SECONDARY USE, REUSE AND RECYCLING OF CERAMIC VESSELS: EVIDENCE FROM LATE NEOLITHIC VINČA*

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Abstract: *Several ways of ceramic vessel's secondary use, reuse and recycling were recorded in Late Neolithic Vinča. The first is represented by partly damaged vessels used as moulds in pottery forming sequence. Re-use refers to the vessels with shape modifications made after they lost their primary function. Recycling is considered as usage of pottery sherds: as tools, building material for oven foundations, and as temper for pottery making. Since the pottery was used in a variety of activities, their life-cycles were discussed and it is assumed that special disposal areas existed in the Neolithic settlement.*

Key Words: *pottery, Vinča, secondary use, re-use, recycling, life-cycle, disposal areas.*

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SEKUNDARNA UPOTREBA, PONOVNA UPOTREBA I RECIKLIRANJE KERAMIČKIH POSUDA: PODACI IZ KASNONEOLITSKE VINČE

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Apstrakt: *Nekoliko načina sekundarne i ponovne upotrebe i recikliranja identifikovano je na kasnoneolitskoj keramici iz Vinče. Sekundarna upotreba odnosi se na delimično oštećene posude koje su korišćene kao kalupi za izradu grnčarije. Ponovna upotreba odnosi se na posude na kojima je izvršena modifikacija oblika pošto su izgubile svoju primarnu funkciju. Recikliranjem se smatra upotreba fragmenata polomljenih posuda i to kao alatki, kao sirovina za gradnju supstrukcija peći i kao sirovina za izradu keramike (šamot). Imajući u vidu da je keramika nakon izlaska iz primarne upotrebe korišćena na različite načine, razmotreni su stupnjevi u njenom životnom ciklusu, a pretpostavljeno je postojanje posebnih mesta za skladištenje ovog materijala u neolitskom naselju.*

Ključne reči: *grnčarija, Vinča, sekundarna upotreba, ponovna upotreba, recikliranje, životni ciklus, prostor za skladištenje.*

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Pottery represents the most numerous class of finds at almost all excavations, especially on the Neolithic sites. Vast number of vessels' sherds is usually subjected to basic typological and other analyses. Considerations about vessel's cultural biographies are, however, extremely rare in Balkan Prehistoric archaeology. Archaeologists often forget the fact that pottery vessels, like other kinds of archaeological finds, especially lithics, are reusable when broken. Analyses of pottery lifecycles, including its usage after they lost their primary function or after their breakage, common in ethnoarchaeological research, are therefore completely lacking. It also should be noted that refitting of the material was rarely fully conducted; so far, there is no data about the existence of "orphan sherds", i.e. the fragments that can't be joined with any reconstructed whole vessel, so important not only for examining fragmentation, but also in reconstruction of reuse activities and assemblage formation processes. Recent excavations of final Neolithic layers at the site of Vinča near Belgrade yielded many examples of pottery reuse, secondary use and recycling. Since analyses of such material are lacking in general, attention must be drawn to their importance.

THE TERMS REDEFINED

Firstly, it is necessary to define the terms, since definitions of secondary use, reuse and recycling are not always applicable to ceramic material. Therefore they must be reformulated to become suitable for explanation of pottery's special and unique lifecycles and modes of usage. Reuse is usually defined as a change in the user or use or form of an artifact, following its initial use (Schiffer 1987, 28) or use of an object in a secondary context when it can no longer serve its original function (Deal and Hagstrum 1995, 111). Since reused vessels are never used for their primary function, the activities in which they take part are also completely different. Secondary use and recycling are considered to be varieties of reuse; the first one is defined as new use of objects without needing extensive modification, and the latter as the return of the artifact to a manufacturing process (Schiffer 1987, 28-32). Weaknesses of these definitions are obvious when it comes to considerations about (re)use of whole vessels vs. their fragments. Vessels in archaeological record exhibit

different stages of fragmentation and damage; in stages where they more or less retain their shape, they can be further used as containers, but for different contents. In contrast to whole (or partly broken) vessels, their fragments lose their capability of containing anything, and their usage is not related to "usual" pottery function any more. The notion of recycling as a return of an artifact to manufacture process therefore must be reconsidered, too. Whole vessel's shape can be modified, but is it reasonable to regard that intervention as a return to manufacture? Or, can usage of vessel fragments be considered to be recycling even if those fragments have not been subjected to the process of manufacture or additional reshaping? During the analysis of Vinča finds, the terms of reuse, secondary use and recycling were redefined according to the level of fragmentation, while additional interventions, i.e. reshaping, were not regarded as the main criterion. Consequently, secondary use is regarded as usage of whole, broken or partly damaged vessels without shape modifications; reuse is regarded as usage of whole or partly damaged vessels with slight shape modifications, but completely different function and finally, recycling is defined as usage of pottery fragments, with or without shape modifications in a variety of activities.

