THE PEBBLE, THE BLOCK AND THE TABULAR. LITHIC RAW MATERIAL USE AT SÁGVÁR, LYUKAS-DOMB UPPER PALAEOLITHIC SITE

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Introduction

Ságvár Upper Palaeolithic site is situated in the hilly loess area of Southwestern Hungary, on a moderate slope facing south at 228 m asl. above creek Jaba (*Fig. 1.*). The ancient human occupation traces were first recognized in 1922.[1] Further field works till the end of the 1950s recovered faunal remains, charcoals, lithic artifacts, and huts basements from two archaeological layers.[2] Radiocarbon dating yielded 17,760 ± 150 BP (GrN-1959) and 18,900 ± 100 (GrN-1783) ages for the site's upper and lower layer, respectively. The presence of pebble raw material and the characters of the lithic tools led to state that the two archaeological levels yielded the same type of industry. [3]

In the Hungarian classification schema of the Upper Palaeolithic, Ságvár and the other pebble raw material user assemblages have been separately handled from other Gravettian sites.[4] Contrary to this foreign scholars often interpreted these assemblages together with the non pebble industries on the basis of radiocarbon dates.[5]

After several modifications in the division of the Upper Palaeolithic Hungary,[6] today the site of Ságvár is eponymous for the Ságvárian culture, dated to between 20 and 17 kyears BP.[7] The Ságvárian is characterized by relatively permanent habitations, pebble raw material use, short blades, flakes and atypical tools made on them.[8] The tool kit includes end-scrapers, burins, splintered tools and a relatively small amount of typical Gravettian artifacts such as backed bladelets and Gravette points.

The aim of this study is to observe principals of the lithic raw material use at Ságvár site. The question what is aimed to be answered is that does the initial form of the raw material predetermine the product composition and the methods of knapping? In order to approach the answer present analysis compares the sizes of the products and their ratio within the raw material types. The products analyzed in this study are:

- Flake: term for a simple, non-laminar removal of the knapping process, with various shape and size.[9]

- Laminar product: technology studies often distinguish between large and small sized laminar products with the terms of blade or bladelet.[10]

[1] LACZKÓ 1929.
[2] LACZKÓ et al. 1930; CSALOGOVITS et al. 1931; GALLUS 1936; GÁBORI–GÁBORI 1957; GÁBORI 1959; 1964a; 1965; VÖRÖS 1982.
[3] GÁBORINÉ 1960; VOGEL–WATERBOLK 1964.
[4] GÁBORI 1964a, 39, 61; GÁBORI 1964b; 1969; GÁBORI–GÁBORI 1957, 19; GÁBORI 1969.
[5] KOZŁOWSKI 1979 ; SVOBODA– NOVÁK 2004.
[6] GÁBORI 1989, 135; 1990, 105; GÁBORI-CSÁNK 1978; DOBOSI–VÖRÖS 1987.
[7] TOLNAI-DOBOSI 2001.
[8] TOLNAI-DOBOSI 2001; DOBOSI 2009.
[9] INIZAN et al. 1995.
[10] INIZAN et al. 1995.

