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## **Contextual analysis of fragmentation of the anthropomorphic figurines from the Late Neolithic site of Selevac\***

**Abstract.** The biographical approach to material culture and the hypothesis of deliberate fragmentation of anthropomorphic figurines are used in this paper to deduce a hypothesis that there should be an association between particular fragmentation categories and context types in the archaeological record of the Late Neolithic settlements in Central Balkans. This hypothesis is tested using published data from the site of Selevac by performing *correspondence analysis* and *chi-square* test on a contingency table in which categories of fragmentation are cross-tabulated with context types. The results are statistically significant, suggesting that complete figurines are associated with houses while transversely broken figurines are associated with pits. There is also evidence that figurines were broken differentially in respect to their original size.

**Key words:** figurines, fragmentation, Late Neolithic, Selevac, context, cultural biography.

### **Introduction**

For artifact classes such as prehistoric figurines, archaeological context is one of the few available variables against which the variability of formal attributes can be projected. Its importance stems from our hope that we can somehow link the physical context with the social context in order to infer the meaning and use of these objects (Chapman and Gaydarska 2007; Gaydarska *et al.* 2007; Marcus 1996; Ucko 1962).

The morphology of figurine fragmentation is a formal attribute considered to be relevant in the archaeology of the Late Neolithic (LN) and Eneolithic (EN) in Southeastern Europe (SE), judging by the fact that it is often recorded and presented in reports (e.g. Biehl 2006; Chapman and Gaydarska 2007;

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Gaydarska *et al.* 2007; Milenković and Arsenijević 2010; Talalay 1987; Zorbić, 2004). Fragmentation of objects from the LN and EN of SE has been given a deeper social and symbolic meaning in the works of Chapman and Gaydarska (Chapman 2000; Chapman and Gaydarska 2007). Chapman's seminal monograph (Chapman 2000) presented a new way of looking at the breakage of objects from the perspective of the enchainment theory of social relations and personhood. The central point of this theoretical perspective is that material culture plays a crucial role in mediating and representing social relations (see also Jones 2005). By deliberately fragmenting an object and giving its parts to other social actors (living people or ancestors) a social link is established – an enchainment. In enchainment, objects are more than mere tokens of relationships – they are supposed to define and convey the very personhood of the individual giving or receiving the object.

The fragmentation is often compared across different archaeological contexts (e.g. Chapman and Gaydarska 2007; Gaydarska *et al.* 2007; Milenković and Arsenijević 2010). The rationale for this kind of analysis is based on concepts and ideas closely related to Kopytoff's concept of cultural biography of things (Kopytoff 1986). Kopytoff's biographical approach is based on a proposition that things or artifacts have biographies or life-histories:

"In doing the biography of a thing, one would ask questions similar to those one asks about people: What, sociologically, are the biographical possibilities inherent in its 'status' and in the period and culture, and how are these possibilities realized? Where does the thing come from and who made it? What has been its career so far, and what do people consider to be an ideal career for such things? What are the recognized 'ages' or periods in the thing's 'life', and what are the cultural markers for them? How does the thing's use change with its age, and what happens to it when it reaches the end of its usefulness?" (Kopytoff 1986, 66–67).

Following this logic, each figurine goes through a sequence of events on its biographical trajectory, and the totality of these events make up its life-history, so figurines can be studied using the *chaîne opératoire* approach that is often applied to other classes of material culture such as lithics (Gaydarska *et al.* 2007). The ideal biography may or may not be realized, but it is reasonable to expect that there was a modal behavioral biography of figurines – if the figurines were cultural items, and the culture is a population phenomenon, it makes sense to speak of the statistically most common sequence of life-history stages. If the transition from one stage to another in life-history is correlated with fragmentation (as a cause or a consequence of the transition), and if this change (in meaning, use, or both) affects the spatial context of use and deposition, the implication is that there should be a correlation between the archaeological context and fragmentation category.

There is empirical evidence that suggests that this correlation is present when figurines from the LN of Central Balkans are in question. Srejšović (1968) noted that complete figurines were usually found in houses. A statistical analysis made by the Petnica Research Station students revealed that there was a significant relationship between figurine fragmentation and archaeological context (Milenković and Arsenijević 2010). There are however two major objections that can be raised about these results: 1) the sample for the fragmentation analysis is biased because the authors chose only specimens presented in figures and plates of published reports; 2) aggregation of figurines and contexts from different sites into a single sample rests upon the untested assumption that the patterns of relationship between context and fragmentation are the same for all of these sites. Additionally, the authors did not formally explore which particular fragmentation categories are significantly related to particular context types.

