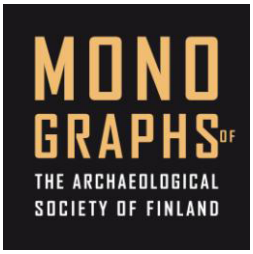

Defining Edges and Districts – Ceramiscene in the Territory of Nepi (VT, Lazio, Italy)

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Source: Janne Ikäheimo, Anna-Kaisa Salmi & Tiina Äikäs (eds.): Sounds Like Theory. XII Nordic Theoretical Archaeology Group Meeting in Oulu 25.–28.4.2012.Monographs of the Archaeological Society of Finland 2, 121–140

Published by: The Archaeological Society of Finland

Stable URL: www.sarks.fi/masf/masf_2/SLT_09_Rajala_Mills.pdf
ISBN 978-952-67594-7-0 (PDF) ISBN 978-952-67594-6-3 (hardback)

Monographs of the Archaeological Society of Finland
ISSN 1799-8611 (online) ISSN 1799-862X (print)
ISSN-L 1799-8611

Defining Edges and Districts – *Ceramiscene* in the Territory of Nepi (VT, Lazio, Italy)

Ulla Rajala & Philip Mills

ABSTRACT **Mills and Rajala recently introduced the concept of *ceramiscene*, a landscape that is defined by the manufacture, use, and discard of artefacts made from fired clay. The concept is related to a methodology that integrates information from ceramic artefacts with landscape elements. This paper further explores the ways Lynch's elements of urban form can be used to analyse rural landscapes. The attributes associated with landscape, survey units, and different elements are used here to characterise the material landscape through a computer-assisted analysis. As a case study the late Roman ceramiscene in the territory of Nepi is analysed and discussed on the basis of the material collected in 1999 and 2000 during the Nepi Survey Project around modern Nepi, north-west of Rome, under the umbrella of the Tiber Valley Project. It is hoped that this article in the NTAG publication will encourage other applications outside the Mediterranean.**

KEYWORDS

ceramiscene, Lynch, elements, Nepi, central Italy, GIS, statistics, late Roman pottery

Introduction

The concept of 'ceramiscene' is a product of 'The Romanisation of a Faliscan Town' project (Mills & Rajala 2011a; 2011b). It was partly developed as a response to Witcher's (2006) critique of the lack of theoretical and interpretative developments in Italian landscape archaeology, particularly regarding survey projects; it was also an outcome of the research process involving a Roman pottery and ceramic building materials (CBM) specialist and a Geographic Information Systems (GIS) practitioner. Thus, the methodology suggested combines theoretical and methodological approaches from landscape characterisation, Roman pottery studies, and archaeological computing.

This article develops the concept and methodology first outlined in Mills and Rajala (2011a). The concept recognises the importance of pottery as the material that provides the bulk of evidence from archaeological surveys and its significance in chronological characterisation and settlement analysis (cf. Fentress 2000; Millett 2000b; see also Patterson & Coarelli 2008). Whilst the problems in the use of such unstratified surface material are widely recognised (cf. Millett 2000a; Patterson 2006:17–24), ceramic evidence is structured in such a way that useful insights can be made through the systematic quantitative and qualitative analysis of an assemblage. Our example is from a recent study of the Roman field-walked material from the Nepi Survey Project, but we argue that it has potential for other periods and geographic areas beyond Roman central Italy.

In 1999 and 2000, the Nepi Survey Project (di Gennaro *et al.* 2002; Rajala 2006; di Gennaro *et al.* 2008) carried out a surface collection in the territory of Nepi (ancient Nepet), north-west of Rome, under

the umbrella of the Tiber Valley Project (e.g. Patterson & Coarelli 2008). The 'Romanisation of a Faliscan town' project, funded by the British Academy, analysed the Roman pottery and CBM from this survey in order to study the character and continuity of Roman rural and suburban settlement around this minor Roman town. Here the definition of a ceramiscene landscape, applying Lynch's (1960) elements of urban form and functional pottery analysis in its characterisation, is summarised together with a discussion of defining boundaries, edges, and districts in the late Roman Nepi area.

A ceramiscene landscape and its characterisation through Lynch's elements and pottery analysis

As Mills and Rajala (2011a) made clear, Ingold's (1993) concept of 'taskscape', a socially constructed space of human everyday actions, was influential in defining 'ceramiscene'. As Rajala (2012) has shown, ceramic distributions can serve as a proxy for the spatiality of human activities. Taskscapes also emphasise the temporality of different activities, the dating of which over large areas is largely dependent on ceramic material. The ceramiscene presents a specific interpretation of the taskscape, and as such can be taken on its own terms.

A ceramiscene underlines the transient nature of a taskscape and the inherited restricted possibilities of the study of past taskscapes. A ceramiscene, defined as the landscape that is created, manipulated, and experienced by the manufacturing, usage, and disposal of material of deliberately fired clay, excluding more ephemeral and friable materials such as mud brick and daub, reflects the reality where most of the preserved Roman survey material consists of fired ceramic vessels and building materials. Metal, glass, and ecofacts are more likely to have been recycled or decayed on the surface. By defining the 'ceramiscene', we acknowledge that survey results are ultimately biased, but through its application we can use the limited evidence fully.

Whilst defining a ceramiscene, Mills and Rajala (2011a) also extended the application of Lynch's (1960) elements of urban form to articulate the distinctively constructed Roman rural landscape. Our argument was that Roman landscapes in Italy were being urbanised from the Republic period onwards and that the five elements listed below facilitate a hierarchical landscape characterisation (cf. Hillier & Hanson 1984). Different types of Roman roads (cf. Frederiksen & Ward Perkins 1957) equate with Paths, the channels of movement. Hierarchical classifications of settlements (e.g. Potter 1979) can be presented as Nodes, strategic points that can be entered as the foci of travelling. Edges are linear elements that equate to natural or observed boundaries between zones, whereas Landmarks, the points of reference the observer does not enter, relate to landscape features that guide movement. Districts, sections identified by different common characteristics with a two-dimensional extent, equate to areas sharing specific common characteristics, such as the distribution of certain pottery fabrics. This conceptualisation, combined with the typological and functional pottery analysis developed by Evans (2001), allows characterising any ceramic archaeological landscapes.

Mills and Rajala (2011a; 2011b) have thus far concentrated on the evaluation of 'Nodes', applying the basic qualitative Roman site typology with huts, renamed here as 'minor sites', farms, villas, and large villas (cf. Kahane *et al.* 1968:154; Potter n.d.:12; 1979:122; 1992), and defining tombs and burials either by their rock-cut structures or by clearly defined small scatters of roof tile and/or pottery in the areas associated with known cemeteries. Sites were generally defined by a concentration of finds that has a higher density than the relative minimum required, with the acknowledgement of 'haloes', post-depositional spreading, and 'non-sites', archaeological background noise (Coccia & Mattingly 1992).

Whilst the bulk of the material is from fields, and not assigned to sites, the application of Lynch's other elements provides a useful means of articulating other spatial relationships, which can be explored by extrapolating those determined for Nodes. Thus, Paths and Edges may be determined by the relative flow of goods from specific sources, that is, specific fabrics may appear in collection units in greater (for Paths) or smaller (for Edges) proportions than would be expected. Districts can be defined by extant topographi-

cal features, such as ravines, as well as reconstructed features, such as the routes of Roman roads. It seems reasonable to expect the ceramic evidence to reflect activities of Nodes within Districts, albeit somewhat disturbed by modern land usage and partitioning.

The exploration of a ceramiscene applies functional analysis (see Evans 2001), where pottery vessels were assigned into defined functional categories (e.g. *amphorae*, jars, storage jars, bowls, dishes). The examination of the proportions (by minimum number of rims MNR and rim equivalents RE) of the different functional groups by site type has produced a very powerful tool for determining site type and status. Mills and Rajala (2011a; 2011b) showed that this application has very good potential for analysing survey material, even acknowledging difficulties with chronological control and finding quantified data sets for comparison. The articles emphasised the importance of using groups with at least 15 rims, suggested by Evans (2001) as the bare minimum. The comparison of the ratios of the pottery assemblage (by number of sherds and weight) broken down into ware types can be used as a complementary or alternative tool; similar ware classification was applied in the restudy of the South Etruria Survey material (see Di Giuseppe *et al.* 2008). Combining functional analysis with ware distributions and site classifications provides a foundation for characterising the distribution of goods and defining the districts on the basis of shared find qualities or distribution networks

Even if the questions of settlement and population tendencies (e.g. Launaro 2012), agricultural production (e.g. Goodchild & Witcher 2010), and villa locations (e.g. Viitanen 2010) have been widely discussed in archaeological research, the position of Nodes in the supply and demand network seems understudied.

Nepi and the Nepi Survey Project

Nepi is located c. 45 kilometres north-west of Rome (**Fig. 1**). It lies on the geographic boundary of two contrasting landscapes: the eastern part of its territory is characterised by canyon-like ravines and wide undulating plateaux between perpendicular cliffs; in the west, the landscape is much gentler with shallower, rounded river valleys and rolling plains.

Figure 1. Central Italy.

In Antiquity, Nepi was on the boundary of the Faliscan area in south-east Etruria (Edwards *et al.* 1995; Francocci 2006). The Romans founded the colony of Nepi in 383 BC (Livy 6.21.4) or 373 BC (Velleius Paterculus 1.14.2) at the site of an earlier centre; Nepi is assumed to have had a privileged position due to its early voluntary submission (Rizzo 1992:2; Francocci 2006:45). Nepi and Falerii Novi, founded after the capture of Falerii Veteres in 241 BC, were both connected to the Via Cassia and wider Roman road network by the Via Amerina (Frederiksen & Ward Perkins 1957:90, 183–188).

