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Michael Kunst | Daniel Steiniger (eds.)

SETTLEMENT STRUCTURES AND METALLURGY

The Relations between Italy and the Iberian Peninsula in the Early Chalcolithic

Papers of an International Conference Held in Rome, Museo Nazionale Romano – Palazzo Massimo, 6–7 October 2011

For some considerable time right up to the present, almost all specialists have been dealing at various different regional levels with the topics of the conference published here. The expansion of the source material in the last decades has led to a comprehensive understanding of early metallurgy and its role in social, economic and settlement-structure terms. Despite this far-reaching progress, concrete questions are emerging more and more clearly that can only be answered at international and interdisciplinary levels. It is precisely this international communication that the conference on which the present volume is based has attempted to set in motion so as to address these complex questions. This publication pulls together and sets out the state of research on the topic at the beginning of the 21st century for the entire Central and Western Mediterranean regions.

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AND METALLURGY

Palilia 33

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Herausgegeben im Auftrag des Instituts von
Ortwin Dally und Norbert Zimmermann

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Vorwort

von *Henner von Hesberg* und *Dirce Marzoli*

Ein offener Dialog, eine einsichtige Darstellung der jeweiligen Arbeitsweisen und die Bereitschaft, den anderen Forschern in die Archive Zugang und in die Ergebnisse eigener Arbeiten Einblick zu gewähren, sind Voraussetzungen eines fruchtbaren Austauschs. Sie führen zu einer vertieften Kenntnis der jeweiligen Erforschung einer archäologischen Epoche, ihrer lokalen Besonderheiten und überregionalen Verbindungen. Ausdruck einer solchen Art von Austausch, der selbst in Zeiten problemloser Kommunikation nicht immer selbstverständlich ist, bilden diese Tagung sowie deren jetzt vorliegende Publikation. Sie erfolgt bedauerlicherweise mit großer Verspätung, aber ihre grundlegende Botschaft ist nicht überholt: nur gemeinsam und länderübergreifend lässt sich das Thema angehen.

Der hier behandelten Kupferzeit Südwesteuropas widmen sich methodisch innovative und interdisziplinär angelegte Projekte, zu denen Ausgrabungen von Siedlungen, Nekropolen, Bergbauarealen ebenso zählen wie Material- und Umweltstudien. Immer komplexer werden dabei auch Einblicke in Gesellschaftsstrukturen, Wirtschaftsweisen, Handelswege und Technologien, zunehmend deutlicher lassen sich zudem die Wege der Übertragung von Fertigkeiten und Produktionsformen nachzeichnen. Einige Ergebnisse liegen schon in internationalen Referenzwerken vor, gleichwohl werden sie im Kontext der Tagung ergänzt und vertieft und um die Forschungsergebnisse aus nicht immer leicht zugänglichen lokalen Publikationen erweitert, welche zudem häufiger lediglich Vorberichte darstellen. Abgesehen davon aber bieten die Beiträge neue Resultate und Interpretationsansätze.

Gerade auf den Gebieten der Siedlungsarchäologie und ihrer Verbindung mit der Montanarchäologie und der Archäometallurgie sind nämlich sowohl auf der Pyrenäen- wie auch auf der Apenninhalbinsel in den letzten Jahrzehnten bahnbrechende Ergebnisse erzielt worden, die nach weiterem Austausch über die Beziehungen zwischen Italien und Südwesteuropa im Chalkolithikum verlangen. Für diese Thematik haben die beiden Abteilungen des Deutschen Archäologischen Instituts – Rom und Madrid –, deren Aktivitäten diesem geographischen Raum vorwiegend gelten, als Veranstalter der Tagung und als Herausgeber der Publikation ein Forum geboten. Mit der Veröffentlichung der Tagung suchen sie der Diskussion im Bereich der Kupferzeitforschung weitere Impulse zu geben.

Die Tagung wurde zwar von den beiden Abteilungen organisiert, aber sie versteht sich als Projekt von Prähistorikerinnen und Prähistorikern aus vielen europäischen Ländern mit dem gemeinsamen Ziel, einen Beitrag zur Kenntnis der westlichen Hemisphäre der europäischen Kupferzeit zu leisten und Anstöße zu weiteren Zusammenarbeiten zu geben. Dabei ging es darum, die sehr unterschiedliche Situation der iberischen mit jener der Apenninhalbinsel zu vergleichen und zu prüfen, ob hier nur der Erkenntnisstand voneinander abweicht oder wir grundsätzlich zwei unterschiedliche Ausprägungen in einem historischen Horizont vor uns haben.

Die Veranstaltung dieser Tagung gewinnt über die fachwissenschaftliche Bedeutung auch eine forschungspolitische. Die Prähistorische Archäologie, die in den Abteilungen des Deutschen Archäologischen Instituts anfangs nur sporadisch und seit den sechziger Jahren in zunehmendem Maße an Bedeutung erlangte, präsentiert sich hier mit einem eigenen Projekt, dessen Anfänge bis in die Zeit der 1954 gegründeten Madrider Abteilung zurückreichen. Zu den Mitarbeitern der ersten Stunde zählte ein Prähistoriker, zu dessen Schwerpunkten die Kupferzeit gehörte: Edward Sangmeister. Ab 1959 war Hermanfrid Schubart als Prähistoriker an der Madrider Abteilung tätig, die er von 1980 bis 1994 leitete. Ihre Forschungen auf diesem Gebiet, vor allem die von ihnen gemeinsam geleitete Ausgrabung in Zambujal bei Torres Vedras in Portugal sind bis heute wichtige Referenzen für die Kupferzeitforschung geblieben. Ihre Namen und der mit ihnen verbundene Grabungsplatz wurden zum Synonym für den Erfolg internationaler Zusammenarbeit, aus der immer weitere Netzwerke hervorgingen. 1994 übernahm Michael Kunst als Referent die prähistorische Forschung der Madrider Abteilung und führte vor allem auch die Grabungen in Zambujal fort.

Das seit 1829 aktive Instituto di Corrispondenza Archeologica war am Anfang ganz den wissenschaftlichen Zielen Johann Joachim Winckelmanns verpflichtet, die in vieler Hinsicht aus einer philologischen Tradition hervorgegangen waren. Deswegen blieben die Zeiträume ohne Schriftzeugnisse zunächst außerhalb der Überlegungen. Erst später, unter dem Einfluss der Entwicklungen in den skandinavischen und angelsächsischen Ländern, kamen einzelne Aspekte der Prähistorie hinzu, konnten aber nie größere Bedeutung erlangen. Immerhin hat Wolfgang Helbig mit seiner 1879 erschienenen

Schrift über „Die Italiker in der Poebene“ sich in diese Bereiche der archäologischen Wissenschaft vorgewagt und damit auch Luigi Pigorini beeinflusst, der seinerseits oft in den Adunanzen des Instituts in jenen Jahren vortrug. Ein gegenseitiger Austausch war vorhanden, aber die Prähistorie in Italien ging bald eigene Wege und das Germanico blieb in der Folgezeit auf die klassische Antike konzentriert, wenn man einmal von der Zeit des Nationalsozialismus absieht, in der aber stärker die Zeit der Völkerwanderung und damit als Wissenschaft die Frühgeschichte an Bedeutung gewann. Spätere Studien von Seiten der Prähistorie, die innerhalb der Abteilung Rom des DAI entstanden, widmeten sich meist der Eisenzeit und ergänzten somit methodisch die Versuche der Klassischen Archäologie, die Frühphasen der späteren Kulturen Italiens zu erschließen. Zu nennen sind hier etwa die 1959 und 1962 erschienenen Werke Hermann Müller-Karpes zu den Anfängen Roms. Später hat Kerstin Hoffmann als Forschungsstipendiatin der Abteilung im Rahmen des von der Gerda-Henkel-Stiftung geförderten Projekts zu den einheimischen Kulturen in Italien sehr intensiv den internen Dialog gefördert. Aber erst mit Daniel Steininger 2006 startete dann ein eigenständiges Projekt, das mit den traditionellen Forschungsfeldern der Abteilung Rom nichts mehr zu tun hatte und ganz im Chalkolithikum angesiedelt war.

Darin kommt ein umfassender Wandel in den Methoden und der Organisation von Forschung innerhalb des Deutschen Archäologischen Instituts zum Ausdruck, der jüngst zu vielen Veränderungen geführt hat, etwa in der sogenannten Bildung von Clustern, also die Abteilungen übergreifenden Forschungsverbünden. Damit die unterschiedlichen Abteilungen des Instituts in den verschiedenen Kulturregionen Europas und der ganzen Welt untereinander weiterhin einen fruchtbaren Austausch pflegen können, zugleich aber auch für ihre Partner an den diversen Universitäten und übrigen Forschungsstätten anschlussfähig bleiben, muss die Konzentration auf einzelne archäologische Disziplinen zugunsten einer breiteren Fächerung erweitert werden. Dadurch ist es möglich, verschiedene historische Horizonte und Epochen etwa im Bereich des Mittelmeeres, aber auch darüber hinaus, in ihren Gemeinsamkeiten und Unterschieden in den Blick zu bekommen. Zugleich profitieren die Disziplinen voneinander durch ihre methodische Vielfalt.

In einer solchen engen Verschränkung kann die Arbeit des Instituts eine wirkungsvolle Ergänzung zu dem Studien- und Forschungsbetrieb der Universitäten bilden, in denen bei aller Interdisziplinarität durch die Studienerfordernisse und Fächerdefinitionen die Grenzen stärker bewahrt werden müssen.

Die Tagung mit ihrer Thematik stellt einen weiteren Schritt in diese Richtung dar und bezeugt zugleich Öffnung und neue Verbindungen, die dadurch möglich sind. Ihr Konzept haben Daniel Steiniger und Michael Kunst gemeinsam entworfen. Beide beschäftigen sich vorrangig mit der Kupferzeit und beide stammen von der Universität Freiburg, wo der eine 2007 und der andere 1982 promoviert hat, womit sie wiederum in der mittelbaren Tradition Sangmeisters stehen.

Ihnen gilt unser besonderer Dank. Danken möchten wir auch Patrizia Petitti und Christian Strahm für die Mitarbeit zur Vorbereitung der Tagung im wissenschaftlichen Komitee sowie allen jenen Kolleginnen und Kollegen, die durch Vortrag, Diskussion und schriftlichen Bericht zum Erfolg des Unternehmens beigetragen haben. Auch an alle anderen, die sich an der Betreuung der Tagung und an der Redaktion beteiligt haben, richtet sich unser Dank. Für die finanzielle Förderung gilt der Fritz Thyssen Stiftung unser besonderer Dank. Hervorheben möchten wir schließlich die Gastfreundschaft von Rita Paris und Anna Maria Moretti, die für die Tagung am 6. und 7. Oktober 2011 ihren schönen Vortragssaal im Palazzo Massimo in Rom zur Verfügung stellten.

Henner von Hesberg, Rom, und Dirce Marzoli, Madrid, Januar 2013

Settlement and Metallurgic Activity

The Case of Sesto Fiorentino (Florence) in the Context of Central Italy

by *Lucia Sarti, Nicoletta Volante, Gianna Giachi* and *Pasquino Pallecchi*

Archaeological Evidence

Our study days at the German Institute in Rome constituted a welcome occasion to get acquainted with the present state of research on metallurgy starting with the consolidated research at Sesto Fiorentino and extending our view to the surrounding zones, with particular regard to the Livorno area, where we have been operating for many years. In these territories evidence has been gathered of settlement levels in which copper was worked. The focus of this contribution is the debate on metallurgic activity and the consequences in daily life.

