O P V S C V L A
A R C H Æ O L O G I C A

UDK 902-904 ISSN 0473-0992

IZDAVAČ / PUBLISHER
ARHEOLOŠKI ZAVOD FILOZOFSKOG FAKULTETA SVEUČILIŠTA U ZAGREBU
DEPARTMENT OF ARCHAEOLOGY, FACULTY OF HUMANITIES AND SOCIAL SCIENCES, UNIVERSITY OF ZAGREB

ADRESA IZDAVAČA / ADDRESS OF THE PUBLISHER
Arheološki zavod Filozofskog fakulteta
Department of Archaeology, Faculty of Humanities and Social Sciences
10000 ZAGREB – CROATIA
I. LUČIĆA 3 – P.O. BOX 171

RAČUNALNI PRIJELOM / COMPUTER LAYOUT
Ivanka COKOL for FF-press

PRIJEVOD NA ENGLESKI / TRANSLATION TO ENGLISH
Ana ĐUKIĆ & Vinita RAMLJAK

GODIŠNJAK / ANNUAL

Izdavanje časopisa novčano podupire
ODSJEK ZA ARHEOLOGIJU FILOZOFSKOGA FAKULTETA SVEUČILIŠTA U ZAGREBU
Publishing of the journal financially supported by
DEPARTMENT OF ARCHAEOLOGY, FACULTY OF HUMANITIES AND SOCIAL SCIENCES UNIVERSITY OF ZAGREB

Službena kratica ovoga časopisa je *Opusc.archaeol. (Zagreb)* / Official abbreviation of this journal's title is *Opusc.archaeol. (Zagreb)*

URL: www.ffzg.hr/arheo/opuscula

Dostupno na / Available at Ebsco Publishing (www.ebscohost.com)

Tiskano 2018. / Printed in 2018

OPVSC. ARCHÆOL. VOL. 39/40 STR. / PAGES 1–297 ZAGREB 2018.

O P V S C V L A
ARCHÆOLOGICA

2018

OPVSC. ARCHÆOL. VOL. 39/40 STR. / PAGES 1–297 ZAGREB 2018.

FILOZOFSKI FAKULTET
SVEUČILIŠTA U ZAGREBU
FACULTY OF HUMANITIES
AND SOCIAL SCIENCES,
UNIVERSITY OF ZAGREB

RADOVI ARHEOLOŠKOG ZAVODA
PAPERS OF THE DEPARTMENT
OF ARCHAEOLOGY

UDK 902-904 ISSN 0473-0992

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LATE NEOLITHIC VINČA POTTERY FIRING PROCEDURE: RECONSTRUCTION OF NEOLITHIC TECHNOLOGY THROUGH EXPERIMENT*

doi: 10.17234/OA.39.2
Pregledni rad / Review paper

UDK / UDC 683.9-033.6:903.2(497.11 Vinča)"6347"
Primljeno/Received: 31.07.2015.
Prihvaćeno/Accepted: 05.02.2016.

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The considerations about Late Neolithic Vinča pottery are numerous in archaeological literature, but the Neolithic technology, and especially firing procedures are still unknown. The main goal of conducted experiment was reconstruction of reduced firing in pits, but also open-air firing and intentional blackening of the vessels fired in oxidizing atmosphere. The results revealed advantages of pit-firing. From the point of view of technological choices, it was established that maintaining low temperatures of the firing was intentional decision of the potter in order to avoid cracking originated from calcium-carbonate decomposition.

Key words: experimental firing, pottery, Late Neolithic, Vinča, pit-firing, open-air firing.

The considerations about Late Neolithic Vinča pottery are numerous in archaeological literature. However, pottery was usually subjected only to typological analyses in order to establish its chronological position. The issues related to technology are very rarely explored in Serbian archaeology, with an exception of short remarks about high quality of Vinča ware in older literature (for example Garašanin 1979; cf. Vuković 2015), thus making a general opinion of highly-skilled Vinča artisans. What "high quality" pottery means, however, was not explained, nor the criterions for determination of "quality" were presented. On the other hand, due to the fact that Vinča pottery was fired on low temperatures, it is not uncommon that many reserachers regard Vinča potters as producers with no sufficient technological knowledge, unable to achieve high temperatures of their products. Consequently, Vinča potters are considered as skilled artisans producing ware with high aesthetic value, and in the same time as primitive ignorants with no idea of suitable raw materials and technical procedures. Therefore, the need for reconsideration of pottery technology and for systematic research with well-defined research goals must be emphasized.

