A Tentative Attempt to Estimate the Systemic Number of the Late Neolithic Vinča Culture Figurines

Abstract: In this paper an attempt is made to estimate the number of figurines which were in “use” in households of the Late Neolithic Vinča culture. The number of accumulated figurines and houses is used as a starting point. Given the complexities of the settlement dynamic, figurine use and the formation processes of the archaeological record, the ratio of the number of accumulated figurines to the number of accumulated houses is only an indirect reflection of the systemic number of figurines. Different figurine use scenarios are evaluated in order to see what the result would be. Keeping in mind that the entire analytical procedure is highly speculative and the range of tested models is far from exhaustive, the results suggest that scenarios resting on the assumption that there was a single figurine per household and that the average use-life of the figurine was equal to the average human generation length predict outcomes that are comparable to the actual archaeological situation.

Keywords: Late Neolithic, Vinča culture, anthropomorphic figurines, houses.

Introduction

The study of the Late Neolithic figurines of the Vinča culture has been dominated by iconographic and typological approaches (e.g. Gimbutas 2007; Срежовић 1968; 1984). The fact that figurines have human form has often seduced researchers into thinking that the meaning of these objects is more apparent and easier to reach than the meaning of other objects which do not have such a familiar form (Marcus 2009). This kind of approach led to various interpretations of prehistoric figurines – from the representations of gods and goddesses, mythical figures, magic items, works of art, to toys and dolls for

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children. The problem with most of these hypotheses is that they are not testable.

As noted by Biehl (2006), the basic principles of a more productive and challenging way of investigating prehistoric figurines were established years ago by Peter Ucko (Ucko 1962; 1968). Ucko's approach was based on the systematic analysis of figurine attributes and context. This kind of approach has further been refined and applied in the research of Late Neolithic and Early Copper Age figurines from Southeastern Europe (Bailey 1994; Biehl 1996; 2006; Chapman and Gaydarska 2007; Gaydarska et al. 2007). Because we cannot hope to understand the meaning of figurines directly merely by looking at them or by looking for analogies in the ethnographic record, we must describe the figurines on different attribute sets and then view the patterning of attribute based data against other archaeological frames of reference (e.g. physical context, social context, economic context). In this way we may be able to learn something about the figurines in an indirect way.

As a consequence of the research motivated by the fragmentation theory (Chapman 2000; Chapman and Gaydarska 2007), the taphonomy of figurines has come into focus of Late Neolithic and Early Copper Age figurine studies (Biehl 2006; Chapman and Gaydarska 2007; Gaydarska et al. 2007). The aim of this kind of research has been to understand how and why the figurines were used and discarded – were they deliberately broken, which parts were broken, are different parts deposited differently in relation to context and other similar questions.

The aim of this paper is to make a tentative and speculative attempt to estimate the systemic number (sensu Schiffer 1976) of Vinča figurines on the basis of the observed number of figurines. The systemic number of figurines refers to the average number of figurines in use (whatever that use might be) at any point in time. Figurines are like any other class of objects – they have their use and use-life. The number of figurines used at one time may tell us something indirectly about their purpose. For example, we would like to know whether there were as many figurines as people or the number of figurines in use was low compared to the population size, suggesting that their use had been related to larger social units rather than individuals (e.g. households, clans, status groups). This kind of information is very general and cannot help us in reconstructing the details of figurine use and meaning, but it can at least help to determine which scenarios are more plausible than others given the available amount of information and some reasonable assumptions about the dynamics of Vinča settlements. In terms of Lesure's (2002) analytical framework this paper deals with the aspect of figurine use.

Method

The general idea is to use the ratio of the number of accumulated figurines to the number of accumulated houses as an empirical basis for inferring the number of figurines in use per single household. The number of houses and the number of figurines are the only two variables which can be observed directly in the archaeological record, but only in the case that the entire area of the site was excavated. In all other cases, both the number of houses and the number of figurines need to be estimated. This estimation is relatively straightforward in the case of houses (e.g. a proportional projection may be used), but it is ambiguous in the case of figurines.

