsidian	-						14						**14**
Others	1	1	4		2		38						**46**
Unidentified	1		5				21				1		**28**
Total	**20**	**1**	**48**	**1**	**7**	**1**	**440**	**1**	**1**	**1**	**1**	**2**	**524**

Table 2. The types of raw materials used, reported with the sections and features in which the pieces were discovered.



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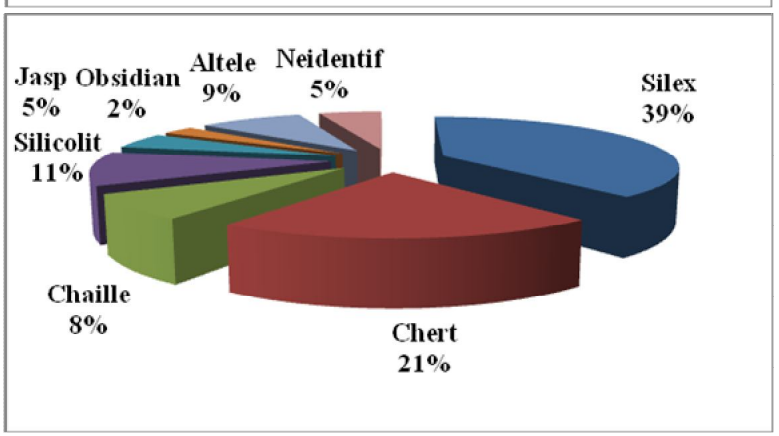

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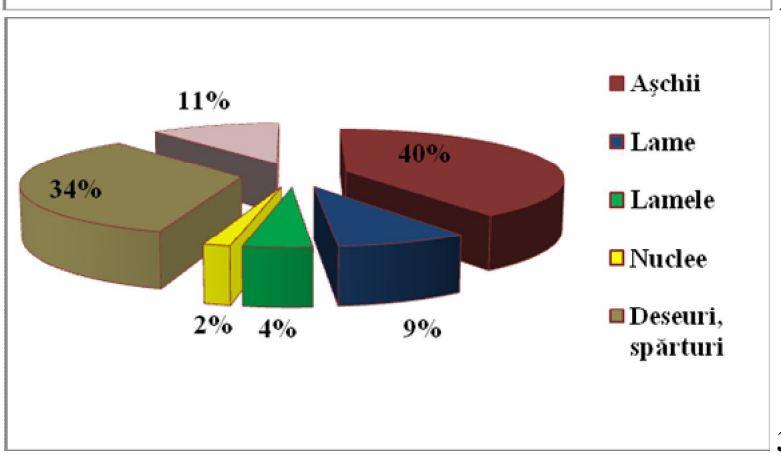

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Fig. 1. 1. The repartition of the lithic materials considering the excavated sections and features. 2. The categories of the used raw materials. 3 The general types of products discovered in the settlement.

C_{40}

Feature C_{40} (a room belonging to L_1) comprises the most numerous ensemble of lithic materials from the settlement: 440 pieces. The technical categories reveal a preponderance of splinters, and the high number of wastes, crackers and fragmented boulders prove that the chopping took place on spot, for some rocks categories (tab. 3). It can be said that inside this dwelling there was a space used for chopping the stone tools or for rectify them.

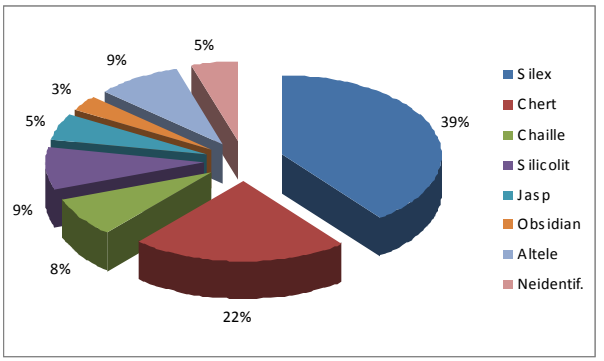
The raw materials

The lithic industry was chopped out of flint (39%), *chert* (22%), silicolite (9%), *chaille* (8%) and jasp (5%), the other rocks having a reduced pounder quartz, grit stone, diverse magmatic and metamorphic rocks) (tab. 3, fig. 2). Of course, in each category of rocks, there can be noticed variations, for example, in the case of the flint, there can be differenced some types, but from 174 of pieces, 153 (88%) are Balkan flint (or flint from pre-Balkan platform as it is mentioned in the literature).

The *chert*, *chaille*, *jasper* and *silicolite* are local rocks, this being suggested also by the large number of boulders and raw material blocks present in the collection. Most probably, excluding the *Balkan flint*, the other flint pieces are from local sources, or they were brought from near distances. In this conditions, it is interesting the report between the local sources or near distances and the other that were brought from large distances, respectively the *Balkan flint* and *obsidian*. Balkan flint represents 34% from all the raw material sources, being the most numerous rock from the collection. Eliminating the unidentified rocks, Balkan flint and obsidian sum 40% from the total, which implies a quite large pounder of the chopped pieces that came from large distances.

