

Dominik Hagmann

Molino San Vincenzo

A Roman Rural Site in the Pesa Valley

The chapter gives an overview of the state of research at the Roman rural site of Molino San Vincenzo in 2018 in central Tuscany (Italy). Since 2008, various types of non-invasive and (micro) invasive methods were applied at Molino San Vincenzo regularly: archeological systematic intensive field surveys, excavations, zooarchaeological analysis, archaeobotanical sampling, geoarchaeological investigations, and geophysical surveys. Moreover, attention was paid to the analysis of the material culture, method and theory of field walking as well as various research activities in the field of digital archaeology.

Keywords: *Roman rural settlement; digital archaeology; geoarchaeology; photogrammetry; GIS*

1 Characterizing the site

‘Molino San Vincenzo’¹ (also known as ‘Molino di San Vincenzo’ and ‘Mulino San Vincenzo’)² is an archaeological site³ in the center of the Italian region Tuscany in the municipality of Montespertoli.⁴ It is a modern field name as well as the name of an archaeological multi-period site. Tuscany’s capital Florence is distanced 15 kilometers in the northeast. The next urban

¹ This chapter is based on the talk ‘A Roman Rural Settlement in the Pesa Valley: The Site *Molino San Vincenzo*’ held by the author in course of the VOPP Workshop at the Department of Classical Archaeology at the University of Vienna on June 22nd, 2018. Furthermore, this chapter builds on modified parts of the author’s master’s thesis (Hagmann 2017) as well, the chapter takes up critically certain parts of the recently published paper Hagmann – Schreck 2018b. Regarding the whole project, the author wants to thank in the first place Günther Schörner for realizing the studies at Molino San Vincenzo and for the invitation to hold a talk at the VOPP workshop 2018. Further, I am grateful for the support offered by Nisa Iduna Kirchengast, Hadwiga Schörner, Alarich Langendorf, and Andreas Steininger who permanently provided valuable support regarding the fieldwork. Moreover, I want to thank all students and co-workers who have participated in this project in Tuscany since 2012. The work on this chapter and the adjacent studies were mainly funded by the Austrian Science Fund (FWF; stand-alone project P 27476 “Val di Pesa and Val Orme as a Changing Rural Landscape: an integrated approach”), and by the Department of Classical Archaeology, as well as the Faculty of Historical and Cultural Studies (Claudia Theune-Vogt) at the University of Vienna. Furthermore, I thank the Soprintendenza per i Beni Archeologici della Toscana (especially Lorella Alderighi and Barbara Arbeid) and the Associazione Archeologica Volontariato Medio Valdarno in general as well Leonardo Giovanni Terreni in particular. Last but not least, I thank Folkert Tiarks, who passed away far too soon, for proof-reading the manuscript.

² Alderighi et al. 2013, 245; Schörner – Terreni 2013.

³ The definition of a ‘site’ follows Witcher 2012, 12: ‘[...] an elevated density of artefacts compared to local background levels’.

⁴ Coordinates (EPSG 4326 WGS84): 43.69415, 11.09495; elevation: approx. 70 m a.s.l.; see GeoNames 2018; Hagmann et al. 2018.



Fig. 1 Map of Molino San Vincenzo's location in the Pesa-valley in Tuscany and of sites mentioned in the text (Dominik Hagmann)

centers Montelupo Fiorentino and Empoli are located seven, respectively, 12 kilometers away in the northwest (fig. 1). The field where the site is located faces the river Pesa and overlooks parts of the former river plain (today agriculturally used areas) and the local paved road 'via Viottolone'⁵, limiting the field to the north (fig. 2c).⁶ The land is subject to continuous plowing.⁷ In the southeast, the road 'via San Vincenzo' limits the field; in the southwest, a steep slope and terraces, both covered by trees and thick undergrowth because these areas are not cultivated nowadays, mark its border.⁸ The site itself is situated on a slight north-facing slope on the left bank in the valley of the Arno-tributary Pesa.⁹

⁵ While this road is not marked in the historic cadastral map of 1820 it can be found on the aerial image of 1954.

⁶ Alderighi 2011, 268.

⁷ Alderighi 2011, 269.

⁸ Alderighi et al. 2013, 245.

⁹ Hagmann – Schreck 2018b, 163; the references cited regarding the journal 'Notiziario della Soprintendenza per i Beni Archeologici della Toscana', which features reports of the archaeological research activities in Tuscany within one year, mention the issue's year of report only instead of the year of publication.



Fig. 2 a: Sondages 1–6/2011 and trenches 1–5/2012–2018 and the 2011's survey grid b: The site's location near the southern bank of the river Pesa. c: View from the north (doubled vertical exaggeration) (Dominik Hagmann)

The natural terrace has been an agriculturally used area (at least) since the 19th century, according to the historical cadastral map ('Catasto Generale della Toscana—Continente') finished in 1820 (fig. 3).¹⁰

Indeed, the site's surroundings witnessed severe changes in the rural landscape in recent years, which resulted in today's layout. Nowadays, the site's field seems like a closed area¹¹ that is sealed off with natural and human-made barriers like shrubberies, lines of trees and bushes, reed, drainage trenches, and an embankment (fig. 4). However, this enclosure is administratively subdivided into six parcels¹² and, therefore, somewhat different from the layout of 1820.¹³ (fig. 3).

¹⁰ Guasti 1820.

¹¹ Area: c. 2.5 ha.

¹² Today, the parcels are owned by the Istituto per il Sostentamento del Clero della Diocesi di Firenze and are leased to the Azienda Agraria Cafaggio 2 of the farmer Eleonori Alessandro.

¹³ 76, 77, 78, 95, 96, 111; the data is provided by the 'Catasto Terreni dell' Agenzia delle Entrate' as WMS via Geoscopio (Regione Toscana 2018).



Fig. 3 The map shows the site of Molino San Vincenzo on the historic cadastral map of 1820 [right] and in the year 2009 [left], including the respective parcel boundaries (Dominik Hagmann)

According to the aerial images provided by the Tuscan regional government—like many other datasets—as open government data (OGD)¹⁴, at least from 1954 (and probably much earlier) to 1965, the parcels were further divided into smaller stripes, seemingly for the cultivation of different crops per parcel. Furthermore, the steep northern slope south of the area, now covered with a thicket of shrubs and trees, seems to have been agriculturally used. From 1978 onwards until today, aerial imagery shows a growing layout of extensive combined fields, probably to obtain larger arable plots (fig. 5).

These occurrences may relate to a change in performing agricultural activities, shifting from a ‘traditional’ to a modern motorized style. The ‘traditional’ landscape that was defined by sharecropping (‘mezzadria’)¹⁵ and thus characterized by subdivided small plots side by side planted with mixed crops got eventually replaced by an ‘industrialized’ landscape characterized by much bigger and throughout connected fields that are ready-made for modern agricultural technologies and applying monocultures.¹⁶ According to the aerial images, one can

¹⁴ Ubaldi 2013.

¹⁵ Alderighi 2011, 270.

¹⁶ Gaggio 2017, 6. 18. 32s. 57. 110. 130s.



Fig. 4 Molino San Vincenzo: view across the site towards north, facing the river Pesa in the background. Students excavating trench 5/2018 is next to the white tent on the left-hand side (Dominik Hagmann)



Fig. 5 Aerial photos of the Molino San Vincenzo site from 1954 to 2007 showing the changing landscape within six decades (Dominik Hagmann)

estimate that for Molino San Vincenzo this transformation may have taken place between the late 1960s and early 1970s. Due to the agricultural use of the area (seasonally varying planting of crops like wheat or sunflower), there are no newly erected buildings in the surroundings of the site apart from farmhouses and already existing buildings like a former mill, an electrical distribution tower, and other elements of infrastructure like an overhead power line and a gas pipeline.¹⁷

The next known ancient sites along the Pesa are ‘Lame di Sotto’ in the east and the site of Podere Piano in the west.¹⁸ Even further westwards, one can find the Roman ‘Villa del Vergigno’¹⁹ at the left bank of the river Virginio near to the confluence with the river Pesa.²⁰ Further eastwards, there is the site of Ponterotto²¹ (fig. 1).

