

A HAUNTING GHOST. NOTES FOR AN EAST EUROPEAN HISTORY OF MORPHOLOGY

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O STAFIE CARE NE BÂNTUIE. NOTE PRIVIND O ISTORIE EST-EUROPEANĂ A MORFOLOGIEI

Ultimul sfert al veacului trecut a adus arheologiei țărilor (pe atunci) est-europene primele contribuții semnificative pentru morfologia ceramică (Rusanova 1976, Parczewski 1993, Fusek 1994). Se încerca, în esență, a schimba limba de lemn a descrierilor arheologice (gen „vas sac”, sau „formă pântecoasă”) cu limbajul mai rece al cifrelor. Toate sistemele la care ne referim au două componente majore: un sistem morfologic pentru tratarea formelor întregi și un sistem pentru tratarea jumătăților superioare (mai corect — *profilelor* superioare). Din nefericire, prima componentă a sistemului nu avea nici o legătură cu a doua, ceea ce-i scădea mult valoarea; încercarea exprima însă nevoia de a opera, cât mai științific cu puțință, și cu formele fragmentare.

Multe lucruri se pot reproșa acestor prime sisteme de morfologie ceramică; cel mai grav însă era ceea ce se întâmpla cu cifrele după prelevarea datelor brute, respectiv modul de constituire a „grupelor morfologice”. Nu *gruparea* formelor conta, așa cum orice arheolog ar putea crede, ci încadrarea lor arbitrară în entități separate de niște linii imaginare, trasate de arheolog de la bun început, și poreclite apoi „cultura Korceak, cultura Penkovka, cultura Kolocin”. Modelul teoretic odată găsit (nici nu era greu; cele trei culturi „de bază” care preced lumea slavă sunt foarte diferite), a fost aplicat cu dezinvoltură oriunde în Europa, iar oala Korceak avea un succes nemărginit (în țările socialiste).

Micul studiu de mai jos sugerează că eroarea (dacă a existat una) nu se regăsește la interpretarea cifrelor, ci la înțelegerea greșită a noțiunii de *cultură*; pe fond, culturile nu sunt *exclusive*, iar conținutul unei culturi nu va separa niciodată net o cultură de altă cultură; drept consecință, caracteristici constatate pe o cultură sau alta pot fie să-i aparțină exclusiv, fie să le împărtășească cu alte culturi, situație în care mai rămâne de stabilit cine a copiat de la cine.

Motivul real pentru care un sistem morfologic cu atât de multe probleme, precum cel propus de Rusanova, să fi avut atâta trecere în mediile științifice, este că el instrumenta, în aparență „științific”, o noțiune istorică strâns legată de geneza popoarelor slave: migrația. Rusanova „ne arăta” cum oala Korceak s-a plimbat prin Europa (de *est*) precum tancurile sovietice. Sistemul era credibil pentru că nu spunea nimic nou, „confirmând” ceea ce oamenii de știință deja „știau”.

Dincolo de asemenea considerente istorice, în condițiile de astăzi, când mizele naționale pe care arheologia le joacă sunt în scădere, aceste sisteme de morfologie pot fi curățate de zgură și reutilizate în modalități constructive și științifice, *central-europene*.

Cuvinte cheie: morfologie ceramică, măsurători, proporții, tipologie, istoria arheologiei.

Keywords: pottery, morphology, measurements, ratios, typology, history of archaeology

Saying that "a Ghost is haunting Europe" Marx was right, albeit not materialistic. A kind of *Genius locii*, sometimes dangerous, sometimes just

studious, governs our life and energies, in a complete lack of consideration for personality. Similar discoveries arise almost at the same time on different meridians and not the espionage is responsible, at least not in archaeology (most of the time...). A similar status of mind and similar problems tend to germinate similar answers, which would be fair enough in a very material world. I don't dare to say whether It's a good or a malicious one. I know just that It is there.

The Ghost I'm talking about is called *Eastern Europe*. Some of us are born there and our passports change the citizenship, not the geography of the spirit. So much scholastic awareness like pot's morphology should not be taken in a political approach; but the Ghost doesn't care about politics or science... Just governs.

I am writing these lines because it happened several times to make critical references of some East European attempts to work with numbers for pots' morphology¹, but never took the time (and space...) to develop the subject. I wouldn't like to take here the charge of raging war without a legitimate *casus belli*.

These notes were first conceived in 2005, as a part of a wider study (second chapter from ten), published on Internet, in Romanian (Teodor 2005), but virtually unknown even in Romania. Unfortunately, this is only something on how things should not be done.

The need for a numerical survey of some descriptive expressions – “tall shape”, “large belly”, “elevated shoulder” – is beyond any doubt for anyone who ever tried to understand something from Early Middle Age pottery²; differences in personal attitude

are to be ascribed just for how long the shadow is when it comes to math and trigonometry. The temptation to change intuition data for numbers has nothing in common – yet – with allegations to a scientific status for archaeology, but with humble intention to stock data in a comprehensible way. The developing skills in planning and managing databases potentially bring some facilities, as automatic calculations, but, virtually, promise brand new research technologies.

The criticism targeting researchers from more or less former generations will not be rendered as “demolition”; try better – “reconstruction”. At the same time, I am stressing the idea that the curriculum proposed by universities is old fashioned, with the most polite expression I was able to find; the young researchers have to leave the scholastic trenches and face the fear in the open field of technology.

The presentation that comes next is not due to some peripatetic tour and should not be expected as a bibliographic market. The paper aims to expose only the most significant challenges in the matter, mostly connected with the so called “Slavic pottery”³, leaving to the reader the pleasure and the responsibility of judging whether the numeric morphology is of any good or it is a dead end.