SECONDARY USE OF VINČA VESSELS

Ethnoarchaeological research revealed wide variety of pottery secondary use: in activities related to gardening (containers for watering plants, enclosures for protecting seedlings, trays for seed drying), maintenance (containers for construction materials), animal husbandry (feeding dishes for animals), to mention just a few (Deal 1995, 109-110). Many of these activities and uses of pottery cannot be identified with certainty in archaeological material, and so far they are not directly recognized in Vinča assemblage. Usage of lower parts of broken vessels as molds in the process of pottery manufacture has been confirmed both ethnoarchaeologically and ethnologically (e.g., Frank 1994; Rye 1981); there is only indirect evidence of their existence in Vinča assemblage. Sometimes the lower cones of bowls, especially near the bases, have uneven, slightly wavy surfaces. They are visible only on specimens without carefully burnished or polished surfaces. Pressing clay body to the convex molds with fingers or by beating with a tool leaves surface markings similar to paddle and anvil technique: series of facets on the exterior of the vessel. Such traces can be identified on bowls with uneven surfaces from Vinča (Vuković 2014, 191) (fig.1). Other kinds of secondary use of lower parts of the vessels in pottery forming sequence, such as supports or means of rotation, are not yet identified in Vinča material.

VINČA REUSED VESSELS

Whole or partly damaged vessels with shape modifications made after they lost their primary function are regarded as vessels in the stage of reuse. Only few examples were identified. The bowl showed on fig. 1 has two opposite circular holes made after it lost its primary function. They were pierced from the outside of the vessel. Function of this bowl with modified shape is not certain yet. It was found in the context were food preparation activities took place[1], along with several ceramic containers and a grinding stone. It could have served as some kind of a lid. However, this function is not certain: lack of mechanical damage on interior surfaces supports these doubts. Also, great size of the holes could have left contents of the covered vessel unsecured, so the function of this specimen still remains unknown. Deliberate shape modifications, however, must be noted.

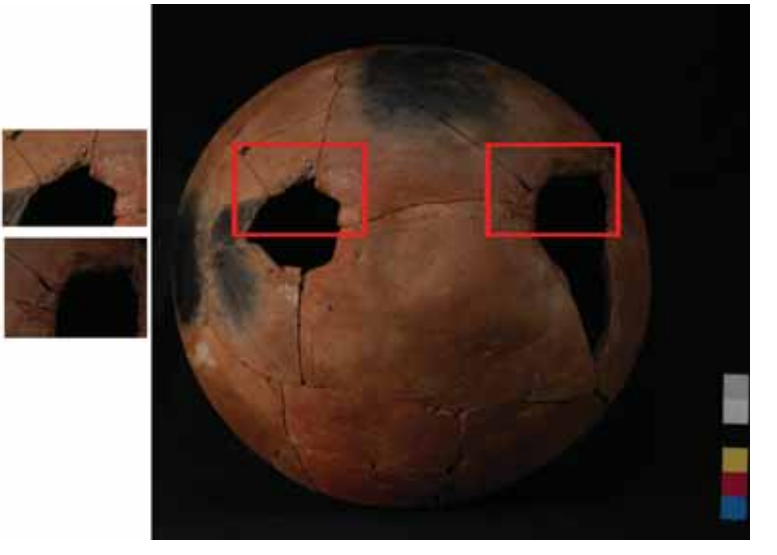


fig. 1. Reused bowl with uneven surfaces suggesting forming in a convex mold and two circular holes

POTTERY RECYCLING

Pottery recycling is the best known aspect of ceramic reuse-cycle from Vinča. Finds of sherds with different functions are numerous and they can be divided into three groups with many subdivisions: tools, building material and raw material. In contrast to the common definitions which regard recycling as return of an artifact to manufacture stage, we consider fragmentation as the

1 It was found in the room with an oven, several grinding stones in association with sets of several ceramic containers in house 01/06 during 2006. excavation campaign.

basic criterion for definition of recycling. In another words, recycling is usage of broken vessels parts. The main reason for such determination is the fact that fragments may, but not necessarily, be reshaped for new function.

