Archaeological Survey and the City

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Edited by

Paul Johnson and Martin Millett

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List of Contributors

Gareth Beale, Archaeology, University of Southampton, Highfield, Southampton S017 1BF, UK

Philip Bes, Sagalassos Archaeological Research Project, Katholieke Universiteit Leuven, Blijde Inkomststraat 21/3314, 3000 Leuven, Belgium [philip.bes@arts.kuleuven.be]

Roberta Cascino, British School at Rome, via Gramsci 61, 00197 Roma, Italy [r.cascino@bsrome.it]

Cristina Corsi, CIDEHUS, University of Evora, Palácio do Vimioso, Apartado 94, 7002-554 Évora, Portugal [Cricorsi@uevora.pt]

Nathan Davis, Archaeology, University of Southampton, Highfield, Southampton S017 1BF, UK

Michael Doneus, Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology, Hohe Warte 38, A-1190 Vienna, Austria

Graeme Earl, Archaeology, University of Southampton, Highfield, Southampton S017 1BF, UK [graeme.earl@soton.ac.uk]

Fabrizio Felici, Parsifal Cooperativa di Archeologia, via Gaba 40, 00183 Roma, Italy [fa.felici@tiscali.it]

Nalan Fırat, Sagalassos Archaeological Research Project, Katholieke Universiteit Leuven, Blijde Inkomststraat 21/3314, 3000 Leuven, Belgium [nalan.firat@gmail.com]

Sophie Hay, APSS, Archaeology, University of Southampton, Highfield, Southampton S017 1BF, UK [S.A.Hay@soton.ac.uk]

Alois Hinterleitner, Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology, Hohe Warte 38, A-1190 Vienna, Austria

Paul Johnson, CIDEHUS, University of Evora, Palácio do Vimioso, Apartado 94, 7002-554 Évora, Portugal [psj197@hotmail.com]

Stephen Kay, British School at Rome, via Gramsci 61, 00197 Roma, Italy [s.kay@bsrome.it]

Simon Keay, Archaeology, University of Southampton, Highfield, Southampton S017 1BF, UK [S.J.Keay@soton.ac.uk]

Klaus Löcker, Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology, Hohe Warte 38, A-1190 Vienna, Austria

Femke Martens, Sagalassos Archaeological Research Project, Katholieke Universiteit Leuven, Blijde Inkomststraat 21/3314, 3000 Leuven, Belgium [femke.martens@arts.kuleuven.be]

Dimitrij Mlekuž, Department of Archaeology (Ghent University, Faculty of Arts and Philosophy), Sint-Pietersnieuwstraat 35 (UFO - 110.016), 9000 Gent, Belgium

Martin Millett, Faculty of Classics, University of Cambridge, Sidgwick Avenue, Cambridge CB3 9DA, UK [mjm62@cam.ac.uk]

Wolfgang Neubauer, Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology, Hohe Warte 38, A-1190 Vienna, Austria [Wolfgang.Neubauer@univie.ac.at]

Jessica Ogden, L–P Archaeology, The Truman Brewery, 91 Brick Lane, London E1 6QL, UK [j.ogden@lparchaeology.com]

Jeroen Poblome, Sagalassos Archaeological Research Project, Katholieke Universiteit Leuven, Blijde Inkomststraat 21/3314, 3000 Leuven, Belgium [jeroen.poblome@arts.kuleuven.be]

Sirri Seren, ZAMG Archeo Prospections®, Hohe Warte 38, A-1190 Vienna, Austria

Bozidar Slapšak, University of Ljubljana, Faculty of Arts, Department of Archaeology, Aškerčeva 2, P.O. 580, SI-1000 Ljubljana, Slovenia [bozidar.slapsak@ff.uni-lj.si]

Neal Spencer, The British Museum, Great Russell Street, London WC1B 3DG, UK [nspencer@britishmuseum.org]

Kristian Strutt, APSS, Archaeology, University of Southampton, Highfield, Southampton S017 1BF, UK [k.d.strutt@soton.ac.uk]

Immo Trinks, Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology, Hohe Warte 38, A-1190 Vienna, Austria

Emanuelle Vaccaro, MacDonald Institute for Archaeological Research, University of Cambridge, Downing Street, Cambridge CB2 3ER, UK [ev259@cam.ac.uk]

Lieven Verdonck, Department of Archaeology, Ghent University, Sint-Pietersnieuwstraat 35, 9000 Ghent, Belgium [lieven.verdonck@ugent.be]

Geert J. Verhoeven, Ludwig Boltzmann Institute for Archaeological Prospection and Virtual Archaeology, Hohe Warte 38, A-1190 Vienna, Austria [Geert.Verhoeven@archpro.lbg.ac.at]

Frank Vermeulen, Department of Archaeology (Ghent University, Faculty of Arts and Philosophy), Sint-Pietersnieuwstraat 35 (UFO - 110.016), 9000 Gent, Belgium [Frank.Vermeulen@UGent.be]

Rinse Willet, Sagalassos Archaeological Research Project, Katholieke Universiteit Leuven, Blijde Inkomststraat 21/3314, 3000 Leuven, Belgium [rinse.willet@arts.kuleuven.be]

Todd Whitelaw, Institute of Archaeology, UCL, 31-34 Gordon Square, London WC1H 0PY, UK [t.whitelaw@ucl.ac.uk]

12 Surveying the Townscape of Roman Trea (Picenum)

Frank Vermeulen, Bozidar Slapšak and Dimitrij Mlekuž

Introduction

The integrated research results presented here concern an abandoned Roman townsite located in the northern part of the ancient Augustan region of Picenum, today central Marche on the Adriatic side of the Italian peninsula. The Roman towns in northern Picenum have very different biographies (Fig. 12.1). Some coastal towns grew from Greek settlements or settlements of the *Piceni* with strong Greek contacts and presence (e.g. Numana, Ancona), while a series of newly founded Latin or Roman, Late Republican, colonies with a subsequent influx of Italic populations, flourished especially on the coast and near important road connections (e.g. Firmum, Auximum, Potentia, Urbs Salvia). However, in the hinterland, especially in the pre-Apennine zone, there is a dense network of small towns with only municipal status that have their roots in pre-Roman settlements. This suggests that the pattern of Roman towns emerged most of all from the protohistoric population and possibly reflects the political situation of the *Piceni* at the time of the mid third-century BC conquest. Continuity from Iron Age settlements can be assumed or proven only for some Roman towns. Thus, the city of Matilica succeeded the aggregation of protohistoric settlements and cemeteries, which most probably functioned as a central place in the intra-montane basin near the Apennine foothills (de Marinis and Silvestrini 2005: 139; Vermeulen and Mlekuž 2012). The same is suspected for the middle Potenza valley town of Trea, located near the important Picene hilltop settlement of Monte Pitino.

