

# REPORT OF THE INVESTIGATION OF OSTIA ANTICA IN 2017-2018

Japanese Research Group of Ostia Antica

2018/4

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## Rapporto dell'anno 2017

Koji Toyota.

Dal 2017 è iniziata la nostra nuova ricerca triennale. Oltre all'indagine dei resti sulla superficie di Ostia Antica dell'anno precedente, quest'anno, seguendo i vari interessi dei nuovi membri, come la ricerca archeologica sui resti ritrovati dagli scavi (Ezoe e Washida) e come l'indagine sui resti sotterranei usando la fotografia aerea dal pallone aerostatico che vola basso (Watanabe), ho ricevuto il compito importante di chiedere l'autorizzazione per poter sviluppare queste nuove ricerche con il parco archeologico di Ostia Antica.

Grazie alla comprensione del Direttore Mariarosaria Barbera, siamo riusciti subito ad avviare i preparativi per le nostre ricerche collaborando con la Dott.ssa Paola Germoni (la responsabile del Procedimento), con il Dott. Marco Sangiorgio (Cartografo Direttore) e con tutti gli altri colleghi. Vorrei esprimere la mia sincera gratitudine per la disponibilità, l'accoglienza e l'amicizia che ogni anno il parco archeologico di Ostia Antica ci riserva immancabilmente. Speriamo, con il nostro impegno e il nostro lavoro di meritare anche in futuro la fiducia preziosa accordataci fino ad ora.

Per quanto riguarda la mia ricerca personale, sviluppando lo studio precedente sulla rete idrica, focalizzato sulla latrina, ho iniziato l'indagine della fullonica e sono riuscito ad avere un grande risultato. Soprattutto ho trovato molto interessante la struttura nelle Terme del Mitra.

I.13.3:fullonica

I.17.2 :Due camere sotterranee delle Terme del Mitra ;

II.11.1-2:fullonica

IV.5.3: Caseggiato ( forse fullonica ? )

V.7.3:fullonica

Purtroppo però nei seguenti casi, non sono riuscito a confermare alcuni punti.

III.2.1-2

Inoltre, anche a Roma, volevo osservare la latrina sotto le scale a livello sotterraneo nella Domus Augustiana presso Mons Palatinus, oppure la fullonica a Casal Bertone che è stata ritrovata negli anni 2007/8, ma sfortunatamente non ho potuto osservarla durante la visita normale, nemmeno attraverso il recinto.

Per ottenere altri confronti, ho allargato la mia indagine presso Minturno, Villa Adriano, Pompeii, Herculaneum ed Oplontis, basandomi sulle informazioni ricavate

dai libri sottocritti (Barry Hobson, *Latrinae et Foricae. Toilets in the Roman World*, Duckworth, 2009 ; Ed. by Gemma C.M.Jansen et als., *Roman Toilets. Their Artchaeology and Cultural History*, Peeters, 2011; Ann Olga Koloski-Ostrow, *The Archaeology of Sanitation in Roman Italy. Toilets, Sewers, and Water Systems*, The University of North Carolina Press, 2015). Quest'anno ho focalizzato la latrina al secondo piano, la urinale da maschio e la fullonica e sono riuscito a registrare un grande successo.

## Pompeii

II.4.3: la latrina alla Villa di Giulia Felice;

VI.8.20: gli affreschi del prismatico presso la fullonica

(ora conservati presso il Museo Nazionale di Napoli, inv.9774);

VI.15.1: gli affreschi della fullonica alla Casa dei Vetti;

VII.2.18: la latrina

IX.7.7: gli affreschi della fullonica alla Officina coactiliaria di Verecundus

## Herculaneum

V.7: la latrina al secondo piano della Casa di Nettuno e Anfitrite;

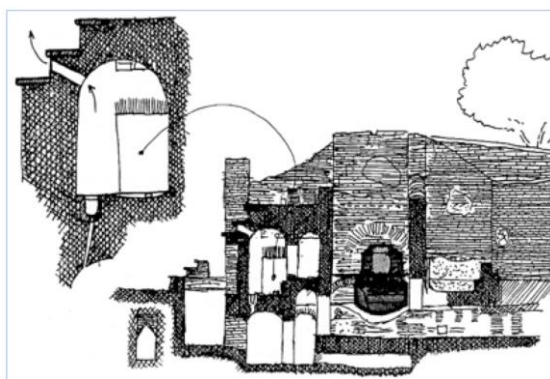
VI.21: la latrina al secondo piano della Sede degli Augustali;

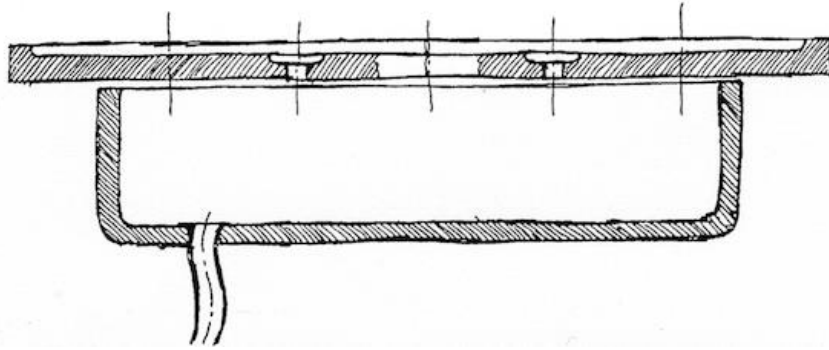
(la scala è collocata sulla parete esterna) ;

VII.9 : la latrina al secondo piano (la scala è collocata sulla parete esterna)

La latrina da urinale; Ostia, I.17.2; Oplontis, insieme con la latrina; Pompeii, VIII.7.19 Odeion; Minturno. Queste informazioni sono state ricavate dai libri sottoscritti (Inge Nielsen & Thorkild Schiøler, *The Water System in the Baths of Mithras in Ostia, Analecta Romana Instituti Danici*, 9, 1980, pp.149-159; Gemma Jansen, *Roman Toilets of the City of Minturnae. A Preliminary Report*, a cura di Giovanna Rita Bellini e Henner von Hesberg, *Minturnae. Nuovi contributi alla conoscenza della forma urbis*, Edizioni Quasar, 2015, pp.129-138.)

## Ostia, I.17.2





Continuando l'indagine anche quest'anno e pubblicherò il mio risultato nel anno prossimo.

(tradotto da Yasuko Fujii)

## Field Survey Report (2017)

Koji Toyota

A new three-year research period beginning from 2017 has started. The new members wish to advance previous members' surface-level researches conducted on the site by performing more archaeological survey such as excavated materials analysis (Ezoe and Washida) and low-altitude aerial photography utilizing balloons as a mean to detect underground sites (Watanabe). Therefore, my important task was to perform arrangements and adjustments to determine whether if such analyses were possible.

On this point, I wish to express my sincerest gratitude for the continuing and friendly support provided by Dr. Mariarosiaria Barbera (Director of Special Superintendency for the Archaeological Heritage of Rome-Seat of Ostia), Dr. Paola Germoni (The Procedure Manager), Dr. Marco Sangiorgio (Director of Cartography) and all the other staffs, and it is my deepest wish that this friendly relationship between us would continue.

As for my own personal research, since last year I have conducted research on the laundry sites listed below. This was performed as an extension of my previous research on water supply and especially latrines, and I was able to obtain many valuable data. The Terme del Mitra proved to be particularly interesting.

I.13.3

I.17.2 Two rooms in the underground level of Terme del Mitra

II.11.1-2

IV.5.3 Caseggiato A Laundromat ?

V.7.3

Unfortunately the location of the site below could not be confirmed.

III.2.1-2

As for the city of Rome itself, I had hoped to visit the latrine below the stairs in the underground level of Domus Augustiana, Mons Palatinus. However, the site was off limits to normal visitors. I also wished to see the fullonica of Casal Bertone even if only across the fence, but unfortunately I was unable to reach the place.

For comparative analysis, I performed related research on Minturno, Villa Adriano, Pompeii, Herculaneum and Oplontis utilizing works cited below, and I was able to obtain good results. The points of interest for this research was the male urinal and fullonica, in addition to the upper level latrine.

Barry Hobson, *Latrinae et Foricae. Toilets in the Roman World*, Duckworth, 2009 ; Ed. by Gemma C.M.Jansen et als., *Roman Toilets. Their Archaeology and Cultural History*, Peeters, 2011 ; Ann Olga Koloski-Ostrow, *The Archaeology of Sanitation in Roman Italy. Toilets, Sewers, and Water Systems*, The University of North Carolina Press, 2015.

#### Pompeii

II.4.3 : latrina in Villa di Giulia Felice

IV.8.20 : Fresco painted on square pillar in Fullonica=Currently stored as Museo Nazionale di Napoli, inv.9774.

VI.15.1 : Fresco of a fullonica painted in Casa dei Vettii

VII.2.18

IX.7.7 : Fresco of a fullonica in Officina coactiliaria di Verecundus

#### Herculaneum

V.7 : Latrina on the upper level of Casa di Nettuno e Anfitrite

VI.21 : Upper level placed on the outer wall of Sede degli Augustali

VII.9 : Latrina in upper level placed on the outer wall

For urinal\* : Ostia, I.17.2 ; Oplontis, placed with latrina ; Pompeii, VIII.7.19 Odei on ; Minturno

\*Gemma Jansen, Roman Toilets of the City of Minturnae. A Preliminary Report, a cura di Giovanna Rita Bellini e Henner von Hesberg, *Minturnae. Nuovi contributi alla conoscenza della forma urbis*, Edizioni Quasar, 2015, pp. 129-138.

This research will be continued, and we intend to publish its results in the following year.

## Report of Investigation, Nov. 2017-March 2018

Mamoru Ikeguchi

Mamoru Ikeguchi's research is characterized by his use of zooarchaeological evidence for studying Roman animal use. He carried out investigation of sites in Ostia and collected zooarchaeological reports in Rome between 31<sup>st</sup> August and 5<sup>th</sup> September 2017. He also observed sites in Herculaneum between 6<sup>th</sup> and 8<sup>th</sup> September.

(1) The data of faunal remains from Ostia were collected by M. MacKinnon ('Animals in the urban fabric of Ostia: a comparative zooarchaeological synthesis', JRA 27, 2014), but this paper does not include classification of each site nor is detailed information about each provenance provided. It is therefore important to observe each site in order to use the data. The following sites are those focused on by Ikeguchi this time:

- Terme del Nutotatore
- Tempio dei Fabri Navales
- Insula dei Dipinti
- Castellum Aquae, Porta Romana
- Castrum

In addition, he joined the investigation of the graffiti in Domus di Giove e Ganimede in Ostia, as an interesting graffito of an animal, presumably that of a goat, is included.

(2) In the libraries of DAI and BSR in Rome, Ikeguchi collected zooarchaeological information in Italian sites, which is to be compared with that in Ostia. Faunal remains were often simply neglected in old excavations: zooarchaeological information is not contained in the reports of excavation carried out with such policies. Nowadays the circumstances have changed and more and more excavation reports provide the information of faunal remains (NISP at least). He is particularly interested in such evidence in Pompeii and Herculaneum. (His project of investigating faunal remains from Pompeii in collaboration with Laboratorio di Archeozoologia of Università di Salento is approaching writing up the final report.) He also observed Villa dei Papiri, where Prof. Hori was permitted to carry out laser-scanning.



## **The report of my researches at Ostia Antica in 2017 summer.**

**Makoto Ezoe**

### **【The results of researches in this season】**

- Understanding these current situations of archaeological park at Ostia Antica
  - The excavated structural remnants and excavation state
  - The exhibition of excavated artifacts in the museum
  - Ruins repairs and site maintenance for tourism resources
  
- Understanding conservation treatments for excavated artifacts (especially coins)
  - Five steps of conservation treatments for unearthened coins at Ostia Antica.
    - (1) Brushing using denatured alcohol to facilitate the removal of inconsistent corrosion products and dirt
    - (2) Mechanical cleaning with scalpels, a fiberglass scratch brushes and scalers using a optical microscope.
    - (3) Irrigation with distilled water using magnetic stirrer for removal of soluble salts.
    - (4) Dehydration by the successive soaking in alcohol and acetone, and by exposure to infrared radiation.
    - (5) Surface consolidation and protection with 2% solution of acrylic resin (Paraloid B72) in acetone.

(1) and (2) are common treatments for unearthened coins. But the process from (3) to (5) has been adapted for the site of Ostia Antica located extremely close to the sea. Especially, the process of (5) is required to avoid recorrosion phenomena which occur inside the coins.
  
- Understanding the current situation of the database for excavated artifacts at Ostia Antica
  - The current database is intended to manage the excavated artifacts, not to search for these artifacts.
  - The Special Superintendence of Rome has managed data input and edit of this database by login ID.
  - The data entry screen is very simple design template made by Filemaker, and it is really only suitable for internal use.

### **【Issues for the future project】**

- We need to make our own attractive database to understand excavated artifacts for the general public as a way of tourism promotion activities.
- For this database, we need to make 3D models of excavated artifacts in addition to taking high-definition photographs.
- I will try to make 3D models of unearthened coins selected by Prof. E. Spagnoli with the use of a high-definition camera and Agisoft PhotoScan in the next season.

# Preliminary report for the study of Amphoras at La Longarina, Ostia

Mutsuro Washida

This short report is a work in progress. Prior to start research to Amphoras at La Longarina near Ostia Antica, I would like to write down this memorandum with the incomplete collection of related bibliography for further research.

La Longarina, another republican harbor of Ostia Antica?<sup>1</sup>

La Longarina is part of swamp, the Stangi di Ostia(ca. 250ha) located in the eastern suburb of Ostia Antica, near “dead river”(fiume morto), the trace of oxbow lake which is cut from Tiber by the flood of 1557. The form of La Longarina is triangle, surrounded Via Luigi Pernier, Via di Castel Fusano and Via del Fosso di Dragoncello nowadays. The depth of this swamp in roman era is estimated about 3.5-4.5m. This is seen as the proof for the possibility of use as the refuge to ships. Although I have not been found any evidence for the daily use as the wharf in detail, the ruin of villa rustica on La Longarina may have it<sup>2</sup>. This seems important to study in economic environment of republican Ostia because the republican harbor is located another place upon Tiber, north-west of the city<sup>3</sup>. A further important point is Stangi di Ostia connected to the Tyrrhenian Sea from the 1<sup>st</sup> millennia BCE to 19<sup>th</sup> century CE. This area is maybe another unknown harbor of republican Ostia.

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<sup>1</sup> Incomplete bibliography on La Longarina: M. Heinzemann, „Beobachtungen zur suburbanen Topographie Ostias, Ein orthogonales Strassensystem im Bereich der Panabella“, *Mitteilungen des Deutschen Archäologischen Instituts* 105, 1998, S. 175–225, Beilage 1. Cf., E. Rivello, “Terra Sigillata italica dalla Longarina (Ostia antica, Roma)”, *Rei Cretariae Romanae Fautorum* 38, 2003, pp. 69–72, Pannuzi, La laguna di Ostia : produzione del sale e trasformazione del paesaggio dall’età antica all’età moderna, *Les Mélanges de l’École française de Rome – Moyen Âge* 125–2, 2013,

<https://mefrm.revues.org/1507>, J.-P. Goiran et al., “Geoarchaeology confirms location of the ancient harbor basin of Ostia (Italy)”, *Journal of Archaeological Science* 41, 2014, pp. 389–398, C. Vittori et al., Palaeoenvironmental evolution of the ancient lagoon of Ostia Antica (Tiber delta, Italy), *Journal of Archaeological Science* 54, 2015, pp. 374–384, C. Pepe et al., Late Holocene pollen record from Fiume Morto (Dead River), a palaeomeander of Tiber River near Ancient Ostia(central Italy), *Journal of Paleolimnology* 56, 2–3, 2016, Volume, pp. 173–187,

<http://iltaoaroma.altervista.org/stagni-di-ostia-longarina/>

<sup>2</sup> “3 July 2008 - Discovery of a villa and a possible wharf” on <http://www.ostia-antica.org/archnews.htm>. I have not found the further report on this ruin yet.