Techno-typological characteristics

From the Balkan flint is the raw material used for chopping several categories of products, but the splinters are the most numerous ones (43%), followed by wastes (30%) and blades (21%). From a technical point of view, the purpose of the production it is being axed in obtaining laminar supports. It was discovered only one nucleus with reduced dimensions that is being defined by exploiting of two surfaces of opposite debit and the intention to continue the debit on the nucleus flanks, because the alternation of the two main surfaces produced a thicknesses of the nucleus (fig. 3). The production was laminar, but some of the chopped pieces on one of the flank are blades. Indifferent of the debit surfaces the modality was unipolar. The pursuit to create new surfaces of debit proves the clear tendency to maximize the use of good quality raw material.



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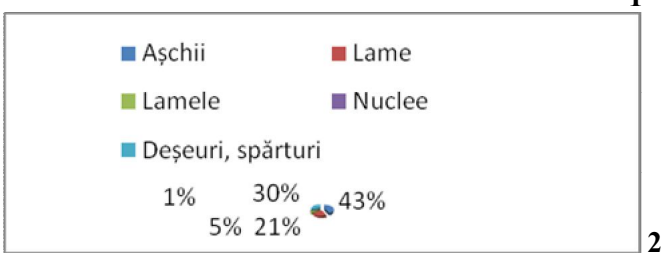

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Fig. 2. 1. The raw materials used in Feature C_{40}. 2. The pounder of the types of lithic chipped pieces made of Balkan flint in C_{40}.

C_{40}	Splinters	Blades	Small blades	Nucleus	Wastes, crackers	Boulders and fragments	Strikers and grinders/ crashers	Total
Chert	50	1			34	7	4	**96**
Chaille	21	1	1	1	11			**35**
Jasp	14			1	7	1	1	**24**
Radiolarit	2							**2**
Local flint	9	3		2	6	2	1	**23**
Silicolit, argilit	7		2		12	15	2	**38**
Quartz, quartzite	5		1		2			**8**
Grindstone	3				1	3		**7**
Diverse metamorphic rocks	-				5	2		**7**
Magmatic rocks							1	**1**
Burned pieces	2	2	3		3	2		**12**
Balkan flint	65	32	8	1	45			**151**
Obsidian	6		5		3			**14**
Unidentified	3				17		1	**21**
Total	**187**	**39**	**20**	**5**	**146**	**32**	**10**	**439**

Table 3. The general categories of lithic pieces discovered in C_{40} and the raw materials from which they were made.

In the category of blades (fig. 3) it was noticed a high percentage of fragmentation, so that from 32 pieces, only 10 are entire, the other ones being, mainly, proximal and distal fragments. From this cause, the determination of the chopping techniques it is difficult, but according to the characteristics of the percussion and the experiments made in time (Pelegrin 2006), most of the blades were debit by indirect percussion, but there are also pieces detached by pressure or a softer percussion. The blades have a good regularity, rectilinear profile, trapezoidal section and softly triangular, which implies their provenience from the *plein debitage* stage. The width of pieces is being framed, in proportion of 72%, between 10 and 22 mm.

A great part of the blades have marks of utilisation. The fragments of blades with vegetable polish are the most numerous (fig. 4, 5). For analysing the polished areas, it was used a digital microscope with optical fibre and an expansion order until 200. The microscopic analysis revealed the provenience of the polish, by cutting the cereals, some of the pieces being classical insertions of sickle. The position of the polish is, generally, oblique-lateral, but there are also some cases of areas with polish on both sides, which implies the use of the piece for the same action.

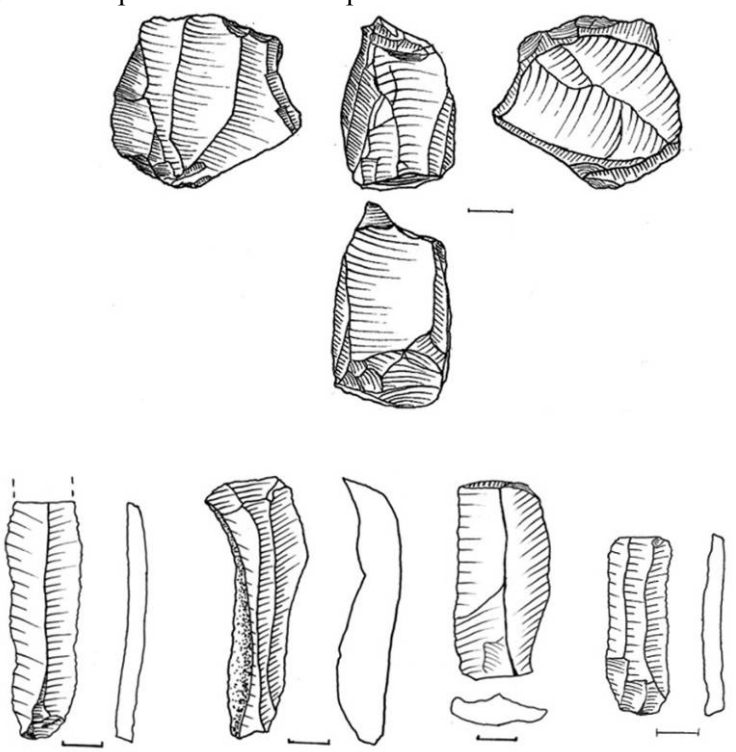


Fig. 3. C_{40}, nucleus and blades made of *Balkan flint*.