SHERDS AS TOOLS

Like other aspects of pottery reuse and recycling, tools made of pottery sherds are rarely recognized and written about. However, they are found in great abundance in the final layers of Neolithic settlement. Many of the tools have interesting biographies, since a considerable number has been found within oven foundations. That reveals the fact that many of the recycled ceramic sherds were used several times in different activities and contexts.

The best known usage of sherds is the presence of handles used as net weights. In the Serbian literature they are wrongly named „burnishing tools". They are easily recognized by their round edges, certainly caused by fluvial abrasion, which means that fragments stayed in water for a longer time periods. It is not clear, however, if these sherds were additionally reshaped before reuse, since the water action erased possible traces of such activities. On the other hand, their usage as net weights is doubtless and supported by finds of their concentrations *in situ* on the floors of Vinča structures. It must be stressed that these artifacts could have been further reused: there are specimens with intensive use-wear traces. They are present as mechanical damage and abrasion suggesting usage in an activity with an diagonal movement on some kind of hard material.

Sherds used as a tools for other activities are numerous, and their classification can be made by employing different criteria. Specimens of the first group are identified as tools used in pottery shaping. Three main classes were identified: tools with working edges, tools with heavily abraded patches on exterior surface and miscellaneous group (Вуковић 2013). Tools with working edges can be finely shaped to become regular polygonal tools or they can be used without further modifications. Their main characteristic is at least one rounded or flattened abraded edge, so the black core is visible. They are often made of fine bowls sherds. Fine bowls with thin walls are made in fabric with fine sand as temper, burnished or polished surfaces, and were fired in reduced atmosphere. These characteristics make their hardness high, therefore securing their high resistance to mechanical damage, an important attribute for pottery, but also for tools meant to be used with some hard material. A significant number of tools belongs to tools made of bowl rims. That means that sherds were chosen because they had one already "finished" rounded edge. The conclusion may be drawn that the intention of their users was to use sherds without the need to make additional adjustments to their shape. According to

rare analogies (Lopez Varela et al. 2002; Merkyte 2005; Van Gijn et al. 2008) it can be assumed that these tools were used in potter's craft, during the processes of vessel surface modifications (their thinning in leather-hard stage) and burnishing in the process of surface finishing and decoration execution.

Usage of tools in other everyday activities is not certain; there is a possibility, however, that tools belonging to other two groups were used in woodworking or plant processing. Tools with abraded patches were not reshaped before use. Instead, fragments with extremely protruded parts, like bowl shoulders or carinated parts of the vessels were chosen to be used in activities of rubbing on some hard surface. This activity caused heavy mechanical damage, so that protruded parts were completely flattened, original surface has been removed and the black core became visible. It can only be assumed that these tools, together with tools with step-like edges, were used in wood and bone processing. However, experiments conducted recently showed that ceramic is not suitable material in such activities (Van Gijn et al. 2008), so the issue of their function still remains open. On the other hand, an example with different use-wear traces in the form of regular parallel incisions on the rim indicates the possibility of use during plant or fiber processing; according to the published experiments, sherds could have been used in this manner (Van Gijn et al. 2008), and plant processing, along with pottery manufacture, was the most probable activity in which pottery tools were suitable for use.

An interesting example of complex artifact biography is a fragment of bowl with inverted rim with several groups of use-alteration (fig. 2). Two fragments of the bowl were found in different contexts, in the area between houses. Each fragment has finely processed semicircular denticulations made after firing and

