

People, metals and models

External influences and long- distance connections from the Bell Beaker and Early Bronze Age burial sites of Acerra (Campania, Southern Italy)

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INTRODUCTION

Intense rescue excavations carried out in the Campania plain have recently brought to light several prehistoric sites, most of which dated to the Late Copper and Early Bronze Age (late 3rd-Early 2nd mill. BC), in particular spanning between two main eruptive events, namely 'Agnano-Monte Spina' (4420 ± 58 BP; Zanchetta et al, 2019; 3335-2913 cal. BCE, 2σ) and 'Avellino Pumices' (1906-1829 BCE cal. 2σ, Passariello et al. 2020). Here we analyse two important burial sites, AC3_620 and AC3_970, both located at the north-eastern edge of Acerra (Fig. 1-2), characterized by strong evidence of extra-regional influences and long-distance circulations of models and raw materials. The particular characteristics of the archaeological record, attesting a highly interconnected transitional phase between Bell Beaker and Early Bronze Age periods, led to the development of an comprehensive project investigating human and objects mobility.

Figure 1. Localisation of the two cemeteries in the hinterland of Acerra, Gaudello locality.



Figure 2. Map of Campania and the site of Acerra



FINAL COPPER AGE (BB) - EARLY BRONZE AGE CEMETERY (AC3_620)

The cemetery of Gaudello AC3_620 includes **126 single flat inhumations** in large sub-rectangular pits (Fig. 3) and arranged with a homogeneous **NW-SE orientation**, in some cases preserving the original covering of stones. Grave goods are not always present and they are mostly represented by metal ornaments, weapons, and in some cases fragmented ceramic vessels. The ceramic repertoire is characterised by **evident Bell Beaker influences** (Fig. 4) in some cases found together with pottery of the local Early Bronze Age style (Palma Campania culture). Metal artefacts are particularly relevant, since their models, extremely rare in southern Italy, are well represented in central and Northern Italy, as well as in trans-alpine regions, as exemplified by the disk headed pins widely attested in the Valois, southern and western Germany (Aurino and De Falco 2022).