The chrono-stratigraphic sequence of Copper-Age cultural aspects in the Florence region was defined more than 15 years ago in its general outlines, confirmed and then updated by a series of research projects, producing general conclusions relative to the Bell Beakers and the passage to the Early Bronze Age[1]. The features and role of the Florence evidence is better understood against the background of the cultural perspective in Central Italy between the late 5th and early 3rd millennium BC cal. In fact, this entire portion of the peninsula is bridged by connections and relationships, as has been revealed on more than one occasion, although distinctive features may be recognized in micro and macro areas within this province[2].

With regard to metallurgy in the central Tyrrhenian region, copper working and the presence of objects have been documented in the first half of the 4th millennium, cal. The same occurs contemporaneously in the Marche region, where slag, residual copper on the inside of pottery vessels, and finished objects are present.[3] Copper artifacts circulated in the Florence area during the Aeneolithic (to date there are no traces of local production), and we can probably hypothesize local Bell-Beaker production. The evidence is more solid for the Epi-Bell-Beaker period, although in general production was limited. Archaeometric analysis is already underway, as part of a large interdisciplinary project on copper and bronze metallurgy in the area under discussion. In this paper we furnish the preliminary data, essential for a first overview of the situation[4].

Among the main reasons that could have determined the intense and continuous occupation of the Florence area from the end of the Neolithic to the beginning of the Bronze Age, which is demonstrated by the archaeological evidence, are the geographic location and geomorphology of the area north-west of Florence, up to the foot of the Apennines, and its good connections. The Lower Valdarno provided an easy passage between the area around Florence and the Tyrrhenian coast, its position near the Apennines facilitated contacts across the mountains along a series of valleys running towards the north; contact with central Italy as far as Latium could be developed along southern tributaries of the Arno, and the Cerbaia and Chianti hills, as far as Valdichiana[5]. The

1 Sarti 1995/1996; Sarti 1997; Sarti – Martini 2000a; Sarti – Martini 2000b; Sarti 2004; Baioni et al. 2008.

2 Sarti 1998; Sarti 1998b; Cazzella – Moscoloni 1999; Anzidei – Carboni 2000; Cazzella 2000; Cocchi Genick 2000; Grifoni Cremonesi 2000; Manfredini et al. 2000; Sarti – Martini 2000; Sarti – Martini 2000b; Carboni 2002; Manfredini 2002.

3 It is perhaps opportune, even though beyond the scope of this article, to remember that the data from Central Italy is not restricted to the peninsula: a framework of more or less contemporaneous evidence is delineated for the Po Valley, Alpine area, north of the Alps and also in Southern Italy and the nearby islands.

4 Giachi et al. 2001.

5 Martini et al. 2007; Pizziolo – Sarti 2008; Pizziolo – Sarti 2011; Pizziolo in Mafredini et al. 2010. Regarding the geomorphology of the Val di Chiana (Dallai et al. 2011), it must be remembered that recent artificial transfer of water from the catchment area of the Tiber to that of the Arno has profoundly changed the flow, which must previously have been different, along with the form of the valleys. During the Neolithic and the Bronze Age the drainage pattern could not have been as it is now: the Tuscan Valdichiana, including the swamp areas of Chiusi, Montepulciano and Trasimeno, must have been a transition area or corridor between the Tiber and Arno Basins, flanked by low hills (Pizziolo et al. 2011).

upper course of the Arno (Casentino area) and nearby Valtiberina allowed the use of roads across the Apennines toward the Adriatic Sea. The abundant local water supply favored an agri-pastoral economy, for which there is good evidence, while the forested zones next to the Florence Basin could have furnished wood and provided good hunting grounds, adding meat to the diet. And the presence of metallurgic resources in the area must also be considered. Furthermore, there is evidence of the use of local stone for tool manufacture.

The Florence Plain is subject to repeated river flooding, so that settlements were founded on deposits in continual transformation, undergoing alternating phases of erosion and accumulation, determined by the relation between the alluvial fans, slope rubble formed at the base of hillsides and surface water runoff. In this context, paleohydrographical details were of fundamental importance in the choice of this area for settlement[6].

The prehistoric occupation deposits are situated on alluvial silty sand layers that cover lenses of pebbles derived from the deposits of Monte Morello and Calvana upstream, deposited in a silty sand matrix by continually moving channels on the lower parts of the alluvial fans. The landscape at the center of the basin must have featured extensive sloping surfaces composed of fine sediment from overflow, crossed by braided channels. The prehistoric occupation levels lie above a series of long-lasting sedimentary episodes, such as those related to marsh-deposited peaty clays, and the underlying clays and silty clays laid down in alluvial conditions, with probable colluvial events and marshy episodes (that may be interpreted as receding of alluvial fans in response to reduced precipitation).

First Metallurgical Activity

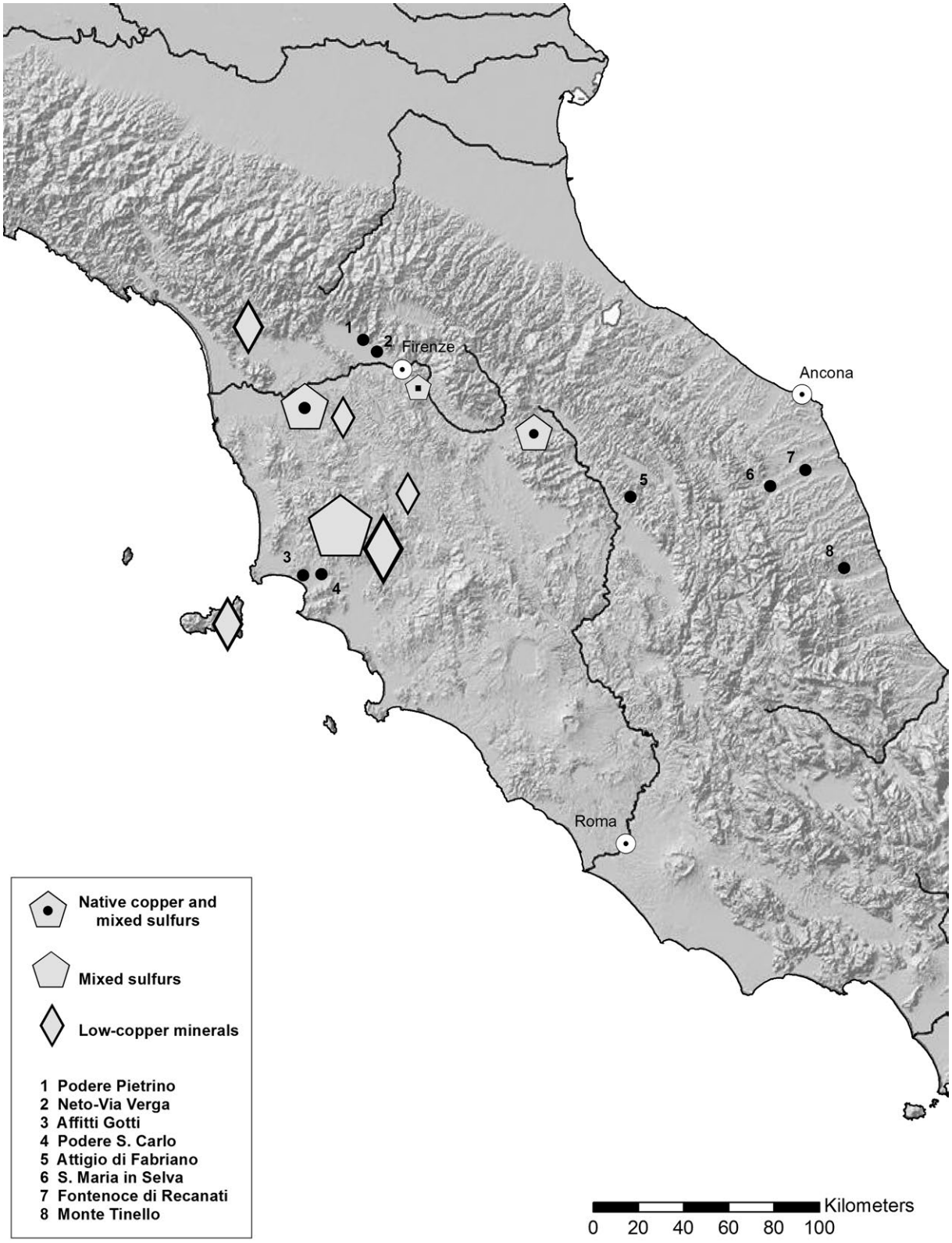
Despite the scarcity of radiometric dates, and sparse and irregular documentation, we know that – on both the Tyrrhenian and Adriatic sides of the peninsula – metallurgy first appears in habitation contexts still permeated by strong Neolithic traditions, in which diversities derived from differing traditions come together. In the mid-Tyrrhenian area the earliest evidence of copper working is in the Florence region (Neto-Via Verga Layer 5, Podere Pietrino) and in the territory of Piombino (San Carlo-Cava Solvay, Affitti Gotti and Orti Bottagone)[7] (fig. 1).

The Late Neolithic settlements in the Florence area are localized in the Piedmont zone at about 50 m above sea level (Podere Pietrino at the base of Monte Ferrato, Neto at the foot of Monte Morello), positioned on drained alluvial fans facing the wetter level land along the Arno. The Neto area is close to Val Marina, which could have offered a route to the north towards the Apennines. Paleobotanical analyses relative to this site indicate an environment little frequented by humans. The vegetation is that of temperate wetlands with a preponderance of non-arboreal taxa over trees, which are largely pines and broad-leaved trees typical of wetlands. The herbaceous plants indicate the presence of marsh-swamp areas and widespread wetlands. The paleoeconomy documented by the levels at Neto is of Neolithic origin, with a majority of ovicaprids, butchered when young, and supplemented by sporadic hunting activity. Human impact on the environment appears to have been limited, probably related to an initial and not extensive deforestation around the inhabited areas that appear to have been transitory/seasonal settlements repeated in the same location rather than stable settlements. This economic and environmental situation changed in the Copper Age, when a population increase is attested by the greater number of occupation sites, some with deeper stratification. Human alteration of the environment increases and the inhabited areas are more open; from an archaeozoological perspective, bovines become the primary resource.

The settlement unit we have called Neto-Via Verga includes inhabited areas investigated in the past with distinct designations (Neto di Bolasse, Neto-Via Verga, Spazzavento). The Neto settlement unit provides a clear example of the problems posed by the grouping together of sites, from spatial (stratigraphic and topographic), chronological and cultural perspectives. Brought to light in spatially restricted archaeological excavations conducted prior to construction work, these discoveries have been studied separately, but their location, stratigraphy and nature suggest that they probably belong to a single settlement system, in which phenomena of continued

6 Magi 1985; Martini et al. 2007; Ghinassi – Tangocci 2008; Pizziolo – Sarti 2008; Pizziolo et al. 2009.

7 Sarti 1998b; Fedeli 1994/1995; Fedeli 1995; Fedeli 1999; Volante 2003; Fedeli – Galiberti 2016; Sarti – Volante unpublished data.