As detailed in Mills and Rajala (2011a; 2011b), the Nepi Survey differed from the previous surveys in the area by recovering samples from all sectors of the territory; its study area was defined by creating a Thiessen polygon around Nepi and sampled by drawing transects along the cardinal directions radiating from the town following the grid of the IGM Nepi map sheet. In 1999 and 2000, a total of 233 field units (**Fig. 2**) were fieldwalked at intervals of 10–20 metres; these units covered an area of 632 ha, nearly 32 % of the area of the planned transects and 8 % of the rectangular territory around Nepi. Where previously known sites were known to be located, the collection was based on a modified traverse and stint method (Liddle 1985:9);

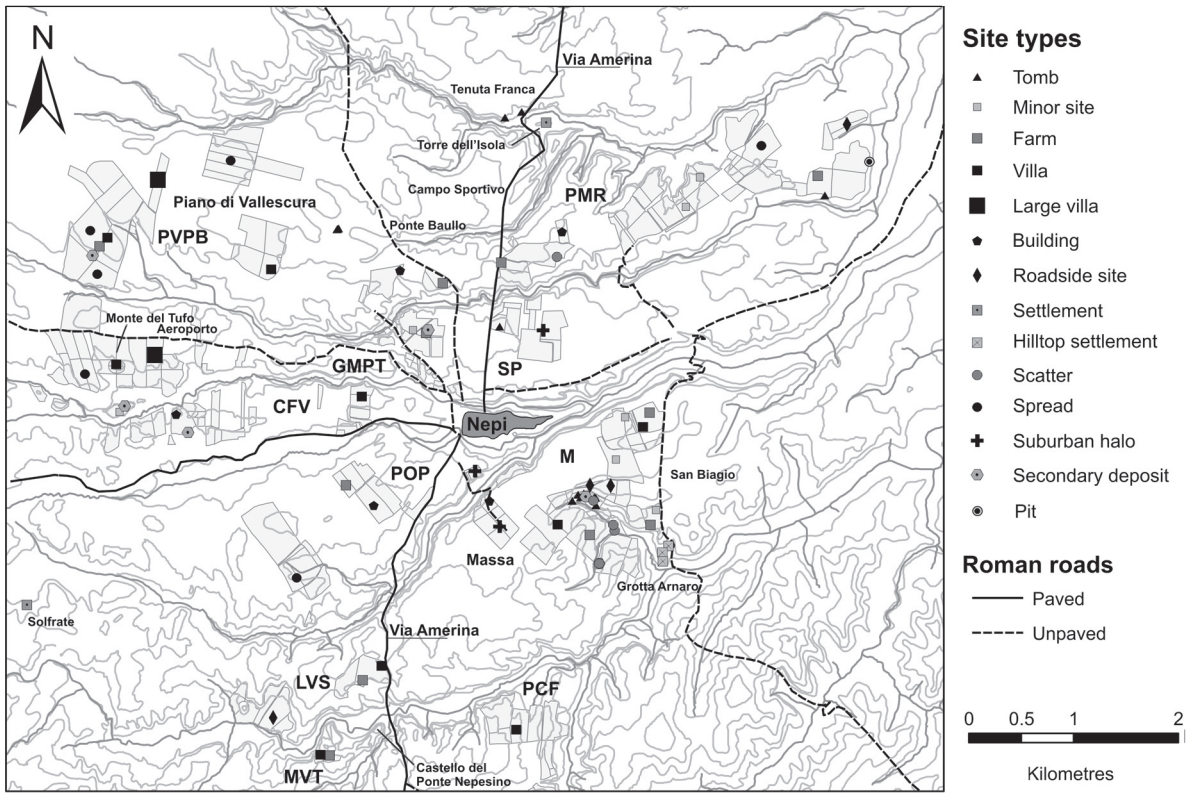

Figure 2. The collection units and Roman sites. Illustration by Ulla Rajala.

otherwise, a subjective grab sample was collected from observed concentrations, assumed to be sites. The pre-Roman emphasis of the Nepi Survey Project (cf. Rajala 2002; 2012) geared the recording and collection systems towards a siteless survey (see Thomas 1975).

The temporality of Nodes in the Nepi area

The results of the pottery analysis are fully discussed in Mills and Rajala (2011b), but since the distribution of sites and different site types provides the framework for off-site distributions, we summarise them here. The dating distribution by site type (**Fig. 3**) shows the increase in pottery after Nepi becomes a Latin colony in 383 BC. In the 3rd century BC, the first burials and roadside sites can be observed with farms and the suburban halo around Nepi being the most significant categories. This pattern expands from the 2nd century BC with all site types in occupation, conforming to regional settlement expansion (Di Giuseppe *et al.* 2008, Fig. 1). Most site types are at their peak in the 1st century AD, except burials. There is a slight decline in the 2nd century, mainly at the expense of farms, with a continued decline in deposition on cemetery sites. All sites are drastically cut back in the 3rd century, like throughout the region (e.g. Patterson 2006:74–77; Witcher 2008), with burials, roadsides, and minor settlement sites disappearing by the 4th century AD.

The urban halo waned in the real terms in the 3rd century, but it increased its relative stand to approximately half of the total pottery deposition, suggesting a population movement towards the urban centre. The relative importance of Nepi in the late Roman period is suggested by the catacomb of Santa Savinilla (Francocci 2006:46). Whereas Falerii Novi seems to have ceased to exist as an urban centre by the 5th century AD, Nepi was relatively flourishing (Cifani & Munzi 1995:390–391). There is a small increase in the later 4th century, seen at the apparent ritual site at M2/1. This peak is short-lived, with a drop in the 5th century and a final peak in the mid-6th century, mainly in the urban halo, which is the only presence from the 7th century onwards. These

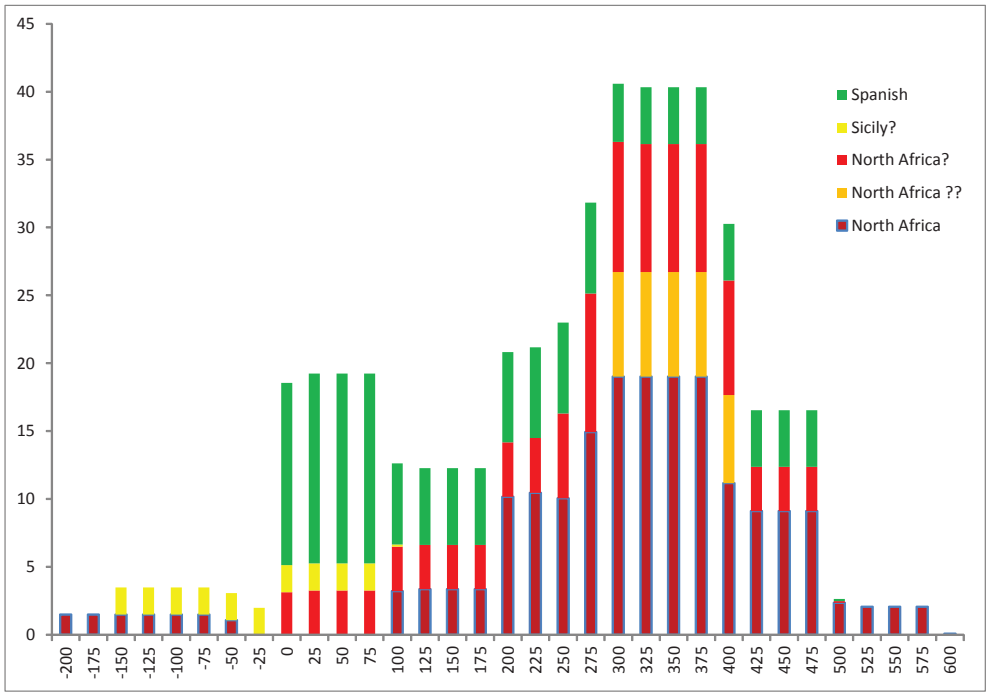

Figure 3. Dating distribution by RE by site type. Illustration by Philip Mills.

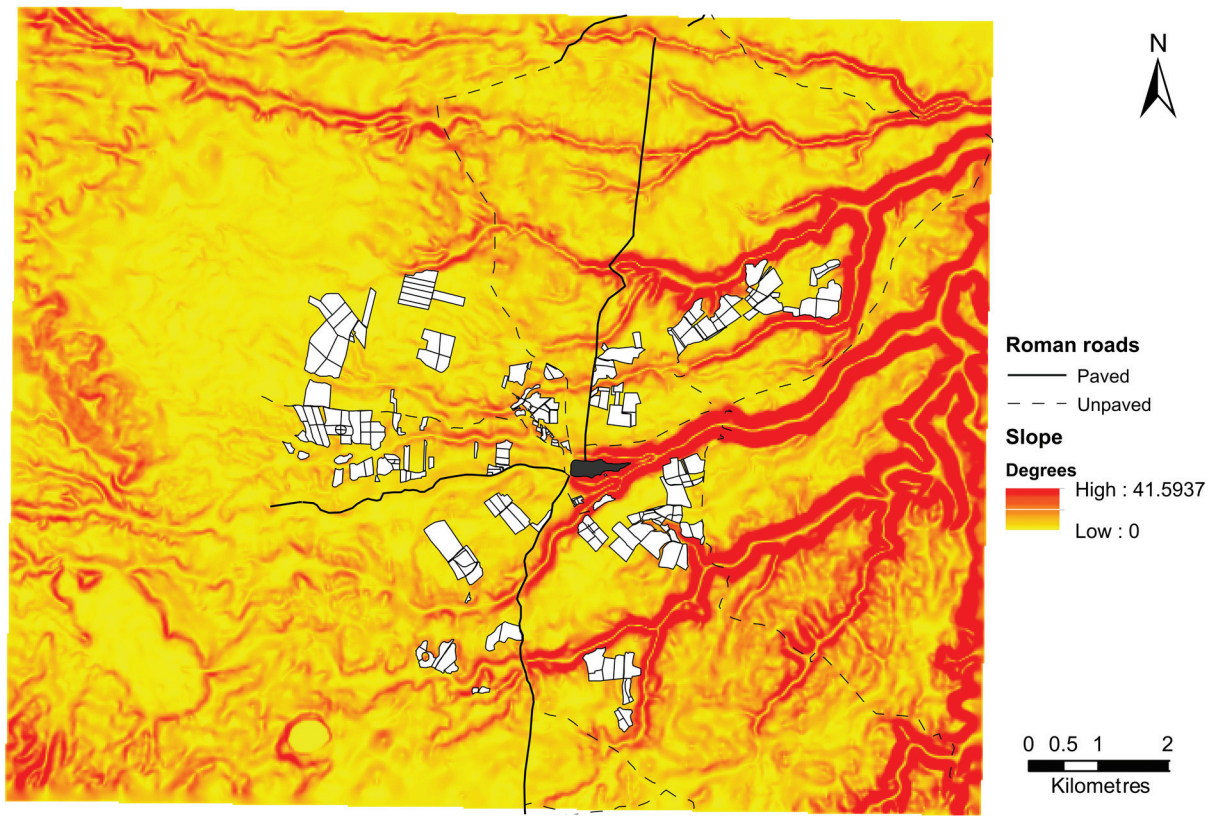

Figure 4. The slope map of the Nepi area. Illustration by Ulla Rajala.