* The article results from the project No. 177012 funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia.

Archaeological excavations of Late Neolithic sites yielded vast number of pottery sherds and whole vessels, but not a single pottery workshop or any activity zone that can be related to pottery production was found. Pottery "kilns"[1] were mentioned in literature (Leković 1995: 30), but the absence of wasters and unfired vessels brings into doubt such attribution. The archaeological context of many ovens found in structures suggest food processing, but not pottery firing. Moreover, ethnoarchaeological research reveal that pottery firing inside residential structures is not a common practice; the activities related to pottery firing usually take place outside, even if the kilns were used, and potential risks of firing is also one of the concerns (Arnold III 1991). In the terms of space usage, organization of pottery production among the female potters tends to be unrestricted (e.g., 102).[2] Therefore, firing of Vinča pottery outside of the houses must be assumed, but firing procedure is still unknown. Bearing in mind the color of Vinča pottery (black and in the shades of grey) and the colors of its cross-section (black-light grey-black), it is obvious that it was fired in reduced atmosphere. Large number of pits excavated on Vinča sites indicate the possibility that they could have been used for pottery firing; after the firing, vessels could have been removed, along with the wasters. The pits could have been further used for garbage disposal. Burned walls of the pit and ashes on its bottom would have been the only evidence about their original purpose. Therefore, it is not surprising that these structures were not recognized as pottery related.

Background: Data and previous research

Firing procedure could not be reconstructed without the knowledge of paste recipes and raw materials used. Therefore complex interdisciplinary research was conducted[3] with the main goals: 1. identification of paste recipes, 2. identification of raw materials used as temper, 3. clay provenance, 4. analyses of fabric of different functional vessel classes, and 5. experimental reconstruction of firing. The aim of the first part of the reserach was to identify potential raw material sources, to make test-briquettes with different recipes, to fire them in controlled conditions in laboratory and experimentally in the pit, and then to conduct archaeometric analyses of both in order to establish original Late Neolithic Vinča pottery recipes.

The first step in reserach was sampling of Vinča pottery for archaeometric analyses. The main goal was to establish whether different functional classes of vessels were made in different fabrics. A total of 13 samples belonging to the final phase of Vinča settlement were selected: bowls with inverted rim (3 specimens), conical bowl (1 specimen), amphorae (5 specimens), baking-pans (2 specimen) and cooking-pots (2 specimens). It is important to note that cooking-pots are extremely rare in Vinča assemblage; the samples were selected according to their macroscopically defined coarse fabric. However, the sherds were lacking use-traces originated from heating, so their attribution to the class of thermal food processing was not certain; they could have been part of storage vessels as well.

The samples of potential raw materials from four locations in the vicinity of the archaelogical site were collected. Two groups of test-briquettes were made[4]: the first, made of clay without any inclusions (6 specimens), and the second, made of composites (mixed raw materials) (13 specimens). They were fired in a modern kiln, and in experimentally in a pit as well. Archaeometric analyses (XRD, AAS, and petrological thin-section analysis) were conducted on fired briquettes and on original archaeological specimens. The results revealed that Late Neolithic pottery was fired at 800°C, and no differences between different functional classes were determined - all samples were made in the same paste; it was also established that several admixtures were added: crushed quartz, shells and finely grained organic inclusions; it was assumed that powdered dung was used (Svoboda et al. 2005). According to the results of the analyses, the strongest correlation with Vinča ceramics was established for raw material obtained from a loess deposit at the location of Ciglana, about 1 km from Neolithic site, where modern day brickyard is located. Technological analyses revealed that this raw material belongs to the group of highly plastic clays; therefore, non-plastics such as carbonates must have been added as temper in order to avoid cracking during drying (e.g., Vasić et al. 2006).

After determination of raw materials, replicas of Vinča vessels were made: amphorae, baking-pans

1 In this case, it is not a kiln, but rather an oven inside the house.

2 It was argued that Vinča potters were female, and the organization of production was household-based adn in the initial level of specialization (Vuković 2014b).

3 The reserach was conducted during 2005. and 2006. under the programme "Experimental archaeology - traditional pottery making" by the joint team of Department of Archaeology, Faculty of Philosophy and DIANA center (now Central Institute for Conservation). The goals of the programme and preliminary results of archaeometric analyses and experimental firing were published in DIANA journal (Svoboda et al. 2005; Vasić et al. 2006).

