

# Arqueología y *Téchne*

Métodos formales, nuevos enfoques

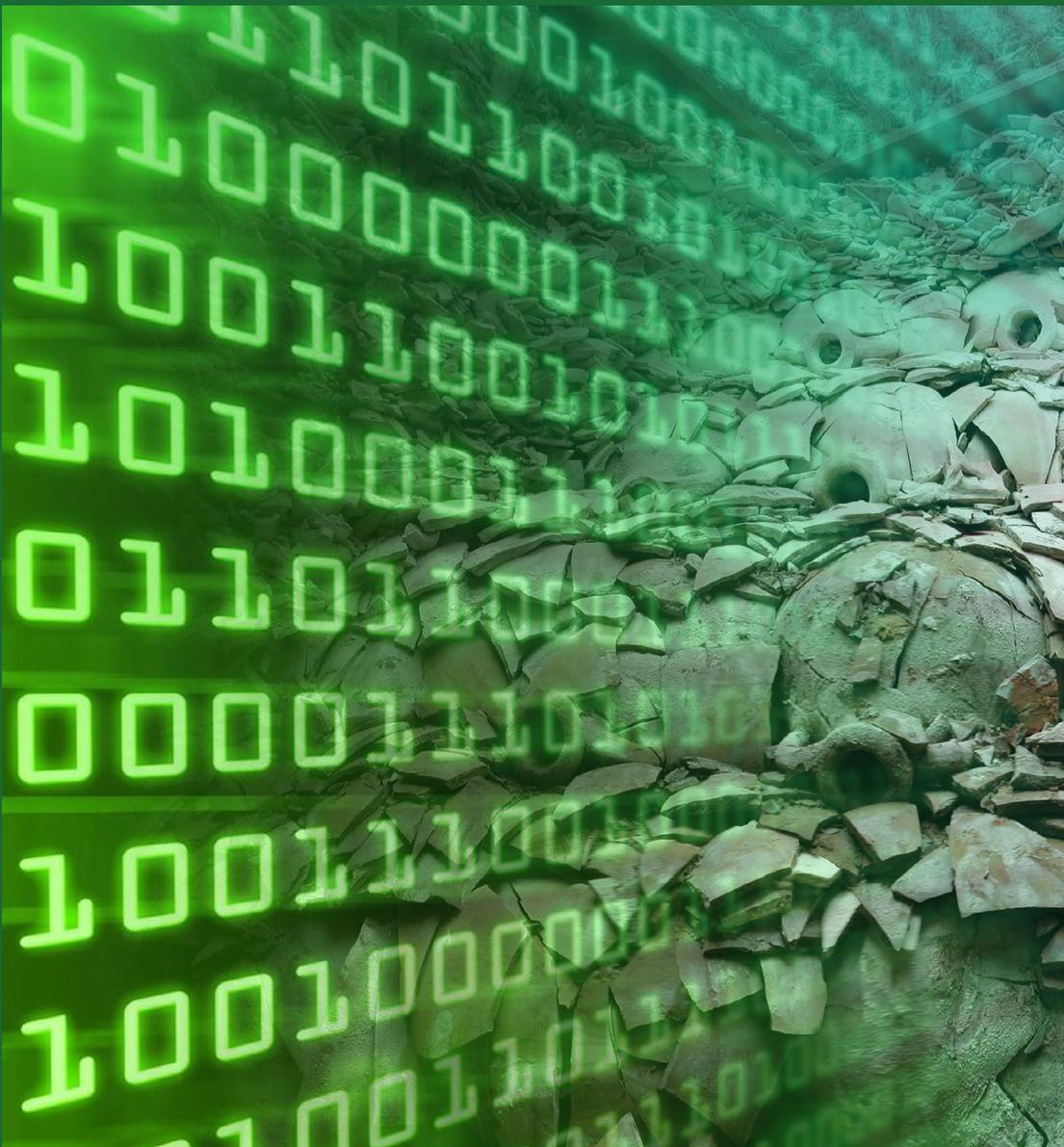
## Archaeology and *Techne*

Formal methods, new approaches

Editado por

José Remesal Rodríguez

Jordi Pérez González



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# Approaches to the Roman Food Economy: GIS Agricultural Modelling in *Baetica* and Amphorae Epigraphy from *Pompeii*

Daniel J. Martín-Arroyo Sánchez

## 1. Introduction

The main results of the EPN<sup>1</sup> lines of research carried out by the author of this chapter are summarized in the following pages.<sup>2</sup> The involved cases are compiled here, not ordered chronologically by date of publication, but by subject matter. EPN concerns production and distribution of food in the Roman Empire using new innovative approaches, by implementing new methodologies in an interdisciplinary research context. The author's previous expertise and skills converged with the requirements of the EPN Project. In that sense, the Roman amphorae and their epigraphy were just a piece of evidence in his study of territories, and GISs (Geographic Information Systems) were one of the tools used in the study of Roman colonies.<sup>3</sup> Within the EPN Project, the author was charged with the study of epigraphy on amphorae which contained fish-based products and wine. Few inscriptions in this regard were referenced in the *Corpus CEIPAC*, which mainly focused on the epigraphy of the Dressel 20 olive-oil amphorae, which were widely provided for the archaeological excavations of the CEIPAC's research team in the Monte Testaccio (Rome). The EPN's challenge required a remarkable quantity of new data. In that sense, the solution proposed and carried out by the author of this chapter was the computerization of the *tituli picti* recorded in the volume IV of the *Corpus Inscriptionum Latinarum*.<sup>4</sup> This volume compiles the inscriptions found in the Vesubian area, mainly in *Pompeii*. As the Cretan wine amphorae were the most notable within this group of inscriptions, most of the author's EPN research was focused on this part of the evidence. In that way, the combination of previous academic interests and new research opportunities have involved studies on olive-oil and wine through different parts of the Roman Empire, by using GIS modelling and amphorae epigraphy to get a better understanding of the production and distribution of food.