The principal objective of this short study is to test the hypothesis that there is a relationship between the fragmentation category and the archaeological context of the LN figurines from Selevac. Selevac is one of the few LN sites excavated and published in sufficient detail necessary for the formal testing of this hypothesis. Selevac is a large multiphase LN Vinča culture site in Central Serbia occupied from 5300–4700 BC as the radiocarbon data indicate (Tringham and Krstić 1990b). In terms of culture history, Selevac belongs to the LN Vinča culture. Four major phases of Selevac occupation were defined: Selevac I corresponding to Vinča B1, Selevac II corresponding to Vinča B2, Selevac III corresponding to Vinča B2/C1, and Selevac IV corresponding to Vinča C1/C2 phase (Tringham and Krstić 1990a).

There are also two additional factors that may influence the relationship between context and fragmentation: 1) formation processes; 2) the ability of archaeologists to discriminate in the field between items from different contexts. Cultural component of formation processes, or C-transforms (Schiffer 1976; 1987) that are based on deliberate decisions to move figurines from one context to another are not problematic. This is exactly what is of interest. However, C-transform such as construction works (i.e. leveling and pit digging) that might have caused an unintentional dislocation of figurines from their contexts of deposition should be filtered out as they may blur the relationship of interest, or even worse, create spurious associations between context types and categories of fragmentation. These formation processes, although formally cultural, as they are a consequence of human action, are actually equivalent to natural transformations or N-transforms (Schiffer 1976; 1987) from the perspective of this particular research problem. N-transforms such as bioturbation and physical conditions of deposition might also act as confounding factors. For these reasons it is necessary to attempt to assess, and if possible, filter out the impact of formation processes.

## Research hypotheses and questions

The main hypothesis to be tested in this study is that *there is an association between context and fragmentation of a figurine*. Given that formation processes can influence the potential relationship between context and fragmentation in ways described above, the main hypothesis will be tested first on a complete set of context types, and then on a restricted number of context types, taking into account only those contexts which are relatively more protected from the influence of formation processes, such as sealed house floors and pits. If the data support the hypothesis in both cases (the complete and the restricted set of context types), it is a sufficient (but not necessary!) condition for the claim that the association between context and fragmentation is a consequence of the changes in the cultural biography of figurines.

It would also be interesting to examine whether certain fragmentation categories stand out in some respect, for example do they appear more or less often in individual contexts. This is a research question that will be explored in this study, as well.

## Materials and methods

Selevac figurines are published in the Selevac monograph along with information on stratigraphic position, fragmentation and context (Milojković 1990). This information is available for 333 of the total of 341 published figurines. Individual contexts are grouped in four context types: house floor, house rubble, pit, cultural layer. House floor and pit are designated here as relatively closed contexts, while house rubble and the cultural layer are considered to be relatively open contexts. This distinction seems to be supported by the data as well (see *Results* section).

For most specimens database entries on fragmentation categories are given without illustration, so this precludes any independent classification of fragmentation categories. However, it was possible to collapse some categories that were considered redundant by the author into a single category. This was done for *almost complete* (slightly damaged) and *complete figurines*, and for categories such as *lower torso* and *figurine base*. The recoding scheme is given in Figure 1.

Correspondence analysis was performed on the context and fragmentation data in order to visualize the associations between fragmentation categories and context type in a two dimensional space. Correspondence analysis is a multivariate technique that reduces the dimensionality of the contingency table (cross-tabulation of fragmentation and context) and enables the analyst to visualize the relationships between categories within and between the categories of two nominal variables (Baxter 1994; Shennan 2004).

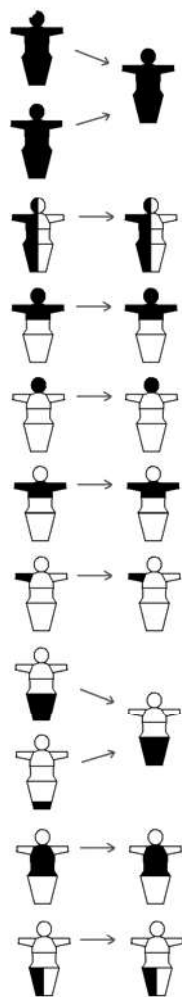


Figure 1: Recoding scheme of fragmentation categories based on original categories from Milojković 1990.

The main hypothesis was formally tested using the standard *chi-square* test with a  $p$  value calculated using the *Monte Carlo* simulation method. The analysis of adjusted standardized residuals (Haberman 1973) of the *chi-square* test was used to formally explore which particular fragmentations categories are related to specific context types. Two *chi-square* tests were performed for the main hypothesis: one with the complete set of contexts and one with only closed contexts.

The research question about the presence or absence of fragmentation categories from individual contexts (not context types!) is explored by plotting the logarithm of frequency of fragmentation categories against the logarithm of their ubiquity, a technique used in zooarchaeology (Lyman 2008, 114–119). The ubiquity of a particular fragmentation category is the number of individual contexts in which the category occurs. If fragmentation categories are distributed across individual contexts in proportion to their frequency in the sample, the points on the graph should all lie along a single line. To evaluate whether this is true, linear regression of ubiquity on frequency will be used to assess the fit of the linear model. More importantly, regression allows us to see which fragmentation categories deviate significantly from the regression line by looking at the values of standardized regression residuals. If a fragmentation category is significantly more or less ubiquitous than some other category that occurs with the same frequency in the assemblage, then it can be inferred that there was a systematic factor affecting the differential dispersion of that fragmentation category across contexts.

