Archaebotanical analysis of a roman funerary context of *Mutina*: via Ferrari

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Abstract: The archaeological investigations of the funerary context of via Ferrari in Modena (northern Italy) carried on in 2010 brought two cremation burials of the *Lollia gens* of the 1st century AD to light. An archaeobotanical analysis (seeds/fruits and charcoals) has been carried out in order to find remains of meals involved in the ritual ceremonies, as evidence of the attendance of the sepulchre. The soil-sieving operation was carried out using piled sieves of differing mesh sizes (10 mm – 0.5 mm – 0.2 mm), as well as screening and microscopic identification. A total 836 seeds/fruits and 19 *taxa* have been identified and they mostly belong to cultivated plants or, anyway, plants that can be used as food, as Cereals, Pulses and Fruit plants. The aim of the anthracological analysis was a preliminary essay. A total of 15 charcoals were examined and the only *taxon* identified was ash (*Fraxinus*).

Keywords: archaeobotany, roman, necropolis, *Mutina*

Introduction

The research focused on the archaeobotanical remains from a roman necropolis context at *Mutina* (Modena, northern Italy), Via Ferrari, dated to the 1st AD. The purpose of the research was to detect foodstuffs offered during the funerary rituals.

Plants have always been important in human history, not only because they provide food, medicines, fuel, and materials, but also for their social uses, including religious ones, i.e. in association with funeral rites. In the Mediterranean, traditions linked to plants can have very ancient roots, which, in many cases, were transferred from Archaic Greece to the Roman World (Bosi et al., 2017).

The likelihood of plant remains becoming charred during Roman funerary rituals and surviving within the archaeological context is far from rare. Therefore, with the help of archaeobotanical investigations, it is possible to reconstruct some of the funeral rituals in parts of the Roman Empire for which no written evidence is available.

Thus archaeobotanical studies applied to necropolises provide information on funeral rituals and practices (Bouby & Marinval, 2004; Rottoli & Castiglioni, 2011), and the types of vegetal offerings for the deceased (Robinson, 2002; Cooremans, 2008; Matterne & Durreumaux, 2008). Plant offerings, therefore, seem to be a substantial and indispensable component of the convivium, an act of communion between the participants (*Fasti* II, 535). It is first of all a form of honor for the dead and also, according to beliefs, it has another function: to neutralize the ill-will of the dead through the shared consumption of the meal. The remains of rituals thus become a tool for understanding the different ideological visions of individuals and groups within ancient societies. At the beginning and end of a funeral, there were series of acts in which an important part was reserved for the symbolic consumption of food with the dead and the *silicernium*, also known as *cena feralis*, served rather to purify the family. The plant offerings are considered to belong to two different moments of the *funus*: charred remains were perhaps spread over the pyre and those unburnt were added

during the proceeding ceremonies. It is also plausible to think that certain foods were reserved only for the wealthiest classes, as with distinctions made between offerings for the deceased and those for the Manes (Riso, 2014). More generally, the common use of dried fruits and seeds, therefore available throughout the year, may have facilitated the repetition of ritual gestures.

The foods might be raw, cooked or burnt. In the absence of carbonization, the preservation of such material, the existence of which is often demonstrated by indirect evidence, is unlikely, but not impossible, by mineralization and/or anoxic conditions (Maspero and Rottoli 2005; Rettore and Rottoli 2008).

On the other hand, preservation of carbonized remains in cremation burials is a much more frequent phenomenon, although a series of events may determine significant loss of information. Combustion may reduce parts of seeds or fruits completely to ash; in the case of *non-bustum* burials, the collection from the *ustrinum* of the carbonized remains to place in the grave may have been only partial. Notwithstanding the heterogeneity of the situations analysed, it seems that larger fruits were favored, in particular those with woody or tough parts.

In addition to these studies, anthracology can sometimes help us to visualize the setting up of the funeral pyre and better understand the motivations influencing the gathering of wood for its construction. Analyses of charcoals from burials show that human beings interact with their environment and adapt to it according to needs related to use and customs (Salvayre & Durand, 2011).

Mutina: the city and the necropolis

Very many sepulchres are to be found in eastern and western areas of *Mutina*, along its major roads, where heavier traffic guaranteed better visibility (Mansuelli, 1963), thereby increasing the effectiveness of the sentiments conveyed by their celebratory decorations. A preferred area was the eastern suburban section of the via Emilia towards *Bononia*. In the western section, on the other hand, the scanty presence of funerary tombstones and the relevant lateness of the sepulchres, apparently deprived of any pre-Augustan evidence, was noticeable, while later tombs of several types were relatively numerous. In this connection, it should be noted that they were no longer constructed in a line, but were grouped in fairly confined spaces.

As far as burial rituals are concerned, until the late 1st century AD almost all tombs are of the cremation type, while the first inhumations appear in the second half of that same century (Malnati et al., 2009).