1 Sites with early metalwork and metallurgy and copper ore deposits in central Italy (Tuscany and Marche)

and repeated occupation are important. Neto is therefore a site with complex stratigraphy[8] that covered a large area (ca. 6,000 square meters excavated). Beginning with the Vasi-a-Bocca-Quadrata culture with episodic occupation, it continued in the Late and Final Neolithic and in the Copper Age (Pre-Bell Beaker, Early Bell Beaker), with scarce evidence also regarding the Etruscan and Roman eras. The most substantial evidence, relating to the largest settlement size, dates to the Late and Final Neolithic.

The Neto-ViaVerga settlement structure shows no distinctive features with respect to the contemporaneous Italian panorama; the structured areas (more or less sunken zones featuring small channels, stake holes, pits, small areas marked off by stones, fire-containing structures) show a limited amount of construction. Roofed structures are not clearly present but have been hypothesized on the basis of the distribution of material and of some functional structures; regular lines of posts are absent. The Neto-Via-Verga settlement unit is interpreted as an area occupied repeatedly for brief periods of time, probably of seasonal nature, by people with a nomadic lifestyle – whether older (Neolithic with incised lines, Vasi a Bocca Quadrata) or more recent (Early Bell Beaker). The working of metal is restricted to a specific marginal zone that includes level areas with little evidence of human activity, and small pits with intensely red-coloured walls, on the upper surfaces and insides of which baked sediment and tiny amounts of copper residues are present.

The pottery production of this time period, which we consider to be an early stage of the Copper Age[9], is characterized locally by the persistence of Neolithic styles associated with items that circulated widely (fig. 2). Together with rare incised decoration, the presence of certain features – for example, the roughening of vase surfaces – should be emphasized; these foreshadow a tendency and taste peculiar to subsequent local Copper-Age communities in about the middle of the millennium. Lithic industries are strongly traditional but with innovative elements; in particular, flat retouched tools are common (more than 25%), among which the pedunculate type prevails (fig. 3). Indirect testimony of the use of metal artifacts is given by the clear marks left by cleaver blows and grooves on animal bones[10]. At present, the possible significance and detailed analysis of this evidence is under evaluation, without neglecting consideration of the types of metal artifacts employed, the role these may have had in social or symbolic community activities, and the possible reasons for the selection of animals to be slaughtered with metal tools[11]. Such specific choices regarding the use of metal tools are not documented in Italian sites dating to the first half of the 4th millennium, but this might be due to the limited studies conducted in this field. More recent examples do exist, but their implications will have to be evaluated on the basis of further evidence. At Maccarese the use of sharp metal tools on parts of an equid deposited in a small pit has been documented, while the very scarce traces of slaughtering found in the dwelling seem to be attributable to a stone artifact. At Conelle di Arcevia the scarce traces of slaughtering on animal bones were made by stone tools, but the functional study of worked bone artifacts suggests that metal tools may have been employed in their production[12]. The subsequent use of metal objects for stripping the flesh from animals is documented at Sesto Fiorentino – on the bone remains found in the Via Bruschi mound, a Bell Beaker ritual site – at a later time in the Copper Age, during which the use of metal tools in everyday activities appears more plausible[13].

In conclusion, therefore, in the Florence region the first metallurgic activity, in the framework of a Neolithic tradition (formative for the Early Metal Age), seems to have resulted from innovative stimuli found at that moment in time, perhaps due to long-distance contacts. We can hypothesize that stimuli would have created interest in the copper resources present in the ophiolite complexes of Monte Ferrato near Prato (about 15 km away) and Impruneta to the south of Florence (30 km), where the presence of native copper and copper-containing minerals (oxides, carbonates and sulfides) has been documented. Our (still on-going) investigation into this aspect has not revealed traces of mining activity in either of these zones, but it should be borne in mind that such ophiolite outcrops have been visited since the Early Neolithic to obtain the "diallagio" used by local potters for tempering clay, and also rocks were used to make polished stone artifacts[14].

This model of mobility and the introduction of outside stimuli is supported and justified by the study of the management of stones used for tool-making; most was procured locally, but an externally procured, high-

8 Sarti 1985; Sarti – Martini 2000a; Volante 2003. For "settlement unit" see Sarti – Martini 2000b; Sarti – Martini 2001; Pizziolo – Sarti 2008.

9 Sarti 1998a; Sarti 1998b; Sarti – Martini 2000a; Volante 2003; Volante 2005; Volante et al. 2008.

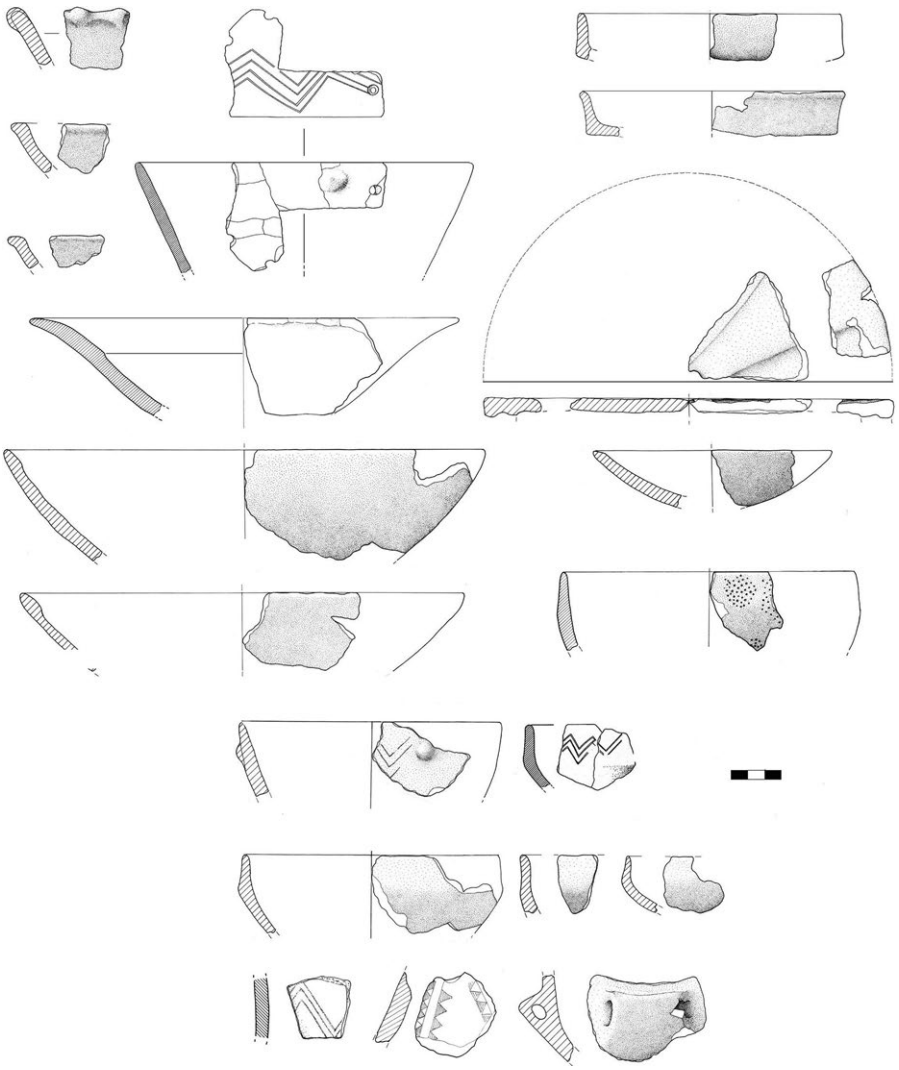
10 Rocci Ris – Volante 2005.

11 At Neto-Via Verga the traces of blows from metal tools were found on the flank of an ox and on the distal portion of the shoulder of a pig.

12 Curci – Tagliacozzo 1995; Wilkens 1999; Cazzella – Moscoloni 1999; Cristiani – Fecchi 2003; Cazzella et al. 2003.

13 Sarti et al. 2011; Mascaro et al. 2012.

14 Martini et al. 1996; Pallecchi – Sarti 2001; Agostini et al. 2008.



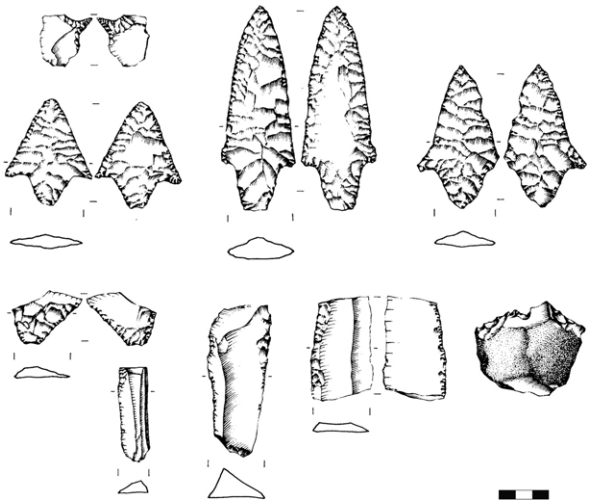
2 Neto - via Verga (level 5): pottery inventory

er-quality flint (Scaglia Rossa) – reserved for regular blades and specialized backed and geometric tools – came from more than 100 km away and was imported in the form of half-finished or finished products (cores are very rare or absent). It may be hypothesized that this non-local raw material was collected and worked, at least roughly, in the area where it was found, thus reducing long-distance transport. The same procurement system may be hypothesized for obsidian from Lipari, found only in the form of finished objects[15].

In the areas of Livorno and Grosseto[16], investigated by a specific multidisciplinary project for many years, useful evidence has emerged regarding this discourse. These areas were frequented since Early Neolithic times and offer easy points of approach by virtue of the morphology of this tract of the Tyrrhenian coastline. Although the amount of evidence currently available is limited, it is possible to reconstruct an acceptable picture of the effects of humans on the territory, above all near Livorno, along the coast north of the Piombino Promontory and the area between Piombino and Campiglia Marittima, where there is evidence of human presence from the earliest Neolithic stage (Cardiale di San Vincenzo) until the Metal Age. South-western Tuscany also appears to have been sensitive to long-distance contacts, whether from a maritime vocation that seems to have been handed down through the millennia, or along land routes. For the Late Neolithic, a strong tie has been

15 Cipriani et al. 2001; Martini et al. 2006.

16 More information in Fedeli et al. 1989; Fedeli 1994/1995; Fedeli 1995; Fedeli – Galiberti 2002; Leonini – Volante 2003; Leonini – Volante 2007; Pizziolo et al. 2009.



3 Neto - via Verga (level 5): lithic inventory

highlighted with the French Midi, perhaps by way of contacts across the Ligurian-Provençal coastal territory[17]. Relatively more recent acquisitions, localized in the present-day swampy area to the south and inland of Piombino, are in contact with the routes between the coast and the interior.