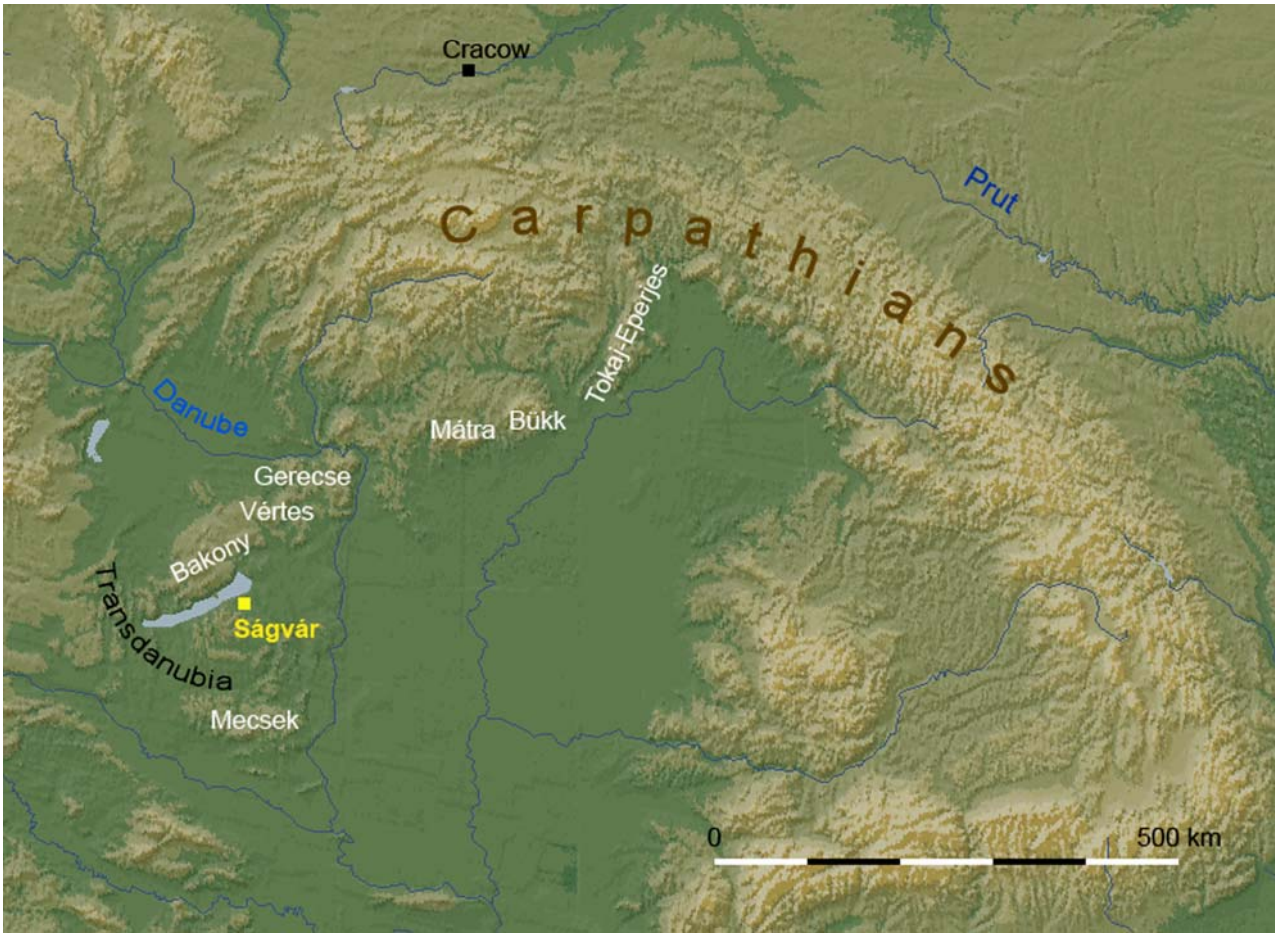

Fig. 1.: Location of Ságvár

1. ábra: Ságvár elhelyezkedése

Herein, this distinction is not made and every elongated removal whose length is at least twice the width and longitudinal dorsal ridges cover them are called laminar products or laminars.

- Debris: these are fragmented items from several sides, lacking clear features of flake or laminar fragments. In addition, this group includes waste material from the tool production such as burin spalls.[11]

- Core: a raw material block, from which flakes or laminars were removed in order to produce blanks.[12]

- Core trimming element (CTE): this category contains such elements of the knapping procedure which were removed after certain preparations and products of core rejuvenation. These are the crest blades, neo-crest blades, core tablets and rejuvenating flakes, core edge removals.[13]

- Tool: each product that bears retouch or modification along its edge or edges. A tool can be made on any product of the knapping process: flake, laminar, core or debris.[14]

Lithic raw materials at Ságvár

Present analysis includes solely the assemblage of the 1957-1959 excavations. This is due to that this series of excavations are the best documented among all. Lithic refitting on finds from this excavation period assembled several cores whose removals were recovered from both the upper and the lower layers.[15] This result allowed deducing

[11] INIZAN et al. 1995.
[12] INIZAN et al. 1995.
[13] INIZAN et al. 1995.
[14] INIZAN et al. 1995.
[15] LENGYEL in press

that the lithic assemblages of the two layers are the products of the same knapping activity. Thus in the following analysis finds of the upper and the lower layers are treated together.