Greek and Roman pottery is relatively standardized, with a transparent functionality (as we like to believe). More, the heft of pottery in archaeological judgment is much lower in classic archaeology, as well as for the medieval archaeology. The concern for an accurate description and classification of pottery is fatally connected with pre- and proto-history studies. It wouldn't be uninteresting to know that British archaeology considers the migrations archaeology as a part of the proto-history archaeology.

³ Most of the archaeologists consider that handmade pottery from the sixth century and further is “Slavic”, that seems now rather an abuse, beginning with the name. I don't intend to develop the issue here; see Curta 2001, last chapter.

¹ Teodor 2008; Ioan Stanciu, Eugen S. Teodor – *Ceramica din nord-vestul României, din perioada migrației slave* (The pottery from North-western Romania in the time of Slavic migration), monograph under redaction, to be expected in 2009.

² The statement should be not translated for any field of archaeology. Obviously, the classic archaeology is less interested in such difficult experiences as long as the

1. Rusanova pattern

The earliest attempts to change shapes for figures is due to the Soviet researcher Irina Rusanova, in the '70s⁴. The morphologic criteria proposed to be focused upon, were six at all: two heights (overall height, noted H and the lower height, noted H1 – see Figure 1) and four diameters (D1 – rim, D2 – neck, D3 – “maximum”⁵, D4 – bottom). Not the absolute dimensions matter, but the proportions, i.e. reports between two criteria, and she took four of them in charge: H1/H, D3/H, D4/D2 and D3/H1⁶. These proportions were rendered on a scattered graph, as in Figure 2. The clear benefit of the procedure is that within one single graph one can already control four of the six morphological criteria. The weaknesses are also important, yet not as much visible. The worst is the coarse control against the shape; there is nothing about the foot, if any; also, there is nothing to express some relevant angles, for instance the angle of the rim. These are several quite critical “details”, as Rusanova learned herself trying to produce the entire chronology of the North Pontic area from 9 “standard sections” (the upper half of the shape; see Figure 4).

The real trouble with Rusanova system was not about the number of criteria, but the way in which the “morphological groups” were driven. Accustomed with *order*, the Soviet researcher took the pen and the ruler and drew some vertical and horizontal lines

⁴ Rusanova 1973; Rusanova 1976. In a relatively recent book, Florin Curta (2001, chapter 6) made a harsh criticism, partially correct, from a partisan position (the pottery *can't be culturally expressive*, at least not the shape, captive to the function). In the same place we learn that Rusanova had a precursor in Vladimir Genning.

⁵ “Maximum” diameter is to be encountered in archaeological literature from virtual any country, although it is not always a maximum; „medial (or middle) diameter” is to be preferred.

⁶ The sign *slash* (/) will be read “divided with”, and the asterisk (*) will be read “multiplied with” in contexts that supposes calculations.

in the graphs area, without any concern about the scattering patterns, in other words she was drawing *groups* disregarding the *grouping vectors*, disregarding that dispersal patterns are ellipsoidal, not rectangular, and, finally, that the trousers bought for Ivan could not fit Karel (see fig 3). The Korchak culture, hereby invented, with the ruler, was gracious exported in brotherhood countries, “proving without any doubt” that the Slavic forefathers were spread almost everywhere. The trick worked and the communist archaeologists rushed themselves “to find The analogy”.

Which was the trick? The poor criteria, first of all. Taking Rusanova’s theory for its face value, almost anything could be Korchak culture; for instance Navajo pottery, or American rocket Apollo. Or maybe Kolotchin culture?... Secondly – a poor understanding of *culture* itself. Human cultures are not only different; they are also *similar*, because they are not Martians. Therefore the characters (here: proportions) noted for Korchak could be encountered elsewhere without inferring a Korchak origin (why not the other way around?). Of course, the trick worked out, as usual, because the folks were ready to see the wonder. The old but energetic theory of migration could push away people only from the East, isn't it?

In spite of any presumption of anti-Soviet feelings in occupied countries, the system proposed by Rusanova made cubs. Everybody understood that with six sticks one can't do a pottery shape, nor describe or classify, and tried to develop the system adding criteria or just dressing them better. But they were developing a modern car on the old carriage.

2. Parczewski development

The Polish professor Michał Parczewski worked in the 80's to his own morphological system, highly debt to the Soviet school. The criteria proposed were the

same six (H, H1, D1–D4), on which he added a personal contribution, the rim angle, that is the angle between the neck diameter and the maximum extension of the rim. Surprisingly, when comes to define the morphological groups, Parczewski uses only the “classic” descriptions like “none”, “vertical” or “bent” (see Table 1). The Polish researcher understood also that one has to note something about the foot of the shape, if any; he decided yet that numbers are not useful in the case, although this piece of information granted him to create subtypes (2.4 against all other 2.x, or 9.2 against 9.1). Worst, the scholar uses the absolute dimensions as typological resolving item, types 1-3, 5-7 and 10 being “averaged”, types 8-9 being “large”, 4 and 11 – “small”, that isn’t “morphology” anymore. I already criticize this kind of sloppy evaluation of the dimensions of the pots and I will restrain myself to a reference (Teodor 1998, 21-2, fig. 1).

We just touched here a hurting thumb. A single classification can’t be rationally done mixing number and para-number arguments (“large” and “small” items are arbitrarily delimited), the lip shape, the color of the slip, or sorting pebbles. Arguments about what should be *the most important* between shape, fabrication or function lead nowhere. We can manage – or computer does, if you prefer – as many taxonomies as necessary and it is no use to make a single one collecting all sorts of “considerations”; will came up with comparisons between the “tall man”, the “skinny huntress” and the “homeless cat”. The optimum is to build up each typology in its own way, followed by a complete inquiry about their fitting, to observe if there is any interesting correspondence.

