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The Rural Site of 'Il Cotone'

Results of the On-Site-Survey 2016

In 2016 and 2017, members of the Vienna Orme and Pesa Valley Project conducted geophysical (magnetics and GPR) and intensive systematic on-site surveys at the Roman rural site 'Il Cotone' near Empoli. This chapter presents the first results of material culture studies and digital mapping of the survey data. All applied methods revealed a small Roman rural settlement used for agrarian production and dwelling as well.

Keywords: *on-site survey; Roman rural settlement; geophysics; ceramic finds; GIS*

1 Introduction[1]

The on-site-survey results at the site 'Il Cotone' of the year 2016 as part of the 'Vienna Orme and Pesa Valley Project (VOPP) have to be recognized as a supplement of the geophysical examinations realized in 2017 on the same location[2]. The site called 'Il Cotone' came to the attention of the 'Associazione Archeologica Volontariato Medio Valdarno' in January of 1995 because of many finds of ancient pottery and tiles lying on the surface of this field after ploughing[3]. Therefore, the association carried out a 'grab sample' in 2010. The finds of that year are a fine assortment of most of all kinds of vessels also found in 2016[4].

The local term 'Il Cotone' is used at this point as an established name, orientated at the late medieval building nearby. Cotone is situated south of the middle part of river Arno and east of the flow Orme (fig. 1). About three kilometers north of Cotone the town of Empoli is located, a supra-regional economic center both in Roman times and today, which is registered as 'In Portu' on the Tabula Peutingeriana[5]. In Roman times a river port was positioned at Empoli, and transport amphorae were produced within the city and its surroundings in High and Late Imperial times[6]. We also know that in this area Roman centuriation was executed, as well

1 I would like to thank Prof. Dr. Günther Schörner, leader of the VOPP project, for the chance to analyze these survey finds and to present the results, and Dominik Hagmann for preparing the digital maps and charts for printing, based on my data.

2 Cf. the contribution of Klaus Freitag in this volume.

3 First mention: Ferretti – Macii – Terreni 1995, No. 40.

4 The VOPP-Project and the author want to thank the Associazione for giving this hint, especially Dottor Leonardo G. Terreni for the facility to attend to the survey material within the magazine of the 'Gruppo Archeologico' at Molin Nuovo (Elsa valley) in August 2017 and April/May 2018.

5 Tab. Peutingeriana 1976, segment III, 2. – The next municipal resp. urban resp. economic centers in antiquity have been Faesulae (it. Fiesole, 30–35 km away) and Pisae (it. Pisa, 40 km away).

6 For the river port cf. Maiuri 2006, 37–39. – For the ‚Anfora d'Empoli' cf. Schreck 2018 (finds at Molino San Vincenzo); Schörner 2013, 68 with fig. 18 (finds at Il Monte); Cambi 1989; Manacorda 1987; Manacorda 1984.

Fig. 1 Il Cotone: localization of the survey field on the map (map drawn by Dominik Hagmann, data analyzed by Hadwiga Schörner)

on the northern as on the southern shore of the Arno within the river plain[7]. Because of the presumptive ending of *centuriatio* at the hills, Cotone is lying at the southern fringe of that area and outside of the centuriation zone. Cotone is positioned above a hillside, which is steeply descending to the north, to the broad Arno valley. Directly on the southern fringe of that plateau there is a small watercourse draining westbound into the Orme. That fact represents one more water source for a settlement, for agriculture and for all kinds of production facilities.

The on-site-survey took place on the 5th and 8th of September, 2016. The weather conditions were sunny and dry; the field was harvested and harrowed. The surface was flat with only small stubbles, so it held a good to very good visibility. In preparing the survey a grid of square units of 10 meters side length was put on the field (fig. 2) and on every unit of this grid four students were walking and scanning the surface under strict rules, which implies mainly the same geographic orientation, simultaneously walking, and comparable rapidness. Thus, 80 percent of all finds of every grid could be collected. The atypical naming of the grid units – B 1, C 1 and so on are reclining not at the fringe of the field – is based on the fact that after the first day with surveying the western and southern part the focus of finds was recognized at the

7 Pucci 1984, 15–22 with map on p. 22; Ferretti – Macii – Terreni 1995, 10–12 with map on p. 11.

Fig. 2 Il Cotone: naming of the grids (map drawn by Dominik Hagmann, data analyzed by Hadwiga Schörner)

eastern and northern limits. So the decision was made to prolongate the survey grids to the north, east, and south at the second day[8]. As a current problem of finds made on an agrarian executed field the finding material, especially the ceramic sherds, is very worn, sometimes very small, and in a very poor state of preservation.

2 Analysis

General Distribution of the Finds

There have been ancient finds in every square of the survey grid with the exception of F 10 at the southeastern corner, most distant from the focal point of all ancient artifacts (fig. 3), which is located in the area of G 2 and F 3 and their closest neighbors, G 1, F 2, and F 4. One less

[8] The grids H, I and J (at the eastern fringe) as well as the double-letter-grids BB to GG (at the northern fringe) were newly inaugurated (fig. 2). This information can be inferred from the documentation sheets of that survey, kept by the VOPP project leader, Prof. Günther Schörner, Institute of Classical Archaeology at Vienna University, and is further digitally stored in the project's spatial database.