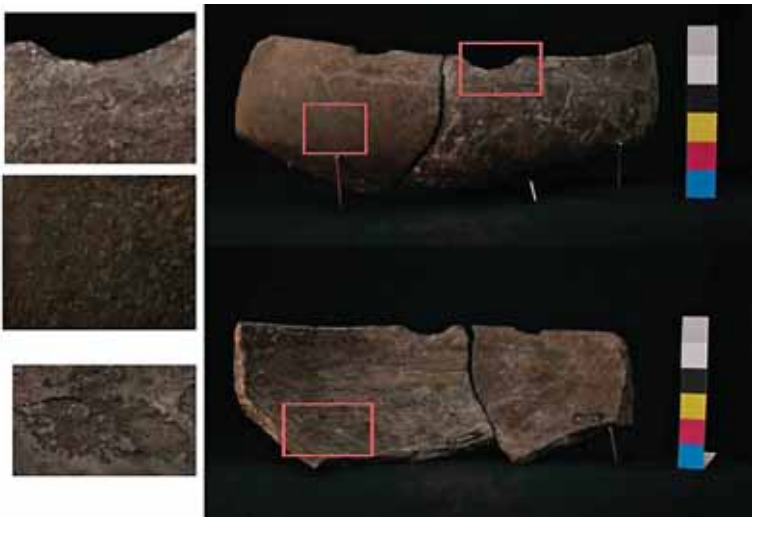


fig. 2. Two fragments of one bowl with different individual histories

probably after the vessel broke; it is pretty certain that they were made on a fragment, not on a vessel, but it is not clear, however, whether they were made before the fragment itself was broken; the rim is abraded on both fragments. After the fragment was broken, each sherd was subjected to different agencies. The first one has dense traces in the form of small regular pits on the exterior wall, as if the fragment was leaning on some „prickly" surface. The other one exhibits moderate surface pitting on the interior surface and heavy mechanical damage and surface spallling on the exterior, so that the original surface has been removed. It is possible that the indentations were fashioned because the tools were meant to be used in shaping and finishing of tools made of bone or wood. After that, one fragment was used probably as some kind of support or working surface[2], while the other could have been deposited in an environment rich with organic matter, so the damage could be the result of post-depositional processes.

SHERDS AS RAW MATERIAL

Usage of grog, i.e. crushed pottery as non-plastic inclusion in clay body, is a common feature of the Vinča pottery. Grog has several advantages over other types of non-plastic inclusions in pottery production for several reasons: it is cost-effective because the addition of crushed ceramics reduces the amount of raw material needed; sherds are easier to crush than other types of mineral temper and most importantly, because grog is already fired, it is stable during refiring and possesses same properties as the fabric into which is incorporated (Rye 1981, 31); this means that when fired, grog has the same thermal characteristics as clay matrix and expands at the same rate (Arnold 1985, 24). Finally, there is great abundance of pottery fragments, originated as a consequence of high breakage rates, especially for fine pottery (Vuković 2010). It is therefore reasonable to assume that broken pottery was kept stored somewhere within the settlement in order to provide necessary raw material for seasonal pottery making.

SHERDS AS BUILDING MATERIAL

As in the case of vessel secondary use, ethnoarchaeological research revealed several different modes of potsherd use as building material: paving for pathways or patios, chinking in chimneys or wattle-and-daub walls, and roof sla-

2 Usage of fragments as working surfaces for cutting and other activities was confirmed; these tools belong to the third miscellaneous group.

ting (Deal 1998, 110). Although we can assume the usage of pottery sherds for paving and similar functions, the only certain contexts in Vinča where sherds usage in construction was confirmed are oven foundations. The analysis of properties of sherds used, their fragmentation and dimensions, however, revealed many interesting issues.

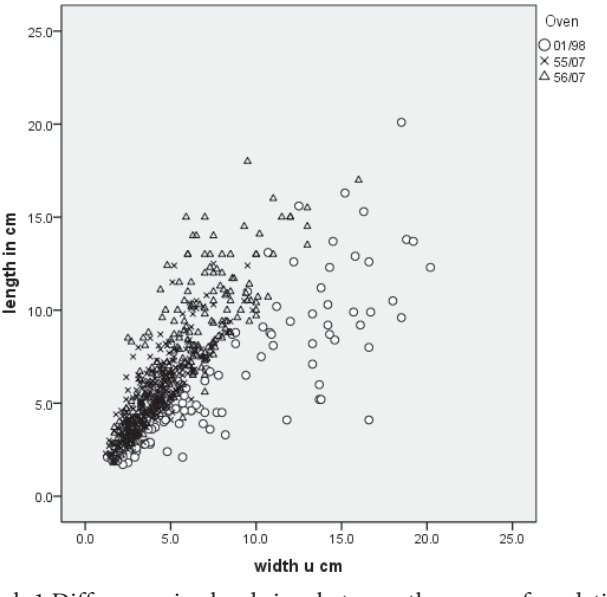
Potsherds are common material for oven foundations, and stone was very rarely used. The analyses of sherd sizes and fragmentation were conducted on assemblages from three oven foundations. These ovens were not connected with residential structures for certain and it is not certain whether they were used in open air or they were incorporated into houses. All of them, however, belong to the same cultural layer, the final Neolithic layer on the site. The results revealed significant differences in their contents.