Turning back to the commented work, there are lots of clumsy solutions. For instance, the type 1 is made by the simple fact that the rim is reverted inside, no matter the pot shape itself; that couldn’t be right, as long as for all other types the tramp cards are

the basic shape proportions (made in USSR). The motivation for such a resolution is simple, but has no connection with the basic morphological rules: all Slavic archaeological school believes that such type, with inverted rim, is to be considered, *a priori*, the most primitive, in a very chronological approach of the word. By consequence, all archaeological contexts that contain such items are dated, automatically, in the first half of the sixth century, if not earlier, and their distribution on the map illustrates the... “homeland” of all Slaves. Let me be very clear: I can’t exclude that such an evolution is plausible, in very general terms, for some territories; but a *demonstration* was never done, because the issue on stake is to be found, each time, both in the premises and in the conclusions! More, no contexts should be ever dated in the “base” of one rim!

Further more, if the rules inside some Parczewski types, generating the variants, seem clear enough, based on proportions, some types are defined by the approximation of words; in fact, those “lips” make the rule, again... Let’s take a look at Table 1 (the end of the paper):

As anyone can see, some proportions are used, some don’t; those used are not always used, and the overall impression is that somebody worked hard to put in figures some other person’s autocratic will. This is not morphology, this is not a system. It is just a will.

The only difference between type 2, variant 1, and type 3, variant 1, is not to be found in proportions, but in the most beloved *lip*. Comparing the drawings (Parczewski 1994, p. 34, 2.1. and p. 36, 3.1., especially *a* and *b*) one can feel how thin the ice is; the shapes are rather identical! The hope that maybe that wonderful lip will provide such a fine chronology is hazardous on the hand made pottery (hand made... drawn). It is ridiculous to believe that the occasional potters in the Slavic world, with a halftime job in robbery, had reached so high standards

to make a progress of just one degree on each five years. Such abuses made the deliciousness of the critics of morphological tools, and for good reasons.

Another funny thing in the Table 1 is that the proportion D3/H1 is redundant. The first criteria is H1/H, the second is D3/H, where H is the common denominator. In those two criteria the relationship between H1 and D3 is expressed as a report between the first number and the second number (or vice versa, in the case), *proportional* with the relationship D3/H1; the last looks science like, but is useless, just a forgotten rule from the general school.

I will not proceed further with a boring dissection, because there is nothing to learn. I will notice only that one can find here another classification for upper sections (Parczewski 1993, 48–9, 51–4), like in Rusanova model. There are seven types, lots of subtypes and uncountable variants, including “Slavic pans” and oven plates (not to confuse them finally). This classification is helpless: paraphrasing The Book, it’s easier to find matches in a supermarket, than to find a number in the phonebook... if one doesn’t know the name.

3. Fusek try

The research model provided by Gabriel Fusek (1994), from the Institute of Archaeology Nitra, inherits also the items from the Genning-Rusanova pattern. For example, there is an isolated typology for entire shapes, and another for upper sections; also – the option for a classification depending on “meridians” and “parallels”, not on natural elections. The face value of the Rusanova system applied to the pottery within Slovakia it is so obvious (fig. 5) that spares other comments. But Fusek is studying the Slovakian pottery and makes a Slovakian graph...

The Fusek system is more sophisticated and I do not intend a full

description; we need here just some basics. The typology of the full shapes is structured in four hierarchical levels, as follows:

Level 1: H2 = report between middle diameter and the height; in Rusanova terms – D3/H; the result is written down as Latin figures (why Latin? my computer is already mad...);

Level 2: A1 = report between lower height and all height (Rusanova H1/H); recorded as Arab number;

Level 3: A2 = report between neck and middle diameters (Rusanova D2/D3); recorded as minuscule letter;

Level 4: H1 = report between bottom and neck diameters (Rusanova D4/D2); recorded as capital letter.

Comes out a classification of I-1-a-A form, which is delivered through the next table of limits:

- I = H2 [0.7...0.85]
- II = H2 [0.85...1]
- III = H2 [1... 1.17647]⁷
- IV = H2 > 1.17647
- 1 = A1 > 0.68
- 2 = A1 [0.5...0.68]
- 3 = A1 < 0.5
- a = A2 < 0.8
- b = A2 > 0.8
- A = H1 > 0.8
- B = H1 [0.65...0.8]
- C = H1 [0.5...0.65]
- D = H1 < 0.5

⁷ 1.17647 (rounded!) it’s a “precise number” that could incite comments. I am going to explain: the first two classes are those for which the height is bigger than the middle diameter, and can be described as tall shapes (I), middle tall shapes (II). When the report D3/H goes above 1, Fusek decided himself to obverse the terms of calculation and to change the name of that criterion, from H2 to M2 (= H/D3), with values under 1, where M2 has, for class III, values between 0.85 and 1, and the IV below 0.85. I found that decision too wired, without any computing sense, and reversed the values for M2, back in values for H2 (low shapes as III and bowls as IV). The “precise number” 1.17647 is the reverted value for 0.85...

For someone who never tried extremely boring sports, the table above could be as interesting as a *haiku* in original. Those who like better a story, here it is: *I* are tall shapes, and *IV* means a bowl (in Fusek's vision!); *I* would have the middle diameter very high, whereas *3* would be, conversely, with a low belly; *b* is a baglike shape, but *a* could be nicely arched; *A* has a large bottom, almost the same as the neck, *D* – of course, quite the opposite, with a tiny bottom. Thankfully, for anything there is a story. Fortunately, for calculations the figures are better!