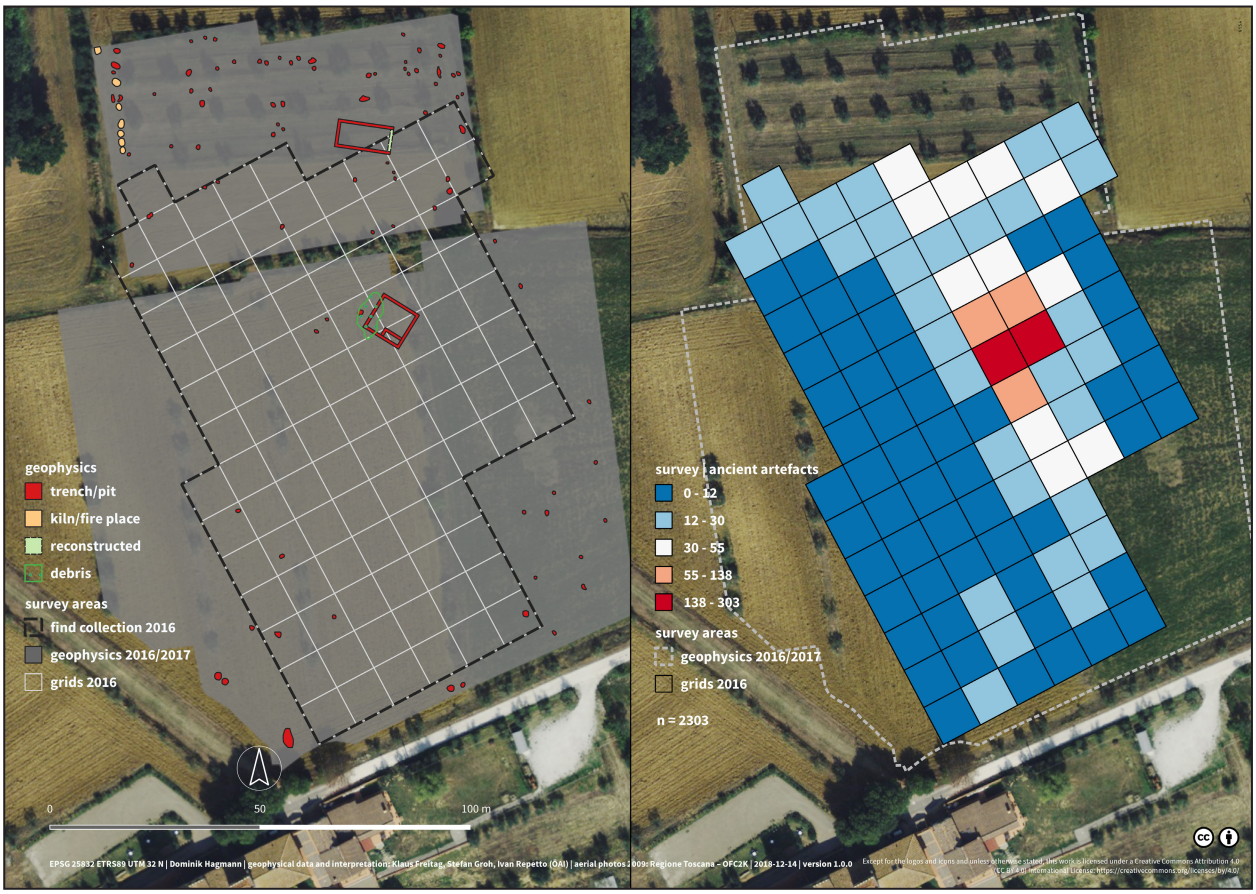

Fig. 3 Il Cotone, left: grid covered over the geophysics; right: all artefacts, distribution (map drawn by Dominik Hagmann, data analyzed by Hadwiga Schörner)

significant core area with ancient artifacts has been found at the northern edge of the field[9].

After comparing the find distributions of ancient pottery and tiles (fig. 4) on the field, a pattern can be detected, with a high concentration of finds on G 2 und F 3, and the adjacent grids, as well as a less considerable peak in the north for the ancient tiles. The pottery finds are also representing a similar pattern: the map of ancient pottery shows the main focal point on G 2 and the neighboring squares, with one less important core area in the north-east and some finds within the southern area.

Of particular interest within this project is the ancient pottery. The diagram (fig. 5) presents the different functions of the ceramic sherds dating to ancient times found during the survey. With 35 percent, the so-called utility wares take up the major component of all, followed by the table or fine ware with 23 percent. Cooking ware – which is pottery in contact with fire – counts 20 percent and is nearly equal with the transport amphorae with 18 percent. The *dolia* and *doliola* are last on the list with 4 percent.

9 In the southern part of the field most of the artifacts of the post-classical period were found, but this non-antique material does not play any role in the present contribution.

