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Obsidian in the Tavoliere, Southeastern Italy — A regional study

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ABSTRACT

We used portable X-ray fluorescence analysis to perform elemental analysis of 111 obsidian artefacts from 32 Neolithic and two Late Neolithic/Bronze Age sites in the Tavoliere, Italy. This is the first detailed regional Neolithic study of obsidian in Italy. By comparing the elemental compositions with those of Mediterranean obsidian sources, we identified the Gabellotto of Lipari as the source for 99 artefacts and Palmarola as source for twelve artefacts. Within the Tavoliere, the Palmarola obsidian had a more westerly distribution, whereas the Lipari obsidian is more generally distributed. This pattern probably reflects the geographical origin of the obsidian and the trade and exchange networks necessary to bring material to the Tavoliere over land from the west. The obsidian pieces have very few or no signs of use-wear, implying that they may have been used only a few times, or even just once. We suggest that such limited use implies a role for obsidian in special rituals involving *rites de passage* such as cutting the umbilical cord of newborns or circumcision of boys.

1. Introduction

1.1. Purpose of the study

Obsidian is a lithic material, a shiny volcanic glass that has long been the focus of research in Neolithic studies in Italy. Artefacts have been assigned to sources using a variety of chemical methods since the 1960s, and the sources of Italian obsidian have been identified as the four islands of Lipari, Palmarola, Pantelleria and Sardinia, with a number of sub-sources within these islands further characterised. However, identifying the source of an obsidian artefact should be the start, not the totality, of research on this material. There are still many questions to do with what obsidian was used for and why it was necessary for Neolithic people to obtain this material from distant places when, for instance, flint could have done most tasks just as well. In this article, we look at the obsidian artefacts from a particular region of Neolithic Italy, the Tavoliere. This region lies at some distance from all the obsidian sources, yet this lithic regularly appears at Neolithic settlement sites. We show that obsidian is widely distributed across the Tavoliere, and we ask what its use could have been, considering that there are nearby sources of high quality tabular flint in the Gargano promontory to the north.

The number of obsidian finds in the Tavoliere has increased greatly in recent years. The five-year Tavoliere-Gargano Prehistory Project (2003–2007), directed by R. Whitehouse and S. Hamilton, Institute of Archaeology, University College London (Hamilton et al., in preparation), aimed to visit and explore as many of these settlement sites as possible. Although this project was mainly concerned with using a phenomenological approach to understanding these sites in their landscape (Hamilton et al., 2006), some field walking and surface collection of artefacts was necessary to confirm the presence of Neolithic occupation and to establish a rough chronology. During this surface collection, a number of pieces of obsidian were noted. A separate Tavoliere Ceramics Project (2013–2015) was undertaken, mainly to record and analyse Neolithic ceramics in the Tavoliere (directed by K. Brown, C. Alexander and R. Tykot) (Alexander et al., 2014, 2016), and again a number of obsidian pieces were collected as well. All 111 obsidian artefacts from these two projects were analysed using a portable X-ray fluorescence (pXRF) spectrometer for their trace element concentrations in order to identify the source of the obsidian. This set of analytical data, reported in this paper, is the largest body of information on obsidian distribution in the Neolithic of the Tavoliere and adds considerably to our knowledge of obsidian networks in southern Italy. We have also compiled the results of previous analyses of obsidian collected from Neolithic sites in order to present a fuller picture of obsidian distribution within the Tavoliere (Table 1). This previous work includes a recent article on Neolithic obsidian provenancing in Puglia (Acquafredda et al., 2017) that also presents results from the Murge region to the south of the Tavoliere, which seems to comprise of solely Lipari obsidian and are omitted from our study. We believe that our paper forms the first detailed regional Neolithic study of obsidian in Italy.

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Table 1
Previous obsidian finds in the Tavoliere (not all have been subject to elemental analysis).