In some cases, the blades were reused or intentionally fragmented by flection or percussion. For example, a blade fragment presents a percussion bulb on the middle of the fracture and the front of the piece was used as collision point. A scraper with carina was made of a retouched on both sided blade (direct retouches, abrupt and semi-abrupt). Both sides, but also the front of the scraper were used quite intense on hard materials and they have determined the detachment of micro-splinters. A distal fragment of a scarper on retouch blade was reused as an insertion for a sickle, the marks of the polish being characteristic for this action.

The small blades, although there are not so numerous (20 pieces, two of them), came from the last debit Phase of the blade nucleus discovered and also a *sous-crete* blade and one of re-arrangement.

An obvious characteristic of the chopped splinters from Balkan flint is the micro lithic character: 41% have lengths ≤20 mm and 35% can be framed under 20 and 30 mm. These are simple splinters, retouches splinters and in a smaller proportion splinters chopped for re-arranging the debit surfaces or the collision plans. Most of the pieces were debit by direct hard percussion, but it was also used soft percussion. Even though the pieces are quite small, part of them present marks of usage. Some of the retouch splinters have a vegetal polish, a micro lithe tool presents pronounced usage marks and some of the pieces were transformed in simple curettes. An *à dos* splinter, retouched bipolar abrupt, has marks of polish made on the opposite side of the retouched part. The abrupt retouched zone was made with the propose o fixing it, and the piece was used for cutting off cereals. The intense usage of Balkan flint products it is being proved also by the transformation of a chopping waist into *perçoir* (fig. 4).

The pieces made of brought into the site and, in a very small percentage they were chopped and remade on the settlement as it can be noticed by the presence of some products with cortical zones on the surface and of the micro-splinters that came from retouching the tools. The tools had several phases of remaking and they were used intensively. The reduced dimension of the stands is due to the large distance reported to the provenience of the raw materials and their finishing. On the other hand, the same tendency it is being noticed also in the case of the pieces made of obsidian: the only debit products are the semi-microlithic splinters and small blades (fig. 6/1).

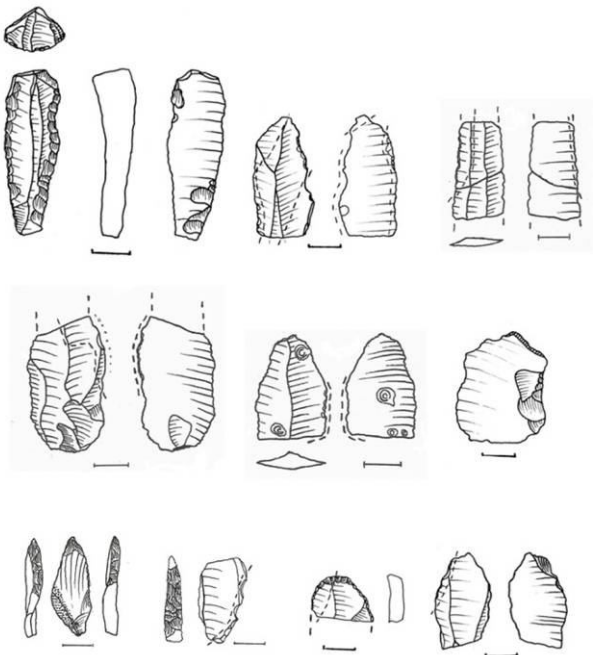


Fig. 4. C_{40}, tools made of *Balkan flint*.

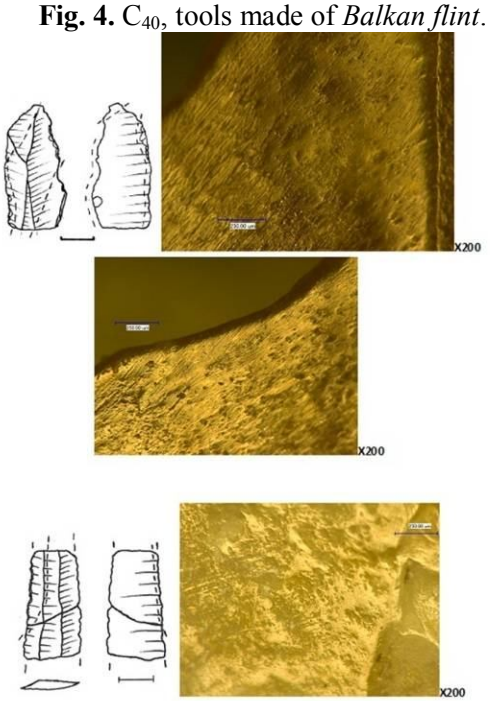


Fig. 5. C_{40}, fragments of Balkanic flint with marks of vegetable pollish (cu urme de lustru vegetal (reap insertions).

Other types of flint were used in a much reduced number, only 23 pieces. The debit products are being represented of some splinters (fig. 6/4), blades (fig. 6/2), wastes, a smashing tool/rubber and two nucleus, very summary exploited. From a functional point of view a distal fragment of blade was used as a sickle insertion, having some marks of polish on one side. Microscopically, it can be noticed that the polish covered some reddish zones from the surface. It is possible for the piece to be initially used for ochre processing, after which it has been reused as a reap insertion (fig. 7). On the other hand, the processing of ochre in C_{40} it is being proved by the marks made on a smashing tool, the ochre imbuing powerfully into the rock (fig. 8).