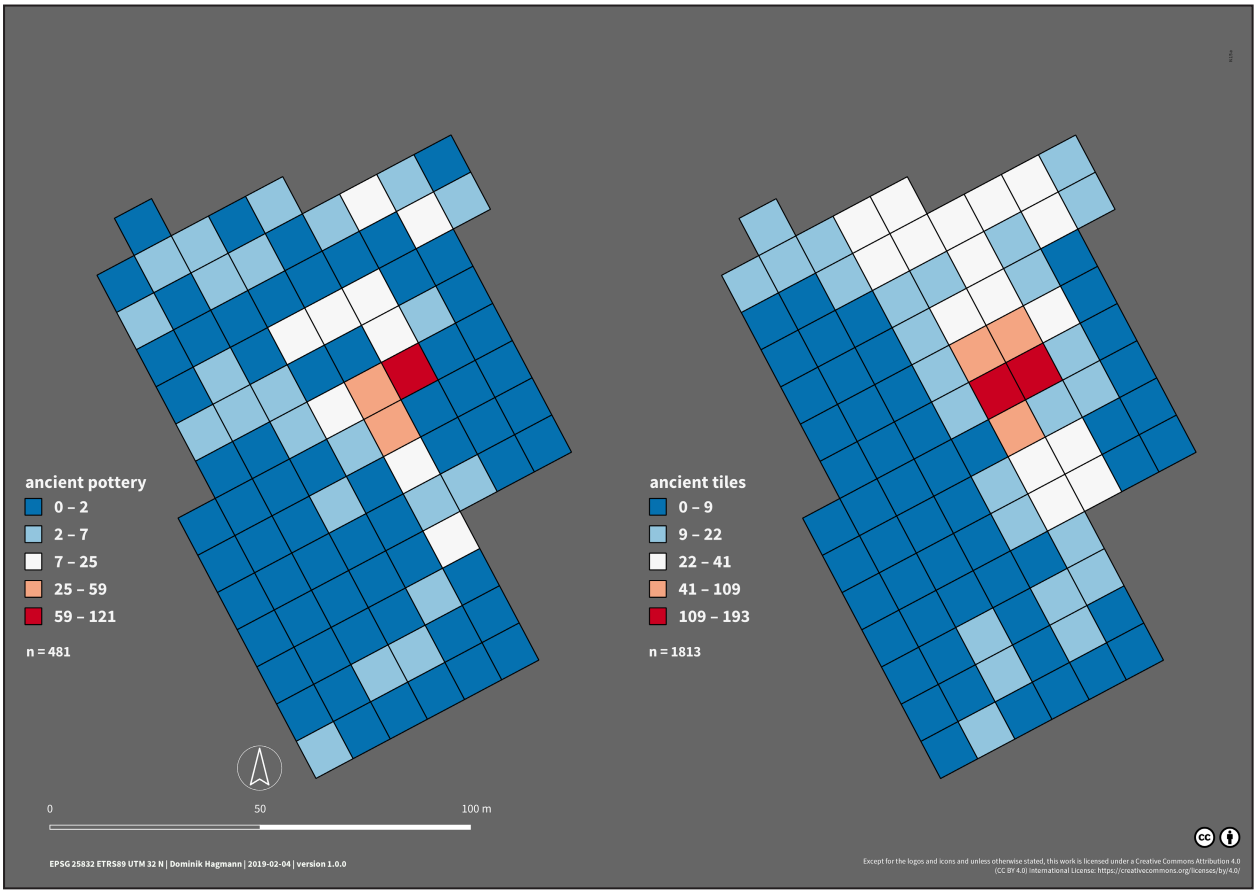

Fig. 4 Il Cotone, left: ancient pottery, distribution; right: ancient tiles, distribution (map drawn by Dominik Hagmann, data analyzed by Hadwiga Schörner)

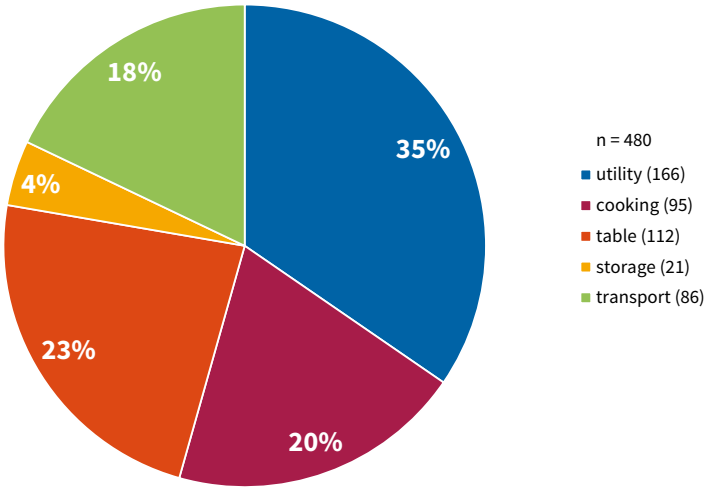

Fig. 5 Il Cotone: functions of pottery found, chart (Hadwiga Schörner)