The advantages provided from such a morphologic system (this one it is!) should be obvious for any archaeologist. The trouble is that Fusek, which emerged this recording system, barely could be presented as an archaeologist really interested in *typology*, being more dedicated to order, as well as the predecessors. The detractors say that the archaeologist enforces the potter to do things never existed. That this is at least half true – it is an easy case, as easy as the Figure 6. On the first graph Fusek compares criteria H2 and H1; here one can see, for instance, that the group IIC is real, but IIB is fictional, because all elements fall in borderline or in other groups' orbits. In the second graph are taken the rest, A2 and A1; one can see here a huge "group" centered exactly on the crossroads of the proposed classification. How could ever express the *cultural* content? Anybody can play a ruler and establish than "tall men are over 1,75 m", and the rest are "short"; but even the mother can confuse the twins...

Let's take a look over the Figure 7, where rendered data from the Slovak shapes may be found, distributed in conformity with Fusek's instructions. It is obvious that the limits defining the "groups" are perfectly arbitrary; the worst situation is that from graph 7B, where the limit between "classes" B and C is exactly in the top of the results, splitting arbitrarily the most coherent group.

What is coming next? That the morphological groups have nothing to do with the notion of "group"?

With such research tools, made as fill-in-the-blanks, anyone can "prove" anything. Applying Fusek criteria on Roman stuff will pop up "Slovakian groups"⁸, because excepting some rare shapes, absent in the inventory from Nitra, most of it can be accommodated within the figures from the table above.

Beyond arguments, this kind of morphological system could have some advantages, as long as the traps are avoided. The main advantage is that those kinds of "groups" are frozen in figures, in meridians and parallels. Such "entities" (I can't get a real name), although without any relevance as "cultural electivity", can be used successfully to explain in which consist the differences between two areas. Take a look on the comparative table for the presence of Fusek groups in Slovakia and Ukraine (Korchak culture; see Table 2 on the end of the paper)⁹:

The conclusion can't be then one: the myth of Ukrainian origin for Slovak pottery in sixth century – defended recently by Fusek himself (Fusek, Záboiník 2003, 338) – can't be sustained any more, no matter the morphologic system used for evaluation. True, the compared lots are not of the same dimensions, the shapes from Slovakia (Fusek 1994) being three times more numerous; even so, the Ukrainian (Rusanova 1973) lack of the most representative "entities" from Slovakia (I1aC, I2aB, I2aC, II2aD, II2bC, III2bC), as well as the lack of Ukrainian "entities" in Slovakia (I1bB, I2bB) show "beyond any doubt" that any kind of derivation is absurd. One lucky fit (group II1bC) is just too few for pretended kinship.

⁸ The trick stroke again: I heard a colleague that he found, on his site, "the groups from Slovakia".

⁹ My own measurements, in Compass System, with data conversion for Fusek criteria. The Slovak archaeologist gives figures only for Slovak archaeological inventory.

The point I intended to make here is now a piece of cake: if we will avoid the temptation for ethnic labels (“Korchak”, “Praga”, “Romance”) and never forget that they are statistical “entities”, not cultural “groups”, this kind of “classification” can work and can be useful, due to the simplicity of the procedure. The “cultural” value of the system is null, as simply expresses Figure 8.

Finally, I should add that Fusek produced, as well as Rusanova and Parczewski, a parallel classification for the fragmentary pottery, namely for upper section. Unfortunately, those efforts are watched by dangers... Let’s see first the proposition:

The code for each group of this kind is composed from three numbers, as 123. The first (from 1 to 6) shows the rim angle (increasingly); the second – the height of the rim reported to the upper height (three classes, increasing); the third – difficult to represent without a drawing, can be described as “how arched is the upper body” (four classes; upper figures for better arched shape). For example, “223” means a relative vertical lip, short rim and a relatively arched body. We shouldn’t develop this here; better to take a look at Table 3. What we can see there is obvious: the two classifications are completely strangers one to each other.

The idea to have a tool working with partial shapes (upper sections) is useful; the accomplishment, for all three authors, is debatable, because if one can’t use the information acquired on the entire shapes to work with fragmentary ones, I can no longer see the application. The reason why the

attempt to compare volumes and sections is not recommended I already explained some years ago (Teodor 1998, 38); important archaeological works, like Davideni (Mitrea 2001), were published since then, with almost all sections devoid of diameters, perfectly useless for the morphologist. The absence of any kind of connection between entire shapes and fragments makes the archaeological inventory from non-developed diggings non-usable for analyses. This is why I tried to tackle the issue within Compass System (Teodor 1996).

4. Conclusions

In ‘70s the Soviet scholar Irina Rusanova emerged a morphological research tool for pottery. It was rather primitive, but proved to be powerful and influent. The system was based on too few criteria and the results were driven arbitrarily to political endings. The weakness of Rusanova’s system were obvious, at least for some (like Parczewski and Fusek), who tried to improve it, but they didn’t reach far.

Beyond criticism, it is to say that those people did more for developing modern methods than others, and their concern was not shared by other national schools, like Romanian, for instance.

In an international context in which the nationalistic fever is diminishing, such tools could be reactivated for the better, and before saying *good bye*, we should take the lesson. *Good bye* for Eastern Europe, *hello* for Central Europe.