Into this framework may be inserted the preliminary data from the research on the multi-period site (from the Neolithic through to the Bronze Age) of Affitti Gotti with evidence of distinctive raw materials such as Alpine greenstone (semi-worked and finished products) and obsidian, besides a moderate quantity of copper slag, and tools for the practice of metallurgy and for finishing products in copper. Research projects and studies on this site are in course; it appears to be connected to the earliest use of copper-bearing ore deposits in the hills surrounding Campiglia. Other traces of metalworking have been found in Orti Bottagone, in an area within the site, probably dating back to the Late Neolithic (research currently underway should yield a more precise chronology): ceramic fragments, probably from crucibles, and a substantial quantity of copper slag, all now in the course of being analyzed.

In the same area, more substantial data has emerged from the settlement area of San Carlo (Copper Age), where three combustion areas with slabs of baked clay and a sort of dump containing a great deal of copper slag and mineral residue has been brought to light. There are only a few finished metal objects, a blade and a small ax[18].

The earliest metalworking activities in the Marche region appear on the whole not unlike those documented in the Florence and Livorno areas, and are also found in contexts dating to the first half of the 4th millennium BC cal. The weight of tradition appears to have been strong in the final phase of the local Neolithic (Santa-Maria-in-Selva *facies*), which we consider a formative moment for the Early Metal Age, given the evolution of pottery production and stone working with a gradual appearance of initial features of the local Aeneolithic[19]. The pottery shows features generally defined as Mid-Adriatic (Marche and Abruzzo regions of the Ripoli *facies*; certain chronological differences probably exist between the sites in the two regions)[20]. Also with regard to settlements and with respect to the preceding periods, continuity may be noted in the organization strategies of the sunken structures that are made up of more than one cavity, probably multifunctional and for specialized activities[21]. In the economic sphere, compared to the Neolithic of the middle of the 5th millennium BC cal, one element of continuity is the preference for bovines, followed by swine and ovicaprids. Innovative features, besides a decrease in the resources allocated to hunting, include the fact that sheep and goats are in decline and they are butchered when adult (the same for cattle), which suggests that they were also used for secondary products, as hinted at by the presence of strainers and funnels[22].

Metallurgic activity in Marche in the Final Neolithic includes small artifacts in copper (S. Maria in Selva, Maddalena di Muccia, Fontenoce settlement, Attiggio di Fabriano)[23]. It seems unlikely that the presence of these items is only due to external contacts and exchange of artifacts, since metallurgical activity in situ is documented at S. Maria in Selva by finds of copper slag (Areas 3b, 3c) and the presence of copper incrustations in the porous fabric of a ceramic fragment (upper layer of Area 2). The same time frame seems to encompass the dates of Monte Tinello, from where come other frag-

17 Volante 2005.

18 Volante – Galiberti, unpublished data; Fedeli 1999; Fedeli – Galiberti 2016.

19 Manfredini 2005; Manfredini et al. 2005; Sarti 2005; Sarti et al. 2005; Martini et al. 2005; Baglioni et al. 2008.

20 Volante 2003; Manfredini 2005; Sarti et al. 2005; Sarti 2005. For the Ripoli and Fossacesia complexes: Pessina – Radi 2003.

21 The absence of area excavations (with the exception of recent work at Maddalena di Muccia) has made it impossible to identify dwelling structures.

22 Wilkens 1999; Manfredini 2005.

23 Santa Maria in Selva Structure 3c: 4,260–3,990 cal 2 σ BC; Fontenoce: Silvestrini et al. 2000; 3,655–3,100 cal. 2 σ BC; 3,700–3,100 cal. 2 σ BC, this site has Copper-Age characteristics and some Late Neolithic elements (Sarti 2005). See also Dolfini et al. 2011.

ments of the porous wall of a conical vessel with drops of metallic copper[24].

As in the Florence area, the early metallurgical activities seem to have taken place against a background of wide-ranging, preexisting relationships: just as the ties with the Ripoli tradition were loosened, new elements appeared with connections in different directions, no longer only north-south along the Adriatic side but also along an east-west route. Perhaps it is not coincidental, from this point of view, that the sites under consideration are located not only along the coast but, above all, in internal hilly areas.

Our present research indicates that in Central Italy the earliest metalworking activity occurred in culturally conservative contexts, connected to communication webs spanning long distances and consequently receptive to new stimuli, and which were probably responsible for the adoption of metallurgy. With regard to this topic, some primary considerations must be borne in mind: the relevant archaeological record, incomplete and full of gaps, which is represented in the Florence region (but not only there) by only a very few awls, while of the (presumed) blades we have only indirect traces of chopping marks on animal bones (Neto); the role and meaning that such objects may have had, not only as prestige objects; the role of metallurgy with respect to a series of transformations, not always distinct, with regard to the secondary products of animal raising (Marche) and specialized activities, for example the production of flat retouched tools in specialized workshops (Liguria, Marche, Tuscany).

Metallurgy and Funerary Rites

Significant and clearer changes in the course of the 4th millennium BC cal. came to light from some burial sites in central Italy; these contexts yielded a complex perspective of complex and diversified rituals, including at times the presence of metal artifacts among grave goods. The overall picture is still unclear because of the incompleteness and dissimilarity of the archaeological indicators. The evidence from La Selvicciola (ca. 3,500–3,750 BC cal.) includes decorative elements of diverse composition, among which are silver and "valentinite". There are also objects in copper (including awls in the older structures) distributed in certain sectors of the burial ground. Tomb 2 of Garavicchio, with a copper dagger, and Tombs 21 and 23 of Ponte San Pietro, with copper and antimony artifacts[25], are attributable to an analogous time period.

Data from these graveyards in Tuscany and Latium contain features that merit reflection, not only due to the antiquity of the underground structures and funerary rites that later became widespread, but also for the innovative types of pottery and stone objects, and especially for the presence of metal artifacts (blades and axes) and objects in silver and antimony[26]. Therefore, the burial rituals in this area indicate, more than the evidence from dwellings[27], the presence of an evolving dynamic and developed social complexity, a complex, well-known problem that goes beyond the scope of this paper (involving tomb typology, distribution within cemeteries, criteria of access to the structures and diversity of burial practices within the same graveyard).

The dating of Grotta Spinosa to the end of the 4th millennium BC cal. seems to confirm the coexistence of diversified rituals (see also Grotta del Fontino and Buca di Spaccasasso in the Grosseto area, which also contain undefined silver items showing similar workmanship[28]) that document, apart from the chronological gap during the 4th millennium, varied burial practices perhaps tied to social diversity or to different groups, as is observed

24 Sarti 2005; see also Fossacesia (Structure 1: 4,461–4,035 cal 2 σ BC; 4,689–3,889 cal 2 σ BC) (Pessina – Radi 2003). In later contexts, a bellows nozzle was found at Cava Giacometti in uncertain stratigraphy (Cazzella – Moscoloni 1994) and another one in Grotta Sant'Angelo in Abruzzo (Di Fraia – Grifoni Cremonesi 1996).

25 Selvicciola: Petitti et al. 2011 *cum bibl.*; Ponte San Pietro and Garavicchio: Dolfini et al. 2011 *cum bibl.* For the crucible in Garavicchio see Aranguren et al. 1987.

26 For the problematic issue of the introduction of metallurgy see the dating to 3,750–3,537 cal. BC of the male buried in Tomb 21, Ponte San Pietro; if this is also valid for the metal objects probably associated (two awls of the Guardistallo type and an ax with flat edges), this poses the problem of advanced metallurgy being present early in the 4th millennium. Miari 1993; Miari 1994; Dolfini et al. 2011.

27 Recent data coming from settlement and burial contexts near Rome show a succession of different cultural and ritual features that indicate a dynamic and complex situation: Anzidei et al. 2011a; Anzidei et al. 2011b; Cerqua 2011.

28 Vigliardi 2002. At the Spaccasasso site silver artifacts were discovered during Cavanna's and Pellegrini's research (Cavanna – Pellegrini 2006). Regarding new stratigraphic data see Leonini – Volante 2003; van Leusen et al. 2011; Volante 2018.

in other areas of the peninsula[29]. Unfortunately, the patchy documentation available does not yet allow reconstruction of the complete picture.

In the Adriatic areas the evidence of the Fontenoce burials and that of rock-cut tombs in other 4th millennium necropolises in the coastal area[30] raises similar problems. These cemeteries attest to the introduction of innovative elements beyond those concerning tomb structure regarding pottery, worked stone and worked bone styles, even when metals are absent. This evidence documents important changes in funerary rituals and is in contradiction with the evolutionary continuum of the settlements in the Final Neolithic.

Middle-Copper-Age and Bell-Beaker Metallurgy

The receptive nature of the Florence area remains steady and develops in the Late Copper Age, constituting a cultural base favorable to the international relations that developed in Bell-Beaker times; within these dynamics the local groups maintained the capacity to re-elaborate in original styles the various external inputs, giving rise to productions with regional peculiarities that seem to connote manufacturing micro-provinces.

Most of the settlements of the Middle Copper Age in the Florence region date to around the mid-4th millennium BC cal.[31] with multi-layered settlements: a population increase is evident in this chronological phase, and later further growth accompanied the spread of the Bell Beakers. In the middle of the millennium settlements began to develop in various areas on the plain, where diverse territorial resources could be utilized efficiently – even descending, in the Early Bronze Age, to lower levels in the wettest areas. In the Middle Copper Age settlements reached larger sizes than in the past, only occasionally with more challenging structures (a ditch at Podere della Gora is at least 800 meters long and reaches 2 meters deep). In fact, the roofed structures, substructures and work areas are on the whole similar in typology and in the scarce effort invested in their construction to those of the earlier period (see Neto-Via Verga above). However, the greater organization of the drainage system of the floors should be noted (thin and discontinuous flooring made of stones and pebbles, animal bones and potsherds, sometimes with the incorporation of natural channel bottoms).

The Bell-Beaker and Epi-Bell-Beaker[32] periods introduced into the settlement plan the commonly found, almost formulaic system of ancient riverbeds, especially the secondary channels connected to the principal NE-SW watercourses, and the construction of dug-out structures with drained surfaces that made use of the pebbles from the old riverbeds mixed with potsherds and animal bones[33]. In some settlement units (Lastruccia, Olmi, Querciola-Semitella-Campo del Sorgo) area excavations, although partial and unplanned (conducted in advance of building work), have brought to light the diversified organization of the settled zone, with a favored area of use along the draining riverbed, and marginal areas with structures and functional installations, perhaps isolated.

In a Late Bell-Beaker phase the widely settled area of Lastruccia (area investigated: 31,000 square meters; presumed extension: ca. 20,000 square meters; area excavated: 3,200 square meters) seems to show a different picture with favored spaces that were reused over long periods by means of repeated re-installations within the same riverbed. The extended layout, therefore, becomes a reference point in which certain zones are periodically reused and re-adapted. This apparent tendency to favour the same area for repeated constructions is found locally at other dates with several differences: the Neto-Via Verga settlement unit constitutes at this point the first evidence of a seasonal settlement repeated in the Vasi-a-Bocca-Quadrata culture, the Late Neolithic and the Aeneolithic.

In evolved Bell-Beaker and Epi-Bell-Beaker times, the tendency towards greater stability and re-installation at the same site (perhaps already initiated in the second half of the 4th millennium at Volpaia – Podere della Gora) is accompanied by the small mono-phase (or less extensive) settlements of the same period, an indication of diversified use of the territory.