2 ‘Molino San Vincenzo’ as a toponym

Following the online service ‘REpertorio TOponomastico REgionale (RETORE),’²² the site is called ‘Molino di San Vincenzo’ on the historic cadastral map of the region (‘Catasti Storici Regionali’²³), ‘Mulino San Vincenzo’ on the official map of Italy (‘Carta Istituto Geografico Militare’²⁴), ‘Molino San Vincenzo’ on the official cadastral map of Tuscany (‘Carta Technica Regionale’²⁵) and finally ‘Mulino San Vincenzo’ in the fiscal cadastre of the Italian Ministry of Economy and Finance (‘Catasto Agenzia delle Entrate’²⁶).²⁷ The specific local place name originates from a former mill next to today’s village San Vincenzo a Torri (‘molino di San Vincenzo’), situated 200 meters eastwards of the archaeological site. The mill itself was likely named after the parish of ‘San Vincenzo a Torri.’ Molino San Vincenzo also belonged to the parish; the parish church is still located 800 m in the north of the site on the Pesa’s right riverbank at San Vincenzo a Torri.²⁸

According to the information provided on the historical cadastral map, it can be stated that the mill was at least water-powered, as an adjacent artificial watercourse of 1.8 km length indicates. This channel provided water from the river Pesa as well as drainages directly to the mill and still exists today. Further, as L. Alderighi states, this name indicates the continued use of

¹⁷ Alderighi 2011, 269.

¹⁸ Alderighi – Terreni 2014, 314s.; see additionally n. 36 and n. 37.

¹⁹ Lewis 2013; Lewis 2014; Lewis 2015; Lewis 2016; see the contribution by C. M. Lewis as well.

²⁰ Alderighi 2011, 270.

²¹ See the contribution by L. Alderighi and A. Pittari in this volume.

²² A free online register which is based on different Italian services that offer data of regional toponyms, see Regione Toscana 2017.

²³ Regione Toscana 2014b.

²⁴ Lucchi 2014; Istituto Geografico Militare, <<https://www.igmi.org>> (22.12.2018).

²⁵ Regione Toscana 2014a.

²⁶ Agenzia delle Entrate, <<https://toscana.agenziaentrate.it>> (22.12.2018).

²⁷ RETORE 2018.

²⁸ Anzani (Auzzani) – Saletti 1820; Finocchi – Saletti 1820; Guasti 1820. San Vincenzo a Torri is already part of the municipality of Scandicci nowadays, while today Molino San Vincenzo is located in the municipality of Montespertoli.

water resources after the ancient settlement's abandonment.²⁹ According to the historic cadastral map and the aerial images³⁰, the mill's buildings remained intact from the 19th century until today. The mill's original 19th-century-layout was not significantly changed and maintained from 1954 to 1988, at least. Between 1988 and 1996, the mill was functionally transformed and is used as an apartment house today (fig. 5).³¹

3 Exploring Molino San Vincenzo

First investigations and studies from 2008 to 2011

Since 2008, various types of non-invasive and (micro) invasive methods were applied at Molino San Vincenzo regularly: archeological systematic intensive field surveys³², excavations³³, zoo-archaeological analysis³⁴, archaeobotanical sampling³⁵, geoarchaeological investigations³⁶, and geophysical surveys³⁷. Moreover, attention was paid to the analysis of the material culture³⁸, method and theory of field walking³⁹ as well as various research activities in the field of digital archaeology⁴⁰.

Vaguely known through random archaeological surface finds since 1988, Molino San Vincenzo had been initially recognized as an archaeological site on September 12th, 2008.⁴¹ In 2009, Leonardo Terreni, Sabrina Bartali, and Sara Ugolini carried out an extensive field survey, confirming an area of c. 50 x 60 m with increased find density, moreover collecting significant

²⁹ Alderighi 2011, 268.

³⁰ Regione Toscana 2014b; Regione Toscana 2015.

³¹ A goal of future studies is to check the corresponding documents (e.g., the 'Tavole Indicative'— Archivio di Stato di Firenze 2016a; Archivio di Stato di Firenze 2016b) of the tax register to gather further information related to the parcel numbers corresponding to the archaeological site and its surroundings (for example the respective owners, tax classification of the parcel, etc.).

³² See the contribution by G. Schörner.

³³ All trenches were refilled again with materials from the soil heaps after each excavation campaign. Selected features of the highest importance (like the foundation walls) were not removed.

³⁴ See the contribution by N. I. Kirchengast.

³⁵ See the contribution by A. Mercuri.

³⁶ See the contribution by E. Draganits and R. B. Salisbury.

³⁷ See the contribution by K. Freitag as well (for a preliminary interpretation of the 2013's results) Schörner et al. 2014b.

³⁸ See the contribution by V. Schreck.

³⁹ Schörner – Hagmann 2015.

⁴⁰ See Hagmann 2018a; Hagmann 2018b and the contribution by R. Woller. As one result of various activities concerning research activities in digital archaeology by the author, all figures and maps for this book chapter have been redesigned from scratch. All data contained therein has been reviewed and refreshed to reflect the latest post-processing results. All 3D models have been reprocessed for this book chapter, the available geodata proofed and (if necessary) restructured. For this reason, the current illustrations succeed all respective former preliminary versions published elsewhere providing always the latest version. The respective version name is shown in the figures.

⁴¹ Alderighi 2011, 268; Alderighi – Terreni 2011, 271; Commune di Montespertoli 2011.

archaeological finds.⁴² All of them are members of the Associazione Archeologica Volontariato Medio Valdarno (AAVMV), an active group in Tuscan community archaeology.⁴³ Based on the collected data, the site had been added to the archaeological map of the most critical sites in the municipality of Montespertoli ('La Carta Archeologica del Comune di Montespertoli'), which had been finished in 2009.⁴⁴ In 2010, the map was presented and, in 2011, finally added to the official cultural resource and risk management plan ('Piano Strutturale Comunale') of the municipality of Montespertoli.⁴⁵ In the same year, data about the site's material culture had been scientifically published for the first time⁴⁶ (after studying the finds during 2010) by Lorella Alderighi (Soprintendenza Archeologia della Toscana), who subsequently defined Molino San Vincenzo as a Roman rural settlement.⁴⁷

Systematic studies started with a further field survey and six sondages⁴⁸ in 2011⁴⁹, under the authority of the Soprintendenza per I Beni Archeologici della Toscana (project lead: Lorella Alderighi) and carried out in the course of a training excavation by the Department of Classical Archaeology at the University of Erlangen/Nürnberg (Germany) under the supervision of Günther Schörner and Martin Boss (fig. 2). While the field survey confirmed all the previous observations regarding the archaeological material's surface scatter, the excavations yielded utterly new results.⁵⁰ Two sondages (SO1 and SO5/2011) provided archaeological remains, namely parts of a possibly collapsed wall in Sondage 1/2011⁵¹ and a significant segment of a foundation wall made of non-local sandstone⁵².