All statistical tests rest upon the assumption that the observations are independent. It is reported that there were only 10 cases of matching fragments (Milojković 1990), but only 3 pairs or 6 matching specimens were mentioned by their identification number. The adjustments were made in the database for the known matching pairs, but no adjustments were made for the remaining matched pairs because they were not identified. Matching pairs must belong to different fragmentation categories by definition (except for longitudinal breaks which are extremely rare), so if the members of a matching pair occur in the same context type this will weaken the relationship (and inflate the probability of Type II Error) between context and fragmentation if it exists (thus counteracting the artificial inflation of the Type I Error), and have no effect on the strength of the relationship if the context and fragmentation are truly independent. Strictly speaking, matching pairs violate the independence assumption, but this violation cannot have any substantial effect on the calculation of statistical significance in this case, because the number of dependent observations is relatively small.

## Results

Correspondence analysis was performed and the associations in the original contingency table are presented in a reduced two-dimensional space (Figure 2). The first two dimensions account together for the 85.3% of inertia (equivalent to variance) in the data. The first dimension accounts for 62.6% of inertia and the second dimension accounts for 22.7% of inertia.

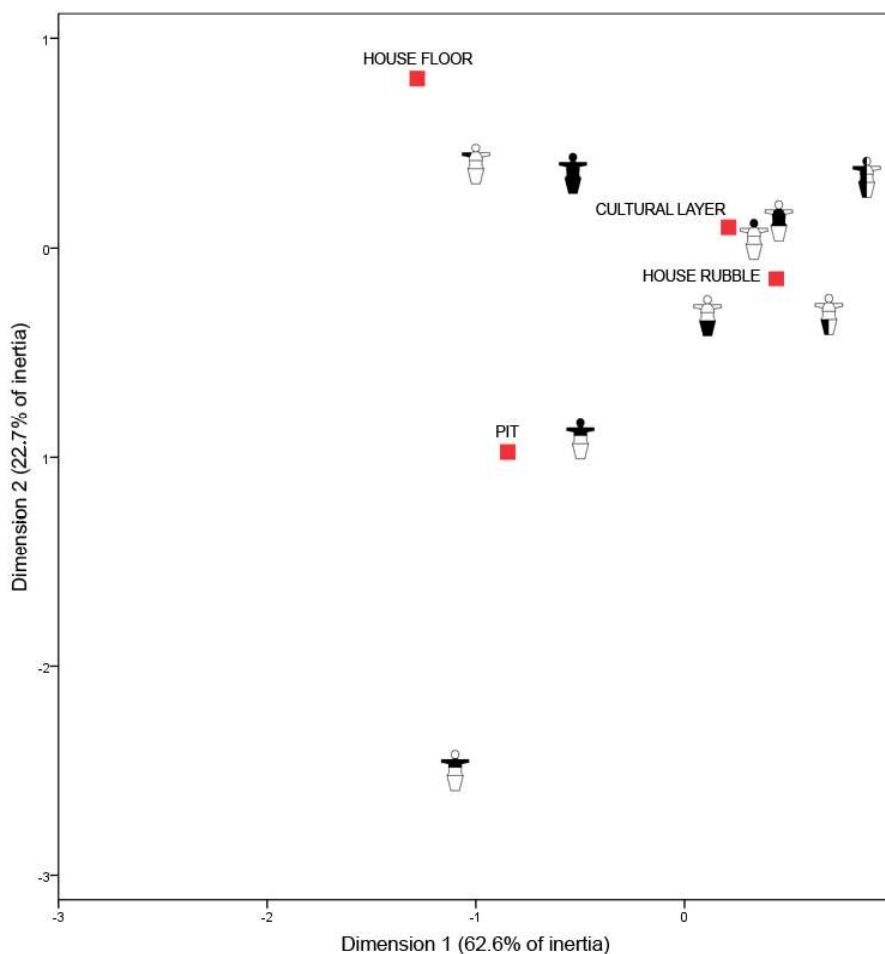


Figure 2: Correspondence analysis of Selevac data; symmetrical biplot of context types and fragmentation categories.

The results of correspondence analysis suggest that:

1. The first dimension which accounts for the largest percent of variance separates clearly house floors and pits on one side, and house rubble and the cultural layer on the other. This means that the greatest differences in the structure of fragmentation categories are between house floor and pit (closed contexts) assemblages on one side, and open contexts such as house rubble and the cultural layer, on the other.