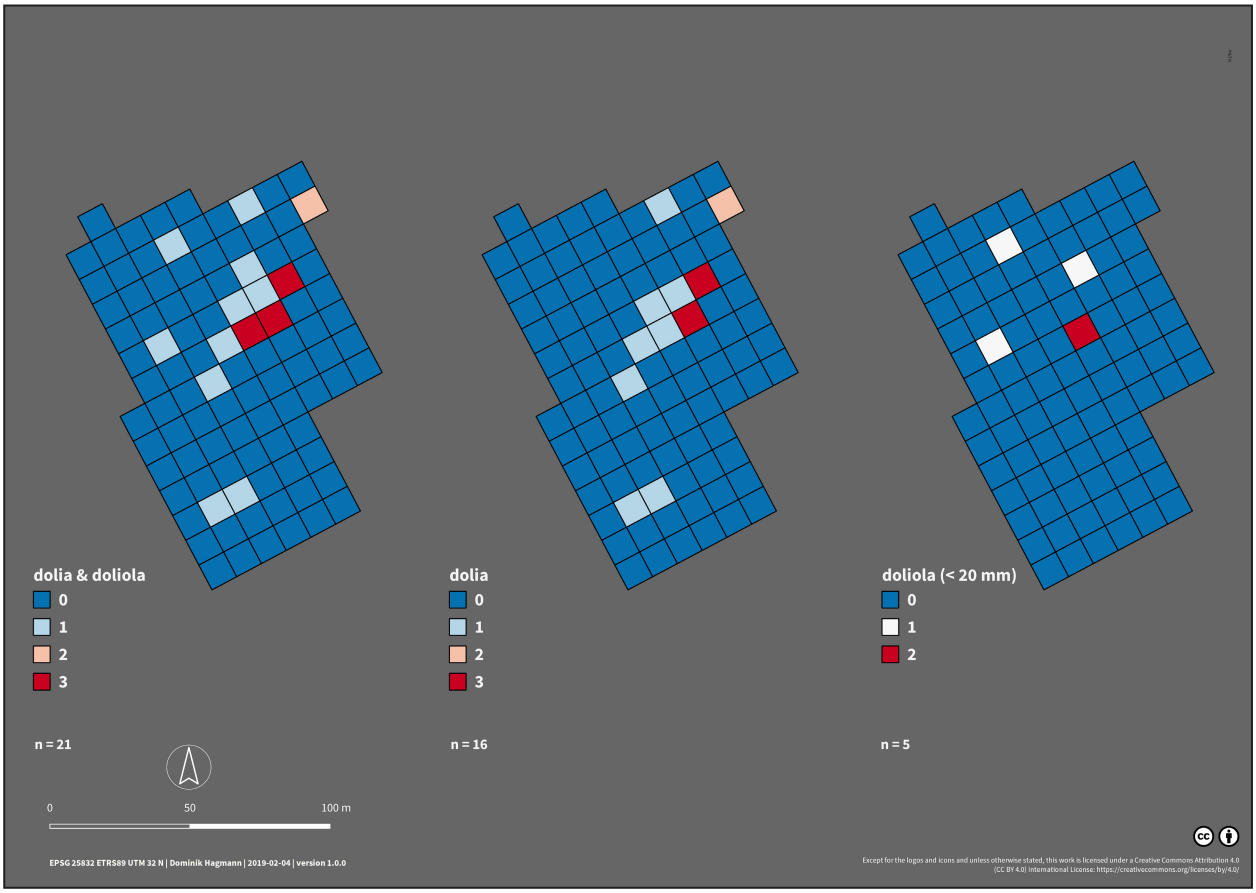

Fig. 6 Il Cotone: Dolia, distribution (map drawn by Dominik Hagmann, data analyzed by Hadwiga Schörner)

The Individual Pottery Wares and their Distribution

a) Dolia (fig. 6)

Ancient *dolia* – huge vessels for the storage of dry or wet food and also for the production of wine[10] – are preserved by 21 fragments, which were found in very poor condition. Some wall fragments are broken all over and do not display an original surface. We can distinguish two size groups made in an identical fabric of very gross tempering: three smaller ones with a wall thickness of up to 15 millimeters, called *doliola*, and 16 bigger ones with a wall thickness from 22.5 to 60 millimeters, the *dolia*. The two thickest of these, with 50 and 60 millimeters original wall thickness preserved, were found in the squares F 2 and H 1. Such huge vessels can achieve heights up to four meters and were set into the soil in order to better reach the contents. Normally one would expect such big Dolia closed with a huge lid buried in an open court, the so called *doliarium*. Unfortunately, no lid was found during the 2016 campaign, also no rims,

[10] Cf. Docter 2002, 684–687; Docter 1997, 734. For the appearance of *dolia* at the rural findspot 'Il Monte' in the northern Elsa valley cf. Schörner 2013, 61–77, for Molino San Vincenzo in the northern Pesa valley cf. Schreck 2018, 174–180.