Figure 3. Tomb 495 with disk headed pin

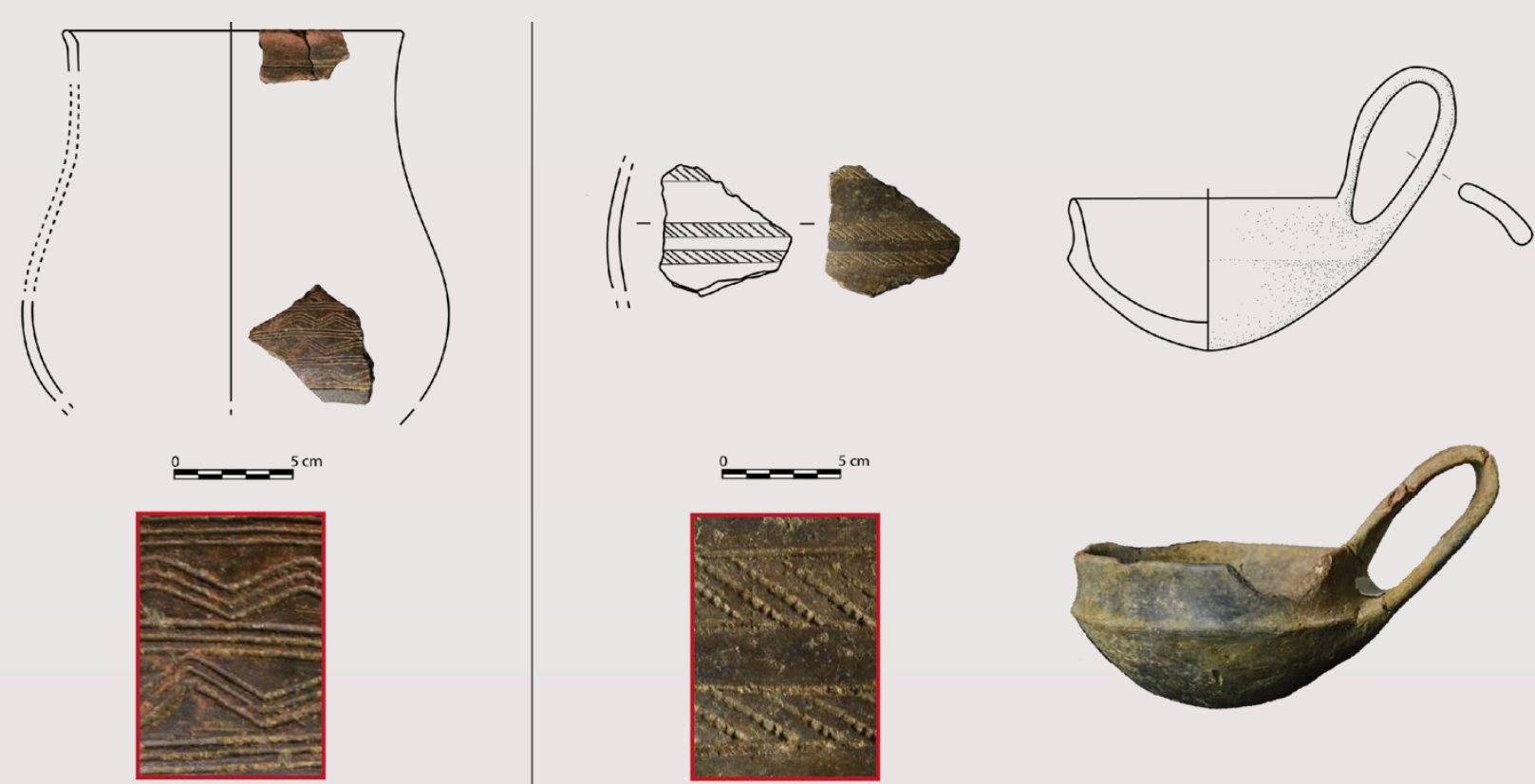


Figure 4. Examples of ceramic grave goods with Bell Beaker influences for the decorative motives (left) and technique (right); local Palma Campania style cup.



Figure 5. Examples of the metal objects yielded by the cemetery: dagger, roll-headed pin, disk-headed pin, losangue shaped pin.

EARLY BRONZE AGE - PALMA CAMPANIA CEMETERY (AC3_970)

About 1 km East from Gaudello AC2_620 cemetery, is set another slightly later burial site in use before and after the destructive eruption of Avellino Pumices (1906-1829 BC cal. 2σ), as indicated by the volcanic stratigraphy, therefore fully set in the Early Bronze Age Palma Campania culture. It comprises about **45 flat graves**, oriented **NW-SE**, sub-rectangular in shape with inhumations crouching on the right side (Fig. 8). Grave goods are generally scarce, consisting mainly of pottery, often fragmented, and rare metal objects, such as daggers (Fig. 7), pins, and one halberd. The ceramic repertoire includes carinated cups (Fig.7), biconical jars and the peculiar cups on decorated high foot and is typical of the Palma Campania culture, attested in Southern Italy between the late-3rd and early 2nd millennium BCE.



Figure 7. Large jar sherd and carinated cup typical of Palma Campania culture; bronze dagger with engraved decoration.



Figure 8. Tomb 374.

COMPOSITIONAL AND PB ISOTOPES ANALYSES ON METAL OBJECTS

The most representative metal objects from both cemeteries were selected for analysis. The combination of chemical analyses (OM-RL, SEM-EDS, EPMA), metallography and lead isotope analysis (LIA) is used to determine the microchemical and microstructural features of the objects, and the **origin of the metal**. The chemical compositions suggest that the amount of **Sn in the bronze is clearly different in the pins and the daggers** (Fig. 9). The LIA data allowed us to interpret the provenance of the copper metal. As expected, most objects were manufactured using copper from **southern Tuscany** (Fig. 10) (Artioli et al., 2016, 2020) however, interestingly enough, several objects show a different signature and the presence of copper from **distant European sources**.