Via Ferrari necropolis

The archaeological investigations required by the Superintendency for Archaeological Heritage of Emilia-Romagna have recently concluded after the discovery of a funerary stele that surfaced at a depth of about 3 meters. The stele was discovered in 2010 in via Ferrari, a few meters from the Museum of Enzo Ferrari (Figure 1).

The inscription of a stele lets us know that the monument belonged to a member of the *Lollia gens*, *Quintus Lollius Niger*, who had it erected for himself, his father *Niger*, his mother *Tettulena Prima* and his daughter *Gratilla*.

Further investigations around the stele, carried out on an area of about 30 square meters, brought to

Figure 1. Stele of *Quintus Lollius Niger,* via Ferrari (Modena)

light two incineration burials of the *Lollia gens*, one of which was equipped with a rich set consisting of three coins issued under the principality of *Tiberius,* oil lamps, balsam jars, some goblets and glasses with thin walls, and some elements in worked bone, referable to the funerary bed burned together with the deceased.

All the elements found contribute to dating the funerary stele and the two tombs to the first half of the 1st century AD.

Tomb 1

The first tomb featured the remains of the pyre: charcoals, ash, fragments of concotto and the burned bones of the deceased, combined with many objects classified almost entirely as 'primary grave goods' as their condition (for example, the partial melting of glass and the fragmentary shards) suggests that they had already been placed in the funeral pyre and then collected together with the remains of the body(ies).

Tomb 2

The second grave was located just before the front of the monument to *Quintus Lollius*. There was a high concentration of coals, fragments of concotto, ash, and burnt bones; the finds, or remains of those that formed the grave goods, were relatively few.

The following is a hypothetical reconstruction of the events and different building stages:

Stage I

A family (perhaps *Q. Lollius*, the father himself) digs a first burial pit (Tomb 2) east of the out-of-town road (leading probably to Verona) during the early Imperial era.

Stage II

Later, *Q. Lollius*, the son, orders that a funerary stele monument be built for himself and his family, and the second burial pit (Tomb 1) is dug at the same time, or a few years later.

Stage III

Finally, as has already been mentioned in the stratigraphy section, a few decades later, and after the level of the necropolis ground has risen as the result of flooding, the memory of the Lolli family has not yet faded, if the interpretation of the remains of a libation ritual demonstrating the perpetuation of their funeral commemoration by (perhaps) their descendants is correct

Material and methods

Carpological remains

Thanks to the extensive scientific study, different aspects, difficult or impossible to examine through regular archaeological field data could be highlighted, allowing us opportunities to: identify rites and their stages through the composition of the deposits; observe variations in plant remains by context; examine whether plant remains were imports from other areas; and determine whether plants mentioned in the literature as symbols were used.

The soil-sieving operation was carried out using piled sieves of differing mesh sizes (10 mm – 0.5 mm – 0.2 mm), as well as screening and microscopic identification of the surfaced materials by a stereomicroscope Leica Wild M10 at various magnifications (between 6 x and 80 x). Once the remaining material had dried out it was collected in sealed bags/containers and labelled (site, grave/structure number, layer).

Seed/fruit identification was based on the Laboratory reference collection, atlas/keys, and miscellanea (Anderberg, 1994; Berggren, 1981; Cappers et al., 2006; Neef et al., 2012). In the case of fragments of carpological remains, for each recognised taxon, the number of fragments found according to the type of finding was returned to the unit.

Charcoals

The aim of the anthracological analysis was a preliminary essay. 15 charcoals were analysed in total, chosen on the basis of the preservation status and dimension (>0.3 mm).

The charcoals originate from the layers related to the graves: concentrated charcoal demands a particular type of sampling in which the charcoals can be manually collected to avoid overrepresentation of taxa, when breakage of large fragments of trunks may occur. In the case of incineration graves, most charcoal frag-

ments represent the remains of funerary pyres, with some exceptions, which include burnt constructions. A correct sampling procedure requires that all charcoal fragments are collected from the structure.

Combustion processes have some effects on the morphology of the wood. While the size and shape of wood constituents can vary, the qualitative anatomical characteristics remain the same. The deformation of the charcoal microstructure varies with wood species (Marguerie & Hunot, 2007).

At the University of Limoges, where the analyses were undertaken, the charcoals were classified following episcopic microscopy, based on their anatomical structure. This examination is associated with an observation of the ligneous structure on traverse sections using a binocular lens (Nikon Eclipse LV100, at a magnification from 7 x to 90 x). This dendrological approach gives valuable data for aiding the identification of the part of the woody plant from which the charcoals came (trunk or branch), recording the growth-ring width.