If morphology of the sherds used is considered, bowls made of fine fabric dominate in oven foundations. The foundation of oven 01/98 (fig.3) contained 416 sherds of large dimensions. After refitting, it became clear that nearly a half of them (48%) were parts of only five large storage vessels. Bowl sherds took 17% of the total; in contrast to the first group, they could not be joined together, and total number of sherds represents the total number of bowls in this context (69 specimens). It should also be noted that a considerable percent (35%) belongs to typologically undetermined vessels. In total, the oven contained fragments of 120 vessels. These numbers clearly reveal the tendency earlier noticed in Vinča pottery in general: fine bowls were used more frequently than other functional classes of pottery, their breakage rate was high, and consequently their replacement rates were high, too (Vuković 2010). Although fragments with thicker walls made in coarser fabric with large quantities of inclusions could have been more suitable for oven foundation paving, Vinča builders used available and abundant resources: bowl fragments.

fig. 3. Foundation of oven 01/98, and two refitted vessels

The ovens 55/07 and 56/07 showed a somewhat different pattern. They contained smaller number of sherds (316 and 243, respectively), but majority could not be typologically determined (78% and 69%). However, in contrast to the first oven, many of fragments were completely worn-out during their primary use (surface pitting is frequent on interior walls, as well as carbon deposits indicating intensive use over a source of heat); also, already recycled sherds used as tools were further used for oven foundation. Minimum number of vessels could not been determined with certainty, but there is a great possibility that it would more or less match the total number of sherds. One cannot escape the impression that the builders of these two ovens did not have the needed amounts and sizes of raw materials available and that they returned to scarce accessible resources. This impression is even stronger when data about sherds sizes are analyzed.

After refitting of sherds from the 01/98 foundation, where the majority of fragments were joined together to become large storage vessels, the possibility that parts of large storage vessels were deliberately further broken in order to become of suitable size as building material emerged. The other two foundations (55/07 and 56/07) contained fragments of considerably smaller sizes, including already recycled fragments. It is important to stress that joining fragments together was not possible, so the total number of sherds is equal to the minimum number of vessels in the assemblage. Scatterplot diagram shows differences in sherd sizes between three oven foundations (graph 1). These data pose many new questions and open new possibilities of interpretation, as will be discussed below.

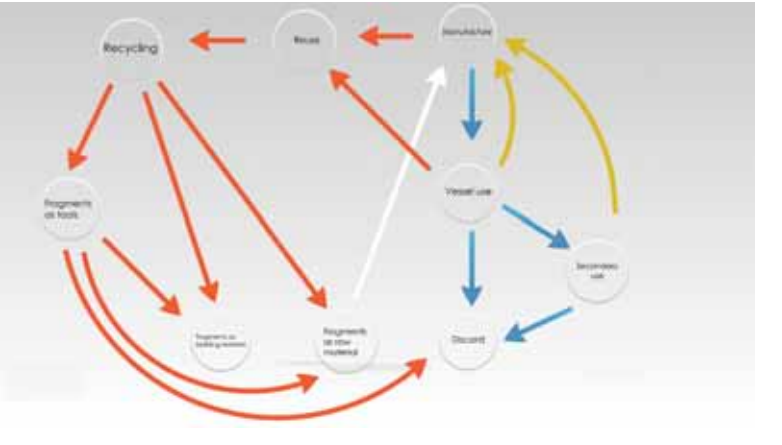


graph 1.Differences in sherd sizes between three oven foundations

DISCUSSION

We saw earlier that pottery vessels were reused in a variety of ways after they lost their primary function. Tools made of pottery sherds were not specialized, most of them were used because of their „natural" shape, with no need for their further reshaping. It is very likely that they were discarded as soon as they became worn-out, so many of them were used only once. On the other hand, contents of oven foundations, as well as lithics analyses[3], revealed that other raw materials, primarily stone, were rare. It can be assumed that access to sources of other raw materials was restricted. It should be borne in mind that this is the situation in the final Vinča layers, the layers which represent the decline of the Vinča settlement. In the situation of raw materials shortage, the Vinča people turned to the only resource they had in abundance: pottery.