Site name	Site number[a]	Class	Lipari obsidian artefacts	Palmarola obsidian artefacts	Reference	Comments[b]
La Panetteria (Lucera, Foggia)	J1	II	1	0	Hallam et al. (1976)	NAA and OES
Il Casone (San Severo, Foggia)	J221	?	0	2	Hallam et al. (1976)	NAA and OES Unstratified
Lucera Castle (Foggia)	J10	?	2	1	Hallam et al. (1976)	NAA and OES Unstratified
Passo di Corvo (Foggia)	J198	IV	10	2 probable	Mello (1983)	Mossbauer and EPR
Monte Aquilone (Manfredonia)	J207	I	3	0	Arias-Radi et al. (1972)	)
Grotta Scaloria (Manfredonia)			1	0	Mello (1983)	Cult cave, EPR and Mossbauer
Masseria Candelaro	J204	II	25	6	Acquafredda and Muntoni (2004)	EDS, SEM and BSD analyses
Masseria Capo di Lupo					Cassano and Manfredini (1983)	3 unprovenanced, unstratified
Masseria Mischitelli					Cassano and Manfredini (1983)	3 unprovenanced, unstratified
Masseria San Chirico					Cassano and Manfredini (1983)	1 unprovenanced, unstratified
Posta D'Innanzi	J193	II			Cassano and Manfredini (1983)	4 unprovenanced unstratified
Masseria Santa Tecchia	J190	I			Cassano and Manfredini (1983)	4 unprovenanced, unstratified 1 unprovenanced, taglio 5
Masseria Belvedere II	J188	I			Cassano and Manfredini (1983)	1 unprovenanced, unstratified
Masseria Centonze (=Stazione di Amendola I)	J184	I			Cassano and Manfredini (1983)	1 unprovenanced, unstratified
Masseria Pedone					Cassano and Manfredini (1983)	1 unprovenanced, unstratified
Masseria Candelaro	J204	II			Cassano and Manfredini (1983)	2 unprovenanced, middle ditch 6 unprovenanced, internal ditch
Monte Aquilone	J207	I			Cassano and Manfredini (1983)	'Abundant obsidian'
Masseria Valente					Cassano and Manfredini (1983)	'Many bladelets'
Lagnano da Piede		I			Mallory (1984–1987)	8 unprovenanced, 7 from plough soil, 1 from ditch fill

[a] The Neolithic sites are identified by a J+ number that indicates a site in the catalogue of Neolithic settlement sites based on WWII RAF aerial photographs listed in Jones (1987).

[b] Abbreviations: EDS, energy-dispersive X-ray spectroscopy; EPR, electron paramagnetic resonance analysis; NAA, neutron activation analysis; OES, optical emissions spectrometry; SEM, scanning electron microscopy.

1.2. Neolithic settlement sites of the Tavoliere

The Tavoliere, a region located in northern Puglia, southeastern Italy, contains the densest concentration of Neolithic settlements yet identified in Europe (Fig. 1). These first were identified from aerial photography carried out by the Royal Air Force during WWII (Jones, 1987). Further research on the Italian Volo Base, taken in the 1950s for mapping purposes, has now raised the total of Neolithic ditched enclosures to at least 566 (Brown, 2001–2003). Whitehouse (2013) has suggested that as many as 800 sites may be present. Thanks to this aerial reconnaissance, we have an extremely detailed knowledge of settlement distribution in the Tavoliere. Unfortunately very few of these sites have been excavated and fewer still radiocarbon dated (Brown and Alexander, 2013; Whitehouse, 2013). What determinations there are suggest Neolithic occupation of the Tavoliere ca. 6100–4000 BCE, but the lack of determinations has made the recognition of phases of Neolithic development and contemporaneity between sites difficult to establish.

The sites consist of ditched enclosures – external enclosure ditches of 2–3 m deep and 2–3 m wide, with smaller C-shaped ditches within of 1 m depth and width. The C-shaped ditches are thought to represent individual social units as hut structures have been found within them. The ditched enclosures have been classified according to the size of the area they enclose (Jones, 1987):

- Class I sites are very small, with single or multiple circular ditches, less than 4 ha in area.
- Class II sites have more complex enclosure ditches, sometimes internal C-ditches, 4–7 ha in area.
- Class III sites are large, with single or multiple enclosure ditches, often filled with C-ditches, 7–14 ha in area.
- Class IV sites are extremely large sites with concentric ditches and/or outer enclosures. They may be filled with C-ditches, or apparently empty of internal features, up to 28 ha in area (size of the inner enclosure at the largest site of all, Passo di Corvo).

The vast majority of sites (95%) belong to Classes I and II while only twelve Class III and sixteen Class IV sites are known (Brown, 2001–2003; Whitehouse, 2013) and most of these are located in the northern half of the Tavoliere. One question that immediately arises is whether these extremely large sites could have controlled the procurement and distribution of obsidian in the Tavoliere.

1.3. Mediterranean obsidian sources

The existence of usable sources of obsidian on the Italian islands of Lipari, Palmarola, Pantelleria, and Sardinia, is long known (Fig. 2). Starting in the 1960s chemical and other analyses have successfully distinguished between these sources. Since then detailed studies have been done on the geological sources on Lipari (Tykot et al., 2006), Palmarola (Tykot et al., 2005b), Pantelleria (Francaviglia, 1988), and Sardinia (Tykot, 1997; Luglie et al., 2006), identifying and successfully discriminating among multiple subsources on each of these islands.

In Italy, analyses in the 1970s and 1980s of small numbers of