Estimation procedure 1. We can assume that the missing fragments of excavated figurines are buried somewhere within the unexcavated portions of the site. In this case we cannot simply extrapolate the number of uncovered figurines to the unexcavated area of the site because the same figurine would be counted twice or more times, depending on the degree of its fragmentation. A potential solution to this problem would be to calculate the equivalent of the number of figurines by summing the present portions of a figurine. For example, if a figurine consists of 6 parts (head, torso, 2 arms, abdomen, base), and we found one complete figurine, 2 heads, one head with torso, and a single arm, the equivalent number of figurines would be $1 + 2 \times \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = 1.83$. This number can then be proportionally projected to the entire site in order to reach an estimate of the total number of figurines accumulated on the site.

Estimation procedure 2. However, if we accept Chapman’s fragmentation hypothesis which claims that even if the entire area of the site was excavated the missing pieces would still not have been found (Chapman and Gaydarska 2007), then we have to assume that each figurine fragment is the only fragment to be found on the site. In this case, the estimation of the total number of figurines accumulated on the site comes down to proportional projection of the number of excavated figurine fragments to the entire area of the site. Even though I consider this particular assumption to be unlikely it will be taken into consideration.

Once we obtain estimates of the total number of figurines and the total number of houses, and calculate the ratio of the number of figurines to the number of houses (FH), the next question is how to interpret it. It would be erroneous to interpret this ratio as a direct reflection of the number of figurines per household, because the dynamics of the accumulation of houses and the accumulation of figurines may differ. The key parameter is the average use-life for these two classes of objects. Only if the average use-life of a figurine equals the average use-life of a house, the ratio will directly reflect the number of figurines per household. In cases where these two values are different,
the ratio of figurines to houses reflects the systemic number of figurines in a complex way.

The approach taken here will be to consider several scenarios of house and figurine deposition. Given that the number of figurines and houses entering the archaeological record is the function of the systemic number and the average use-life (Schiffer 1976; 1987), the idea of this paper is to see which combinations of figurine use-life and the number of figurines per household would produce the observed FH ratio. It will not be an exhaustive test of all conceivable scenarios; only some scenarios will be considered:

1. Figurines are objects related to houses – each household owns a single figurine, and the use-life of a figurine is equal to the use-life of a house.

2. Figurines are objects related to nuclear families – each household owns a single figurine and the figurine use-life equals the average human generation length. The average generation length is taken to be 28 years (Fenner 2005).

3. Figurines are objects related to persons – one figurine per person or several figurines per house (depending on the average household size). The average use-life of a figurine equals the average generation length (which is close to the expected life span for the Neolithic people, see Acsádi and Nemeskéri, 1970, Weiss, 1973).

4. Figurines are related to households – one figurine per household, but they were used annually so their use-life in this scenario is 1 year.

Evaluating different scenarios

The assessment of different models will be based on figurine data sets from two Late Vinča sites: Divostin and Mali Borak (Acsádi et al. 2011, McPherron and Srejović 1988; Снасач и Вуковић 2011).

Divostin is a Late Vinča (Vinča D) site in central Serbia. The total area of Divostin site was estimated to be 15ha, 2480m² (1.65%) of which was excavated (McPherron and Srejović 1988). Two Vinča horizons were defined – Divostin IIa and Divostin IIb. These two settlements lasted altogether for about 300 years, from 4900-4650 cal. B.C. (Borić 2009). The total of 5 Divostin IIa and 12 Divostin IIb houses were uncovered completely or partially (McPherron and Srejović 1988). In order to estimate the total number of accumulated houses, a proportional projection was made. The average household size is estimated to be 8 persons (Поповић 2010). There are clues that there was a generational continuity in Divostin households (Tripković 2009), so it can be assumed that the use-life of the house was around two generation lengths (56 years). If both Vinča settlements in Divostin covered the same area, the estimated total number of accumulated houses is 1028. Within the excavated area 92 figurine fragments were found. These figurine fragments stand for 36.16
complete figurines. The estimated total number of figurines on the site should be around 2187. The FH ratio is $2187:1028 = 2.127^1$. If we accepted Chapman's hypothesis, the estimated total number of figurines would be around 5565, and the corresponding FH ratio would be $5565:1028 = 5.41$.

Crkvine, Mali Borak is a Late Vinča (Vinča D) site in the Kolubara basin in western Serbia. The total area of the site is estimated to be 3ha. 3000 square meters or 10\% of the site area was excavated (Apuš et al. 2011). There are no C14 dates for this site but an educated guess can be made that the duration of this site was around 100 years. There were 13 architectural objects in the excavated area, but only 6 or 7 of these objects could have been residential objects – houses (Mapuš 2011). The average total area of houses is around 38 square meters (based on data given in Mapuš 2011), which roughly corresponds to the average household size of 5 persons (Поруч 2010). It seems that only a single family lived in these houses so the average use-life of the house is taken to be a single generation length (28 years).