Lithic raw materials at the site derived from various sources.[16] Largest portion of lithics originates north of the site, the northern part of the Transdanubia, in Mts. Bakony, Gerecse, and Vértes. These raw materials weight 17412 g. Rocks of limnic origin, making up almost one-third of the assemblage, 7218 g, derive from yet unknown sources. Lithics from east of the Danube are also present in the assemblage, although with low frequencies and a moderate weight (altogether 1498 g). A small portion of the raw materials has an origin of Mecsek Mts. in the southern Transdanubia in, 640 g. Lithics from the largest distance are flints of river Prut region and the Jurassic formations near Cracow in Southern Poland. Their number is the smallest in the assemblage, and their weight is altogether 46 g.

The raw materials of the entire lithic assemblage emerge in three different forms. Pebble form is characterized by worn smooth cortex. The shape is generally rounded but it can be often irregular or angular. In this study each rock shaped in fluvial environment is called pebble. Their size in the assemblage does not exceed 6 cm.

Block is a general term that covers rocks which are not pebbles, have no pebble cortex and the size is larger than pebble. The shape is various, ranging from nodule to irregular. The largest portion of raw material in the assemblage was collected in forms of blocks. The largest piece of this raw material is 10,8 cm.

Tabular form is characterized by two parallel sides which are cortical and enclose the siliceous rock. Its thickness in the assemblage ranges between 2 and 8 cm. Their largest size is 6,4 cm.

Products of pebble raw material (*Table 1****.)***

Cores and core trimming elements

Cores make up 9,7% of this assemblage. A total of 60,5% of them are laminar and the rest are flake cores. Core trimming elements make up 1,8% of the assemblage and consists of core striking platform rejuvenating flakes, crest and neo crest laminar products from the laminar debitage.

[16] LENGYEL 2009.

Table 1.: Products of pebble raw materials

1. táblázat: Pattintott termékek megoszlása a kavics nyersanyagokon belül

	Frequency	Percent
flake	377	41,1
laminar	119	13,0
debris	316	34,4
flake core	36	3,9
laminar core	53	5,8
flake CTE	4	0,4
laminar CTE	13	1,4
Total	918	100,0

Neo crest products are the most numerous, 52,9% of this group, and the remaining 47,1% is almost equally shared among the remainder types.

Flakes

Flakes make up 41,1% of this raw material. Their size ranges between 8,5 and 51,5 mm. Their mean length is 24,7 mm. More than fifty percent of the flakes fall between 18 and 34 mm.

Laminar products

Laminar products make up 13% of this raw material. Their size ranges between 3,8 and 66,5 mm. The mean length is 28,8. More than fifty percent of the laminars fall between 18 and 35 mm.

Tools

Most of the tools were made on flakes. This is 15,4% of the flake assemblage. The mean length of the flake tools is 28,7 mm and their size range between 15,7 and 44,3 mm.

The majority of the flake tools are burins, retouched tools and splintered pieces.

Laminar tools are mostly retouched pieces and burins. They make up 16,8% of the total laminar assemblage. Their mean length is 25,7 mm and their size ranges between 13,7 and 48,7 mm.

Debris is used for splintered tools, notches and denticulates and burins in most cases. The mean length of these tools is 30,9 mm and their size ranges between 18,9 and 62 mm.

From CTEs, only the laminar form was used. The mean length is 31,2 mm and their size ranges between 30,5 and 32 mm.