Trea lies in the middle valley of the River Potenza, some 30 km from the Adriatic shore. The hilly area, situated between 250 m and 350 m above sea level, is characterised here by a narrowing of the valley formed by two axial hill-spurs, now respectively occupied by the medieval town centres of Treia and Pollenza. The presence of important protohistoric settlements in this zone, such as on top of Monte Pitino, mostly known from their adjoining cemeteries (Lollini 1976; Boullart 2005) and now also from some of our recent surveys (Vermeulen *et al.* 2002; 2009), does not surprise at all when we take into account the strategic importance of this particular area. On a dominant plateau, 1 km north-west of present day Treia, and just 3 km east of Monte Pitino,

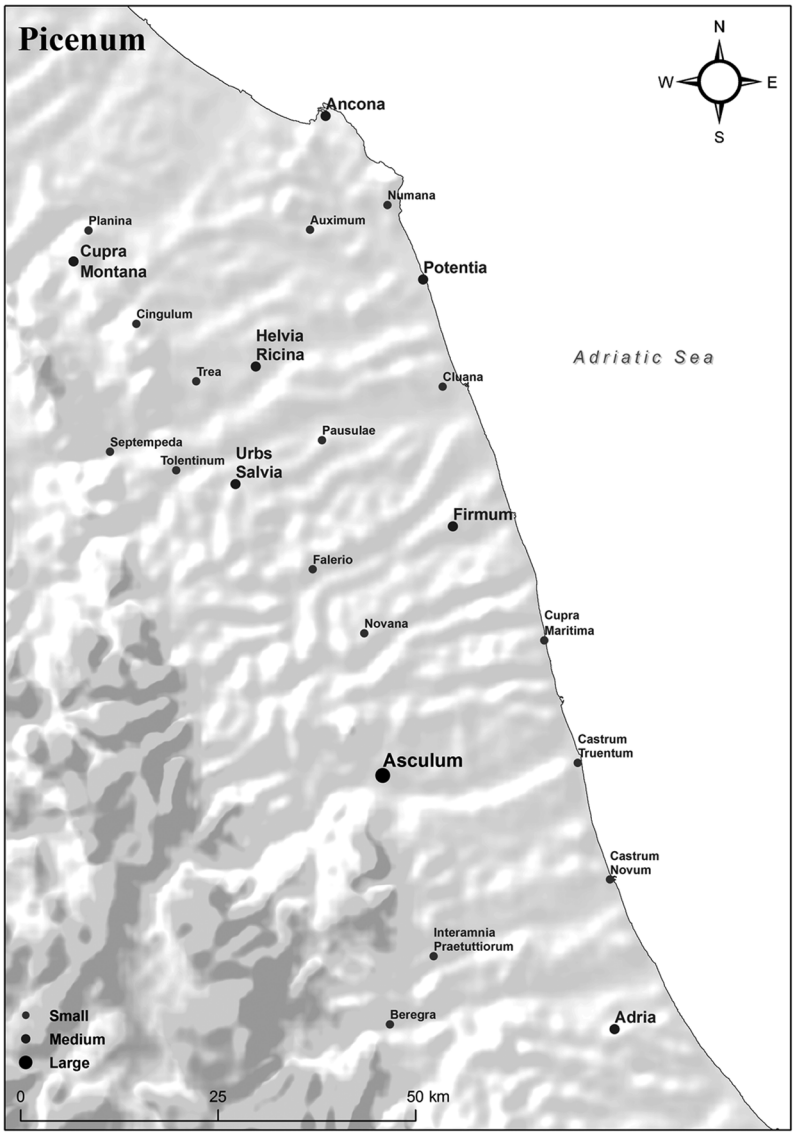

Figure 12.1: Localisation of Trea and the other Roman towns in Picenum (after DeLigt).

lies the site of the Roman *municipium* of Trea, in an agrarian area around the convent of SS. Crocifisso. The only remaining visible ruins are two small sections of the city walls, partly incorporated in a now abandoned farm house. According to the *Itinerarium Antonini*, the Roman city was located on the *Via Flaminia per Picenum Anconam*, a *diverticulum* from the main Rome–Rimini road, leading via Septempeda, Trea and Auximum towards Ancona.

Since the sixteenth century many isolated finds and epigraphic monuments concerning Trea have been discovered in this general area.[1] The first and only major excavations, by Fortunato Benigni in the late eighteenth century (Fig. 12.2), determined the exact location of the town and revealed parts of its city wall, a *basilica* (not exactly located by him) and a sanctuary with possible thermal building under the cloister of SS. Crocifisso

