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«Rien ne se perd, rien ne se crée, tout se transforme». Transformation and manufacturing in the Late Roman villa of Aiano-Torraccia di Chiusi (5th-7th cent. AD)

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The Roman villa of Aiano-Torraccia di Chiusi (Siena) dates from the 4th c. AD and witnesses various phases of occupation up to the 7th-8th c. AD. During the 6th c. AD, the complex was deprived of a great part of its decoration, the elements of which were recycled in the productive process implanted inside the villa. This site appears to be not only a real "mine" of reusable material, but also a centre manufacturing metal objects, glass and gold, and probably also pottery. The aim of this paper is to present the workshops brought to light during eight excavation campaigns.
Keywords: villa, transformation, manufacturing, metal, glass

La villa romana di Aiano-Torraccia di Chiusi (Siena) si data al IV secolo d.C. e vive fasi di vita diverse fino al VII-VIII secolo. Nel corso del VI secolo, il complesso venne spogliato della decorazione architettonica, che venne riciclata nelle attività produttive impiantate al suo interno. Il sito appare non solo come "miniera" di materiali riciclabili, ma anche come centro di officine artigianali che lavorano metalli e vetro, e probabilmente anche ceramica. Questo contributo presenta gli impianti e le attività produttive portati in luce durante gli otto anni di scavo.
***Parole chiave**: villa, trasformazione, manifattura, metallo, vetro*

1. Introduction

The site of Aiano-Torraccia di Chiusi is situated in the municipality of San Gimignano, in the heart of Tuscany, in the territory of the ancient Augustan *VII regio*. This late antique villa has been excavated since 2005 by a Belgian-Italian team led by Prof. Marco Cavalieri (Université catholique de Louvain) with the support of various institutions, mainly Belgian and Italian (www.villaromaine-torracciadichiusi.be). This site presents various phases of occupation from the 3rd century to the 7th-

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8th centuries AD. and covers an area of about 10.000 m2, an estimate based on various geophysical prospections (Cavalieri, Pace 2011).

The area has long been known for its discoveries, as shown by one of R. Bianchi Bandinelli's first publications, the study of a marble urn decorated with festoons and heads of Ammon found in Monti, near Aiano. Italian archaeological law has protected the site since 1977, but it was only in 2001 that the local association of volunteers undertook a survey (to the south of the present excavation area), which revealed the presence of late antique pottery sherds.

Eight campaigns (2005-2012) have brought to light about 2000 m2 of the complex, thus giving a picture of considerable interest – although still partial – for understanding the phenomenon of late antique rural villas in northern Tuscany, the transition of the countryside from Late Antiquity to the Early Middle Ages and the new logics of production and refunctionalization during the "post-classical" age.

2. The villa

The site is located on the border between the roman civic territories of Siena, Volterra and Florence, within Elsa river's basin, in the small valley created by its tributary, the Foci stream. This location is particularly favourable in terms of communication with the neighbouring areas, because of its position on an axis connecting Siena's territory and the Arno Valley. In the Middle Ages, the *Via Romea* passed through this valley, on the top of the hills, leading pilgrims from Canterbury to Rome (Patitucci Uggeri 2005, pp. 57-58). The presence of this passage suggests that a road already existed in Roman times, but the latter has not been identified yet[1].

In present times, the building complex (fig. 1) appears[2] to be organized around a vast pavilion, composed by a Trefoil Hall, bordered by exedras on three sides and preceded by a vestibule; the latter enables access into the central hall and into the five-lobed *ambulatio* surrounding it. The Trefoil Hall complex is connected to the other rooms of the villa (only partially excavated) by corridors and / or steps: to the south of the Hall, a long corridor running in a N-S direction, opens on its western side into three rectangular rooms (A, B, C), communicating with each other; on its eastern side, the corridor reveals a passage to a large open area (possibly a yard); to the north of the Trefoil Hall complex, an impressive

[1] Cavalieri 2009, p. 3-7; Cavalieri 2010, p. 120; On the *Via Cassia*, see Mosca 2002.

[2] As only part of the villa was excavated, the apparent centrality of the Trefoil Hall could be challenged by future discoveries.