2. The second dimension separates house floors from pits.

3. House rubble and the cultural layer are similar in their composition of fragmentation categories on both dimensions. This justifies the decision to treat these two context types as the same class of open contexts.

4. Complete figurines and arm fragments are associated with house floors.


5. Upper parts of transversely broken figurines (upper torso with or without head) are associated with pits.

6. Head, torso without arms and head, leg fragments, lower torso fragments, and longitudinally broken figurines are associated with house rubble and the cultural layer.







The *chi-square* test for the association between fragmentation and context yielded statistically significant results allowing the rejection of the null hypothesis of no correlation at the 0.05 level ( $\chi^2 = 44.655$ ,  $df = 24$ ,  $p = 0.01$ ). Therefore, the main hypothesis seems to be supported by the data – the correlation between context and fragmentation is statistically significant, although weak (*Cramer's V* = 0.211,  $p = 0.01$ ).

Observed and expected frequencies along with associated adjusted standardized residuals are given in Table 1. Adjusted standardized residuals significant at the 0.05 level (one-tailed) are given in boldface. The analysis of residuals suggests that the following associations from the correspondence analysis biplot are statistically significant: complete figurines and arm fragments are found on house floors more often than expected by chance, upper torso fragments with or without head are found in pits more often than expected by chance, upper torso fragments without head and arms are found in the cultural layer more often than expected by chance. Negative associations are also of interest. Negative residual values indicate which fragmentation categories are found in what context types less often than expected by chance. The results suggest that upper torso fragments without head and arms are found less often on house floors and in pits, arm fragments are found less often in house rubble, and upper torso fragments with head and arms are less often found in the cultural layer.

Table 1: Context and fragmentation, contingency table with expected values and adjusted standardized residuals; residual values given in boldface indicate deviations significant at the 0.05 level (one-tailed).









	<i>GENERAL LAYER</i>	<i>HOUSE FLOOR</i>	<i>PIT</i>	<i>HOUSE RUBBLE</i>	TOTAL
 Count	18	6	4	5	33
Expected Count	20.51	2.97	3.67	5.85	
Adjusted residual	-0.95	<b>1.94</b>	0.19	-0.41	



		<i>GENERAL LAYER</i>	<i>HOUSE FLOOR</i>	<i>PIT</i>	<i>HOUSE RUBBLE</i>	<i>TOTAL</i>
	Count	5	0	0	1	6
	Expected Count	3.73	0.54	0.67	1.06	
	Adjusted residual	1.08	-0.78	- 0.87	-0.07	
	Count	14	3	8	7	32
	Expected Count	19.89	2.88	3.56	5.67	
	Adjusted residual	<b>-2.26</b>	0.08	<b>2.63</b>	0.65	
	Count	44	5	5	17	71
	Expected Count	44.14	6.40	7.89	12.58	
	Adjusted residual	-0.04	-0.65	- 1.23	1.55	
	Count	1	0	1	0	2
	Expected Count	1.24	0.18	0.22	0.35	
	Adjusted residual	-0.36	-0.45	<b>1.76</b>	-0.66	
	Count	23	10	7	3	43
	Expected Count	26.73	3.87	4.78	7.62	
	Adjusted residual	-1.26	<b>3.50</b>	1.16	<b>-1.98</b>	
	Count	25	1	5	3	34
	Expected Count	21.14	3.06	3.78	6.02	
	Adjusted residual	1.44	-1.30	0.70	-1.43	
	Count	69	5	6	19	99
	Expected Count	61.54	8.92	11.0 0	17.54	
	Adjusted residual	<b>1.84</b>	<b>-1.64</b>	- <b>1.91</b>	0.46	
	Count	8	0	1	4	13
	Expected Count	8.08	1.17	1.44	2.30	
	Adjusted residual	-0.05	-1.16	- 0.40	1.26	
<b>TOTAL</b>		207	30	37	59	333

Even though the second dimension separates house floor contexts from pits, the null hypothesis of no association between fragmentation and closed context cannot be rejected at the 0.05 level ( $\chi^2 = 7.308$ ,  $df = 7$ ,  $p = 0.403$ ; *Cramer's V* = 0.330,  $p = 0.403$ ). It is clear from Table 2 that there are great differences between house floor and pits in the proportions of complete figurines (relatively more frequent in houses) and upper torso with head (relatively more frequent in pits), but these differences are not statistically significant at the 0.05 level.

Table 2: Fragmentation and closed context types; column percentages in parentheses.

