The last phase of the Tripolye Culture in Ukraine: New Developments of East/West patterns of human interaction in the 3rd Millenium B.C.

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Introduction

This is the report for the 2008 research campaign of the three-year-project: *The last phase of the Tripolye Culture in Ukraine: New developments of East/West patterns of human interaction in the 3rd Millennium BC*. The 2008 campaign started with a visit to the Institute of Archaeology of the Ukraine National Academy of Sciences in Kiev in February to organise the whole project and in particular the Talianki excavation for the summer. This initial trip also included the visit to a potential archaeological site in Slavske near Lviv that will possibly be included in the project. The Ukrainian team of experts started to work on the project in early spring reviewing the most important literature published in Russian and Ukrainian. The summer field season consisted of the excavation of two houses (Houses: 40 and 41) of the Talianki giant-settlement (Kruts *et al.* 2008) plus a few test-pits in two other important settlements included in the Tripolye reservation of the Cherkassi region: Apolanka and Fioderovska. The summer field included two trips to Charkassi and Slavske to meet other Tripolye Culture experts and visit two potential archaeological sites related to the project. An important aspect of the project is the direct involvement of the local community; the Tripolye Museum of Legedzeno therefore organised an important cultural event called the Toloka which linked experimental archaeological research to folkloristic traditions. The budget set for the 2008 campaign was accepted and all expenses are within the maximum amount of money received. Scientific analyses were carried out in various laboratories (Institute of Archaeology, Kiev; IPNA, University of Basel and the University of Oxford Radiocarbon Accelerator Unit) and the results are included in this report.

1a

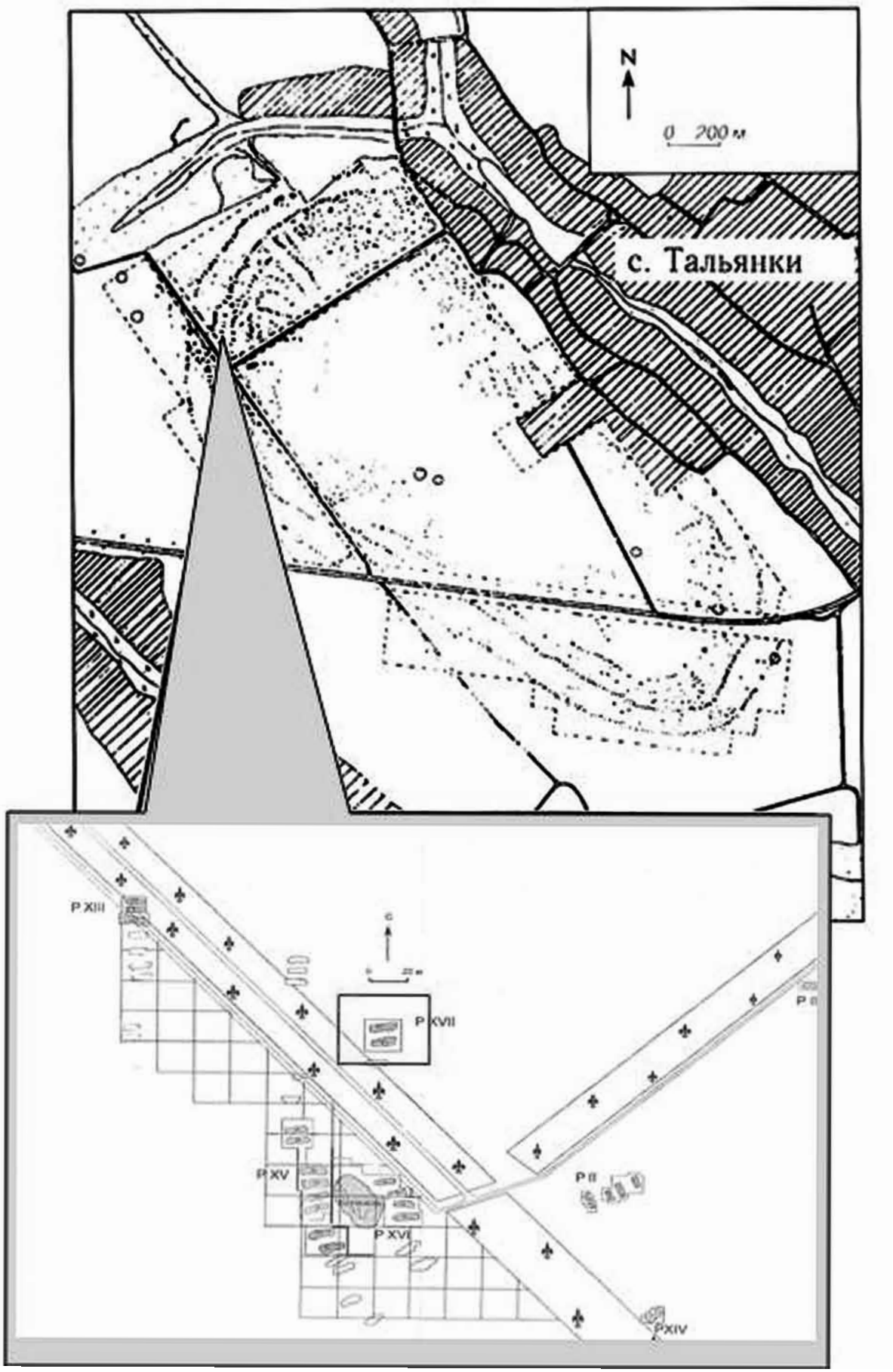
Fig. 1 The two excavated Tripolye houses (No. 40 [left] and No. 41 [right]) within the Talianki giant-settlement. The map shows the geomagnetic survey of the whole Talianki giant-settlement (elliptical shape – each dot is a house) (© F. Menotti)