Fieldwork in 2012

Regarding these results, in spring 2012, a geophysical survey (electrical resistivity) covering an area of 1200 m² was carried out by the Dipartimento di Scienze e Tecnologie per l'Ambiente e il Territorio of the Università degli Studi del Molise under the local direction of Prof. Paolo Mauriello.⁵³ In summer, based on the results of the 2011's campaign in Sondage 5/2011 and considering the geophysical survey results, two trenches (S1 and S2/2012) were staked out.⁵⁴

⁴² Alderighi 2011, 269; Alderighi et al. 2013, 245.

⁴³ Terreni 2013; together with the Soprintendenza Archeologia della Toscana the AAVMV is the most important cooperation partner of the Department of Classical Archaeology of the University of Vienna as well as for the connected research activities presented in this book chapter.

⁴⁴ Alderighi et al. 2013, 245; Terreni 2013, 10.

⁴⁵ Alderighi – Terreni 2011, 271; Comune di Montespertoli 2011.

⁴⁶ Hagmann 2017 and Hagmann – Schreck 2018b, 163 mention this year as the starting date of systematic research at the site due to the first published scientific paper referring to that year.

⁴⁷ Alderighi 2011, 270.

⁴⁸ Maximum extents: SO1/2011: c. 10 m², SO2 to SO6/2011: c. 5 m².

⁴⁹ Brittain 2018.

⁵⁰ Alderighi et al. 2013.

⁵¹ Linearly arranged and partly disturbed composite of river pebbles (stratigraphic units USS 103 to 106/SO1/2011); Alderighi et al. 2013, 246s. fig. 78.

⁵² US 501/SO5/2011: Alderighi et al. 2013, 247 fig. 77.

⁵³ Schörner – Terreni 2013, 332.

⁵⁴ The planned extent of trench 1 was 101 m², the area of trench 2 29 m², later extended to 34 m².

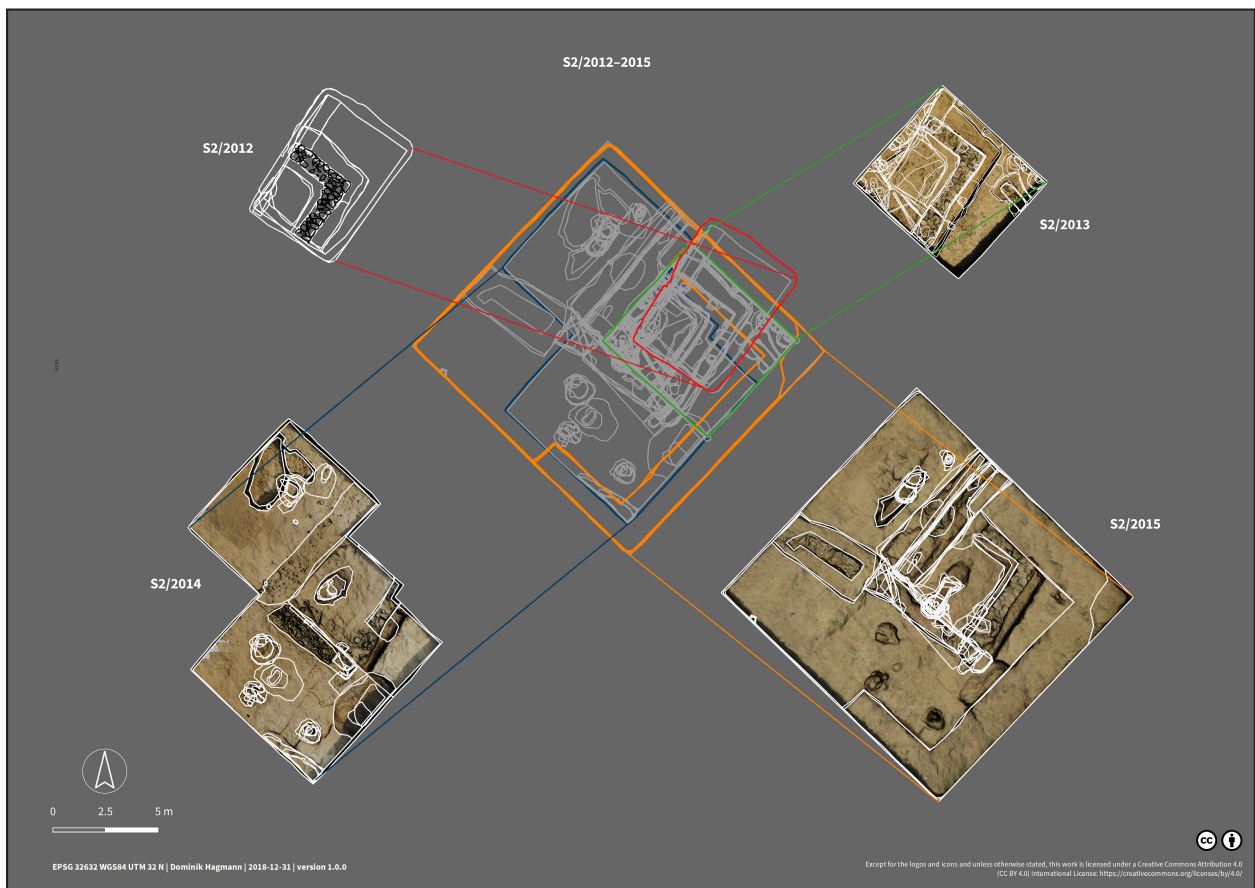


Fig. 6 Trench S2: excavation campaigns 2012–2015, including all features found in the respective excavation year (Dominik Hagmann)

This fieldwork campaign was designed as training and research excavation, organized by the Department of Classical Archaeology at the University of Vienna (Austria), in cooperation with the University of Erlangen/Nürnberg under the supervision of Günther Schörner.⁵⁵ In trench S1/2012, the most crucial feature was US 500/S1/2012, which consists of two parallel linear stone concentrations with a significant backfilling. This structure, which runs in the direction of NW-SO, has an additional backfilling (US 900/S1/2012), which can be interpreted as the patch material for pothole repair – the period interface⁵⁶ (IF 3/S1/2012) of these and the related stratigraphic units may be interpreted as the surface of a local dirt road of uncertain, possible post-classical, dating.⁵⁷ In trench S2/2012, a dry stone foundation wall could be exposed (USS 500/4600/S2/2012), consisting of non-local layered edgy sandstone blocks placed in a foundation trench.⁵⁸ Its layout is shaped like a turned ‘L’ and part of the foundation wall

⁵⁵ Local field directors: Martin Boss and Dominik Hagmann.

⁵⁶ Harris 1989, 64–68.

⁵⁷ Salvini 2013 for a road with a similar construction technique but presumably different dating.

⁵⁸ See Hagmann – Schreck 2018a; Hagmann – Schreck 2016a, Hagmann – Schreck 2016b, and Hagmann – Schreck 2018b term the sandstones as limestones due to a primary interpretation.