4 Raw materials were prepared and briquettes and vessels were made by M.A. Vesna Svoboda, artist-ceramist.

and bowls. The clay from Ciglana was used for clay body and it was mixed with different amounts of inclusions: crushed shells, grog, sand and powdered dung; a total amount of 11 vessels made in different recipes was prepared, but the most suitable for shaping were three pastes: with 20% of gravel, 10% of sand and 20% of dung. Although the aim of the experiment was not the reconstruction of forming techniques, the vessels were made according to the existing knowledge about shaping of the pots (Vuković 2011; 2014a). An amphora made of paste with powdered dung was built by combining different methods: with usage of convex mold for the lower section of the vessel and coiling for the upper part. When the vessel reached leather-hard stage, the walls were thinned by using a riverine shell; it was not a time-consuming task and it was done without any difficulties - the shell edge turned out to be extremely suitable for this purpose. Burnishing of inner and outer surfaces was carried out with a pebble; this was a difficult task - it took about three hours before all the surfaces were evenly burnished. Bowls and baking-pans were made by drawing.

Experimental firing

Athough the pit-firing was assumed to be the procedure used in later phases of Vinča, it was decided to conduct experimental firing in the open air as well, for several reasons. Oxidized firing preceeds firing in reduced atmosphere; it is common during the Early Neolithic and initial phases of Vinča. Besides, three-coloured vessels (so-called "black-topped") represent one of the most attractive pottery finds of earlier phases of Vinča tradition. However, it was not clear how the multicolored effect was achieved; it was assumed that it was made by exposure of the vessel to different firing atmospheres. Secondly, the procedure of open-air firing with intentional blackening of the vessel's surface had to be tested as one of possible firing methods. Also, black and grey surfaces could have been produced in oxidizing atmosphere if the vessels were left to cool in the setting, covered with ash and unburned fuel; therefore, cooling atmosphere could have been reduced, thus producing black and grey surfaces. Finally, the main goal of the experiment was to define advantages and disadvantages of two firing methods, in order to explain the shift in technology during the Neolithic period. One of the main prerequisites for experiment was to choose adequate fuel. It was decided to use low calorific fast-burning fuel for preheating (straw, brushwood - ailanthus, elderberry and apricot), high calorific fuel (beechwood) for pit- and open-air firing, and fast burning fuel (dry leaves, straw and brushwood) for making smoke for achieving reduced atmoshpere in pit-firing and for additional blackening.

Pit-firing

1. Conical pit was dug (diameter 1.8 m, depth 0.9 m and bottom diameter 0.97 m). On the edge of the pit, a low "shelf" was made (23 cm wide), paved with pottery sherds in order to prevent contact of the vessels with moist soil. The canal for pyrometer was also dug (Fig. 1).

Figure 1.

2. Inside the pit the fire was set by using low calorific fuel. Then, the vessels were placed on the "shelf" for preheating. The pit was heated and the pots were preheated for two hours (Fig. 2).

3. When the ember was formed, pottery sherds were placed above it in order to prevent thermal shock. Then the pots were placed in center of the pit. Chunks of beechwood were placed around the pots (Fig. 3).

Figure 2.

Figure 3.

Figure 4.

Figure 5.

Figure 6.

Figure 7.

4. When fire caught the fuel it was necessary to constantly control the temperature on pyrometer (Fig. 4). This is water-smoking stage of the firing, when the water remained in the vessels' walls started to release. The rate of heating must be slow, because the water steam may cause cracking. Neolithic potters may have controlled this stage by observing the color of the flame, as it was confirmed in ethnoarchaeological and ethnographic research (Arnold 1999: 52; Rye 1981: 105). After a half an hour, the temperature reached 260°C. Afterwards, the fire was maintained by constant adding of the fuel. After an hour from the beginning of firing it reached 575°C.

5. The heating continued and when the temperature reached 850°C (a maximum temperature) it was sustained for 30 minutes (Fig. 5).

6. After this soaking period no fuel was added and cooling process started (Fig. 6).

7. During the cooling, the fire is slowly withering. Some vessels are in the ashes, while the others are surrounded by ember (Fig. 7).

8. After 1 hour and 45 minutes from the beginning of the firing, the flames were gone. It was the moment for creating reduced atmosphere. The fast-burning fuel was thrown into the pit. A great amount of smoke was created (Fig. 8).

9. Smokening lasted for 10 minutes, and then the pit was quickly filled with earth (Fig. 9). The firing lasted for 2 hours, but the whole process, including preheating lasted for 4 hours.