The Talianki excavation

Two houses (No. 40 and No. 41 – see Fig. 1) were carefully chosen within the Talianki giant-settlement by means of a geomagnetic survey, and they were subsequently fully excavated from June to August 2008.

The excavation was carried out by eight professional archaeologists with the help of approx. 40 students from the T.G. Shevchenko National University (Ukraine), the Kyiv-Mohyla Academy (Ukraine) and The Uman National University. The results of the excavation were astonishing: the debris of the two houses were very well preserved, one of the houses (40) turned out to be the biggest house in the settlement (22 metres long and almost 6 metres wide). Some of the characteristic features (altar, oven and elevated shelf [platform]) were clearly visible. Finally, both houses yielded a high number of potsherds and seven intact ceremonial pots (see Figs. 2 and 3) and one kitchen pot (see Fig. 4) (Kruts *et al.* 2008). An astonishing discovery was that some potsherds showed traces of repairs (see Fig. 5); e. g. some broken plates had been repaired and continued to be used. This shows that pottery was made periodically (possibly seasonally), therefore, during the periods of pottery unavailability, the broken vessels were not thrown away, but repaired and used again (Ryzhov 1993).

During the excavation, samples of soils were collected in a stratigraphic manner in some parts of the house, e. g. near the oven, on the porch of the house and near a grinding stone, in order to wet-sieve them in search of micro-organic remains and most importantly charcoal for 14C dating. 13 probes, of 10 gr. each, were filled with organic material after wet-sieving, and they were processed and analysed at IPNA, University of Basel (see below). A detailed report of the excavation including all the results has been published in the journal of the Institute of Archaeology of the Ukraine National Academy of Sciences.



1b

2

3

4

5

Test-pits (Apolanka and Fioderovska)

In addition to the main excavation of the Talianki giant-settlement, four 1×1 m test pits were excavated in the «nearby» Tripolye Culture giant-settlements of Apolanka and Fioderovska. The two test-pits at Apolanka revealed the presence of certain anomalies in the house construction style (the house was possibly extended due to demographic pressure), whereas the two test-pits at Fioderovska identified some important typological features in the ceramic that might be crucial for the understanding of the transitional period: B2 to C1 (Passek 1949). Further analyses will tell us whether more excavations might be required at these two locations.

Cherkassi and Slavske research trips

Three research visits were paid during this year's research campaign; two to Slavske (near the Carpathians, not far from Lviv), one in February and one in August, and one to Cherkassi. The surrounding of Slavske could be important for the source of salt and metal during the C1 period (first half of the 4th millennium BC) (Passek 1949). In Cherkassi, we visited a scholar who is working on Early Bronze Age sites in the Dniper region (important for the understanding of the very last phase of the Tripolye Culture (early 3rd millennium BC).