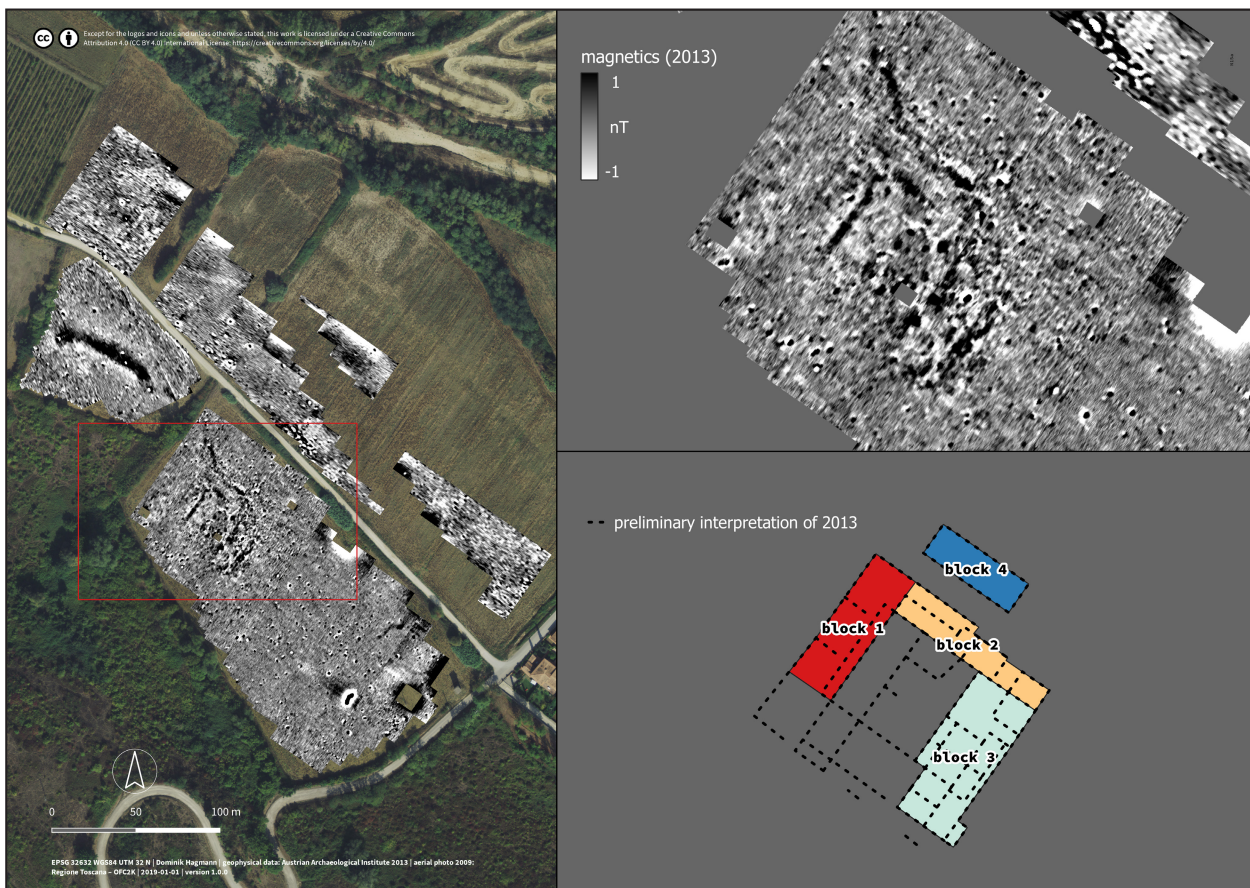


Fig. 7 Results of the 2013's geophysical survey campaign at Molino San Vincenzo: magnetic data (left). Right: Significant magnetic anomalies (above) and mapped archaeological features based on the preliminary interpretation of 2013 (below) (Dominik Hagmann)

found in Sondage 5/2011 (US 501/SO5/ 2011). Regarding the artefacts collected at the field survey in 2009⁵⁹ and the finds of S2/2012 (such as mosaic stones and storage vessels [dolia]), the foundation wall indicates a relatively sophisticated equipped ancient settlement with up-standing structures on the one hand. On the other hand, S1/2012 revealed an insight into the complex and quite devastating history of the site in post-classical times.⁶⁰ (fig. 2; fig. 6)⁶¹

(Non-)invasive studies in 2013

As part of the investigations in 2013, in comparison to the campaign of 2012, not only invasive fieldwork activities but also non- and micro-invasive studies were performed as part of the training and research excavation of the University of Vienna. In addition to continuing the ex-

⁵⁹ Alderighi 2011.

⁶⁰ Schörner 2012; Schörner – Terreni 2013, 332–334.

⁶¹ These figures state the features shown in the sketches of trench 1 (c. 10 x 10 m) and 2/2012 (c. 4,9 x 7 m) more precisely: see Schörner – Terreni 2013, 333 fig. 112, fig. 114.

cavations in the course of the extension of trench S2/2012 as S2/2013⁶² to the east, south, and west, an intensive grid survey as well as a shovel test pit survey, and a geophysical prospection (magnetics) were carried out at the site (fig. 2; fig. 7).⁶³

The excavations in trench S2/2013 enabled further work on the foundation wall made of sandstone (USS 500/4600/S2/2012); hence it was possible to uncover another plow-damaged section southwest (USS 4100/4900/S2/2013).⁶⁴ Furthermore, an additional structure that may have served as the foundation of an inner wall (US 1300/S2/2013) was uncovered, originally built using a slightly similar but independent construction technique.⁶⁵ The structure is roughly oriented along the northern section of the already known foundation wall and may further extend the walls to the southeast (fig. 6; fig. 10d).⁶⁶

Geophysical surveys (magnetics) were carried out by hand in cooperation with the Department of Central European Archeology (ZEA) of the Austrian Archaeological Institute (ÖAI), today a division of the Austrian Academy of Sciences (ÖAW)⁶⁷, covering an area of more than 4 ha including the immediate surroundings of the site, as well as parts of the fields located in the north and west of Molino San Vincenzo (fig. 7).⁶⁸

Various measured anomalies in the geophysical data can be interpreted as archaeological structures. They may be identified in the vicinity of the excavation trenches south of the via Viottolone only, while the surrounding areas may not be considered relevant regarding the presence of archaeological structures. Data from the northeastern section of the geophysical survey area in the fields north of the via Viottolone are substantially influenced by interferences caused by a massive underground gas pipeline running through the measurement area. Rough surface conditions because of very coarse plowed fields started from trench S2 and continued to the south. As well, all fields north of the via Viottolone had a very grossly plowed surface. These surface conditions eventually resulted in motion-induced noise influencing the data due to the antennas' abrupt varying heights and irregular walking gait during the measurements.⁶⁹ The magnetic contrast between the archaeological features and the extremely dry soils was low too⁷⁰. As trench S2/2013 further revealed, the foundation trenches' backfillings consisted mostly of the same material as the surrounding soils since these soils were directly reused and

⁶² Planned area: 43 m².

⁶³ See Schörner et al. 2014b, 310. 312 for the first report on the preliminary results; see here the contributions of K. Freitag and G. Schörner. Configuration: Fluxgate-Gradiometersystem Geoscan Research FM 256 Dual (resolution: 0.1 nT; grids: 20 × 40 m; traverse interval: 0.5 m; sample interval: 0.125 m); Software: Geoscan Research Geoplot 3.0 t.

⁶⁴ A comparable wall made from sandstone may be found e.g., at the site of 'La Rotta' (Figline Valdarno). The site is damaged by modern agriculture too: Fedeli et al. 2014, 317s. fig. 114.

⁶⁵ Since the dating of this structure remains still unclear, it will not be discussed further in this book chapter

⁶⁶ Schörner et al. 2013.

⁶⁷ Cooperation partner: Stefan Groh; local field director: Dominik Hagmann; archaeologists: Klaus Freitag, Gabriel Paul Roland; data processing and interpretation: Volker Lindinger, Dominik Hagmann.

⁶⁸ For further geophysical surveys see Freitag, this volume. One of the main goals of future studies is to provide a combined interpretation of the results of the geophysical surveys of 2012 to 2013 and 2016 to 2017.

⁶⁹ Linford et al. 2007, 160 s.; Neubauer – Eder-Hinterleitner 1997, 193 s.