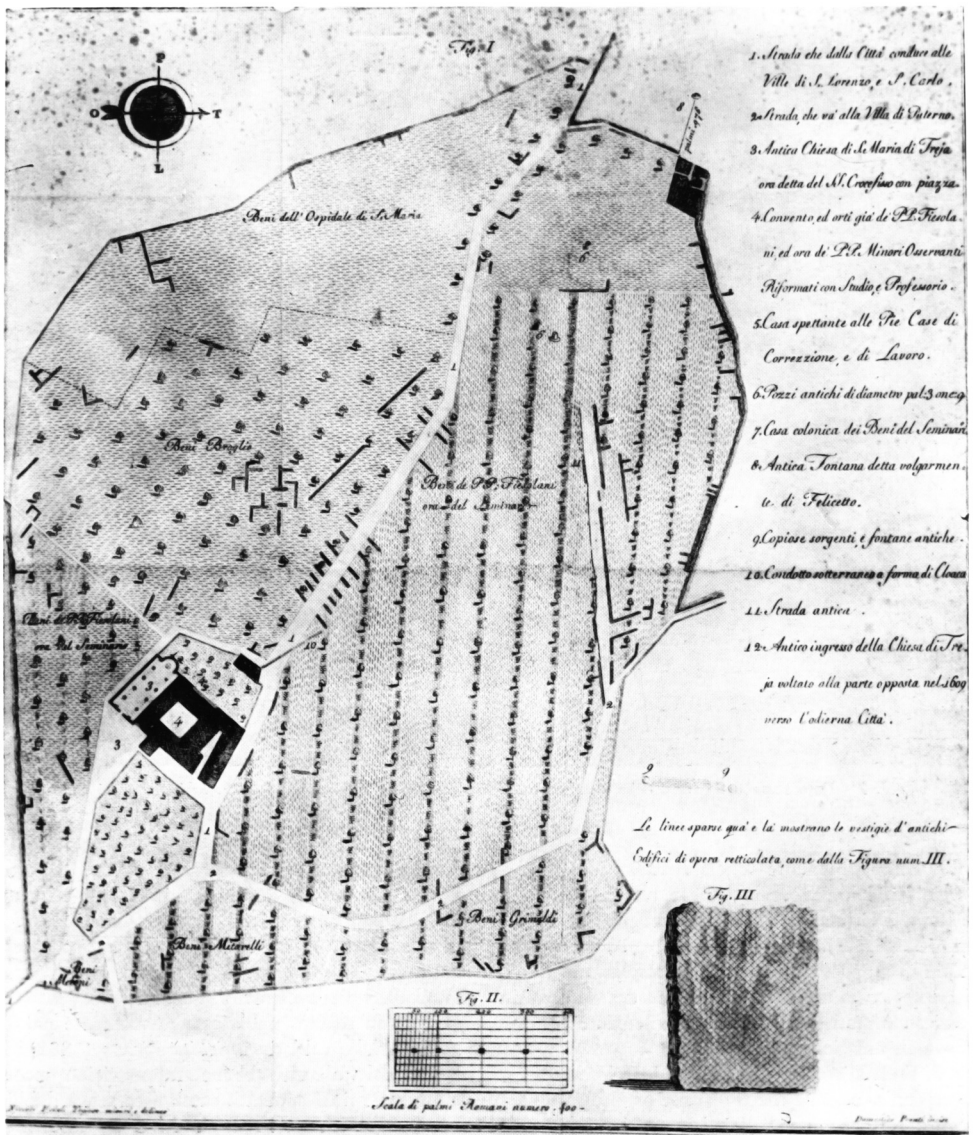

Figure 12.2: First attempt at mapping archaeological traces of the Trea townsite (by F. Benigni, late 18th century).

(Percossi Serenelli 2000). In the 1970s the University of Macerata intensified research in this area, with surveys and topographic studies by Moscatelli based on existing vertical aerial photographs[2] and excavations by Fabrini in the convent compound, in the eastern part of the city, between 1985 and 1988.[3] These studies produced a first hypothesis about basic urban organisation, especially the approximate location of the city wall, and evidence that the site of the later monastery and church was organised as a sanctuary for the worship of Egyptian deities in the second century AD.

As a result of this earlier research the main traits of Trea's form and development seemed clear by the time of our involvement with the site in 2001. Although the precise origin of the site remains unknown, its location on an elevated plateau could indicate that it was already a pre-Roman centre, possibly later chosen by the Romans to establish one of their controlling *praefecturae*. It became a Roman *municipium* shortly after 49 BC (Paci 1999) and it is conceivable that its concrete circuit wall, according to the few remains above ground built in a *quasi-reticulatum* technique with blocks of whitish local limestone, was erected around that time[4]. According to the *Liber Coloniarum*, the territory of Trea received a regular land allotment during the second triumvirate, an intervention which left its trace in the nearby Potenza plain, south-west of the town centre (Moscatelli 1985). The large collection of funerary monuments, statuary and epigraphic evidence, now displayed in Treia's Museo Civico, indicate that the Roman town flourished particularly between the reigns of Augustus and Antoninus Pius (Marengo 2000; Percossi Serenelli 2000: 74–105). As with many towns in Italy, later phases are less well documented. The last epigraphic evidence dates from the fourth century (Marengo 2000), but some archaeological finds (ARS pottery, African lamps and coins) from these earlier excavations and surveys prove later occupation in Trea, with a coin of the Byzantine emperor Phocas (602–610) as the latest piece (Fabrini 1990). The Lombard-dominated seventh century remains obscure in Trea, although an ornamental bronze object and a possible grave of that period suggest some continuity at the site. It is conceivable that during the early Middle Ages the remaining habitation was restructured in connection with an old *pieve*, a simple early Christian sanctuary for the *plebs*, here to be located at the site of the SS. Crocefisso monastery. Although this usage is only attested in documents from the mid twelfth century onwards, a considerable quantity of early medieval *spolia* used in the later church indicates the presence of a much earlier phase. During the main period of *incastellamento* in Italy the population probably moved towards the easily defendable hill-site of Montecchio (later called Treia), sometime around AD 1000, and the original city site remained practically deserted (Vermeulen and Verhoeven 2004).

In 2000 the valley which Trea overlooks was chosen as a case study area for intensive regionally based field research and the Potenza Valley Survey (PVS) project was born.[5] After a first phase of intensive fieldwork in order to map and study all retrievable occupation from later prehistory up to the early Middle Ages within the valley, the main survey efforts concentrated, from 2006 onwards, on intra-site city surveys of the four abandoned Roman town sites. The objectives of these intensive

investigations on the coastal colony of Potentia and the inland *municipia* of Ricina, Trea and Septempeda was threefold: first we wanted to map in as detailed a manner as possible the major town structures *intra muros*, without having to rely on new and expensive excavations. Secondly, we hoped to contribute to a better understanding of the origin and development of these towns and to their specific urbanisation within the regional and wider context. Thirdly, we needed a better understanding of the suburban developments around these small cities and of the impact of the gradual urbanisation on landscape use by the Romans. In this paper we will highlight the work on one of them, Trea, as probably the best case study to demonstrate the potential and limits of our intra-site survey approach. Because of space constraints we will be mainly preoccupied by our two first objectives: mapping the town and understanding its urbanisation and development.

Methodology

The survey methodology applied at Trea involves a series of activities, some of a more traditional nature and others somewhat innovative. As in any topographic study we first collected, analysed and re-interpreted the existing evidence. For Trea these are the earlier field reports and publications (see above), the existing vertical photography[6] and both early and current maps of the area.[7] The main new data capture was achieved via a series of active aerial photography operations, large-scale geophysical prospection and intensive artefact surveys. These three main operations, which we will discuss further, were accompanied by a set of necessary topographic measurements[8] and regular field observations concerning the geomorphology of the site and its wider environments.[9]

Aerial photography

Within the wider programme of active aerial photography set up by the PVS team (Vermeulen and Verhoeven 2004; Vermeulen 2011), the site of Trea was continuously monitored from the air between 2001 and 2010, with some 25 individual flights.[10] The potential of this site for such an approach is certainly excellent: apart from the present-day presence of the abbey, a street and three houses with small gardens, the whole former urban site of Trea, as we can now delimit it, is currently in use as arable land. The basic geology – always relevant for aerial surveys – consists of quaternary (Pleistocene) alluvial fan deposits creating a terrace of the first order, composed mainly of poorly sorted sandy-gravel sediments deposited in the foothills of the Apennine mountains.[11] The geological surroundings consist of Tertiary, mainly clastic sedimentary, rocks, some of which are plausible source areas for the predominant sandstone and limestone building materials used on the site of Trea (Vermeulen *et al.* 2009). Even if regular ploughing of the still unprotected site further contributes to its erosion, this

activity has allowed fruitful aerial reconnaissance over the last decade. Especially intense flying with a light two- or four-seat aircraft, during certain dry spring seasons (e.g. 2003, 2009) has produced some remarkable images, locating and visualising many aspects of the hidden urban topography (Figs 12.3 and 12.4). The flights over the intra-mural area and beyond resulted in excellent aerial views of crop marks as well as soil marks. The latter are mostly the result of ploughed-up larger stone structures, such as the city streets, the circuit wall with towers, public buildings and houses, but also of a combination of ploughed-up occupation layers, zones with different quantities of organic substance in the upper layers, and humidity traces caused by differential drying of the soil in some parts of the town.