	<i>HOUSE FLOOR</i>	<i>PIT</i>	<i>TOTAL</i>
	6 (20%)	4 (10.8%)	10
	3 (10%)	8 (21.6%)	11
	5 (16.7%)	5 (13.5%)	10
	0	1 (2.7%)	1
	10 (33.3%)	7 (18.9%)	17
	1 (3.3%)	5 (13.5%)	6
	5 (16.7%)	6 (16.2%)	11
	0	1 (2.7%)	1
<b>TOTAL</b>	<b>30</b>	<b>37</b>	<b>67</b>

The plot of logarithmically transformed frequency and ubiquity is presented in Figure 3 along with the with the linear regression line. Frequency explains 97.1% of variance in ubiquity. Fragmentation category that seems to deviate most from the regression line is upper torso with head. The standardized residual value for this fragmentation category is 1.75, and this is significant at the 0.05 level if one-tailed  $p$  value is calculated for this residual ( $p = 0.04$ ). This indicates that this fragmentation category is more ubiquitous than expected for its frequency in the assemblage.

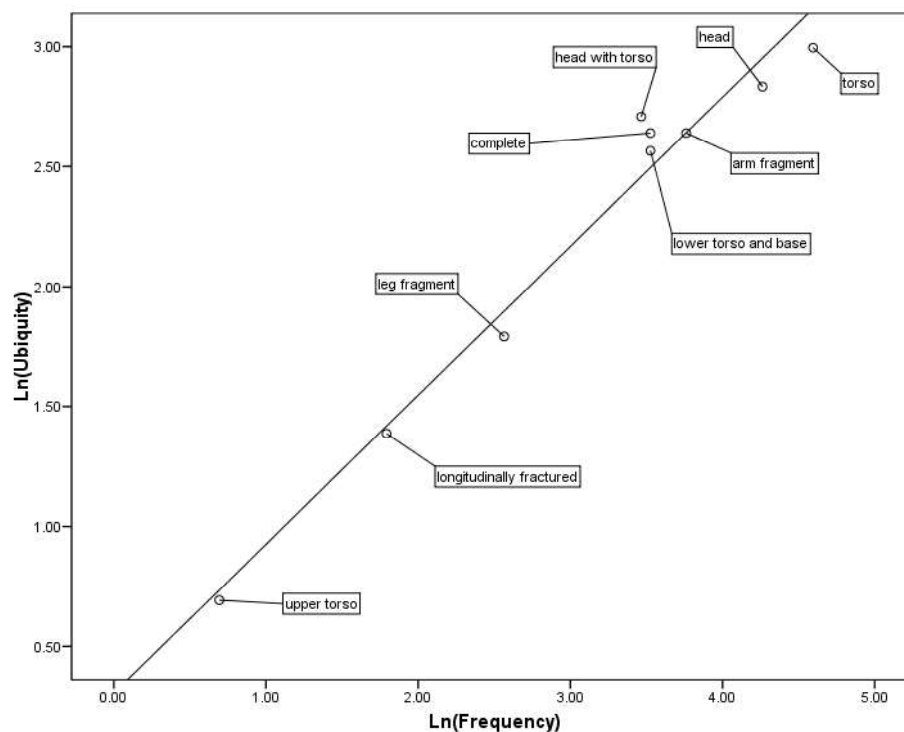


Figure 3: Scatterplot of ubiquity and frequency of fragmentation categories; best fit linear regression line is shown.

## Discussion

The main hypothesis seems to be supported by the data when all context types are included, but there was no significant difference between house floor and pit contexts. The fact that differences are statistically significant only when open contexts are included raises the question of whether these differences were due to formation processes or actual behavior.

The answer to the question – "how did the cultural layer in LN sites in Central Balkans form?" – is relevant for this discussion. Cultural layers are artifact and ecofact rich deposits within which house features are inserted and subsurface features are cut, and they are a common feature of the LN settlements (Chapman 2000b). Thinking about the accumulated assemblages coming from pits or cultural layers brings into focus the theoretical issue of cultural and practical logic (Hutson and Stanton 2007). Are accumulated assemblages from

LN sites in Central Balkans the products of cultural or practical reason? How does the cultural layer form? Is it a product of deliberate deposition (see below) or is the cultural layer a secondary product of formation processes acting on site features such as houses and pits? Chapman's explanation of cultural layer assemblages is given in terms of cultural logic. As Chapman describes it, the typical Balkan Late Neolithic and Copper Age village or farm was:

"(...) another kind of ambience in which a walk around a settlement involved avoiding the larger, if not sharper, materials lying on the ground and was dominated by the smells of decomposing human feces, vegetal and animal matter (...) The basic image of NCA settlements is of people living on top of, or within, what most twentieth century archaeologists would call a 'refuse tip'. The implication of this striking picture is that of the proximity of residents to their discarded objects and food remains rather than strict segregation of 'refuse' into 'rubbish' pits" (Chapman 2000b, 356).