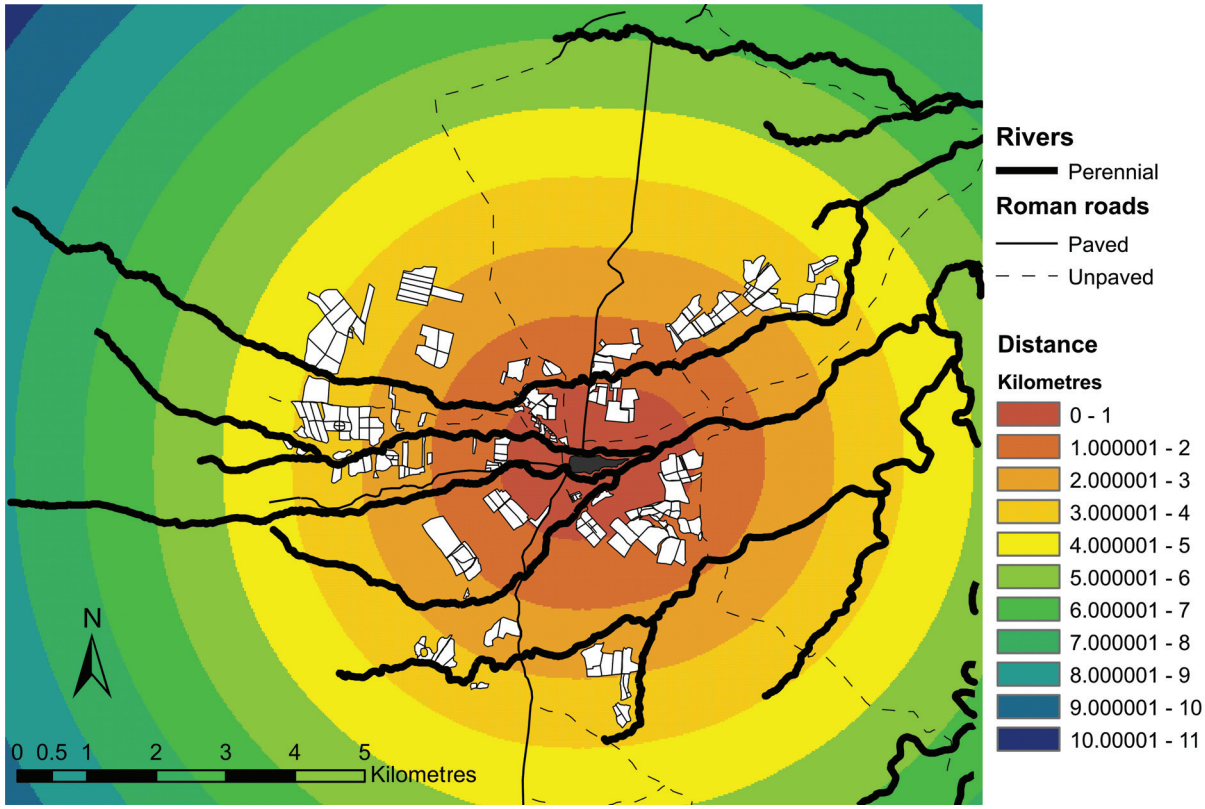

Figure 5. The distance zones radiating out of Nepi. Illustration by Ulla Rajala.

late Roman peaks conform to a large extent to the known periods of late antique rural Tyrrhenian settlement (Francovich & Hodges 2003:31–53).

The dominant ware class is the 'utilitarian' oxidised coarsewares at 73 %. *Amphorae* at 5.59 % show the same proportion as in the Tiber Valley Project (5.6 %, Di Giuseppe *et al.* 2008:Fig. 2). The levels of fine-wares, *terra sigillata* and African red slips combined at 3 %, are far lower than in the Tiber Valley Project (39.7 % of the material, Di Giuseppe *et al.* 2008:Fig. 2). This is a significant variation, which can be mostly accounted for by the Early Imperial component and the proximity of fine-ware production sites (cf. Di Giuseppe 2008:Fig. 10; Bousquet *et al.* 2008:Fig. 7), although much of it can be attributed to the collection bias around Veii (R. E. Witcher *pers.comm.*). The lack of fine-wares may suggest higher demand for more precious vessel materials at the highest status sites and/or higher numbers of lower status agricultural sites around Nepi.

Defining edges and zones in the Nepi area

The dissected landscape around Nepi creates natural boundaries, easiest to visualise with a slope map (**Fig. 4**). The high gradient values in red show the perpendicular cliffs that split the landscape into natural districts. In the more subtle western part the steeper slopes created natural boundaries in a similar but less dramatic way.

A natural way of zoning the territory is to show the distance bands radiating from Nepi (**Fig. 5**). This information, together with the qualitative interpretation of the finds nearer the centre, suggests that the first kilometre from the town contained the suburban area with an urban halo, very common around Italian centres. The haloes have been explained with manuring or refuse from the urban centre (cf. Wilkinson 1989; Fentress 2000:46–48; de Haas 2012), but if one considers the well-known suburban pattern with suburban villas and Roman funerary monuments outside Pompeii (e.g. Cormack 2007; Guzzo 2007), it is clear

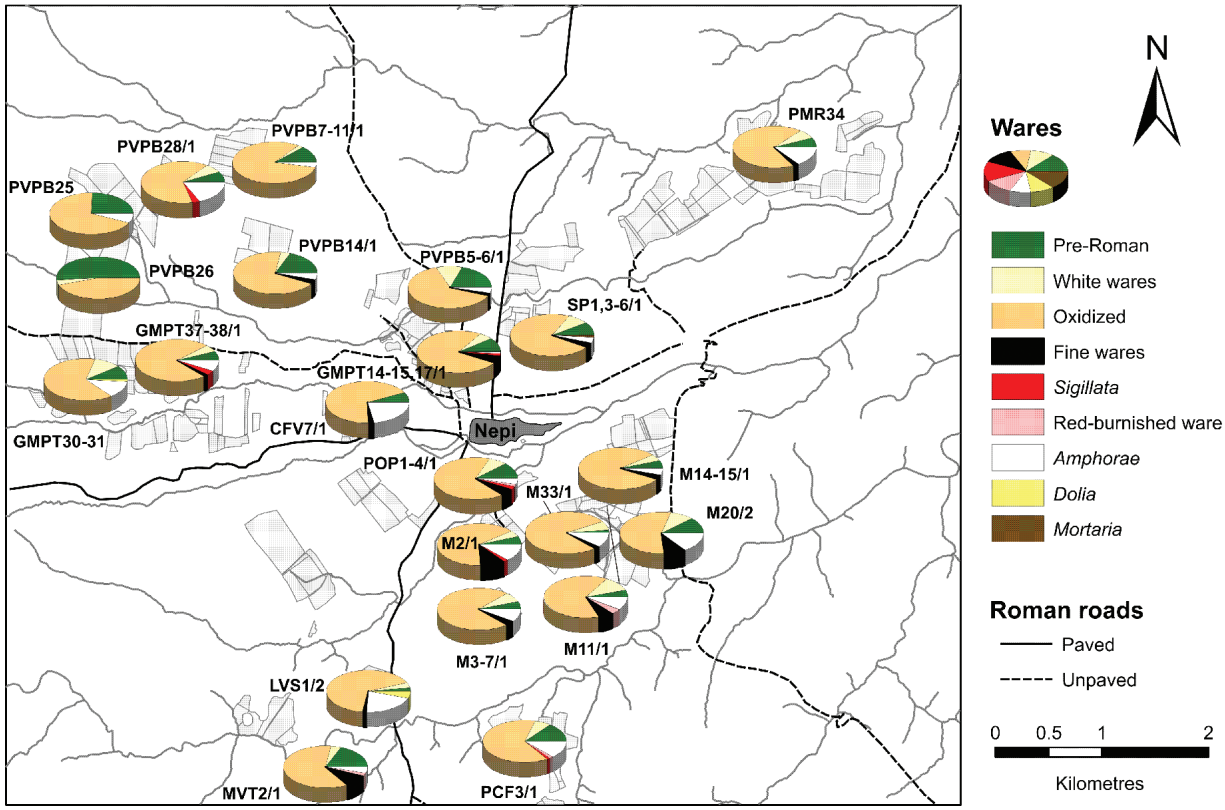

Figure 6. Ware groups by number at selected sites and spreads. Illustration by Ulla Rajala.

that the relatively intensive land use during the Roman times and recent deep ploughing are likely to have resulted in a halo of finds. We know that there were *mausolea* along the roads out of the town (Frederiksen & Ward Perkins 1957:88–89). Similarly, a series of suburban buildings were excavated outside the town walls where the Via Amerina approaches the city, and the standing remains of an amphitheatre and a villa are located south of the town (Edwards *et al.* 1995:Fig. 1; Francocci 2006:53; di Gennaro *et al.* 2008:884).

The Archaic cemetery area was in the north and west of the town (Stefani 1910; Rizzo 1992). The cut features and the indirect suggestions in the earlier 19th-century excavations in the Massa area suggest that another pre-Roman and Roman cemetery area was across the ravine in the south-east[1]. This was undoubtedly at least partly used by the inhabitants of the farms and villas c. 1 km from Nepi (e.g. sites M33=M36/1, M20/1).