<sup>3</sup> Goiran et al., op. cit.

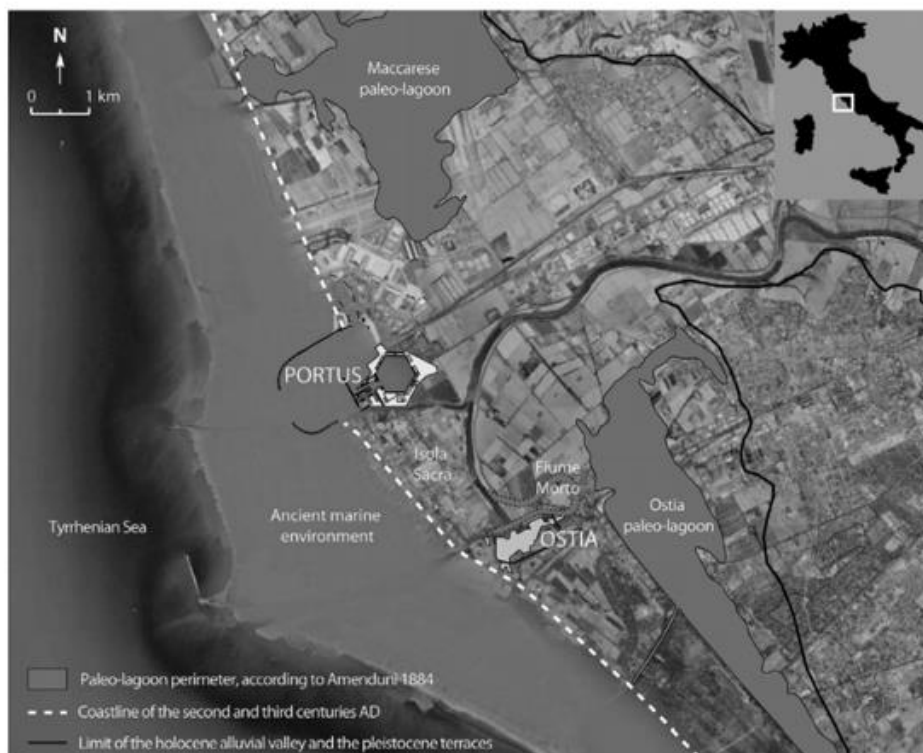


Fig. 1. General location map of the Tiber Delta.



Fig. 1: Pianta aerofotogrammetrica. In evidenza il canale colatore delle acque medie (sinistra), la via per Castel Fusano (destra). L'area triangolare che delimitano è la Longarina (secondo M. HEINZELMANN, Beobachtungen zur suburbanen Topographie Ostias. Ein orthogonales Strassensystem im Bereich der Pianabella. Mitt. DAI Rom 105, 1998, Beilage 1).

4

To think economic significance of La Longarina, it should be added the project of *Fossa Neronis*, the canal between Ostia and Lake Avernus near Puteoli by Nero. It is estimated an abolished plan in general. But the trace of this canal is found at near Circeii and near Voltturnum<sup>5</sup>. Besides, Pliny the Elder tell us the influence of this canal have made the loss of Caecuban wine produced in the swamp near *sinus*

<sup>4</sup> Goiran et al., op. cit., p. 390, fig. 1, Heinzelmann, op. cit., Beilage 1.

<sup>5</sup> Cf. R. J. A. Talbert(ed.), *The Barrington Atlas of the Greek and Roman World*, Princeton University Press, 2000, MAP 44.

*Amyclanus*<sup>6</sup>. On this plan, the influence of *damnatio memoriae* of Nero have made difficulty to estimate it<sup>7</sup>. However, it may be natural to estimate that Stangi di Ostia had been combined in this plan. Anyway, the eastern suburban area of Ostia could have the significance of economical function in theory. Open problem is the evidence to proof this hypothesis.

### The amphoras from La Longarina

The excavations of La Longarina are carried out twice, on 1974-1975(the site named Longarina 1) and on 2005(Longarina 2). Although most studies depends on first excavation only, data of second one have not yet been used in effect<sup>8</sup>. Based on the table of D'Alessandro and Pannuzi that indicates different types of amphoras are found between Longarina 1 and Longarina 2, to use data of both excavations, it is likely that vision to trade at republican Ostia is modified<sup>9</sup>.

TABELLA DI CONFRONTO TRA I RINVENIMENTI DI LONGARINA 1 (HESNARD, 1980, 149) E LONGARINA 2

PROVENIENZA	ANFORE	LONGARINA 1	LONGARINA 2
Italia	Lamboglia 2		34
	Dressel 2-4 ad.	4	
	Dressel 6A	42	
	Anfore di Brindisi	3	
	Dressel 1		3
	Dressel 2-4 it.	65	
	Pascual 1	15	
Spagna	Dressel 2-4 tarr.	11	
	Dressel 9 tarr.	3	
	Ovoide tarr.		1
	Ovoide gaditana		1
	Haltern 70	32	
	Dressel 7/11	96	
	Longarina 2-3		
Produzione non identificata	Dressel 12	5	1
	Dressel 20	6	
	Ovoidi		4
Africa e Tripolitania	Anfora a fondo piatto		1
	Anfore di tradizione punica		2
	cd. Tripolitana antica = Africana antica (Contino - Capelli, 2013, 199-208)	4	
Egeo-Oriente	Anfora rodia	8?	
	Anfora di Cos	4	
Totale		298	47

<sup>6</sup> Plin., *Nat. Hist.* 14. 61: antea Caecubo erat generositas celeberrima in palustribus populetis sinu Amynclano, quod iam intercidit incuria coloni locique angustia, magis tamen fossa Neronis, quam a Baiano lacu Ostiam usque navigabilem incohaberat. But ager Caecubus is located in the west of Caieta, this sinus begins from Caieta as the western limit to Sinuesssa. See Talbert, *op. cit.*, MAP 44. I have no idea on this Pliny's inaccuracy.

<sup>7</sup> Cf. K. D. White, *Greek and Roman Technology*, London, Thames and Hudson, 1984, pp. 227-229, table 6, R. Laurence, *The Roads of Roman Italy*, Routledge, London and New York, 1999, pp. 114-119,

<sup>8</sup> E.g., A. Tchernia, *The Romans and Trade*, Oxford University Press, 2016.

<sup>9</sup> L. D'Alessandro, S. Pannuzi, Le anfore dello scavo di Longarina 2 ad Ostia antica(RM), in: R. Járrega, P. Berni(eds.), *Amphorae ex Hispania: paisajes de producción y consumo, monografías Ex Officina Hispana III*, Instituto catalán de Arqueología clásica, 2016, pp. 530-537, p. 536.

The relics at La Longarina are varied. But studies on them mainly focus on Terra sigillata<sup>10</sup> and Amphoras<sup>11</sup>. I am interested in wine trade, therefore amphoras will be the main subject. Tchernia listed up the places of 181 Amphoras' production found at Longarina 1 dated Augustan age as follows: 4 amphoras from Cos island, 8 Rhodes island, 42 from north Italy, 50 from Pompeii-Sorrento, 5 from ager Falernus, 32 from Baetica, 26 from Tarragona and 14 unallocated Dressel 2-4 type.

The total number of amphoras from Longarina 2 is 47. Within this, the number of Lamboglia 2 is 34. This type amphora is seen as the oil-container in general, but wine was carried on the analysis of the contents of vessels from the Madrague de Giens shipwreck.<sup>12</sup> Moreover 3 amphoras of Dressel 1 type also wine-container. The remain need to be examined in detail.

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<sup>10</sup> On terra sigillata at La Longarina, E. Rivello, Terra Sigillata Italica dalla Longarina(Ostia Antica, Roma), *Rei Cretariae Romanae Fautorum* 38, 2003, pp.69-72.

<sup>11</sup> On amphoras found at La Longarina: A. Hesnard, "Un Dépôt Augustéen D'amphores à La Longarina, Ostie (An Augustan Deposit of Amphoras at La Longarina, Ostia)", in: J. H. D'Arms, E. C. Kopff, *The Seaborne Commerce of Ancient Rome: Studies in Archaeology and History, Memoirs of the American Academy in Rome* 36, 1980, pp. 141-156, D' Alessandro, Pannuzi, op. cit.

<sup>12</sup> F. Formenti, A. Hesnard, A. Tchernia, Note sur le contenu d'une amphore Lamboglia 2 de l'épave de la Madrague de Giens, *Archaeonautica* 2, 1978, pp. 95-100.

# Report on the scientific research and restoration of cultural properties in the Republic of Malta and Sicily, Italy

Yoichi Nishiyama

Itinerary of the research trip in the republic of Malta and Sicily, Italy: 2018/3/6-3/17

## 3/8 (World Cultural Heritage Site of Valetta, Republic of Malta)



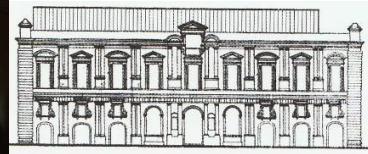
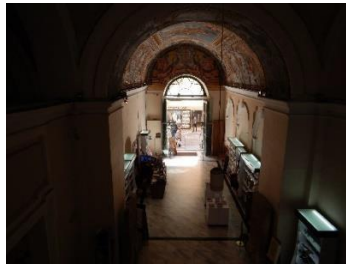
(Left) Distant view on the fortified city of Valetta (taken from hotel) (Center & Right) Streets of the fortified city of Valetta (Republic street. Buildings are made of Maltese tuff, or Malta Stone. The roads are paved with marbles and shales)



Malta Stones, being tuff, have weathered heavily and restoration works are being performed in many areas

(Left) The fortified city of Valletta used Malta Stones both for bedrock and surface decorations (Center) Weathering on building wall (Right) Restoration work being performed on stairs via replacement

## National Museum of Archaeology, Malta



National Museum of Archaeology, Malta (Left) Entrance(Right)Inside the entrance(It utilizes Baroque-style building built in 1571)

Megalithic culture of Malta(Display of artifacts from 3600 BCE, older than the Egyptian Civilization. Fully restored, the giant statue of a goddess stands 2m tall)

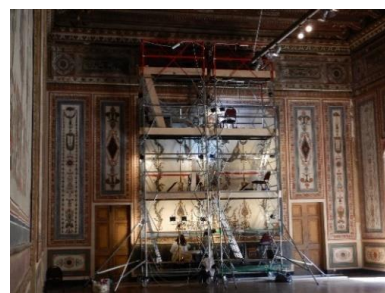
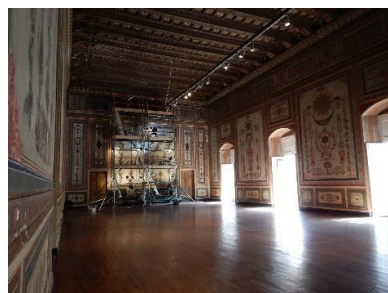


Display for the Bronze age(Potteries, Bronzeware and copper ingots) Display for the Phoenician period (Terracotta coffins•Murex purple dye)



( Left ) Collection of coins ranging from the Phoenician period to today. The time period of Archaeology museum's displays does not extend beyond the Phoenician period

( Below ) Hallway of Archaeology Museum's 2nd floor. Wall paintings on four sides are being restored by two female restorers



## St. John Co-Cathedral



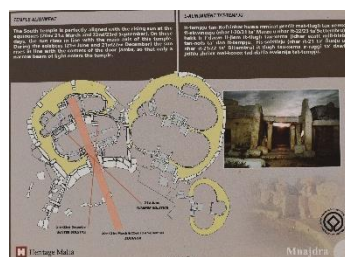
(Left) Cathedral's entrance.  
 (Center) Caravaggio "The Beheading of St. John"

(Right) Restoration of the wall. Restorations of buildings and wall paintings are being performed on numerous cultural properties

## 3/9 Hagar Qim Temple • Mnajdra Temple



Hagar Qim Temple (Left) Whole view • Protections covers the entire site (Center) Environmental monitoring (Right) Environmental monitoring inside the covering



Mnajdra Temple (Left) Whole view (Right) Explanatory panel of the site

Visitor center (Left) Excavated figure of a goddess (Right) Display panel; Comparison between the goddess and a Sumo wrestler



Distant view of the Malta Stone quarry. It is both an archaeological site and an active quarry



### 3/10 From Catania to Gela



From Catania to Gela (Left)Almond farms(Right)Crude oil mining. Discovery of both land and underwater oilfield led

### Gela



(Left)Mr. Nuccio Mulè, Chairman of Gela's Archaeological Club (Center)Research team and Mr. Mulè(From right: Riccardo Franchi(Co-researcher•Museo Stibbert), Noriko Yamamoto(interpreter), Yoichi Nishiyama, Mr. Nuccio Mulè, Yoko Nishiyama(Assistant) (Right)Mr. Cassarino Francesco(Discoverer and excavator of the brass ingots. Found 30m from the beach at the depth of 3-5m. He initially believed it to be gold)



(Left)Gela Archaeological Museum (Center) Buildings dating from the Greek era have been discovered near the museum (Right)Gold coin of the colony of Gela



(Left)(Center)City wall of the Greek colony of Gela. The surviving wall has a length of 800m and height of 5m, and it was buried beneath the sand. It is now protected as part of an natural history park with lush vegetations(Right)Remains of Greek era bath house with protective coverings



Regional Archaeological Museum of Agrigento (Left) Amphorae pulled up from the sea (Center) Black background pottery (Right) Lead and iron-made objects



Regional Archaeological Museum of Agrigento (Left) Bronze Helmets (Center) Stone sarcophagus (Right) Cemetery (Display panel) Almond festival was taking place in Agrigento, and many people were visiting the sites

3/12 Archaeological Museum of Gela: Study on brass ingots.



(Left•Center) Out of the 85 brass ingots found in Gela, 24 are on display (Right) Drawing measurements (Drawing measurements and taking photographs for the 5 items shown below)

Brass ingots found in Gela (Left upper side) (Right under side)



(SOP MARE 4218) (SOP MARE 4215) (SOP MARE 4204) (SOP MARE 4210) (SOP MARE 4196)

Length 31.6cm Length 31.7cm Length 17.2cm Length 28.8cm Length 23.1cm

\* Brass ingots of Gela were found in a 2600 years old Corinthian sunken ship from Greece. It is both the oldest and the sole source of brass ingot in the world.. It is an alloy of about 80% copper and 20% zinc, and it is assumed that it was first produced in Anatolia and then brought to Greece. It is narrated in connection with the civilization of Atlantis. Such copper ingots are also found in the Heian period of Japan as well.



Archaeological Museum of Gela(Left)Mr. Emanuele Turco, Museum’s curator (Furthest left) (2 shots in center)Temple’s plaque to ward off evil and decorative reliefs (Right)Terracotta Sarcophagus

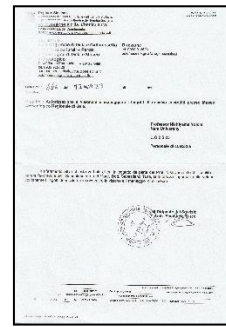
### Future plan for the Gela Archaeological Museum



(Left) Plan to display the sunken ship (Center) Stone anchors (Right)Wooden baskets (preserved)

\* Gela is a quiet town with beautiful beach and Greek-era ruins. With the discovery of the brass ingots, the town now aspires to be prosperous both in history and nature.