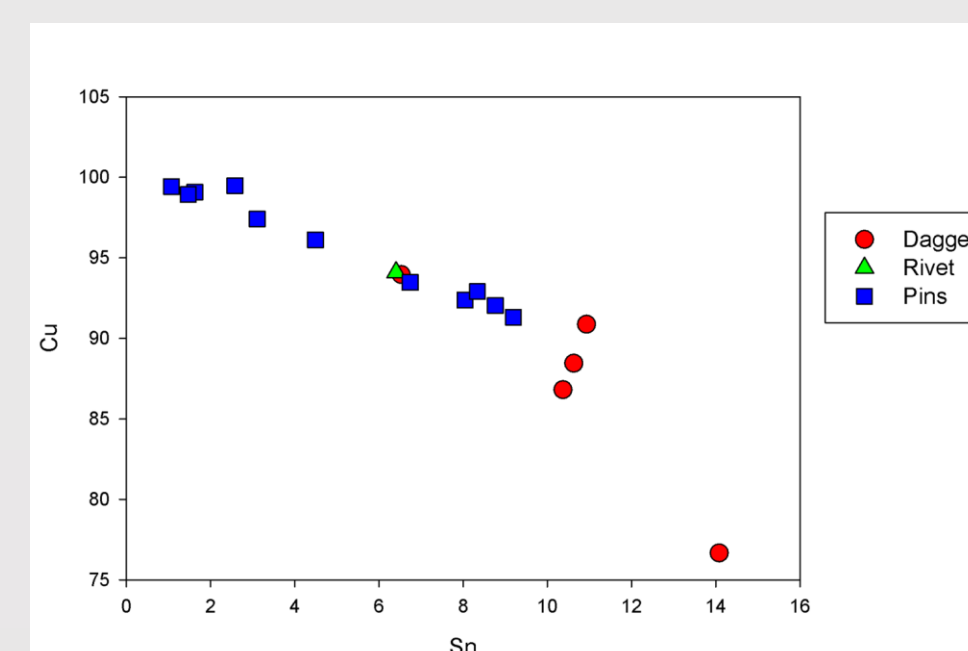


Figure 9. Scatter plot showing the different amount of copper and tin in the objects (EPMA analysis)

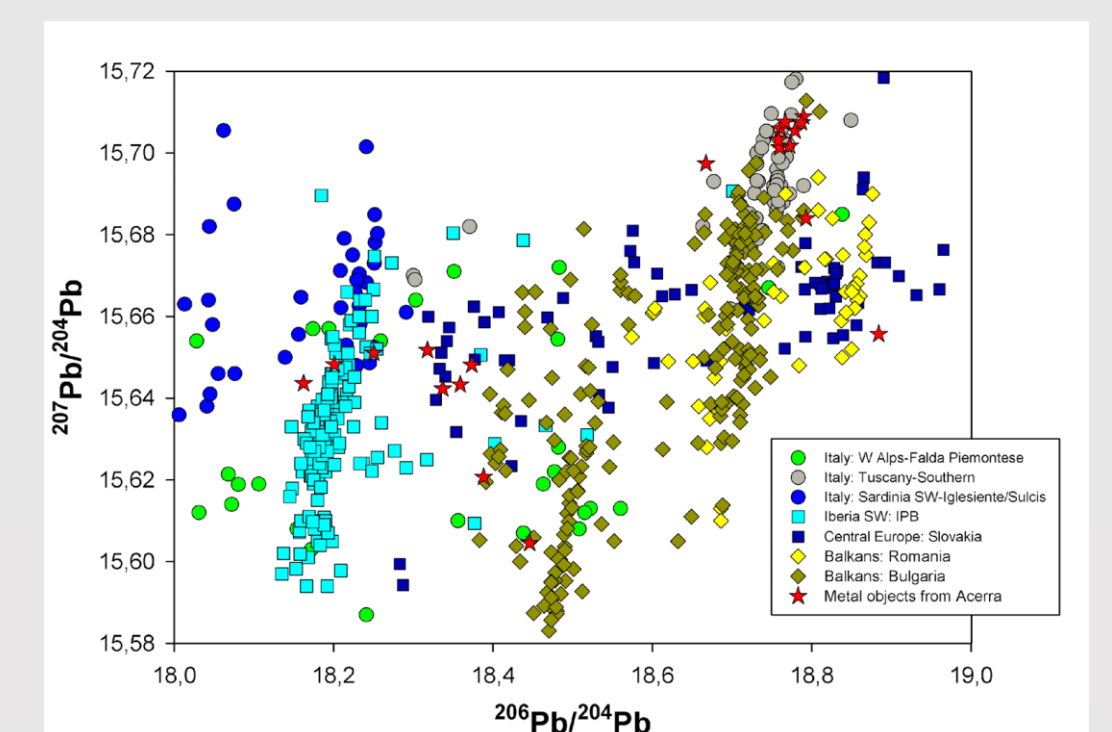


Figure 10. Lead isotope ratios diagram of the analysed metal object compared with selected ore deposits.