Table 2.: Tool types of pebble raw material

2. táblázat: Eszköztípusok megoszlása a kavics nyersanyagon belül

	flake	lami-nar	deb-ris	flake core	lami-nar core	lami-nar CTE	Total
backed	0	3	0	0	0	0	3
borer	2	1	0	0	0	0	3
burin	17	4	5	0	0	1	27
chisel	7	1	1	1	0	0	10
chopping tool	0	0	0	1	0	0	1
combined	1	0	0	0	0	0	1
endscraper	5	2	1	0	0	0	8
notched & denticulated	3	1	6	0	0	1	11
retouched	12	7	3	0	0	0	22
splintered	11	1	6	0	1	0	19
Total	58	20	22	2	1	2	105

Flake and laminar cores were used also for shaping tools. A chisel and a chopping tool were made on flake cores with length of 27,4 and 38,2 mm (mean length is 32,8 mm).

The laminar core, 20 mm large, is a splintered tool.

Products of block raw material (*Table 3.****)***

Cores and core trimming elements

A total of 110 cores belong to this type of raw material, making up 7,7% of the assemblage. Larger part of them were used for producing flakes (63%) and the remainders are remnants of laminar debitage.

Core trimming elements, 2,7% of the assemblage, consists of core striking platform rejuvenating flakes, core edge removals, crest and neo crest laminar products from the laminar debitage. Core striking platform rejuvenating flakes are the most numerous, 48,8% of this group, and the remaining 51,2% is almost equally shared among the remainder types.

Table 3.: Products of block raw materials

3. táblázat: Pattintott termékek megoszlása a blokk nyersanyagokon belül

	Frequency	Percent
flake	716	45,1
laminar	230	14,5
debris	476	30,0
flake core	77	4,8
laminar core	46	2,9
flake CTE	21	1,3
laminar CTE	22	1,4
Total	1588	100,0

Flakes

Flakes make up 45,1% of this raw material. Their size ranges between 3,2 and 73,5 mm. The mean length is 27,7 mm. More than fifty percent of the flakes fall between 20 and 40 mm.

Laminar products

Laminar products make up 14,5% of this raw material. Their size ranges between 10,7 and 62,9 mm with a mean length of 31,2. More than fifty percent of the laminars fall between 20 and 45 mm.

Tools

Most common type of product in the tool kit is the flake. A total of 13% of the flakes are tools. Their mean length is 29,9 mm and their size ranges between 10,8 and 73,7 mm. The most common tool type is the endscraper. Burins, splintered tools, notches and denticulates and retouched pieces are present in significant frequency, as well.

Laminar products are less common in the tool kit. A total of 17,8% of the laminars are tools. Their mean length is 29,8 mm and their sizes range between 10,3 and 78,5 mm. These specimens are simply retouched on one of their edges in most cases.

Debris can also be found in the toolkit, although infrequently. Tool types made on debris are burins, splintered tools, scrapers, notches and denticulates. Their mean length is 33,5 mm and their size ranges between 21,1 and 52,2 mm.

Table 4.: Tool types of block raw material

4. táblázat: Eszköztípusok megoszlása a blokk nyersanyagon belül

	flake	laminar	debris	laminar core	flake CTE	laminar CTE	Total
backed	0	5	0	0	0	0	5
borer	2	0	1	0	0	0	3
burin	18	11	4	1	1	0	35
chisel	1	0	0	0	1	0	2
combined	1	0	0	0	0	1	2
endscraper	29	4	1	3	1	0	38
notched & denticulated	12	4	3	0	0	1	20
retouched	10	15	3	0	1	4	33
sidescraper	2	0	0	0	0	0	2
splintered	14	1	2	2	0	1	20
truncated	4	1	0	0	0	0	5
Total	93	41	14	6	4	7	165

CTEs of flake and laminar forms were also used for tools. These are included within the most frequent tool types of the regular flake and laminar tools. The mean length of laminar forms is 35,9 mm and their size ranges between 24,6 and 59,4 mm. The only flake form is 29,8 mm large.