3/13 Soprintendente del Mare · Palermo Cathedral · Cappella Palatina, Palace of the Normans



(Left)Entrance of the Soprintendente del Mare (Center)Meeting with Mr. Sebastiano Tusa (2<sup>nd</sup> from right)  
(Right)Research permit for Gela's brass ingots



Palermo Cathedral (Left)Whole view (Center)Inside (Right)Sundial(Brass on the ground shows the year's beginning, months and days)



The Palace of the Normans (Left · Center ) The walls of the Cappella Palatina is decorated with gorgeous mosaics (Right) Special protective sheets are preserving the mosaics

Regional Archeological Museum Antonio Salinas



(Left)Museum entrance(Center)Decorative reliefs from Selinunte Temple(Right)Marble statue



(Left) Bronze she-goat from Syracuse (Center) Potteries (Right) Votive pots with goddess figurines



(Left) Bronzewares and ironwares (Center) Stone sarcophagus (Right) Recreation of the temple's decorations

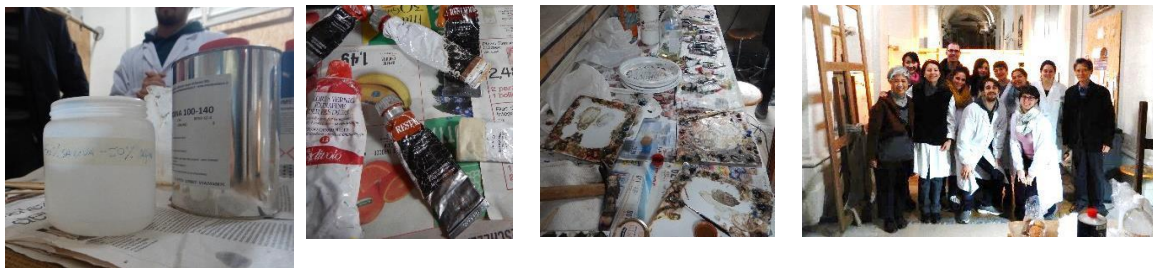
\* Like other museums in Sicily, Palermo's regional museum displays many Greek temples and earthenware. In regards to museum displays, Sicily is dominated by Greek culture, despite being a region of Italy. There are some Roman era materials on display as well, but its numbers are few and their presence light.

3/14 Palermo, Sicily ⇒ Rome

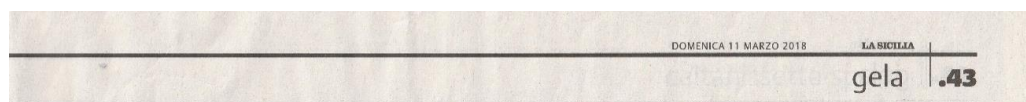
3/14 Rome, Church of St. Anastasia (Observing the painting restoration of Ms. Patrizia)



(Left) Façade of St. Anastasia Church (Center) Restoration work inside the church (Right) Restoration of the saint's painting (cleaning)



(Left) Cleaning agents: Enzymes are the main ingredients (Center 2 ) RESTAURO' paint used for restoration, (Right) Restoration staff



## Visita di Youichi Nishiyama e di Riccardo Franci accompagnati da Mulè

# Dal Giappone e Firenze per studiare gli oricalchi

**I componenti del team di un progetto internazionale sull'uso dell'ottone**

Dal Giappone a Gela per vedere e studiare i lingotti di oricalco e fare un confronto sull'uso dell'ottone nel bacino del Mediterraneo nel VI secolo a. C. è quello che se ne fece in epoche successive nel mondo asiatico ed in particolare in Giappone. Questo interesse scientifico ha spinto Youichi Nishiyama docente dell'Università di Nara ad affrontare il lungo viaggio dal Giappone alla Sicilia. Ad accompagnarlo, oltre alla moglie e all'interprete, c'è il prof. Riccardo Franci curatore dell'arte Stibbert di Firenze. «Io, il prof. Nishiyama ed altri studiosi di varie parti del mondo - racconta il prof. Franci - facciamo parte di un team che cura un progetto di studi internazionali sull'uso dell'ottone. La notizia della scoperta dei lingotti di oricalco a Gela è di grandissima rilevanza per le nostre ricerche. Ne ho parlato con il prof. Nishiyama che ha deciso di venire qui a vederli. Il do-

cente giapponese spiega che sta studiando l'uso dell'ottone come pigmento nei testi sacri giapponesi e che l'ottone in Giappone viene importato ed ha un significato simbolico molto importante. Ma la sensazionale scoperta del mare di Gela apre nuovi ed interessanti scenari di studio sull'uso che altre civiltà hanno fatto dell'ottone».

Il giapponese Youichi Nishiyama con la moglie, l'interprete, il prof. Riccardo Franci ed il prof. Nuccio Mulè

L'oricalco, l'oro di cui parlò Platone descrivendo la mitica Atlantide, si ritiene sia simile al moderno ottone. Dalle analisi effettuate sui lingotti trovati nel mare di Bulala vicino ad un relitto affondato è emerso che sono composti da una lega di rame al 75%, zinco al 15% e per il resto da nichel, piombo e ferro. Non esistono al mondo altri lingotti di oricalco. «Un viaggio che darà buoni frutti non solo per le nostre ricerche ma anche come arricchimento culturale per le tante altre rarità che vedremo al museo di Gela» - dice Riccardo Franci. A fare da guida al museo e per la conoscenza della storia locale al docente giapponese è il prof. Nuccio Mulè contattato dallo stesso docente perché segnalato da un altro collega giapponese che era già stato a Gela.

Fino a lunedì la visita alla città, con molto spazio dedicato a vedere da vicino gli oricalchi, e poi martedì la partenza per Palermo per incontrare il Sottintendente del mare Sebastiano Tusa, lo studioso dei lingotti di Gela. Un tesoro che porta la nostra città all'attenzione internazionale.

**M. C. G.**

## Report on fieldwork at Ostia Antica 2018

Yoshiki Hori

Laser scanning covering the area mapped by I. Gismondi was carried by Japanese team from 2010. We intended to revise his map, which was extremely exact and had the welcome result of confirming the substantial accuracy of the observations made by the earlier excavators, such as Dir. G. Calza in the early 20th century, but now the new technology of laser scanning and GNSS could provide more accurate data with less than 10 mm errors. The project has given work to more than 3000 stations of laser scanner over 7 years (on Figs. 1 and 2), and a further 500 stations in the final stages in 2018. We linked the site survey by terrestrial laser scanner to GNSS network of 68 control points using Leica Viva GS14 and 16 points provided by Parco Archeologico di Ostia Antica to transfer survey stations to world coordinates. On Gismondi's map, the Capitolium turned 20.7 degrees anti-clockwise around its own axis from the north, however, that temple turned 28.1 degrees, then 7.4 degrees more anti-clockwise, actually.

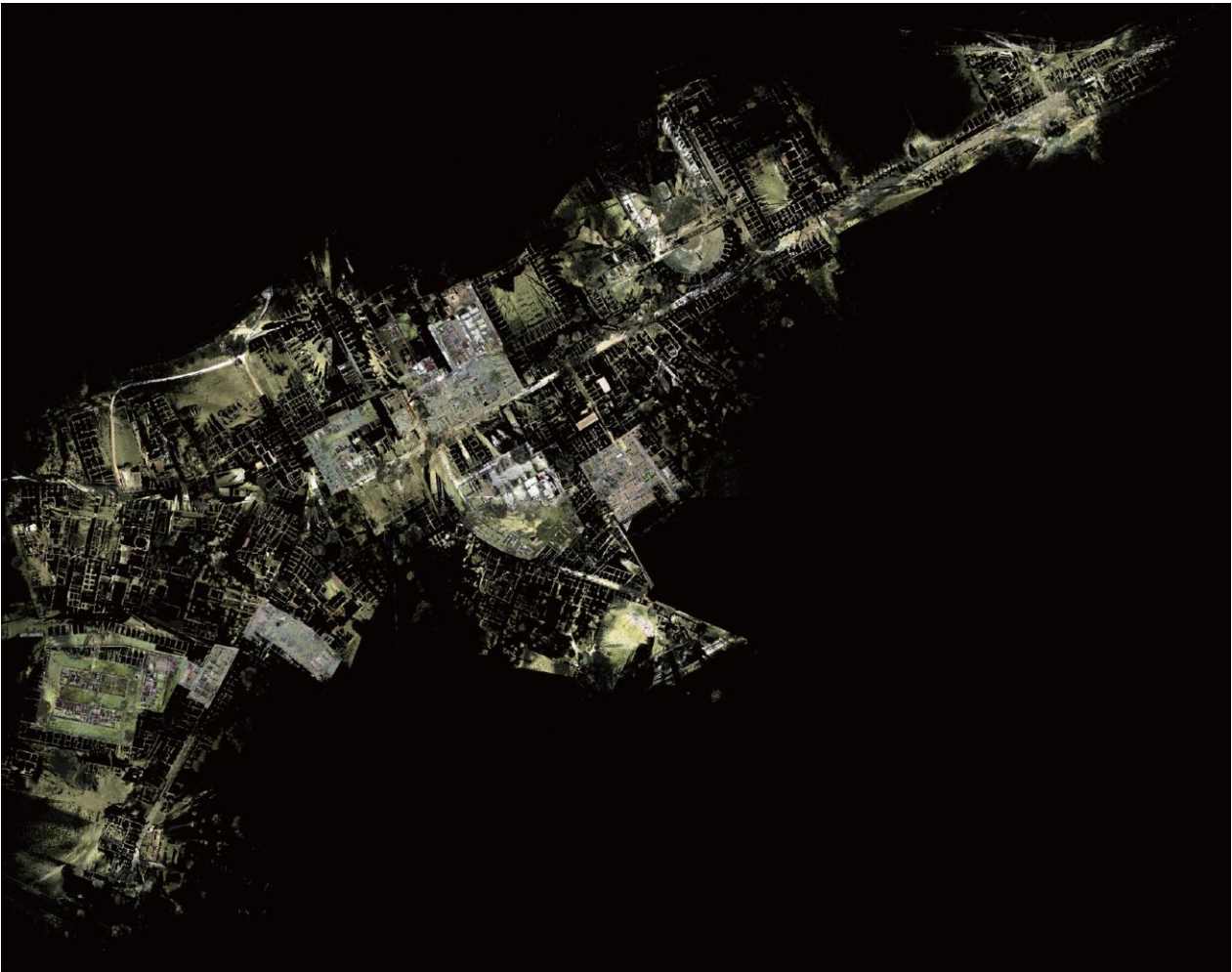


Fig.1 Scanned area from 2010

On the next page, drawing simply traced the wall described as double straight lines.



Fig. 2 Drawing simply traced the wall described as double straight lines.



Fig. 3 illustrates a part of the result of laser scanning coming from the stations showed on Fig. 4.

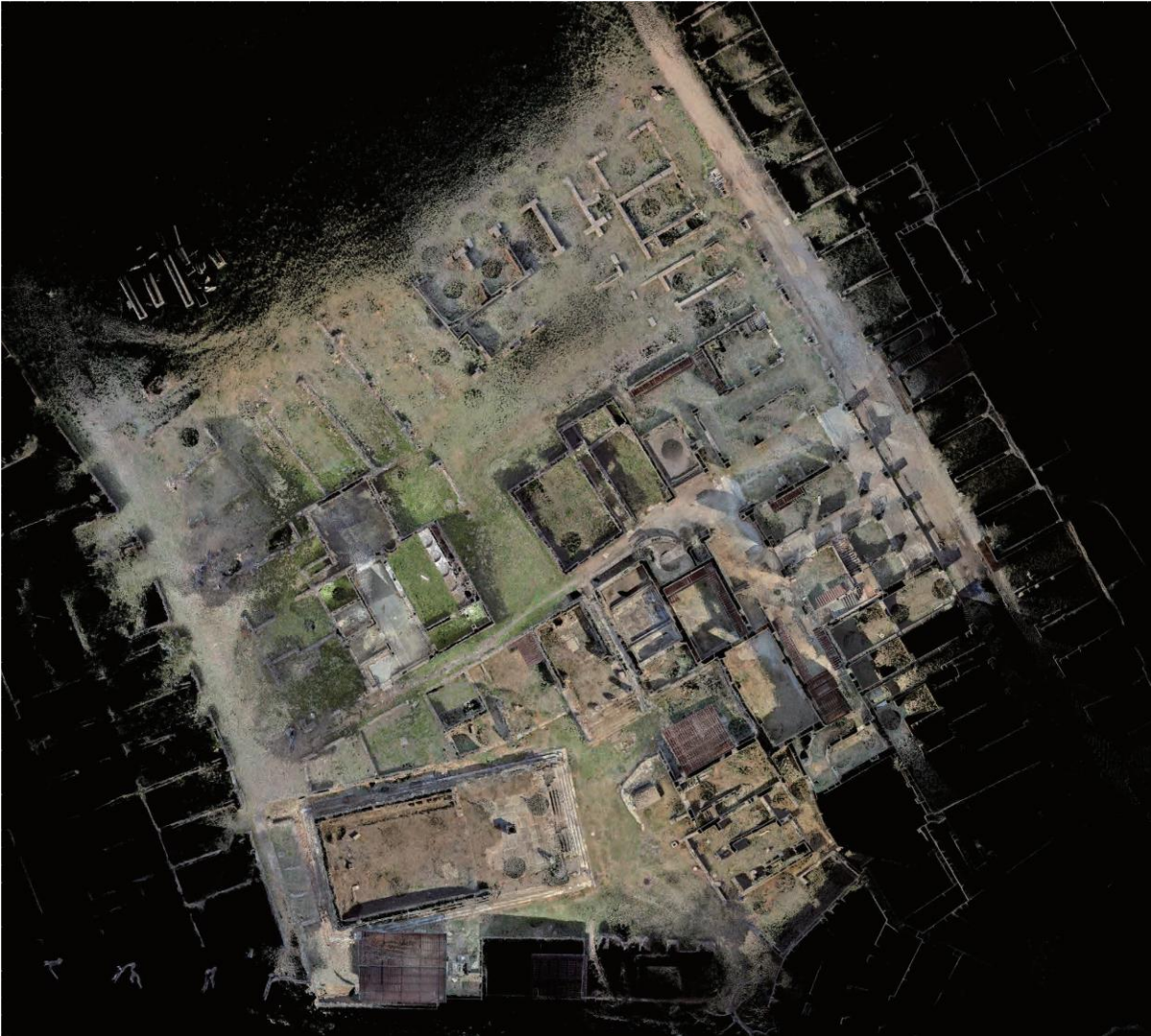


Fig.3 Merged point cloud from more than 100 stations of scans using terrestrial scanners



Fig. 4 Stations of scans covering whole of a city block

And on the final stage, we started to draw the general map overlapping the point cloud data, which can be inserted to Auto CAD using ReCAP, examples can be shown on Figs. 5 and 6.

On Fig.2, every single wall was drawn in the straight double-lines in parallel, then the curve and inequity on the surface of the wall could be ignored. More detailed drawing can be produced in the next season.



Fig.5 Part of general map: Case Giardino, Insula delle Muse, Casa delle Volte Dipinte and Caseggiato delle Trifore.

