ARCHEOLOGICKÝ ÚSTAV AKADEMIE VĚD ČESKÉ REPUBLIKY V BRNĚ

PŘEHLED VÝZKUMŮ
45

ISSN 1211-7250

ISBN 80-86023-64-8

BRNO 2004

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Na titulním listě:	Jeskyně Švédův stůl. Foto Jiří A. Svoboda
Tisk:	Bekros
Náklad:	400 ks

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Poláček, L. (Hrsg.): Studien zum Burgwall von Mikulčice. Band V. Spisy Archeologického ústavu AV ČR, Brno, č. 21, Brno 2003, 709 str.

Poláček, L. (Hrsg.): Studien zum Burgwall von Mikulčice. Band VI. Spisy Archeologického ústavu AV ČR, Brno, č. 23, Brno 2003, 550 str.

Profantová, N., Kavánová, B.: Mikulčice. Pohřebiště u 6. a 12. kostela. Spisy Archeologického ústavu AV ČR, Brno, č. 22. Brno 2003, 472 str.

Přehled výzkumů 43. Red. Komoróczy, B., Škrdla, P. a kol. Archeologický ústav AV ČR, Brno, Brno, 2002, 351 str. (vyšlo na počátku roku 2003).

Přehled výzkumů 44. Red. Komoróczy, B., Škrdla, P. a kol. Archeologický ústav AV ČR, Brno, Brno 2003, 299 str.

Svoboda, J. A. (ed.): Mezolit severních Čech. Komplexní výzkum skalních převisů na Českolipsku a Děčínsku, 1978-2003. Dolnověstonické studie Archeologického ústavu AV ČR, Brno č. 9, Archeologický ústav AV ČR, Brno, Národní park České Švýcarsko, Oblastní muzeum Děčín 2003, 328 str.

Jako součást prací na řešených problémech spolupořádal Archeologický ústav AV ČR, Brno, dvě mezinárodní sympozia:

- XVIII. sympozium o starší době bronzové v českých zemích a na Slovensku, ve dnech 15.-17. října 2003 v Opavě realizované spolu s Moravským zemským muzeem v Brně a Archeologickým seminářem Slezské univerzity v Opavě, za účasti 35 badatelů z ČR, Polska, Rakouska a Slovenska, předneseno na 20 referátů.
- 16. Internationales Symposium „Grundprobleme der frühgeschichtlichen Entwicklung im mittleren Donauraum". Pořádáno spolu s Archeologickým ústavem SAV v Nitře, Prähistorisch. Kommission der Österreichischen Akademie der Wissenschaften Wien, Österreichisch. Ost- und Südosteuropa-Institut, Außenstelle Pressburg/Bratislava a Archäologisches Institut d. Universität zu Köln na téma „Gentes und das Imperium an der Donau und Rhein (Archäologische Zeugnisse – historische Interpretation)" v Budmericích 3.-6. 11. 2003, přes 60 účastníků z ČR, Francie, Maďarska, Německa, Polska, Rakouska, Rumunska, Ruska a Slovenska.

Z popularizačních aktivit lze zmínit obsáhlou prezentaci nových poznatků o římsko-germánských kontaktech v prostoru středního Podunají, kterou přinesla výstava „Římané a Germáni. Nepřátelé, rivalové, sousedé" v Muzeu města Brna a Moravském zemském muzeu v Brně ve dnech 30. 4.-26. 10. 2003. Akce byla za autorského vedení ústavních badatelů (odborná koncepce, libreto, scénář a realizace) uskutečněna ve spolupráci s mnoha zahraničními institucemi (např. Slovenské národné múzeumu v Bratislavě, Múzeum v Komárně, Múzeum Komárom, Archeologický ústav Slovenskej akademie vied v Nitre, Janus Pannonius Múzeum Pécs, Savaria Múzeum Szombathely a Niederösterreichisches Landesmuseum Wien). Ve spoluúčasti byla realizována v Muzeu Těšínska ve dnech 14. 2.-15. 9. 2003 tematická výstava „Když se řekne archeologie ...", seznamující s metodami a postupy archeologie jako moderní vědní disciplíny. Ústav se významnou měrou podílí rovněž na budování archeoparku na hradišti Chotěbuz-Podobora na česko-polské hranici u Českého Těšína. Pro potřeby studentů více humanitních i přírodovědných oborů pak badatel ústavu doc. dr. J. Svoboda publikoval v ediční řadě „Panoráma biologické a sociokulturní antropologie" skripta „Paleolit a mezolit: Pohřební ritus" (sv. 19, Masarykova univerzity v Brno 2003, 98 str.).