Laminar cores were also used for tools. The mean length is 28,8 mm and their size ranges between 22 and 33,7 mm. These are end scrapers, splintered tools and a burin.

Products of tabular raw material (*Table 5.)*

Cores and core trimming elements

Cores make up 11,2% of the assemblage. Flake cores dominate this assemblage with a ratio of 53,3%. Core trimming elements (2,4%), consists of core striking platform rejuvenating flakes, core edge debordant removals, crest and neo crest laminar products from the laminar debitage. Neo crest blades are the most numerous, 42,8% of this group, and the remaining 57,2% is almost equally shared among the remainder types.

Table 5.: Products of tabular raw materials

5. táblázat: Pattintott termékek megoszlása a pados nyersanyagokon belül

	Frequency	Percent
flake	115	40,2
laminar	57	19,9
debris	75	26,2
flake core	18	6,3
laminar core	14	4,9
flake CTE	2	,7
laminar CTE	5	1,7
Total	286	100,0

Flakes

Flakes make up 40,2% of this raw material. Their size ranges between 9,2 and 49,2 mm. The mean length is 21,7 mm. More than fifty percent of the flakes fall between 15 and 25 mm.

Laminar products

Laminar products make up 19,9% of this raw material. Their size ranges between 14,5 and 50 mm. The mean length is 28,7. More than fifty percent of the laminars fall between 20 and 40 mm.

Tools

Most tools were made of flakes. A total of 13% of the flakes are tools. The mean length is 26,9 mm and their size ranges between 10,6 and 41,5 mm. Burin is the most common type.

A total of 19,3% of the laminars are tools. The mean length is 25,2 mm and their size ranges between 14,5 and 50 mm. Laminar tools are end scrapers and retouched items in most of the cases.

Debris are splintered tools. The mean length is 21,2 mm and their size ranges between 12,5 and 31,5 mm.

Of the core trimming elements two end scrapers were made on a flake and a blade and a blade was retouched. The mean length of the laminar form is 39 mm and their size ranges between 36,3 and 41,8 mm. The only flake CTE is 29,8 mm.

Table 6.: Tool types of tabular raw material

6. táblázat: Eszköztípusok megoszlása a pados nyersanyagon belül

	flake	lami-nar	deb-ris	flake core	flake CTE	lami-nar CTE	Total
burin	5	1	2	1	0	0	9
chisel	1	1	0	0	0	0	2
combined	0	1	0	0	0	0	1
endscraper	2	3	0	0	1	1	7
notched & denticulated	1	2	1	0	0	0	4
retouched	2	3	0	0	0	1	6
splintered	3	0	5	1	0	0	9
truncated	1	0	0	0	0	0	1
Total	15	11	8	2	1	2	39

Flake cores were also used for tools. The mean length is 27,8 mm and their size ranges between 27,4 and 38,2 mm. These are a burin and a splintered tool.

Discussion

Generally, the same types of lithic products constitute the three raw material assemblages and the ratios of the various products hardly differ. For example, the largest percent of debris is recorded in the assemblage of pebble form material, 34,4%, while this percent is 26,2 at the tabular material. The highest laminar frequency was observed at the later raw material group and the lowest one in the pebble. This is not coincident with that the largest percent of laminar cores is counted in the pebble type raw material.

The sizes of the flakes and laminars are the largest among block raw material products, while the mean length values of tabular and pebble products are very similar. The largest percent of flakes for tools were used from pebbles while that of the laminars from tabular material.

The largest laminar tools were also made of block material. It is of interest that the mean length of the laminar CTE tools is always over that of the laminar tools. The mean length of flake tools is always larger than that of the blanks, while the mean length of regular laminar tools is always smaller than that of the blanks.