A number of 96 pieces were chopped from *chert* and from them, half are being splinters (fig. 6/5), the following category being the waists and crackers. It is being noticed a sub-representation of some technical categories: we haven't discovered any nucleus although the large quantity of waists suggest the chopping on spot of the materials, and the blades are being represented only by one distal blade fragment of semi-cortical blade, this one being accidentally produced during the process of chopping the splinters. On the other hand, the lack or the reduced number of some technical categories it is being visible in all the cases of the local rocks.

The production mode can be determined based only on the types of splinters. From 50 splinters, 32 are cortical and from these, half have quite ample surface cortical zones (≥50%). Most of them are decortication splinters, semi-corticated splinters or *à dos* cortical, the last ones coming from a slice debit (*tranche*). Some overflowing splinters, a *pseudo-Levallois* point, a *à crete longitudinale* splinter prove the exploitation of the boulders by two surfaces, the process being similar to the discoid debit. But the attempt to form two secant surfaces can be associated with steps from the debut of a laminar debut, *à crete* or*demi-crete* initiation. A single tablet suggest the use of laminar debit, these one being chopped in order to remove the distal part of a laminar revolving nucleus, with the purpose to create another plan of collision.

The percussion is hard, direct, only in 3 cases being the possibility of a softer one and the majority of the talons are soft, which implies a weak preparation of the collision plans. It has been noticed only one single type of accident, *rebroussement*, both in the case of splinters (3 cases) and most in the case of the negatives on their surface, most of them being unipolar. Of course, the accident was produced, mainly because of the raw materials. In what concerns the fragmentation, only 12 pieces present fractures, besides two proximal fragments and one mesial and distal, the rest of the splinters having small fractures and dimension, lateral or oblique.

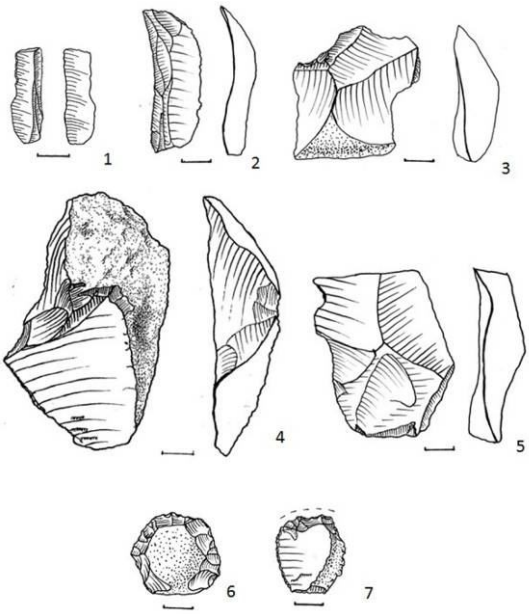


Fig. 6. C_{40}, lithic pieces from divers sources of raw materials: 1. Obsidian little blade; 2. Flint blade; radiolarit splinters (3), brownish flint (4) and chert (5); silicolite scrapers (6) and jasper (7).

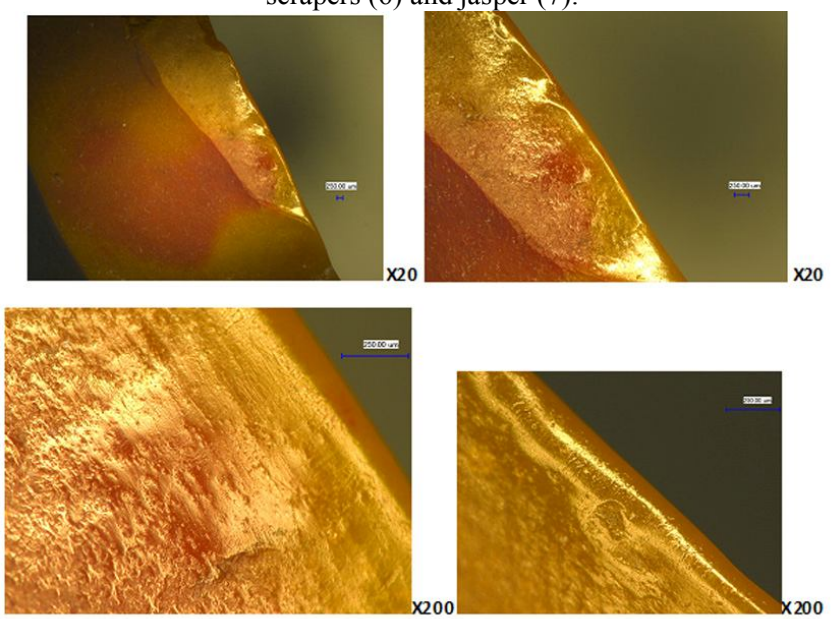


Fig. 7. C_{40}, flint blade with a cereals polish displayed over the reddish zone (possible with marks from the ochre processing).