Important efforts have been undertaken to digitally enhance, rectify and map the most relevant archaeological features visible on this oblique imagery (Fig. 12.5).[12] To enhance

Figure 12.3: Oblique aerial photograph (from NE) taken in 2009 of crop marks revealing major features of the central monumental area of the city site (photo F. Vermeulen).

Figure 12.4: Oblique aerial photograph (from SW) taken in 2009 of crop marks revealing remains of the circuit wall with indications of towers, a gate and some extra-mural structures (photo F. Vermeulen).

Figure 12.5: Orthophoto with enhanced contrasts, created from the 2009 oblique aerial photographs (rectification by G. Verhoeven). The image shows the full intra-mural area of the urban site, with many details of the town structures, especially north of the modern road crossing the site from east to west.

the possibilities for detailed and precise mapping of buried features, additional low altitude high precision photography has been achieved since 2006 with a so-called Helikite. To deal with cloudy conditions (or other particular situations in which the shutter speed becomes too slow for conventional aerial photography) and to allow us to obtain high spatial resolution imagery of the large site involved (in the visible, and also in the near-infrared and even ultraviolet, range), a stable, easily maintainable and remotely controllable construction was created. This combination of a helium balloon with a kite, linked to a set of additional devices (monitor, remote control etc.), allowed certain details to be revealed which were not present in the more traditional aerial photography from a manned aircraft.

Geophysical prospection

The geophysical research strategy[13] was prepared corresponding to the exceptionally evident crop marks apparent on aerial photographs from April 2003. The most creative research design makes use of a multi-method approach with application of several independent geophysical techniques. The geophysical prospections at Trea incorporated, therefore, the application of the resistivity method with Twinpole array (Geoscan RM15) covering 4.61 ha (Figs 12.6 and 12.7), the magnetic method with caesium magnetometer (Geometrics G–858) covering almost the same area (Fig. 12.8), local measurements of the apparent magnetic susceptibility of the soil and stone construction

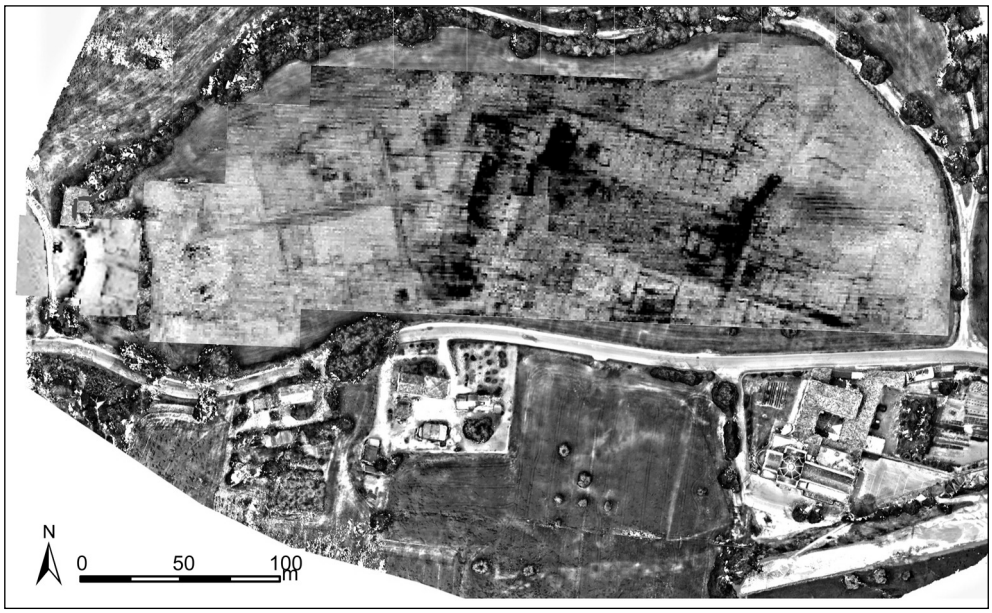

Figure 12.6: Integration of the orthophoto in fig. 5 with the images resulting from electric resistivity surveys and total station survey of some standing structures (by B. Slapšak and R. Plesničar).

Figure 12.7: Area of the western gate: integration of the orthophoto with images resulting from the 2009 electric resistivity survey and total station survey of some standing structures (by B. Slapšak and R. Plesničar).

fragments (Kappameter KT–5) and a smaller test with the Ground Penetrating Radar method using 200 and 400 MHz antennas (GSSI SIR3000). A profile separation of 0.5 m was used for the magnetic and the GPR methods, while resistivity measurements were taken at a distance of 1 m between profiles. Separation between measuring points along the profiles for magnetic survey was 0.15 m, for resistivity readings 1 m and for GPR traces 0.04 m. Two geophysical field campaigns were organised, in September 2007 and September 2009, when conditions for productive acquisition of data from all of the geophysical techniques used were quite favourable. The major part of the site of the Roman *municipium* on the plateau was surveyed in 2007, on fallow land. The excellent results permitted comparison with the equally exceptional results of aerial photography, thus revealing the major features of the urban structure and much detail of major public architecture in the heart of the town and its northern part. The southern slopes, however, which are now

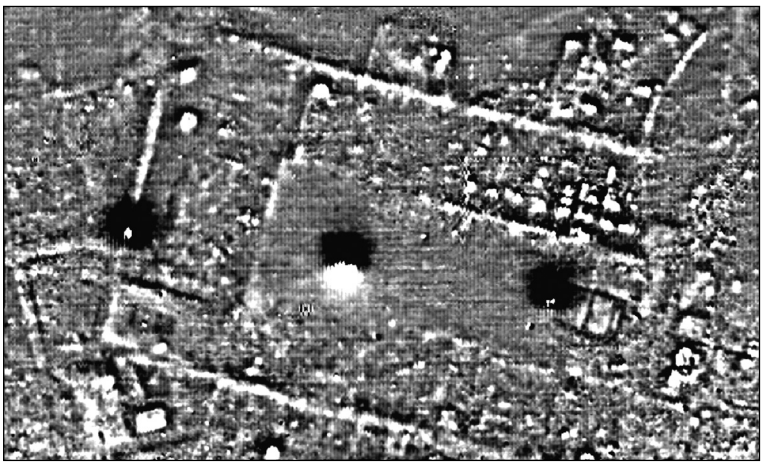

Figure 12.8: Detail of the image resulting from the 2007 magnetic survey on the forum area (by B. Mušič).

known to have been still partly within the city walls, and the westernmost part of the city, were excluded. Terrain conditions in the second campaign of 2009 did not allow further geophysical work on the southern slopes, but the area of the west gate was surveyed by resistivity, covering 0.32 ha of slightly more problematic terrain due to the presence of construction remains and long grasses.