Fig. 1. Plan of the villa.

rectangular room with a row of pillars was discovered, but it still has not been excavated completely.

The monumental complex on the whole is characterized by a long period of occupation, in which five distinct macro-phases have been distinguished. During the first phase (between the end of the 3rd and the second half of the 5th century AD), a great six-foiled hall was built. This major project required significant economic resources; therefore, it is very likely that the first owners of the *villa* were of high socio-economic stature.

The second phase, probably a few decades after the end of the prior phase, witnessed the modification of the original building project. Three lobes of the room were dismantled and turned into rectangular rooms, without openings to the inner Hall. Indeed, the careful excavation of rooms I, H and L has revealed the presence of foundation pits related to the six-foiled project. Moreover, the discovery of the infill of a door on the north side of the *ambulatio* indicates that this part of the villa was no longer conceived as a room of passage, but as a place to live in and host guests, or dedicated to *otium*. Furthermore, the flooring in so-called *opus signinum*, which also belongs to this phase, demonstrates this new use of the room (Cavalieri 2012, pp. 456-460).

The third phase (second half of the 5th century AD) saw the progressive abandonment of the villa, with several structures collapsing, for reasons that have not been clarified yet. However, most of the rooms were still standing.

After this break in occupation, during a fourth phase, the site was reoccupied (6th-7th centuries AD). Various areas were restructured and reused. The site then was reoccupied by a group of artisans who set up a series of workshops, carrying out the recuperation of both precious and raw materials from the *villa*'s structures.

The fifth phase (until the mid-7th century AD) is difficult to define because of the depth reached by agricultural works of the last few decades, which destroyed most of the related archaeological layers. This final period is characterized by sporadic occupations. Thereafter, the complex was completely abandoned and then its ruins welcomed two burials, without grave goods.

The fourth phase, which will be discussed in this article, witnessed the systematic reuse of materials composing the architectural equipment and decoration of the villa. This explains why the greater part of them has been found only in the form of fragments. Various categories of materials are numbered amongst them: marble, glass *tesserae*, metal.

The marble fragments came from the wall and floor decoration of the complex. Over 600 fragments have been found and the majority of them consists of various types of white marble, from all over the Mediterranean.

Fig. 2. *Opus sectile* decoration in the form of a fish head.

In some cases, they were very rare and expensive (Cavalieri, Lenzi, Cantisani 2012 and 2013). Moreover, there is evidence of architectural decoration fragments made from white marble, such as a plinth with mouldings, fluted pilasters, or even fragments of a bas-relief figurative panel.

Numerous glass fragments also were found in all areas of the villa. They are of different types: window glass – so fragmentary, that the reconstruction of a whole slab was not possible –; vessels (plates, cups, goblets, bottles) – the greater part of the glass record –; polychrome glass *opus sectile*, in the form of fishes (fig. 2). These wall decoration elements are of great quality, dating to the 4th/5th century AD, and probably belonged to a decorative panel. The closest comparison with them is the "Domus del Chirurgo" at Rimini, Italy (3rd century AD).

In addition to that, a large number of mosaic *tesserae* have been identified. They are white, coloured or clear, in the latter case backed with gold foil. To realize this kind of *tesserae*, two different types of glass were employed. The gold leaf was sandwiched between a support of common glass, which appears more greenish due to the presence of iron, and a protective glass sheet, rich in antimony and manganese, which was far more transparent (Cavalieri, Giumlia-Mair 2009, pp. 1030-1031).

3. The workshops

All these materials yield evidence beyond the "residential" phase. In fact, as the architectural decoration was dismantled, they were recycled as part of a clear logic of production, established within the *villa*'s structures.

Productive activities are located principally in two distinct areas of the site: the southern area (including the Trefoil Hall) and the north-eastern one. The first zone hosted the better-documented productions, while the second one is characterized by firing activities, the exact identification of which is not yet possible. At the moment, there is no certain connection between these two areas, and the stratigraphic and chronological study of the north-eastern sector's phases still is still not completed. For this reason, at this stage of the research, it probably would be hazardous to assume the contemporaneity of these two areas[3].

