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The circulation of Early Neolithic pottery in the Mediterranean: A synthesis of new archaeometric data from the Impressed Ware culture of Liguria (north-west Italy)

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ABSTRACT

The use of ceramic sourcing to study the scale of human interaction has revealed new perspectives on Early Neolithic voyaging in the Ligurian Sea (northern Italy). We have documented, through archaeometric analyses and in particular optical microscopy of 50 thin sections, the discovery of imported vessels at important prehistoric sites of the Impressed Ware culture of western Liguria. The imported fabrics are characterised by inclusions of gneisses, ophiolites or alkaline-potassic volcanic rocks, which are incompatible with local formations. The sources of these imports could be a few geological areas of the Tyrrhenian coast between central Liguria, Corsica and Lazio. The results of this research demonstrate that a very early maritime circulation of pottery began in the central Mediterranean, with the introduction of ceramic pyrotechnology at the beginning of the Neolithic period (*c.* 6000 BCE). The provenanced areas for the imported vessels suggest that the route of human colonisation of the Ligurian-Provençal arch could have been from the south-east, probably favoured by the north-west direction of the surface marine currents. The stylistic similarities (in vessel shapes and decorative motifs) observed in the pottery production and other aspects of the material culture from the Impressed Ware sites of the north and central Tyrrhenian coast are thus explained as the result of an intensive contact network that existed between the populations living along the coast of the Mediterranean, which were trading and exchanging several commodities overseas, presumably including obsidian and greenstones but also, perhaps, perishable substances contained in vessels.

1. Introduction

The discussion presented here is derived from the preliminary results of on-going research. The study involves a synthesis of data from the earliest pottery production sites in Liguria (north-western Italy), dating to the Early Neolithic (the beginning of the 6th millennium cal. BC; Biagi and Starnini, 2016; Branch et al., 2014), with the aim of characterising the compositional and textural features of the pastes in order to define the provenance of the raw materials and the technology of production (Capelli et al., 2006a, 2006b, 2006c).

Early Neolithic pottery production in the study region is currently represented by artefacts found mainly in cave sites concentrated in western Liguria that are attributed to the Impressed Ware culture (Fugazzola Delpino et al., 2002; Fig. 1). Several of these sites have had successive occupations, which allows the study of material production over different millennia and associated with different cultures. The samples discussed in this paper are from excavations of the following sites: Pian del Ciliegio rock shelter (Capelli et al., 2008, 2009; Del Lucchese, 2009), Arene Candide cave (Bernabò Brea, 1946, 1956; Capelli et al., 2007; Ferraris and Ottomano, 1997; Mannoni, 1999; Tiné, 1999), Pollera cave (Mannoni, 1990) and the open-air site of San Sebastiano di Perti (Capelli et al., 2006d; Starnini and Vicino, 1993), all of which are located in the Finalese area (Savona Province) (Figs. 1 and 2). Another sample was taken from Arma di Nasino (Capelli et al., 2011; Leale Anfossi, 1974), a rock shelter located in Val Pennavaira, about 30 km west of Finale Ligure as the crow flies (Fig. 1).

2. Materials and methods

Archaeometric research was carried out on samples representing a range of the ceramic production typical of the Impressed Ware culture (Fugazzola Delpino et al., 2002). The assemblage consisted of vessels of different shapes and sizes (from handled bowls and necked jars to large storage containers), the surfaces of which could be either plain or decorated with impressed motifs made with the edge of shells (*Cardium*, etc.) or other tools (Figs. 3 and 4, Table 1).

The principal analytical method used was optical microscopy, both stereomicroscopy and thin-section analysis of 50 samples using an Olympus BX51 polarising microscope. Selected samples were also analysed by X-ray powder diffraction (XRPD). XRPD analyses were carried out using a Philips PW3710 diffractometer. Powdered samples

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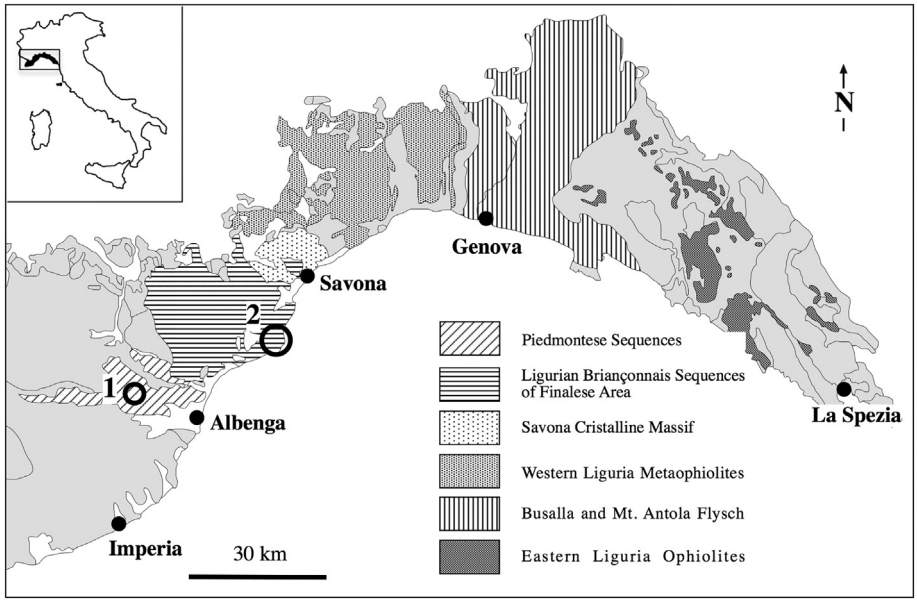