⁸⁷Sr/⁸⁶Sr ISOTOPE ANALYSES OF HUMAN REMAINS

Sr isotope measurements were performed on dental enamel samples by MC-ICPMS (@UNIMORE) after Sr-chemical separation. Human isotope data were compared with fauna values and the local isotopic variability from the Italian Sr isoscape (Fig. 11), to unravel the mobility pattern of individuals. Those from **AC3_620** are **highly compatible with the local baseline** and likely locals (Fig. 12); on the other hand, **four individuals from AC3_970 (362, 349, 336, 355)** are slightly **more radiogenic** than the others. These might be non-locals, but still compatible with the isotope signature of several areas of the Campania plain. Overall, **individuals of the later phase (AC3_970) appear to be more mobile than those of the earlier phase (AC3_620)**.

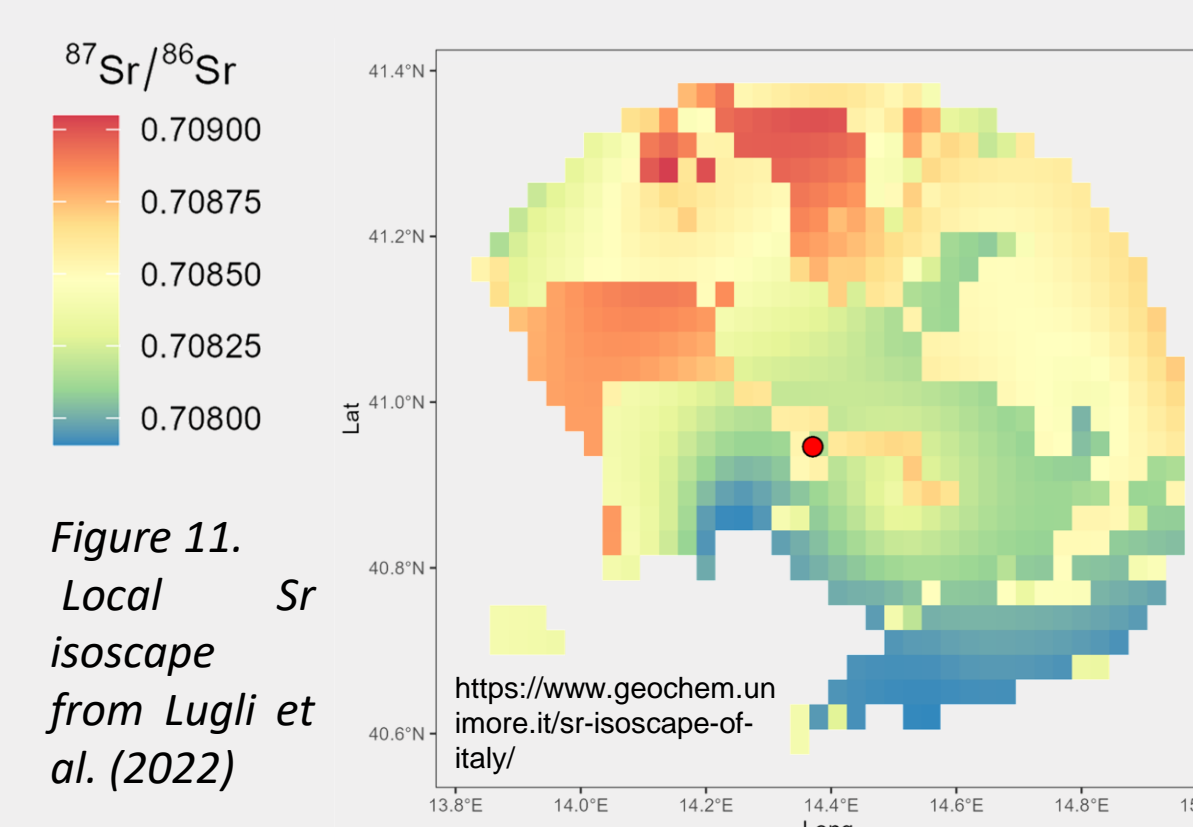


Figure 11. Local Sr isoscape from Lugli et al. (2022)