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Table 1. Morphological types, Parczewski 1993

examples, first three groups

Note that the figures from proportions are expressed as percents.

type	variant	H1:H	D3:H	D3:H1	D3:D2	D4:D2	D1:D3	lip	height	sole
1								none	19-23	
2	1	79	80	102				vertical	18-30	
2	2	66-75	78-89	113-127				vertical		
2	3	64-72	90-96	128-143				vertical		no
2	4	68-70	93	133-138				vertical		yes
3	1	71-79	78-86	102-113	117			bent	19-30	
3	2	78	83	107	110			bent		
3	3	66-69	91-100	133-148	113-116			bent		
3	4	70-74	90-98	129-133	118-123			bent		
3	5	58	80	138	139			bent		
3	6	68-76	96-98	127-145	107			bent		

Table 2. Typological groups conforming Fusek system for Slovakia and Ukraina

group	Slovakia	Ukraina		group	Slovakia	Ukraina
I1aB	1			II2bC	7	
I1aC	5			II2bD	2	
I1bB		3		II3aB	1	
I1bC	2	4		II4bB	1	
I2aA	3			III1aB	1	
I2aB	10			III1bB		1
I2aC	9			III1bC	1	2
I2aD	1			III1bD	1	
I2aE	1			III2aB	1	
I2bB		3		III2aC	2	
I2bC	7	2		III2bB		1
I2bD	1			III2bC	6	
I3aA	1			III2bD	2	1
I3aB	1			IV0bB		1
I3aC	2			IV1bB	2	
I3bB	1			IV1bC		1
II1aC	2	1		IV2aA	1	
III1bB	1			IV2aB		1
III1bC	5	4		IV2aC	1	
III1bD	2	2		IV2bC	1	1
II2aB	6	1		IV2bD	1	
II2aC	12			V1bB	1	
II2aD	1			V1bC	1	
II2bB	3					

Table 3.

Comparison between morphological classifications
for the entire pots and fragmentary pots,
as recommended by Fusek 1994.
Shapes from Slovakia.

LEGEND:

column 1 = number of items; column 2 = entire shapes from the group...; 3 = the same shapes classified within section rules.

bold – matching classification; bold-italic – partially matched classification; normal – unmatched classification; irrelevant records have been deleted.

1	I1aC	112
1	I1aC	311
2	<i>I1aC</i>	<i>321</i>
1	I1aC	422
3	<i>I1bB</i>	<i>111</i>
2	<i>I1bC</i>	<i>211</i>
1	I1bC	221
1	I1bC	311
1	I1bC	321
1	I1bC	421
1	I2aA	222
1	I2aA	412
1	I2aA	433
1	I2aB	211
3	<i>I2aB</i>	<i>422</i>
3	<i>I2aB</i>	<i>512</i>
1	I2aC	212
1	I2aC	412

2	<i>I2aC</i>	<i>421</i>
4	<i>I2aC</i>	<i>422</i>
1	I2bB	114
1	I2bB	211
1	I2bB	411
1	I2bC	111
1	I2bC	211
1	I2bC	311
1	I2bC	411
2	<i>I2bC</i>	<i>421</i>
2	<i>IIIaC</i>	<i>222</i>
1	II1bC	211
1	II1bC	232
2	<i>IIIbC</i>	<i>321</i>
1	II1bC	332
2	<i>IIIbC</i>	<i>421</i>
2	<i>IIIbC</i>	<i>422</i>
1	II1bD	311

1	II1bD	321
1	II1bD	421
1	II1bD	522
1	II2aB	211
1	II2aB	212
2	<i>II2aB</i>	<i>221</i>
1	II2aB	311
1	II2aB	312
1	II2aC	312
2	<i>II2aC</i>	<i>322</i>
1	II2aC	412
2	<i>II2aC</i>	<i>421</i>
1	II2aC	512
1	II2bC	111
1	II2bC	311
1	II2bC	322
1	II2bC	411
1	II2bC	422

1	II2bC	521
2	<i>II2bD</i>	<i>321</i>
1	III1bC	231
1	III1bC	321
1	III1bC	332
2	<i>III2aC</i>	<i>222</i>
1	III2bC	411
2	<i>III2bC</i>	<i>421</i>
1	III2bC	422
1	III2bC	511
1	III2bC	521
1	III2bD	311
1	III2bD	312
1	III2bD	321
2	<i>IV1bB</i>	<i>111</i>
1	IV2aC	423
1	IV2bC	111
1	IV2bC	222