Jiří Doležel, AÚ AV ČR Brno

Technological and dermatoglyphic analysis of the earliest ceramics: Pavlov (South Moravia) and Krems (Lower Austria)

(Preliminary research report for the Austrian Science and Research Liaison Office Brno)

The material

The objects from fired clay were discovered at the sites of Pavlov I, Dolni Věstonice I, and Krems, dated to the Upper Paleolithic – Gravettian. The analyzed pieces from Pavlov I (and a smaller collection from Dolní Věstonice I) are deposited in the Center for Paleolithic and Paleoethnological Research, Institute of Archaeology AS CR Brno, and the pieces from Austria are deposited in Weinstadt Museum in Krems. The objects are considered to represent the earliest evidence of ceramic technology in the world-wide scale.

So far, we have recorded 2635 pieces from site at Pavlov I and 17 pieces from Krems (Krems-Wachtberg: 3 pieces, Krems-Hundssteig: 12 pieces, Kamegg: 2 pieces).

The process of study

The material from Pavlov was studied by the Czech part of the team, and especially by M. Králík, at Dolní Věstonice (Center for Paleolithic and Paleoethnological Research) and the material from Krems was studied in Vienna (University in Vienna). The Austrian colleagues centered mainly on the ceramic pieces from the Krems Weinstadt Museum; they also provided the possibility to study the material under a stereoscopic binocular microscope (many thanks to Mathias Mehofer, Vienna Institute for Archaeological Science, University of Vienna), collaborated during the scanning and supplied the contextual information on the objects under study (Thomas Einwögerer).

Preliminary results were presented at two scientific conferences:

"Dermatoglyphic analysis of ancient ceramics (palcodermatoglyphics): Identification of fingerprints, possibilities and limitations" (Králík, Novotný). International conference *The Gravettian along the Danube*, 20.– 21. 11. 2002, Mikulov, Czech Republic (oral presentation, publication in preparation).

"Fingerprints on Ceramics: Experiments and Palcodermatoglyphics" (Králík, Novotný) *1st EXAR Conference on Experimental Archaeology*, Vienna, October 10-12, 2003 (poster presentation).

The support from the Austrian Science and Research Liaison Office, Brno, was acknowledged at the both occasions.

The analysis

Method

Each piece (ceramic objects) was described following its approximate size, shape, color, molding signs and interesting details of technology and surface structures. For recording or scanning we used macro-photography, camera PRACTICA with macro, stereoscopic microscope OLYMPUS and digital cameras KODAK DS 260 and NICON COOLPIX 4500. Lighting was provided by a halogen lamp and pointed source of light from a microscope. Calibration of the images was provided by sheet of calibrated paper (method suggested by Králík 2000). For casting the imprints we used dental composition Laborsil (made by concern Dreve) and obvious plasticine. On the whole, more than 1200 photographs were taken and more than 200 silicon casts were made.

Ceramic technology/trasology

The material consists of worked and unworked fired clay pieces. Worked, intentionally shaped fragments can be divided into non-figurative and figurative pieces. Many of the worked objects bear traction lines on wet soft clay as a results of shaping and molding, as well as imprints of whole finger balls and fingertips. Sometimes the material was added or rolled together. There are signs of composition of figurines from prepared parts: bodies and legs (wooden twigs were used for reinforcement of the connection between them). Anthropomorphic figurines are sometimes decorated and have suggestion of dress (belts). Contrary to these features of efforts for good shaping and stability of three dimensional figurines, zoomorphic figurines are frequently deformed in soft clay state and/or contain traces of intentional damage: cuts, dots and cavities. In some cases two fingers – pinching – pressed against each other and deformed or even destroyed original soft clay figurine. At the same time, imprints of plants, wood and other natural structures are present on the surfaces, as well as in the inner matter of the pieces. There are many pieces evidently molded or shaped but without any reasonable shape. Generally, the trasology suffers from the multi-layer surface of the ceramic pieces. Except for the original surface of the ceramics there is also shadow/black (carbon and ash) layer from a fireplace. Sinter layer (calcium carbonate) coated the pieces artifact during thousands of years of deposition and varnish finished the "stratigraphy" after a "musealization". Traces, lines and scratches are present in all these surfaces and, therefore, it is difficult to identify structure of the original surface at all.

Paleodermatoglyphics

Paleodermatoglyphic approach begins with the identification of fingerprints and continues with proper dermatoglyphic analysis.