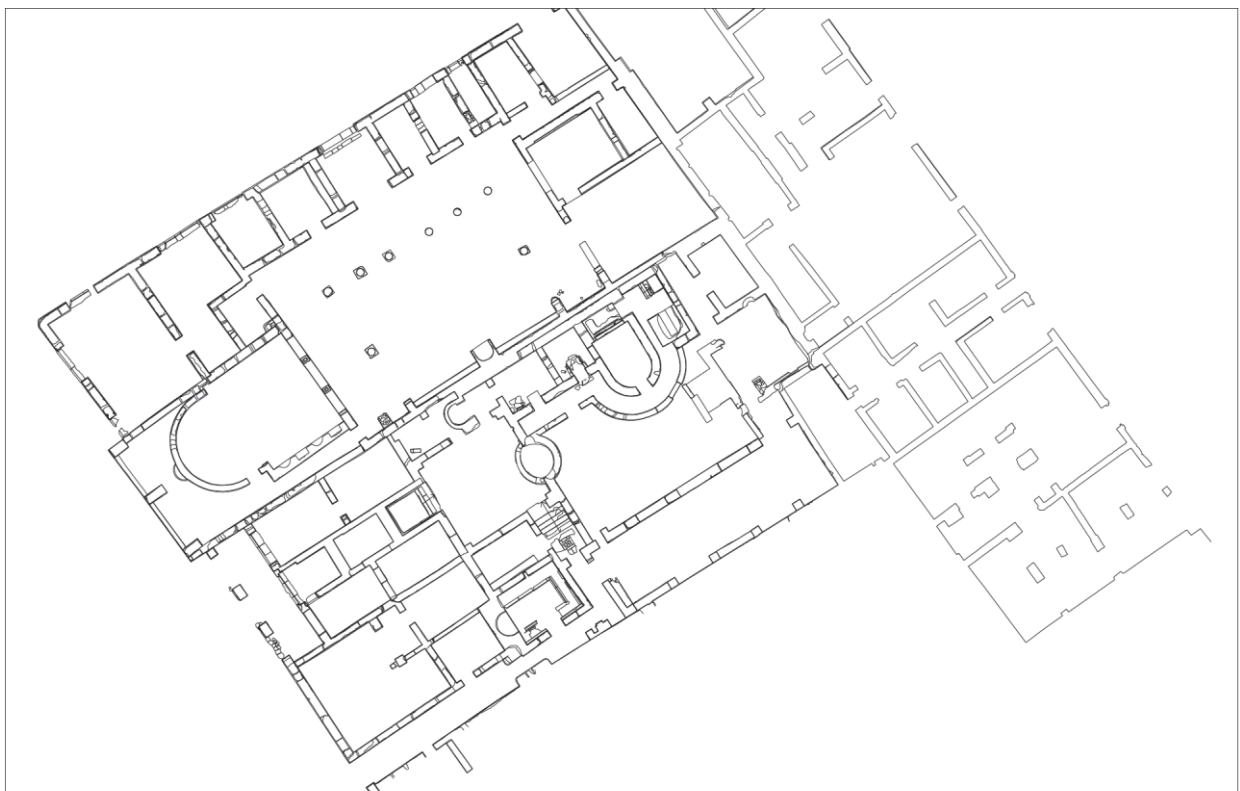


Fig.6 Part of general map: Domus della Fortuna Annonaria and Terme del Filosofo

# 2017 Report for survey in Ostia Antica

Nobuya Watanabe

Schedule: 2017/8/22-2017/8/26 (8/24-8/25 in Ostia)

## 8/22 Arrival

## 8/23 Visiting the museum in Rome

National museum, ancient buildings and features in the city of Rome were visited.

## 8/24 Introducing new members and discussion about the survey plans

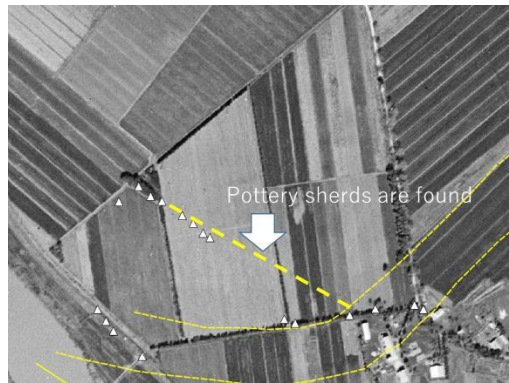
Meeting was held at the office in Ostia Antica in the morning. Future survey plans using satellite remote sensing and UAV photographing as a measure were discussed with Dr. Saintgeorge. We concluded that these methods are highly effective, and cooperative work can reach fruitful results. Excursion in Ostia Antica archaeological park was led by Prof. Toyota after the meeting. Not only touring around the main structures to improve our (surveyors whom first visited the site) basic knowledge, but also reference data (geo-tagged photo) were collected for the future image interpretation (Figure 3).

## 8/25 Survey around the Ostia Antica

Survey around the Ostia Antica was conducted. There were several areas and land marks which caught our interest during the preliminary satellite image interpretation. Some of the detected soil marks in the images were expected to be reflecting the underground structures. Survey for this season focused especially to the northern area of the old river channel of Tevere River (Figure 1). We confirmed that one of the detected soil marks were actually a site, since it was recently excavated and still preserved. We were also able to find several pottery sherds when surveying around the detected soil mark which probably are unknown. This soil mark is linear shaped and it is connected to the nowadays road (Figure 2). It can be an ancient road which part of it was continued to be used in the following time. Also continuity of some stone paved roads were confirmed within the Ostia Antica.

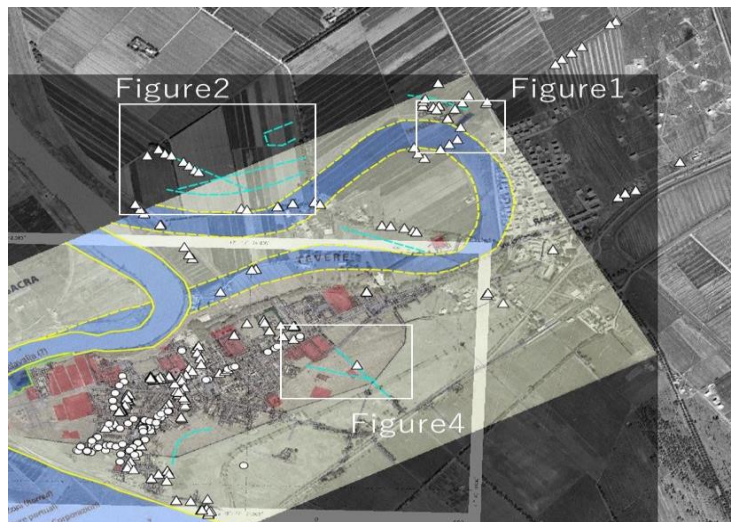


Figure 1 Soil mark detected within image



**Figure 2** Detected linear structure and difference between the data.

These results implies the reliability of satellite image interpretation for detecting ancient structures in the vicinity of the Ostia Antica. However, there are difference of its visibility among the data. **Figure 4** shows the clear difference between the historical CORONA satellite and the recent Worldview-3 images. Thus, this result ask us to 1) seek for the cause of this difference, 2) use multiple images to cross-check the detection.



**Figure 3** Preliminary GIS database including surveys and digitized detected structures (points generated from tagged-photo). White circle stands for the photos taken in 8/24, while white box is for photos taken in 8/25.



**Figure 4** Detected underground structures and difference of visibility between the data

The interpreted results were digitized and mapped on the geo-rectified satellite images using the GIS. Aerial photographs, satellite images, and other surveyed materials are planned to be integrated into this system as an Ostia Antica survey geo-database (Figure 3). The data collected and prepared can be shared among the co-workers, which can be one of a basic information to understand the spatial situation of the Ostia Antica, including the past environmental impacts.

## **8/26 Departure**

# The Graffiti Survey Report at Ostia Antica in 2017

Hiroki Okuyama

Part-time Lecturer of Okayama University of Science,  
and National Institute of Technology, Hiroshima College

## 1 Introduction

Since 2008, we have focused our surveys on Ostia Antica backed by grants from JSPS KAKENHI and with the permission of Soprintendenza Speciale archeologica di Roma per Ostia Antica(1), clarified the structure of the city and its occupants' activities from various points of view such as architecture, economy, society, religion, art, and living environment(2). We obtained new subvention and we will be conducting further study. Its purpose is to present the actual life and situation of the general public in the ancient Roman period.

Our approach mainly consists of five points: ①Philological approach, ②Architectural approach (continuation of data collection through the application of 3D laser precision measurement on the site, and the analysis of the acquired data), ③Geographical approach (discovery of buried remains using satellite imageries), ④Archeological approach (the analysis of unearthed relics), and ⑤Approach using textual materials. This report describes "textual materials"(3). Textual materials included Inscriptions, Mosaics, Money signatures etc. , but we focused on Graffiti (or incised wall-inscriptions), since among textual materials, graffiti are the one most connected with the general public.

## 2 Confirmation investigation

The primary task of our Graffiti survey was to confirm the investigation results of graffiti previously published, then we investigated and confirmed the present conditions and situation of Ostia-graffiti.

Survey remains are as follows. The number (G···) of graffiti corresponds on "Ostia-Harbour City of Ancient Rome"(4), and the published graffiti refers to graffiti listed in that homepage.

### ① Capitolium (I, Forum)

We had access to 5 graffiti out of 6 total: G0001, G0002, G0003, G0004, G0005.

### ② Basilica (I, II, 3)

We had no access (2 total).

### ③ Caseggiato del Termopolino (I, II, 5)

We had access to all (3 total): G0008, G0009, G0010.

### ④ Domus di Giove e Ganimede (I, IV, 2)

We had access to 19 graffiti out of 26 total:

G0023, G0024, G0025, G0026, G0027, G0028, G0030, G0031, G0033a, G0033b, G0036a, G0036b, G0036c(k), G0036d, G0036e, G0036f, G0036g, G0036h, G0036j.

⑤ Portico di Pio IX (I, V, 1-2)

We had no access (14 total).

⑥ Botteghe (I, VIII, 10)

We had no access (1 total).

⑦ Casa Basilicale o dietro la Curia (I, IX, 1)

We had no access (7 total).

⑧ Domus del Tempio Rotondo (I, IX, 2)

We had access to 3 graffiti out of 4 total: G0056, G0057, G0059.

⑨ Caseggiato dei Triclini (I, XII, 1)

We had no access (4 total).

⑩ Terme di Foro (I, XII, 6)

We had access to 11 graffiti out of 19 total:

G0063, G0064, G0065, G0067, G0068, G0071, G0073, G0074, G0076, G0077, G0081.

⑪ Caserma dei Vigili (II, V, 1)

We had access to 20 graffiti out of 45 total:

G0088, G0089, G0090, G0091, G0108, G0112, G0113, G0114, G0115, G0116, G0117, G0118, G0120, G0121, G0122, G0123, G0124, G0125, G0127, G0392.

⑫ Aula di Marte e Venere (II, IX, 3)

We had access to all (2 total): G0417, G0418.

⑬ Caseggiato delle Trifore (III, III, 1)

We had access to all (2 total): G0157, G0158.

⑭ Casa a Giardino (III, IX, 4)

We had access to 14 graffiti out of 23 total:

G0178, G0179, G0180, G0181, G0182, G0183, G0184, G0185, G0186, G0187, G0192, G0193, G0194, G0196.

⑮ Casa delle Ierodule (III, IX, 6)

We had access to 26 graffiti out of 70 total:

G0199, G0511, G0512, G0557, G0558, G0559, G0563, G0564, G0565, G0566, G0568, G0569, G0572, G0578, G0580, G0583, G0584, G0586, G0600, G0612, G0614, G0617, G0618, G0619, G0620, G0621.

⑯ Casa del Graffito (III, IX, 21)

We had access to 3 graffiti out of 4 total: G0224, G0225, G0226.

⑰ Caseggiato di Annio (III, XIV, 4)

We had access to 7 graffiti out of 15 total: G0330, G0332, G0333, G0335, G0338, G0339, G0340.

⑱ Caseggiato del Temistocle (V, XI, 2)

We had access to 6 graffiti out of 7 total: G0359, G0360, G0361, G0362, G0397, G0520.

As the result of the investigation, we were able to reconfirm 121 out of these 260 graffiti.

We did not investigate other remains where graffiti have been already confirmed, because of time limitation and the lack of permission: Sacello del Silvano (I, III, 2, 4 total), Caseggiato di Diana (I, III, 3-4, 4 total), Mitreo di Menandro (I, III, 5, 2 total), Casa di Bacco Fanciullo (I, IV, 3, 2 total), Horrea Epagathiana (I, VII, 3, 5 total), Casa del Soffitto Dipinto (II, VI, 5-6, 5 total), Mitreo delle Pareti Dipinte (III, I, 6, 4 total), Sacello delle Tre Navate (III, II, 12, 12 total), Casa delle Volte Dipinte (III, V, 1, 17 total), Casa delle Pareti Gialle (III, IX, 12, 26 total), Domus delle Muse (III, IX, 22, 24 total), Casseggiato degli Aurighi (III, X, 1, 95 total), Insula dell'Aquila (IV, V, 8, 4 total). And about Terme Marittime (III, VIII, 2, 30 total), we gave up an investigation because of protection on the walls and of thick foliages.

### 3 Indications based on the field work

(1) The survival of graffiti

As described above, we reconfirmed 121 of these 260 graffiti through field work, but in other words, it means that we could not reconfirm more than half of these 260 graffiti.

There are various reasons for this. For example, in Casa delle Ierodule which has 26 out of 70 graffiti, we confirmed a unity of graffiti in one wall, but could not divide these into individual graffiti for limitation of investigation time (G0589~G0611), in Portico di Pio IX we were not able to reconfirm (0 out of 14 graffiti), it is a cause that a few graffiti were hard to continue being put in the original position: for example the piece of the head of statue and the fragment of marble plate. And above all, many graffiti must have been lost due to being originally placed on plaster wall. Actually, in Caserma dei Vigili where only 20 out of 45 graffiti could be reconfirmed, the plaster protected by eaves completely exfoliated (fig. 1), and as for the graffiti which we were able to reconfirm, most remained on the bed of the plaster (fig. 2). Even the hard stones of floor graffiti described below are damaged by human foot, and exposure to elements, therefore we were not able to reconfirm 8 out of 19 floor graffiti in Terme di Foro. Graffiti can be lost even on hard stone, even more so on soft support such as plaster. There is nothing we can do in regards to this. However, we must consider how to investigate graffiti which even a photograph is not left.





Fig.1 The lost of plaster (Caserma dei Vigili (II, V, 1), 44)

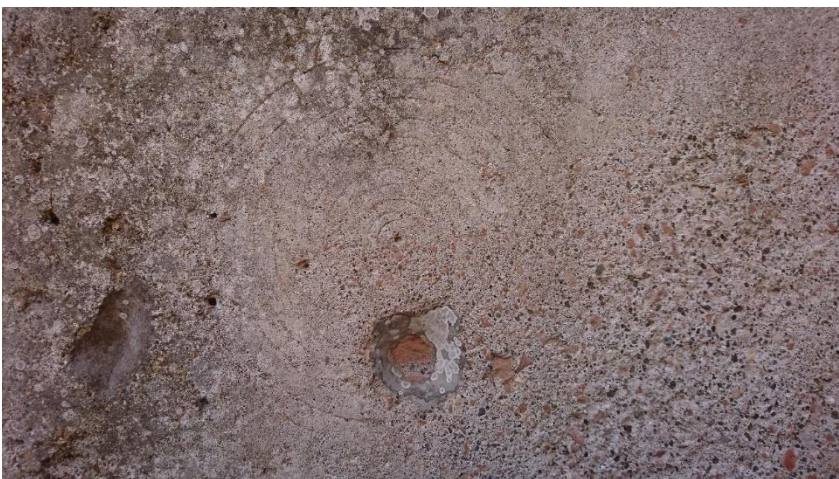


Fig.2 Graffito remaining in the bed (Caserma dei Vigili (II, V, 1), G0114)

## (2) The Floor graffiti

One support of Ostia-graffiti is floor (fig. 3). It consists of 43 graffiti. The floor consists hard stones such as marble, in which graffiti were carved and engraved sufficiently. However, graffiti are created by easy and quick scratch using materials such as a rock picked up from the ground and stylus and key, and it does not require a specific tool and technique to carve and engrave it on hard stones.

The case of the Capitolium is particularly interesting. In the Capitolium, all graffiti are on the steps of stairs. But it seems that all of those are restoration, and marbles excavated in other remains of Ostia were used for this restoration<sup>(5)</sup>. Accordingly, even in remains other than the Capitolium, the floor graffiti which we reconfirmed might not have been originally made for floor. In addition, the restoration itself was carried during the ancient Roman period, and recycled stones were often used on such occasions. When we consider the context which surrounds graffiti including relations of its contents and remains, the recycling becomes a problem. At least, it will be necessary to know the process from the excavation of each remains to the present day. To treat floor graffiti as “graffiti” may be a problem in the first place.