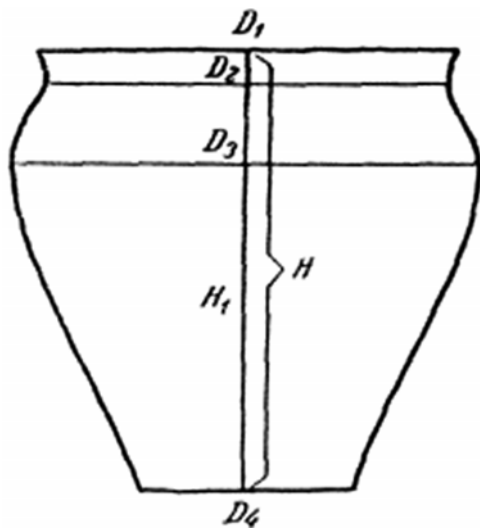
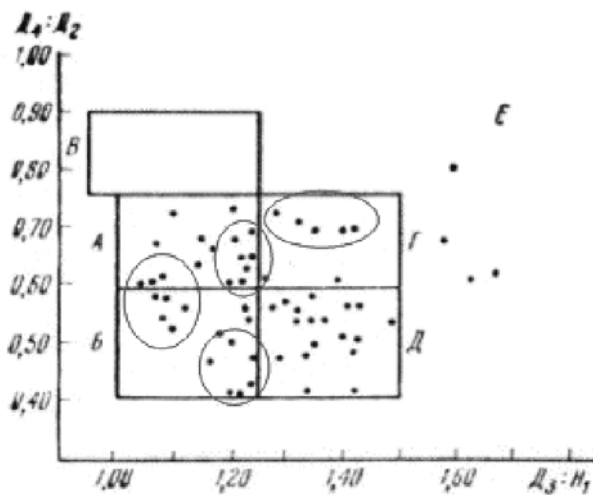
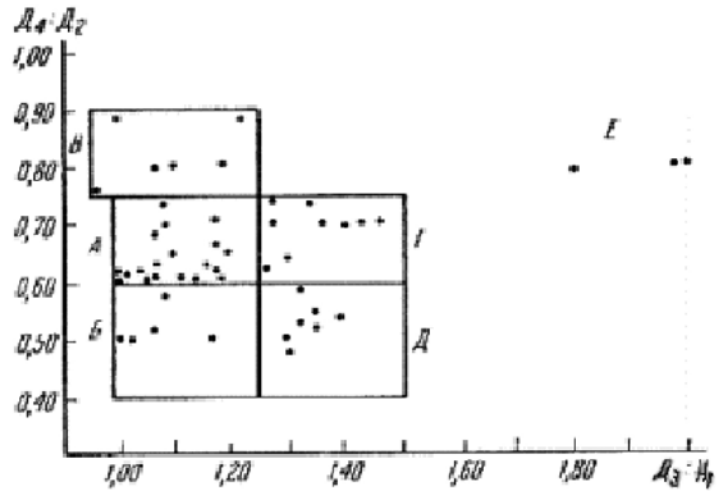


Figure 1.
Morphological criteria
after Rusanova 1976.

Figure 2.
Korchak pottery, after Rusanova (1976, fig. 5).
On X one finds the report D3/H1;
on Y one finds the report D4/D2.
There are (arbitrarily) delimited six groups.



Graph taken after Rusanova (1976, 121, fig. 41), meaning the process of classification of pottery from the former Tchecho-Slovakia following the rules for Korchak culture. The ellipses are added by me to suggest how the groups are added (just some examples).

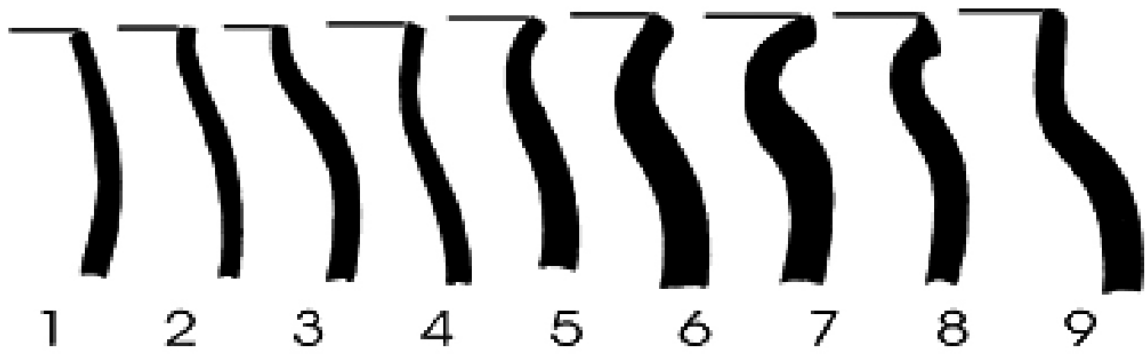
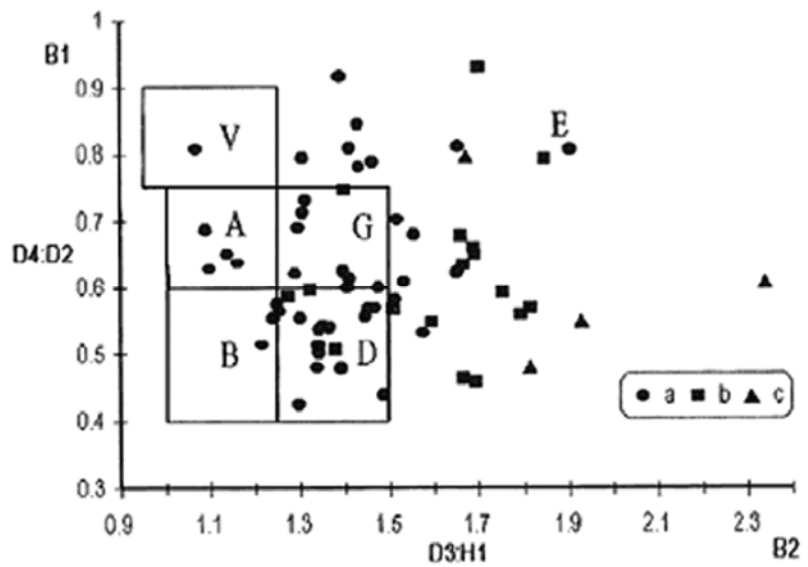


Figure 4.
The upper sections for the Korchak types (Rusanova 1976, 19, fig. 7). Types 1-3 are supposed to be the earlier, in the sixth century (mainly the first half).

Figure 5.
Slovak shapes on Ukrainian rules
(Fusek 1994, 25, fig. 10).