If Chapman is right, the cultural layer is mostly the product of intentional deposition rather than a secondary derivative of assemblages from features transformed by formation processes (see also Chapman 2000a). The taphonomy of animal bones may offer some indirect clues: if the material from the cultural layer comes from disturbed pits and other features, we should expect to find no differences in weathering between bones from the pits and bones from the cultural layer. This hypothesis can be rejected at least for the site of Gomolava, where Orton demonstrated that there were statistically significant differences in the frequency of weathered bones between pits and the cultural layer – bones being more weathered in the cultural layer than in pits (D. C. Orton 2010). The relative frequency of weathered specimens from Gomolava is 25%. Data on weathering are available from several other sites: Stubline – 27.87% (Porčić unpublished), Petnica – 40% (David Orton 2008, 258), Vinča – Belo Brdo – 7% (Dimitrijević 2008). Unfortunately, it is not well understood at what rate the weathering occurs in temperate environments, so it is difficult to interpret these figures in terms of the deposition rate of the cultural layer. However, Orton's result from Gomolava does seem to suggest that the cultural layer is not a secondary context in relation to pits and houses. Therefore, this evidence, along with the fact that the upper parts of transversely broken figurines associated with pits are less likely to be found in the cultural layer may suggest that the deposition of certain kinds of fragments into the cultural layer may have been related to cultural biography rather than formation processes.

The correspondence analysis suggests that upper torso fragments with head are more frequent in pits while complete figurines were more frequent in houses, but *chi-square* test failed to demonstrate the significance of these differences, even though the strength of the association, as measured by *Cramer's V* coefficient was moderate. This may be due to a lack of statistical power or more probably due to the fact that not all house floors come from burnt houses.

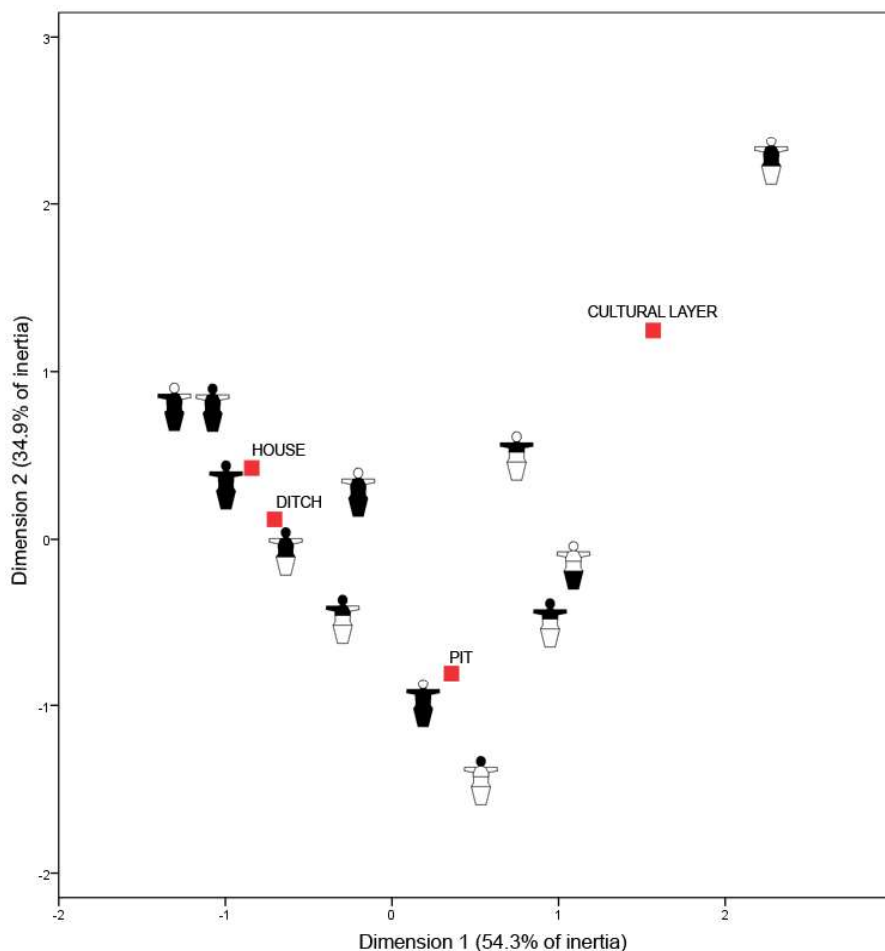


Figure 4: Correspondence analysis of data from Milenković and Arsenijević 2010; symmetrical biplot of context types and fragmentation categories.

Both correspondence analysis and *chi-square* residuals indicate that arm fragments are unusually frequent on house floors. This result is difficult to interpret at this moment. It may be that some of these arm fragments come from unidentified matching pairs (e.g. near complete figurines and their complementary broken arms), but there is no way of checking this without physically inspecting the figurines.