As already mentioned, the activities pertaining to the Trefoil Hall are located in four rooms (H, I, L and the vestibule). Room H hosted pottery production, Room I housed copper working, while Room L and the vestibule were dedicated respectively to gold processing and glass manufacturing. These spaces communicated with each other through the *ambulatio*, while the vestibule only opened directly into the long corridor that runs to the south. To the west of this corridor, near the vestibule, we found three other rooms dedicated to productive activities (A, B, C). Room A was dedicated to glass manufacturing, but perhaps also to lead processing. Compartment B served as a blacksmith workshop. Unfortunately, at the moment the function of Room C remains uncertain.

In the north-eastern part of the *villa* complex, two areas were dedicated to manufacturing activities: K, a long rectangular room bearing the findings of several furnaces, and U, where remains of fire technology activities and *spolia* from the villa were found.

These production activities must have been connected to a complex water supply system, of which only traces remain: one channel runs to the south of the Trefoil Hall, while another one goes inside the *ambulatio*, between Room H and the vestibule (fig. 1). They were possibly linked to a more ancient water system, which must have been fed by a reservoir that was identified in 1970s on the hill overlooking the site to the north (Cavalieri 2008, pp. 7-8).

On the whole, it is possible to observe a systematic use of the villa's spaces for production purposes and an efficient management of work (Munro 2010, p. 237). In fact, the location of workshops must have been principally linked to the proximity of the materials, but, perhaps, also to the preservation of these environments, probably less affected by the destruction resulting from the abandonment phase during the 5th c. AD (Cavalieri 2012, p. 462). It must be added that the various activities – that will be described hereafter in detail – mainly dealt with fire and were prob-

[3] The more recent data in the *Preliminary report on the 6th campaign of excavations at Aiano, 2011*, to the Soprintendenza ai Beni Archeologici della Toscana (unpublished).

ably all interconnected: the position of workshops, one close to the other, certainly would have facilitated the transportation and the use of water, thus optimising the production processes.

3.1. Room B: blacksmithing (iron)

The excavation of Room B revealed the presence of a workshop dedicated to iron processing. The room has a rectangular shape, oriented E-W; at the centre of it, a large water basin was found, in connection with a channel that must have been related to a water supply system. In addition to that, close to the southern wall, two other pits were discovered (fig. 3). The deepest of the two (B) shows a rim which reduces the diameter of its opening. They probably carried water or other liquids for tempering (either oil or urine). Their size, smaller than that of the water basin with channel, may suggest that they were intended for smaller objects, the tempering of which could not take place within the larger basin. Moreover, a stone slab was uncovered inside the room, which perhaps was used as a work surface (Cavalieri *et al.* 2010, pp. 16-17). Flakes of hammer scale allow us to identify with a good degree of accuracy the po-

Fig. 3. Room B: the blacksmith's workshop.

sition of small forges: the latter were made of stones, juxtaposed one to the other to contain the roasting embers, and they were located along the northern and the southern walls, near the room's entrance. Close to the eastern wall, a large amount of quartz sand was found in a hollow. It was used as an antioxidant or as a support for the finished elements, as shown by the thin iron bars that were found in it (Cavalieri *et al.* 2010, pp. 15-16).

The analysis conducted on circa 200 samples found in Room B, has identified the materials that were used in the process[4]. In most cases they appear to be recycled artefacts and scraps: no waste fragments were found that could be interpreted as the product of purification, refining and compaction activities, normally referred to raw iron processing (Cavalieri 2013, p. 301).

Among the iron remains, two cowbells can be recorded; however, it is difficult to determine if they were manufactured by the local blacksmith, or they were lost on site during occasional attendances, dating from the last phase of the *villa*'s domestic occupation.

3.2. Room L: the goldsmith workshop

Traces of gold were uncovered in Room L. In particular, the analysis of the soil revealed that it contained a significant percentage of gold, which resulted very probably from the particular type of activity performed in this area. The gold of the mosaic *tesserae* was in fact recovered by means of a cupellation technique, which also was used to purify gold alloys[5]. This fact also implies lead processing: the treating of impure

Fig. 4. Touchstone of silicate stone with bevelled edges.

[4] The results of these analysis will be published in the monograph dedicated to the site.