Table 7.: Products of the three types of raw materials

7. táblázat: A pattintott termékek megoszlása a három nyersanyagtípus szerint

	form	pebble	block	tabular	Total
flake	Count	377	716	115	1208
	% within form	41,1%	45,1%	40,2%	43,3%
laminar	Count	119	230	57	406
	% within form	13,0%	14,5%	19,9%	14,5%
debris	Count	316	476	75	867
	% within form	34,4%	30,0%	26,2%	31,1%
flake core	Count	36	77	18	131
	% within form	3,9%	4,8%	6,3%	4,7%
laminar core	Count	53	46	14	113
	% within form	5,8%	2,9%	4,9%	4,0%
flake CTE	Count	4	21	2	27
	% within form	,4%	1,3%	,7%	1,0%
laminar CTE	Count	13	22	5	40
	% within form	1,4%	1,4%	1,7%	1,4%
Total	Count	918	1588	286	2792
	% within form	100,0 %	100,0 %	100,0 %	100,0 %

Comparing the tool types by the type of the raw material, also insignificant differences are observable. The list of types is the shortest in the case of tabular material. Besides this, the tool types generally are present in similar percentages in every raw material. Minor difference can be seen with the endscrapers, which were made of block material in the highest frequency.

Conclusion

The use of the different types of raw materials at the Upper Palaeolithic site of Ságvár is quite uniform. Three types of forms of lithic raw materials were processed: block, pebble and tabular pieces.

Table 8.: Tool types of the three raw material types

8. táblázat: Eszköztípusok megoszlása a három nyersanyagtípus szerint

	form	pebble	block	tabular	Total
backed	Count	3	5	0	8
	% within form	2,9%	3,0%	0%	2,6%
borer	Count	3	3	0	6
	% within form	2,9%	1,8%	0%	1,9%
burin	Count	27	35	9	71
	% within form	25,7%	21,2%	23,1%	23,0%
chisel	Count	10	2	2	14
	% within form	9,5%	1,2%	5,1%	4,5%
chopping tool	Count	1	0	0	1
	% within form	1,0%	0%	0%	,3%
combined	Count	1	2	1	4
	% within form	1,0%	1,2%	2,6%	1,3%
endscraper	Count	8	38	7	53
	% within form	7,6%	23,0%	17,9%	17,2%
notched & denticulated	Count	11	20	4	35
	% within form	10,5%	12,1%	10,3%	11,3%
retouched	Count	22	33	6	61
	% within form	21,0%	20,0%	15,4%	19,7%
sidescraper	Count	0	2	0	2
	% within form	0%	1,2%	0%	,6%
splintered	Count	19	20	9	48
	% within form	18,1%	12,1%	23,1%	15,5%
truncated	Count	0	5	1	6
	% within form	0%	3,0%	2,6%	1,9%
Total	Count	105	165	39	309
	% within form	100,0 %	100,0 %	100,0 %	100,0 %

Although significant difference is observed in the weights of the raw materials, the processing and the product management is very similar.

Basic technological feature is that laminars and flakes were produced by their own debitage processes on each raw material type. In each case, remnants of flake production are more numerous than those of laminar production. Although pebble raw material exploitation resulted in more laminar cores than flake cores, according to the frequency of pebble flakes shaped into tools and the ratio of flakes within the group of pebble raw material pieces, this raw material was used to produce mostly flakes as well as the other two. In laminar production, the tabular material was used with the highest efficiency while pebbles yielded the lowest percentage of laminar products. In spite of this, the laminar production was performed the same way in all cases. The core configuration rarely involved cresting and in the course of the production the reshaping of the debitage surface and the rejuvenation of the striking platform was rather performed. This means that regardless to the initial form and size of the raw material, the cores were maintained for longer exploitation to obtain the same products.

The tool kit consists mainly of flakes. This explains why the remnants of flake debitage are more common in the assemblage than the laminar debitage. The tool types are very similar from each type of raw material. Regarding the size of the tools, it is no surprise that the largest tools were made of block material which originally is larger than the pebble and tabular. The tendency in blank selection for tools in the case of each raw material is that from the flakes the larger and from the laminars the smaller specimens were selected.