The comparison of distributions by field is used to define boundaries and districts. Firstly, we explore the distributions of certain key ware groups that may allow reconsidering the site interpretations and test the site statuses against the assemblage.

Amphorae have an interesting concentration around Nepi and to the south (**Fig. 6**), with strong presence points in the north-west, in the west, and to the north-east. This pattern is consistent with the marketing of *amphorae* through the central point of Nepi to the villas, which could then act as a secondary destination for *amphorae*. The deposition of *amphorae* in cemeteries (M8, M11) also shows that they were recycled at the centre or from the villas nearest to the

[1] A French excavator, Paille, worked on the property of S. Marcello owned by the De Maris family at an unspecified time between 1893 and 1896. His explorations concentrated in the area east of the Via Amerina on La Massa and in the Fosso di Ronci and Pian delle Rose areas (Gaultier 1999:88–89). However, the tombs mentioned by Iaia and Mandolesi (1993:30), were described by Stefani (1910:213) as being located '*a poco più di un km., a valle di Ponte Nepesino, quasi sul ciglio dell'alta rupe tufacea*', a little more than a kilometre in the valley of Ponte Nepesino.

cemetery area. *Amphorae* are strongest at burial sites, followed by large villa and villa sites, with the smallest proportion at the suburban halo sites.

It is not surprising that the most variety in pottery supply is exhibited at large villas (GMPT37–38/1, PVPB28/1) and suburban haloes (SP1,3–6/1, POP1–4/1), reflecting the status of these sites and the development of villa economy. The suburban haloes present the most varied functions of all sites (**Fig. 7**). In addition, the presence of highly varied function types at site M2/1, classified as a building and given its proximity to cemetery sites in this area, could suggest feasting as part of rituals.

The concentration of *amphorae* consumption at the urban centre and at the larger higher status villas (**Fig. 6; 7**) underlines the way these products of the imperial economy were destined for consumption by the local elites. It is interesting that beakers and cups do not occur at the main villas, presumably as drinking vessels would more likely have been in metal or glass. Their distribution concentrates near Nepi in the suburban haloes and at the probable ritual site M2/1.

Crucially, the date range for *amphorae* is startlingly different from the assemblage as a whole. Whereas the overall pottery numbers plunged after 200 AD (cf. **Fig. 2**), the *amphorae* reached their peak during the 4th century AD (**Fig. 8**). After 200 AD, the *amphora* number levels are the same as during the Augustan and Flavian periods, the peak in the general distribution, and they continued to rise. Thus, the drop in the 3rd century AD that suggests general decline in rural settlement is not reflected in the *amphora* distribution. Even if the countryside seems to be depopulating, the villas seem to increasingly benefit from the wider imperial economy. This suggests a depopulation of lower status settlements from the rural hinterland (presumably moving to the urban centre or other urban areas) with resources increasingly controlled by the larger villas.

*Sigillata*s, the more displayable tablewares, concentrate at two large villa sites (GMPT37–38/1 and PVPB28/1; cf. **Fig. 6**). The other fine-wares, however, are common at many sites to the south-east of the survey area.

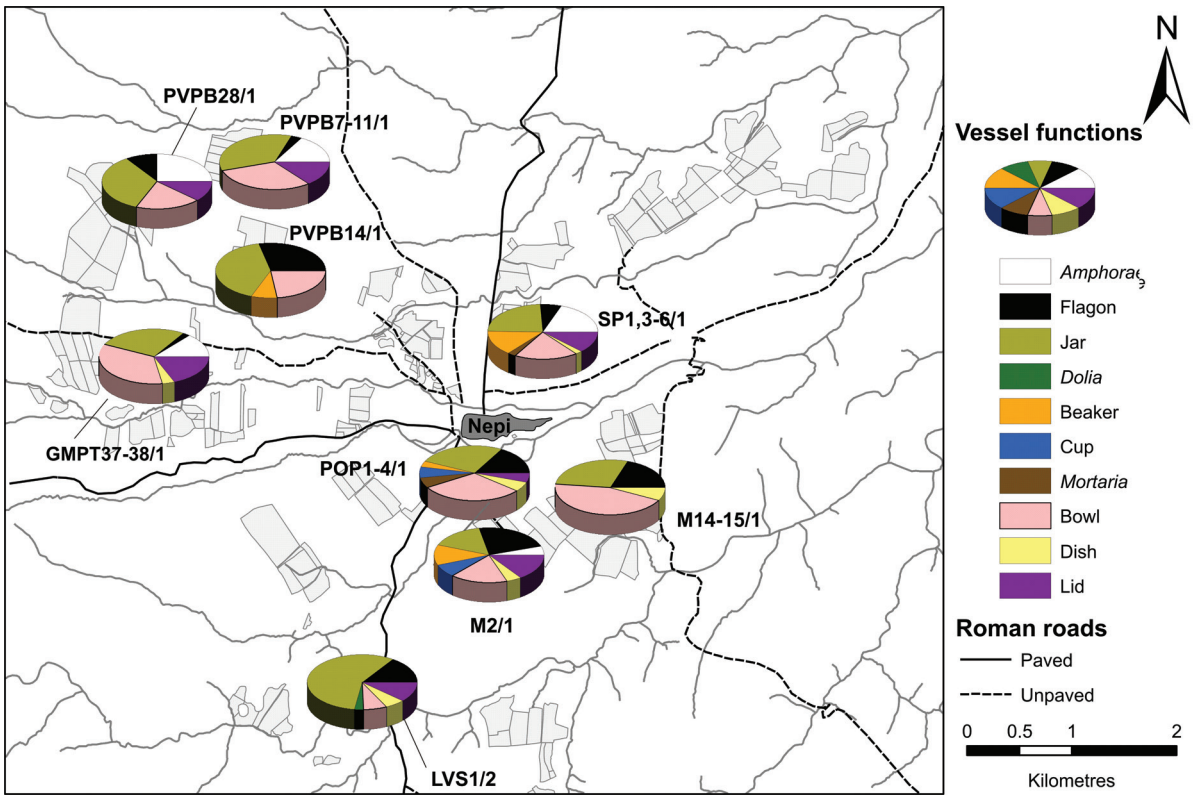

Figure 7. Functional types by RE at certain sites. Illustration by Ulla Rajala.

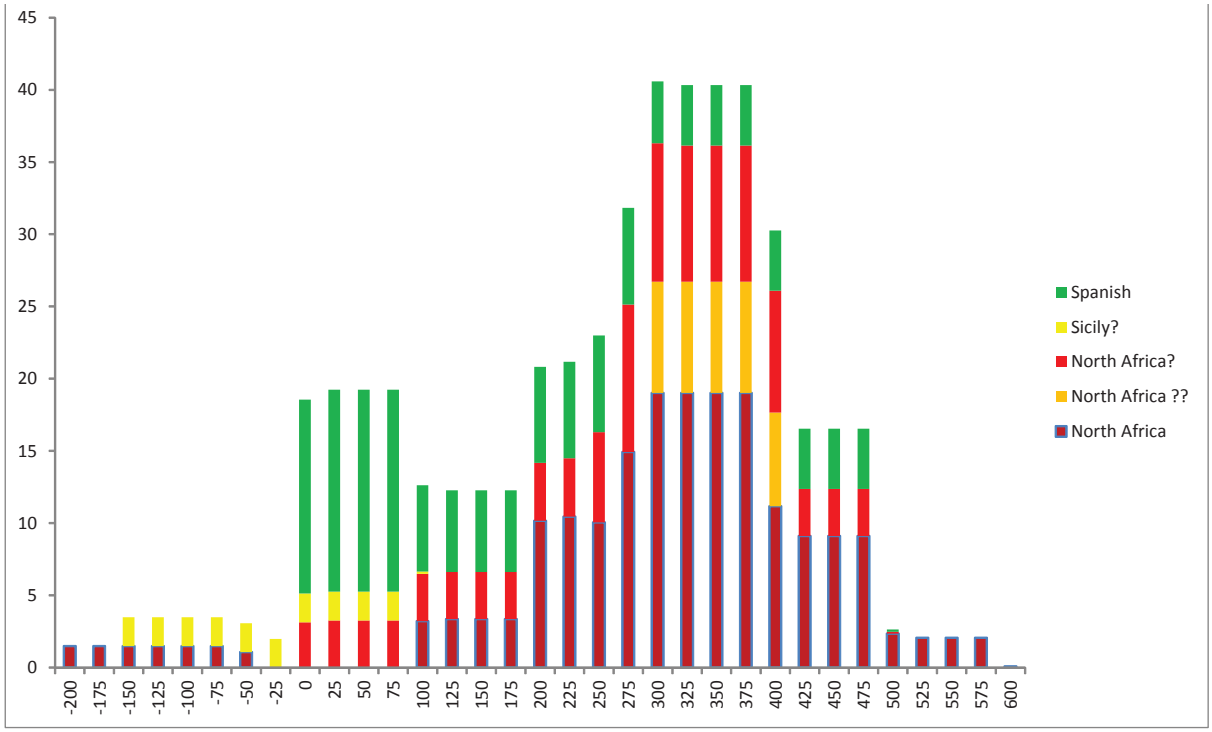

Figure 8. Amphora date range. Illustration by Philip Mills.

Even if Mills and Rajala (2011a:9–10) have shown that the coarseware fabric proportions give suggestions about connectivity, circulation, and supply networks, it is clear that *amphorae* and fine-wares have more power to differentiate between Nodes and Districts due to their finer dating resolution and distinctiveness. Although the correct way to present discreet survey distributions is by collection unit, the visualisation of high densities and potential boundaries can be enhanced by using different interpolation methods (see Borrough & McDonnell 1998:98–162). The continuous areas of low values can separate areas of high density that can be interpreted in the light of the evidence in the assemblage. In this experiment, applying the Inverse Distance Weighted (IDW)[2], the find numbers were allocated to the centroids of the field units in order to create the required point distribution.