Fig.3 Floor graffito (Terme di Foro (I, XII, 6), G0063)

### (3) The Brick graffiti

Bricks are structural materials of the remains, we can see it everywhere in Ostia. The brick is also one of the supports of Ostia-graffiti, it numbers 42 in all (fig. 4). However, the brick was covered by plaster, and it was not originally visible (fig. 5). Naturally, there would have been no way originally to carve graffiti on bricks, therefore it is certain that bricks with graffiti were exposed at one point. For the timing when the bricks were exposed, we assume either the time of the construction of building and the time when the plaster fell off by some kind of reasons (deterioration through aging etc. ). When it fell off, the restoration must have been carried out, and graffiti would be made on the exposure before restoration. But the wall might have been left without any restoration. The timing when graffiti were made would have many variations. The absence of any repairs of the damaged outer wall makes us imagine the decline of whole of Ostia. The decline of Ostia began at the mid-third century and was complete by the early fifth century(6). Although we did not see all of the brick graffiti, existence of so-called “wedge-shaped” A (the form of the left diagonal stroke and horizontal stroke forming the acute angle :fig. 6) in graffiti (G0241) of the outer wall of Domus delle Muse (III, IX, 22) may become the collaborating evidence for the

relations of the decline stage and bricks graffiti, because they happen often in the Late Antique context. For proof, it is necessary for proof to extract the “Letter form” of textual materials of Ostia so that the period can be estimated.

Finally, bricks are the structural materials of remains, and for that reason the knowledge of structure and building technique of the remains, and the architectural knowledge including the remodeling and the reconstruction order are indispensable. Our challenge now is to consult architectural experts, and to conduct detailed study on every remain, every wall.



Fig.4 Bricks graffito (Caserma dei Vigili (II, V, 1, G0091)



Fig.5 Bricks and plaster



Fig.6 Graffito of the outer wall (Top:original, Bottom:tracing, Domus delle Muse (III, IX, 22), G0241)

#### 4 Discovery of new graffiti

On our confirmation investigation, we discovered 51 new graffiti in Casa a Giardino (III, IX, 4). However, they might not be new graffiti, but being the 35 listed graffiti (G0521~G0555) listed under “Work in progress” on the homepage. However, we present them here, because we were not able to make comparison at the present, in case of a simple graffito comprised only of consecutive lines, we assume a graffito to be intentional if it consists of more than 3 lines. The location of each graffito is based on Cervi(1998)(fig. 7), and about the graffito number, we acquire it sequentially from the right side of the wall.

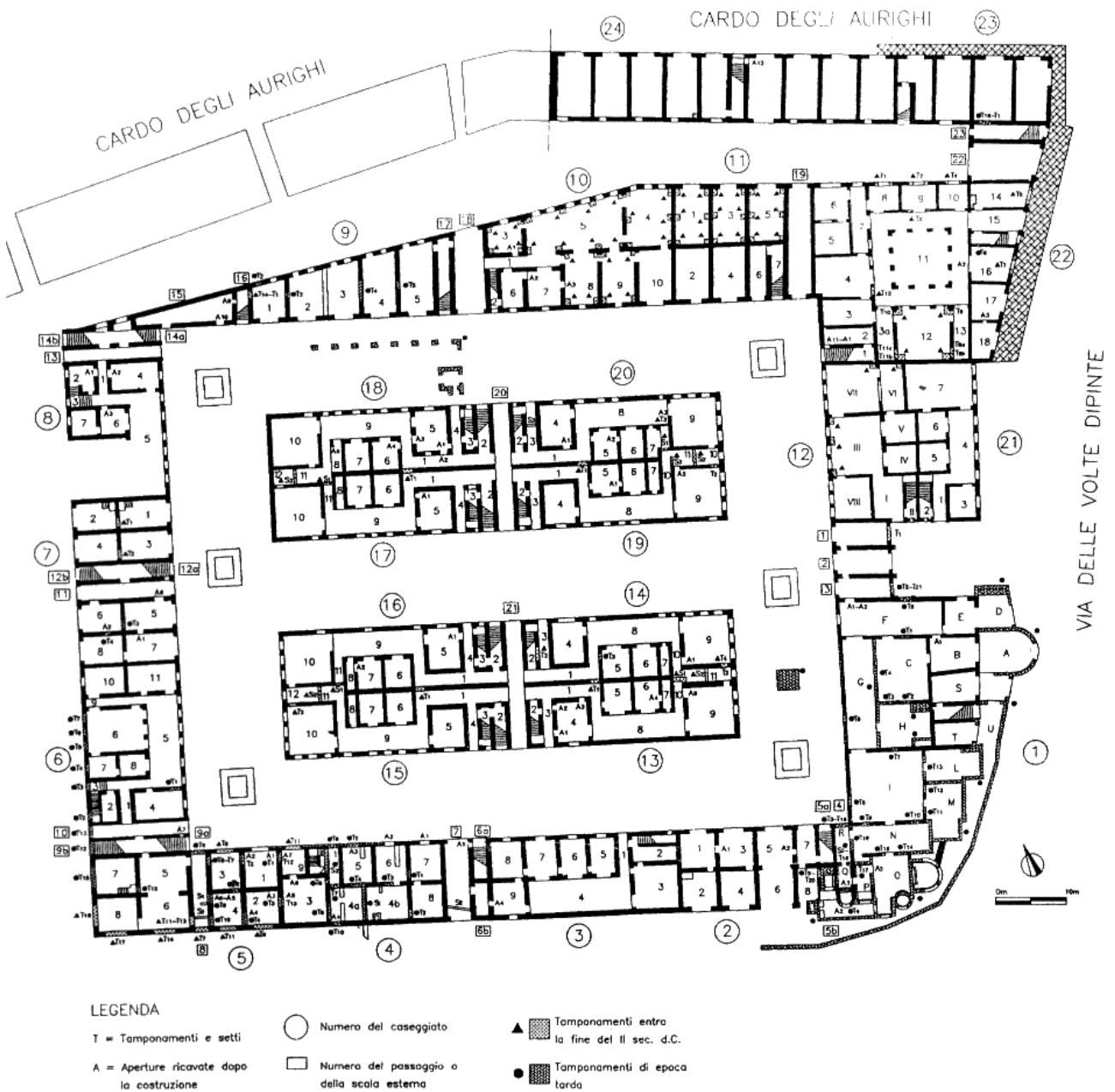
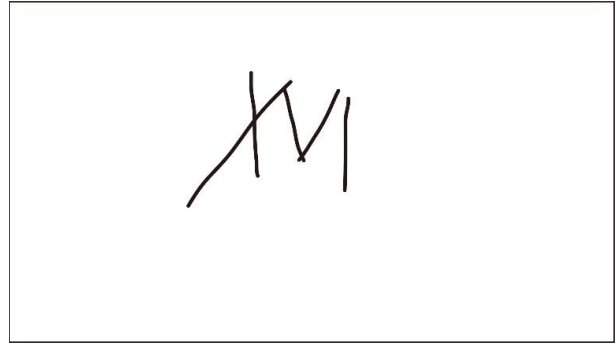


Fig.7 Casa a Giardino (Cervi(1998), fig. 2)

(1) 4-7

① Numbers (east wall, 13×17cm)

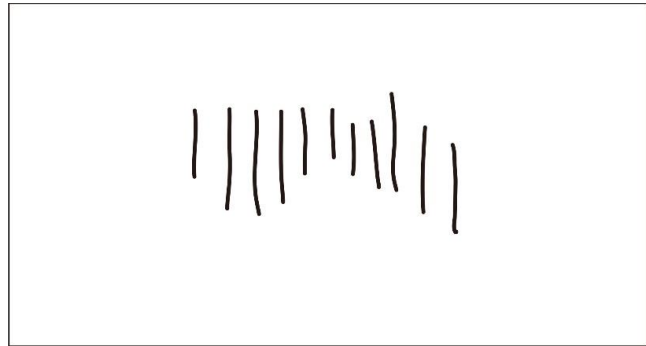
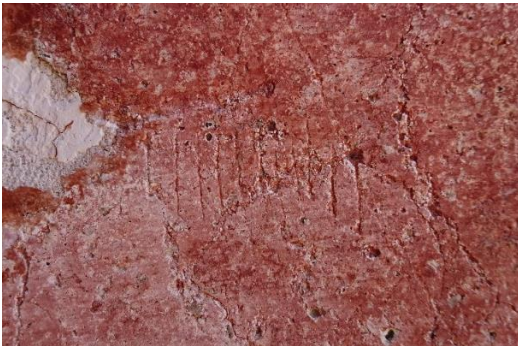
XXI (21)



(2) 13-4

① Numbers (east wall, 2×4.5cm)

IIIIIIIII (11)



② Numbers (east wall, 10×9cm)

IIIIIII? (9?)



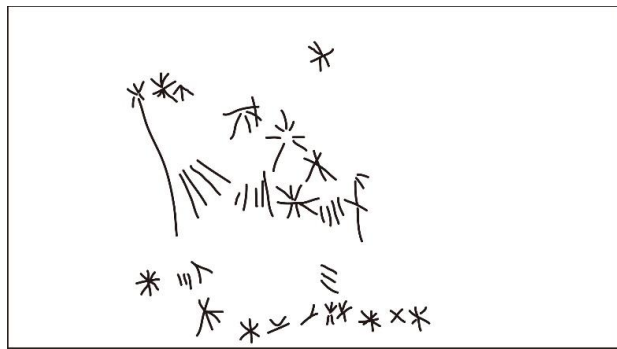
Because the lower left part is greatly damaged, the accurate number is unidentified, but we confirm at least 9 lines.

③ Unidentified objects (east wall, 9×3cm)



Between 2 narrow lines joining up in the upper part, we confirmed two signs that combines + with ×. There is possibility of the money unit sign(=as) consisting - and ×, an obelisk and a kind of tower based on G0200 and G0201 where the overall shape is similar to.

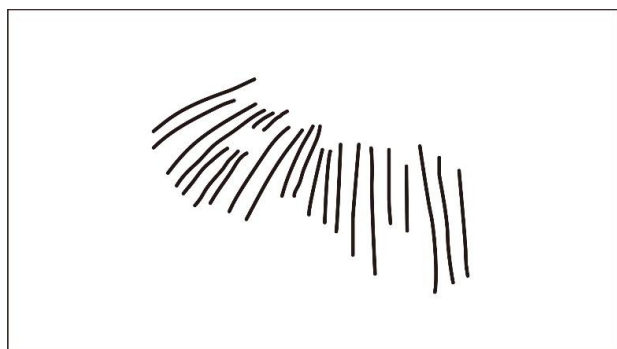
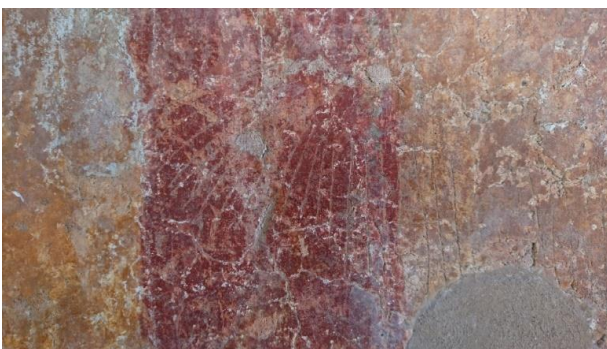
④ Unclassified texts (east wall, 12×16cm)



There are large and small lines, sign that combines + with ×. We consider the sign as money unit and the lines as numbers. Thereby we must grasp the combination of both.

⑤ Numbers? (east wall, 12×40cm)

IIIIIIIIIIIIIIIIIIII? (21?)



We consider it to be a number for a series of lines, or some kind of iconographic images because the lines goes downward to the right.

⑥ Numbers (east wall, 2.5×2.5cm)

IIII (4)

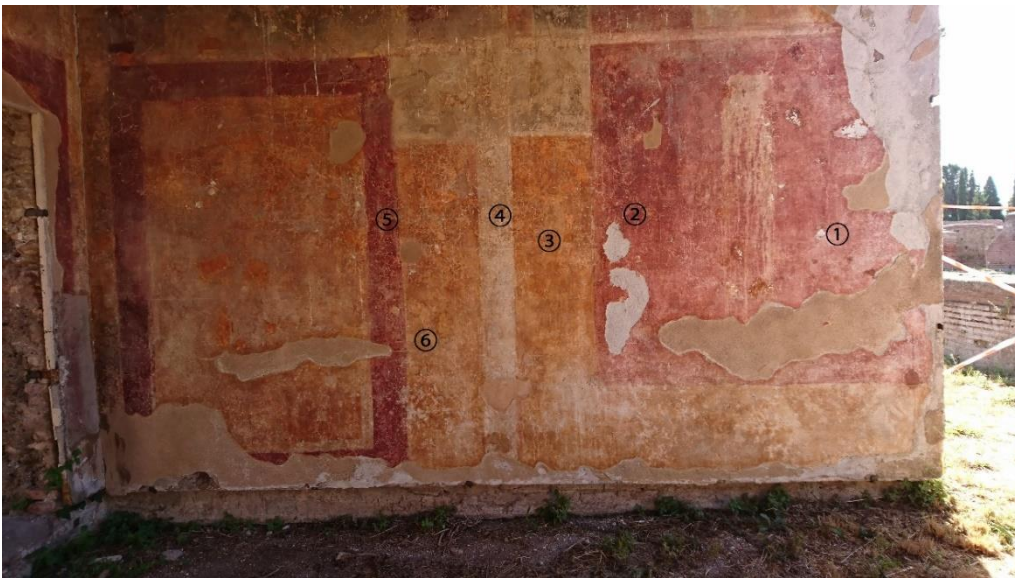
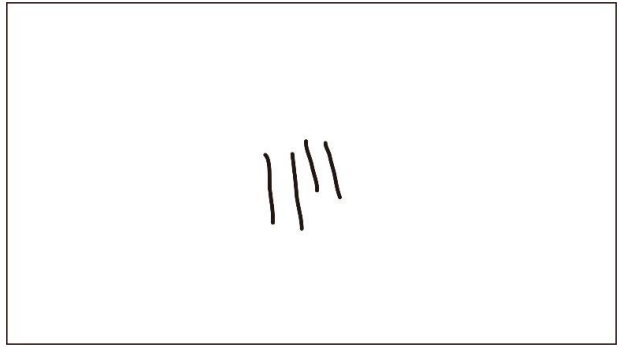


Fig.8 East wall of 13-4

⑦ Numbers (north wall, 7×9cm)

IIIIIIIIII (12)

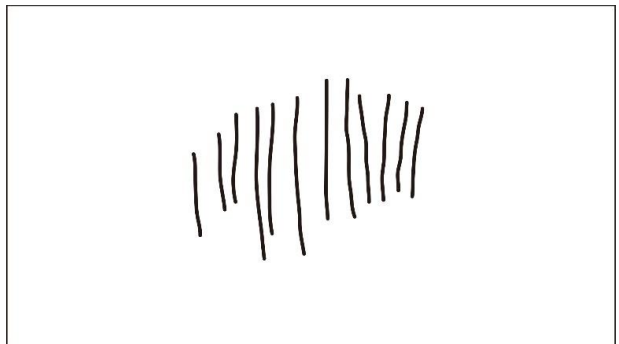
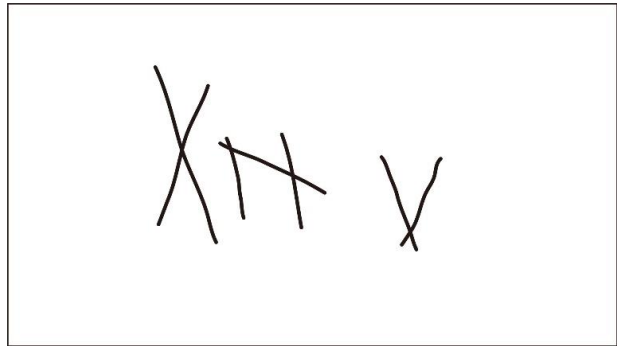
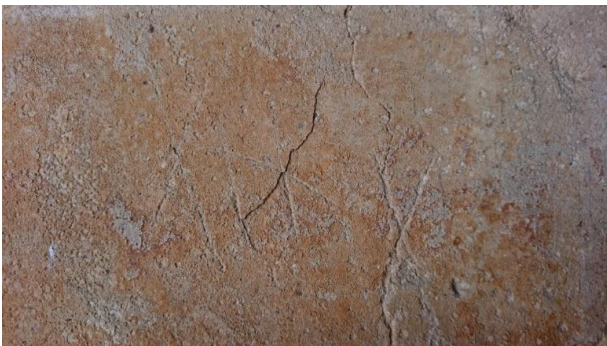




Fig.9 North wall of 13-4

⑧ Unclassified texts (west wall, 5×9cm)

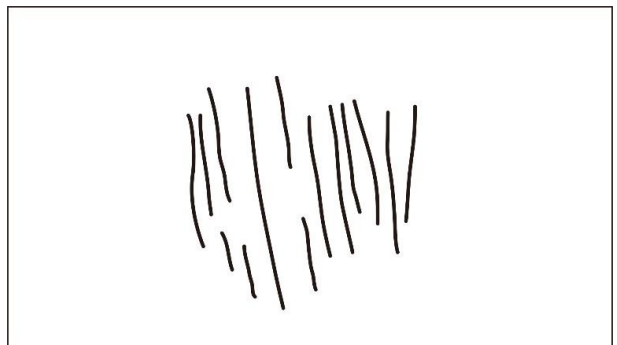
XIXV?