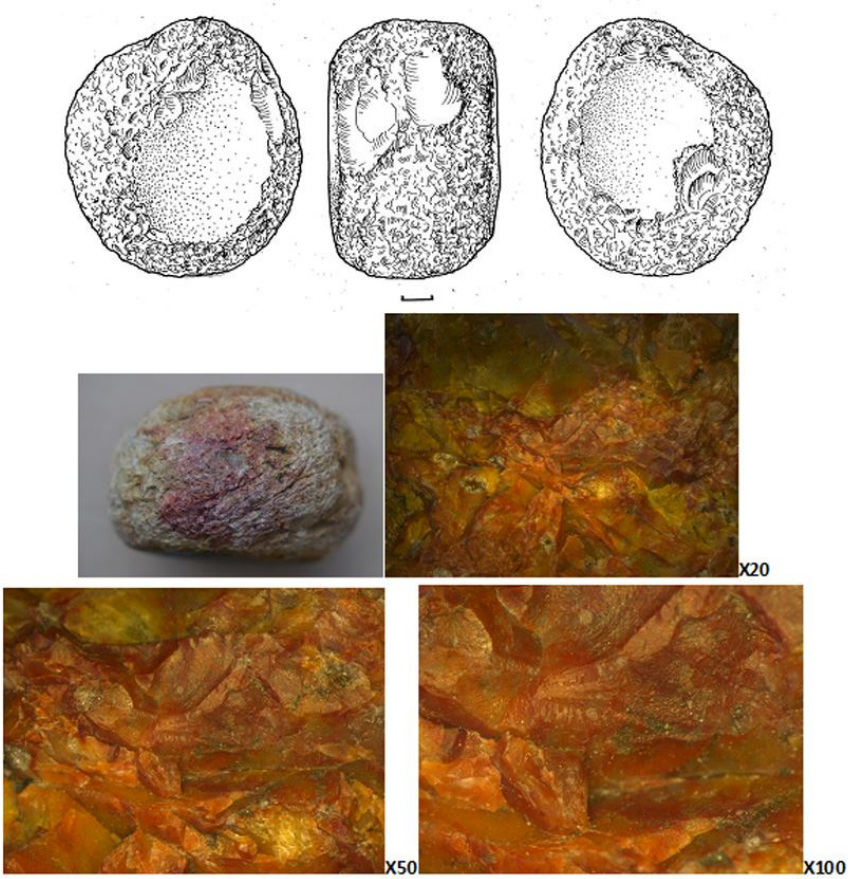


Fig. 8. C_{40}, smashing tool with ochre marks.

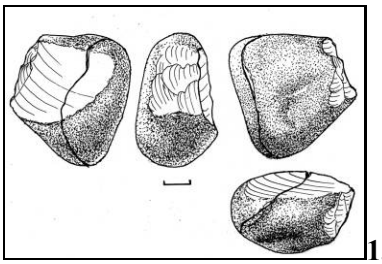
The number of the retouched splinters is a small one, only 5 pieces, but some of the not retouched products have utilisation marks. Two splinters partially retouched, a splinter with reversed truncation obtained by abrupt retouches, a simple scarper on retouched splinter are the only types of tools that were identified. The scarper was made on a directly retouched splinter with abrupt retouched, relatively ample, while the front was created by abrupt retouches, *ecailleuse*. Both the front of scarper and the retouched sided, presents some marks of crashing that were produced either after a high usage, or by using it on a hard material (bone/horn).

Most of the splinters have reduced dimensions, half of them being between 20 and 40 mm, the following pounder being occupied by the splinters having lengths between 40 and 50 mm (36%), and the micro-splinters (≤20 mm) represent 11% from the total.

Only 35 pieces are being chopped of chaille, and from those, most of them are splinters and waste. The only nucleus from this rock has reduced dimensions (37/37/27 mm), flat out by multidirectional debit, the resulted products are small sized splinters. The lamination pieces are being represented by a blade mesial fragment and the tabular ones by a micro-blade. The splinters are similar to the ones of chert, half of them being cortical (decortication splinters, semi-cortical, a dos cortical). The percussion is mainly directly hard, and the talons are mainly softer type ones, which indicated a reduced preparation for the collision plans. The length of the splinters does not exceed 60 mm, more of the half having dimensions between 20 and 40 mm, followed by splinters of 40-60 mm. Due to the homogeneity of the raw materials the fragmentation is quite weak, having only two fragments distal and proximal and 3 pieces have very small fractures. An *encoche* splinter, two simple scarpers (fine and direct retouches) and scarper with an abrupt front are the only retouched pieces.

From jasper were discovered only 24 pieces, from which more than a half are splinters. Besides those, the component of the ensemble is being completed by some breaches, a boulder broke in half and a small sized rubber (48/48/43 mm). Not a single product was chopped from this material.