10. After 24 hours the vessels were dug out from the pit (Fig. 10).

11. Majority of vessels "survived" the firing, and most of them were of grayish-black color (Fig. 11).

12. The appearance of the pit after the earth was removed and vessels dug out was instructive for archaeological excavations. Its walls were burnt and red in color, with a black zone just above its rim. The bottom of the pit was covered with a layer of ash, and a layer of soot and charcoal above it. After their removal, the black burnt pit floor was uncovered (Fig. 12).

Figure 8.

Figure 9.

Figure 10.

Figure 11.

Figure 12.

The Results

One of the most important results of pit-firing experiment was almost complete absence of cracks and fractures on the vessels. However, two cases of cracking must be examined in more details. This is a good example how an "accident" may lead to important conclusions. Both of the vessels were made of paste with shells added as temper. During firing, a large quantity of fuel was added into the pit by mistake, and caused extremely rapid temperature increase (more than 1000°C in only few minutes), resulting with breakage and spalling, leaving a cone-shaped pits with a whitish grain in its center on vessel's walls (Fig. 13). This "accident" is of significant importance for understaning of the firing procedures in the past. It confirms that reaching high temperatures in pit-firing was not difficult to achieve, as it was shown also in published works (Gosselain 1992: Livingstone-Smith 2001); furthermore, this temperature rise can be triggered by accident, and does not have to be conditioned by possessing specialized knowledge. More importantly, it had a fatal impact on the vessels made of clay with crushed shells. Calcium carbonates decompose on the temperatures between 750°C and 825°C to calcium oxide which can react with the water in the air forming calcium hydroxide; CaOH has greater volume than CaO and $CaCO_3$, so this expansion may cause serious damage to the vessel, in the worst cases resulting with their breakage. This destructing process can be prevented by keeping the firing temperature below that where calcium carbonate decomposes (Rye 1981: 107; Tite *et al.* 2001: 322). The vessels cracked probably during cooling of the pit. Therefore, the highest temperature should be kept under 800°C, in contrast to the procedure conducted during the experiment.

Open-air firing

1. A bonfire was made of beechwood. The pots were placed in side position (Fig. 14).

2. Around the bonfire, another fires were set for preheating (Fig. 15). Preheating lasted for 3.5 hours.

Figure 13.

Figure 14.

Figure 15.

Figure 16.

Figure 17.

3. When fire caught the bonfire, a gradual temperature increase started, for 1.5 hours, with a temperature between 365°C and 450°C. In this stage, the vessels became black (Fig. 16).

4. After this stage, fuel was arranged around the pots until the temperature of 800°C was reached; it was sustained for a half an hour. The pots lost their black color and became of brownish and red color (Fig. 17). After a half an hour, the fire was not maintained anymore. The whole process lasted 6 hours.

The results

The open-air firing produced more wasters than pit-firing (Fig. 18). This is because the atmosphere (and temperatures) were more difficult to control, resulting with cracking of the pots, especially the thick-walled ones. Different parts of these vessels were subjected to different temperatures, which caused stresses that led to breakage (Rice 1987: 104–107). Besides, the pots were not removed from the bonfire while the fire was still on its peak, but instead were left in the ash; therefore, some of the vessels retained their greyish colors.[5]

[5] It must be stressed that open-air firing was not the priority of the experiment, but instead a preliminary attempt, as a basis for designing a new experiment oriented towards the reconstruction of Early Neolithic oxidized firing.

Figure 18.

Figure 19.

Figure 20.

Figure 21.

Intentional blackening

During the experiment, two ways of intentional blackening of the vessels were tested: the first method was similar to well-known raku-technique and was oriented towards blackening of a whole vessel. The procedure was conducted according to the ethnographic and ethnoarchaeological evidence (Beier 1980; Berns 2007; Frank 1994; Longacre *et al.* 2000). The second was challenging because of the lack of considerations of similar techniques in literature; the goal was to test whether it is possible to achieve multicolored effect on different parts of the pot by different firing procedures.

One big pot[6] was filled with straw. When the flame on the bonfire dropped to 450°C, the pot of smaller dimensions was removed from the fire and while still red-hot put into the bigger pot; the straw started to burn and great quantity of smoke was created; instantly, the pot was covered with a ceramic lid in order to prevent airflow (Fig. 19). After several minutes, the small vessel was taken out of the pot (Fig. 20). As a result, it gained even dark-grey color (Fig. 21).