Due to the economic situation in the Middle Copper Age and Pre-Bell-Beaker period ovicaprids were still the major category, but bovines were on the rise (hunting

29 Analogous considerations can be made, even keeping in mind important differences, for the grave structures of the Diana *facies* (mid-4th millennium BC) in Southern Italy (Manfredini 2001), where there is a diversification of grave structures and rituals. In these contexts innovative metallurgical features are already present.

30 Baroni – Recchia 2005; Silvestrini et al. 2005; Cazzella – Silvestrini 2005.

31 Sites: Mileto-lower layer, Via Leopardi-upper layer, Volpaia-Layer 5, Olmicino, Podere della Gora, Neto-Via Verga, Lazzerini, Olmi. See: Sarti – Martini 1993; Sarti 1998b; Martini et al. 1999; Sarti et al. 1999/2000; Sarti – Volante 2001.

32 On the Bell-Beaker period in the Florence region and elsewhere in Tuscany: Sarti – Martini 2000b; Sarti 2004; Leonini – Sarti 2008a; Leonini – Sarti 2008b; Martini 2008.

33 Sarti – Martini 2000b; Sarti – Martini 2001; Pizziolo – Sarti 2008.

wild boar and deer and occasionally other wild animals remained a supplementary activity). In the evolved Bell-Beaker epoch animal husbandry favored bovines, and an increase in swine is perhaps evidence of a greater degree of settlement. In Bell-Beaker times horses were reintroduced (rare remains at Querciola), connected probably to external contacts and perhaps also to changes in social order[34]. Analysis of the paleobotanical evidence indicates a well-peopled landscape, with areas subject to deforestation. Grain production appears to increase, integrated with the harvesting of wild plants, also as animal feed, and with the use of *Vitis vinifera*[35] All this suggests prolonged presence in the territory, which includes burial grounds, as evidenced by a limited group of simple grave burials in the Middle Copper Age (Via Lazzerini), and extends the symbolic panorama up to the present day confined to the Bell-Beaker mound at the Via Bruschi site.

In the Florence area metallurgy is documented for the Middle-Copper-Age (second half of the 4th millennium B.C.) settlements by finished artifacts (sheels, small blades) and by scarce traces of metalworking (drops and slag); evidence relative to specific production zones inside the site is currently lacking. At present, it does not seem that population growth, indicated by a greater number and size of settlements, is directly connected with metallurgic activity. This situation regards the settlement evidence from Central Italy, which is weak with respect to metalworking techniques and objects. Abundance of copper artifacts from burial sites currently shows no relationship to production centers.

In the Bell-Beaker period, the few finished artifacts appear perhaps more varied (a small ax, dagger blades, awls, foil, wires); rare – but at any rate more evident than in the Middle Copper Age – are traces of metalworking (slag at Querciola, Frilli Ovest and Lastruccia, a nozzle at Lastruccia, a crucible fragment at Olmi). At the Via-Bruschi site, as mentioned above, some bones bear grooves and traces made by metal blades. Metalworking zones within Bell-Beaker sites are unknown, while there is evidence of them on Epi-Bell-Beaker sites, at the onset of the local Early Bronze Age, with two specialized areas at Lastruccia 1/Layer N (a probable casting mold, a line of small pits with fired walls and baked clay) and at Fosso di Lumino (sunken structures with deposits high in charcoal and burnt clay, containing also nozzles, crucibles, slag, an awl and a small dagger blade).

Recent studies of Pre-Bell-Beaker productions (pottery and lithic industry) have shown[36] strong ties with tradition and a notable capacity of insertion into the relations already in place in the final phases of the Neolithic (first half of the 4th millennium). Copper-Age features tend to constitute a well characterized cultural complex for the Florence area, including widespread features derived from the above-mentioned exchange network. Thus, this picture is currently supported by other work[37], and must have created a heterogeneous background shared by a number of cultural provinces through the circulation of goods or exchange of models between diverse areas.

Into this picture of relations and exchange enter also the Middle-Copper-Age features found in the Marche region, which show distinctive characteristics, in part diversified from those of the Tyrrhenian but with shared aspects. Although it maintained a specific local connotation, the Florence area adopted from the Adriatic area occasional formal and decorative elements that do not alter the overall picture. It must not be forgotten, furthermore, that flint from the Marche appears, even if in minimal quantities, in the lithic industries around Florence in this millennium, probably the continued use of particular raw materials that started a long time before[38]. A possible route for these interactions seems to be indicated by the position of Middle-Copper-Age settlements in the Marche region[39], along the roads connecting it with the Apennine region, and therefore also with the Tyrrhenian zone; the Middle Copper Age in the Marche region, however, seems to indicate more wide-ranging contacts with the Adriatic area[40].

Recent work on the Middle-Copper-Age settlements in the Marche reveals little evidence of structures (postholes); the ditch at Conelle di Arcevia stands out for the effort made in its construction. On an economic level the presence of bovines and ovicaprids has been noted with regard to secondary products[41]. As for metallurgy, few finished products (two awls, a blade, a flattened curvilinear fragment and a scrap) were discovered in Conelle[42], made from polymetal minerals; to this may be added the use of metal artifacts to make worked bone objects mentioned above. A crucible was discovered at

34 For Bell-Beaker sites see Sarti et al. 2008; for archaeozoological studies Perusin et al. 2008.

35 Carra 2008.

36 Sarti 1998a; Sarti 1998b; Sarti et al. 1999/2000; Sarti – Martini 2000a; Sarti – Martini 2000b; Sarti 2005. Studies underway (Podere-della-Gora site, unpublished data) and new radiometric datings show a local development; in this Copper-Age context the pottery productions of the San-Lorenzo-a-Greve site (Aranguren – Perazzi 2011) are similar.

37 Sarti 1998a; Sarti 1998b; Anzidei – Carboni 2000; Cocchi Genick 2000; Manfredini et al. 2000; Silvestrini – Pignocchi 2000; Sarti – Martini 2000a; Sarti – Martini 2000b; Manfredini 2002.

38 Cipriani et al. 2000/2001.

39 Manfredini et al. 2009.

40 Cazzella et al. 2011.

41 Wilkens 1999.

42 Palmieri – Cazzella 1999, also about stratigraphy.

Grotta S. Angelo and (probably) another at Cava Giacometti[43].

(L. S. – N. V)

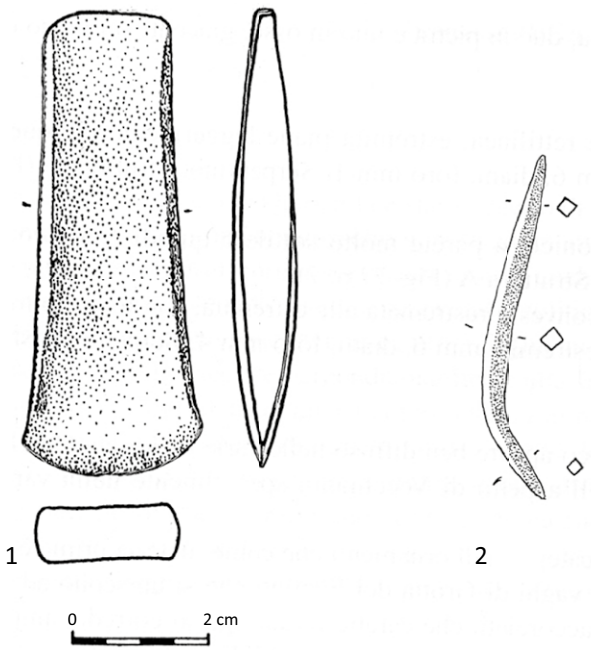
Archaeometric Analyses

Although compositional, technical and functional analyses and studies to characterize the supply areas are still in course, some preliminary archaeometric data are available to integrate the chrono-cultural framework[44].

At Neto-Via Verga and Podere Pietrino the slag and crucibles, as well as small pits with traces of combustion, are connected to metallurgy. The crucibles were produced locally and the tempers used in the clay mixtures (diallage in particular) are the same as those present in the common-ware pottery – tempers whose provenance has been traced (as mentioned above) to areas near the site and surrounding zones, up to Monte Ferrato (ca.15 km). The surfaces of the crucibles are partially vitrified through long exposure to fire; inside they contain incrustations of variable coloration from brown to black, composed essentially of copper and iron. The black incrustations include green nodules of malachite, attributable to the alteration of drops of copper not removed during metalworking. The kiln slag presents a globular morphology, coloured from brown to red and characterized by a silicate composition, essentially $(Fe, Mg)_2SiO_4$ with lesser quantities of iron oxides and compounds of copper, zinc and manganese.

Analyses of the composition of artifacts from Neto-Via Verga attest to the presence of copper with traces of nickel, antimony, zinc and silver. The presence of antimony is considered an indication of the use of ore from Tuscany, more specifically from the Maremma area, where antimony is often associated with cinnabar (see San Martino sul Fiora, Selvena) and with copper (Civitella Paganico)[45].

While awaiting the results of analyses of the Bell-Beaker artifacts, it is important to note that at Querciola the slag and the small ax contained only copper, while the awl contained copper with traces of silicon and iron (fig. 4). The small blade from Bulimacco Cilea shows a



4 Querciola: copper axe and awl

different composition: copper with a modest percentage of arsenic. At the Epi-Bell-Beaker site of Fosso di Lumino preliminary analyses of the finished objects indicate compositions of copper with traces of silicon, silver, antimony and nickel[46]. The presence of metallurgical activity on the Florence Plain has suggested the hypothesis that copper ore was procured from the nearby ophiolite complexes of Monte Ferrato and Impruneta, where the presence of native copper and related secondary minerals (oxides, carbonates and sulfides) has been documented. Analyses of copper artifacts from Neto-Via Verga and Podere Pietrino, including those from the Bell-Beaker and Epi-Bell-Beaker periods, indicate the use of polymetal sulfides, evidence that confirms the ancient dates of the mines of Libiola and of Monte Loreto in Liguria[47]. Important copper lodes (also of the fahlerz type) are frequent in Tuscany. Besides the Ligurian evidence and the more modest secondary mineralizations of the Florence area, we cannot exclude other supply zones: for example, the area around Campiglia, perhaps connected by way of the coastal sites in Liguria, those of Monti Rognosi in internal northern Tuscany and the Colline Metallifere in southern Tuscany. At present, only the results relating to

43 Cazzella – Moscoloni 1994; Di Fraia – Grifoni Cremonesi 1996. In Offida metal artefacts are related to the transition of the Copper Age and the Early Bronze Age.

44 Analyses by Gianna Giachi and Pasquino Pallecchi, Soprintendenza per i Beni Archeologici della Toscana. With regard to some Copper-Age complexes, see preliminary studies in Giachi et al. 2001 and P. Pallecchi in: Sarti 1997, 325–332.

45 Giardino 2011; Petitti et al. 2011.

46 Querciola site: P. Pallecchi in: Sarti 1997, 328–330; Bulimacco and Fosso-di-Lumino sites: Pallecchi – Sarti, unpublished data.