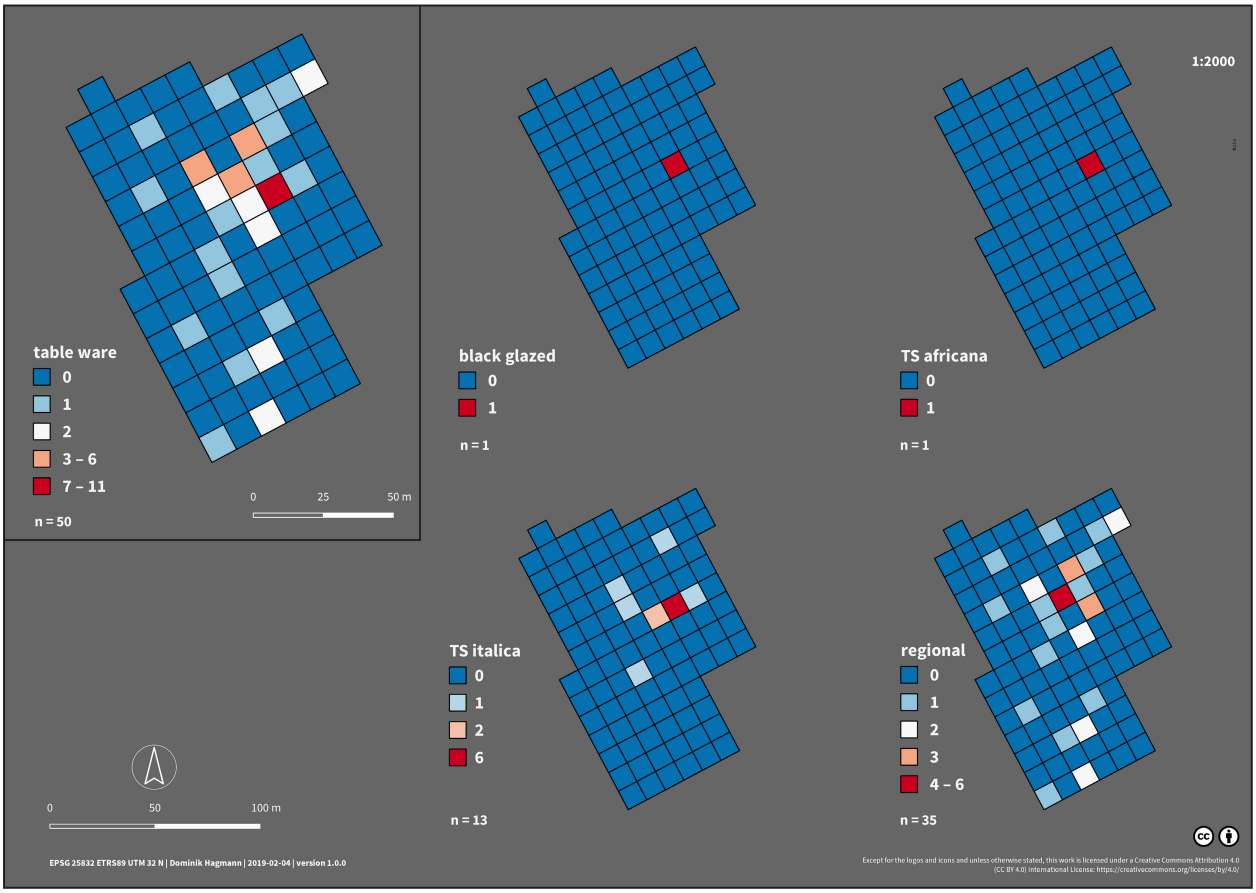

Fig. 7 Il Cotone: Table ware, distribution (map drawn by Dominik Hagmann, data analyzed by Hadwiga Schörner)

and only two handles, which must have been parts of *doliola* due to their small size. The distribution of finds indicates a focus around G 2 (with E 3, F 2, F 3, G 1), but there are also smaller concentrations in the southern (B 9, C 8), western (C 2, D 4), and northern (GG 1, H 1, H 4, J 2) parts of the field[11]. Because of the lack of diagnostics, it is not possible to reliably date the *dolia*. Nevertheless, it is remarkable that the *doliola* were found only in the northern part, around the main focus of finds; in B 9 and C 8, we have found only fragments of huge *dolia*.

b) Cooking Ware (fig. 8, 3–4)

The cooking wares, 91 pieces in total, include 88 sherds of a regional ware and three pieces of African kitchen ware (AKW). The imported products can be categorized: two rim fragments of a lid belong to the shape Hayes No. 196 A[12] and date between the middle of the 2nd to the middle of the 3rd century AD. One grooved wall fragment of a typical African casserole,

11 Only one published production center of *dolia* is known in the vicinity of Cotone: ‚Le fornaci del Vingone' at Scandicci, about 20 kilometers upstream the river Arno, near the modern village Vingone at a small river with the same name: Sheperd et al. 2008 passim. But the production period at Vingone extends only from 20 BC to 20 AD. At other times the Dolia must be brought from other production centers or must be produced at 'Il Cotone' itself.

12 CT 2016, F 4/1, HS 64/17; CT 2016, G 2/3, HS 101/17: Hayes 1972, 208 form 196 A No. 1 fig. 36.

Hayes No. 197[13], must be dated between the end of the 2nd and the end of the 3rd century AD. All three AKW-fragments were found exactly in the focus area in squares G 2, F 3, and F 4.

The regionally produced cooking ware can be distinguished into two main groups, the pots, and the pans. Almost all of the pans, 25 sherds (19 wall fragments, six bottom fragments), show blackening on their outsides, especially on the very flat bottoms, which is caused by sooting during cooking or baking when the vessels stood in or near the fire/hot ashes. The pots, represented by 63 rim fragments, belong both to closed and open shapes. Also, two handles and one lid knob were found. Only one third bears traces of sooting on their exterior surface. It is not possible to date these local or regional produced ceramic vessels precisely, because they don't undergo a noticeable development[14]. Most of this material, however, has to be dated to late Republican and/or early and middle Imperial times.

The main findspot of the imported cooking ware is located exactly on the focus aera of all finds, above the quadrangular house in the squares G 2, F 3, and F 4. The local or regional cooking vessels were found on G 2 and consequently form a northern focus and one smaller concentration in the southern part of the field.

c) Utility Ware (fig. 8, 2)

165 fragments of the so called utility or coarse ware were registered. Within this much-worn material group two fragments of bottoms, 150 walls, eight rims and five handles were counted. Only 78 pieces of them can surely be assigned to a vessel shape or group: 14 belong to open vessels like dishes or bowls, 64 to closed vessels like pitchers or amphorae with flat bases; the handles all belong to closed vessels like jugs or flasks. The remaining 87 fragments are too worn off to make any statements about the vessel form.

The distribution shows a center on and around G 2, where most of the pieces were found, and an extended halo around this core. A few fragments have been discovered also in the southwestern edge of the field.

d) Table Ware (fig. 7)

50 fragments can be defined as belonging to table ware. Here again, we have to differentiate between regionally produced table ware and the more elaborated table ware, i. e. Black Glazed, Terra Sigillata Italica, or African Red Slip ware[15]. 35 sherds belong to the first group of vessels made of fine elutriated clay with no or very small tempering particles, and without coating or other decoration. 15 pieces can be attributed to the elaborated fine wares.

The regional table ware is difficult to date. Some of the elaborated pieces allow a more precise dating: The oldest fragment (found in square G 2), one – very worn – Black Glazed foot of a plate without stamp decoration can be classified as Lamboglia B 5[16] and can be dated due to examples at Volterra from the 2nd quarter of the 2nd century to the middle of the 1st

13 CT 2016, F 3/3, HS 83/17: Hayes 1972, 209 form 197 fig. 36.

14 Cf. most recently: Schreck 2018, 136.

15 For the distinction cf. Schreck 2018, 55.

16 CT 2016, G 2/3, HS 98/17.

century BC[17]. The 13 Terra Sigillata Italica fragments are also very worn; on many of the fragments the coat is totally rubbed off. Only two of these can give us a hint for their classification: one wall fragment of the bucking of a plate (found in E 1), belonging to Conspectus form 21, refers to the 1st century AD, from late Augustan to Flavian times[18]. One very small rim fragment of a cup (from square G 2) most probably belongs to Conspectus form 32 und can be dated approximately to the 1st century AD[19]. Unfortunately, no potter's stamp is preserved in order to help us to localize or to date the Terra Sigillata fragments in a more precise way.