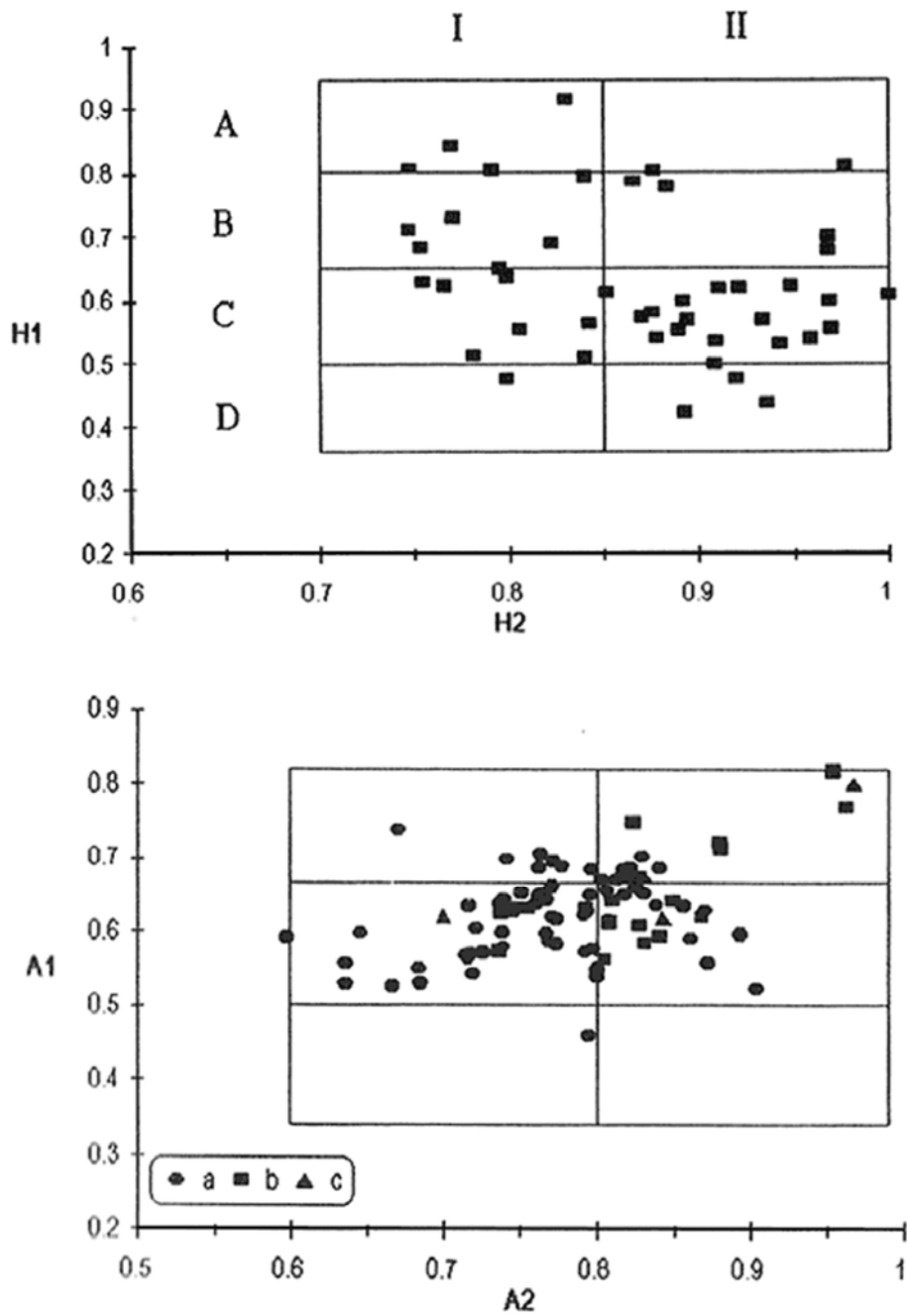


Figure 6.
Classification after Fusek rules and criteria
(H2 and H1 in the top; A2 and A1 for the bottom).
After Fusek 1994, 33, fig. 16, 18.

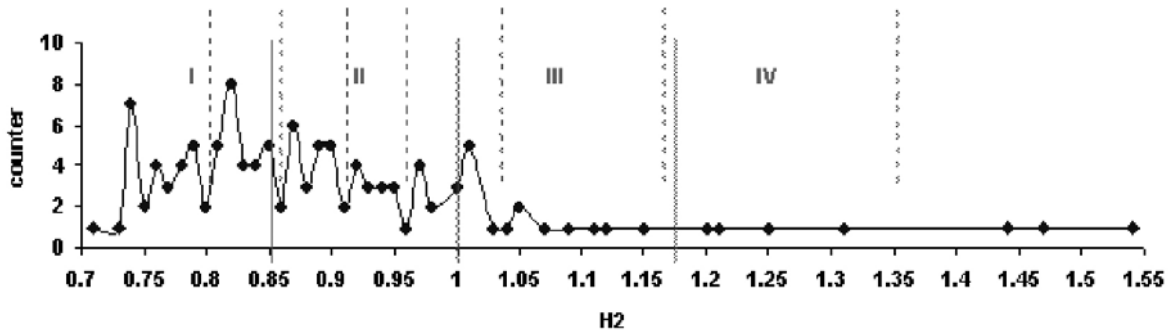


Fig. 7A. Pottery from Slovakia. Graph for H2.
Continous lines and Latin figures – Fusek project. Doted lines for a “natural” grouping.