During the process of analysis and interpretation of all these data the good results, especially of resistivity and magnetometry, can be overlain and observed under gradual image transparencies. This shows spatial correlation between different data sets and makes more reliable interpretation possible. In this way it is possible to visualise magnetic and resistivity anomalies in such a manner that architectural elements and the urban organisation are much more easily discernible. The same can be applied to the dataset from aerial photography, once adequately rectified.

Artefact survey

Artefact survey is very complementary to the remote sensing effort. On complex sites like Trea, which were used for centuries, we cannot assume any direct relation between structural remains, which were visible using remote sensing, and the surface record of artefact distribution. This is because the formation of the artefact scatter on complex sites is an extremely complex process or palimpsest of processes. It is a result of a process of building, use, abandonment, and post-abandonment transformations often operating side by side and turning the surface population into a complex set of different natural and cultural transformations (Schiffer 1987). The three main objectives of the fieldwalking exercise were: to provide good data about the precise location and use of building materials, and the dating and function of some of the traces found via remote sensing; to understand better the suburban context of the town and its possible pre-Roman environment; and to provide a comparative data set which would enable us to study the formation processes that created the surface record. Apart from a series of simple field checks of traces indicated by aerial photography, and mostly random artefact collections on some of the freshly ploughed fields of the site of Trea, four campaigns having a more systematic character were organised.

Firstly, in September 2007 an intra-site artefact survey was carried out by the PVS team on the central area of the town, where aerial survey located the forum. The area of some 140 × 90 m, including the square and its surrounding public buildings, was then grid-walked in order to characterise further the type of structures, their function and if possible some of their chronology. The area was subdivided into sixteen regular units (30 × 20 m), and each unit was walked by a group of seven people for 30 minutes each, collecting samples of datable ceramics and other diagnostic artefacts (building materials, glass etc.) in a systematic way.

During the same month a sampling of surface materials was undertaken on the ploughed fields to the west and south-west of the Roman town area.[14] Parts of this extra-mural territory were surveyed by Umberto Moscatelli in the 1980s (Moscatelli

1988), but our aim was to re-visit the sites located by him and also to survey some surrounding ploughed fields in order to gain a clearer picture of the chronology and extent of possible pre-Roman and Roman sites in the area.

The third and fourth campaigns were spread over the September months of 2009 and 2010, when an intensive grid survey was conducted on the southern slope of the townsite, where aerial photography revealed negative cropmarks that can be interpreted as the remains of the wall of Roman Trea. The survey was conducted to assess the role of the wall in the distribution of the surface material and dumping and other processes that operated on the city limits.[15] The surveyed area is oriented down the slope, with the wall running across the middle of the area. It is located on a considerable slope (around 10° or 17%) oriented towards the south and south-east. Modern land use here is arable field with a few olive trees, and the freshly ploughed state of the terrain allowed high and uniform visibility of artefacts over the whole surveyed area. An area of 3.2 ha was intensively surveyed and material was collected within 10 × 10 m grid squares. During the second period of this survey (2010), total material collection was only achieved within 4 × 4 m sampling units in the NE edge of the 10 × 10 m grid. After a first treatment in the field, of the more than 30,000 artefacts, just a diagnostic sample of the finds was further studied and classified within the PVS material database.

Results

Notwithstanding the fact that Trea received some scientific attention during the last decades of the twentieth century (see above), information about the precise location, extent and urban organisation of the Roman city remained very limited and partly hypothetical. Our intensive surveys conducted here since 2001 completely revolutionise current knowledge concerning this *municipium*, altering some of the earlier hypotheses and complementing the scant topographic, qualitative and chronological data with a whole series of new identifications and interpretations. We will try to summarise here the most important contributions of the new approach, integrating the results from different methods.

The present state of mapping (Fig. 12.9) and interpreting the traces visible via remote sensing operations indicates the precise location of some 70% of the basic town infrastructure during the heyday of its life, very probably constructed and used mainly between the mid first century BC and the third century AD. According to our observations, the probably mid-first century BC town wall, delimiting the main urban area of Trea after its promotion to municipal status, has an irregular oval shape which agrees well with the general topographical configuration of the hilly plateau that determines the location of the town. It seems that, on its long northern and short western and eastern sides, the trace of the town wall is still more or less preserved in low earthworks that border modern roads, while parts of the long southern city limits were mainly discovered via aerial photography. The latter produced evidence for at least

Figure 12.9: Provisional and generalized plan obtained from the interpretative integration of all recent survey and legacy data on the town of Trea (by Carboni, Vermeulen, Verhoeven and Mlekuž). The thick east–west line in the centre of the plan represents the oldest main street of the town, pre-dating the erection of the monumental forum.

three rectangular towers and/or bastions and a centrally-placed gate in the southern wall circuit. Geophysics on the western side of the city have produced evidence of buried features connected to the standing monumental remains of the city wall visible on and within the farm house, and to the standing remains of a possible tower to the south. Typologically, this buried feature recalls the typical late Republican city gate structures with a central single tower gate and two flanking round towers delimiting a semi-circular courtyard. These were current at the time of the elevation of the town as *municipium*, and seem to be represented elsewhere in the region.[16] The efficient resistivity survey here also suggested the presence of a kind of *intervallum* immediately inside the gate area, free from major building structures.

The total city area delimited by this circuit wall is probably only about 11 ha.[17] This does not exclude the existence of extramural habitation areas, however, particularly in the eastern and western directions where the less articulated topography would certainly allow it, but our survey has not yet produced evidence for this.

Both aerial images and geophysics produced good evidence for the *decumanus maximus*, cutting the city in two halves from east to west. This trace of a probably paved structure, around 6 m wide, represents the main street of town around which most of the urban grid was developed. This road – no doubt the *diverticulum* of the *Via Flaminia* towards Ancona – enters the city at the western gate, but after some 150 m eastwards it is interrupted by the monumental forum complex. Both remote sensing approaches clearly indicate that this road originally continued for a while in the same direction and then made a bend towards the north-east, in the direction of Ancona. This trace neatly underlies younger traces of the forum monuments. It is clear that the later building programme of the forum necessitated a reorganisation of this road, which from then onwards continued its trajectory from the eastern flank of the forum in two main directions, to gates which have not yet been located in the north-east (to Ancona) and the south-east (to Ricina and Potentia). Even if no hard stratigraphic evidence is available, the survey results clearly suggest an evolution in the basic street system as a result of a re-organisation of the town.