A single African Red Slip fragment, a rim of a dish with sloping wall and slightly enrolled rim, classified as Hayes No. 5 type C[20], dates around the middle of the 2nd century AD. Within the same square of the grid (G 2) also a rim-fragment with exactly the same shape has been found but made of indigenous clay[21]. The phenomenon of imitating imported vessel shapes is not unusual in the middle Arno valley, but the find-spot on the same square and the accuracy of copying make this sherd extraordinary[22].

Also, the distribution of the two table wares are differing on 'Il Cotone': The regionally made table ware is widely distributed, with a not very accentuated core on square G 2 but extending from northeast to southwest. The elaborated ware, in contrast, focuses mainly around the square G 2 with a narrow halo.

e) Ceramica a pareti sottili (fig. 8, 1)

This term designates a special kind of thin-walled drinking beakers made of different fabrics[23]. They are differently shaped, from slim to more rounded, with ring-foot or flat-bottomed, etc. Also, the walls are variously decorated, from plain to non-figurative relief ornamentation. From the in total 63 fragments found at Cotone, we can distinguish two bottom-, 37 wall-, 19 rim-, and five handle-fragments with different shapes (the handle made of one or two beadings, or of one flat belt). The beakers can be dated to a period from the middle of the 1st century BC to the middle of the 2nd century AD. Only one ring base fragment, found in G 2, can be dated more precisely within the 2nd half of the 1st century BC[24].

The thin-walled beakers were found mostly on the squares G 2, F 2, F 3, but also to E 2 and E 3. A small number of sherds forms a halo around that focus or was collected at the northern, western, and southern fringes of the field.

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17 Pasquinucci 1972, 310 form 5; 283 fig. 1 No. 65.

18 CT 2016, E 1/2, HS 55/17: Ettlinger et al. 2002, 88 f. form 21.5.1 pl. 19.

19 CT 2016, G 2/3, HS 296/18: Ettlinger et al. 2002, 108 f. form 32.5.2 pl. 29.

20 CT 2016, G 2/3, HS 102/17: Hayes 1972, 27 f. form 5 C No. 26 fig. 3.

21 CT 2016, G 2/3, HS 294/18.

22 For the phenomenon of shape imitations of African Red Slip ware in this area cf. Schreck 2018, 107 f. with figs. 11 (Empoli). 13 (Molino San Vincenzo).

23 To the topic of 'ceramica a pareti sottili': Schreck 2018, 71 f.; Sheperd et al. 2008, 65–67.

24 CT 2016, G 2/2, HS 95/17. The shape is very close to a cup with two handles (coppa biansata), form Ricci 2/385, found at Vingone: Sheperd et al. 2008, 73 f. fig. 64 No. 1.