It is interesting to compare the structure of the associations between fragmentation and context at Selevac with the structure of associations based on data collated by Milenković and Arsenijević (2010). Even though the fragmentation and context categories are not the same in these two studies,

most of them are comparable. Correspondence analysis was applied to Milenković and Arsenijević's data, and the results are given in Figure 4. The first two dimensions account for 89.2% of inertia. The first dimension accounts for 54.3% and the second for 34.9% of inertia. There are interesting similarities between the two correspondence plots: complete figurines are associated with houses, upper torso with head is associated with pits, and upper torso without arms and head is associated with the cultural layer. It is interesting to note that the association between closed contexts (houses and pits) with fragmentation is significant in this case ( $\chi^2 = 19.849$ ,  $df = 10$ ,  $p = 0.009$ ; *Cramer's V* = 0.643), meaning that there are statistically significant differences in the distribution of complete (adjusted residual for complete figurines in houses = 3.1) and transversely broken figurines in this sample (adjusted residual for torso with the head and arms in pits = 1.7). This may also be taken as independent evidence, though biased for the reasons explained above, that there was something special about the transversely broken figurines and their deposition into pits.

The "unusualness" of transversely broken figurines at Selevac is also supported by their higher than average ubiquity. For some reason this fragmentation category was found in more individual contexts than expected if the dispersion of this kind of fragments across context was dependent only on its overall frequency.

One of the most important questions related to fragmentation analysis is whether the figurines were broken deliberately or the fragmentation was a result of their use and/or formation processes. There is no experimental evidence (at least not to my knowledge) to guide us in discriminating between intentional and accidental breaks. It is reasonable to assume that figurines are most likely to break in places where they are the weakest such as the neck or the arm region, so this kind of breakage does not have to imply any additional effort to break the figurine. But it is not that simple to determine for other parts of the figurine body whether the break can occur without additional and deliberate human action. Biehl offered criteria for the identification of potential and non-potential breaks (Biehl 2006, 206, Figure 18.3), but acceptable as they may be to the common sense, they are still educated guesses about the probability of intentional and unintentional fragmentation.

In this study, the inference of the nature of fragmentation was not the main objective, but Selevac data can be used to shed some light on this problem as well. This issue deserves a full study, but I will nevertheless present some tentative results that might be relevant for further research. If figurines were fragmented regardless of their size, the average height of preserved figurines should be higher than the average preserved height of the figurines broken in half (e.g. upper torso with head, or just upper torso). This hypothesis can be tested formally on Selevac data. The null hypothesis to be tested is that the

average height of the complete figurines is equal to the average height of upper torso fragments with head and upper torso fragments without head. In Selevac database, there is information about the length, width and thickness of each figurine fragment. The results are surprising: there is no statistically significant difference at the 0.05 level between the length of complete figurines and the length of upper torso fragments with head ( $M_{\text{complete}} = 52\text{mm}$ ,  $SD_{\text{complete}} = 21.3\text{mm}$ ;  $M_{\text{upper torso with head}} = 43.8\text{mm}$ ,  $SD_{\text{upper torso with head}} = 17.2\text{mm}$ ;  $t = 1.647$ ,  $df = 60$ , one-tailed  $p = 0.0525$ ). Moreover, there are no statistically significant differences between complete figurines and torso fragments without head and arms ( $M_{\text{complete}} = 52\text{mm}$ ,  $SD_{\text{complete}} = 21.3\text{mm}$ ;  $M_{\text{torso}} = 50\text{mm}$ ,  $SD_{\text{torso}} = 31.8$ ;  $t = 0.319$ ,  $df = 125$ , one-tailed  $p = 0.375$ ). In order to account for the possibility that the L dimension reported in the database is a measure of the maximal linear dimension rather than preserved height, the *t test* was performed in the same manner for a "size" variable computed as the product of the length, width, and thickness. No significant differences were found (complete vs. upper torso with head:  $t = 0.338$ ,  $df = 59$ , one-tailed  $p = 0.363$ ; complete vs. torso:  $t = 0.267$ ,  $df = 119$ , one-tailed  $p = 0.395$ ). This means that the complete figurines are not significantly higher or larger than fragments representing approximately one half of their original size. From this it follows that the fragmented figurines were larger when they were complete than the preserved complete figurines.

This is a very important result because it suggests that figurines were broken differentially in respect to their size. What this means in terms of actual behavior is difficult to specify at this moment. Taken at face value, in combination with the (not proven) assumption that large figurines break more easily in general, the most parsimonious explanation for the figurine breakage would be that they were broken accidentally. If big and small figurines were used in a similar manner, and if bigger figurines break more easily when dropped, accidental breakage as a result of manipulation failure is a sufficient explanation for the observed empirical pattern. If there was an intention to break the figurine, this could have been achieved with a little extra effort (e.g. smashing it with a rock) regardless of its size and the potential resistance to breakage. The alternative, but more complex explanation, is that big and small figurines were used for different purposes and perhaps meant different things. In any case, further research is needed on this issue – the first step would be to see whether this pattern is found on other LN sites in the region.