47 The two mines have yielded traces, as noted, of the use of chalcopyrite starting in the first half of the 4th millennium BC (Campana et al. 2006).

the slag and copper ax from Querciola leave open the possibility of the use of native copper, or of a more careful working in the smelting of polymineral ores, since no pieces of ore have been found at the Florence sites. Perhaps the ores used in different periods – or indeed at times in the same chrono-cultural stage – had diverse provenances. In fact, the presence of arsenic in the copper blade from the Bell-Beaker Bulimacco site would be compatible with the raw material that came from the Fiora Valley, the Colline Metallifere or the Monti della Tolfa[48]. Interrelations between the Florence zone, southern Tuscany, and upper Latium are documented already during the Middle Copper Age by the circulation of ceramic models; there is solid evidence of this during the evolved Bell-Beaker period, when features of Bell Beaker pottery from the area around Grosseto and Viterbo are related to those of the mid-Tyrrhenian zone[49]. The area between the rivers Fiora and Albegna might correspond to[50] the southern limit of large sites where this is found, with mid-Tyrrhenian Bell-Beaker features coexisting with other local cultural groups or with outside influences, as documented at Grotta del Fontino, Fontanile di Raim and Fosso Conicchio[51].

(G. G. – P. P. – L. S. – N. V.)

Bibliography

Agostini et al. 2008 L. Agostini – F. Briani – P. Pallecchi – L. Sarti, Notes about Bell Beaker Pottery Raw Material in Sesto Fiorentino (Florence), in: M. Baioni – V. Leonini – D. Lo Vetro – F. Martini – R. Poggiani Keller – L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze – Siena – Villanuova sul Clisi, 12–15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008) 81–87

Angeli et al. 2011 L. Angeli – C. Fabbri – G. Radi, Nuovi elementi campaniformi nella piana del Fucino (L'Aquila), in: L'età del Rame in Italia. Atti della XLIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Bologna, 26–29 novembre 2008 (Florence 2011) 515–518

Anzidei – Carboni 2000 A. P. Anzidei – G. Carboni, L'Eneolitico del territorio di Roma. Aspetti culturali e ambienti cronologici, in: M. Silvestrini (ed.), Recenti acquisizioni, problemi e prospettive della ricerca sull'Eneolitico dell'Italia centrale. Atti dell'Incontro di Studio, Arcevia, 14–15 maggio 1999 (Ancona 2000) 215–231

Anzidei et al. 2011a A. P. Anzidei – G. Carboni – L. Carboni – M. A. Castagna – P. Catalano – R. Egidi – M. Malvoni – D. Spadoni, Il gruppo Roma-Colli Albani della facies di Rinaldone. Organizzazione spaziale, rituali e cultura materiale nelle necropoli di Lucrezia Romana e Romanina (Roma), in: L'età del Rame in Italia. Atti della XLIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Bologna, 26–29 novembre 2008 (Florence 2011) 297–308

Anzidei et al. 2011b A. P. Anzidei – G. Carboni – L. Carboni – P. Catalano – A. Celant – R. Cereghino – E. Cerilli – S. Guerrini – C. Lemorini – G. Mieli – S. Musco – C. Rambelli – F. Pizzuti, Il Gaudo a sud del Tevere. Abitati e necropolis dall'area romana, in: L'età del Rame in Italia. Atti della XLIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Bologna, 26–29 novembre 2008 (Florence 2011) 309–322

Aranguren et al. 1987/1988 B. Aranguren – P. Pallecchi – P. Perazzi – A. Revedin, La necropoli di Garavicchio (Capalbio, Grosseto), RScPreist 41, 1987/1988, 199–237

Aranguren – Perazzi 2011 B. Aranguren – P. Perazzi, L'insediamento di San Lorenzo a Greve, Firenze. Nuovi dati per una definizione degli aspetti culturali dell'Eneolitico nell'Italia centrale, in: L'età del Rame in Italia. Atti della XLIII Riunione Scientifica

48 The metal items from San Pietro and Garavicchio indicate the use of polymetal sulfides found in nearby zones (Aranguren et al. 1987/1988; Miari 1994). See also Petitti et al. 2011 *cum bibl.*; Dolfini et al. 2011; Giardino et al. 2011.

49 The first identification of the evolved Bell-Beaker culture in the Florence region (Sarti 1995/1996 and Sarti 1997; Sarti – Martini 2001) was confirmed and specified, also with regard to its geographic boundaries, by Leonini and Sarti (Leonini – Sarti 2008a; Leonini – Sarti 2008b).

50 Recent discoveries in Ortucchio (Angeli et al. 2011 confirm evolved Bell-Beaker contacts with the Apennine region in Central Italy (Le Coste and Valle della Vibrata sites) (Fugazzola – Pellegrini 1998; Leonini – Sarti 2008b).

51 Observations on the analyses by G. Giachi, P. Pallecchi and L. Sarti; historical and archaeological observations by L. Sarti and N. Volante with equal contributions.

dell'Istituto Italiano di Preistoria e Protostoria, XLIII Riunione Scientifica IIPP, Bologna, 26–29 novembre 2008 (Florence 2011) 79–86

Baglioni et al. 2008 L. Baglioni – F. Martini – N. Volante, Identità, variabilità e interazioni nei complessi litici tra V e III millennio a. C. Evoluzione e tendenze in industrie della Toscana e delle Marche, BPI 97, 2008, 91–126

Baioni et al. 2008 M. Baioni – V. Leonini – D. Lo Vetro – F. Martini – R. Poggiani Keller – L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze – Siena – Villanuova sul Clisi, 12–15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008)

Baroni – Recchia 2005 M. Baroni – G. Recchia, Comportamenti funerari durante l'Eneolitico nelle Marche, in: Preistoria e protostoria delle Marche. Atti della XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Portonovo, Abbadia di Fiastra, 1–5 ottobre 2003 (Florence 2005) 455 f.

Campana et al. 2006 N. Campana – R. Maggi – M. Pearce – C. Ottomano, Quanto rame? Stima della produzione mineraria del distretto di Sestri Levante fra IV e III millennio B. C., in: Materie prime e scambi nella preistoria italiana. Atti della XXXIX Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Firenze, 25–27 novembre 2004 (Florence 2006) 1339–1348

Carra 2008 M. Carra, Plant Macroremains from Olmi 1 (Sesto Fiorentino, Florence). Preliminary Study, in: M. Baioni – V. Leonini – D. Lo Vetro – F. Martini – R. Poggiani Keller – L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze – Siena – Villanuova sul Clisi, 12–15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008) 59–66

Cazzella 2000 A. Cazzella, L'eneolitico dell'Italia centrale. Alcuni aspetti problematici, in: M. Silvestrini (ed.), Recenti acquisizioni, problemi e prospettive della ricerca sull'Eneolitico dell'Italia centrale. Atti dell'Incontro di Studio, Arcevia, 14–15 maggio 1999 (Ancona 2000) 21–31

Cazzella et al. 2011 A. Cazzella – M. Cultraro – G. Recchia, Relazioni tra l'Italia centro-meridionale, la Sicilia e l'area egeo-balcanica durante l'Eneolitico, in: L'Età del rame in Italia. Atti della XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Bologna, 26–29 novembre 2008 (Florence 2011) 157–166

Cazzella – Moscoloni 1994 A. Cazzella – M. Moscoloni Il sito stratificato di Cava Giacometti (Arcevia-Ancona). Testimonianze culturali dal Neolitico finale all'età del Bronzo, Quaderni del Museo Archeologico Etnologico di Modena 1, 1994, 89–114

Cazzella – Moscoloni 1999 A. Cazzella – M. Moscoloni (eds.), Conelle di Arcevia. Un insediamento eneolitico nelle Marche I. Lo scavo, la ceramica, i manufatti metallici, i resti organici (Rome 1999)

Cazzella et al. 2003 A. Cazzella – M. Moscoloni – G. Recchia (eds.), Conelle di Arcevia II. I manufatti in pietra scheggiata e levigata, in materia dura di origine animale, in ceramica non vascolari, il concotto (Rome 2003)

Cazzella – Silvestrini 2005 A. Cazzella – M. Silvestrini, L'Eneolitico delle Marche nel contesto degli sviluppi culturali dell'Italia centrale, in: Preistoria e protostoria delle Marche. Atti della XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Portonovo, Abbadia di Fiastra, 1–5 ottobre 2003 (Florence 2005) 371–386

Carboni 2002 G. Carboni, Territorio aperto o di frontiera? Nuove prospettive di ricerca per lo studio della distribuzione spaziale delle *facies* del Gaudo e di Rinaldone nel Lazio centromeridionale, Origini 24, 2002, 235–301

Cavanna – Pellegrini 2006 C. Cavanna – E. Pellegrini, Il sito di Spaccasasso ad Alberese (Grosseto). Indagini 2002–2004, in: N. Negroni Catacchio (ed.), Pastori e Guerrieri nell'Etruria del IV e III millennio a. C. La cultura di Rinaldone a cento anni dalle prime scoperte. Atti del Settimo Incontro di Studi, Viterbo 21 novembre 2003, Valentano (Vt), Pitigliano (Gr), 17–18 settembre 2004, Preistoria e Protostoria in Etruria (Milano 2006) 243–252

Cerqua 2011 M. Cerqua, Selva dei Muli (Frosinone). Un insediamento eneolitico della *facies* del Gaudo, Origini. Preistoria e protostoria delle civiltà antiche 33, 2011, 157–223

Cipriani et al. 2000/2001 N. Cipriani – M. Dini – M. Ghinassi – F. Martini – C.Tozzi, L'approvvigionamento della materia prima nei tecnocomplessi della Toscana appenninica, RScPreist 51, 2000/2001, 337–388

Cocchi Genick 2000 D. Cocchi Genick, Processi storici dell'Eneolitico dell'Italia centrale tirrenica nel contesto peninsulare, in: M. Silvestrini (ed.), Recenti acquisizioni, problemi e prospettive della ricerca sull'Eneolitico dell'Italia centrale. Atti dell'Incontro di Studio, Arcevia, 14–15 maggio 1999 (Ancona 2000) 149–163

Cristiani – Fecchi 2003 E. Cristiani – F. R. Fecchi, I manufatti in materia dura animale. L'inquadramento tipologico ed i risultati dell'analisi tecno-funzionale, in: A. Cazzella – M. Moscoloni – G. Recchia (eds.)