As a result of this knick point and the differently oriented forum, the pattern of the other town streets and buildings shows two predominant orientations. The smaller western part of the town corresponds with the highest part of the plateau. The crop marks and images of streets and buildings in this area were more complex, with indications of several phases of urban development. It is also possible to observe the existence of a series of narrower streets parallel with and perpendicular to the main east–west axis. They seem to demarcate several regular *insulae*, even if the plans of individual buildings and houses are less sharply distinguished. Some houses and possibly public buildings (*thermae*?) in this area show plans with internal courtyards. Surface survey showed the presence of several zones with mosaic floors and many pottery finds confirm the partial function as habitation quarters. It is interesting to note that most Republican surface finds were observed in this sector of town. This could mean that this highest

part of the city, was also the area of the earliest settlement. It is also interesting to note the presence here, indicated by the magnetic survey, of a series of indicators for possible industrial activity in this part of the town. The geophysics revealed a number of strong magnetic anomalies with slight magnetic field polarity deviation here. Such anomalies are characteristic of archaeological remains with a thermoremanent type of magnetisation which is the attribute of bricks, tiles, forges, kilns, furnaces etc. Some clusters probably indicate the presence of workshops, with activities that might have required high temperatures of firing. Further evidence is needed, however, to determine the specific period(s) of these activities.

The larger eastern part of the town, oriented along a NW–SE axis, gives much more precise information. The aerial views make it possible to distinguish a whole series of buildings and public areas, as well as several streets constituting the backbone of the urban space within this orderly, laid-out sector of the town. The streets, with an estimated average width of some 4 m, describe a regular grid of *insulae*, having their longitudinal axis oriented parallel with the central *decumanus maximus*. By extrapolating the visible crop marks on our oblique aerial images with information from earlier topographic observations, such as vertical aerial photographs[18] and the presence of the excavated structures under SS. Crocefisso,[19] we can propose the existence of a series of rectangular *insulae* with different dimensions partly conditioned by the presence of the circuit wall and by the main street axes.

A monumental complex, lying almost centrally in the city, is clearly the forum. It is composed of an open rectangular square, bordered on three sides (north, west and south) by porticoes. Centrally placed on its eastern side is the configuration of a rectangular and axially placed building of some 20 × 10 m. Its position facilitates a determination that it is a temple of the *capitolium* type. The podium building is clearly subdivided in an approach with stairs, a deep *pronaos* and a *cella* with internal infrastructure for the statuary of the venerated deity.[20] Both south and north of the forum the porticoes border rows of narrow rectangular buildings with their short sides towards the square, some of which are clearly shops or *tabernae*. A larger and more complex building with a courtyard in the south-east corner, however, could well be a *macellum*. Also the north-west corner is characterised by more important buildings, possibly temples or structures with administrative functions. Finally, the forum is bordered to the west by the long side of a large rectangular building, clearly planned as part of the forum complex and preceded by a colonnaded street which is prolonged outside the forum space towards the south. The building seems to be flanked on its short sides by two other monumental buildings, one of which (to the south) resembles a temple. A function as *basilica* for the main colonnaded hall, measuring some 35 × 20 m, is clearly suggested by its position and typology. It is possible that the structure was already partly excavated around 1800 by Benigni, and the published, but never well located, plan proposed by this early researcher could give us further clues about the construction details (Benigni 1812).

The whole spatial setting of this central area displays the typical features of a planned forum with a dominating sanctuary of the *capitolium* type, a *basilica* on the opposite side and rows of shops and other public buildings behind monumental porticoes lined with columns. Although we see an obvious resemblance with several late Republican and early Imperial Italian *fora* in well planned towns (Gros 2000: 312–313), and many fragments of Roman pottery were found during surface control, we are unable to propose a date at this stage of research. However, it seems likely that this forum, and with it the whole gridded central and eastern sector of Trea, was only constructed under the reign of Augustus, when much epigraphy was produced, or under his immediate successors. Of special relevance to the further interpretation of the excellent remote sensing data in this central part of the Roman town are the systematic artefact surveys which we conducted here. As the terrain of the forum is quite flat, so that horizontal movement of artefacts and building materials ploughed to the surface should be quite limited, we are able to link some of the surface observations to the actual situation of the archaeological structures *in situ*. For instance, in the zone of the 'capitoline' temple we found large pieces of mortar, which could belong to a podium nucleus built of *opus caementicium*. Fragments of very large roof tiles, a few white marble *crustae*, a fragment of a small marble column and a piece of a marble slab with the remains of an inscription underline the public character. The survey grids over the *tabernae* on the northern side of the forum produced many fragments of worked limestone and sandstone, probably the main building materials here, together with the rooftiles. In several units we also collected fragments of pie-wedge shaped bricks, which could indicate that the portico in front of the *tabernae* had brick columns. A good amount of brick floor tiles seems indicative of the predominant floor type in the shops. Fairly large numbers of marble *crustae* and *tesserae* prove also a certain quality of these shops. Many fragments of *dolia* demonstrate food storage at some period of time, while pieces of over-fired brick and burned sandstone, together with metal slag, seem to confirm the proposition from magnetic survey that several remnants of furnaces are to be located here, possibly in the later phases of the use of this space. The grids over the probable *basilica* and the buildings on either side of it displayed an especially rich assemblage of building materials. Although limestone, sandstone and mortars prevail, the finds comprise also huge numbers of marble *crustae* in different colours, and fragments of *opus sectile* floors. Many *tesserae*, pieces of hexagonal floor tiles in brick, and some fragments of painted *stucco* add further information. Several small fragments of *tubuli* are possibly indicative of a heating system, in particular in the building south of the *basilica.*[21]

Directly east and north from this forum, crop marks clearly indicate the presence of several buildings oriented in accordance with the grid. Quite striking is the presence of an almost square building, with an internal portico, with sides measuring around 25 m, situated directly north of the public space. According to the surface scatters connected with buildings along the central NW–SE oriented street (e.g. mosaic *tesserae*, *tubuli*, painted *stucco* and fine pottery) and their more intricate multi-room plans, some seem

Figure 12.10: Location of the 2010 artefact survey grid on the provisional plan (by D. Mlekuz).