A re-mounting made of a nucleus and a splinter offer details regarding the technical modalities of chopping (fig. 9/1). The nucleus have two surfaces for debit alternatively exploited. One of the surfaces it has only two negatives: a decortication splinter and a cortical splinter (90% cortex) re-mounted on the nucleus. The second surface of debit has very small dimensions and the collision plan is the negative of the decortication splinter on the other surface. It were detached micro-lithic splinters, invaders, cortical, so probably less used. The change of the surface it has no clear utility, due to the fact that the products are micro-lithic (all of them have lengths under 20 mm) and they are in reduced number. The modality of chopping was unipolar for both surfaces. This summary type of chopping of a boulder is a consequence of the reduced dimensions of the nucleus.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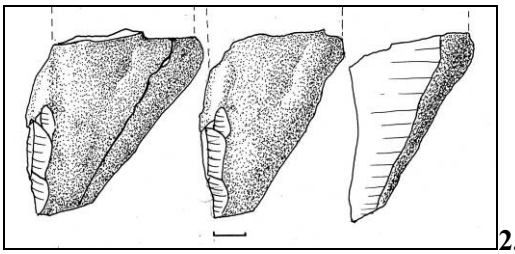
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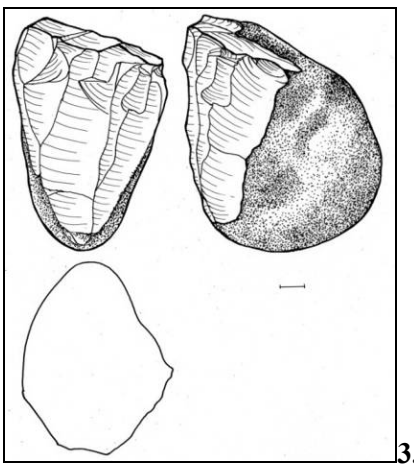
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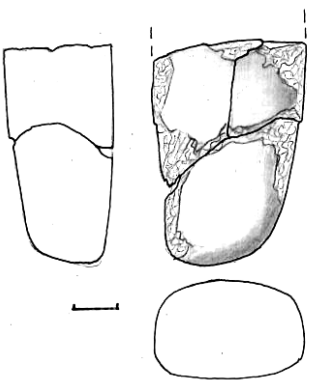
4

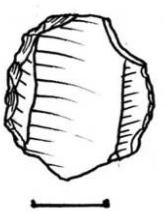
5

Fig. 9. Re-mounting made of jasper (1) and cuartite (2) discvered in C_{40}; flint nucleus discovered in C_{24} (3); fragment of a small ax from C_{10} (4); microlithic tool discovered in S_8 (5).

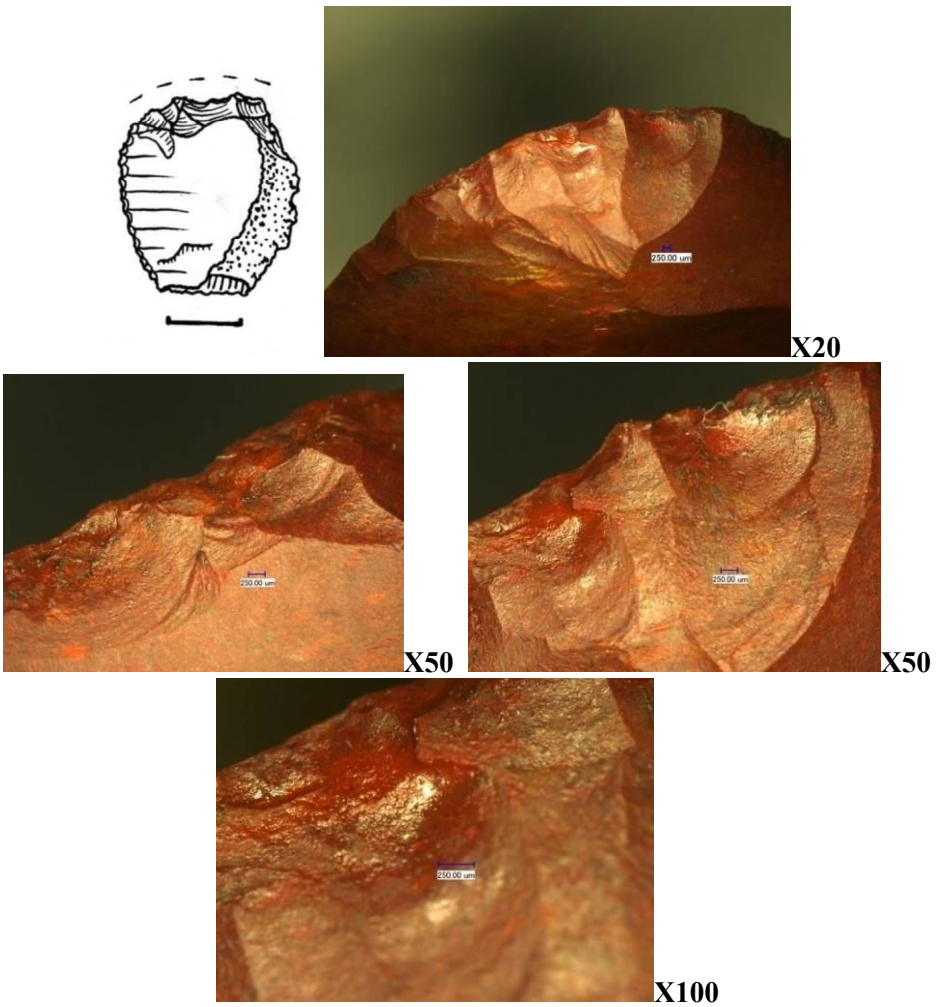

Fig. 10. C_{40}, gratoar made of a retocuched splinter from jasp, with polish marks.