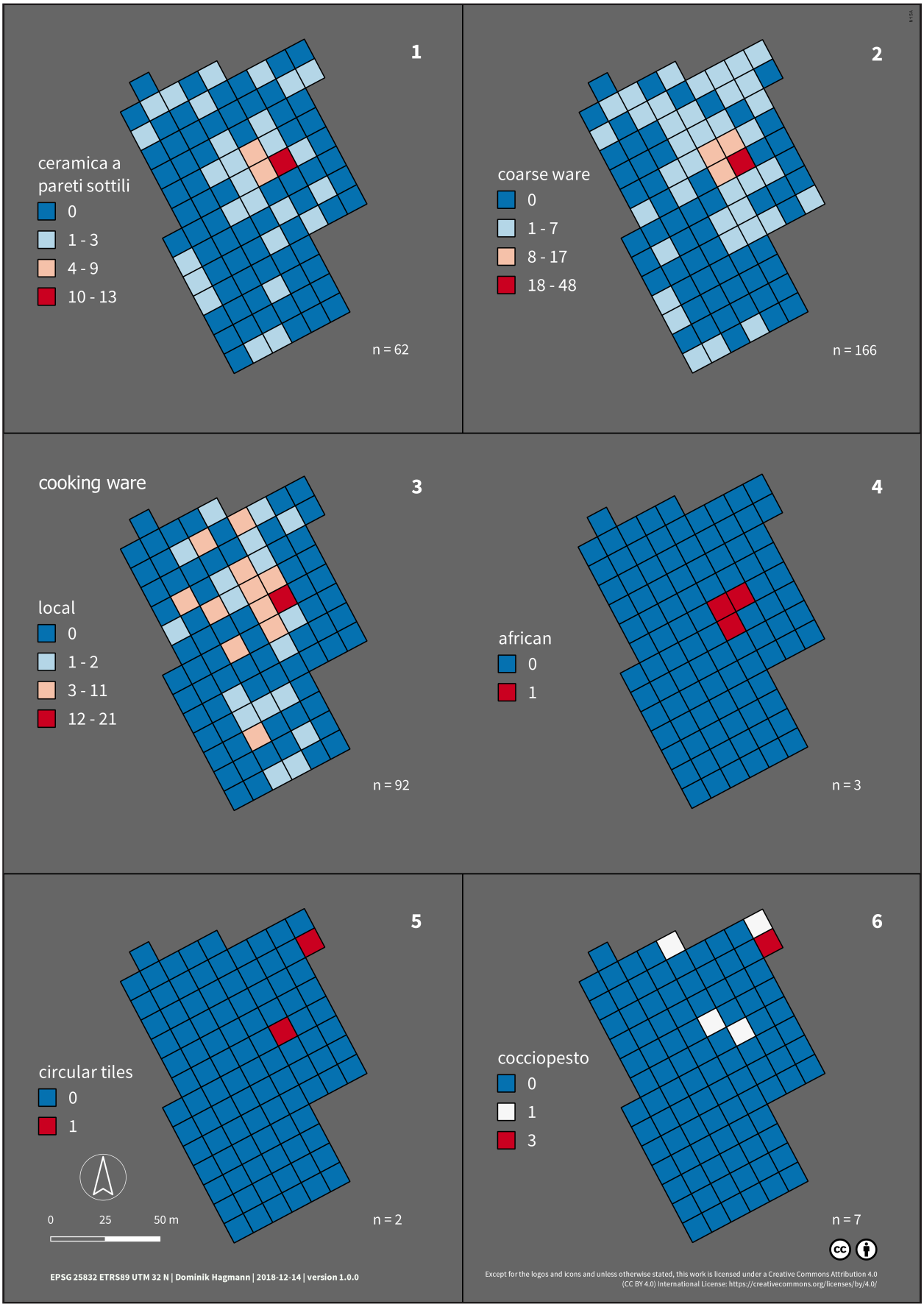

Fig. 8 Il Cotone: Thin walled pottery (1), coarse ware (2), cooking ware (3. 4), circular tiles (5), cocciopesto (6): distribution (map drawn by Dominik Hagmann, data analyzed by Hadwiga Schörner)

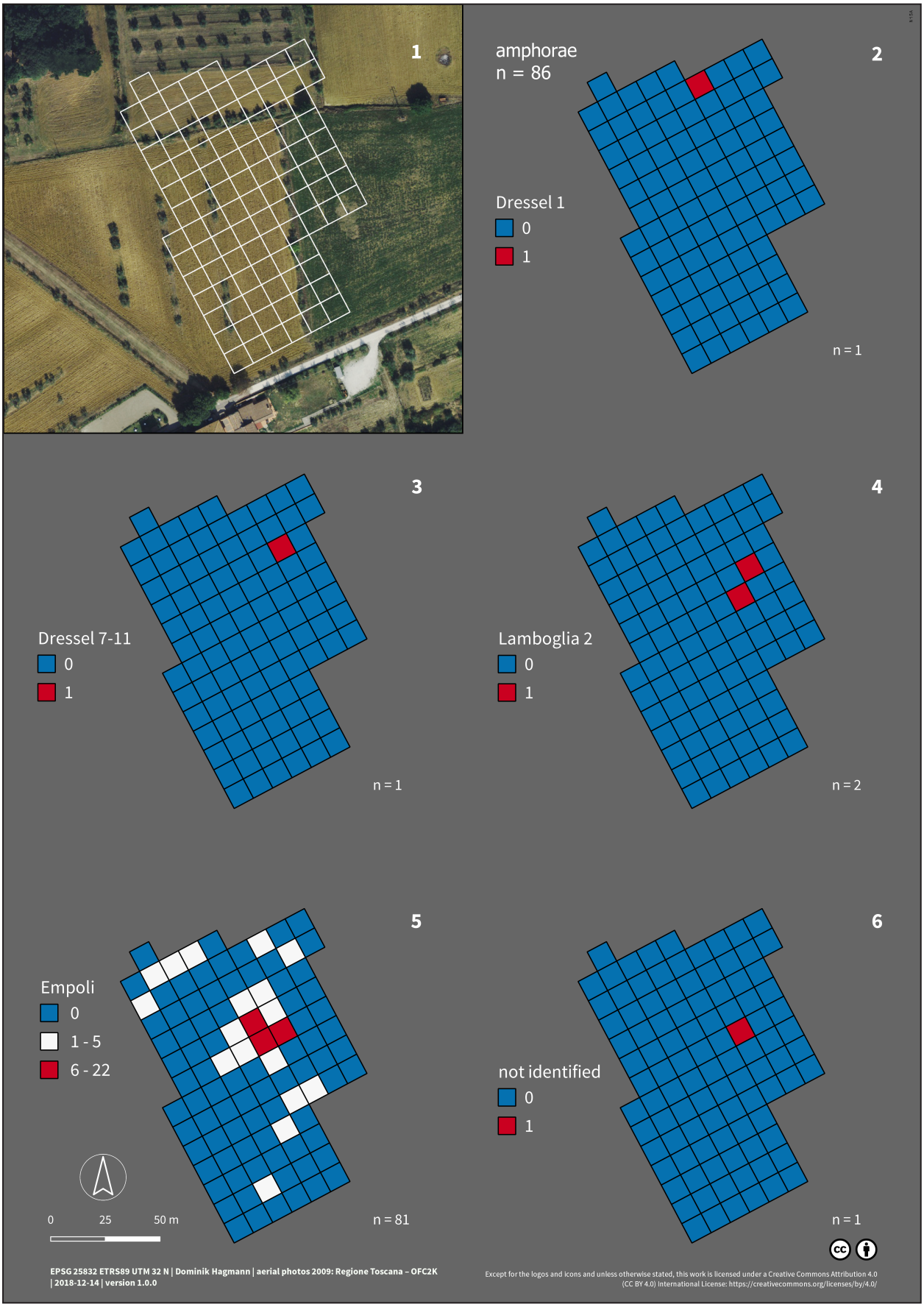

Fig. 9 Il Cotone: Amphorae, distribution (map drawn by Dominik Hagmann, data analyzed by Hadwiga Schörner)

f) Amphorae (fig. 9)

Most of the transport amphorae belong to the 'Anfora di Empoli' type[25]: 74 sherds of 80 amphorae fragments belong to the Empoli amphorae form; this is a share of 92.5 %. The identification of this shape type was mainly due to the fabric, because all fragments, also the diagnostic ones (one bottom, four handles and three rims) are very worn.

