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The Fontenoce Necropolis (Recanati, Copper Age): Craniometric Variation and Comparative Morphometric Analysis

S. Di Marco[1], G. D'Amore[1], S. Cencetti[2], E. Pacciani[1]

[1] Laboratorio di Archeoantropologia della Sopr. per i Beni Archeologici della Toscana, Scandicci, Firenze.
E-mail: sdimarco@unifi.it
[2] Università degli Studi di Firenze, Polo Scientifico e Tecnologico - Sesto Fiorentino, Firenze

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Introduction

The Fontenoce necropolis (Recanati, Macerata) was excavated by the *Soprintendenza per i Beni Archeologici delle Marche* during 1984, 1992 and 1997 field seasons, and represents a significant Italian Copper Age archaeological site (Silvestrini and Pignocchi, 1997).
The necropolis consists of 21 tombs *"a grotticella"* dated to the second half of IV millennium B.C. Several radiometric determinations produced ages within a time interval of 3600-3300 calibrated years B.C., corresponding to the Early Copper Age (Dolfini, 2010). Funerary structures and grave goods suggest a cultural attribution to the Rinaldone *facies*, typical of the Tusco-Latial area.
The human skeletal sample is well preserved and consists of 35 individuals including 12 adult males, 6 adult females and 17 subadults. In this contribution a craniofacial morphometric analysis of the adult specimens is presented in order to compare the Fontenoce sample to both coeval and more ancient (Neolithic) samples from Italy and neighbouring areas.

Materials and Methods

In a first analysis, 8 cranial indexes (according to Martin and Saller, 1957) for 14 Fontenoce individuals (8 males and 6 females) were used in an univariate comparison. Sexes were pooled to increase the sample size. Comparative samples included 228 Neolithic and 484 Copper Age individuals from Italy and neighbouring areas (Southern France, the Alpine, Balkan and Hellenic regions).
In a second analysis, 10 cranial measurements (according to Martin and Saller, 1957) for 6 Fontenoce individuals (5 males and 1 female) were used in a series of bivariate comparisons with 221 Neolithic and 177 Copper Age individuals, again with pooled sexes. The smaller sample sizes were due to the need to select the most complete specimens for the whole set of measurements. The measurements were previously Q-mode standardized (Jungers *et al.*, 1995) in order to separate size and shape information.
In a third analysis, the same individuals and 10 standardized variables of bivariate analysis were used for a multivariate comparison. Here the whole sample was more finely subdivided, according to archaeological information, into 13 Neolithic groups, 9 Copper Age groups and the Fontenoce group. The programme RMET was used to perform a R-matrix analysis (Relethford, 2003) in order to detect the morphological relationships among the groups.
These were evidenced in a graphical way by means of a Principal Coordinate Analysis (PCA) applied to the resulting R-matrix.

Results

The univariate analysis showed that the Fontenoce cranium was on average wider (cranial index) and taller (vertico-longitudinal index), and its face was on average taller (upper facial index) than the Neolithic and Copper Age cranium and face. The Fontenoce face was also narrow in comparison to the cranial breadth (craniofacial transverse index), the orbit was lower (orbital index) and the nose was narrower than in the other samples. Only the cranial index showed a large amount of variation; the facial, vertico-transversal and nasal indexes, on the contrary, showed a reduced variability.
In the bivariate analysis the Neolithic and Copper Age samples were compared by plotting any pair of characters and interpolating them with 95% confidence ellipses. The 6 Fontenoce specimens were also projected onto the plots. This analysis showed that the Fontenoce sample on the whole was superimposed more largely with the Copper Age ellipsis in a major part of the comparisons; Fontenoce was distinguishable from the Neolithic sample mainly because of its greater cranial width relative to the cranial length and height and to the facial width.
Finally, the multivariate analysis highlighted a clear separation between almost all the Neolithic and Copper Age groups, with the Fontenoce group being clearly located among the latter ones (Fig. 1). In particular Fontenoce was closer to the Italian groups of South-Central Tuscany Copper Age, Northern Tuscany/Liguria Copper Age, and Remedello.

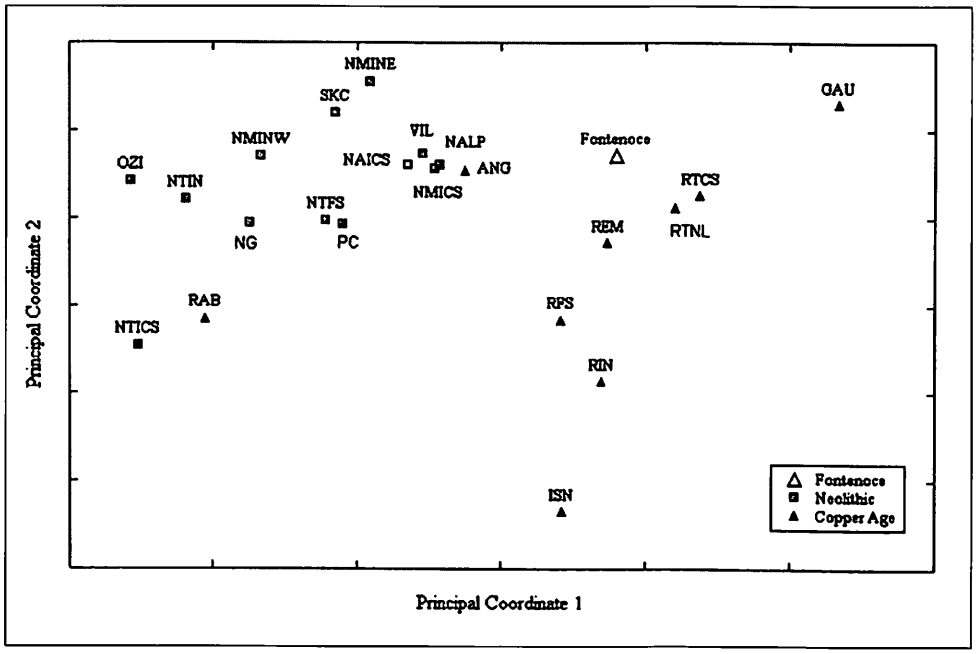

Fig. 1. *Plot of the first two principal coordinates obtained by PCA on the R-matrix. Abbreviations used: ANG: Anghelu Ruju; GAU: Gaudo; ISN: Isnello; NAICS: S.-C. Italy Early Neolithic; NALP: Liguria and Provence Early Neolithic; NG: Greece Neolithic; NMICS: S.-C. Italy Middle Neolithic; NMINE: N.-E. Italy Middle Neolithic; NMINW: N.-W. Italy Middle Neolithic; NTFS: S. France Late Neolithic; NTICS: S.-C. Italy Late Neolithic; NTIN: N. Italy Late Neolithic; OZI: Ozieri; PC: Phyn-Cortaillod; RAB: Balkan Early Copper Age (Bodrogkeresztur, Vucedol and Baden cultures); REM: Remedello; RFS: S. France Copper Age (Chalcolithique Narbonne); RIN: Rinaldone; RTCS: S.-C. Tuscany Copper Age; RTNL: N. Tuscany/ Liguria Copper Age; SKC: Starcevo-Koros-Cris; VIL: Villeneuve.*

Discussion

This comparative study showed for the Fontenoce sample some cranial morphological peculiarities as, for example, a wide, tall and short cranium, and a narrow face. These features make Fontenoce clearly distinguishable from Neolithic comparative groups and morphologically closer to other Italian Copper Age samples. The minor resemblance of Fontenoce to the Rinaldone group might suggest that the archaeological similarities among the corresponding sites could be due uniquely to cultural connections, without significant biological relationships.

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