These features of the lithic assemblage show that even though the initial form and size of the raw materials are divers, the end products and the method which obtained those are basically the same.

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…A KAVICS, A BLOKK ÉS PAD. KŐ-NYERSANYAG FELHASZNÁLÁS SÁGVÁR, LYUKAS-DOMB FELSŐ PALEOLIT TELEPEN

LENGYEL GYÖRGY

Kulcsszavak: kő-nyersanyag, felső paleolitikum, Ságvárien.

Ságvár – Lyukas-domb lelőhely a Balaton délkeleti partjától 10 km-re Délre található. A lelőhely az 1920-as évek végén vált ismertté Laczkó Dezső munkájának köszönhetően. Laczkó felfedezése után 1930 és 1959 között több ásatás folyt a területen, melyek kőeszközöket, állatcsontokat, tűzhelyeket és lakóépítmények földbe mélyített alapjait tárták fel. A régészeti leletek és jelenségek löszbe ágyazódva kerültek elő, néhol szórványosan, helyenként egy, kettő, és nagyon ritkán három egymás fölötti szintben. A kőeszközök túlnyomó része kisméretű. Közöttük jellemzőek az apró méretű pengék, melyek egyik éle meredeken retusált, valamint a szilánkokból és rövid pengékből készült vakarók és vésőeszközök. Az állatcsontok nagy része rénszarvas, kisebb arányban pedig ló. A rénszarvas agancsok egy részéből eszközöket is készítettek, melyek között egy átfúrt darab a legismertebb. Az elmúlt 30 évben a lelőhely a Ságvári (Ságvárien) régészeti kultúra névadója. A radiokarbon mérések alapján a legfelső szintből előkerült leletek megközelítőleg 18 ezer évesek, míg az alsó réteg közel 19 ezer évvel ezelőttre datálható.

A Ságvárien kulturális jellemzői között szerepel, hogy kőeszközeinek nagy részét készítette kavics nyersanyagból, míg a magyarországi Gravetti másik két csoportja, az idős pengés Gravetti és az Epigravetti, alig használta ezt a típusú nyersanyagot. A ságvári leletegyüttesben a kavics formájú nyersanyagokat kerekded vagy sarkas formák jellemzik. A kavicson kívül két másik típusú nyersanyagot lehet megkülönböztetni. Az egyik a blokk nyersanyag, ami minden olyan pattintható követ magába foglal, ami nem felel meg a kavics kritériumainak. Alakja lehet szabályos és szabálytalan, éppen ezért ide tartoznak a tűzkő gumók is. Rendszerint méretük nagyobb, mint a kavicsé. A harmadik típus a pad formájában gyűjthető nyersanyag. Ennek jellemzője, hogy párhuzamos oldalai vannak, ezek kéreggel fedettek, és közrezárják a pattintásra alkalmas kőzetet.

A leletanyag legnagyobb mennyiségben a blokk formájú nyersanyagból áll. Ezt követi a kavics, majd a pados formájú. Ezeket a nyersanyagokat elsősorban szilánkok és másodsorban pengék előállítására használták. A nyersanyag kiinduló formájától eltekintve, mindegyiken ugyanazon pattintási lépések nyomai fedezhetők fel. Mindháromból hasonló arányban készültek pengék és szilánkok. Ugyan ez a szám a legkisebb a pados kovakőzeteknél. A kiinduló nyersanyag méreténél fogva, a blokk nyersanyagokból készültek a legnagyobb eszközök, valamint elenyésző fölénnyel ennek a nyersanyagnak a szilánkjait használták leginkább vakarók készítésére. Mindent összevetve megállapítható, hogy a megfigyelt kis fokú eltérések ellenére, mindhárom nyersanyagtípust ugyanolyan módszerekkel dolgozták fel és ugyanolyan módon használták fel az eszközkészítésben, annak ellenére, hogy a pattintás előtti méretük és formájuk különböző.