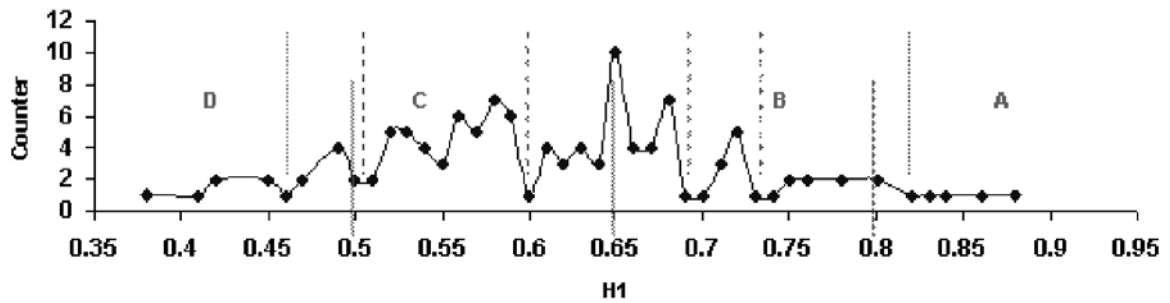


Fig. 7B. Graph H1 for pottery from Slovakia.
Lines as above.

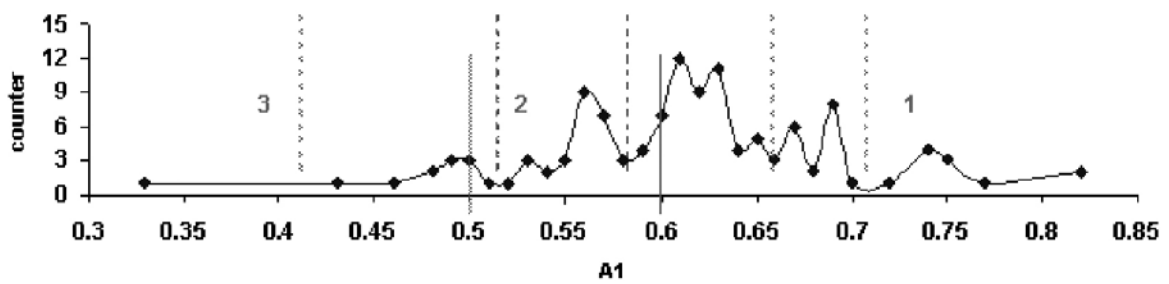


Fig. 7C. Graph A1 for pottery from Slovakia.
Lines as above.

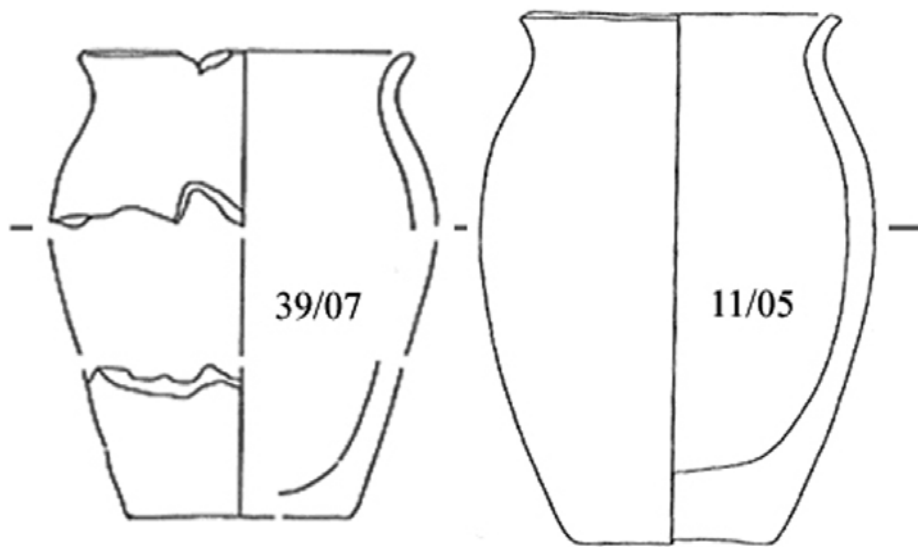


Figure 8A.
Two shapes
“alike”
(Fusek
group I3aC)

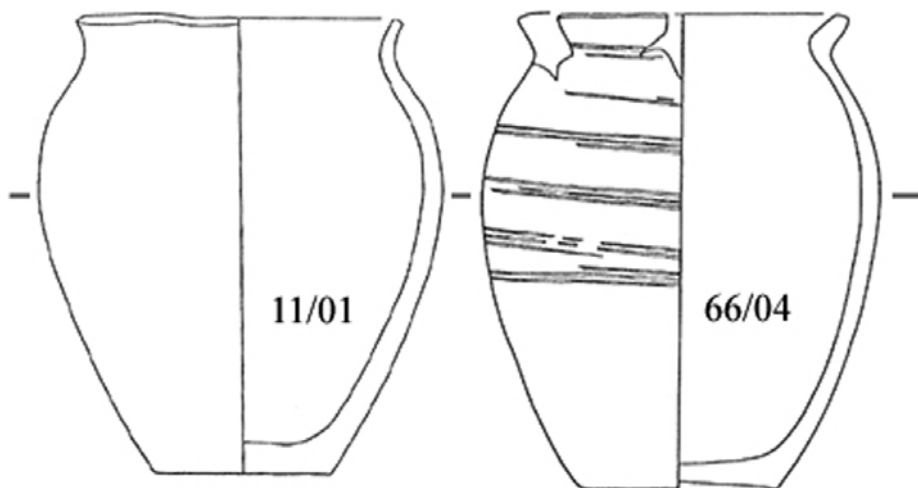


Figure 8B.
Two shapes
“not alike”
(Fusek
groups I2aC
and I2aC).

Figure 8. Fusek groups on Fusek illustration.
The numbers on the shapes are those from the original plates.