Since *amphorae* act as proxies for different economic activities, such as transport of foodstuffs, the high-density areas of *amphorae* can help to pinpoint Nodes and the core areas of past estates. In the Nepi Survey material, the high-density areas (**Fig. 9**) coincide with some of the larger villas (PVPB28/1, GMPT37–38/1, CFV7/1). Similarly, the suburban halo is prominent. In the Massa area, part of the cemetery area (M8 and M11) and some of the farms and villas (M20/1, M32/1, M33=M36/1) are highlighted. These maps can be used to suggest the locations of villas that may have not been noticed in the field due to local circumstances; the *amphora* interpolation highlights the area of PMR26 in the north-east.

Nevertheless, the find distributions can only reveal the underlying settlement when the collection can be carried out in suitable conditions. For example, the villa on PMR3, recorded by Potter (n.d., H3), is invisible in our survey due to the grass cover. On the other hand, this analysis suggests that PCF3/1 may actually be a farm on the basis of the minimal presence

[2] IDW, even if not without problems and anomalous values outside the field unit area, is more suitable than the other interpolation methods in ArcGIS, the software package used. It estimates cell values for a resulting grid by averaging the values of sample data points in the neighbourhood of each processing cell. The closer a point is to the centre of the cell being estimated, the more weight it has in the averaging process. It is an exact, deterministic interpolation method that is directly based on the surrounding measured values (O'Sullivan & Unwin 2003:227–32).

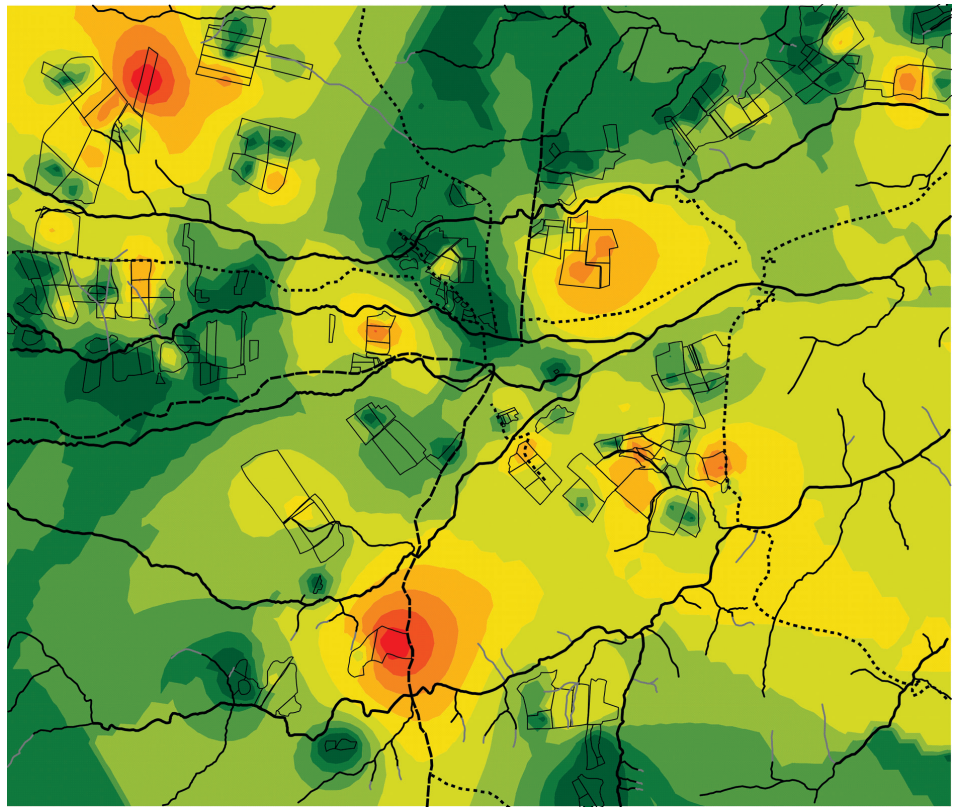

Figure 9. An interpolated *amphora* surface (inverse distance weighted, 10 categories, values 0 – 58, from dark green to red respectively. Illustration by Ulla Rajala.

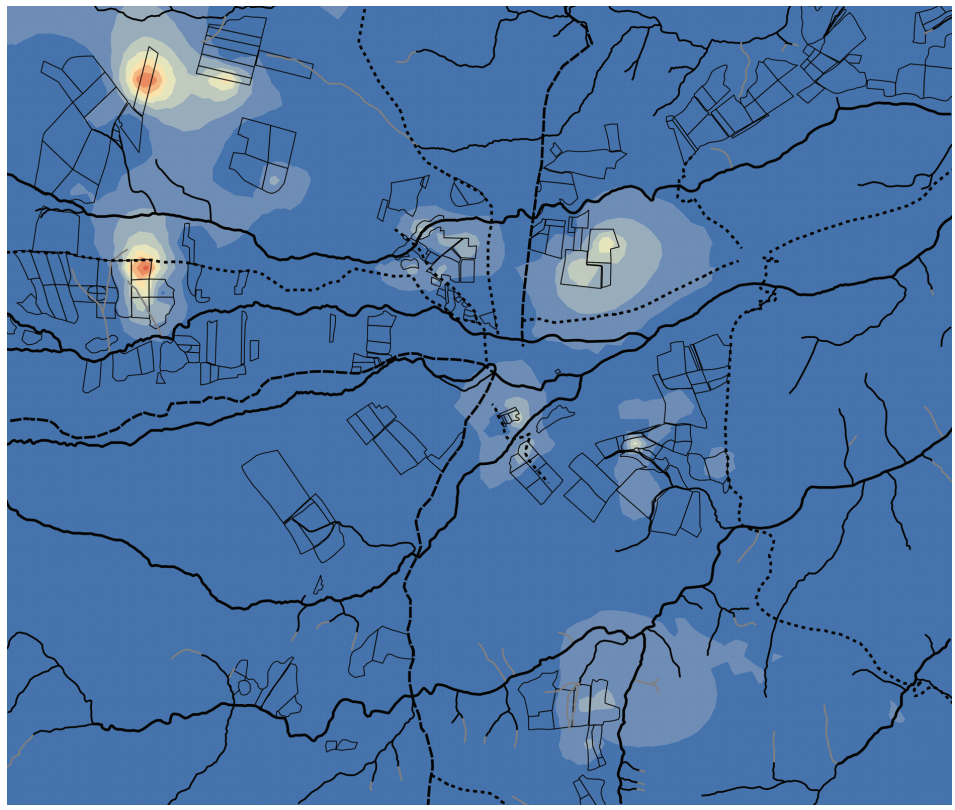

Figure 10. An interpolated *sigillata* surface (inverse distance weighted, 10 categories, values 0 – 11, from blue to red respectively. Illustration by Ulla Rajala.

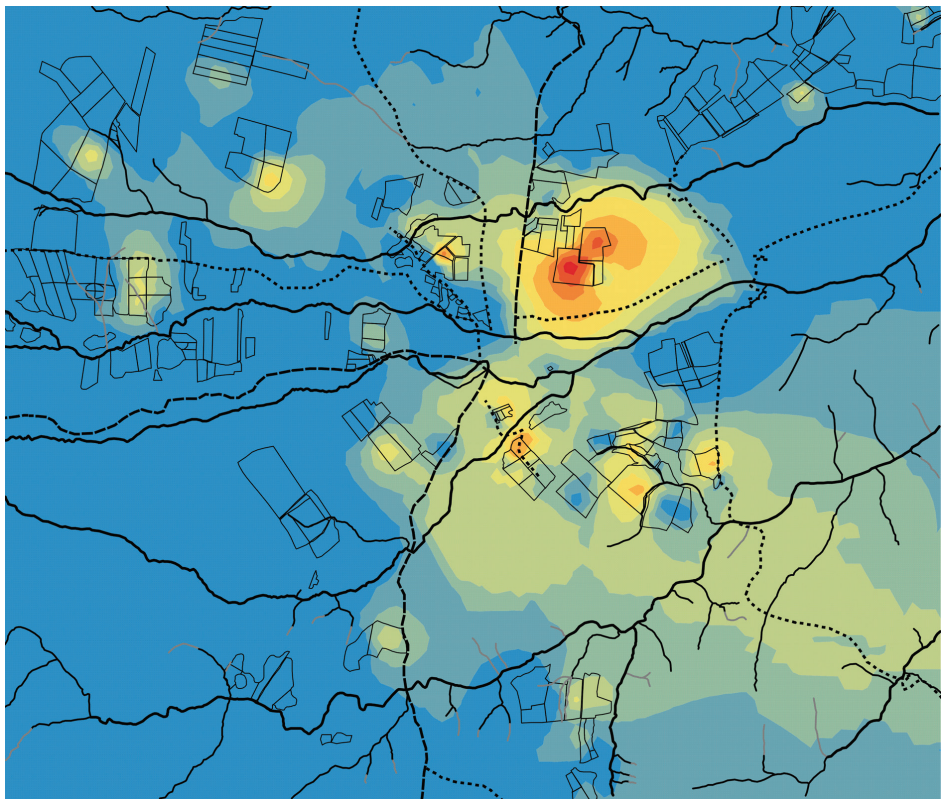

Figure 11. An interpolated fine ware surface (inverse distance weighted, 10 categories, values 0 – 35, from turquoise to red respectivelyl. Ilustration by Ulla Rajala.

of *sigillata* and the absence of other fine-wares. Potter (n.d., E10) had interpreted this site as a 'hut', but the dominant location of the area under the neighbouring modern house and the *sigillata* find within the relatively thin assemblage, assumed to belong to the halo of a supposed villa, resulted in 'overinterpretation'.

The interpolation of *sigillata* finds (**Fig. 10**), including several *sigillata* types as well as African Red Slip (ARS), shows the richness of large villas GMPT37–38/1 and PVPB28/1. Many presumably less affluent rural sectors are poor in these finer table wares with higher presences around Nepi, in the Massa area, and further south. The finds highlight the urban haloes, the ritual building at M2/1, villas and cemetery areas around Massa, the Casale Galeotti area near Sutri, and the farm/villa at PCF3/1. The fine-ware finds (**Fig. 11**), including *vernice nera*, thin-walled ware, and coated wares, highlight the Roman building M2/1 and a series of villa sites (M20, M32, PVPB14/1, GMPT37–38/1) as places of display. Nevertheless, the fine-wares are most prominent in the urban halo north of Nepi, although this depends to some extent on the generally earlier dates of the fine-wares.