Excepting four pieces, from which two micro-splinters, the other products are semi-cortical splinters or decortication splinters. The placement preponderantly lateral of the cortex, the exclusive hard-direct percussion, the unipolar or bipolar direction of the negatives, the talons mainly soft, proves a debit made without a preparation of the debited surfaces. Besides of a proximal fragment, the rest of the splinters are entire. In what concerns the dimensions, excepting two splinters (40 and respectively 46 mm), the rest of the pieces have values under 40 mm, part of them being micro-splinters.

Two scrapers from this ensemble do not frame in the general characteristics. Both of them are being arranged on fine retouched on a side splinters. One of them has the front arranged by *ecailleuse* retouch and the other one has clear marks of remaking the front, which implies the reuse of the tool. The last one presents the different functional characteristics, the entire front being covered by polish (fig. 10), but macroscolpicaly, the polish marks are not similar to the ones that were made after cutting the cereals. Most likely, the tool was used for scraping some vegetable materies rich in silicium, different off the cereals.

38 pieces are made of silicolite, but only 7 splinters and 2 blades are being chopped of this material. Almost half of the pieces are entire or fragmented boulders, one of them being a junction made of 3 pieces. Some boulders present summary detachments, which implies an attempt of debit or testing of the raw materials. There are also presented two hammerstones, from which one is double. The splinters have micro-lithic dimensions and with only one exception, all of them have lengths under 30 mm. The percussion is direct-hard and soft. The only tool is a circular scarper (28/28/10 mm), made by *ecailleuse* retouches (fig. 6/6). Other types of rocks were used in a much reduced proportion, being chopped in the settlement as it proves a re-mounting made of two cortical chopped quartz splinters.

Other types of rocks were used in redouced number, being chooped inside the settlement, as it prooves a re-mountage made of two cortical spintes chopped of cuartite (fig. 9/2).

S_1/S_2

From sections S1 and S2 from terrace 2 there were collected 20 pieces: 5 splinters, 4 blades, a blade and a nucleus, 9 waists and crackers. The raw material is represented especially by local flint, different types of silicolites and Balkan flint, but it is being spread differently considering the categories of chopping products. In the case of the blades the percentage is being equilibrated between the Balkan flint and silicolite, in case of the splinter prevails the local flint and silicolites. Also, a single blade from this ensemble is being chopped of Balkan flint.

The only nucleus discovered (93/80/47 mm), chopped of a greyish chaille presents a unipolar exploitation on a single surface, in the thickness of the boulder. The resulted products are cortical splinters or semi-cortical ones, with reduced dimensions, 25-35 mm, similar to the splinters discovered in S_1 and S_2.

All 5 splinters were carved by direct hard percussion. A splinters came from sectioning of a boulder, being the only pieces with medium dimensions (44/40/30 mm), the other having lengths $\leq$30 mm. Two pieces present debit accidents (*rebroussement*) and the predominant talons are the simple smooth type ones, but in some cases cortical punctiform ones. Indifferent of the raw materials that were used, the general tendency is being dictated by the need to obtain micro-lithic splinters. A single splinter made of reddish cher is being retouched (direct *encoche*).

From the four recovered blades, only two are entire: a blade made of greyish chaille (53/22/10 mm) and one made of Balkan flint (40/16/5 mm). The other two pieces are being represented by a distal blade fragment made of Balkan flint and a proximal fragment, junctional from two pieces, made of local flint. In the case of all pieces, the percussion is soft direct and the observed talons are simple smooth ones, sided and removed. A single piece is being partially retouched on one side (direct retouched, under-parallel), while a blade present unregulated usage marks. In what concerns the regularity, in this category of products the raw materials are being determining, so the entire blade of chaille is being deformed and one of the unipolar negatives from the surface presents a chopping accident (*rebroussement*), which implies a difficult control in case of a laminar debit. The only blade discovered (25/8/3 mm), made of Balkan flint, and was chopped by indirect percussion, having a punctiform talon.

A number of 8 pieces are wastes and crackers, from which a fragment was broken by a hammerstone made of chert. It was collected also an entire bolder made of chaille (51/39/42), which doesn't present anthropic marks.

In what concerns the tools, besides the *encoche* and the routocuhe blade fragment, was discovered a geometrical microlithic tool made of *Balkan flint*.
The rotocuhces are marginal, fine direct, abroupt on a side and semi-abrupt on the other side. Along with other similar pieces discovered in other features its presence emphasis the early character of the discoveries.

C_{24}

From dwelling C_{24} (House of the Deaf – CM (Luca *et al.* 2013b)) we have only 7 pieces: a splinter made of metamorphic rock, a distal blade fragment made of Balkan flint, 2 nucleus of flint and silicolite, a boulder and two wastes. This dwelling is important, especialy through the discovery of twi graves inside it. Unfortnetaly, the lithic materials does not presents special characteristics in order to be associated with the two graves. The nucleus presents different methods of exploitation. A laminar nucleus of flint (100/96/60 mm) has only one surface of debit un-arranged, frontal chopped, unipolar modality, being a classic example of usage of the rocks morphology. The first chopped products were cortical or semi-cortical *outrepasse*, and the other ones were lamellar (the lengths of the negatives vary between 54 and 82 cm). The other nucleus is made of silicolite and the purpose of the production was to obtain small sized splinters (20-25 mm). The chopping of the boulder was made in its thickness, on one surface only, unipolar modality. It can be noticed that both of the nucleus were similar treated, even though the purpose of the production is different: summary exploitation of the boulders morphology, without a preparation of the debit surfaces.