Each charcoal fragment was manually broken along the three anatomical sections of the wood: transverse, longitudinal tangential, and longitudinal radial. They were then studied using reflected light microscopy with light and dark fields. Each charcoal fragment constitutes an observation unit, which is used for the quantification of charcoals in the form of absolute and relative frequency. Botanical identifications were made by means of comparison with anatomical atlases (Jacquiot et al., 1973; Schweingruber, 1990; Vernet et al., 2001; Fahn et al., 1985), and a charcoal reference collection. Furthermore, some basic dendrological observations were made on all the samples.

The other aspects included in the analyses are mentioned below (Marguerie & Hunot, 2007):

- presence of insect degradation: tunnels are sometimes observed and they are a good indicator of the combustion of drifted dead wood.
- presence of radial cracks: their frequency depends on the anatomy of the wood (more frequent in the case of dense and large rays), the location in the wood (less frequent when close to the pith), the level of wood dampness (a consequence of discharge of 'closed water') and temperature. The carbonization of water-logged wood favours a substantial increase in the number of radial cracks.
- evaluation of growth-rings curvature: the evaluation of tree-ring curvature enables identification of the part of the tree used, e.g. a weak or smooth curve corresponds to the tree trunk, while a strong or marked curve could correspond to the branches. The ring curvature is estimated according to a standard classification: with constant magnification. Charcoals are divided into three groups, exhibiting: a) strongly curved rings; b) moderately curved rings; c) weakly curved rings (at this observation scale, the rings seem 'straight' and the rays parallel). More generally, abundant charcoals with strongly curved rings indicate the use of small-calibre wood or branches. On the other hand, the predominance of charcoals with weakly curved rings suggests the use of large-calibre wood, such as trunks or large branches.
- growth-ring width: the average growth-ring width can provide information on the growing conditions of the trees: a) narrow rings correspond to restrictive growing conditions; b) large rings indicate favorable growing conditions.

The average growth-ring width has only been measured on charcoal samples with a weak curvature of rings (derived from trunks or large branches, far from the pith), and with regular width rings. In practice it was possible to measure the average ring-width with a calliper by examining the ligneous structure of charcoals on transverse sections using a binocular lens.

Results

Carpological remains

A total 836 seeds/fruits (from 53 to 783 sf/grave; from <1 to 10 sf/l) and 19 *taxa* (from 12 to 14 *taxa*/grave) have been identified, for a total of 172 liters sieved (see table 1).

The seed/fruit categories considered important for offerings at funeral rites, according to the literature consulted on the subject (Bouby & Marinval, 2004; Cooremans, 2008; Matterne & Derreumaux, 2008; Monckton, 2000; Preiss et al., 2005; Robinson, 2002; Rottoli & Castiglioni, 2011; Rovira & Chabal, 2008; Sostaric et al., 2006; Zach, 2002) are: cereals, pulses and fruit plants. Here listed the most frequent *taxa*

Table 1. Carpological data				
Modena - via Ferrari				
grave (2 CR - 1st cent. AD)		1	2	
layer		34	36	42
volume (total liters - 169)		92,5	28	48,5
Apiaceae undiff.	mericarp		2	
Avena sp.	caryopsis			1
Cereals	caryopsis	2		1
Corylus avellana	nut	1		
Ficus carica	achene		1	22
	syconium	1		6
Galium sp.	mericarp			2
Lens culinaris	seed	2		
Panicoideae undiff. (wild)	caryopsis	1		
Phoenix dactylifera	berry	1	107	11
	seed		1	
Pinus pinea	cone			2
	seed			19
Plantago sp.	seed			1
Platanus cf. orientalis	achene	3		
Pulses	seed			2
Rumex sanguineus/ conglomeratus	achene	4	2	7
Sambucus ebulus	endocarp			3
Sambucus nigra	endocarp	1		
Vicia faba var. minor	seed	30		589
Vitis vinifera	pip	2		1
indeterminate		5		3
SUM (total - 836 sf)		**53**	**783**	
sf/liter		<1	10	
nr. taxa (total - 19)		12	14	
c				
nc				
c/nc				

among pulses were *Vicia faba var. minor* and *Lens culinaris*, while among Fruit plants were *Phoenix dactylifera*, *Vitis vinifera* and *Corylus avellana*.

Charcoals

A total of 15 charcoals were examined and the only *taxon* identified is ash (*Fraxinus*) (see table 2). The ring curvatures indicate that the charcoals originated from tight-diameter timber, as they are very curved. The average number of rings is three, so they were perhaps branches. The average width of rings is 0.8 cm. No radial cracks or insect degradation has been noticed.

Discussion

Carpological remains

Faba bean (*Vicia faba minor*) seeds, of a distinctive dark colour, were very important signifiers of links between the world of the living and the realm of the dead (Ferrari 2006). In fact 'black faba beans', as described by Ovid (*Fasti* III, 533–534; V, 436–440), are found in the *Feralia*, festivals dedicated to ancestors, during which presents are taken to their graves, as well as in the celebrations for *Lemures*, the souls of the dead. As for the beginning of these celebrations, several sources point to the death of Remus and Romulus's decision to perform these rituals, which also included faba beans, to solace his brother's soul (Ferro & Monteleone, 2014).