[5] No cupellation furnace was found, but significant traces of gold (2,3%) were discovered on a lead ingot, which has a particular form and a handle for transportation. Cavalieri 2013, p. 299.

gold needed a quantity of lead equal to about four times the amount of gold. Lead was added to raw gold inside a crucible. Then, the compound created was heated up to 1000° C in a furnace; in these strong oxidizing conditions, lead absorbs all the impurities and separates from the gold, which does not oxidize.

The most interesting discovery related to the activity of this goldsmith consists of two touchstones, two little tablets (one very well preserved, the other one only fragmentary) of silicate stone with bevelled edges (fig. 4). The pieces of gold were rubbed on the surface of the tablets in order to test the degree of purity of the metal. These objects are often difficult to recognize because their shape is similar to tablets used for cosmetic and pharmaceutical purposes during Antiquity (Cavalieri 2013, p. 300). These kind of tools were used only by skilled goldsmiths, a fact that confirms the high technical level of the artisans of the *villa*.

3.3. Room I: copper manufacturing[6]

Within the *ambulatio* residues of copper processing were identified. They are mainly remains of the very labile material that formed on the surface of crucibles during the refining of alloying material. It was composed of silicates and copper salts that were removed from the alloy, by pouring them quickly on the ground while in a liquid state. These components are difficult to identify and to sample, without also collecting soil and sand; they form a sort of greenish stain on the terrain. Among the objects found in that area, a group of copper alloy pins must be mentioned (10 specimens) (fig. 5); these kinds of objects in such quantities are not found frequently outside the funerary context. It is therefore possible to hypothesize an on-site production, still characterized by high-level technical skills. The analysis of objects and fragments made of copper alloys has shown that they derived from an heterogeneous group of

Fig. 5. Copper pin found in Room I.

[6] Cavalieri *et al.* 2010, pp. 19-20 and Cavalieri 2013, p. 303.

artefacts from different chronological periods. The material composing the findings can often be dated to the Roman period, and possibly even up to the Iron Age, but in several cases it is possible that the alloy composition was based on the recycling of older artefacts, recovered and processed by the late antique workshop.

3.4. Vestibule and Room A: glass manufacturing

Apparently, the southern part of the Trefoil Hall (the vestibule or Room O) and Room A hosted the glass workshop.

Inside the vestibule, a small glass kiln was recovered. This kiln is more akin to the kind used for reprocessing glass fragments, rather than primary production. An example of this kind of oven, which remained unchanged for centuries, can be found in Theophilus Presbyter's description of a furnace for melting glass slabs (*De diversis artibus*, beginning of the 12th c.). The base of the kiln was on a Roman *tegula*, wider than any other found at the site, and thus probably picked on purpose from somewhere else; the side walls were made of stone and tile fragments, while the dome consisted of mud, vegetable fibres and snail shells (fig. 6). The furnace must have been reconstructed several times, and in different positions: a shell heap was found in one of the room's corners, and fire noticeably altered the room's walls in different spots. In addition to that, fragments of a brazier were found near the furnace; examples of this type are known in medieval and even later contexts, and they may have been used by artisans for modelling semi-finished casting products. A system of water supply was recovered in the vestibule as well, and it is possibly related to glass working: it consisted of two catch-basins, one of them connected to a drainage pipe, in which water flow could be adjusted by interposing a tile.

Furthermore, the presence of the kiln explains the function of two basins discovered within Room A: the first one contained around 6,000 glass *tesserae*, with traces of mortar and charcoal, and evidence of fast heating at low temperatures. Not far from the first pit, a second one, in the form of a seat, contained a Roman *tegula* still *in situ*, which may have served as a working surface. Room A must have been the area where glass *tesserae* were prepared for the subsequent reprocessing in the vestibule's kiln; they were heated to eliminate the rest of mortar in the first pit, and then washed in the second one, using the tile as worktop. the numerous fragments of glass vessels and mosaic *tesserae* found all around the furnace site provide more evidence of the glass reprocessing activity; moreover, various waste materials came from the rooms surrounding the vestibule, including stone *tesserae*, glass drippings and