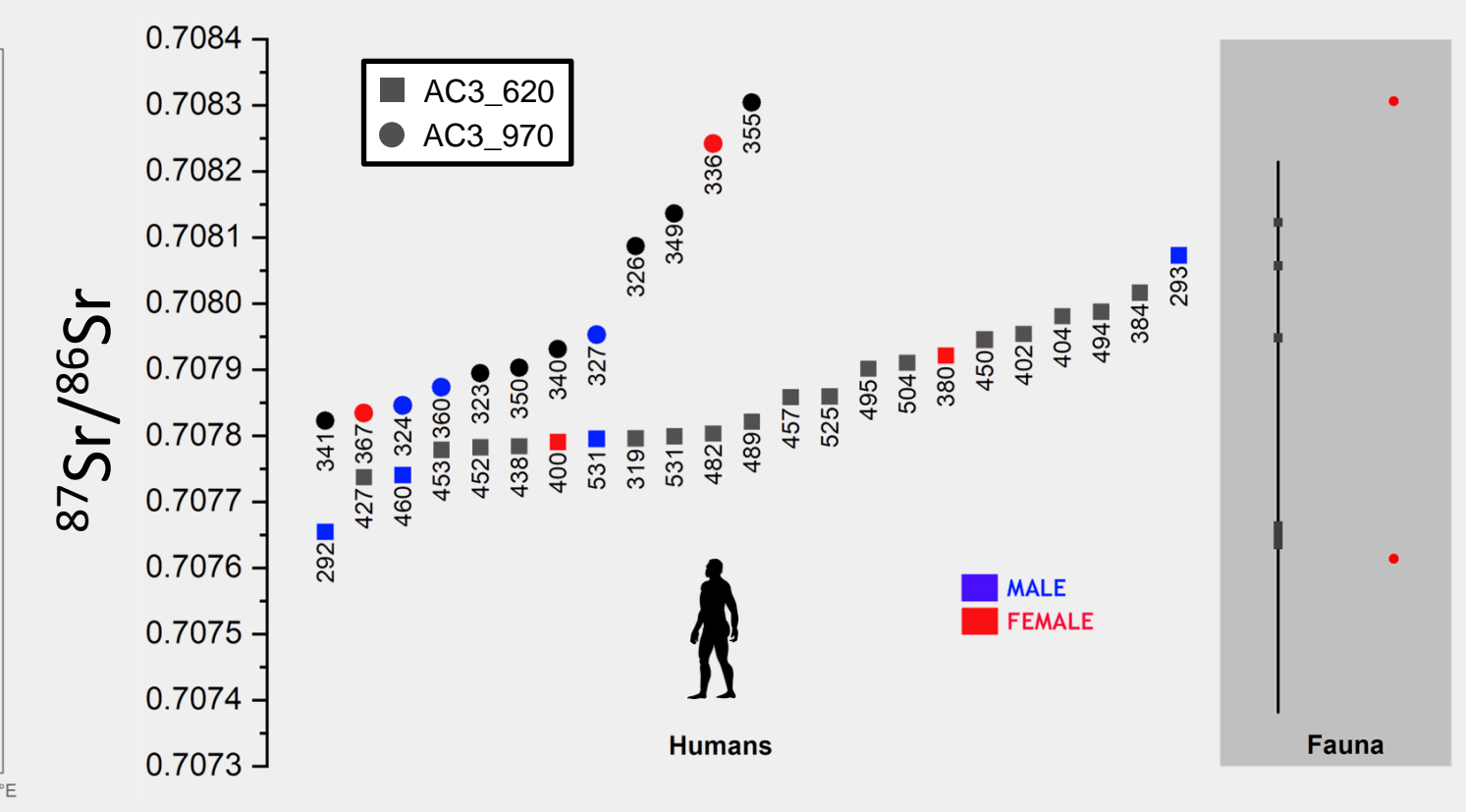


Figure 12. Sr isotope data of humans and animals from Acerra-Gaudello.

PRELIMINARY OBSERVATIONS

These sites testify a transitional phase between the more permeable Final Copper Age/Bell Beaker period and the onset of the local Early Bronze Age communities, commonly identified as Palma Campania culture. The isotopic data on metal objects suggests the existence of different circulation routes, one linked to Tuscany as displayed by all the disk-headed pins, and another pointing to Central and Western Europe. The presence of Bell Beaker models especially in the pottery record suggests that these networks, most likely linked to metal procurement, were already in place during the Bell Beaker period (second half of the 3rd mill. BC) with Tuscany as a core or intermediate point, given its strong Bell Beaker tradition. Despite the higher number of «exotic» objects types in the AC3_620 necropolis a higher mobility, though possibly at a regional scale, can be detected only for the full Early Bronze Age. The evidence of long distance connection with Northern Italy, Continental Europe and Western Mediterranean emphasizes the scale and the complexity of the exchange network in an area traditionally considered as peripheral to the main routes.