This is a graffito consisting of three or four letters. The first letter is X. The part of second letter complicates to some extent and has some possibilities: IX, N, and H based on a diagonal line. But we adopt the IX interpretation, because “Numbers” is the largest category of graffiti of Casa a Giardino. The fourth letter is V or X since lower part of the letter is damaged.

⑨ Numbers (west wall, 6.5×11.5cm)

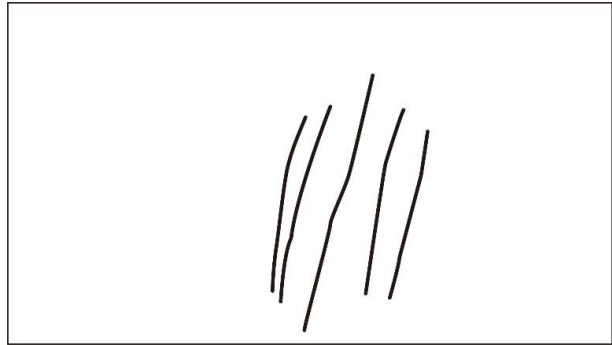
IIIIIIIIII (11)





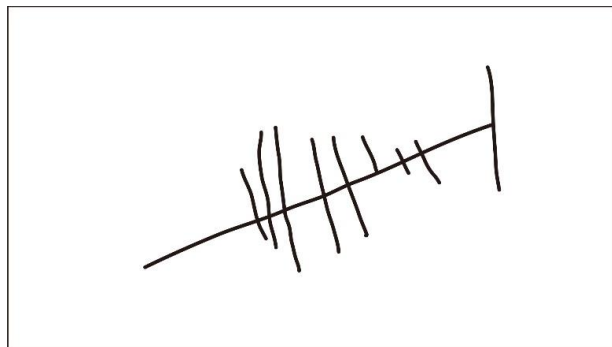
⑩ Numbers (west wall, 5.5×4.5cm)

IIII (5)



⑪ Numbers(Tallymarks) (west wall, 6×18cm)

IIIIIIII (10)



⑫ Numbers (west wall, 7.5×15.5cm)

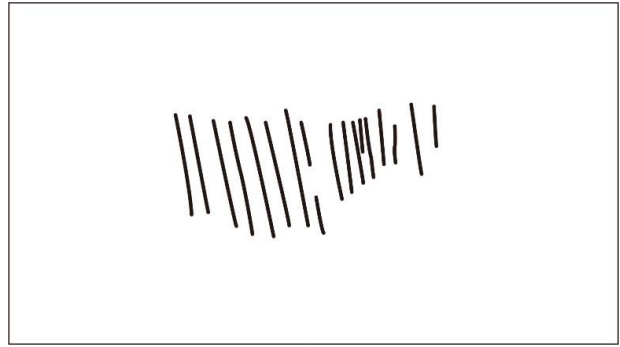
IIIIIIII III (14?)



The accurate number is unidentified, but we confirm at least 14 lines.

⑬ Numbers (west wall, 10×19cm)

IIIIIIIIIIIIIIIIII (17)



⑭ Unclassified texts (west wall, 6.5×7.5cm)

XA

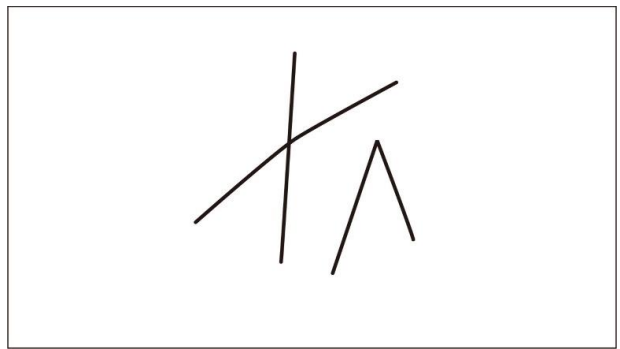


Fig.10 West wall of 13-4

(3) 13-5

① Numbers (east wall, 3×4cm)

IIIIII (7)

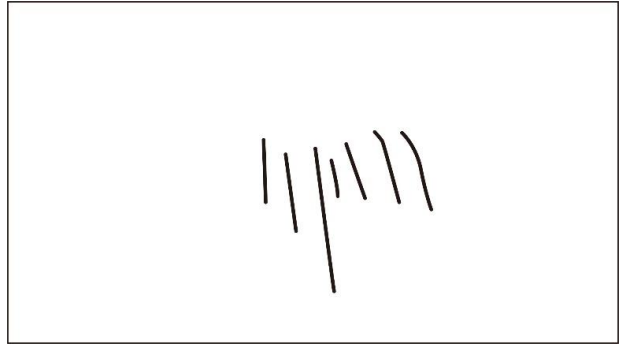
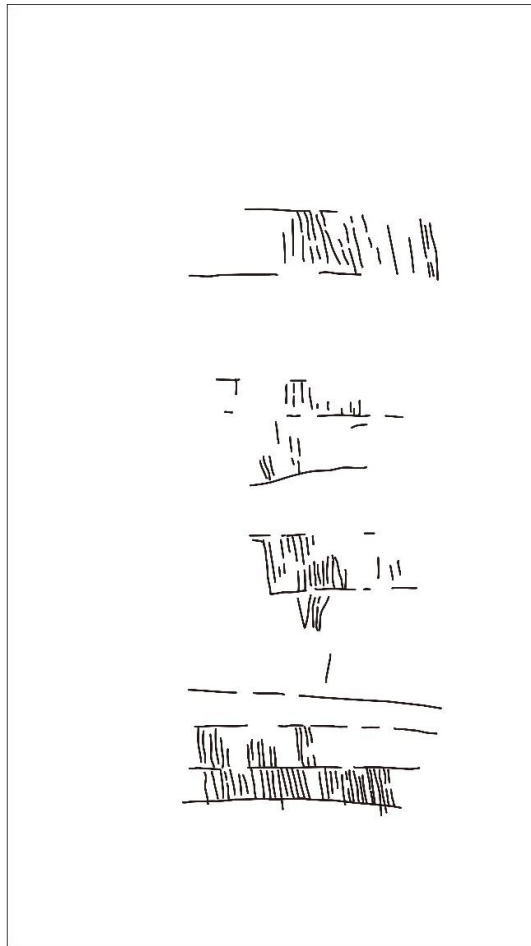
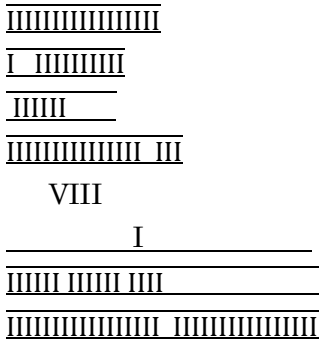


Fig.11 East wall of 13-5

(4) 13-8

① Unclassified texts ? (north wall(entrance of 5), 6×13cm(line 1), 3×18cm(line 2), 6×18cm(line 3), 5×14cm(line 4), 3×2. 5cm(line 5), 6×20cm(line 6), 3×20cm(line 7), 3×20cm(line 8), whole hight: 50cm)



The graffito is very big, consisting of eight lines. The component is very simple, and most become consecutive lines. Simply thinking, each line is a number, and this interpretation is reinforced by the fifth line VIII. There is a problem with the horizontal line of the boundary of each line, because it may express simple ruled line or some kind of iconographic images. Therefore, unfortunately we cannot conclude it to be a number.

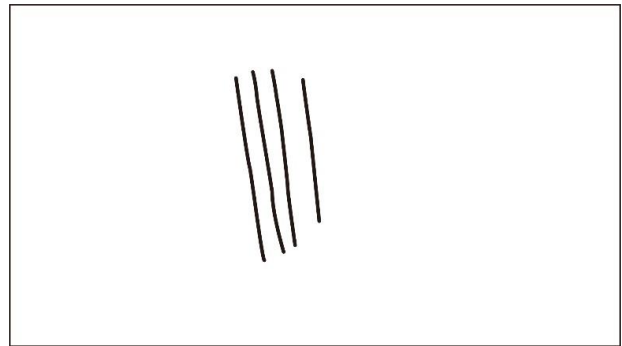


Fig.11 North wall of 13-8 (Entrance of 5)

(5) 14-4

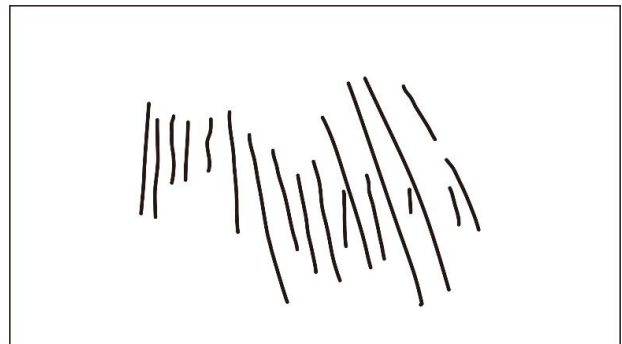
① Numbers (west wall, 13×4.5cm)

IIII (4)



② Numbers (west wall, 10~14.5×20.5cm)

IIIIIIIIII ? (14 ?)



Although we count only it long lines, but if we include the short lines it becomes 18. Because the short lines are about the same length, two graffito may be piled up.

③ Numbers (west wall, 8.5×9cm)

IIIIIIIIIIII (14)

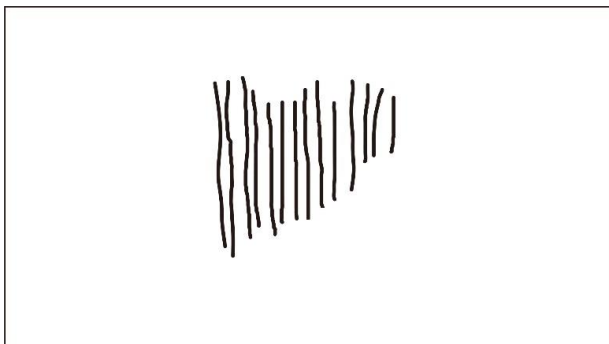
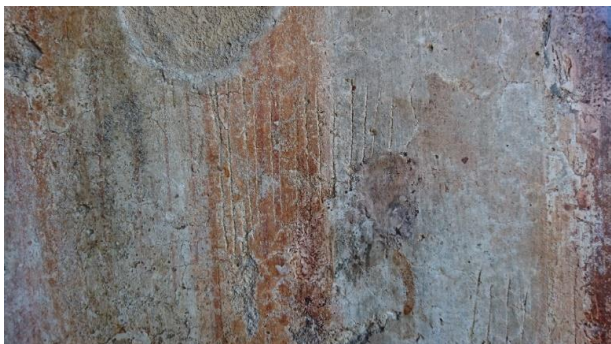
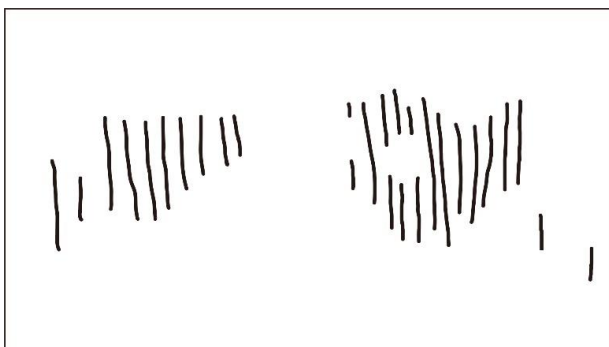
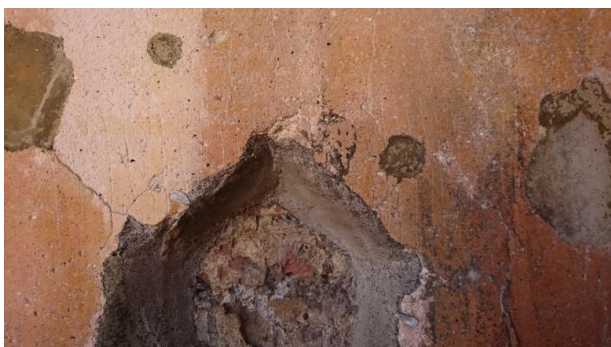


Fig.12 West wall of 14-4

(6) 14-5

① Numbers (east wall, 8~10×33.5cm)

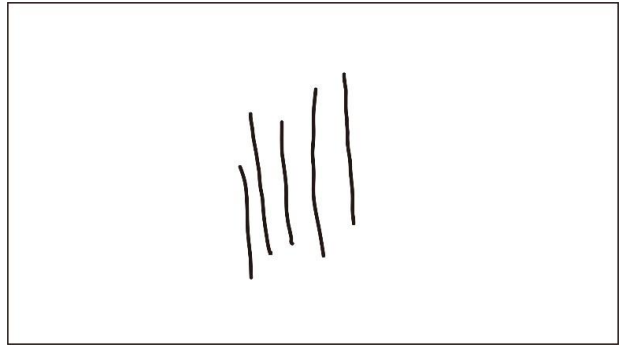
IIIIIIIII...IIIIIIIIIIII (over 24)



Because the center part is greatly damaged, the accurate number is unidentified, but we confirm at least 24 lines.