Replica of a Vinča pedestalled goblet was fired in an open fire. The assumption was that a multicolored effect was achieved by additional blackening of the upper part of the vessel. When red-hot goblet was removed from the fire, it was immersed into the sand from the bottom to its shoulder. The upper part was left above the sand; immediately, it was covered with straw, similarly to the procedure described above. When straw started to burn, it was covered with another ceramic pot, which prevented airflow (Fig. 22). After the straw burned out, the pot was removed. The upper part of the goblet became grey, in contrast to the lower part which remained red-brownish (Fig. 23).

6 The traditionaly made pot from Zlakusa (southern Serbia) was used. Zlakusa pots are made of paste with calcite (1:1) and fired in an open fire.

Figure 22.

Figure 23.

Discussion

Firstly, it must be stressed that conducted experiments represent the initial and so far only one single attempt to reconstruct Late Neolithic Vinča firing procedures. Therefore, the results must not be regarded as final and indisputable reconstruction of firing technology, but rather as useful guidelines for more elaborate future research. However, several observations have beed made. Pit-firing was in many ways more advantageous than open-air firing: it is more cost-effective because it takes less time (with an exception of 24 hour cooling, but this stage does not require any attention of the potter); considerably smaller quantity of fuel is needed (more than 1/3 comparing to the amount needed for open-air firing); the type of fuel is not important, because the same effects can be achieved by using low-calorific and high-calorific fuel (therefore any fuel could have been used and potters were not limited to one type of fuel, therefore the fuel acquisition was much easier); fire is easier to control in comparison to open-air firing, and as a consequence, low amount (or even absence) of wasters is created. It should be born in mind, however, that the absence of wasters in archaeological record can be explained in several ways; they could have been removed after firing and then further used as raw material (for grog temper, or as moulds, for example) (Vuković, *in press*). The appearance of the pit after the firing is of great significance for archaeology for identification of firing locations on archaeological sites. It should be born in mind that pits could have served for garbage dispoal after their usage for pottery firing. The presence of ash and burnt walls usually lead the researchers to considerations of activities related to cult, although they are more likely the evidence of more practical functions of the pits.

A small vessel subjected to reduced atmosphere after being fired in oxidizing conditions is worth of more elaboration (Fig. 24). During additional blackening, a thin black-colored layer was formed; on the outer surface its margins were sharp, but on the inside it was almost invisible. On the upper parts of the vessel, with thicker walls, a red-colored core is visible. It is possible that reduction was not fully performed, leaving initially created red core. The grey core on other parts, however, indicate that additional blackening can erase the traces of oxidation. Future research should be oriented towards exploration of intentional reduction related to different pastes, sizes and shapes of the veseels.

Figure 24.

An "accident" that occured during the experimental pit-firing and caused cracking and breaking of two vessels also seem significant for raising new questions. The issue of maximum temperature and (in) ability of the potter to achieve high temperatures and control the fire must be reconsidered again. It was showed that reaching high temperatures was not a difficult task (cf. Livingstone-Smith 2001: 997); moreover, it could be done very easy, but with risk of vessel breakage as a consequence of decomposition of calcium-carbonate. The only solution for the potters was to maintain the temperature under 800°C in order to avoid breakage. Consequently, it can be concluded that so-called low temperatures were maintained *intentionally*; they were not developped not because the potters did not know how to do it, but on the contrary, because they did not want to do it. It was their choice (cf. Lemonnier 2002). Maintaining the temperature below 800°C required specialized "technological knowledge" (Schiffer & Skibo 1987) of the properties and performance of raw materials, and ability to control intensity of the fire; in another words - it required significant experience and skill of the potter. The low-temperature firing, therefore, must be considered from the point of view of technological choices; it was conditioned by carbonates in the paste. The choice of adding carbonates to the paste can be easily explained. They are convenient non-plastic inclusion for high-plastic clays (Rye 1981: 32–33). On the other hand, they are suitable for functional requirements of the vessel with intended function of cooking. They exhibit extremely stable performance during cooking temperatures, because their thermal expansion rate is similar to that of average fired clays, thus providing high thermal shock resistance to the vessel (Tite et al. 2001: 319–322). The choice of low firing temperature of Neolithic potters was therefore conditioned by the complex requirements related to the whole technological "chain" - from raw material preparation and forming sequence to usage aspects.

Concluding remarks

Experimental firing did not yield final conclusions about Late Neolithic pottery firing procedure. Rather, it is considered as an intial phase of experimental research. The issues related to the performance of the vessels with different kinds of surface treatments and decoration during firing must also be considered in future experimental research. Nevertheless, the experiment lead to some assumptions about technological choices of Neolithic potters. More complex research, along with archaeometric analyses are therefore much needed in order to fully understand Neolithic pottery technology.

