

Palaeodermatoglyphics in Two Postsherds

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Introduction

Dermatoglyphics, or fingerprints, both of the hand and of the foot (Cummins and Midlo, 1961), are determined by the presence on the fingertips and on the toetips surface, of skin folds, a series of ridges and grooves that are arranged into particular patterns (generally divided into: arches, loops, whorls, the latter two characterized by a delta-shaped figure called triradius, one for loops, two for whorls). Such configurations are already defined at birth, and do not change over an individual's lifetime; they are unique to each individual, such that even those of homozygous twins are not the same. Differences in the print shape, its arrangement, dimensions, type, can be recorded in both sexes (whorls are usually prevalent in males, Prasada Rao, 1972; females have thinner ridges) and at different ages (the print becomes larger with age, but patterns remain the same; Pesce Delfino *et al.*, 1975). In 2002 an article (Kralik *et al.*, 2002) presented the identification of a fingerprint left by a boy (in the authors' interpretation) on the back of the Dolni Vestonice Venus (Gravettian period, 29-25000 years ago) which would be the oldest print ever documented (for a study on ancient fingerprints see Cummins, 1941). The study of fingerprints left on archaeological (pottery, plastic figures, paintings, building materials etc.) and on bioanthropological (mummies etc.) materials already has a name, suggested in 1982 by Bartsocas: paleodermatoglyphics. There are several scholars (Kralik and Novotny, 2003 a,b; Kamp *et al.*, 1999; Gottarelli *et al.*, 1990; Cracolici, 2003; Astrom and Erikson, 1980; Astrom, 2007; Kralik *et al.*, 2008; D'Andria, 1997; Badawi *et al.*, 2006) who examine imprints on ceramic materials, especially on black ware, or try to devise formulae based on the skin folds thickness, which in the most optimistic case aim to distinguish whether the individual was male or female, young or old, its ethnicity, special pathologies (Kralik and Novotny, 2003).

Materials and Methods

Two potsherds were examined, one from the Sardinian Museum of Anthropology and Ethnography, Department of Experimental Biology, University of Cagliari, probably

dating to the Middle Neolithic (pers. communication C. Lugliè) (specimen 1), and the other one from the situ of Baccu Lau (Selargius, Cagliari), kindly made available by C. Lugliè, Department of Archaeological and Historic-Artistic Sciences, University of Cagliari, probably pertaining to the Late Bronze Age (Lugliè, 2005) (specimen 2).

After the acquisition of the fingerprints, they have been investigated by stereomicroscopy, with a Zeiss Stemi 2000 C instrument, with binocular heads W-PI-10x, Videocamera Moticam 2.300 3.0 MPIXel usb 2.0 and transfer on a PC Pentium (R) Dual Core CPU 2.80 GHZ 200 GB RAM using Motic Images Plus 2.0 ML acquisition software.

Results

Applying the method in Kralik and Novotny (2003), the following was performed:

Specimen n. 1 – two areas were identified; one made up of 7 folds, another of 4, and the distance between folds in mm was calculated, then divided by the number of folds, so obtaining the width of the single fold. This is then corrected by multiplying it by 1,081, the adjustment for the shrinkage due to the shaping of the artifact. From the two observations, an average of 0,617 mm is obtained, which according to the table included, would indicate an adult male. The type of print, difficult to define, could be that of a right thumb and the pattern, an arch (very interesting since in Sardinia the frequency of arches in the thumb is 4,14%, rather low: Maxia *et al.*, 1971). It should be noted that in *Rivista di Antropologia* of 1930-1032 some impressed prints are described, coming from a vessel found at the prehistoric site of Vinca, on the Danube river near Belgrad (Males and Grbic, 1930-'32), probably dating to the Late Neolithic; one of the recorded prints can be attributed to a right thumb, and the pattern is probably an arch.

Specimen n. 2 – two areas were identified, one with 4 folds, another with 3. With the procedure described above, the average value for the ridge's width is 0,304 mm, which would correspond to that of a subadult (below age 15). The fingerprint, quite difficult to interpret, could be a loop arranged toward the ulnar side of the left hand (frequency in present-day Sardinian population is 53%, Maxia *et al.*, 1971).

Discussion

Palaeodermatoglyphics represent an interesting branch of anthropology, which necessitates a tight collaboration between physical anthropologists, archaeologists and palethnologists, and has the potential to generate important results. Some obstacles remain, especially the identification of formulae valid for each population where the fingerprint's owner is presumably to be searched. Finally, it must be underlined that at least in the two cases presented here, the prints are very difficult to classify and perhaps it would be best not to go beyond the calculation of the ridges' width.

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