Characterising the late Roman landscape

In order to illustrate the ways the pottery can be used to characterise the ceramiscene, the distribution of certain late Roman wares, namely North African *amphorae* (**Fig. 12**), ARS (**Fig. 13**), and North African coarsewares (**Fig. 14**), are discussed as proxies that are likely to highlight the activities in the territory at the time when the rural settlement was declining. Above we have touched upon the contrasting date distribution presented by the *amphorae*. The circulation of North African *amphorae* contributes most to the increase in *amphorae* numbers. As imports, they reflect the strength of some parts of the local economy. Generally North African *amphorae* can be found in all sectors of this ceramiscene (**Fig. 12**), but they concentrate in large villas (GMPT37–38/1 and PVPB28/1) and the known cemetery area in the Massa area (M11). Relatively high numbers in some sectors (field units GMPT36, CFV11, PMR26) may indicate the existence of a villa in the vicinity.

The correlations between the find numbers of the selected wares and the geographic characteristics

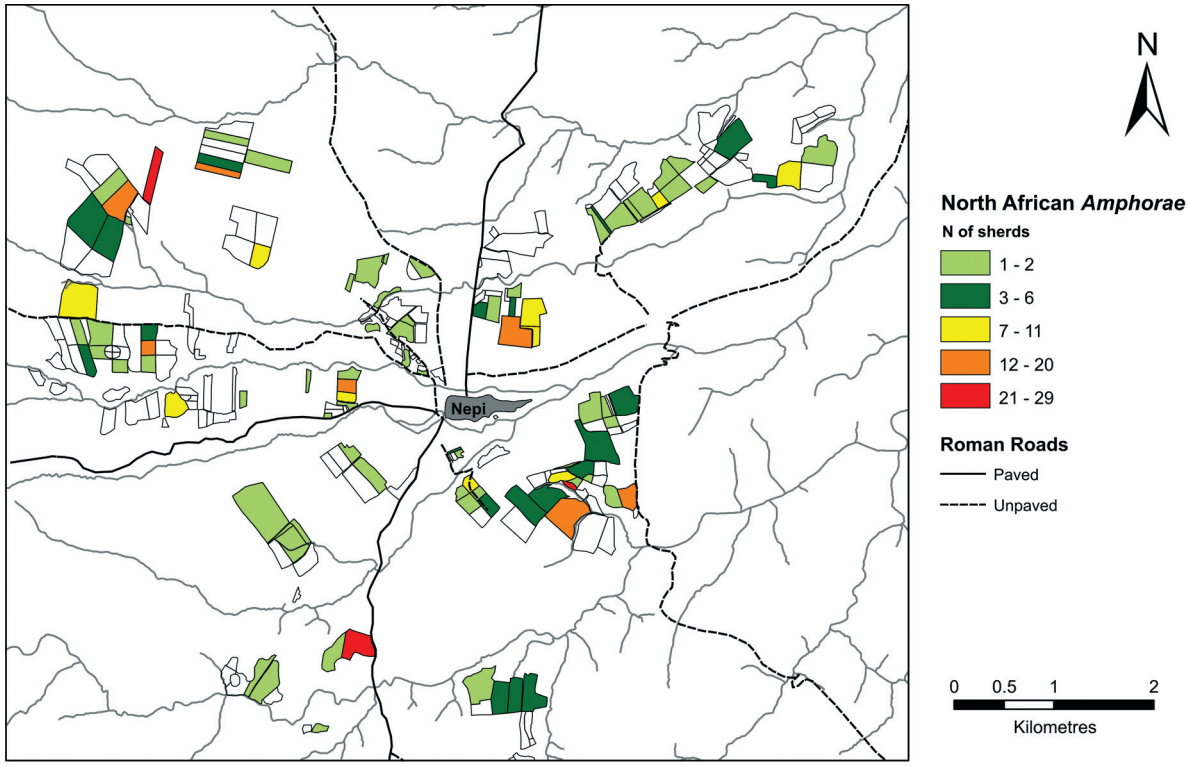

Figure 12. The distribution of North African *amphorae*. Illustration by Ulla Rajala.

of the field units they were found in can help to define more closely different Districts (cf. Rajala 2012). Kendall's Tau and Spearman's Rho coefficients[3] (Field 2000:91–93) were computed in order to find any correlations between the find distributions and their geographic context. Similarly, the Wilcoxon Mann-Whitney rank sum test[4] (Field 2000:53–57) was performed in order to see whether the fields with and without these late Roman wares were similar or different. The correlations were calculated with the SPSS 20 and Wilcoxon Mann-Whitney tests in Minitab 16.1 at the Department of Archaeology at Cambridge with the data stored in Excel tables. The mean values of geographic attributes for the field units were originally computed as part of Dr Rajala's PhD work (see Rajala 2012), except for the distances from the Roman roads.

[3] These are non-parametric statistics, suitable for archaeological distributions (cf. Shennan 1988:145–148; Field 2000:91–93). Spearman's Rho is fittingly suitable for small datasets.

[4] This method, measuring whether two distributions are subsets of the same wider distribution, is very suitable for archaeology, since it a does not require normal distribution (cf. Shennan 1988:61–68).

The number of certain North African *amphorae* correlates negatively with slope at the 99 % confidence level. This means that these finds were made mainly from flatter areas. The mean slope is lower than with the two other late Roman pottery groups (**Tables 1–3**). The slope values for field units with and without certain North African *amphorae* are also significantly different; the median for the former is 2.04 degrees, whereas the median for the latter is 2.9 degrees. These figures reflect the locations within premium agricultural land.

The aspect is also correlated at the 95 % confidence level. The result is confirmed by the Wilcoxon Mann-Whitney rank sum test at the 97 % confidence level. The median aspect for the certain North African *amphorae* is 152.70 (a south-eastern direction), whereas the median for the field units without these *amphorae* is 177.33 (a southern direction). The east or south were the suggested optimum aspects for Roman villas (Vitruvius 6.6.1; Columella 1.5.5), which is reflected by these figures.

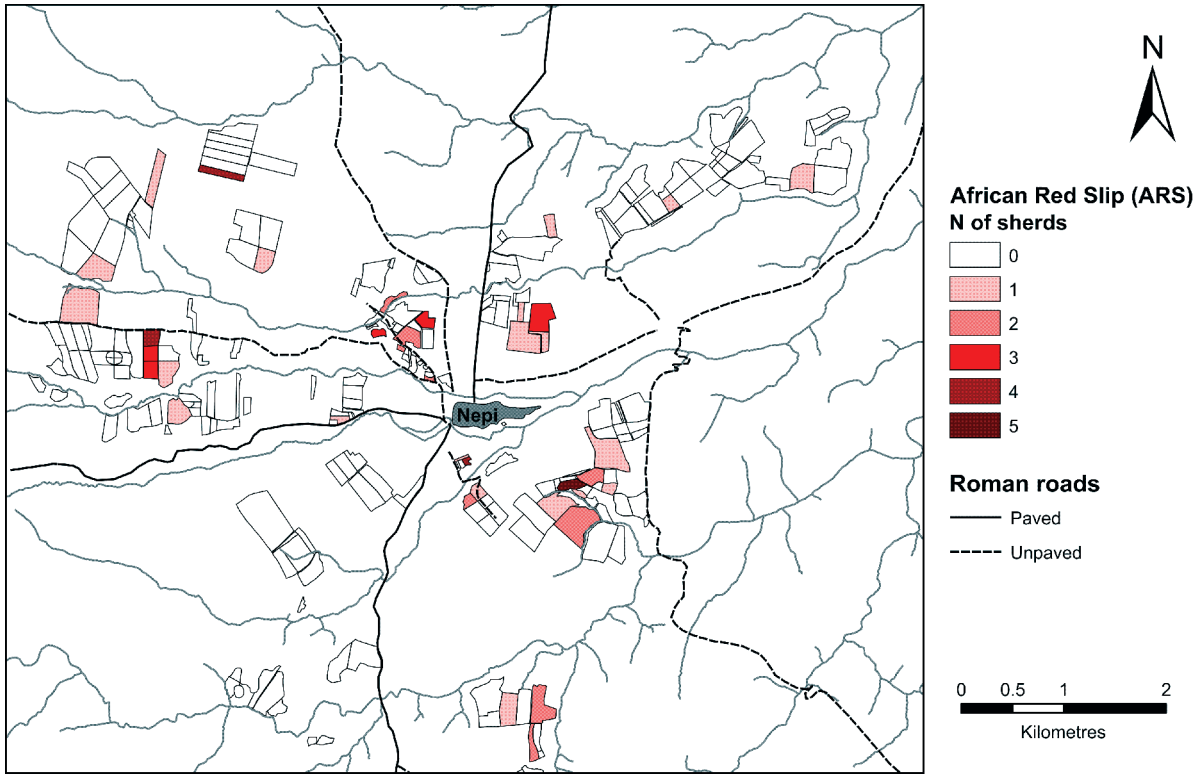

Figure 13. The distribution of African Red Slip (ARS) ware. Illustration by Ulla Rajala.