Literature review

A thorough literature review on published and unpublished essays in Russian and Ukrainian was carried out by a Ukrainian research team in spring 2008 before the main excavation began. This kind of literature review is extremely useful, since a lot of important papers are either published in small and local journals, or they are not published at all. If such a research was not done, a lot of crucial information would be overlooked!

Fig. 2 Ceremonial pot (House 40) (© F. Menotti)

Fig. 3 Ceremonial pot (House 41) (© F. Menotti)

Fig. 4 Kitchen pot (House 40) (© F. Menotti)

Fig. 5 Traces of repair in a kitchen vessel (two holes have been drilled near the crack and the two pieces bound together with an organic rope or string) (© F. Menotti)

Scientific analyses

In addition to the excavation and typological studies, a number of scientific analyses were also performed during the 2008 field season. For instance, wet-sieving was carried out on the soil of three systematically-selected locations in house 40 in order to locate micro-organic remains and charcoal particles for 14C dating.

Pollen analyses on the content of eight complete pots were also carried out at the IPNA scientific laboratory in Basel.

Wet-sieving

In order to locate micro-organic remains and charcoal particles for 14C dating, wet-sieving was carried out on the soil of three systematically-selected locations in house 40. The locations of the three 50×50 cm pits are:

Pit 1 – Coord: E-4 (House 40 near the oven)
Pit 2 – Coord: 3-4 (House 40 near the grinding stone on the porch)
Pit 3 – Coord: 3-6 (House 40 near the smashed pot on the porch)

The soil of each pit was collected every 10 cm (from the top of the house remains) until a depth of 40–50 cm (the original ground where the house was built on). Each layer (10 cm) of each pit was wet-sieved and the organic remains carefully analysed by Britta Pollmann at IPNA laboratory, University of Basel (see below).

Organic macro-remains (by Britta Pollmann – IPNA, University of Basel)

The organic material found in each of the pit layers was sorted and the remains were carefully analysed using a powerful microscope. Snails, small roots and a variety of seeds were found in basically all strata (see Table 1). An unexpected discovery was the pres-

TABLE 1: Talianki - Organic macro-remains (by Britta Pollmann)

house	**H 40**	**H 40**	**H 40**	**H 40**	**H 40**	**H 40**	**H 40**	**H 40**	**H 40**	**H 40**	**H 40**	**Unexp. H**	**Unexp. H**
location	grinding stone	grinding stone	grinding stone	grinding stone	oven	oven	oven	oven	pot/porch	pot/porch	pot/porch	30/40 m NW	30/40 m NW
level	0/-10 cm	-10/-20 cm	-20/-30 cm	-30/-10 BOG	0/-10 cm	-10/-30 cm	-30/-40 cm	-40/-10 BOG	0/-10 cm	-10/-30 cm	-30/-40 cm	+10/0 cm	0/-10 cm
volume before sieving (ml)	25000	25000	25000	25000	25000	50000	25000	25000	25000	50000	25000	25000	25000
volume of organic fraction (ml)	2	6	6	2	8	10	3	4	10	8	3	4	6
artefacts													
iron													
bronze													
glas													
ceramics													
slag													
plaster			?						x (contam!)				
Varia													
porous stones													
stones, pebbels							(x)	(x)				(x)	
burnt clay (reddish)		x			(x)	x	x		(x)			x	(x)
sinter/mineral conretion				x									
clay	x	xx	xx	xx	x	x	xx	xx	xxx	xxx	xxx	xxx	xxx
bones big animals													
cancellous bone fragment									x				
burnt bone													
calcined bone									x (cancellous)	x (skullfrg?)			
tooth													
bones small animals													
sundries	x		(x) calc?	xx									
egg shells													
fish													
scales													
bones													
vertebra													
molluscs													
mussel													
snail	x	x	x	(x)	x	(x)	x	(x)	x	(x)	(x)	x	x
insects													
insect (fragments)													
botanical remains													
charcoal		x	x	x	(x)		xx	x		(x)	x	x	
charred bark													
AOV (amorphous charred objects)				(x)			x			(x)			
charred seeds		x (Corylus!)		x	x?							(x)	
mineralized seeds						(x)							
recent contaminations													
leaves									(x)				(x)
buds													
insects	x	x	(x)		x	xx	x		x	(x)		x	xx
seeds	xxx	xxx	x	xx	xxx	xx	xx	x	x	x		xx	xx
small roots	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	xxx	x	xxx
caulis			x										
wood (min.)							(x)?						
bark							(x)						
wood												x	