Bibliography

Arnold 1991	P. J. Arnold III, *Domestic ceramic production and spatial organization: A Mexican case study in ethnoarchaeology*, Cambridge, 1999.
Beier 1980	G. Beier, "Yoruba Pottery", *African Arts* 13 (3), Cambridge, 1980, 48–53, 92.
Berns 2007	M. C. Berns, "Pottery-Making in Bonakire, Ghana", *African Arts* 40 (1), Cambridge, 2007, 86–91.
Frank 2007	B. E. Frank, "Marks of Identity: Potters of the Folona (Mali) and their "Mothers", *African Arts* 40 (1), Cambridge, 2007, 30–41.
Garašanin 1979	M. Garašanin, "Centralnobalkanska zona", in: A. Benac (ed.), *Praistorija jugoslavenskih zemalja* II, Sarajevo 1979, 79-212.
Gosselain 1992	O. Gosselain, "Bonfire of the enquiries: Pottery firing temperatures in archaeology: what for?", *Journal of Archaeological Sceince* 19, 1992, 243-259.
Leković 1995	V. Leković, "Neolitska naselja", in: Z. Vapa (ed.), *Arheološka istraživanja duž auto puta kroz Srem*, Novi Sad, 1995, 25–44.
Lemonnier 2002	P. Lemonnier, "Introduction", in: P. Lemmonier (ed.), *Technological Choices: Transformation in Material Cultures since the Neolithic*, London, 2002, 1–35.
Livingstone-Smith 2001	A. Livingstone-Smith, "Bonfire II: The Return of Pottery Firing Temperatures", *Journal of Archaeological Science* 28, 2001, 991–1003.
Longacre *et al.* 2000	W. Longacre, A. Xia & T. Yang, "I Want to Buy a Black Pot", *Journal of Archaeological Method and Theory* 7 (4), 2000, 273–293.
Rice 1987	P. Rice, *Pottery Analysis: A Sourcebook*, Chicago, 1987.
Rye 1981	O. Rye, *Pottery Technology: Principles and Reconstruction*, Washington, 1981.
Schiffer & Skibo 1987	M. B. Schiffer & J.M. Skibo "Theory and Experiment in the Study of Technological Change", *Current Anthropology* 28 (5), Chicago, 1987, 595–622.
Svoboda et al. 2005	V. Svoboda, J. Vuković, D. Izvonar & D. Kićević, "Eksperimentralna arheologija - tradicionalne proizvodnje keramike: Prikaz realizacije I faze projekta", *Diana* 10, Beograd, 2005, 123–131.
Tite *et al.* 2001	M. S. Tite, V. Kilikoglou & G. Vekinis, "Review Article: Strentgh, Toughness and Thermal Shock Resistance of Ancient Ceramics and Their Influence on technological Choice", *Archaeometry* 43 (3), 2001, 301–324.
Vasić *et al.* 2006	N. Vasić N, D. Milovanović, D. Izvonar, S. Knežević,V. Svoboda, & J. Vuković, "Eksperimentalna arheologija - Tradicionalne proizvodnje keramike, dalji razvoj projekta", *Diana* 11, Beograd, 2006, 71–73.
Vuković 2011	J. Vuković, "Tehnike oblikovanja kasnoneolitske grnčarije: pitos iz kuće 01/06 u Vinči", *Zbornik Narodnog muzeja* XX-1, Beograd, 2011, 71–82.
Vuković 2014a	J. Vuković, "Archaeological Evidence of pottery forming sequence: Traces of manufacture in Late Neolithic Vinča assemblage", in: S. Vitezović & D. Antonović (eds.), A*rchaeotechnology: Studying technology from Prehistory to the Middle Ages*, Belgrade, 2014, 177–195.
Vuković 2014b	J. Vuković, "Women Labor and Household Production: Emergence of Specialized Potters in the Late Neolithic of the Central Balkans", paper presented at the 20th Annual Meeting of the European Association of Archaeologists, Istanbul 2014.
Vuković 2015	J. Vuković, "Izgubljeni u tranziciji: problem prelaza ranog/srednjeg u kasni neolit centralnog Balkana u jugoslovenskoj/srpskoj arheologiji druge polovine XX veka", *Etnoantropološki problemi* 10(3), Beograd, 2015, 651-673.
Vuković *in press*	J. Vuković, "Secondary Use, Reuse and Recycling of Ceramic Vessels: Evidence from Late Neolithic Vinča", *Arhaika* 3, Beograd.