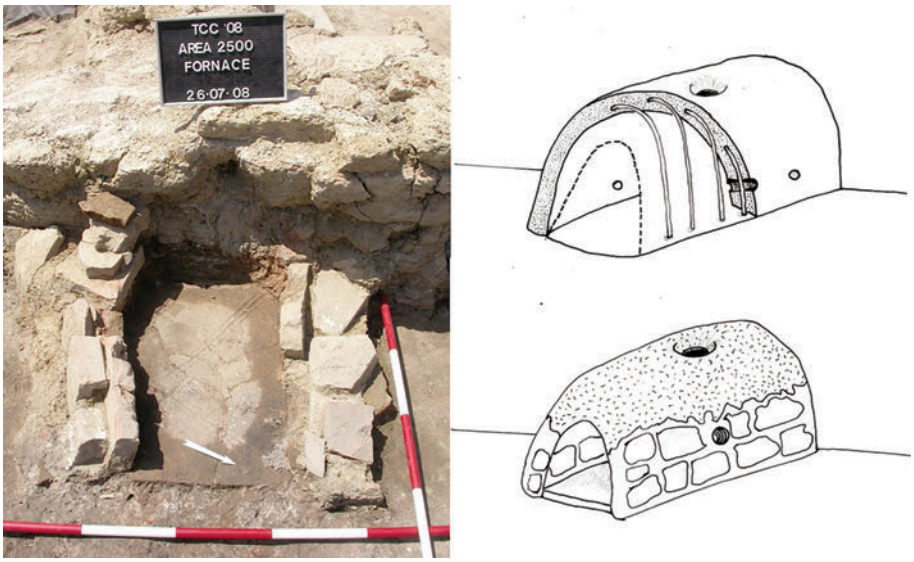

Fig. 6. Left: remains of the glass kiln; right: (top) reconstruction of Theophylus' kiln for melting glass slabs, (bottom) reconstruction of the glass kiln of Aiano.

beads of various colours and dimensions, and discarded materials from different phases of glass recycling. These materials have been analysed by X-Ray Fluorescence Spectrometry (XRF)[7], focusing in particular on the pigments. The results of the analysis for Na, K and Ca showed that the samples were made of common sodium-calcic glass, used in Roman times. Small opaque-pale green and transparent-yellow beads revealed a composition identical to that of *tesserae* and vessel fragments of the same colour found nearby (fig. 7). The slightly different composition between beads and *tesserae* with the same colouring can be explained by the addition of other elements during production. In particular, red glass contains lead, similar to the Merovingian red glass (V-VII c. AD) from the Schleitheim graveyard in Switzerland (Cavalieri, Giumlia-Mair 2009, p. 1030 with references). The glass workshop at Aiano-Torraccia di Chiusi seemed to have devoted itself only to the recycling of glass objects from the Roman *villa*, with the aim of producing small ornaments. The practice of collecting and reprocessing glass shards is already well attested in Roman times. This allowed lower production costs: it reduced the use of raw materials and facilitated melting at lower temperatures, thus saving fuel. This practice lasted into the Middle Ages, due to the loss of some

[7] The analyses have been carried out by A. Giumlia-Mair (AGM Archeoanalisi, Merano).

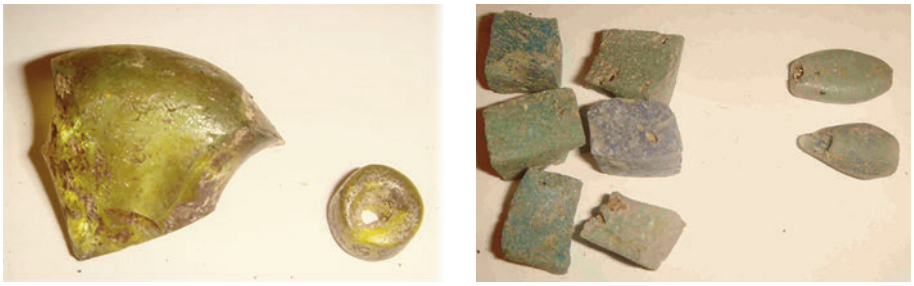

Fig. 7. Glass beads made from vessel sherds and mosaic *tesserae*.

technical knowledge and to increasing difficulties in provisioning raw materials (Sternini 1995, p. 35). Later on, as Theophilus witnesses, in Northern Europe, France, and Germany, artisans used coloured glass *tesserae* and small vessels found in "ancient pagan buildings" for their enamels; when they wanted to produce stained-glass for churches, transparent glass was added to the coloured ones from mosaic *tesserae* (apparently on the market and exported from Italy) (Cavalieri, Giumlia-Mair 2009, p. 1025 with references).