abbreviations: BOG = below the original ground; min = mineralized; calc = calcined, contam = contamination, frg = fragment

remarks to the samples	recent seeds: a lot Chenopodiaceae, Polygonaceae and others	among the charred seeds: Corylus spec.	charred seeds: glume base of probably einkorn (Triticum monococcum) or emmer (Triticum dicoccon), Solanaceae; recent seeds: Consolida/Delphinium and others	recent seeds: Brassicaceae, Polygonaceae and others	in the small plastic bag were clay and porous stones; mineralized seeds: could be also a "clay imprint"	charred seeds: Solanum, recent seeds: Polygonaceae, Chenopodiaceae; **one piece of charcoal is given to Angela for wood species identification and then for radiocarbon dating**	the plaster is a contamination from the excavations camp house	charred seeds: Corylus	among the insects: one complete ant, heads of others…

Table 1
Table of organic micro-remains

ence of charcoal which was found in almost all the wet-sieved layers (see Table 1). In particular, there was a fairly large particle of charcoal found in the layer -30/-40 of the pit located near the oven of house 40. This particle, along with the large piece found in house 41, was sent to Oxford for 14C dating (see below).

Charcoal for 14C dating:

The 2008 field season was particularly fruitful in terms of locating charcoal remains. One large piece (the first ever found without wet-sieving) was located during the excavation of house 41. The grid coordinates, where the charcoal was found, are: 3-9.

A second small piece of charcoal was found during wet-sieving in house 40, near the oven at a depth of -30/-40 cm (Grid-Coord: E-4).

Both pieces of charcoal are from ash tree *(Fraxinus)*. The two samples were sent to the Oxford Radiocarbon Accelerator Unit, University of Oxford for 14C dating. Unfortunately one of the two samples failed to yield the date (P-23320 Talianki 08 – H-40 – Oven), but the second sample (O×A -19840 Talianki 08 – H-41), belonging to House 41, resulted to be between 3956 and 3766 cal BC.

Pollen analyses (by Lucia Wick – IPNA, University of Basel)

One kitchen pot and seven small pots (all complete) were selected, and their intact original contents were analysed in search for pollen. Below is the list of selected pots and their location coordinates (see also the published Talianki excavation report):

K-POT (Kitchen-Pot) Excavation Grid-Coord: Г-11
Pot 0132 – H. 40 – Excavation Grid-Coord: В-5
Pot 0133 – H. 41 – Excavation Grid-Coord: К-10
Pot 0134 – H. 41 – Excavation Grid-Coord: Ж-11
Pot 0135 – H. 40 – Excavation Grid-Coord: Ж-6
Pot 0136 – H. 40 – Excavation Grid-Coord: В-5
Pot 0137 – H. 41 – Excavation Grid-Coord: Ж-10
Pot 0138 – H. 40 – Excavation Grid-Coord: Б-7

Sample preparation

Samples of 2–3 ml of sediment were treated using standard methods with HCl 10 %, HF 40 % and acetolysis and mounted in glycerine. In order to get an estimation of pollen concentrations *Lycopodium* tablets were added. The results in Table 2 are given as pollen counts (c) and percentages (p).

Results (see also Table 2 – annexe)

Due to the dry conditions the pollen grains are more or less seriously corroded. Many of them could not be identified anymore, and some of the most sensitive pollen types may have been completely dissolved. This mainly applies to tree pollen (except for lime and pine), whereas Cichoriaceae and other pollen types (e.g. Compositae pollen types) that are resistant to corrosion may be over-represented in the pollen spectra. Thus, the proportions of arboreal and non-arboreal pollen are not a reliable base for quantitative estimations of the vegetation cover, the degree of deforestation in the surroundings of the settlement.