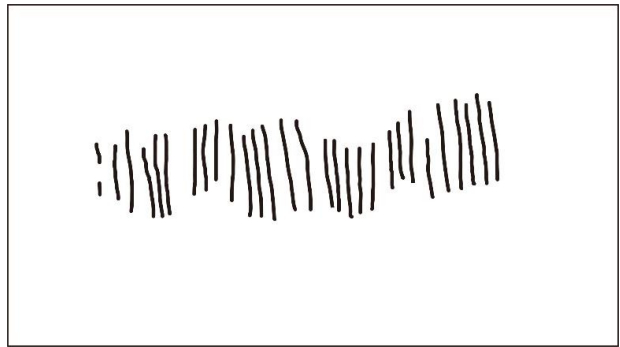
② Numbers (east wall, 7×4cm)

IIII (5)



③ Numbers (east wall, 8~10×30.5cm)

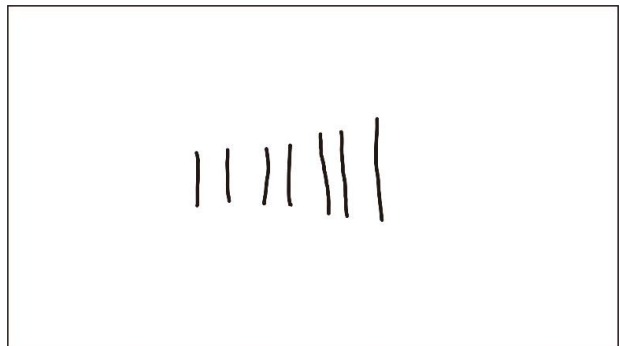
IIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII (29)



The left part is greatly damaged, but we confirm 29 lines by the top of lines.

④ Numbers (east wall, 4×7cm)

...IIIIII (over 7?)



Because the left part is greatly damaged, the accurate number is unidentified, but we confirm at least 7 lines.

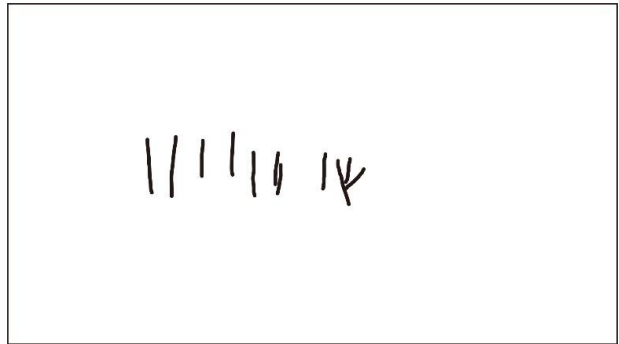


Fig.13 East wall of 14-5

(7) 15-7

① Numbers (south wall, 3×12cm)

IIIIII? (8?)



Because the center part is greatly damaged, the accurate number is unidentified, but we confirm at least 8 lines.



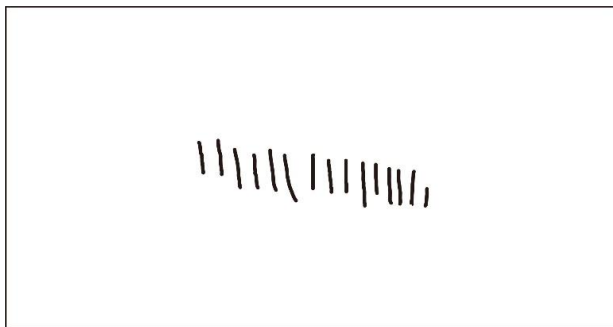
Fig.14 South wall of 15-7



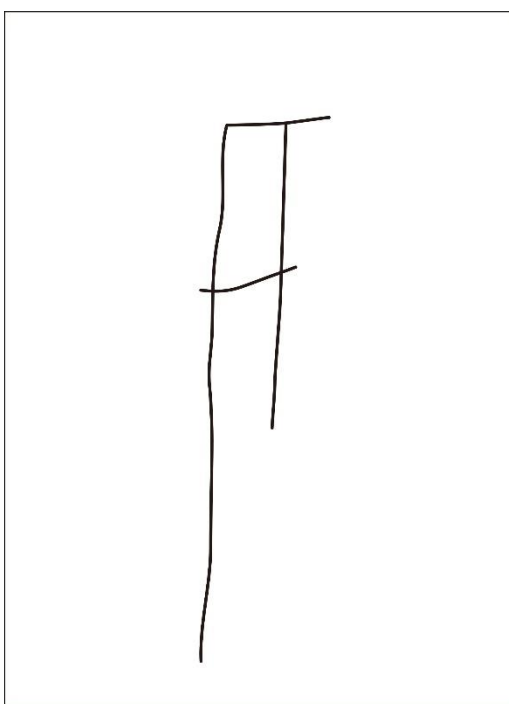
(8) 15-9

① Numbers (north wall (entrance of 7), 3×25cm)

IIIIIIIIIIII (15)



② Unidentified objects (north wall (entrance of 7), 23×3~4.5cm)



This graffito consists of two long vertical lines and two short horizontal lines. Although the bottom is not closed, it looks like a big and small rectangle. The slim shape suggests a building such as a tower, but we should understand it as a circumscribed Pharos, because of the lack of signs between long lines present in the case of tower.

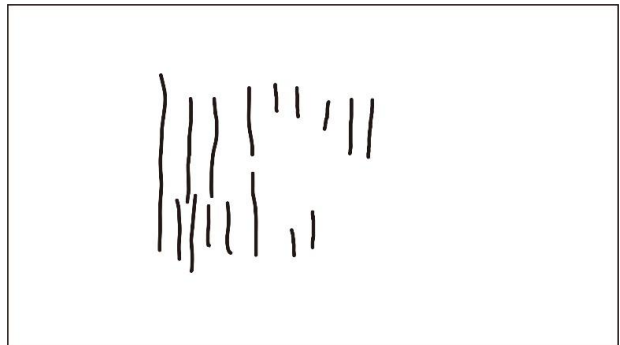


Fig.15 North wall of 15-9 (Entrance of 7)

(9) 16-5

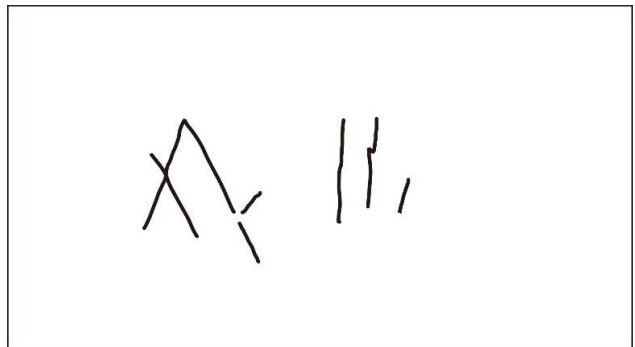
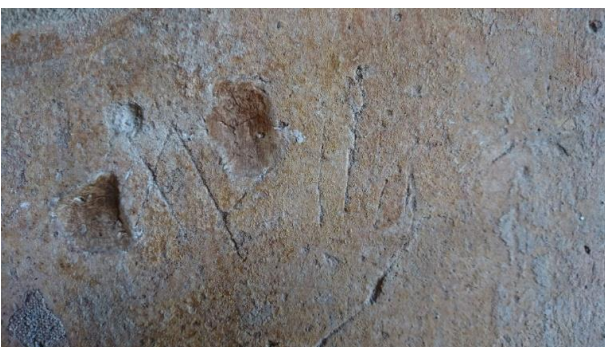
① Numbers (west wall, 6×7cm)

IIIIIIIIII (13)



② Numbers (west wall, 4×8cm)

XVIII (18)



We identify the second letter with V not X, because there is no left diagonal line after the intersection. There is a line to the right of vertical line, but we understand it as a part of a crack.



Fig.16 West wall of 16-5

③ Numbers (east wall, 3.5×3cm)

III (3)

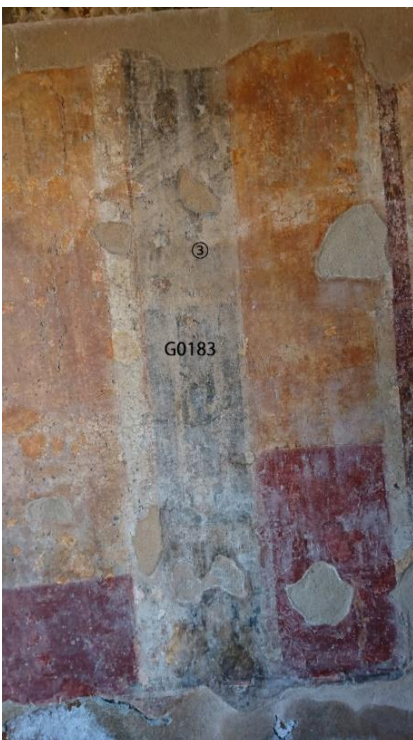
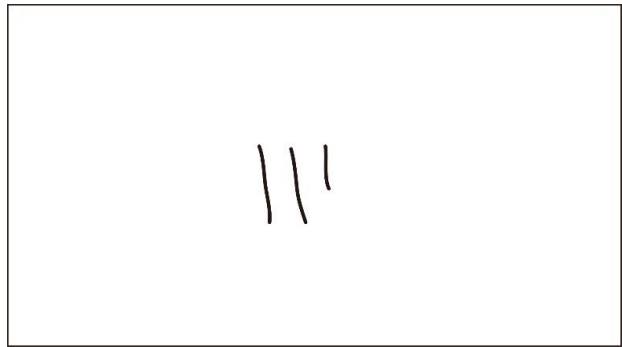
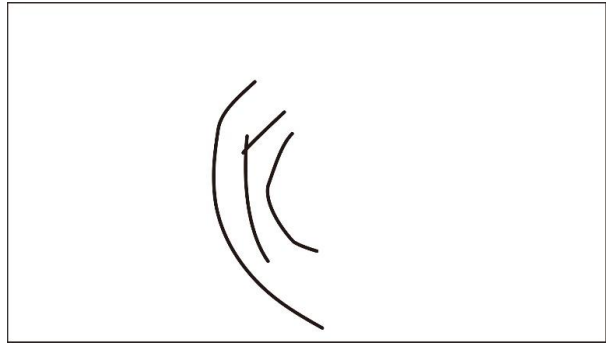


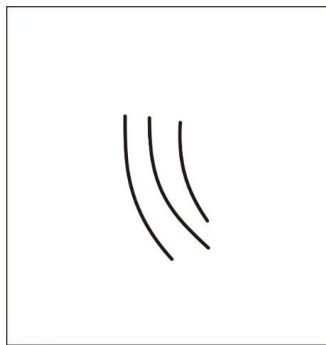
Fig.17 Center part of east wall in 16-5

④ Unidentified objects (east wall, 7.5×3cm)



This graffito consists of three outward curve lines. We consider it to be not a number, something with the intention that is different from the number, because there are similar instances (16-5-⑤, 17-6-⑥, G0360).

⑤ Unidentified objects (east wall, 3×1.5cm)



This graffito consists of three outward curve lines. Refer to similar instance 16-5-④.

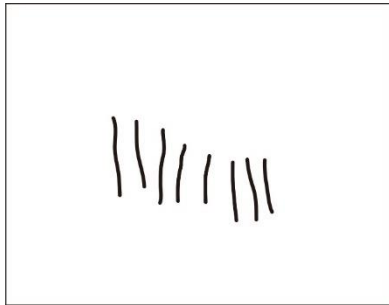


Fig.18 Left part of east wall in 16-5

(10) 16-7

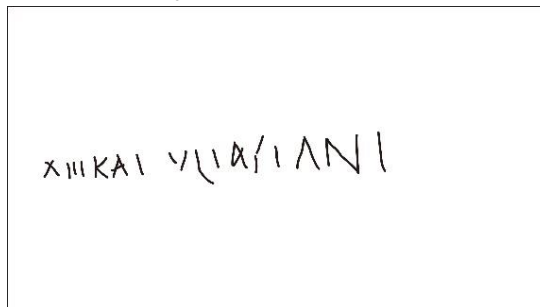
① Numbers (east wall, 1.5×3cm)

IIIIIII (8)



② Dates (east wall, 1.5×17.5cm)

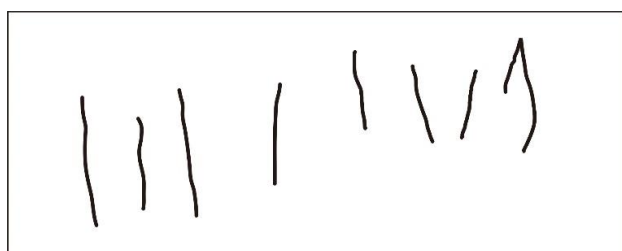
XIII KAL(endas) IVLIAS I AN(n)I (June 19 of the first year)



It is not particularly unusual that there is to only a date in the Ostia-graffiti (denoting memory of having come to the place (G0265) and of having performed something (festival in particular: G0012, G0358)), but only this graffito has the year. As for the first year, we assume it to be a regnal year of an Emperor.

③ Unclassified texts (east wall, 1.5×5cm)

IIIIIM?



The right part of this graffito is greatly damaged. The consecutive lines are more likely to be a number, but it is difficult to identify it since various words including M are thought to be continued on the missing part.

④ Numbers (east wall, 2×8cm)

IIIIIIII (9)

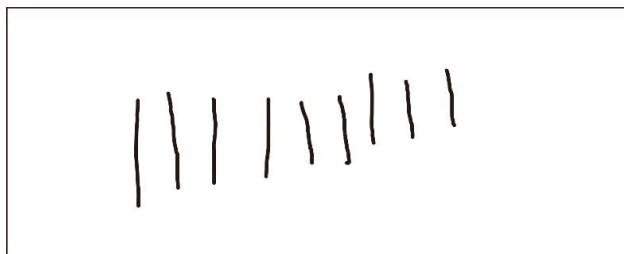
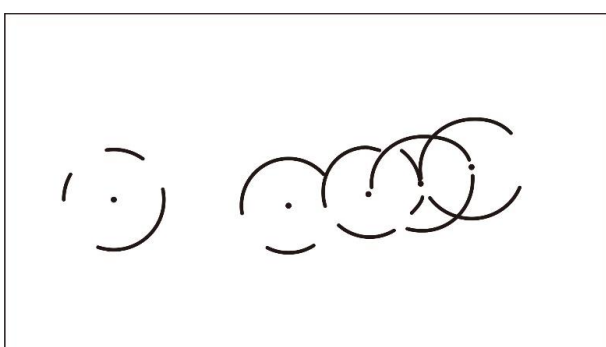


Fig.19 East wall of 16-7

(11) 17-1

① Circular objects (west wall (the end of street), 4.5×4.5(20.5)cm)



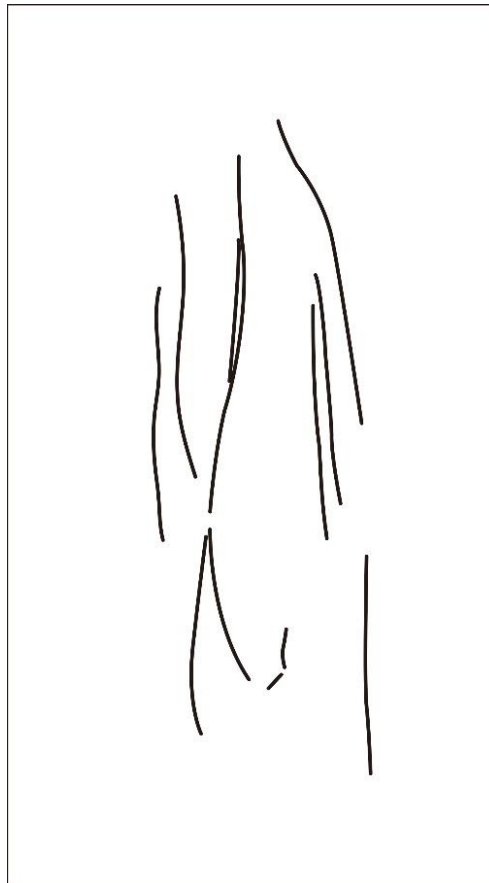
This consists of five perfect circles, and the traces of compass axis are clearly visible in the center. A similar instance is 20-7-① in Casa a Giardino, and G0116. In addition, there are examples of more complicated iconographic image using compasses (ex. G0114, G0202).