Conelle di Arcevia II. I manufatti in pietra scheggiata e levigata, in materia dura di origine animale, in ceramica non vascolare, il concotto (Rome 2003) 423–503

Curci – Tagliacozzo 1995 A. Curci - A. Tagliacozzo, Il pozzetto rituale con scheletro di cavallo dell'abitato eneolitico di Le Cerquete-Fianello (Maccarese - RM), Origini. Preistoria e protostoria delle civiltà antiche 18, 1995, 297–350

Dallai et al. 2011 L. Dallai - G. Pizziolo - L. Sarti (eds), La Chiana dal Mare alle Bonifiche. Storia di un fiume invisibile. Catalogo della mostra Montepulciano (Siena 2011)

Di Fraia – Grifoni Cremonesi 1996 T. Di Fraia - R.Grifoni Cremonesi (eds.), La Grotta Sant'Angelo sulla Montagna dei Fiori (Teramo) (Pisa 1996)

Dolfini et al. 2011 A. Dolfini - B. Aranguren - M. Silvestrini, La prima metallurgia in Italia centrale alla luce di nuove date radiometriche, in: L'età del Rame in Italia. Atti della XLIII Riunione scientifica dell'Istituto Italiano di Preistoria e Protostoria, Bologna, 26-29 novembre 2008 (Florence 2011) 171–180

Fedeli 1995 F. Fedeli, Scavo di un insediamento eneolitico nel distretto minerario del Campigliese (LI), in: N. Negroni Batacchio (ed.), Tipologia delle necropoli e rituali di deposizione. Ricerche e scavi. Atti del secondo incontro di studi 2, Farnese 21–23 maggio 1993, Preistoria e Protostoria in Etruria (Milan 1995) 73–81

Fedeli 1994/1995 F. Fedeli, Ricerche pre-protostoriche nel territorio di San Carlo (San Vincenzo, LI). I materiali di Vallin del Mandorlo, RassAPiomb 12, 1994/1995, 149–235

Fedeli 1999 F. Fedeli, Il sito preistorico degli Orti Bottagone (Piombino, LI). Comunicazione preliminare, RassAPiomb 16, 1999, 115–129

Fedeli – Galiberti 2002 F. Fedeli - A. Galiberti, Strutture e materiali del Neolitico recente dalla periferia di San Vincenzo (LI), RassAPiomb 19A, 2002, 47–112

Fedeli – Galiberti 2016 F. Fedeli - A. Galiberti, Metalli e metallurghi della preistoria. L'insediamento eneolitico di San Carlo-Cava Solvay (Pontedera 2016)

Fedeli et al. 1989 F. Fedeli - A. Galiberti - S. Di Lernia - E. Pacciani, Lo scavo del Riparo Biserno (San Vincenzo, Livorno), RassAPiomb 8, 1989, 147–185

Fugazzola Delpino – Pellegrini 1998 M. A. Fugazzola Delpino – E. Pellegrini, Presenze "campaniformi" nell'Italia centro-meridionale, in: F. Nicolis - E. Mottes (eds.) Simbolo ed enigma. Il bicchiere campaniforme e l'Italia nella preistoria europea del III millennio a.C., Catalogo della Mostra Riva del Garda, (Trento 1998) 155–160

Ghinassi – Tangocci 2008 M. Ghinassi - F. Tangocci, Middle-Late Holocene Deposits of the Sesto Fiorentino Area (Florence, Italy). Preliminary Data, in: M. Baioni - V. Leonini - D. Lo Vetro - F. Martini - R. Poggiani Keller - L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze - Siena - Villanuova sul Clisi, 12-15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008) 33–38

Giachi et al. 2001 G. Giachi - P. Pallecchi - L. Sarti, La metallurgia in area fiorentina dalle origini al I millennio a. C. Progetto di indagine, in: Preistoria e Protostoria della Toscana. Atti della XXXIV Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Firenze, 29 settembre-2 ottobre 1999 (Florence 2001) 637–640

Giardino et al. 2011 C. Giardino - G. Guida - G. Occhini, La prima metallurgia dell'Italia centrale tirrenica e lo sviluppo tecnologico della *facies* di Rinaldone. Evidenze archeologiche e sperimentazione, in: L'età del Rame in Italia. Atti della XLIII Riunione scientifica dell'Istituto Italiano di Preistoria e Protostoria, Bologna, 26-29 novembre 2008 (Florence 2011) 181–186

Grifoni Cremonesi 2000 R. Grifoni Cremonesi, Alcune osservazioni sull'Eneolitico della Toscana, in: M. Silvestrini (ed.), Recenti acquisizioni, problemi e prospettive della ricerca sull'Eneolitico dell'Italia centrale. Atti dell'Incontro di Studio, Arcevia, 14–15 maggio 1999 (Ancona 2000) 123–131

Leonini – Sarti 2008a V. Leonini - L. Sarti, Bell Beaker Pottery in the Florentine Area, in: M. Baioni - V. Leonini - D. Lo Vetro - F. Martini - R. Poggiani Keller - L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze - Siena - Villanuova sul Clisi, 12-15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008) 87–102

Leonini – Sarti 2008b V. Leonini - L. Sarti, Bell Beaker Pottery in Central Italy, in: M. Baioni - V. Leonini - D. Lo Vetro - F. Martini - R. Poggiani Keller - L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze - Siena - Villanuova sul Clisi, 12-15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008) 119–128

Leonini – Volante 2003 V. Leonini – N. Volante, Le ricerche nella Buca di Spaccasasso (Alberese, Grosseto). Osservazioni preliminari, RScPreist Suppl. 1 (Florence 2003) 541–552

Leonini – Volante 2007 V. Leonini - N. Volante, Alberese (Grosseto). Grottino di Spaccasasso, Notiziario della Soprintendenza per i Beni Archeologici della Toscana 3, 2007, 699–700

van Leusen et al. 2011 M. Leusen van – G. Pizziolo – L. Sarti (eds.), Hidden Landscapes of Mediterranean Europe. Proceedings of the International Meeting, Siena, May 25th–27th, 2007, BARIntSer 2320 (Oxford 2011)

Magi 1985 M. Magi, La Geologia, in: L. Sarti (ed.), L'insediamento neolitico di Neto di Bolasse (Sesto Fiorentino, Firenze), RassAPiomb 5, 1985, 65–74

Manfredini 2001 A. Manfredini, Rituali funerari e organizzazione sociale. Una rilettura di alcuni dati della *facies* Diana in Italia meridionale, in: M. C. Martinelli – U. Spigo (eds.), Studi di Preistoria e Protostoria in onore di Luigi Bernabò Brea, Quaderni del Museo Archeologico Regionale Eoliano Suppl. 1 (Messina 2001) 71–89

Manfredini 2002 A. Manfredini (ed.), Le dune, il lago, il mare. Una comunità di villaggio dell'età del Rame a Maccarese, Origines (Florence 2002)

Manfredini et al. 2000 A. Manfredini – G. Carboni – C. Conati Barbaro, Nuovi spunti nello studio dell'Eneolitico dell'Italia centrale. Una comunità di villaggio a nord del Tevere, in: M. Silvestrini (ed.), Recenti acquisizioni, problemi e prospettive della ricerca sull'Eneolitico dell'Italia centrale. Atti dell'Incontro di Studio, Arcevia, 14–15 maggio 1999 (Ancona 2000) 203–215

Manfredini et al. 2005 A. Manfredini – G. Carboni – C. Conati Barbaro, La struttura 12 di Maddalena di Muccia. Un'ipotesi interpretativa, in: Preistoria e Protostoria delle Marche. Atti delle XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Portonovo, 1–5 ottobre 2003 (Florence 2005) 335–347

Manfredini 2005 A. Manfredini – L. Sarti – M. Silvestrini, Il Neolitico delle Marche, in: Preistoria e Protostoria delle Marche. Atti delle XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria Portonovo, 1–5 ottobre 2003 (Florence 2005) 197–208

Manfredini et al. 2009 A. Manfredini – M. A. Fugazzola Delpino – L. Sarti – M. Silvestrini – F. Martini – C. Conati Barbaro – I. M. Muntoni – G. Pizziolo – N. Volante, Adriatico e Tirreno a confronto. Analisi dell'occupazione territoriale tra il Neolitico finale e l'età del Rame in alcune aree campione dell'Italia centrale, RScPreist 59, 2009, 115–180

Martini 2008 F. Martini, Bell Beaker Lithic Industries in the Florentine Area, in: M. Baioni – V. Leonini – D. Lo Vetro F. Martini – R. Poggiani Keller – L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze – Siena – Villanuova sul Clisi, 12–15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008) 103–118

Martini et al. 1996 F. Martini – P. Pallecchi – L. Sarti, La ceramica preistorica in Toscana. Artigianati e materie prime dal Neolitico all'età del Bronzo (Florence 1996)

Martini et al. 2005 F. Martini – L. Sarti – M. Silvestrini – N. Volante, L'insediamento di Santa Maria in Selva di Treia. Progetti e prospettive di ricerca, in: Preistoria e Protostoria delle Marche. Atti delle XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Portonovo 1–5 ottobre 2003 (Florence 2005) 295–308

Martini et al. 2006 F. Martini – M. Ghinassi – B. Moranduzzo, La caratterizzazione degli areali e modalità di raccolta della materia prima litica in area fiorentina dal Paleolitico all'età del Bronzo, in: Materie prime e scambi nella preistoria italiana. Atti della XXXIX Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Firenze 25–27 novembre 2004 (Florence 2006) 299–315

Martini et al. 2007 F. Martini – G. Pizziolo – L. Sarti, Paesaggi nell'antichità. Uomo e ambiente in area fiorentina nella preistoria, in: S. Conti – B. Scardigli – M. C. Torchio (eds.), Geografia e viaggi nel mondo antico. Affinità Elettive (Ancona 2007) 123–147

Martini et al. 1999 F. Martini – G. Poggesi – L. Sarti, La lunga memoria della piana. L'area fiorentina dalla preistoria alla romanizzazione (Florence 1999)

Martini – Sarti 1993 F. Martini – L. Sarti, Costruire la memoria. Archeologia preistorica a Sesto Fiorentino (1982–1992) (Florence 1993)

Mascaro et al. 2012 I. Mascaro – S. Perusin – L. Sarti, La "quotidianita" del metallo. Analisi al SEM delle tracce di macellazione dei reperti faunistici del sito campaniforme di Via Bruschi a Sesto Fiorentino, in: J. De Grossi Mazzorin – D. Saccà – C. Tozzi (eds.), Atti 6° Convegno nazionale di archeozoologia, Parco dell'Orecchiella-Lucca 2009 (Lucca 2012) 7–9

Miari 1993 M. Miari, La necropoli eneolitica di Ponte S. Pietro (Ischia di Castro-Viterbo), RScPreist 45, 1993, 101-166

Miari 1994 M. Miari, Il rituale funerario della necropoli eneolitica di Ponte S. Pietro (Ischia di Castro, Viterbo), Origini. Preistoria e protostoria delle civiltà antiche 18, 1994, 351–390

Pallecchi – Sarti 2001 P. Pallecchi – L. Sarti, I materiali di provenienza gabbrica utilizzati nella fabbricazione delle ceramiche preistoriche in Toscana, in: Preistoria e Protostoria della Toscana. Atti della XXXIV Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Firenze, 29 settembre – 2 ottobre 1999 (Florence 2001) 641–644

Palmieri – Cazzella 1999 A. M. Palmieri – A. Cazzella, I manufatti metallici. Caratteri tecnologici, in: A.