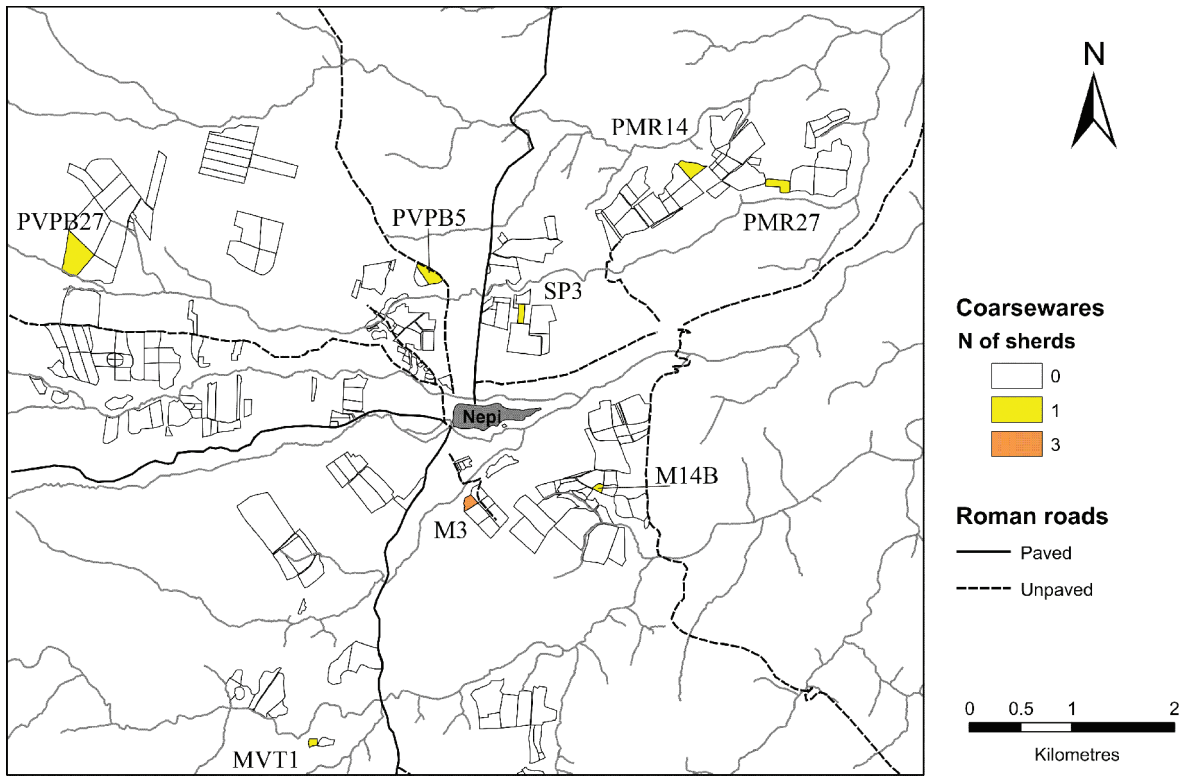

Figure 14. The distribution of late Roman North African coarsewares. Illustration by Ulla Rajala.

Table 1. The geographic attributes and certain North African amphora (N= 100).

Attribute	Mean	SK	RKU
Elevation	226.7716434	-.215	-.124
Slope	2.69084907	1.902	5.378
Aspect	159.1008496	.782	1.163
Curvature	.03136385	.199	2.239
Curvature profile	-.02997004	-.619	3.390
Curvature plan	.00101230	.313	1.889
From road cutting	417.016631	.987	.903
From pre-Roman cost path	360.157163	2.001	3.921
From Nepi	1949.832799	.274	-1.418

Key: SK= skewness, RKU= kurtosis.

Table 2. The geographic attributes and North African coarsewares (N= 8).

Attribute	Mean	SK	RKU
Elevation	221.3028938	-.168	.121
Slope	3.97160475	.360	-1.280
Aspect	209.1655687	.466	-2.062
Curvature	.14706362	.535	-1.198
Curvature profile	.7600	.045	-.780
Curvature plan	-.11273112	-.403	-2.103
From road cutting	.03323413	1.035	.779
From pre-Roman cost path	273.423725	.917	-.675
From Nepi	366.744450	2.092	4.640

Key: SK= skewness, RKU= kurtosis.

Table 3. The geographic attributes and ARS (N= 38).

Attribute	Mean	SK	RKU
Elevation	226.3113508	.059	.134
Slope	3.04598966	1.689	3.764
Aspect	157.9520682	.555	.546
Curvature	.03139274	-.294	2.347
Curvature profile	-.03007413	-.278	2.824
Curvature plan	.00121487	.237	1.594
From road cutting	346.738124	1.728	4.580
From pre-Roman cost path	256.675953	1.500	2.158
From Nepi	1719.949392	.502	-1.409

Key: SK= skewness, RKU= kurtosis.

The number of North African coarseware finds correlates positively with curvature, measuring the relative convexity of slope, at the 95 % confidence level. The mean of curvature is positive, suggesting that these finds concentrate on convex hillocks or slopes. However, these finds were relatively scarce (**Table 2; Fig. 14**) and the curvature distribution is relatively flat, considering the negative kurtosis (cf. **Table 2**; Field 2000:40–41). Nevertheless, the Wilcoxon Mann-Whitney test is significant at the 95 % confidence level, showing that the find spots seem to be deliberate.

The number of ARS finds correlate negatively with the distance from Nepi itself, Spearman's Rho at the 99 % confidence level but Kendall's Tau only at 95 %. The mean distance from Nepi is smaller than with other late Roman wares (**Tables 1–3; Fig. 13**). Although the form of the distribution is relatively flat, as shown by a negative kurtosis value, the distribution piles onto the left side, as a positive skewness value shows (cf. **Table 3**; Field 2000:40–41). The Wilcoxon Mann-Whitney test, however, is significant at 99 %. The median of the field units with ARS is 1073 m, whereas that of the units without ARS is 2278 m. The places where finer table wares were displayed were either at the centre or farther away at the large villas.

Distance from Nepi was additionally analysed with chi-square one sample test (Shennan 1988:65–70) in SPSS 20. The distance distributions of other late Roman wares do not divert from the general distribution of the survey units, but ARS shows a tendency at the 91.9 % confidence level. When the numbers in the expected and observed values in different distance categories (**Table 4**) are examined, it is clear that the occurrences of ARS are far more common than expected near Nepi. With only two categories, the tendency is stronger at 93.8 % with certain North African *amphorae* and all three late Roman wares together showing a weak tendency at the 87 % and 84.9 % confidence levels respectively. The late Roman material is more common near Nepi, but increasing in numbers farther away from the town (**Table 4; 5**), suggesting again a bipolar settlement pattern with the late Roman town and the larger villas or estates.

The late Roman coarsewares show no correlation with Distance from Nepi, but the North African

Table 4. The observed distances in percent from Nepi (with all units used as the expected values).

Distance category	All survey units (N=231)	ARS (N=38)	North African *amphorae* (N=100)	North African coarsewares (N=8)	All (N=111)
1	26.41	44.74	34.00	37.50	32.43
2	19.05	15.79	19.00	12.50	19.82
3	22.94	18.42	22.00	12.50	20.72
4	31.60	21.05	25.00	37.50	27.03

amphorae lean towards a negative correlation at 91 %. Whilst the numbers are high in the north-western sector, there is a weightier concentration with higher numbers at Nepi and in the Massa area (**Fig. 12**). The flatness of the distribution, shown by the negative kurtosis value (**Table 2**), suggests different distributions in different sectors, with lower frequencies in the north-east, and points to the differentiation of Districts. When field units with and without the certain North African *amphorae* are compared, this interpretation is proven; the Wilcoxon Mann-Whitney test is significant at the 95.8 % confidence level. The median for the certain North African *amphorae* is 1906.5 m, whereas the median for the field units without these *amphorae* is 2428.3 m, again showing the importance of the centre in the settlement pattern.

ARS also shows a tendency to correlate with the distance from the least-cost routes between the pre-Roman centres at the 88 % confidence level. Similarly, the Wilcoxon Mann-Whitney test shows tendency at 87.7 %. Nevertheless, the median distance of ARS units is 200 m, whereas the median of those units without ARS is 252 m. This is partly related to the concentration of ARS near Nepi with many radiating road lines of different ages (cf. **Fig. 13**), but also to the continued use of the cliff-bound pre-Roman centres as easily defended Medieval towns. This tendency seems significant, since there is no correlation between the find numbers of any of these late Roman wares and the distance from the Roman roads or Via Amerina; the Roman roads are omnipresent and were used to supply different wares.

In order to illustrate late Roman land use in the territory, the distributions of certain North African *amphorae*, North African coarsewares, and ARS were used as markers for late Roman activities. For the presentation of the accumulated presence/absence in the different sectors of the territory, every marker was given a value of 1. Thus, on a sum map (**Fig. 15**), all units have a value between 0 and 3. The strongest presence with all three markers is in the area surrounding the town, at SP3 in the suburban halo area, and at M2 with the ritual building M2/1. Even if this building is on the other side of the wide ravines, it is intimately connected with the town due to the road cuttings leading to Nepi. This highlights the importance of the town and ritual continuity during the late Roman period.

The distribution of the units with two late Roman markers highlights the importance of the large villas GMPT36–37/1 in the west and PBPV28/1 in the north-west, as well as the relative settlement density in the north-eastern sector, which generally has thinner find coverage and seems to lack a rich villa site. It has already been suggested that the North African *amphorae* distribution may highlight missed villas, and thus, the area of PMR26/27 may reveal further

Table 5. The observed distances in percent from Nepi (with all units used as the expected values).