### Conclusion and suggestions for further research

The main conclusion of this study is that there is a statistically significant association between fragmentation and context. Although it is not possible to demonstrate this rigorously, circumstantial evidence suggest that the association

of transversally broken figurine parts with pits and the association of complete figurines with houses indicates changes on the biographical trajectories. Therefore, it seems that the fragmentation of figurines, deliberate or accidental, is culturally significant either as a cause or a consequence of changes in the use of figurines. These results are consistent with Chapman's hypotheses about the use of fragmented objects for social and symbolic statements.

I will conclude this paper with suggestions for future research:

1. Fragmentation analysis should be undertaken for other LN sites in Central Balkans to see whether the patterns of association are the same.
2. Spatial analysis of fragmentation is necessary – are fragmentation categories randomly distributed across the site or do they appear in meaningful clusters?
3. Experiments with fragmentation are necessary in order to determine what are the effects of different fragmentation scenarios (e.g. deliberate vs. accidental) on the probability of observing particular fragmentation categories and breakage types.

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### Kontekstualna analiza fragmentacije antropomorfnih figurina sa kasnoneolitskog lokaliteta Selevac

Pronalaženje odgovora na pitanje šta su predstavljale i čemu su služile antropomorfne figurine u kasnom neolitu Balkana predstavlja jedan od najtežih zadataka praistorijske arheologije. S obzirom na to da nije moguće samo na osnovu formalnih atributa figurina doći do ovog odgovora, alternativni pristup je da se druge klase arheoloških podataka iskoriste kao uporedni okviri za sagledavanje varijacije formalnih atributa figurina. Ukoliko se u jednu ravan stave koncepcija kulturne biografije predmeta Igora Kopitofa i Čepmenova hipoteza o fragmentaciji kasnoneolitskih antropomorfnih figurina sa područja Balkana, može se dedukovati hipoteza da postoji veza između arheološkog konteksta u kome je figurina pronađena, kao uporednog okvira za trajektoriju upotrebnog ciklusa figurine, i modaliteta njene fragmentacije kao direktnog pokazatelja posledica upotrebe (namernog ili slučajnog lomljenja). Cilj ovog rada jeste da na podacima sa lokaliteta Selevac testira ovu hipotezu. Na tabelu u kojoj su ukršteni podaci o kontekstu i fragmentaciji, tj. o zastupljenosti pojedinih kategorija fragmentacije po arheološkim kontekstima, primenjeni su analiza korespondencije i *hi kvadrat* test. Rezultati ukazuju na to da podaci potkrepljuju osnovnu hipotezu tj. da postoji statistički značajna veza između konteksta i modaliteta fragmentacije. Cele figurine dominiraju u kućama, a transversalno polomljene figurine u jamama. Takođe, podaci sa Selevca ukazuju na to da je fragmentacija figurina bila pristrasna u odnosu na veličinu figurine – veće figurine su češće fragmentovane od manjih figurina.

*Ključne reči:* figurine, fragmentacija, kasni neolit, Selevac, kontekst, kulturna biografija

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Analyse contextuelle de la fragmentation des figurines anthropomorphes de la localité du néolithique tardif de Selevac

Trouver la réponse à la question sur la signification des figurines anthropomorphes et leur usage dans le néolithique tardif des Balkans représente une des tâches les plus difficiles de l'archéologie préhistorique. Étant donné qu'il n'est pas possible d'obtenir cette réponse uniquement à partir des attributs formels des figurines, l'approche alternative consiste à exploiter d'autres classes de données archéologiques en tant que cadres parallèles pour l'analyse de la variation des attributs formels des figurines. Si l'on met sur le même plan la conception de la biographie culturelle des objets d'Igor Kopitof et l'hypothèse de Chapman sur la fragmentation des figurines anthropomorphes du néolithique tardif de la région des Balkans, il devient dès lors possible d'émettre l'hypothèse sur l'existence d'une relation entre le contexte archéologique dans lequel la figurine a été trouvée, cadre parallèle pour une trajectoire du cycle d'usage de la figurine, et la modalité de sa fragmentation, révélateur direct des conséquences de l'usage (de la fracture volontaire ou involontaire). L'objectif de ce travail est de tester cette hypothèse en se fondant sur les données du site de Selevac. Sur le tableau où sont croisées les données sur le contexte et la fragmentation, c'est-à-dire sur la présence des catégories particulières de fragmentation établies d'après leurs contextes archéologiques, l'analyse de la correspondance et le test du X<sup>2</sup> ont été appliqués. Les résultats révèlent que les données étayaient la principale hypothèse, celle de l'existence d'une relation statistiquement importante entre le contexte et les modalités de fragmentation. Les figurines intactes se retrouvent dans le plus grand nombre dans des maisons alors que les figurines transversalement abîmées sont plus nombreuses dans des fosses. Les données de Selevac démontrent également que la fragmentation des figurines s'est faite en fonction de leur taille – les figurines plus grandes sont plus souvent fragmentées que les plus petites.

*Mots clés:* figurines, néolithique tardif, Selevac, contexte, biographie culturelle

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