⁷⁰ Schmidt 2007, 23.

refilled after digging the respective trenches. Moreover, geoarchaeological studies of 2016⁷¹ also showed that Molino San Vincenzo's soils have a high iron content, which gives the sediment its reddish color. So, the sediments provide a low but continuous magnetization over the entire site.⁷² Due to these factors and their associated effects on data quality⁷³, interpretation was challenging. The archaeological interpretation of the positive and negative anomalies in the magnetic data suggests a quadrangular architectural complex. The total maximum extent is around 57 x 64 m, which is likely divided into two buildings. The first, more prominent polygonal building has (to a certain degree) a relatively straightforward layout of internal structures arranged around a reasonably empty space (except of different pits), which may be regarded as an inner courtyard. Two clearly detectable positive linear anomalies in the north and northwest can be interpreted as significant foundation trenches that bend along a right angle, possibly marking the substruction of former load-bearing walls. Besides, various other circular and linear positive anomalies may be archaeologically addressed as pits and ditches. Further negative anomalies can be taken as walls, respectively more probably, as small foundation walls (considering the previous excavation results).⁷⁴ The internal structures can be subdivided into three wings or blocks. A second rectangular building of the same orientation as the first one is located at a small distance (c. 7 m) to the north and may originally have been laid out as an economically used outbuilding (like a stable or barn). Parts of a possibly collapsed wall of this outbuilding may have been found in SO1/2011. After considering all geophysical survey results of 2013, the magnetic measurements definitively revealed an archaeological settlement, as several structures could be defined on the one hand.⁷⁵ On the other hand, the data show that, presumably, recent agricultural activities like continuous (deep) plowing⁷⁶ severely affected the preservation of the archaeological features.

Excavations in 2014 and 2015

During two campaigns in 2014 and 2015, trench S2 was significantly enlarged. In doing so, S2 was continuously expanded from originally 25 m² in 2012 to almost 200 m² in 2015.⁷⁷ Consequently, the excavation campaign in 2014 focused on three sections within trench S2/2014. One section was based on trench S2/2013; two more sections increased this area significantly to the northwest (S2A/2014) and southwest (S2B/2014).⁷⁸ Besides, archaeobotanical samples were taken in 2014 by Anna Maria Mercuri (Università degli Studi di Modena e Reggio Emilia, Italy) and the excavation team as well as Erich Draganits and Roderick B. Salisbury

⁷¹ See the contribution of R. Salisbury and E. Draganits.

⁷² Salisbury 2017, 19.

⁷³ Fassbinder 2015.

⁷⁴ For the geophysical surveys in 2016 and 2017 see the contribution of K. Freitag.

⁷⁵ Schörner et al. 2014a.

⁷⁶ Gaggio 2017, 130.

⁷⁷ Planned extent in 2015: 193 m²; Hagmann – Schreck 2018b, 164.

⁷⁸ Planned area: 113 m². Schörner – Terreni 2015, 268 mention an plow soil layer's area of 112.63 m² which has been mechanically removed.

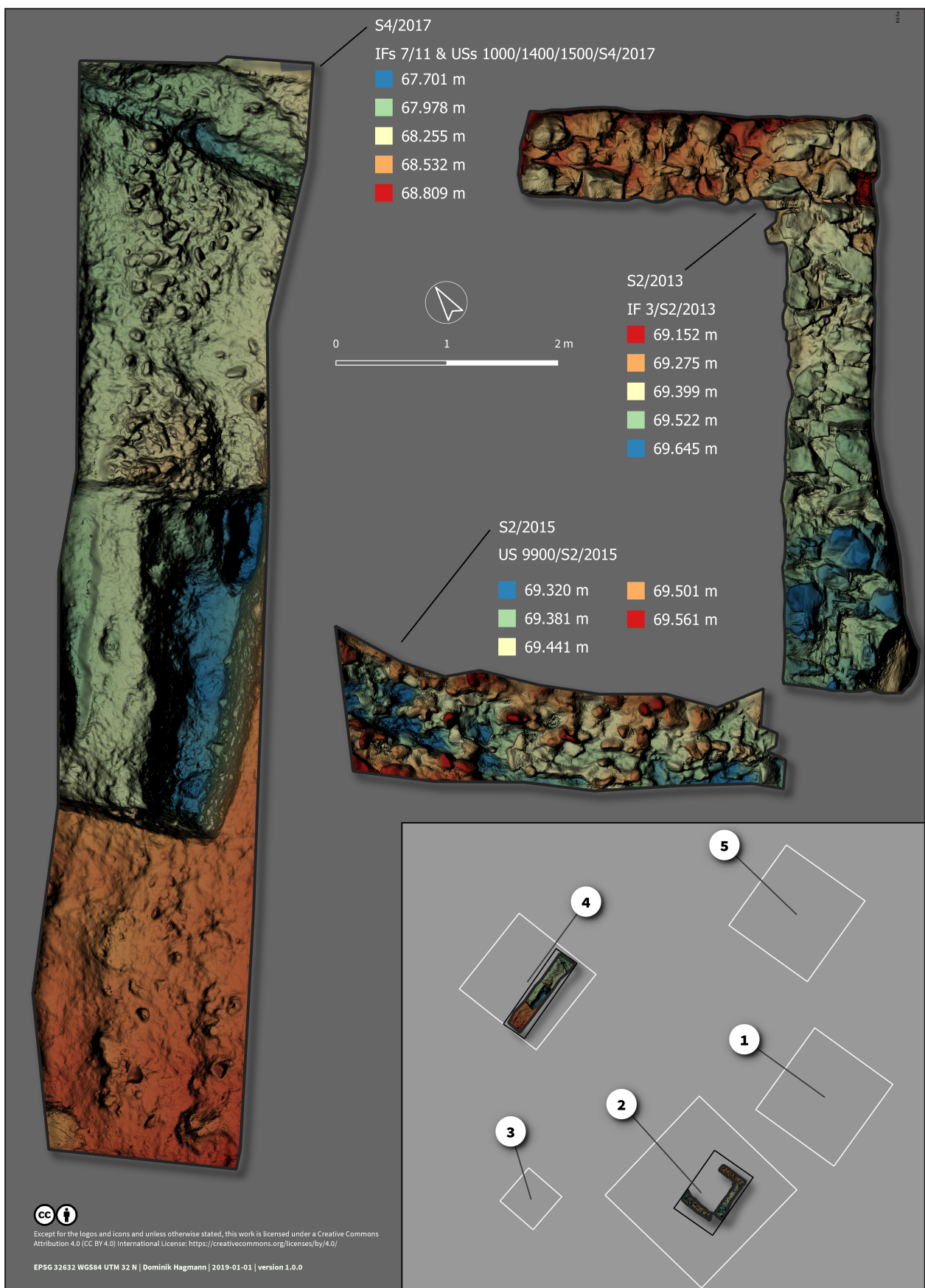


Fig. 8 Two different foundation wall building techniques (Dominik Hagmann)

(both University of Vienna) carried out geoarchaeological corings at the site in 2015.⁷⁹ Numerous and very differently designed features were removed, e.g., the remains of a battery of furnaces placed next to an associated large working pit (IF 91/S2A/2014). This feature might refer to post-classical reuse and recycling processes in the sense of *c*-transforms defined by M. B. Schiffer.⁸⁰ Moreover, it was possible to uncover other parts of the 2013's foundation wall USS 4600/4900/S2/2013, thus made of differently sized and presumably local river pebbles, hence using a significantly different building technique (US 9900/S2B/2014).⁸¹ All foundation walls form a turned 'C'-shaped layout of the ground plan with an opening space to the northwest (figs. 6. 8).⁸²