Cazzella – M. Moscoloni (eds.), Conelle di Arcevia I. Un insediamento eneolitico nelle Marche. Lo scavo, la ceramica, i manufatti metallici, i resti organici (Roma 1999) 205–209

Perusin et al. 2008 S. Perusin – Z. Di Giuseppe – C. Corridi – P. Mazza, The Sesto Fiorentino Fauna. Subsistence Strategies from the Late Third Millenium to the Second Millennium BC. Preliminary Data, in: M. Baioni – V. Leonini – D. Lo Vetro – F. Martini – R. Poggiani Keller – L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze – Siena – Villanuova sul Clisi, 12–15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008) 67–74

Pessina – Radi 2003 A. Pessina – G. Radi, Il Neolitico recente e finale in Abruzzo, in: Preistoria e protostoria dell'Abruzzo. Atti della XXXVI Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria, Chieti – Celano, 27–30 September 2001 (Florence 2003) 209–220

Petitti et al. 2011 P. Petitti – C. Persiani – P. Pallecchi, Reperti metallici dalla necropoli della Selvicciola (Ischia di Castro – Viterbo), in: L'età del Rame in Italia. Atti della XLIII Riunione scientifica dell'Istituto Italiano di Preistoria e Protostoria, Bologna 26–29 novembre 2008 (Florence 2011) 187–194

Pizziolo et al. 2011 G. Pizziolo – S. Poesini – L. Sarti, La Val di Chiana nella Preistoria, in: L. Dallai – G. Pizziolo – L. Sarti (eds.), La Chiana dal Mare alle Bonifiche. Storia di un fiume invisibile. Catalogo della mostra Montepulciano (Siena 2011) 27–57

Pizziolo – Sarti 2008 G. Pizziolo – L. Sarti, Prehistoric Landscape, Peopling Process and Bell Beaker Settlements in the Florentine Area, in: M. Baioni – V. Leonini – D. Lo Vetro – F. Martini – R. Poggiani Keller – L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze – Siena – Villanuova sul Clisi, 12–15 maggio 2006, Millenni. Studi di archeologia preistoria 6 (Florence 2008) 39–59

Pizziolo – Sarti 2011 G. Pizziolo – L. Sarti, A Prehistoric Hidden Landscape in an Alluvial Plain. Investigations in the Florentine Area, in: M. van Leusen – G. Pizziolo – L. Sarti (eds.), Hidden Landscapes of Mediterranean Europe. Cultural and Methodological Biases in Pre- and Protohistoric Landscape Studies. Proceedings of the International Meeting, Siena, May 25th–27th, 2007, BARIntSer 2320 (Oxford 2011) 17–27

Pizziolo et al. 2009 G. Pizziolo – L. Sarti – N. Volante, Geografia del popolamento durante la preistoria recente nel territorio toscano. Riflessioni metodologiche e casi studio, in: G. Macchi Jánica (ed.), Geografie del Popolamento. Casi di studio, metodi e teorie (Siena 2009) 215–227

Rocci Ris – Volante 2005 A. Rocci Ris – N. Volante, I macromammiferi del livello del Neolitico finale – primo eneolitico di Neto-Via Verga a Sesto Fiorentino (Firenze). Studio archeozoologico e tafonomico, in: G. Malerba – P. Visentini (eds.), Atti del 4° convegno nazionale di archeozoologia, Pordenone novembre 13–15 2003, Quaderni del Museo Archeologico del Friuli Occidentale 6 (Pordenone 2005) 191–196

Sarti 1985 L. Sarti (ed.), L'insediamento neolitico di Neto di Bolasse (Sesto Fiorentino, Firenze), RassA-Piomb 5, 1985, 63–117

Sarti 1995/1996 L. Sarti, Cronostratigrafia del Campaniforme in area fiorentina. Dati preliminari dall'insediamento di Lastruccia, RScPreist 47, 1995/1996, 239–261

Sarti 1997 L. Sarti, Querciola. Insediamento campaniforme a Sesto Fiorentino (Florence 1997)

Sarti 1998a L. Sarti, Culture e artigianati del terzo millennio a.C. nella Toscana settentrionale, in: G. Capecchi – O. Paoletti – G. C. Cianferoni – A. M. Esposito – A. Romualdi (eds.), In memoria di Enrico Paribeni (Rome 1998) 397–407

Sarti 1998b L. Sarti, Aspetti della ceramica eneolitica precampaniforme in area fiorentina. Appunti per lo studio delle relazioni culturali nel terzo millennio nell'Italia centrale, RScPreist 49, 1998, 410–429

Sarti 2004 L. Sarti, L'Epicampaniforme en Italie centrale. Stratigraphies, datations radiometriques, productions lithiques et ceramiques, in: J. Czebreszuk (ed.), Similar but Different. Bell Beakers in Europe (Poznan 2004) 205–222

Sarti 2005 L. Sarti, Rapporti tra Marche e Toscana nell'Eneolitico sulla base dell'indicatore ceramico, in: Preistoria e Protostoria delle Marche. Atti delle XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria Portonovo, 1–5 ottobre 2003 (Florence 2005) 387–398

Sarti et al. 1999/2000 L. Sarti – C. Carlini – F. Martini, L'Eneolitico di Volpaia a Sesto Fiorentino. Primi dati sulle produzioni fittili e litiche, RScPreist 50, 1999/2000, 189–228

Sarti et al. 2008 L. Sarti – C. Balducci – P. Brilli – P. Fenu – V. Leonini – F. Martini – G. Pizziolo – M. Zannoni, Catalogue of Bell Beaker Settlements in Sesto Fiorentino, Florence, in: M. Baioni – V. Leonini – D. Lo Vetro – F. Martini – R. Poggiani Keller – L. Sarti (eds.), Bell Beaker in Everyday Life. Proceedings of the 10th Meeting "Archéologie et Gobelets", Firenze – Siena – Villanuova sul Clisi, 12–15 maggio 2006,

Millenni. Studi di archeologia preistoria 6 (Florence 2008) 23–33

Sarti et al. 2011 L. Sarti – P. Fenu – V. Leonini – F. Martini – S. Perusin, The Bell Beaker Tumulus of Via Bruschi in Sesto Fiorentino (Florence, Italy). New research, in: E. Borgna – S. Müller Celka (eds.), Ancestral Landscapes. Burial Mounds in the Copper and Bronze Ages (Central and Eastern Europe-Balkans-Adriatic-Aegean, 4th–2nd millennium B.C.). Proceedings of the International Conference held in Udine, May 15th–18th, 2008, Travaux de Maison de l'Orient et de la Méditerranée 58 (Lyon 2011) 231–238

Sarti – Martini 1993 L. Sarti – F. Martini, Costruire la memoria. Archeologia preistorica a Sesto Fiorentino (1982-1992) (Florence 1993)

Sarti – Martini 2000a L. Sarti – F. Martini, L'Eneolitico in area fiorentina. Appunti e riflessioni, in: M. Silvestrini (ed.), Recenti acquisizioni, problemi e prospettive della ricerca sull'Eneolitico dell'Italia centrale. Atti dell'Incontro di Studio, Arcevia, 14–15 maggio 1999 (Ancona 2000) 163–178

Sarti – Martini 2000b L. Sarti – Martini, Insediamenti e artigianati dell'età del Bronzo in area fiorentina. Le ricerche archeologiche nei cantieri CONSIAG (1996-98), Millenni. Studi di archeologia preistoria 2 (Florence 2000)

Sarti – Martini 2001 L. Sarti – F. Martini, Strategie insediative del Campaniforme nell'Italia centrale tirrenica, in: F. Nicolis (ed.), Bell Beakers Today. Pottery, People, Culture, Symbols in Prehistoric Europe. Proceedings of the International Colloquium, Riva del Garda, 11–16 maggio 1998 (Riva del Garda 2001) 187–199

Sarti et al. 2005 L. Sarti – M. Silvestrini – N. Volante, Il Neolitico recente-finale marchigiano tra il medio versante adriatico e l'alto versante tirrenico, in: Preistoria e Protostoria delle Marche. Atti delle XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria Portonovo, 1 – 5 ottobre 2003 (Florence 2005) 259–278

Sarti – Volante 2001 L. Sarti – N. Volante, Aspetti locali e interregionali del Neolitico finale in Toscana e nelle regioni limitrofe, in: Preistoria e Protostoria della Toscana. Atti della XXXIV Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria Firenze, 29 settembre – 2 ottobre 1999 (Florence 2001) 201–214

Silvestrini et al. 2000 M. Silvestrini – C. Carlini – G. Pignocchi, L'insediamento di Fontenoce di Recanati (MC) alla luce dei nuovi dati sul complesso ceramico, in: M. Silvestrini (ed.), Recenti acquisizioni, problemi e prospettive della ricerca sull'Eneolitico dell'Italia centrale. Atti dell'Incontro di Studio, Arcevia, 14–15 maggio 1999 (Ancona 2000) 51-72

Silvestrini et al. 2005 M. Silvestrini – A. Cazzella – G. Pignocchi, L'organizzazione interna della necropoli di Fontenoce-area Guzzini, in: Preistoria e Protostoria delle Marche. Atti delle XXXVIII Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria Portonovo, 1 – 5 ottobre 2003 (Florence 2005) 457–468

Silvestrini – Pignocchi 2000 M. Silvestrini – G. Pignocchi, Gli insediamenti preistorici di Fontenoce di Recanati (Macerata). Aspetti del Neolitico ed Eneolitico marchigiano, Origini. Preistoria e protostoria delle civiltà antiche 22, 2000, 135–194

Vigliardi 2002 A. Vigliardi, La Grotta del Fontino. Una cavità funeraria eneolitica del Grossetano, Millenni. Studi di archeologia preistoria 4 (Florence 2002)

Volante 2003 N. Volante, Neto-Via Verga (Sesto Fiorentino). La produzione vascolare dell'area 1, RScPreist 53, 2003, 375–504

Volante 2005 N. Volante, Les faciès de l'Italie centrale entre le Ve et le IVe millénaire av. J. C. Les rapports avec la France du sud d'après les morphologies et les styles des céramiques, in: Un siècle de construction du discours scientifique en préhistoire. Actes 26e session du congrès préhistorique de France, Avignon, 21-25 septembre 2004 (Avignon 2005) 153–163

Volante 2018 N. Volante, Poggio di Spaccasasso. Pratiche funerarie in una cava di cinabro tra Neolitico ed età dei Metalli, Millenni. Studi di archeologia preistoria 16 (Florence 2018)

Volante et al. 2008 N. Volante – M. Chelini – Z. Di Giuseppe – M. Ghinassi – P. Pallecchi – S. Ricciardi, Il sito neolitico di Scandicci – Via Deledda (Firenze), Origini. Preistoria e protostoria delle civiltà antiche 30, 2008, 99–140

Wilkens 1999 B. Wilkens, I resti faunistici, in: A. Cazzella – M. Moscoloni (eds.), Conelle di Arcevia. Un insediamento eneolitico nelle Marche I. Lo scavo, la ceramica, i manufatti metallici, i resti organici (Rome 1999) 213–261

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Addresses

Lucia Sarti and Nicoletta Volante
Università degli Studi di Siena
Dipartimento di Scienze Storiche e dei Beni culturali
Via Roma 56
53100 Siena
lucia.sarti@unisi.it
nicoletta.volante@unisi.it

Gianna Giachi and Pasquino Pallecchi
Soprintendenza per i Beni Archeologici della Toscana
Via delle Pergola 65
50122 Firenze
gianna.giachi@beniculturali.it
pasquino.pallecchi@beniculturali.it

Riassunto

Gli Autori presentano una sintesi delle ricerche sulla prima metallurgia in Toscana, basandosi sui risultati delle indagini condotte in area Fiorentina e nel territorio livornese, dove da tempo opera l'Università di Siena. Il focus del contributo riguarda le ricadute dell'introduzione della metallurgia nella vita quotidiana. Nella prima metà del IV millennio a.C. (cronologia calibrata). la prima metallurgia si inserisce nella tradizione tardoneolitica, che è formativa della prima età del Rame. In queste aree la prima tecnologia del rame sembra far parte di stimoli innovative collegati anche ai contatti a lunga distanza.