Besides that, other types of amphorae could be identified, even though only wall fragments are preserved. These are in chronological order: one Dressel 1 (A or B, not to decide), found in GG 3, dating from the middle of the 2nd to the end of the 1st century BC[26]; two fragments of Lamboglia 2 (found in the squares G 2 and H 4), which belong to the period between the middle of the 1st century BC and the end of the 1st century AD (a closer dating is not feasible)[27]. One fragment of a Dressel 7–11, found in H 3, presents the only interregional imported transport amphora type and was produced in the Roman province of Baetica in southern Iberia for the transport of *garum*, the well-known fish sauce[28]. It dates from the late 1st century BC to the end of the 1st century AD. This fragment bridges the gap between the late Republican amphora shapes like Dressel 1 or Lamboglia 2 to the Empoli amphorae, which were produced from the 2nd to the 5th century AD. One fragment, found also in grid square G 2, is probably also regionally produced because of the color of the clay[29].

The chronological spectrum of the amphorae lasts from the 2nd century BC to the 5th century AD. It seems that the late Republican and early Imperial amphorae are located mostly in the central-northern part of the grid, in contrast to the Empoli amphorae, which focus mainly in G 2, F 2, and F 3, but with a few outliers in the eastern, northern, and southern parts of the field.

g) Other Ancient Finds

Few other materials than pottery has been found at 'Il Cotone' during the survey. Two fragments of circular tiles, both quite worn, could be recognized within the grids G 2 and J 2 (fig. 8, 5). The piece found on G 2 has a diameter of about 15 centimeters. These tiles have belonged to columns, but it is impossible to decide to what kind of part of a luxurious architecture (above the ground or part of a hypocaust). Only one very small piece of a Roman oil lamp[30] has been found in square G 2, the main focus of this survey field. It cannot be dated precisely because of its tiny size and worn surface.

Seven pieces of *cocciopesto* were also discovered in that field (fig. 8, 6). The find spots are F 2 and G 2, but also FF 3 in the north and, quite interesting, J 1 and J 2 with in total four fragments at the northeastern fringe. Cocciopesto is the Italian term for the Roman *opus signinum*,

25 The recognition of the amphora type Ostia IV, p. 260 No. 35 as produced at Empoli was described for the first time by Manacorda 1984; cf. Cambi 1989; Schreck 2018, 160 f.

26 CT 2016, GG 3/3, HS 68/18: Peacock – Williams 1986, 86–90 Class 3 resp. 4.

27 CT 2016, G 2/3, HS 100/17; CT 2016, H 4/4, HS 84/17: Peacock – Williams 1986, 98–100 Class 8.

28 CT 2016, H 3/3, HS 65/18: Peacock – Williams 1986, 117–119 Class 16.

29 CT 2016, G 2/3, HS 289/18.

30 CT 2016, G 2/3, HS 295/18.

a special kind of a smooth, water-proof floor[31] within houses made of different kinds of sand, lime mortar, shattered tiles, and gravel. We can suppose that these fragments stem from nearby architectural contexts.

3 Summary

Regarding the results of the geophysical measurements, the survey could – unfortunately – not reach the kiln battery line northwest of the grid and just touched a smaller, rectangular building in the north, but it completely covered the larger quadratic house, which is located beneath the grids G 1, G 2, F 2, and F 3, where most of the ancient finds could be collected during the survey (fig. 3)[32]. Aside from that main concentration, there are also smaller focal points, like the northern part, going northbound to the area with many pits, and H 1, which is located right beneath the smaller, rectangular building. Another peak is visible within the squares J 1 and J 2 with finds of house building material like Cocciopesto or a circular tile. In the southern part of the survey field, only a few pits are recognizable, but there some cooking ware, course ware, table ware (all of regional or local origin), also Empoli amphorae, and two fragments of huge Dolia have been found.

What kind of site did we find at 'Il Cotone'? There must have been a kind of a small settlement, where people had resided in one or more houses with roof tiles, which is indicated by everyday material like vessels for storing, cooking, eating, and drinking. But there was also a place for agrarian production because of a larger number of *dolia* in bigger sizes. The numerous finds of Empoli amphorae fragments hint at an export-oriented agrarian production site. Together with two sherds of Dolia with black patterns on their interior, maybe pitched (from the squares F 2 and F 3), we can assume that in 'Il Cotone' a wine production facility was located during – at least high –Imperial times.

It cannot be decided whether the furnaces, arranged in a line in the northwest, were built for the production of ceramic vessels, respectively tiles or – more fundamentally – if they have an ancient origin at all. Also, the production of roof tiles could have been possible there, like it was verified for example on the survey field at Podere Pozza in the Pesa valley[33], also located on a hill, by finds of overfired and deformed *imbrices* as part of rural production of roofing materials in local need.

The total spectrum of pottery covers altogether at least a time span of seven centuries, from the 2nd century BC to the 5th century AD, represented in its entire temporal expansion by the amphorae finds and underlined by the Black Glazed ware, Terra Sigillata Italica, the import-

[31] After the output of the floor screed and after polishing, the surface has been applied with linseed oil, with red wine slaked lime, wax, or tar. In antiquity people wanted to achieve a sleek, attractive and hydrophobic floor. Additionally it could be decorated by the insert of single colored stones (*tesserae*): Vitr. VII 1, 3–6; Plin. n. h. XXXV 46. Cf. Vassal 2006, 13–31.

[32] Cf. the contribution of K. Freitag in this volume.

[33] The results of this survey (as part of the VOPP project) are not published yet.

ed vessels from North Africa (African Red Slip and African Kitchen Ware) and also the thin walled beakers for drinking.

In order to answer further questions like the exact date of the kilns or the function of the two buildings, the quadratic and the rectangular house (fig. 3, left), excavations are urgently needed. That is the only way to define the site function of 'Il Cotone' more precisely and track the continuity of this settlement from the ancient to the early modern era.

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