Only two pieces present fine utilisation retouches, the blade fragment and a waste, both made of Balkan flint.

C_{10}

This feature is being differenced of the others by two aspects. Inside the feature, from 48 pieces collected, no blade was discovered. Only two fragments of two fine marginal retouched lamella, chopped of Balkan flint, the rest of the products being associated with the debit of splinters: 13 splitters, a nucleus, 22 wastes and crackers, two hammerstones, one of them used and a rubber, 6 fragmented boulders. The second distinct element it that the only polished piece in the settlement, a fragment of a small axe, very burned, was discovered in this feature (fig. 9/4).

The nucleus of silicolite presents an alternant exploitation of four debit surfaces, the splinters resulted being short and irregular. Different form the nucleus of local rocks discovered in the settlement, its abandonment was made because of the total exhaustion and the try-outs to obtain stands, even though, as it can be noticed from the last negatives, these ones are mediocre. The weak regularisation of the splinters can be a result of the large angles between the debit surfaces: 90° or >90 in the Phase of abandonment. A cortical splinter, of reduced dimensions (28/18/16) was remounted on this nucleus.

Most of the splinters, no matter the raw materials from which they were chopped, have very reduced dimensions (under 30 mm, having even under 20 mm). The larger piece is a junction of two pieces (L 61 mm) of a proximal fragment. The soft percussion was preponderantly used in the case of the splinters made of Balkan flint and a more careful preparation of the collision plan (*egrisage* stigma in the case of one piece), while the direct hard percussion is being specific for the ones made of local silicos rocks. In the case of 4 pieces made of Balkan flint, two of them seem to have come from a laminar debit, considering the surface negatives and the clear distinction between the splinters and laminar stand is difficult in their case. One of the lamellar splinters made of Balkan flint is being retouched and it presents a polish on both sides in the area of the retouches.

A scarper of silicolite was arranged on a very used stand. These one was differently retouched on three sides: 1 denticulate side; 1 retouched directly, with ample semi-abrupt retouches; 1 with *encoche*. It is possible to be a recollection of a piece from older context and its reuse.

The same as for the other features, it were discovered many fragmented boulders and crackers from silicolite and chert, which reinforced the local provenience of the raw material (for example, 8 fragments are being broken from the same block of raw materials. Beside these, there were also discovered 2 hammerstones made of flint and silicolite, from which one it was used as a rubber, crasher and the other one presents a negative on one end (possible testing of the raw material).

Conclusions

In the context of understanding Early Neolithic and its diffusion in South-Eastern Europe, the study of the lithic chopped assemblages can provide important information. In the last period, in the specialized literature was given a special

attention to this aspect, as it is in the case of the Balkan flint, seen by several authors as an important element of determination of the route of neolithisation (Biagi, Starnini 2010; Biagi, Starnini 2013). Considering that the chopped stone tools discovered in the Early Neolithic settlements from our country many times didn't benefit of detailed analysis, the study on the lithic materials discovered in the settlement from Cristian I provided new information on the technical behaviour of Starčevo-Criș communities reported to the sources of raw materials from which the tools were made.

A first aspect that is being emphasised after the analysis of the lithic material is the existence inside the settlement of some chopping zones and the usage of the stone tools. The larger part of the ensemble is being concentrated in dwelling L_1, the room called by us Feature C_{40}, while in Feature C_{10} it is being surprised a limited stage of chopping local rocks, the porpoise of the production being exclusively to obtain splinters.

In the entire collection, it is being noticed a technological difference according to the used raw materials. The Balkan flint sums 40% of the ensemble, which implies a quite high pounder of the chopped pieces from rocks that were brought from a large distance. The pieces made of Balkan flint were brought inside the site already debited and, in a very small proportion, were chopped or re-arranged in the settlement. From a dimensional point of view, it is being obvious the majority microlithic component of the supports. These were transformed in tools and intensively used, some pieces going through diverse phases of re-making and re-usage. The reduced dimension of the supports made of Balkan flint can be connected with the large distance in accordance with the provenience of the raw materials and its exhaustion. But, even though in a more reduced percentage, the microlithic character is being visible also in the case of the local rocks.

From a technical point of view, there is a very large difference from chopping the pieces made of Balkan flint and the ones made of local rocks. The majority of the laminar products are being made out of Balkan flint, while in the case of the local rocks the porpoise of the production was centred on the production of splinters, most of them in small dimensions. The debit of the local rocks seems to be expedient in some cases, the boulders are being chopped mostly in a summary way and a part of the products are mediocre. This fact can also be a result of the weak properties of some rocks categories (*chert*, quartzite) or of the wish to obtain on spot some sharp stands for diverse activities or even for testing the local raw materials. On the other hand, the striking difference of chopping can be also a result of some social aspects, possibly connected with the learning of some technical chopping process. From another perspective, the lithic ensemble from Cristian I settlement surprises an episode of the apartment of the communities to the local resources during Early Neolithic.

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