It is possible to summarize different stages of Vinča pottery uselife-cycles in the diagram (graph 2). The primary cycle is marked with blue arrows: it starts with manufacture and continues with pottery use, then broken vessels could have been secondarily used or discarded. The cycle of reuse is marked with red arrows. It starts when vessels break and their fragments separately start their own life cycles in different activities and contexts. This cycle is much more complicated, because fragments can be reused (and possibly reshaped) as tools with different functions (for example, handles as net weights and after that as burnishing tools). In other words, fragments can be returned to this stage several times. After the ceramic tools were worn out and were not suitable for further use, they could have been discarded in trash. This represents the end of a single life-cycle. However, there are two more possible ends. Pottery

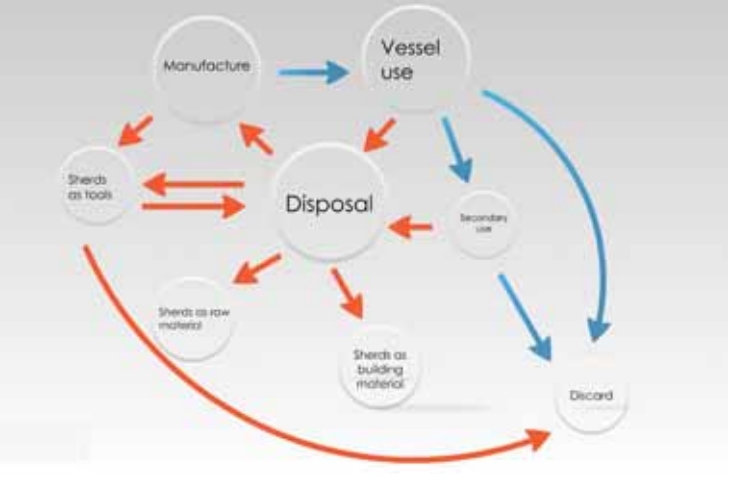


graph 2. Different stages of Vinča pottery use-lifecycles

3 D. Antonović and V. Bogosavljević-Petrović, pers. comm.

sherds can be used as building material. If they were used for oven foundations, this is where they end their use-lives. If the fragments were used as roof cover supports, their life cycle could have been different, because after that kind of usage they could have been used further as tools or raw materials, which means that they returned in one of remaining stages[4]. Finally, usage of sherds as raw materials represents a certain end of a life cycle. From this stage crushed fragments return to manufacture stage to become parts of newly made vessels which start their own life cycle from the beginning. If we look closer to the diagram the large number of arrows can be seen, especially if we bear in mind that there could be even more of them, since the stage of recycling can be repeated several times. One can not escape the feeling that something is missing. Fragments do not simply exit from one stage and enter another. So, the question arises: What happened with pottery sherds between the stages? Where were they before they entered in or returned to some stages of life cycle?

If we consider ceramic reuse from the point of view of human activity cycles, the diagram will look completely different (graph 3), since the presence of storage is introduced. Therefore, we must assume the existence of disposal areas within the Neolithic settlement as well. The provisional discard of damaged vessels, defined in ethnoarchaeological research, is considered to be the most important disposal mode for understanding the spatial patterning of pottery assemblages (Deal 1998, 118-120). Different strategies include dispersed or clustered storages; the latter is a continually used household facility. If we try to understand and recognize provisional discard in the Neolithic archaeological record, many questions arise.