The most relevant fact to be noticed at the Aiano-Torraccia di Chiusi workshop is not the presence of the glass kilns themselves, a common feature in quite a few contexts in Italy and in other regions (Munro 2012, pp. 353, with references); instead, it is the remarkable organisation and efficiency of different workshops, located under the same roof and connected so as to take advantage of the water supply system, fuel and raw materials common to the various products (i.e. sand, clay). Lead can be taken as example. Probably obtained from the *villa*'s piping, it was re-used in the cupellation process (cf. *supra*). Then, during glass processing, it could have been added to reduce the glass melting temperature, hence facilitating its manufacturing. Finally, it was used as an additive in the production of glass beads, in order to enhance certain colours. It is plausible that the tools used in the different manufactures, such as crucibles, tongs, hammers, pincers of various shapes and dimensions, also were produced inside the workshop (Cavalieri, Giumlia-Mair 2009, pp. 1031-1032).

Other activities probably were related merely to household workmanship. Some conical pervious elements with hooks on one side, maybe part of a spinner, and a needle, all made of copper alloy, can help to reveal past instances of spinning and embroidery. Findings of bones and antlers with working marks (currently being studied) suggest another type of craftsmanship (Cavalieri 2008, p. 18, n. 29).

Fig. 8. Remains of the pottery kiln.

3.5. Pottery production in the southern corridor and Room H

Other parts of the villa yielded evidence of different production activities. The area between Room A and the Trefoil Hall hosted another kiln, located outside the six-foil corridor. It is a medium-sized vertical structure (ca. 3 m length), with a rectangular plan and a central-aisled fire chamber, very similar in shape to type II/B Cuomo Di Caprio (fig. 8). The kiln showed three small arches still *in situ*, propping the pierced loading bed, while the side walls were made of a refractory mixture of fragmented tiles and raw clay. This type is rather widespread, as it is adaptable for cooking various kinds of objects, such as clay building material, containers and common ware. Type II/B was in use at least since the early imperial period, and lasted until Late Antiquity, with minor modifications: our kiln probably can be dated to the 6th-7th c. AD. After the complete excavation of the furnace, the filling did not return any useful elements for dating, but only pieces from the clay vault; investigations in front of the kiln revealed a smaller and earlier furnace, which was probably used for producing or processing metal objects (Cavalieri *et al.* 2011, p. 376 with references). Because only the fire chamber survives, it is difficult to

get a definite idea on the kiln's capacity. We lack data about the dome and the fire chamber's height; moreover, up to the present day, no dumps or drying areas have been found nearby, nor materials that can witness the different processing phases, such as waste, spacers, etc. However, in addition to the structure typology, another element seems to strengthen the hypothesis that the kiln was intended to produce pottery: a small basin covered with hydraulic mortar on its inner sides, with a thin grey layer on its surface, that possibly was connected to the furnace's activity. This structure may have served as a sedimentation basin for clay, and the surrounding zone may have been a working surface area. With regard to this, a thick clay layer, which has been documented inside Room H, has been interpreted as the possible storage of raw material, instead of natural sedimentation (Cavalieri 2008, pp. 18-21).

4. Other hypothetical activities

Investigations in other parts of the complex, in particular to the south and west of the Trefoil Hall, returned evidence of further activities, mostly based on the use of fire, in addition to those already identified in the central rooms of the site. Reconstructing the characteristics and the chronology of these finds and interpreting their relationship with the above-mentioned workshops are still difficult for various reasons: in these areas the excavations have not always been completed, the interpretation of the stratigraphic features is generally arduous, and the findings that can be related to the phases linked to craftsmanship are scanty. Nevertheless, these data seem to confirm the picture of widespread and efficient manufacturing activity, that exploited the surrounding area and radically transformed the late antique villa site.