The 2015's campaign aimed to continue the excavations of 2014 immediately. S2/2014 was extended towards the northeast and southwest as trench S2/2015.⁸³ The foundation wall, made of local river pebbles, was recorded as US 9900/S2/2015 and afterward removed. After the removal, it became apparent that the river pebbles were placed above the foundation wall made of sandstone: The river pebbles thus lie partially above two other, newly discovered sandstone foundation walls (USS 12500/12600/S2/2015) where US 12500/S2/2015 is inter-linked with the already known sandstone foundation wall USS 4600/4900/S2/2013.⁸⁴ As well, the foundation trench IF 86/S2/2015 of the pebble-foundation wall US 9900/S2/2015 is stratigraphically above the sandstones USS 12500/12600/S2/2015.⁸⁵ These observations mean that the foundation walls made from river pebbles date to a younger period than the sandstone-foundation wall. Furthermore, another foundation wall US 12400/S2/2015, designed in the same construction technique as US 9900/S2/2015 (river pebbles), was uncovered but not removed. Even though both features were spatially not connected, US 12400/S2/2015 is oriented along the course of US 9900/S2/2015. (figs. 6. 8. 10a)

All in all, clear statements can be made about the site's relative chronology based on these features: The chronologically first construction technique was used to build up a foundation wall using roughly worked non-local sandstone blocks (USS 4600/4900/S2/2013 and USS 12500/12600/S2/2015), which had to be received from another location than the site. Later, an alternative construction technique was used to build foundation walls made of local river pebbles (USS 9900/12400/S2/2015), which were homogeneously filled in the respective foundation trenches. The foundation wall made of river pebbles (US 9900/S2/2015) lies strati-

⁷⁹ See the contributions regarding the archaeobotanical and geoarchaeological studies in this volume.

⁸⁰ Schiffer 1972; Schiffer 1983; Schiffer 1987.

⁸¹ Further stratigraphic units are connected to this feature but due to considerably severe recent damages through modern agricultural activities it is difficult to make clear statements about these features, e.g., US 9700/S2B/2014.

⁸² Schörner 2014; Schörner et al. 2015a; Schörner – Terreni 2015.

⁸³ Schörner et al. 2015b.

⁸⁴ Schörner et al. 2016b.

⁸⁵ Nevertheless, it must be noted at this place that it cannot be excluded that foundation trench IF 86/S2/2015 has already been used for the sandstone foundations USS 12500/12600/S2/2015 too. For each feature an own foundation trench (IFS 116/118/S2/2015) was defined in course of post-processing. All foundation walls were not removed and covered with geotextiles after excavation due to terms of conservation (Ballard 2008, 267).

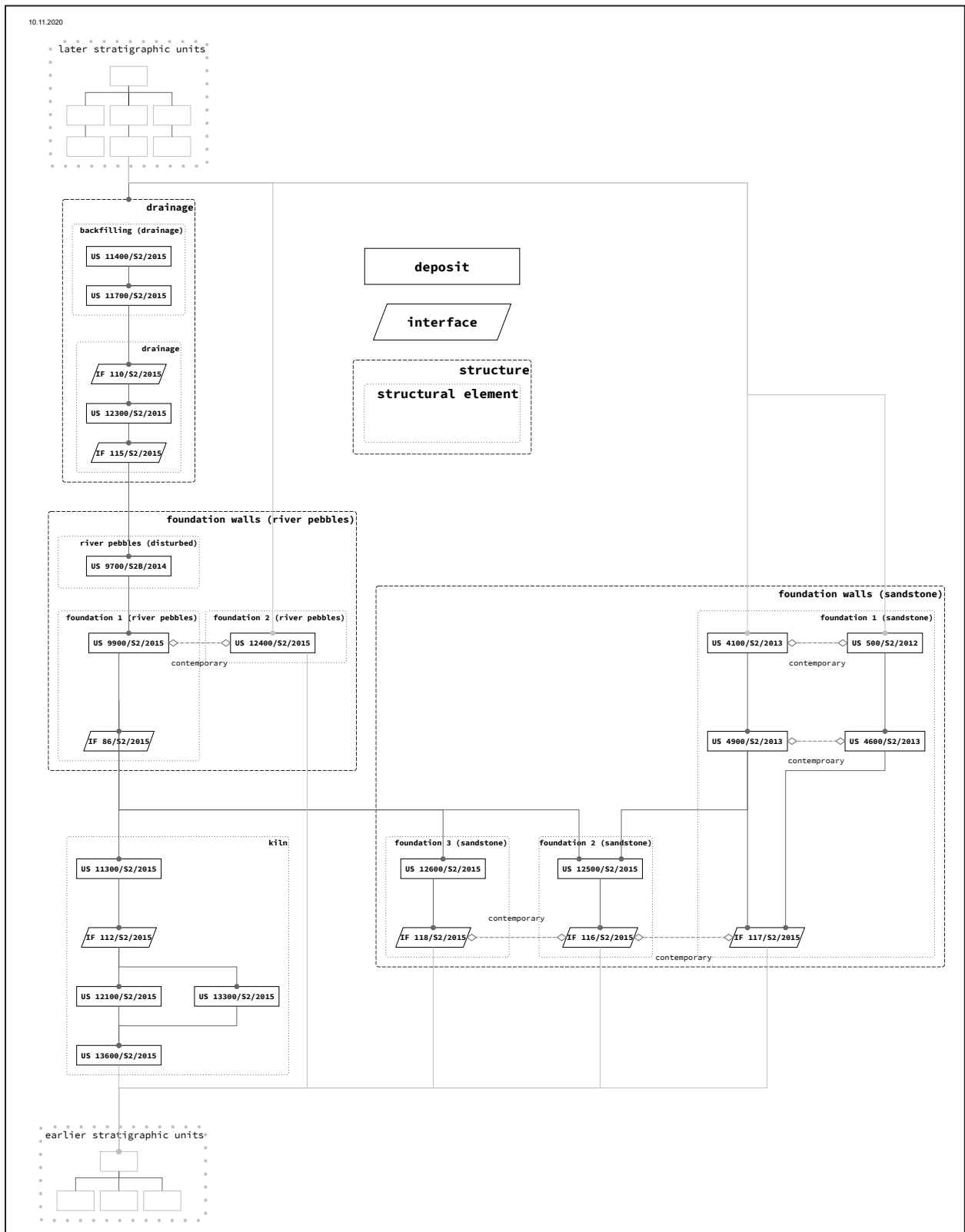


Fig.9 Selected stratigraphic relations of trench 2's most significant features mentioned in the text (Dominik Haggmann)