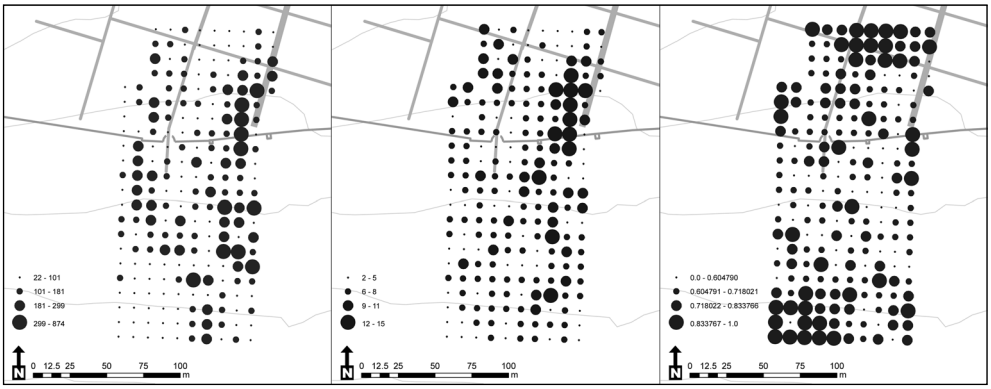

Figure 12.11: Mapping of artifact quantities in the 2010 grid survey. From left to right: assemblage sizes, richness and diversity (by D. Mlekuz).

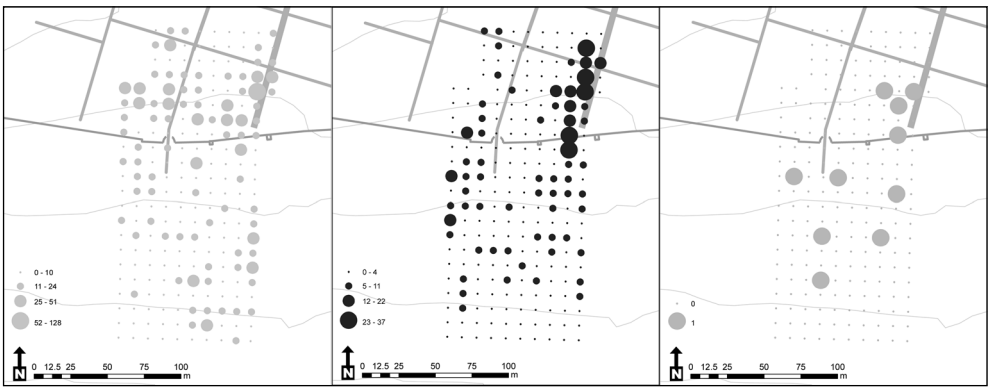

Figure 12.12: Mapping of artifact quantities in the 2010 grid survey. From left to right: distribution of large pieces of ceramic building material, amphorae fragments and lamp fragments (by D. Mlekuz).

to display a great deal of luxury and could well be interpreted as *domus*. Fragments of slag found in the north-eastern sector of the town are possibly indications for local artisanal activity in a part of the town showing less pronounced structural features in the crop marks and geophysical imagery.

Finally, the whole southern part of the intra-mural city, where geophysical research has not yet been achieved, remains somewhat problematic. As good aerial data is also scarce here (apart from the earlier discussed defence system) we have to rely on the much less structurally linked data from artefact scatters. The systematic surveys in this area produced mainly material to be dated between the second century BC and the early sixth century AD, as was also the case in the more central area on the plateau. On the basis of surface observations on this southern slope we can distinguish several

areas with collapsed structures (Figs 12.10–12): some belong to building blocks *intra muros* and a few are located *extra muros*, probably aligned along the southern exit road. This conclusion is mainly based on the mapping of concentrations of large pieces of ceramic building material. The interpretation is further complicated due to the possible presence of a dumping area *intra muros*, which may result from reusing abandoned buildings as secondary refuse areas in a late phase of the city's life. There is also a large dump of secondary refuse outside the town, forming a large 'carpet' of building material, and all kinds of pottery (cooking ware, table ware, amphorae etc.) extending almost 100 m from the town wall.[22] This might overlap the possible earlier burials, aligned along the presumed exit road. Aerial photographs revealed clear crop marks, interpreted as a town gate, outside of which some possible burial monuments were traced, distinguished as rectangular spots near the gate. Remarkably, many fragments of Roman lamps – a typical burial gift – were retrieved in this area. In addition, a concentration of Iron Age pottery found here also suggests strong pre-Roman activity in the southern part of Trea.

In fact, the regular retrieval of a number of surface finds with a pre-Roman character all over the site, most of which belonging to the Picene Iron Age (ninth–third centuries BC), is an important discovery of the survey.[23] The mostly *impasto*-type pottery and typical ceramic building material – especially early roof-tiles known to be in use in this region since the fifth century BC (Boullart 2003) – indicates a stronger pre-Roman occupation of Trea than was previously thought. Iron Age pottery within the town might have been exposed during the building of the Roman structures and become incorporated in backfill deposits. It is too early to interpret whether the concentrations reveal the presence of Iron Age settlement structures hidden beneath the Roman Trea or a series of farms, scattered on the plateau and the southern slopes. The wider artefact surveys undertaken by our team around the walled Roman city area partly answer this question. These revealed the presence of different (at least six) nuclei of Piceni occupation within a distance of one kilometre south and west of the city centre (Vermeulen *et al.* 2009).[24] Even if it is still not clear whether they indicate a scattered occupation of, not all contemporary, Iron Age farmsteads, or a kind of proto-urban cluster from where the Roman town gradually grew, they feed the impression that the position of Roman Trea on the Rome–Ancona road was at least partly conditioned by some stable indigenous presence.

Conclusions

Even if an archaeological field project is never 'finished', this paper, summing up some of the most important acquisitions so far, shows that a systematic and integrated survey effort on a complex site such as Trea has many wider implications. We would like to briefly stress here just two of them.

First, we think that it contributes to the methodological 'philosophy' of applying a wide set of locally adapted techniques to study complex abandoned sites with a former urban character. Thanks to different applications of active aerial photography and geophysical survey, major new discoveries about the city topography were achieved. This comprises most of all the almost total defensive system, many elements of the intra-mural street network, the detailed plan of the forum, some hypotheses about the relative phasing of the central road system and city grid, and the location and partial plans of many public buildings and houses. Important data are now also available about settlement size and functional zoning within the small city, even if the lack of chronological indicators prevents us from understanding these fully. Interpreting surface distributions in terms of functional activities and thus finding the function of buildings, as seen on maps derived from the interpretation of remote sensing and geophysics, can however be overly simplistic, especially on complex town-sites. The more systematic trials with artefact survey at Trea demonstrated the potential of an approach that also takes into consideration the complexity of urban material residues resulting from long-term mundane practices, such as waste disposal.