The identification of fingerprints consists of two parts: *negative* and *positive identification. The negative identification* means eliminating structures that cannot be fingerprints but may look like fingerprints: *intentional lines (decoration), traction line, imprints of textile, plant imprints, pressure lines* resulting from opposite acting forces and cracks due to drying, scratches on the fired ceramics and unstuck places, imprints in conservational varnish and so on. That is why the technological and trasological analysis is inevitable preceding part of paleodermatoglyphics in any ancient ceramics. *The positive identification* represents anatomical recognition of structures of friction skin – dermatoglyphic markers of epidermal ridges. Without an apparent dermatoglyphic pattern there is no direct evidence that the print is a real fingerprint. However, there are some markers that can identify even the tiniest fingerprint as a negative of human epidermal ridges: the breadth of epidermal ridges within the range of human variability, homogeneity/uniformity in the breadth of ridges in limited area, minutiae - small variations from the strictly parallel direction of ridges (discontinuities and branching), typical broad U-shape of ridges in cross section (but this feature may be confused with varnish), epidermal ridge appear to consist of irregular beads on a string (manifestation of the trait depends on illumination and can be imitated by other structures), slight concavity of imprint (finger ball or fingertip shape), arrangement of parallel ridges into curved streams (part of dermatoglyphic pattern).

At Pavlov, we have recognized more than 60 possible fingerprints so far, 19 of them (on 7 artefacts) have been identified as positive (see FIG. 1). The identification of other structures still continues.

At Krems, 17 pieces were studied and more than 20 possible fingerprints were found on their surfaces. Only one of them has been positively identified so far, based on several dermatoglyphic minutiae. Identification of other structures from Krems is still subject of discussion with interested colleges from the Czech Republic and USA, given the similarities of certain structures to traction lines and textile prints.

The analysis. Considering the limited area of the majority of the fingerprints, the analysis is primarily based on *epidermal ridge breadth.* Since epidermal ridges are finished before birth, they grow together with the hand and the fingers. Epidermal ridge breadth co-relates with the age during the growth period of the person. Kamp et al. have studied this general relation experimentally in fingerprints on ceramics (1999) and we have worked out an original technique for recording fingerprints, measurement of ridges and estimation of age. We have proved experimentally that the majority of estimations never vary by more than 4 years from the real age. Therefore, at least, we can differentiate children from adult individuals.

TAB. 1 sum up preliminary results of the analysis. The mean epidermal ridge breadth of the fingerprints from Pavlov I is 0.38 mm, from Krems (1 fingerprint, 15 ridges) 0.36 mm. In comparison to fingerprints from recent ceramic workshops and schools of art, we observe a similarity of the Pavlov sample of fingerprints with the fingerprints of recent age group from 6 to 10 years or females from 10 to 15 years of age (FIG. 2, 3). Mean of estimated age from Pavlov fingerprints is 11.8 years, from Krems fingerprint 10.5 years. Provided that the relation between the epidermal ridge breadth and age was the same in Upper Paleolithic times as it is now, they could hardly be the fingerprints of adult men.

Perspectives

As a next step, we are trying to complete the possible statistical evaluations of the dermatoglyphic features and to define the relationships of the features to the properties of

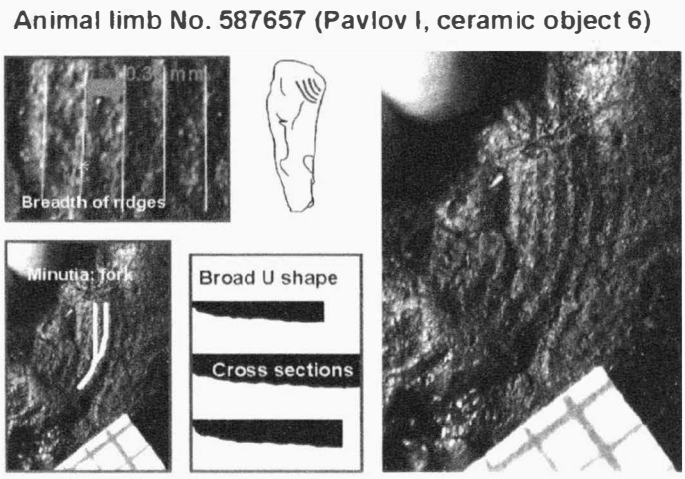

Fig. 1. Example of a fingerprint from the site at Pavlov I (identification of the fingerprint).