Using proportional projection and the assumption that there were 6 residential objects, the estimated total number of houses is 60. 18 figurine fragments were excavated (Спасић and Вићковић 2011) representing 6 complete figurines when summed in the manner presented in the Method section, yielding the estimate of the 60 figurines for the entire site. If Chapman's assumption is accepted the estimate of the total number of figurines would be 180. The FH ratio equals 1 in the first, and 3 in the second case.

Scenario 1. This is the simplest scenario. If this was the case, the FH ratio for both sites should be 1 (or close to 1 given the sampling error). For Divostin there is an obvious mismatch no matter which estimate is used. For Mali Borak, this scenario is plausible only if we choose the first estimate of total number of figurines (one not based on Chapman's assumption).

Scenario 2. For Divostin, this scenario means that there is a single figurine per house, but that it lasted approximately 28 years, while the house lasted twice as long. This would imply that there were effectively 2 figurines per house so the expected FH ratio under this scenario would be around 2 which is precisely the case for Divostin. If FH ratio of 2 is compared to the corresponding figure estimated on the basis of Chapman's hypothesis, the mismatch is obvious – empirical FH ratio is more than two times higher. This scenario is identical to scenario 1 for Mali Borak because the use-life of a house equals the generation length, again giving a good match only if the first estimate of the total number of figurine is accepted.

1 It is not necessary to actually estimate the total number of figurines and houses on the site, since the same value of the FH ratio would be the same if we used the derived number of represented figurines and the number of excavated houses. The only reason for making this additional step is to make the calculation more intuitive.
Scenario 3. If each person from the household had had a figurine, the FH ratio would have been higher (around 8) than the empirically derived ratio based on the first estimation procedure. If the second estimation procedure was used, the FH ratio in this scenario would be close to (around 8) but still higher than an empirical ratio. The same argument applies to Mali Borak.

Scenario 4. In this scenario, each house would produce at least 28 figurines which would result in extremely high FH ratios, an order of magnitude higher than the empirically recorded values, regardless of the estimation procedure.

Discussion

Results of "trying out different scenarios" suggest that the most probable scenario is scenario 2 in which the figurine is related to a single generation (nuclear family?) within the household. In the case of Mali Borak, archaeological evidence suggests that household and nuclear family coincide.

How does this result fit with archaeological data related to the presence of figurines in houses? In other words, how many figurines were actually found in houses? Before this question is pursued, a methodological note is required. The number of figurines found in houses may or may not represent the true number of figurines in use. In terms of behavioral archaeology, systemic and archaeological context are not the same thing (Schiffer 1972; 1976; 1987). Assuming that they are is to assume the "Pompeii premise" (Schiffer 1985). However, given that most figurine fragments are found outside houses and that figurine assemblages coming from houses are dominated by complete figurines (Milenković and Arsenijević 2010) it seems likely that figurines found inside the house were de facto refuse or at least that they do reflect the number of figurines in use, even if they were deliberately deposited prior to ritual house destruction as suggested by Chapman (1999; 2000). The number of figurine fragments found inside Vinča houses on different sites is shown in Table 1. Histogram of figurine fragment counts from houses is given in Figure 1. This review of figurines from houses is not exhaustive. Figurines are found in Selevac houses, as well, but it seems that figurines were associated with houses mainly on the basis of proximity and physical contact with house remains – for example the total count of figurines from House 1 in Selevac is 22, but the authors specify that only 5 fragments were actually found within the house rubble. For this reason, figurine counts from Selevac houses are unusually high (House 1: 22 figurine fragments; House 2: 33; House 3: 2; House 4: 8; House 6: 6; House 8: 6; House 9: 5; House 10: 4). It also important to emphasize the fact that houses from Divostin Ila horizon did not burn, so the actual context of figurine fragments associated with these houses is problematic, given that there is no preserved house rubble.
### Table 1: Figurines found in houses.