The pollen spectra are dominated by steppic plants, such as grasses (Poaceae), chenopods (Chenopodiaceae), and various taxa belonging to the Asteraceae (e.g. *Artemisia*, *Centaurea solstitialis* t., *Cousinia*). The Cichoriaceae pollen type is extremely robust and thus probably strongly over-represented due to selective pollen corrosion; in the samples, the Cichoriaceae values are therefore excluded from the pollen sum. Indicators of pasture such as *Plantago lanceolata*, *Juniperus* and *Fabaceae* suggest that

TABLE 2: Pollen analyses contents of the eight selected pots of houses 40 and 41 - Talianki (by Lucia Wick)

Sample	T-POT		0132		0133		0134		0135		0136		0137		0138	
	c	p	c	p	c	p	c	p	c	p	c	p	c	p	c	p
Trees and Shrubs																
Corylus	23	**11.0**	6	**21.4**	4	**7.8**	2	**5.4**	7	**7.1**	13	**4.2**	9	**5.8**	20	**13.5**
Alnus glutinosa type	16	**7.6**	2	**7.1**	3	**5.9**			15	**15.3**	24	**7.8**	14	**9.1**	20	**13.5**
Fraxinus excelsior			1	**3.6**							2	**0.7**				
Quercus robur t.	5	**2.4**	1	**3.6**	1	**2.0**	1	**2.7**	2	**2.0**	26	**8.5**	7	**4.5**	9	**6.1**
Tilia					1	**2.0**	1	**2.7**	2	**2.0**	5	**1.6**	4	**2.6**	4	**2.7**
Ulmus											1	**0.3**	1	**0.6**		
Acer															1	**0.7**
Betula	2	**1.0**					1	**2.7**	1	**1.0**	4	**1.3**	1	**0.6**		
Pinus sylvestris type	4	**1.9**	3	**10.7**	2	**3.9**	1	**2.7**	7	**7.1**	26	**8.5**	7	**4.5**	6	**4.1**
Picea									2	**2.0**	1	**0.3**				
Rosa													1	**0.6**		
Salix											2	**0.7**				
Viscum album	2	**1.0**														
Cultivated plants																
Cerealia type	12	**5.7**	2	**7.1**	1	**2.0**	3	**8.1**	1	**1.0**	14	**4.6**	3	**1.9**	5	**3.4**
Triticum type	7	**3.3**			1	**2.0**					14	**4.6**				
Fagopyrum											6	**2.0**				
Steppic and ruderal plants																
Poaceae	18	**8.6**	1	**3.6**	4	**7.8**	6	**16.2**	8	**8.2**	31	**10.1**	23	**14.9**	17	**11.5**
Artemisia	48	**22.9**	6	**21.4**	18	**35.3**	10	**27.0**	26	**26.5**	30	**9.8**	42	**27.3**	29	**19.6**
Achillea type	3	**1.4**	1	**3.6**	1	**2.0**			1	**1.0**	9	**2.9**	1	**0.6**	6	**4.1**
Aster type	7	**3.3**			2	**3.9**	3	**8.1**	4	**4.1**	27	**8.8**	5	**3.2**	5	**3.4**
Centaurea solstitialis type	13	**6.2**	3	**10.7**	2	**3.9**	3	**8.1**	3	**3.1**	6	**2.0**	8	**5.2**	4	**2.7**
Arctium	7	**3.3**			1	**2.0**	1	**2.7**	2	**2.0**	1	**0.3**	5	**3.2**		
Cirsium													1	**0.6**		
Echinops	2	**1.0**			1	**2.0**										
Carthamus	2	**1.0**											1	**0.6**		
Cousinia	4	**1.9**			2	**3.9**										
Scabiosa	2	**1.0**														
Chenopodiaceae	13	**6.2**	1	**3.6**	4	**7.8**	2	**5.4**	9	**9.2**	16	**5.2**	13	**8.4**	7	**4.7**
Polygonum aviculare type	6	**2.9**	1	**3.6**	1	**2.0**			2	**2.0**						
Plantago lanceolata							1	**2.7**							3	**2.0**
Plantago maior	1	**0.5**														
Rubiaceae									2	**2.0**	12	**3.9**	2	**1.3**	7	**4.7**
Onosma	2	**1.0**														
Linum catharticum type	1	**0.5**														
Fabaceae	2	**1.0**			1	**2.0**					1	**0.3**				
Vicia type											2	**0.7**				
Brassicaeae	1	**0.5**					1	**2.7**			1	**0.3**				
Anthericum									1	**1.0**						
Campanulaceae															1	**0.7**
Caryophyllaceae undiff.	4	**1.9**			1	**2.0**			1	**1.0**			1	**0.6**		
Dianthus											1	**0.3**				
Daucus carota type											18	**5.9**				
Apiaceae undiff.	1	**0.5**							2	**2.0**			4	**2.6**	2	**1.4**
Cichoriaceae	75	**35.7**	6	**21.4**	42	**82.4**	25	**67.6**	27	**27.6**	124	**40.5**	19	**12.3**	41	**27.7**
undiff./corroded	9	**4.3**	2	**7.1**	6	**11.8**	5	**13.5**	6	**6.1**	12	**3.9**	5	**3.2**	14	**9.5**
Indicators of humidity																
Mentha type	1	**0.5**									2	**0.7**			2	**1.4**
Potentilla type											2	**0.7**				
Ranunculus undiff.													1	**0.6**		
Cyperaceae							1	**2.7**			7	**2.3**				
Polypodiaceae	1	**0.5**														
Fungal spores																
Podospora											x					
Sporormiella											x					
Coniochaeta ligniaria											x					
Pollen sum excl. Cichoriac. & undiff.	**210**		**28**		**51**		**37**		**98**		**306**		**154**		**148**	