Object	MRBf	MRBm	Medm	SD	NF	NM	NR
1	0,350	0,350	0,344	0,036	3	13	52
2	0,386	0,383	0,384	0,031	2	8	25
3	0,382	0,372	0,367	0,022	3	8	24
4	0,421	0,421	0,428	0,027	1	8	31
5	0,387	0,387	0,416	0,075	1	7	33
6	0,359	0,356	0,357	0,026	4	15	58
7	0,394	0,383	0,380	0,049	5	14	42
Mean	0,383	0,379	0,382	0,038			
Sum					19	73	265

Tab. 1. Epidermal ridge breadth (in mm) of the fingerprints on 7 artifacts from the site at Pavlov I; MRBf – Mean from average values of fingerprints, MRBm – Mean from all measurements, Medm – Median from all measurements, SD - Standard Deviation from all measurements, NF – number of fingerprints, NM – number of measurements, NR – number of measured epidermal ridges.

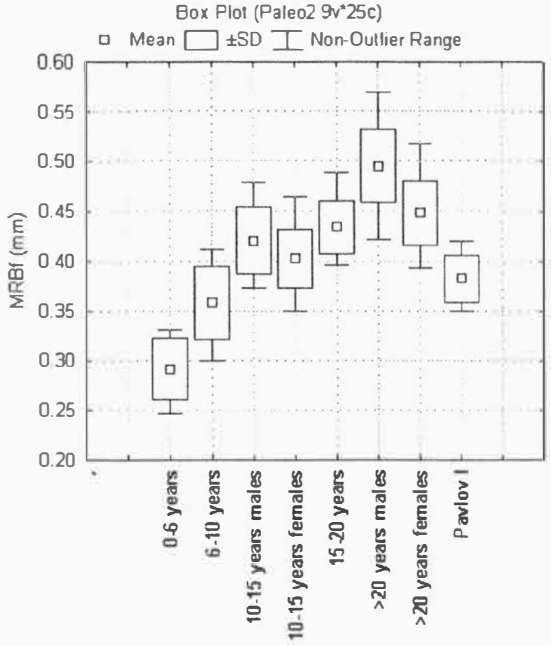

Fig. 2. Box plots of MRBf (in mm) for recent age categories compared to Pavlov I.

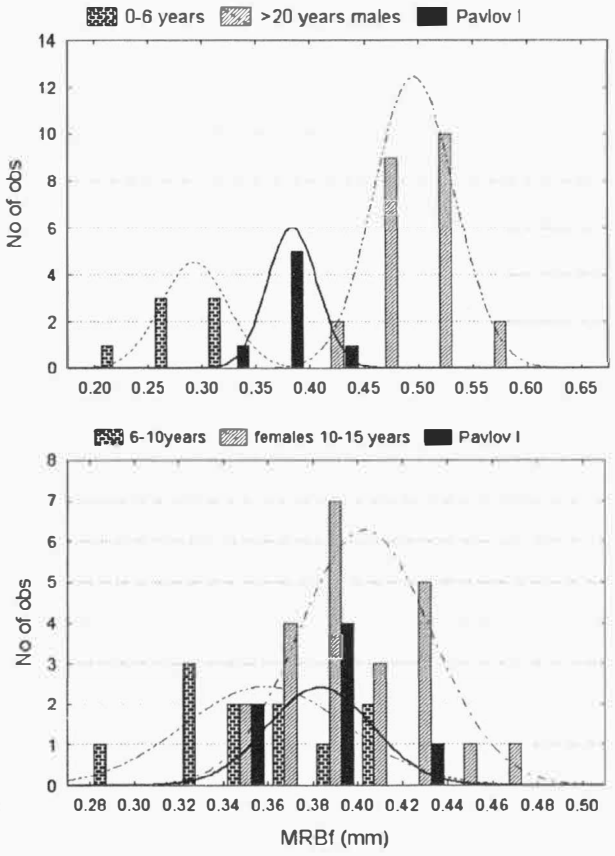

Fig. 3. Comparing of histograms of MRBf values for recent ceramic artifacts and fired clay objects from the site at Pavlov I.

ceramic pieces: size, type of representation (shapeless, anthropomorphic, zoomorphic), position inside the locality (only at Pavlov I) and others. Finally, we wish to compare the evidence from Pavlov and Krems with the fingerprints from the site of Dolní Věstonice I. If the majority of the fingerprints will prove to have consistently sub-adult breadth of ridges we should consider the presence of children and/or woman as substantial in the process of creation of these oldest ceramics. This is a new, hitherto unexpected result.

The complete results of this analysis will be published as a part of a complex monograph "Pavlov I – Southeast", The Dolní Věstonice Studies, Volume 12, Brno 2005.

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