Fig. 1. The location of the study sites shown on a schematic geological map of Liguria (from Capelli et al., 2006b, Fig. 2, modified). 1, Arma di Nasino; 2, Finalese sites (Pian del Ciliegio rock shelter, Arene Candide cave, Pollera cave and San Sebastiano di Perti).

were run between 2.5 and 70° 2θ, with a generator potential of 30 kV, a generator current of 22 mA (using CuKα radiation), a Ni filter, and a scan speed of 1°/min. The software used for XRPD data reduction was Philips PC-APD Diffraction Software and MacDiff 3.0.6c.

The first stage of the research was a systematic review of the prehistoric pottery thin sections held at the Laboratory of Archaeometry of the Dipartimento di Scienze della Terra, dell'Ambiente e della Vita (DISTAV) of the University of Genova, Italy (Capelli et al., 2006a), where several samples belonging to Early Neolithic impressed ware from Ligurian sites (Pollera and Arene Candide caves and Nasino rock shelter) are housed. Subsequently, the various archaeological contexts evaluated were integrated with a selection of new samples (from Pian Ciliegio rock shelter, San Sebastiano di Perti open air site and Arene Candide cave).

One of the principal aims of this research project, besides the definition of the local, earliest pottery production in terms of technology and raw materials, is to identify imports and define their provenance. Another aim is to compare the composition and technology both intra-site, among the different types of vessels present at a single site, and inter-site, between the different production areas at regional and extra-regional scales. A final aim is to identify and characterise the mineralogical and petrographical markers as well as the technologies

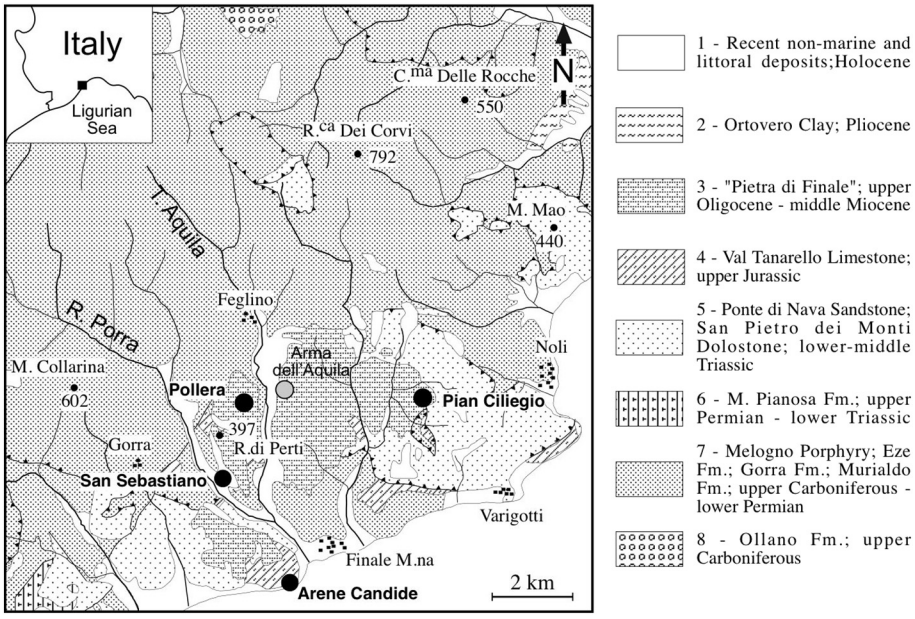

Fig. 2. A geological sketch map of the Finalese area with the location of the study sites (modified from Capelli et al., 2006d; redrawn and modified from Giammarino et al., 2002). 1, clays, sands, gravels; 2, clays, marly clays, marls, silty marls, siltstones, silty sandstones; 3, conglomerates, coarse sandstones, sandy-clayey marls, marls, biocalcirudites, biocalcarenites, coquinoid limestones, bioclastic limestones; 4, fine-grained, strongly recrystallised limestones; 5, quartz-siltstones, quartz-arenites, quartz-conglomerates; dolostones, dolomitic limestones, limestones; 6, arkosic metaconglomerates and metaarenites, phyllites, metapelites, quartz-sericite schists, graphite schists; 7, metarhyolites and metarhyodacites; metaandesites and prasinitic schists; sericitic and cloritic schists, phyllites, micaschists, quartzites, quartzschists, quartz-arenites, quartz-conglomerates and metaarkoses; quartzschists, quartz-micaceous schists, chloritoid-schists, albitic-chloritic schists, graphitic phyllites; 8, metaconglomerates, metaarenites, phyllites, phyllitic schists, graphite schists.

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