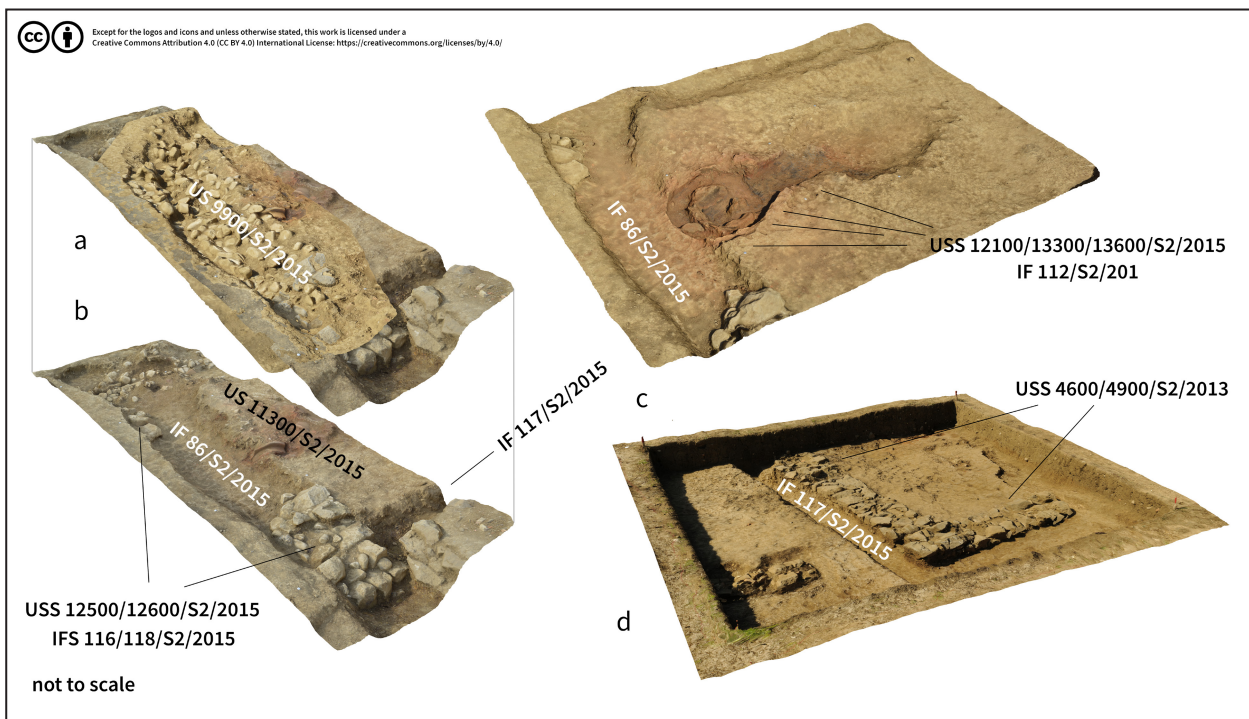


Fig. 10 Selected features of trench 2: a) River pebbles as backfill of the foundation trench. b) The trench after removal of the pebbles. c) The pottery kiln. d) Foundation walls made from sandstone (Dominik Hagmann)

graphically above the sandstone wall (US 12500/12600/S2/2015). Due to the poor state of conservation of the archaeological features and an absence of significant finds, the two foundation wall-building techniques (and the corresponding features) can only be dated relatively through their stratigraphic relations. Consequently, there is no information regarding the absolute dating of both walls at the moment (fig. 9).

The foundation trench IF 86/S2/2015 and the foundation wall US 9900/S2/2015 are strongly related to a further archaeological feature in trench S2, namely the remains of an intentionally abandoned and broken down ceramic kiln (USS 12100/13300/13600/S2/2015 and IF 112/S2/2015),⁸⁶ initially discovered in 2013 and finally excavated in 2015. The kiln was backfilled with charcoal, parts of its own kiln walls, several large-sized dolia-fragments, and numerous other ceramic fragments (US 11300/S2/2015). These finds were mostly deposited in the combustion chamber. After the kiln's abandonment and refilling, the newly built foundation trench IF 86/S2/2015 cut partially through the feature. According to the archaeological findings, the kiln's backfilling can be dated to the 1st century BCE and thus gives a terminus

⁸⁶ This feature surface marks the kiln's interface of destruction: Harris 1989, 68. The remains of the kiln were not further cleared and, instead, covered using geotextiles after excavation in terms of conservation.

post quem for the kiln's demolition and for the foundation trench (IF 86/S2/2015) belonging to US 9900/S2/2015.⁸⁷

Based on these observations, an explanatory model of the building history of the site can be thought of:⁸⁸ It is conceivable that the construction technique applying the river pebbles is used as an adaption or an expansion of the foundation walls built initially by sandstones. For this reason, it may be assumed that the foundation walls at Molino San Vincenzo reflect two major phases of the building: An older phase characterized by foundation walls made of sandstone and one younger phase, characterized by foundation walls made of local river pebbles. It seems imaginable that some of the sandstones have been intentionally removed after a specific time and have been replaced by the river pebbles. Hereafter the sandstones were disposed of elsewhere. The initial trenches (IFS 116/118/S2/2015) of the other two existing but spatially independent remnants of the sandstone-foundation walls (USS 12500/12600/S2/2015) may have been connected in course of these rebuilding activities to create an all-new foundation trench IF 86/S2/2015 for the river pebbles. In the course of these activities, the trench has been dug through the already abandoned kiln marked by IF 112/S2/2015 and its backfill US 11300/S2/2015. Furthermore, trench IF 86/S2/2015 is spatially connected to the trench of 2013's sandstone-foundation wall (USS 4600/4900/S2/2013 and IF 117/S2/2015)

The newly established and empty trench has been generously filled with the river pebbles of US 9900/S2/2015, serving as a new foundation wall. It must be considered that such activities may have resulted in a stern change of the ground plan's layout too. The reasons for applying two different building techniques for foundation walls can be guessed only: Perhaps the primary cause for changing the technique was due to regular renovation activities, a fundamental change of function, respectively ownership or economic factors (fig. 10a-c).⁸⁹

Another result of the archaeological excavations in trench 2/2015 is a straight-lined and well-preserved modern drainage (IF 110/S2/2015 respectively US 12300/S2/2015).⁹⁰ The drainage's initial trench intersects with the foundation wall made by river pebbles (and the site as a whole) and may be recognized as a crop mark on various aerial images. The aerial images also indicate that the drainage has been discontinued in 1954 and served mainly as a parcel boundary. According to the historic cadastral map, the drainage IF 110/S2/2015 is mapped as parcel 281. Hence, the drainage is at least datable to the 19th century or earlier since the

⁸⁷ The furnace can be classified as belonging to the category ,l/a' (Cuomo Caprio 1971–1972, 410–414); see Hagmann – Schreck 2018b, 165.

⁸⁸ See for first considerations on the different building techniques applied for the foundation walls and three alternative models considering one or two phases Hagmann – Schreck 2018b.

⁸⁹ Hagmann – Schreck 2018b, 165.

⁹⁰ Comparable drainages, commonly dated to the modern era and later, can be found at various sites in Tuscany, e.g., Alderighi – Pittari 2013, 30 fig. 6 or Fedeli et al. 2014, 318 fig. 113. The drainage IF 110/S2/2015 does not correspond completely to the features drawn on the cadastral map as the archaeological features are slightly differently oriented. This may have several causes like issues regarding the cartographic representation of the cadastral map, errors of measurement during excavation, or slight shifting of the trench to some degrees in the real world due to maintenance activities (e.g., repeated digging of the trench to remove the accumulation of floating debris) for example.

respective cadastral map sheet had been finished on December 14th, 1820; this date serves as a *terminus ante quem*. After discontinuing the drainage, its trench was refilled with material from the site, containing significant archaeological artefacts. In the area of the fields situated north of the *via Viottolone*, the drainage is still in use (figs. 5. 6).

The excavations' results at trench S2 regarding the absolute and relative dating show that a kiln (USS 12100/13300/13600/S2/2015) has been abandoned in the 1st century BCE according to the datable archaeological finds in its backfill. After the kiln's demolition, a foundation trench (IF 86/S2/2015) filled with local river pebbles (US 9900/S2/2015) cut through the backfill. Moreover, the foundation trench IF 86/S2/2015 is stratigraphically above three foundation walls (USS 4600/4900/S2/2013, USS 12500, and 12600/S2/2015) made from sandstones, which means that a second building technique was applied. Consequently, the walls made of sandstone are older than the walls made of river pebbles. A drainage that is at least datable to 1820 intersects with the foundation trench US 9900/S2/2015, which means that US 9900/S2/2015 has to be older than 1820 in any case.