4.1. Room K[8]

After the removal of shallower layers of abandonment and collapse, the remnants of nine brick kilns were brought to light. They were located along both side walls of the room. Two of them were cut into a tufa and mortar boulder, leaning against wall USM 7507, which borders the room to the East. A third kiln, older than the other two according to the stratigraphic features, is located in the centre of the same wall. Four other kilns, laying abreast at different levels, were flanking the southern part of

[8] *Preliminary report* 2011, pp. 19-22.

Fig. 9. Room K, western wall: four furnaces. Foreground, to the left: possible bellows' housing.

the room's western wall. The larger two, located to the south, shared one parapet-wall, burnt on each side; the latter showed a brick and stone structure at its easternmost end, which has been interpreted as the housing for bellows (fig. 9). Although the two structures are probably chronologically close, they were not in use contemporarily; still, it is unclear which one is prior to the other: the presence of the bellows would have prevented the use of the northern kiln, but the bellows' housing itself seems to have been disabled, having been closed by a tile. The other two furnaces were similar and smaller. The southernmost kiln yielded evidence of a longer use than the neighbouring one, and it was covered by a layer of compact ash, that returned a blue glass *tessera*, one of the rare findings of this room. All nine kilns have left evident traces of burning and erosion of the walls behind them, and the fact that many of them are located at different heights, showing reuse or obliteration of the parapets of nearby kilns, seems to imply that they did not work all at the same time. What was actually produced in this area, the excavation of which has not been completed, is still an open question, which further investigations possibly could answer. Indeed, apart from the above-mentioned *tessera*, the other furnaces have not returned artefacts nor enough data for reconstructing the dome; moreover, until now the entire area proved to be significantly poor in findings, which in any case are not related to production activities.

4.2. Room U[9]

Excavations in 2011 have unearthed the central northern part of the pillars room, revealing a layer with stone tesserae and mosaic shards, and alterations due to fire activities. This allows it to be identified as an area for disassembling and recycling stone mosaic fragments. A stack of wooden elements, including planks and beams, mostly oriented N-S, belongs to the layer underneath; maybe connected to the same layer, other evidence of fire is located to the south of second pillar from the north (USM 7503). Interpretations about the function of the wooden elements are still in progress: it is possible that they derive from dismantling activities, or from the remains of a covering, possibly a roof for sheltering the production activities inside the room. Below these layers, levelled floor surfaces with small limited hearths have been discovered.

In area 5000 W (Cavalieri *et al.* 2010, p. 6) as well, the evidence recovered is linked to fire activities: fragments of tiles and mortar, decorated *stucco*, leftovers of hearths in the form of reddened soil and ash, a drainage pipe made from spoliation stones and tiles.

All the activities reported so far, have been recorded on the same floor level as the processing activities detected in Rooms A, B, E and O, thus confirming a major contemporary phase of re-allocation of functions in all the above-mentioned areas.

4.3. Room C[10]

Underneath the first levels, various overlapping layers were identified, which can be related to different phases in the room's accommodation for fire activities (fig. 10). First, in the north-western corner of the room, the remains of a kiln were characterised by a peculiar loading bed, made of tiles, built on a masonry structure of stones and clay. Beneath the working level connected to the kiln, a first floor level, probably exposed after the removal of the original flooring, showed four circular cuts on the southern side of the room. The placement of the cuts almost are aligned; they may have served as post holes for a covering structure. A fifth cut in the same direction, of greater dimension and depth, is characterised by a filling of *spolia* and various objects, including pottery, metal, marble and glass. The excavation of this floor level yielded evidence of a previous phase of working activities, witnessed by a level of plaster and mortar fragments and two circular cuts with reddened linings.

9 *Preliminary report* 2011, pp. 10-13.

10 *Preliminary report* 2011, pp. 14-17.

Fig. 10. Room C: traces of firing activities and kiln (?).