graph 3. Vinča pottery use-lifecycles with presence of provisional discard

4 Since this kind of usage is not identified in Vinča yet, it is not shown on the diagram.

First, we must consider disposal with its spatial and temporal dimensions. It is logical to assume that some time must have passed between breaking of the vessel and its reuse, so the sherds must have been stored for different periods of time. On the other hand, we must consider the possibility that the difference between long-term and short-term storage existed. For example, during the excavations in Vinča a heap of pottery sherds was identified lying on the floor of the house[5], in the vicinity of one large grinding stone (other findings from the floor included mostly whole vessels). It is highly possible that it was short-term disposal area, which means that the fragments were brought to the house just to be crushed in the grinding stone and prepared as temper. This is related to spatial dimension of disposal. It can be assumed that pottery sherds storage could have taken place in different parts of the households or the settlement. Differences between sherd assemblages from oven foundations lead us to pose another question: were disposal areas communal, did every household have its own or both kinds existed? We showed earlier that the oven foundation assemblages greatly differ from each other. One contained fragments of large dimensions originated from several vessels. Another two showed completely different picture: fragments were extremely small and each belonged to another vessel. Several conclusions can be drawn. The assemblage of the first oven shows more consistency; it was probably formed over a shorter time period. In other words, short period of time has passed between vessel breakage, disposal and usage of their fragments as building material. The assemblages from the other two ovens show us the opposite: small sherd size and almost the same number of sherds and minimum number of vessels indicate a longer period of disposal and shortage of building material. Furthermore, the possibility that oven builders depleted their own source of pottery sherds and did not have access to any other disposal area must be taken into account. Finally, we must ask can these data be considered as markers of some social relations, too?

CONCLUSION

Bearing in mind all these questions, it is obvious that more attention should be paid to pottery reuse and disposal. We are at the beginning of such research and many questions still do not have answers. On one hand, pottery recycling should give us more insight in everyday life of Neolithic people: about the way tools were used and different activities they were involved in, as well as access or restrictions in acquisition of raw materials, leading to better understanding of social relations. More experimental research is needed in order to define real function of sherds used as tools. On the other hand, disposal areas are

5 It is the same house (01/06) mentioned earlier in the case of reused bowl with circular holes.

very difficult to recognize during archaeological excavations, since pottery fragments are very numerous. It is important to be aware of their existence, so that in the future field research new methodologies for identification of such places could be developed. Only then final answers and interpretations should be drawn in order to reveal complex interactions between pottery and people in Neolithic society.

REFERENCES

Arnold, Dean E. 1985. *Ceramic Theory and Cultural Process*. Cambridge: Cambridge University Press.

Deal, Michael. 1998. *Pottery Ethnoarchaeology in the Central Maya Highlands*. Salt Lake City: The University of Utah Press.

Deal, Michael, and Melissa B. Hagstrum. 1995. „Ceramic Reuse Behavior among the Maya and Wanka: Implications for Archaeology", In *Expanding archaeology*, eds. James M. Skibo, William H. Walker and Axel E. Nielsen, 111–125. Salt Lake City: The University of Utah Press.

Frank, Barbara E. 1994. More than Wives and Mothers. The Artistry of Mande Potters. *African Arts* 27(4), 26–37+93–94.

Lopez Varela, Sandra L., Annelou Van Gijn, and Loe Jacobs. 2002. De-mystifying Pottery Production in the Maya Lowlands: Detection of Traces of Use-wear on Pottery Sherds through Microscopic Analysis and Experimental Replication. *Journal of Archaeological Science* 29: 1133–1147.

Merkyte, Inga. 2005. V: Pottery as a Source of Information, *Acta Archaeologica* 76 (1): 73–94.

Rye, Owen S. 1981. *Pottery Technology*. Washington: Taraxacum.

Schiffer, Michael B. 1987. *Formation Processes of the Archaeological Record*. Albuquerque: The University of New Mexico Press.

Sullivan, Alan P. III 1989. The Technology of Ceramic Reuse: Formation Processes and Archaeological Evidence. *World Archaeology* 21 (1): 101–114.

Van Gijn, Annelou, and Corinne L. Hofman. 2008. Were they used as tools? An exploratory functional study of abraded potsherds from two pre-colonial sites on the island of Guadeloupe, northern Lesser Antilles. *Caribbean Journal of Science* 44 (1): 21–35.

Вуковић, Јасна. 2013. Фрагменти као алатке у каснонеолитској Винчи. *Старинар* 63: 191–207.

Vuković, Jasna. 2010. Neolithic Fine Pottery: Properties, Performance and Function. *Journal of the Serbian Archaeological Society* 26: 7–23.

Vuković, Jasna. 2014. „Archaeological evidence of pottery forming sequence: Traces of manufacture in Late Neolithic Vinča assemblage", In *Archaeotechnology: Studying technology from prehistory to the Middle Ages*, eds. Selena Vitezović and Dragana Antonović, 177–198. Beograd: Srpsko arheološko društvo.