As for 'fruit', Hazelnuts (*Coryllus avellana*) have been found at many archaeological sites in northern Italy, dating as far back as the Neolithic period (Rottoli & Castiglioni, 2011), probably because this plant is a spontaneous component of oak woods and hedges. However, it seems that the Romans selected clones of this tree through vegetative reproduction, although the date and location of its domestication are not yet confirmed (Zohary et al., 2012).

The grapevine (*Vitis vinifera*) was the symbol of *Bacchus*. Depicting grapes or vines on artifacts linked to burials are to be viewed as signifiers of hope and good omen. Wine was also considered as a magical element, 'God's blood', a symbol of civilisation as opposed to savagery, and was often sprinkled before sacrifices.

The date palm (*Phoenix dactylifera*) was linked to Mercury, a god who joined the earth and the sky, and living beings with the dead. A symbol of immortality, regeneration (thanks to its shoots), fertility, harmony, beauty, and victory, it is the tree of life in the Mediterranean area. *Plinius* (*HN* XIII, 42) relates the story of a palm tree near Alexandria that died and came to life again, together with the phoenix. Palm-tree branches belong to the iconography of those kings that became

Table 2. Anthrocological data

Modena - via Ferrari									
Grave	**Funerary area/ fence**	**Layer**	**Sample n°**	**Taxon**	**N° of rings**	**Total width of rings (cm)**	**Rings bending**	**Vitrification**	**Radial cracks**
1	\	34	1	Fraxinus sp.	4	1	3		
			2	Fraxinus sp.	3	0,8	3		
			3	Fraxinus sp.	2	0,5	3		
			4	Fraxinus sp.	2	1	3		
			5	Fraxinus sp.	2	0,7	2		
2	\	36	1	Fraxinus sp.	5	0,8	3		
			2	Fraxinus sp.	3	0,7	3		
			3	Fraxinus sp.	3	0,8	3		
			4	Fraxinus sp.	2	0,6	3		
			5	Fraxinus sp.	3	0,7	3		
2	\	42	1	Fraxinus sp.	4	1	3		
			2	Fraxinus sp.	4	1,2	3		
			3	Fraxinus sp.	3	1	3		
			4	Fraxinus sp.	3	0,9	3		
			5	Fraxinus sp.	3	0,8	3		

gods after their death, and their fruits were popular with the Romans as delicacies and gifts, even if, as pointed out by Rottoli and Castiglioni (2011), finds of this *taxon* at non-funerary Roman sites in Italy and Europe is extremely rare.

Charcoals

In this present study, the number of charcoals studied is insufficient to permit a palaeoecological approach. It is important to compare the list of *taxa* from the analysed contexts with the existing ones, or the natural potential vegetation, in order to confirm or reject the random gathering of wood.

The only *taxon* found is *Fraxinus*. Although recent studies provided great biodiversity at Modena, the selection of *Fraxinus* as a unique taxon indicates that it was considered one of the best fuel sources for sustained heat. Pollen diagrams of the Emilia-Romagna region in Roman times (Accorsi et al. 1999), and particularly in the Modena area (Bosi et al., 2015), show the frequent, although not abundant, presence of the *Fraxinus excelsior* type.

Conclusion

This current research has allowed us to identify and highlight important aspects relating to archaeobotanical analysis within the Roman funerary context of via Ferrari. The results outlined at the end of this research and which have been discussed in the previous chapters, can be summarised in the following points. Regarding the methodology, it is important to underline the importance of a complete and systematic sampling during the excavation. The archaeobotanical results confirm that when sampling was carried out through a scientific strategy, it was possible to make an accurate reconstruction of the funeral event and of the following ceremonies after the burying. It would therefore be better to have a strategy aimed at the sieving procedure, rather than relying on the collection of objects from the ground, since the micro-remains, even the archaeological ones, can easily be missed. It will then be up to the individual researcher to address the screened and classified materials to the different disciplines.

In terms of the funerary aspects, recurring and standardised behaviours have been noticed that perhaps relate to custom, social rule, or emulation, i.e.

the redundancy of faba beans, grapes and dates above all. Therefore, most of the remains that emerged after sieving are charred and they are evidence of offerings during the cremation process. It is noticed also a good variety of plant offerings, especially pulses and fruit plants.

The criteria that determined the collection of wood are very difficult to establish and different possibilities should be taken into consideration. It can be assumed that both functional and cultural factors influenced the choices of wood for cremation rites. The results indicated that wood was gathered based on its availability, i.e. ash, the most frequent taxon, as well as by its symbolical meaning.

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