Investigations from 2016 to 2017

The excavation of two new trenches started in 2016 (S3 and S4/2016), simultaneously to a systematic intensive re-survey at the site⁹¹ and further field surveys in the immediate surroundings.⁹² Geoarchaeological corings were carried out under the supervision of Roderick B. Salisbury in the southwestern part of the site.⁹³ The planned trenches' locations were chosen for two reasons: firstly, the western part of the archaeological structures (according to the geophysical data interpretation) has never been excavated before since the previous excavations always focused on the eastern part exclusively. Secondly, the interpretation of 2013's geophysical data should be examined regarding its reliability. Hence it was planned to test the results of the 2013's geophysical and intensive systematic surveys in selected areas. Firstly, trench S3/2016 was deliberately staked out in an area of the site where presumably no archaeological structures may be expected⁹⁴. Secondly, during the systematic survey in 2013, hardly any surface finds were recorded in that place. Thirdly, Sondage 6/2011 in the very south of the field uncovered no archaeological material. According to these assumptions, the previous non-invasive studies of 2013 could be verified since only a few insignificant archaeological finds could be traced in trench 3/2016, namely, plow marks and a minimal concentration of heavily fragmented bricks (US 200/S3/2016) which was probably inserted into the ground by plowing. Trench S4/2016⁹⁵ was chosen as an excavation area in the western part of the site to gather more information ab-

⁹¹ See the contribution of G. Schörner.

⁹² Hagmann – Schreck 2018b, 166. In winter 2016 a geophysical survey in collaboration with the Austrian Archaeological Institute using ground-penetrating radar was planned to be carried out at the site. Due to very bad surface conditions at the site the geophysical survey had to be postponed to 2017; see the contribution by K. Freitag.

⁹³ See the contribution of R. Salisbury and E. Draganits.

⁹⁴ Planned extent: 25 m².

⁹⁵ Planned extent: 25, later 30 m².

out a noticeable anomaly in the geophysical data, which is interpreted as a foundation trench. According to this reading, it was possible to trace the archaeological structures indicated by the geophysical data. Parts of the supposed foundation trench could be excavated and were further investigated in the follow-up campaign 2017 (fig. 2).⁹⁶

In 2017, trench S4 was significantly enlarged⁹⁷ with regard to the interpretation of the geophysical data and the previous year's results. In parallel, a geophysical survey (ground-penetrating radar) was carried out by the Austrian Archaeological Institute, and the intensive systematic field surveys on the fields in the south of the via Viottolone were continued too.⁹⁸ As already known from the geophysical data and the 2016's season, several archaeological features were excavated in S4/2017, forming a linear structure.⁹⁹ In this case, one can define another foundation wall, made from local river pebbles which were partially mixed with archaeological artefacts.¹⁰⁰ It seems very likely that this foundation wall, according to its building technique, belongs to the same younger phase as the pebble-foundation walls of S2/2015 and may have served as a substructure for a bearing wall. The excavated parts of the foundation wall correlate with the corresponding anomaly within the magnetic data measured in 2013. Again, plow marks, witnessing modern agricultural activities, were excavated, and further, a drainage (US 2900/S4/2017) was discovered. In parallel to the drainage, a shallow ditch (IF 4/S4/2017), which partially runs across the excavation area, was discovered. These features are roughly oriented along former plot boundaries shown on aerial images from 1954 and 1965 in that area. Nearly all archaeological features of trench S4 had been carved into a former riverbed of a Pesa river channel dating to the Pleistocene.¹⁰¹ A spring on the hill south of the site still seasonally feeds a water channel that forms the field's northwestern boundary.¹⁰² As already known from the results of past studies, S4/2017 furthermore witnessed that the archaeological record has been heavily damaged by former (e.g., drainages) and recent agricultural activities (e.g., deep plowing) throughout the whole site (fig. 2).¹⁰³

4 Conclusion and future prospects

All in all, the numerous research activities which were applied at the archaeological site of Molino San Vincenzo since 2008 provide information on the complex history of the site that spans from an ancient settlement to a modern, intensively used agricultural area. In general, it can be stated that more recent activities are primarily represented by severe damages of the archaeological record resulting from systematic mechanized agricultural activities like deep

⁹⁶ Schörner et al. 2016a.

⁹⁷ Planned extent: 121 m².

⁹⁸ See the contribution of K. Freitag.

⁹⁹ USS 1000/1200/1300/1400/1500/1700/1800/2000/2600/2700/2800/S4/2017 and IFS 5/7/S4/2017.

¹⁰⁰ For pottery finds see the contribution of V. Schreck in this volume; cf. also Schreck 2018. Further studies concerning the archaeological finds are still ongoing.

¹⁰¹ Salisbury 2017, 15.

¹⁰² Alderighi et al. 2013, 245.

¹⁰³ Schörner et al. 2017.



Fig. 11 S5/2018: A rubbish pit's backfilling containing non-local sandstones, parts of a dolium, and other finds (Dominik Hagmann)

plowing, a situation that can be observed everywhere in Tuscany.¹⁰⁴ The peak of these activities at the site is hard to specify. However, the start seemingly must be dated between 1965 and 1978, according to the aerial images (fig. 3), when smaller parcels were merged to bigger fields to comply with the needs of modern mechanized agriculture.

This state is most clearly recognizable by the remaining substructures at the site since no archaeological structures above the foundation walls and trenches are preserved, and even these structures are damaged by plowing. For example, the plow reached a depth of c. 0,45 m on average in 2014, which can be considered as regularly applied 'moderate' deep plowing;¹⁰⁵ archaeological features start at the same depth. Nonetheless, agricultural activities were common practice at the site and its surroundings for centuries. This circumstance can be observed through several ditches and drainages often connected to pre-mechanized agriculture.

Aside from post-classical events, conclusive outcomes for Antiquity can be outlined based on the archaeological record: According to the results from several geophysical surveys, field walking, and excavations, a multi-phased rural settlement with upstanding structures erected on stable foundation walls can be assumed at Molino San Vincenzo. At least two phases (based on two different construction techniques of the foundation walls) were observed at the

¹⁰⁴ Knapp – Dommelen 2010, 145s.

¹⁰⁵ Deep plowing is often used to improve the yield of agriculturally used and not fertile soils although several disadvantages of this method are known, e.g., the destabilization of the soil structure and the increase of the rate of erosion: Knapp – Dommelen 2010, 145. Deep plowing exceeds a depth of c. 0.40 m and reaches depths up to 1.2 m (Alcántara et al. 2016, 2940; Baumhardt et al. 2008, 677) while 'conventional' plowing reaches depths up to c. 0.3 m (e.g, Emmerling – Hampl 2002, 19; Russell 1956).

site in which the younger phase can be dated after the 1st century BCE. Leastways, in terms of relative chronology, the older phase can be dated to the 1st century BCE. or may be considered older. Aside from datable archaeological finds, a ceramic kiln provides the information that pottery production is provable at the site, at least for self-use. The dating of the significant archaeological finds of Molino San Vincenzo ranges from the 6th/5th century BCE until the 5th century CE; Roman pottery finds (e.g., thin-walled pottery) can be dated between the 1st century BCE and the 2nd century CE and later (figs. 8-10).¹⁰⁶

Further studies are needed to clarify the complex archaeological history of the features at Molino San Vincenzo. Such studies may include the detailed analysis of the results of trench 5 (fig. 11), excavated during the 2018's season. The continuation of excavations at this trench is planned for 2019 as well. Moreover, an in-depth analysis regarding spatial aspects like site location¹⁰⁷ and visibility¹⁰⁸ will be carried out, trying to consolidate the archaeological knowledge regarding the site of Molino San Vincenzo.

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¹⁰⁷ For an overview see Verhagen 2018.

¹⁰⁸ See Llobera 2018.

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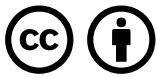
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