<table>
<thead>
<tr>
<th>Site</th>
<th>House number</th>
<th>Number of figurine fragments</th>
<th>Fragmentation</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Divostin IIA</td>
<td>House 7</td>
<td>3</td>
<td></td>
<td>Letica, 1988</td>
</tr>
<tr>
<td>Divostin IIA</td>
<td>House 8</td>
<td>5</td>
<td></td>
<td>Letica, 1988</td>
</tr>
<tr>
<td>Divostin IIB</td>
<td>House 12</td>
<td>1</td>
<td></td>
<td>Letica, 1988</td>
</tr>
<tr>
<td>Divostin IIB</td>
<td>House 13</td>
<td>2</td>
<td></td>
<td>Letica, 1988</td>
</tr>
<tr>
<td>Divostin IIB</td>
<td>House 14</td>
<td>2</td>
<td></td>
<td>Letica, 1988</td>
</tr>
<tr>
<td>Divostin IIB</td>
<td>House 23</td>
<td>7</td>
<td></td>
<td>Letica, 1988</td>
</tr>
<tr>
<td>Stubline</td>
<td>House 1/2010</td>
<td>1</td>
<td></td>
<td>A. Crnobrnja, personal communication, 2011</td>
</tr>
<tr>
<td>Stubline</td>
<td>?</td>
<td>2</td>
<td></td>
<td>Tasić, 1973</td>
</tr>
<tr>
<td>Mali Borak</td>
<td>House 1.72</td>
<td>1</td>
<td></td>
<td>Спачић and Вигинић, 2011</td>
</tr>
<tr>
<td>Medvednjak</td>
<td>a single house was excavated</td>
<td>1</td>
<td></td>
<td>Галовић, 1975</td>
</tr>
<tr>
<td>Grabovac</td>
<td>?</td>
<td>1</td>
<td></td>
<td>Tasić, 1973</td>
</tr>
<tr>
<td>Grivac V</td>
<td>House 4</td>
<td>2</td>
<td></td>
<td>Zorbić, 2004</td>
</tr>
<tr>
<td>Grivac V</td>
<td>House 12</td>
<td>1</td>
<td></td>
<td>Zorbić, 2004</td>
</tr>
<tr>
<td>Grivac V</td>
<td>House 14</td>
<td>1</td>
<td></td>
<td>Zorbić, 2004</td>
</tr>
</tbody>
</table>

2 A set of 46 clay figurines was found in house 1/2008 in Crkvine, Stubline (Crnobrnja, et al., 2010). In spite of the fact that the context of these figurines is well documented, they have not been included in this review since they are completely different in terms of typology from the class of objects usually referred to as Vinča figurines.

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Етноантропологија проблема, к. с. год. 6. св. 3 (2011)
Most houses where figurines are found usually have one or two figurines. This is consistent with the main results of this paper. However, the case of House 23 from Divostin strongly contradicts this pattern. 7 figurines (6 complete and 1 almost complete) were found in this house. The fact that the number of figurines is close to the estimated average household size of 8 people for Divostin was used as an argument that these figurines might have represented members of that particular household (Попцах 2010, 218-219; Трипковић 2009). How to interpret this contradiction? At present, it seems most parsimonious to treat figurine assemblage from House 23 as anomalous – an exception to the rule.

Figure 1: Number of figurine fragments found in house remains (data from Table 1).

It is interesting to mention that there are many houses where figurines were not found at all. Actually, the number of houses without reported figurines exceeds the number of houses with figurines (e.g. at Divostin, figurines were found only in 5 houses out of 17; see Попцах 2010). This might be an argument against the conclusion that each household owned a figurine. It might suggest a scenario where a small number of households owned a greater number of figurines (something like the case of House 23) and that these households monopolized the use of figurines (e.g. due to their higher status). However, this scenario is less likely because the fact that figurines were not found in the archaeological

context does not imply that they were not used in the systemic context – the probability of finding a figurine in a house is also partially dependent on the mode of house abandonment. Additionally, figurine fragments are not clustered around a single house, they are more or less evenly distributed around all or most of the houses (cf. McPherron and Srejović 1988; Milojković 1990).

To summarize, presented evidence is consistent with the assumption that the use of figurines was somehow related to nuclear families living in single-family, multi-family or stem-family households. A cautionary note is required here: the fact that empirical observations are consistent with this scenario does not automatically prove that this scenario was true. There are other models which would produce the same pattern. These particular models were privileged because they were a priori most likely given our assumptions (or educated guesses) about the social dynamics of Late Neolithic communities.