5. Conclusion

Despite the fact that the study of the settlement pattern in Roman and Late Antique Elsa Valley territory has not reached a great level of detail yet, the case of the Aiano-Torraccia di Chiusi villa enlightens the picture of a major site in the region during the Late Antiquity – at least in its first phase –, pertaining to its scale and architectural and decorative features. Because of these characteristics, the villa proved to be a treasure trove of materials for the group of people that started its new occupation phase, between the end of the 5th and the end of the 6th century. It is plausible that the decision to set themselves up there was not made randomly. In addition to the large availability of materials, another important issue – always crucial for a site's potential economic growth – was its strategic location: the villa lies in a river valley, not far from the centres of *Volaterrae* and *Saena Iulia*; along routes that reached both the Arno valley and the Tyrrhenian coast; and in a pivotal area between Byzantine and Gothic possessions. The variety of productions (iron, gold, glass, probably bronze and pottery manufactures) and the level of organisation and integration between the different workshops lets us imagine the existence of a production system addressed not only to internal consumption. However, the present state of the investigation does not allow the characters of the commercial network in which the site was involved to be conclusively defined. At the moment, the only data comes from the study of the ceramics, which seem to point to—even if only preliminarily—a closer relationship with the area of *Saena*.

As of today, the case of Aiano-Torraccia di Chiusi shows an economic system relying on reuse and recycling of materials. These activities are carried out by systematically re-adapting spaces and concentrating pro-

cessing activities in the ancient residential rooms, choosing those which were practicable and likely most abundant in resources[11]. Collecting marble, glass and metal from the villa cannot be defined as a fortuitous pillage, but rather as systematic and continuous salvaging, compatible with the activity of a qualified workforce. Through all these elements, the Aiano villa between the 5th and the 6th century appears as an integrated, conscious production system, likely endowed with a certain economic potential. Recent studies have drawn attention to villa sites with phases of systematic salvage for recycling materials, after the loss of the original function. This phenomenon is not rare and shows consistent features, in Italy as in other Western provinces of the Roman Empire[12]. To mention some Italian cases, for Tuscany, the *mansio* at S. Cristina di Buonconvento (Siena) (see within this publication); the villa-*mansio* complex at Vignale (Livorno; Zanini, Giorgi, with references); for southern Italy, in addition to the most renowned examples (Faragola, San Vincenzo al Volturno, San Giusto; Munro 2010, pp. 219-227 with references), see also the villa of Piano della Fara (Pescara; Staffa 2005, pp. 77-78), and so on[13]. If numerous *villae* and settlements show the dismantling of their furnishings for onsite recycling in their final phases, few of them reveal, as the Aiano villa does, such a variety of interrelated productions, which are not directly connected to a definite scope, such as, for example, the building of a church. The closest parallels in the Italian context seem to be some urban and suburban cases: the Crypta Balbi at Rome, and the remains detected just outside the Byzantine Wall at Aquileia (Fondo Comelli), that possibly could be referred to as glass, but also bronze and iron manufacturing (Buora *et al.* 2010, pp. 53-54). Although at the moment it is impossible to identify the artisans of Aiano[14], considering the analogy with other case studies, it is not implausible that they were a group of itinerant skilled workers, maybe appointed by the owner of the villa to reclaim the structures no longer in use. Many points await clearer answers in order to better understand the Aiano case: in an onsite perspective, defining the limits of the early medieval productive quarter, possibly in relation to the identification of the artisans' dwellings; in a contextual perspective, defining more precisely the social and economic network in which the villa was placed. The aim is the reconstruction of the role carried out by the Aiano villa in the transitional period between Late Antiquity and the early Middle Ages in the Elsa Valley and in inner Tuscany.

11 On the location of the installations, see Munro 2012, pp. 359-360.

12 Munro 2012, pp. 367-368. For Tuscany, see also the site of Santa Cristina in Caio (Buonconvento, Siena): Valenti 2012, p. 7 and Valenti 2015, pp. 5-7.

13 For further examples of reoccupation and conversion to production activities of residential spaces in Abruzzo region – although mainly related to agricoltural production-, see also the *villa* of Le Muracche (Tortoreto, TE), and the site of Grasciano (Notaresco, TE): Antonelli 2008, pp. 65-72.

14 The hypothesis of a northern origin is not certain; cfr. Cavalieri, Giumlia-Mair 2009.

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