Fig.20 West wall of 17-1

(12) 17-5

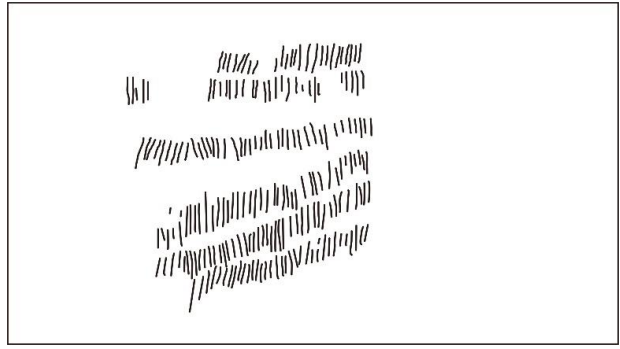
① Unidentified objects (north wall, 19×7cm)



Though it is unclear, two lines curve gently towards the bottom and join each other. An amphora is assumed for its shape. There is a similar instance for this, G0361.







This is a big graffito consisting of 6 lines. The relations of each lines are unknown, but there is not the information other than the vertical line in the graffito. There are no doubt that these are numbers.

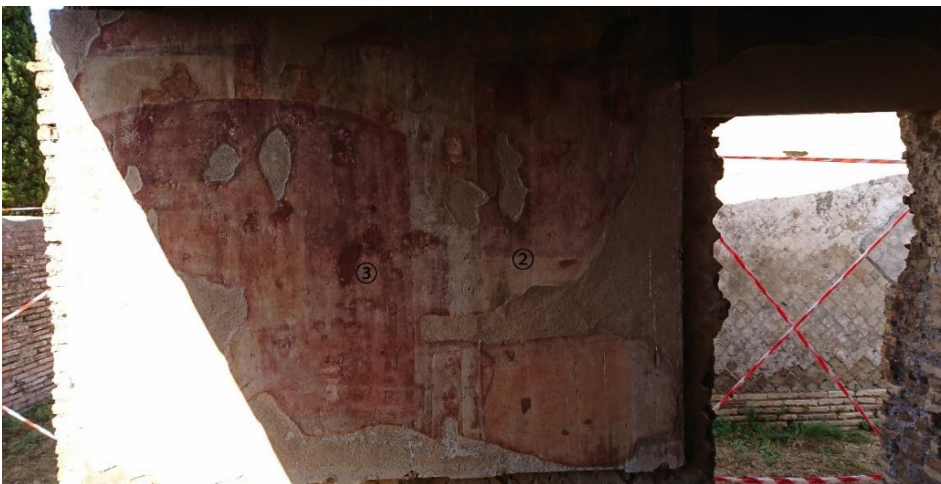
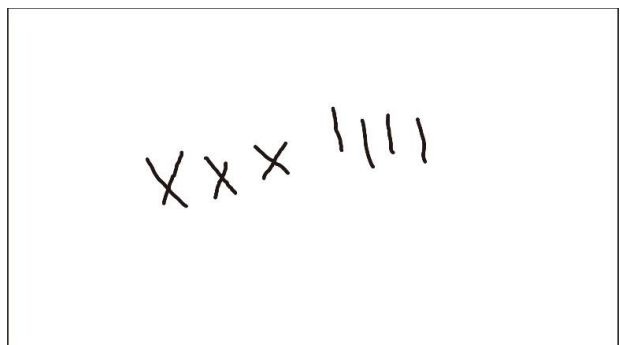


Fig.22 West wall of 17-5

(13) 17-6

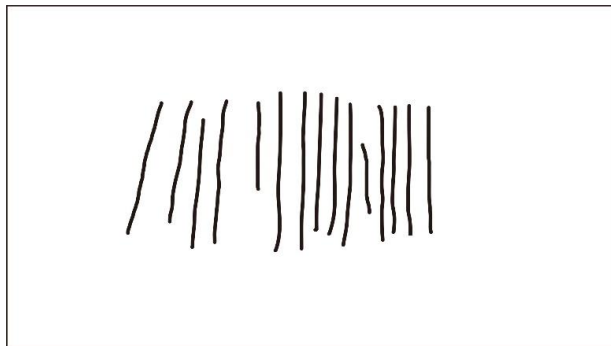
① Numbers (north wall, 2×8.5cm)

XXXIIII (34)



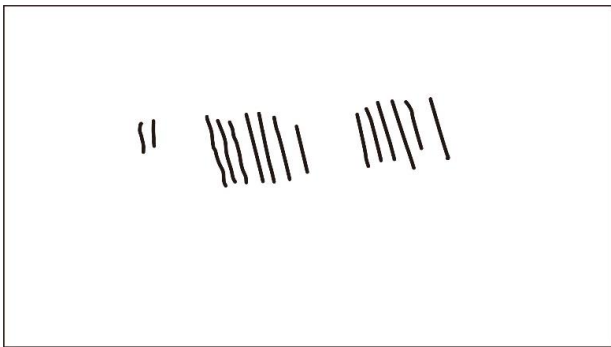
② Numbers (north wall, 9×16cm)

IIIIIIIIIIIIIIII (15)



③ Numbers (north wall, 3×13cm)

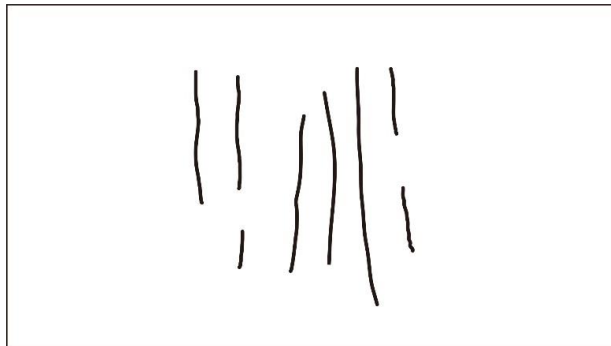
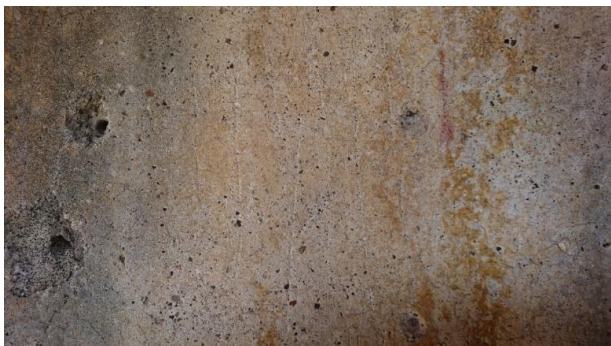
II IIIII IIIII (over 15)



There are many indistinct parts, but we confirm at least 15 lines.

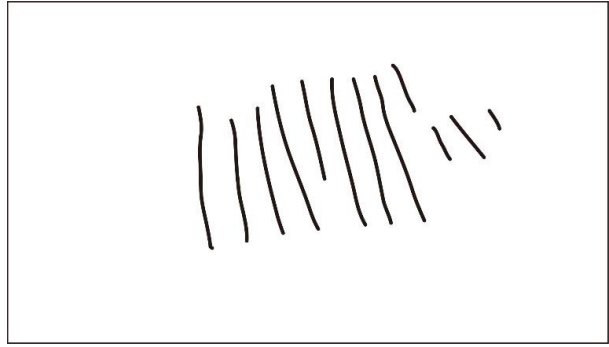
④ Numbers (north wall, 10×11cm)

IIIII (6)



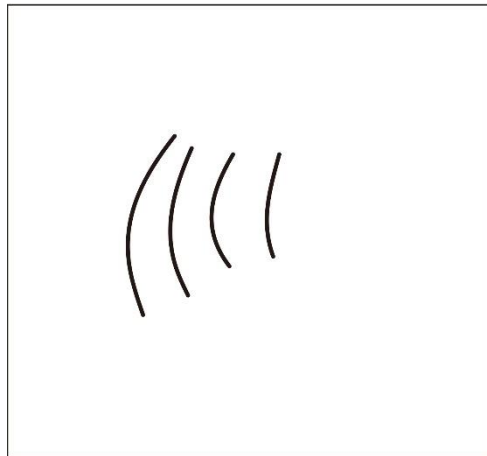
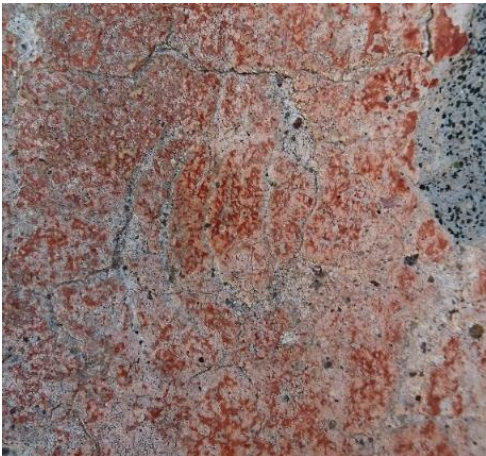
⑤ Numbers (north wall, 5.5×11cm)

IIIIIIIIII (11)



The right part is damaged, but we confirm 10<sup>th</sup> and 11<sup>th</sup> lines by the bottom of lines.

⑥ Unidentified objects (north wall, 3×2.5cm)



This graffito consists of four outward curve lines. Refer to similar instance 16-5-④.

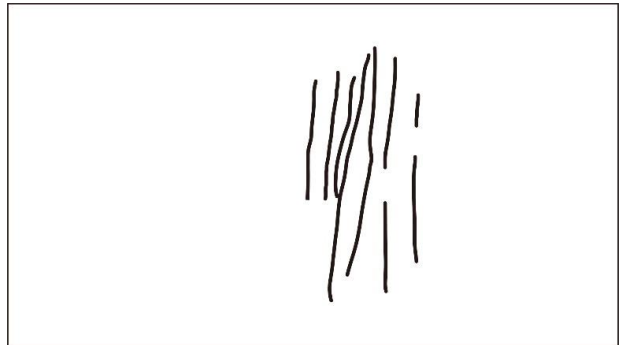


Fig.23 North wall of 17-6

(14) 17-7

① Numbers ? (east wall, 26×25cm)

IIIIII ? (7?)



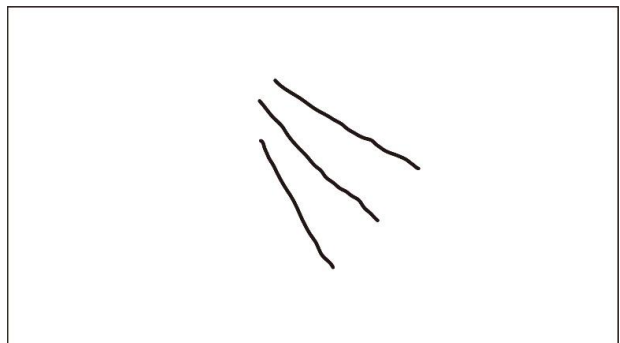
Because the gauze for restoration and protection is placed on the left part, the accurate number cannot be identified. But we confirm at least 7 various high lines.



Fig.24 East wall of 17-7

① Unidentified objects (north wall, 9×9cm)

III (3?)



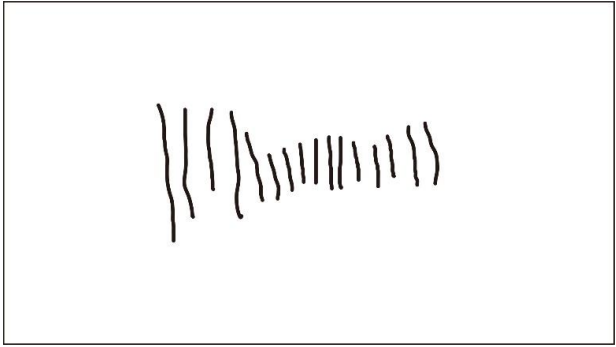
There are the three diagonal lines. In 13-4-⑤ we consider it as a number, because all lines are not diagonal and has many one. But it may not be a number since this only has little number of lines.



Fig.25 North wall of 17-7

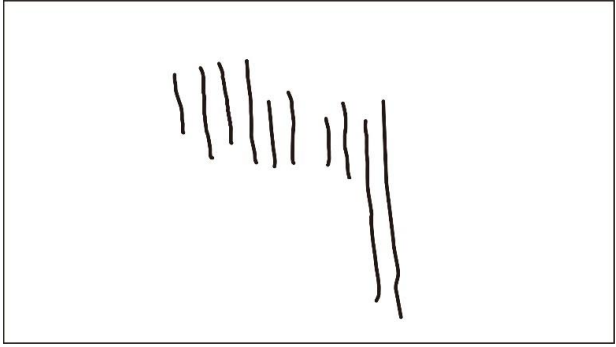
② Numbers (west wall, 1.5~3×7.5cm)

IIIIIIIIIIIIIIII (16)



③ Numbers (west wall, 6~13.5×13cm)

IIIIIIIIII (10)



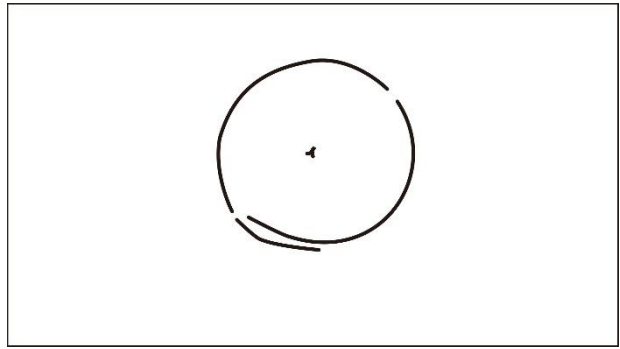
Two right-side end lines are twice more longer than the rest, but we consider it as a number.



Fig.26 West wall of 17-7

(15) 20-7

① Unidentified objects (west wall, 5.5×5.5cm)



It is a perfect circles, and the trace of a compass axis is clearly in the center. Refer to the similar instance 17-1-①.



Fig.27 West wall of 20-7

## 5 Conclusion

Finally, we conclude about these new graffiti. First, the place of discovery is concentrated in the central part (13~20) except for one graffito (4-7-①). This depends on the residual situation of the wall surface, and in the central part 18 and 19 in which the preservation of the wall surface is bad, we could not find any graffiti.

Second, the contents. In 51 graffiti, there were 6 Numbers (together ?), 9 Unidentified objects, 5 Unclassified texts, 1 Dates. Predominantly there are Numbers. More than half of the published graffiti are these (23 graffiti: 7 Geometric and vegetative motifs, 3 Games, 3 Numbers, 2 Complex structure, 1 Frames for writings, 1 Ships, 1 Human figures, 4 Unclassified texts, 1 Unidentified objects). Many Numbers consists only of consecutive vertical lines (33 graffiti), and the appearance and contents are very simple. The consecutive vertical lines should be classified as non-letter graffiti rather than letter graffiti. There were many non-letter graffiti in Casa a Giardino, consisting 25 out of 35 graffiti excluding the Numbers mentioned above. Many non-letter graffiti are extremely suggestive in providing information as to the type of people who produced graffiti, namely those who lived in or in its vicinity of Casa a Giardino. The research will be continued utilizing various disciplines' methods including archeology, architecture, geography, and studies on neighboring remains.

## Notes

(1) We wish to extend our sincere gratitude to Dott.ssa Mariarosaria Barbera, Il Direttore del Parco Archeologico di Ostia Antica, and Dott. Marco Sangiorio, Direttore del tecnico delle medesima Area, for their undivided support and guidance throughout this survey.

(2) Please refer to the article on our survey so far : <http://pweb.sophia.ac.jp/k-toyota/monbukaken2010-2012/>, and A cura di Akira SAKAGUCHI e Koji TOYOTA, *La città portuale di Roma antica: la prima linea della ricerca di Ostia Antica*, Tokyo, 2017.

(3) On ①~④, see each report.

(4) <http://www.ostia-antica.org/>.

(5) Pointed by “Work in the Capitolium by Michael Myer and his students 2014”(Ostia - Harbour City of Ancient Rome). But the application for a licence is necessary for reading. See <http://www.ostia-antica.org/~graffiti/auth.htm> for more information.

(6) Pellegrino(2017), pp. 10-11.

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