Jasna Vuković

Sekundarna upotreba, ponovna upotreba i recikliranje keramičkih posuda: podaci iz kasnoneolitske Vinče

Rezime

Nekoliko načina sekundarne i ponovne upotrebe i recikliranja identifikovano je na kasnoneolitskoj keramici iz Vinče. Sekundarna upotreba odnosi se na delimično oštećene posude koje su korišćene kao kalupi za izradu grnčarije. Ponovna upotreba odnosi se na posude na kojima je izvršena modifikacija oblika pošto su izgubile svoju primarnu funkciju. Tu se izdvaja zdela sa dve naspramno probijene rupe posle pečenja, koja je mogla služiti kao neka vrsta poklopca. Recikliranjem se smatra upotreba fragmenata polomljenih posuda. Oni mogu biti korišćeni kao alatke (tegovi za mreže, alatke korišćene u procesu modifikacije površina tokom izrade grnčarije, a možda i za obradu drveta ili biljnih vlakana), kao primesa osnovnoj masi za izradu posuda (šamot) i kao sirovina za gradnju supstrukcija peći. Rezultati analize keramičkih fragmenata (minimalni broj posuda, funkcionalna analiza, fragmentacija) tri supstrukcije peći pokazali su njihov različit sadržaj. Supstrukcija peći 01/98 sastojala se od fragmenata velikih dimenzija; posle njihovog spajanja, utvrđeno je da je skoro polovina fragmenata pripadala ukupnom broju od pet skladišnih posuda, a nešto manji procenat zdelama, čije fragmente nije bilo moguće spojiti; ostatak pripada tipološki neopredeljivim fragmentima. Sadržaj supstrukcija peći 55/07 i 56/07 se u priličnoj meri razlikuje: mnogi fragmenti su potpuno istrošeni prethodnom upotrebom (uz one već reciklirane koji su pre nego što su dospeli u supstrukciju korišćeni kao alatke); fragmenti su u najvećoj meri tipološki neodredivi i izuzetno su malih dimenzija, posebno u poređenju sa prethodnom supstrukcijom; minimalan broj posuda je gotovo identičan ukupnom broju fragmenata.

Ukoliko se ponovna upotreba grnčarije posmatra iz ugla ljudskih aktivnosti, mora se računati sa postojanjem prostora za odlaganje i skladištenje fragmenata polomljenih posuda, potvrđenim etnoarheološkim istraživanjima. S obzirom na to da je od trenutka lomljenja posuda do upotrebe njihovih fragmenata moralo da prođe neko vreme, može se pretpostaviti da je postojala razlika između mesta za kratkotrajno skladištenje i onog za dugotrajno. Razlike u asemblažima supstrukcija nekoliko peći ukazuju na mogućnost da su neka domaćinstva imala ograničen pristup sirovinama, što za sobom povlači pitanje zajedničke ili individualne upotrebe takvih prostora. Osim toga, imajući u vidu sadržaj supstrukcije peći 01/98 (veliki fragmenti koji pripadaju manjem broju posuda), može se zaključiti da je između lomljenja posuda i njene gradnje prošao relativno kratak period. S druge strane, druge dve peći pokazuju sasvim suprotnu sliku: male dimenzije fragmenata i minimalan broj posuda koji je gotovo jednak broju fragmenata ukazuju na duži period skladištenja, kao i nedostatak pogodnog materijala za gradnju. Može se pretpostaviti da su graditelji iscrpli svoje „zalihe", te nisu imali pristup drugima. Time se nameće pitanje da li ovakvi sadržaji supstrukcija ukazuju i na neke socijalne razlike.

Imajući u vidu prethodnu analizu, treba istaći da se sekundarnoj upotrebi keramike mora posvetiti veća pažnja. S jedne strane, analize reciklirane keramike mogu da pruže nove podatke o aktivnostima neolitskih stanovnika; u tom smislu, važno je ukazati na potrebu za eksperimentalnim istraživanjima. S druge strane, potrebno je razviti metodologiju kojom bi bili identifikovani prostori za odlaganje i skladištenje, kako bi se bolje razumeli ne samo organizacija naselja već i socijalni odnosi.