Even if we knew with more certainty that a particular model was true, this knowledge could not help to determine who or what was represented by figurines. This is because there is no deterministic link between the use of figurines in a behavioral sense and their meaning in terms of symbolism and narrative.

In any case, this kind of speculation can be useful for formulating further specific questions. For example, one such question would be: if figurines are related to households, do they represent 1) household-specific entities (e.g. head of the household, guardian spirit, immediate ancestor) 2) lineage-specific entities (e.g. ancestor – lineage founder) or 3) community-specific entity (e.g. leader, ancestor, deity)? The real challenge is to formulate these questions into empirically testable hypotheses. Variation in formal variability of figurines might be a good candidate for testing – if figurines represented household-specific entities (copying attributes from a larger pool of models), formal variability should be high relative to the case where figurines represented community-specific entities (attributes are copied from a single abstract model, e.g. the accepted canon of how should the entity look like). The problem is to define what is high and what is low in quantitative terms and this perhaps can be done by modeling and experiment.

Conclusion

Research presented here can be characterized as a highly speculative thought experiment – a "what if" sort of inquiry. The greatest problem associated with this approach is that there are many other scenarios which would produce the same empirical output in terms of FH ratio – yet another instance of equifinality in archaeology. It is very similar to a situation where one tries to solve for two unknowns (systemic number of figurines and figurine use-life) but only one equation is available. For this reason no definite and firm conclusion
regarding the use of figurines can be offered. The main conclusion of this paper is that the quantity of figurine production and the way they are used and deposited should receive a full analytical attention. What is needed is an explicit quantitative model of figurine use and discard (a numerical simulation) that can allow for a more rigorous assessment of different scenarios than the verbal reasoning presented in this paper. Speculating about the behavioral context of figurines may not bring definite answers but it certainly opens interesting research questions.

**Literature**


Етноантропологија проблема, и. с. год. 6. св. 3 (2011)
Pokušaj ocenjivanja sistemskog broja kasnoneolitskih vinčanskih figurina

Cilj ovog rada je da se oceni broj figurina koje su bile istovremeno u upotrebi u domaćinstvima kasnoneolitske vinčanske kulture. Broj akumuliranih figurina i kuća su uzeti kao empirijska osnova. S obzirom na kompleksnost dinamike života naselja, upotrebe figurina i formacionih procesa, količnik broja akumuliranih figurina i broja akumuliranih kuća predstavlja tek indirektan odraz sistemskog broja figurina. Ideja je da se dedukuje kakav bi bio odnos broja akumuliranih figurina prema broju akumuliranih kuća pod različitim pretpostavkama o dinamici upotrebe figurina. Imajući u vidu ogradu da je čitava analitička procedura veoma spekulativna i ne iscrpljuje sve mogućnosti upotrebe figurina, može se reći da rezultati ukazuju na to da oni modeli koji pretpostavljaju da je svako domaćinstvo imalo po jednu figurinu i da je njen životni vek bio jednak dužini trajanja ljudske generacije, predviđaju ishode koji su uporedivi sa onim što zapravo opažamo u arheološkom zapisu.

Ključne reči: kasni neolit, vinčanska kultura, antropomorfne figurine, kuće.

Une tentative d’évaluation du nombre systémique des figurines du Néolithique final de la culture de Vinča

L’objectif de cet article est d’évaluer le nombre de figurines qui étaient simultanément en usage dans les ménages de la culture de Vinča du néolithique final. Le nombre de figurines et de maisons accumulées a été pris comme base empirique. Vu la complexité de la dynamique de la vie de l’agglomération, de l’usage des figurines et des processus de formation, le quotient du nombre de figurines accumulées et du nombre de maisons accumulées ne représente que...
le reflet indirect du nombre systémique de figurines. L’idée est de déduire qu’el serait le rapport du nombre des figurines accumulées envers le nombre de maisons accumulées en faisant différentes hypothèses sur la dynamique d’utilisation des figurines. Compte tenu du caractère spéculatif de toute cette procédure analytique, puis du fait qu’elle n’épuise pas toutes les possibilités de l’utilisation des figurines, il est possible d’affirmer que ceux des modèles supposant que chaque ménage possédait une figurine et que son espérance de vie était égale à la durée d’une génération humaine concordent avec ce que en réalité nous observons dans la trace archéologique.

*Mots clés*: néolithique final, culture de Vinča, figurines antropomorphes, maisons

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