The second type of contribution is connected with settlement history in the region and especially with the complex urbanisation process resulting from Roman dominance over a region which knew no real cities before the second century BC. The example of Trea could be seen as representing dispersed to slightly clustered, mainly indigenous, occupation of a topographically well situated area until the later third–early second century BC. The upgrading by the Romans of a probably already important communication route towards Ancona clearly signified the start for Trea of real urbanisation, possibly around a controlling *praefectura*. Until the beginning of the first century BC, towns were not of major importance in these inland Picene regions, except where Latin and Roman colonies had been founded by Rome, such as at several strategic places along or near the coast (Delplace 1993). When, however, the Italian allies of Rome acquired Roman citizenship as a result of the Social War, the élites in many parts of Italy began to transfer their attention to the city of Rome and to political competition there (Patterson 1987). Accordingly, they began to build in the newly created *municipia* and neglected the old *pagi* and *vici* (Paci 2008). This must have resulted in Trea, during the first century BC, in a gradual decline of the loose settlement system and in distinct 'urban' development, from Augustan times onwards upgraded with the monumentality Rome required of its Italian towns. The position of Trea, closely linked to the wider inland road network of central Italy, enabled it to develop a strong Roman profile, in the course of the first century AD. This is particularly shown by the layout of a large forum and monumental centre, with a marked change and difference of style when compared with other parts of the town. This probably demonstrates a very intensive effort of monumentalisation and demonstration of allegiance to the Roman cause.

Notes

1 For the most recent summary: Marengo 2000. See also: Benigni 1812; Bejor 1977; Moscatelli 1988 and Fabrini 1990, 111–119.
2 Moscatelli 1985; 1988. This topographic work was also partly based on observations and on earlier hypotheses of Benigni and Bejor.
3 Fabrini 1990. The excavations gave evidence that a Roman temple base was reused for the construction of the church tower, while several sanctuary rooms with the same orientation as the later monastery buildings contain mosaic floors as well as a system of aqueducts leading to a series of basins and cisterns. Important Egyptian statuary found in this area refers to the cult of Isis and Serapis (Capriotti Vittozi 1999).
4 Dates proposed for the wall construction vary between the first half (Moscatelli 1985, 82–87) and the second half (Percossi Serenelli 2000, 75) of the first century BC.
5 This project, directed by F. Vermeulen, is mainly financed by Ghent University, Belgian Science Policy (IUAP-actions) and the Fund for Scientific Research Flanders. Since 2007 and in particular for the Trea surveys the team has been enlarged with a team from the University of Ljubljana directed by B. Slapšak. For presentations of some of the main results of the PVS research we refer to: Vermeulen 2005, forthcoming; Vermeulen *et al.* 2002; 2009 and forthcoming; Vermeulen and Mlekuž 2012; Vermeulen and Verhoeven 2004; Percossi Serenelli *et al.* 2006. See also: http://www.potenza.ugent.be/.
6 Certain Italian vertical imagery of 1972 and 1974, produced by the Istituto Geografico Militare, is particularly useful. More recent vertical photographs, such as those from a 1992 flight organised by the Regione Marche, provide much less information, because of obvious changes in the landscape and surface situation. This applies also for the regularly updated Google Earth imagery.
7 This includes some new work by C. Corsi on the georeferencing and study of older cadastral maps (including the well-known nineteenth century '*Catasto Gregoriano*') within the GIS of the Potenza Valley Survey project.
8 We mention especially differential GPS measurements coordinated by A. De Wulf (Ghent University) to create a DEM and total station measurements to map some standing structures of the city wall coordinated by S. De Seranno (Katholieke Hogeschool Gent).
9 Especially regular field visits directed by M. De Dapper and his team of geomorphologists.
10 Most of the aerial photography of Trea was achieved by F. Vermeulen, while the Helikite imaging is done by G. Verhoeven. For interpretation help was obtained from D. Grosman.
11 Source: Geological map of Italy at scale 1:100,000.
12 The integrated GIS mapping of all the aerial data is facilitated by the use of *Airphoto 3.x*, software specifically developed to rectify archaeological images made with handheld non-calibrated cameras (Scollar 2002, 167). This mapping activity, mainly achieved by G. Verhoeven, F. Vermeulen, F. Carboni and D. Mlekuž, also involves the development or adaptation of new software for the purposes of rectification and (2D and 3D) visualisation.
13 This research by the Department of Archaeology of the University of Ljubljana was coordinated by Božidar Slapšak and important collaborations in the field were especially obtained from archaeologists Branko Mušič, Rok Plesničar and Matjaž Mori. For a published report of the 2007 campaign, see: Vermeulen *et al.* 2009.
14 Both survey campaigns were directed by F. Vermeulen and S. Dralans, with the help of students from Ghent University.
15 The survey was conducted by Dimitrij Mlekuž, assisted by H. Verreyke for pottery analysis, and a team of students.
16 Brands (1988: 206) mentions comparable city gates in the nearby town of Septempeda and in the defences Sulla built in Telesia. Other late Republican examples are known from Philippi and Ptolemais. Early Imperial examples are also encountered outside Italy, such as in Fréjus, Arles, Aix-en-Provence, Neuss and Tipasa.

17 This new and reliable proposition, which only needs further detailing on the eastern edge of the town, leaves us with a much smaller city than proposed by earlier researchers such as Bejor (1977) and Moscatelli (1988).
18 A few linear traces seen by Moscatelli in the southern part of the city, in line with the present day church, agree well with our new information (Moscatelli 1988).
19 See Fabrini 1990. The insertion of the orientation of this convent and church in the ancient street pattern is at least remarkable.
20 For Trea there is epigraphic evidence of the cults of Minerva, Victoria, Domina, Serapis, Isis and the Emperor (Marengo 2000).
21 We can mention also the discovery of a bronze figurine of Harpocrates.
22 The existence of large refuse dumps immediately outside the built-up areas are known from other Roman towns. Good evidence in this region comes from Rimini (Ariminium), where excavations uncovered sizable deposits of refuse dating to the late Imperial period along the outer face of the town's fortification wall (Gelichi 2000).
23 The Iron Age pottery represents approximately 1% of all pottery finds in the area systematically sampled.
24 The individual dating of the sites is problematic as very few diagnostic wares were found. These surveys also confirmed some of the Roman rural sites near the urban centre found by Moscatelli, as well as adding a good number of 'new' ones. Another important discovery during this fieldwork is the precise location of a Roman aqueduct, indicated by concentrations of fragments of terracotta water pipe, departing the Apennine foothills near the San Lorenzo sanctuary, 3 km to the west of the city, and reaching Trea in on a straight west–east alignment (Vermeulen *et al*. 2009). In this same area there are large outcrops of marly limestone, of the same kind used for the Roman circuit wall.

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