Distance category	All survey units (N=231)	ARS (N=38)	North African *amphorae* (N=100)	North African coarsewares (N=8)	All (N=111)
1	45.46	60.53	53.00	50.00	52.25
2	54.54	39.47	47.00	50.00	47.75

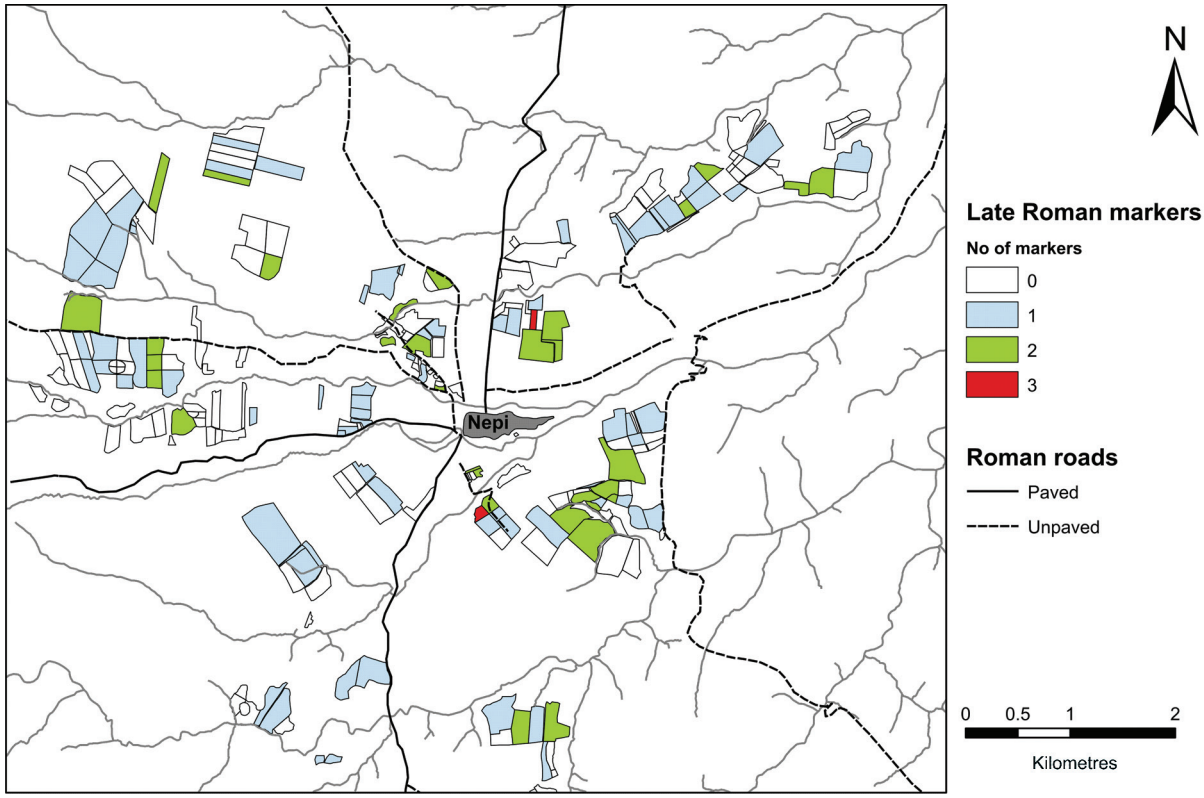

Figure 15. Late Roman cumulative marker map. Illustration by Ulla Rajala.

finds in the future. The relative lack of markers in the north-western sector is likely to reflect chance and research circumstances[5]. On the basis of the North African *amphora* distribution and other qualitative villa markers, this area was one of the strongholds of the villa economy.

Conclusions

The Nepi area provides an easy geographic definition for Roman districts and a good example of the application of the ceramiscene approach. The vertical slopes of the perpendicular cliffs and river valleys allow defining separate Districts as bound by ravines or river valleys, such as the Eastern District. In addition, the differences in find quantities, the find quality, and the distribution of Nodes allow further refinement of our District model (**Fig. 16**). The Via Amerina and other Roman roads served as Paths with the Southern District dominated by the main road. Districts nearest to the town present a halo-like find distribution with multifunctional suburban areas with villas, public buildings, and cemetery areas. The thinness of finds separates the North-eastern District from the others; further analysis pointed out the underlying existence of at least one villa site. The Western and North-western Districts show strong villas along different routes.

We have shown that more versatile or specialist wares, such as fine wares or *amphorae*, can serve as markers allowing more precise categorisation of different Nodes and Districts. The relationship between *amphorae* and villas has been noted. The case study of the late Roman finds suggests that, even if the find distributions overlap in different Districts, certain zoning is apparent. The North African *amphorae* are strongly present in the areas with large villas or multiple villas

[5] Unfortunately it was not possible to locate pottery from fields PVPBS15, PVPB16, and PVPB17 in storage during Dr Mills' two study seasons. The results for PSBR14/1 can be taken as indicative of the results for these fields.

in the west, north-west, and east in the central flatter areas of those Districts. The ARS finds show zoning around the town itself. The rare North African coarsewares concentrate on more distinctive hillock or slope locations. The late Roman indicators in general suggest a dichotomy between the town and the strong villas in the hinterland. These could be taken as the two broad Districts during the Late Antiquity. Nevertheless, this dichotomy does not result in exclusion, since the *amphora* supply and trade seem to be channelled through Nepi itself.

There are several directions the study of ceramiscenes can take. Generally, the collection strategies have to be optimised; the Nepi Survey Project tried to counterbalance the Roman bias by concentrating on 'siteless survey', but our analyses have shown that the subjective grabs at Nodes were not enough to deliver proper resolution. Although the case for gridded surveys or point collection has been raised before (e.g. de Haas 2012) and the advantages of the systematic transverse and stint method are apparent from British examples (see, e.g. Score 2010:5–6, Fig. 3), so far the quantitative needs have not been discussed as extensively. This consideration is intimately related with the future use of multivariate analyses in ceramiscene studies.

It is clear that ceramics as the key proxy for Roman action act as the agents within a landscape and can be used more innovatively in order to characterise these landscapes. The ceramiscene concept also provides a theoretical framework for analysing social constructs, such as identity (Sterry 2008) and Romanisation (Lepot 2010), through material distributions. Similarly, we are confident that similar ceramiscene studies can be replicated in very different areas in which there are quantifiable differences in coarsewares, fine wares, and functional vessel types, for example, to discuss the Medieval social dynamics through Anglo-Saxon pottery in Britain (cf. Jervis 2009) or the expansion of the Hanseatic League through the circulation of northern German pottery in northern Europe (cf. Gaimster 2000; Immonen 2007; Mehler 2009).

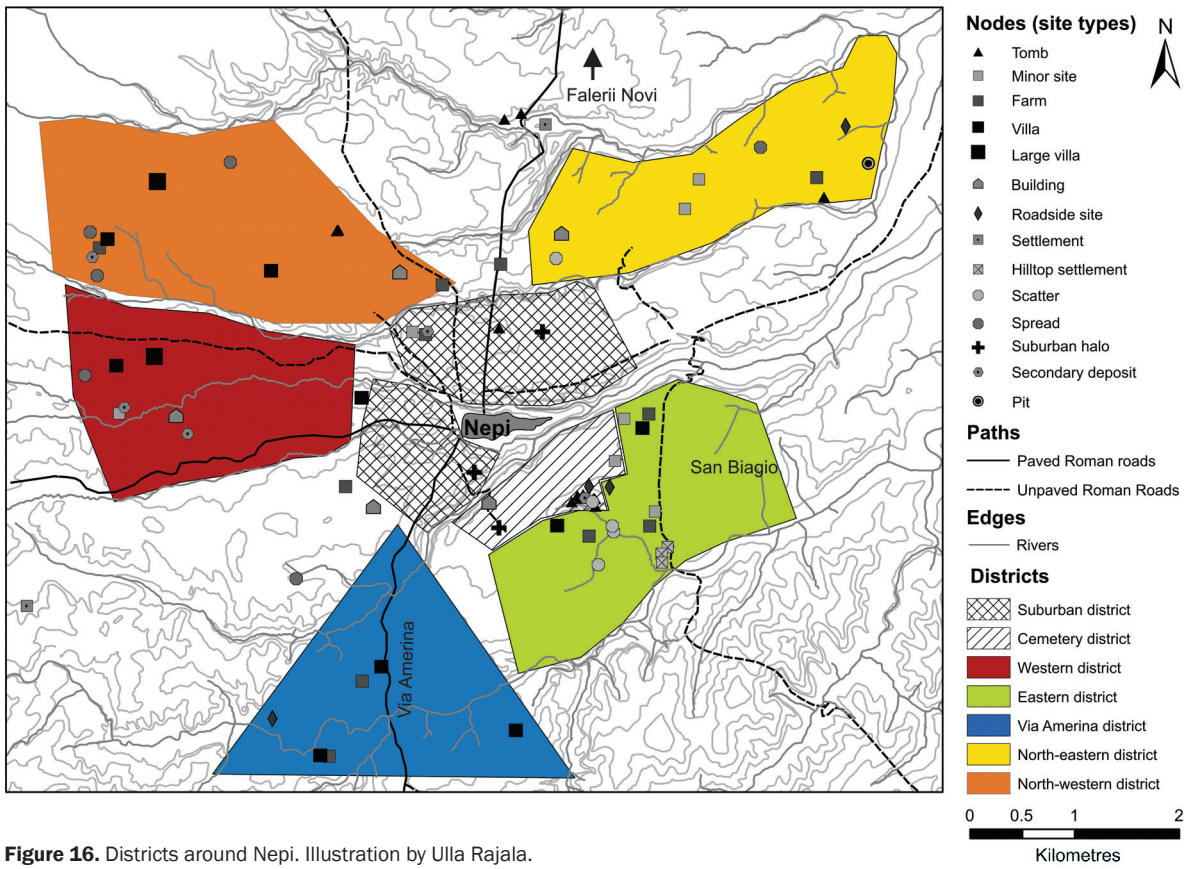

Figure 16. Districts around Nepi. Illustration by Ulla Rajala.

Acknowledgements

This research was carried out under concession from and in close collaboration with the Soprintendenza archeologica per l'Etruria meridionale under the supervision of Dott.ssa Daniela Rizzo. The survey was supported and assisted by the British School at Rome and its staff together with the mayor and personnel of the Comune di Nepi. The authors are grateful to Simon Stoddart, the director of the original Nepi Survey, for his support, and want to thank the British Academy and McDonald Institute for Archaeological Research, Cambridge, for granting funding for the original fieldwork. Dr Rajala ran the survey as part of her PhD research with financial support from multiple sources, including the British Academy, the Academy of Finland (grant no. 44638), New Hall College, Cambridge European Trust, and the Finnish Cultural Foundation. 'The Romanisation of a Faliscan Town' project was kindly financed by the British Academy and received assistance from the British School at Rome, the Museo Civico di Nepi and its director Stefano Francocci, as well as Museo Archeologico dell'Agro Falisco (Civita Castellana) and its staff. Last but not least, we want to thank the survey teams of 1999 and 2000.

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