Table 2
Table of pollen analyses

livestock breeding was part of the local economy. The importance of cereal cultivation is shown by the presence of cereal pollen grains in all the samples. Well preserved pollen grains were identified as wheat (*Triticum* type). An additional crop that may have been planted in the area is buckwheat *(Fagopyrum Esculentum)*. Its pollen was found in Pot 0136, together with relatively high percentages of cereal pollen.

Pollen of hazel *(Corylus)*, alder *(Alnus)*, lime *(Tilia)*, ash *(Fraxinus excelsior)*, deciduous oak *(Quercus)*, and elm *(Ulmus)* suggest woodland habitats along the rivers. High percentages of the pioneer taxa hazel and alder point to woodland exploitation for timber and animal fodder.

The bad preservation of organic matter makes it difficult to reconstruct the original content of the pots, but at least some of the samples are rich in strongly decomposed organic remains, indicating that the pots contained food or other plant material. This concerns the kitchen pot, and the pots 0138 and 0136. The latter is rich in ascospores of the coprophilous fungi *Podospora*, *Sporormiella* and *Coniochaeta*.

Conclusions

From the palynological studies carried out on the content of eight pots recovered during the excavations at Talianki in 2008, the following conclusions can be drawn:

a. The environment of the settlement mainly consisted of steppe vegetation; patches of woodland grew along the rivers.

b. Indicators of pasture and spores of coprophilous fungi point to cattle breeding.

c. Cereals (mainly wheat) and buckwheat were probably cultivated in the surroundings of the village.

d. Decomposed plant remains and high pollen values of cereals and buckwheat suggest that at least some of the pots contained food.

Experimental archaeology and folklore: the Toloka

One of the major aims of the project is to involve local communities and make them appreciate their cultural heritage. This year (2008), the Tripolye Museum of Legedzeno, in collaboration with the Tripolian Reservation and the Cultural Heritage, has organised an important cultural event called the Toloka, whereby people of the local community as well as from other areas are invited to help plaster a newly-built house with clay. For this particular event, the museum built an experimental Tripolian house and, using the same techniques used by the Tripolians 5,500 years ago, the house was fully daubed in clay mixed with chaff (see Figs. 6a, b, c). The Toloka folkloristic tradition has been passed on for generations and generations, and in some remote areas it is still part of everyday life. This event was not only an interesting folkloristic experience, but it was used as an archaeological experiment to test archaeological findings and theories within the project. The whole event was very much appreciated by the local community.

Fig. 6 Three moments of the Toloka (© F. Menotti)

6a

6b

6c

2008 research budget

As mentioned above, all the expenses for the project were within the calculated budget 23,850 SFR. I have spent 23,399.73 SFR, therefore leaving 450.27 SFR still available. (For a detailed list of expenses and the receipts, see the attached official financial report of the University of Basel's financial department.)

Reports and publications

In addition to this report, the 2008 field season has produced the excavation report which was published bilingually in the Institute of Archaeology of the Ukraine National Academy of Sciences Journal in December. Furthermore, one chapter on internal migrations within the latest period of the western Tripolye Culture is in preparation, and it will be included in the edited book which will be published at the end of the project.

Conclusions

The first campaign (2008) of the project was very successful! Everything went smoothly as planned, from the research preliminaries early this year to the excavation in Talianki during the summer and finally to the scientific analyses, which were carried out in the various laboratories in Kiev, Basel and Oxford. Plans and agreements for the next season (2009) have already been made and discussed with the Ukrainian collaborators, and we all look forward to a fruitful 2009 research campaign.

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