## 2. GIS agricultural Modelling in *Baetica*

### 2.1. Olive growing

The Roman Province of *Baetica* experienced an important expansion during the Principate.<sup>5</sup> Several sources of wealth supported this economic growth but one of them is especially documented in the archaeological record: the olive oil production. More than 8.000 tonnes of olive oil were produced every year just for the public supply to the Roman troops in the German and British frontiers, and the citizens living in Rome. The impressive structures dedicated to extract oil from olives are evidenced in

<sup>1</sup> EPN Project *Production and Distribution of Food during the Roman Empire: Economic and Political Dynamics* (ERC-2013-ADG 340828); European Research Council; I.P. José Remesal Rodríguez. With respect to other CEIPAC's granted projects, see the references HAR2017-85635-P (MICINN) and 2017 SGR 512 (AGAUR).

<sup>2</sup> Many thanks to Nick Bennet-Britton for the English revision.

<sup>3</sup> Martín-Arroyo 2018a.

<sup>4</sup> Martín-Arroyo and Remesal 2017.

<sup>5</sup> Remesal 2011.

*Baetica* (Fig. 1), but the more remarkable evidence is the huge amount of amphorae fragments that were accumulated beside the Baetican Genil and Guadalquivir rivers. Actually, more than 115.000 amphorae were annually made just for the aforementioned public supply.<sup>6</sup> The resulting amount and complexity of these archaeological data offers the unusual traceability of an ancient key commodity. The referred amphorae (Dressel 20 type) carried different inscriptions (stamps, graffiti, and *tituli picti*) that provide information about the complex mechanisms involved in the olive oil economy. Effectively, olive oil was needed to maintain the military and political order in the frontiers and the capital. Moreover, it was an essential element in the Mediterranean diet<sup>7</sup> as, indeed, it is today. This opportunity of research is equal in size to the resulting challenge. The analysis of available data depends on our understanding of them as a part of the full evidence, which is in turn the result of a complex historical phenomenon. The huge diversity, quantity, and wide dispersion of the archaeological remains constrains the research, in addition to the lack of explanatory frameworks for the way in which Roman society generated them.

Ancient writers on agriculture reported some generalities on olive cultivation such as the preference for soft and stony slopes in the Baetican case<sup>8</sup> and the inland expansion of olive groves.<sup>9</sup> Preceding research has been quite limited in the study of this phenomenon of olive grove expansion because of the large amount of data to be managed. Currently, GIS technologies make it easier to embrace this challenge, with modelling as a tool to link historical theory, terrain data, and the partial information from the archaeological record. Nowadays, functional groups with up to six oil presses are attested in the Middle Valley of the Guadalquivir, the Subbaetic System, and the surroundings of Jaén and Granada<sup>10</sup> (Fig. 1). This points to the prolongation of the olive groves far beyond the riversides in the Middle Valley, even including those groves that were dedicated to the export trade. They possibly may have existed even beyond the boundaries of the *Baetica* in the High Valley, as epigraphically attested.<sup>11</sup> However, traditional and current research have focused on the riversides of the Middle Valley, where the fluvial transport conditioned the arrangement of the Dressel 20 potteries. The researchers were attracted by the huge amount of findings and the epigraphy, especially stamps. Actually, the epigraphic corpus on Dressel 20 has allowed the CEIPAC<sup>12</sup> and the EPNET Project<sup>13</sup> to implement new methodological approaches<sup>14</sup>. Nevertheless, a more complete understanding of these stamps requires a deeper knowledge of the Roman potteries or *figlinae*. Unfortunately, most of them are recorded just by superficial survey. The Oleastro Project<sup>15</sup> is prosecuting this research with archaeological surveys and excavations, but probably the biggest part of the evidence will remain underground for a very long time.

<sup>6</sup> Martín-Arroyo 2019a: esp. 176.

<sup>7</sup> UNESCO recognized the Mediterranean diet as an Intangible Cultural Heritage of Humanity: <https://ich.unesco.org/en/RL/mediterranean-diet-00884>

<sup>8</sup> Columella, *De Re Rustica* (COL. 8. 5. 8); Plinius the Elder, *Naturalis Historia* (PLIN. Nat. 17. 93). See too Sáez 1987: esp. 153 and 157.

<sup>9</sup> Plin. Nat. 15. 1. Thanks to Antonio Aguilera (CEIPAC, Universitat de Barcelona) for the suggestion of this idea.

<sup>10</sup> Peña 2016: esp. 318.

<sup>11</sup> See the *tituli picti* on Dressel 20 amphorae from the *Corpus Inscriptionum Latinarum* (CIL, XV, 4134-4136: *Fisci rationis patrimonio provinciae Tarraconensis*). Martín 2001. See too: Fornell 1997.

<sup>12</sup> <http://ceipac.ub.edu/>; Remesal *et al.* 2015.

<sup>13</sup> Remesal *et al.* 2014.

<sup>14</sup> Rubio *et al.* 2017; Pérez *et al.* 2018; Remesal 2018; Rubio *et al.* 2018.

<sup>15</sup> <http://archimede.cnrs.fr/index.php/102-programmes-scientifiques/programmes-scientifiques-3/717-oleastro>.

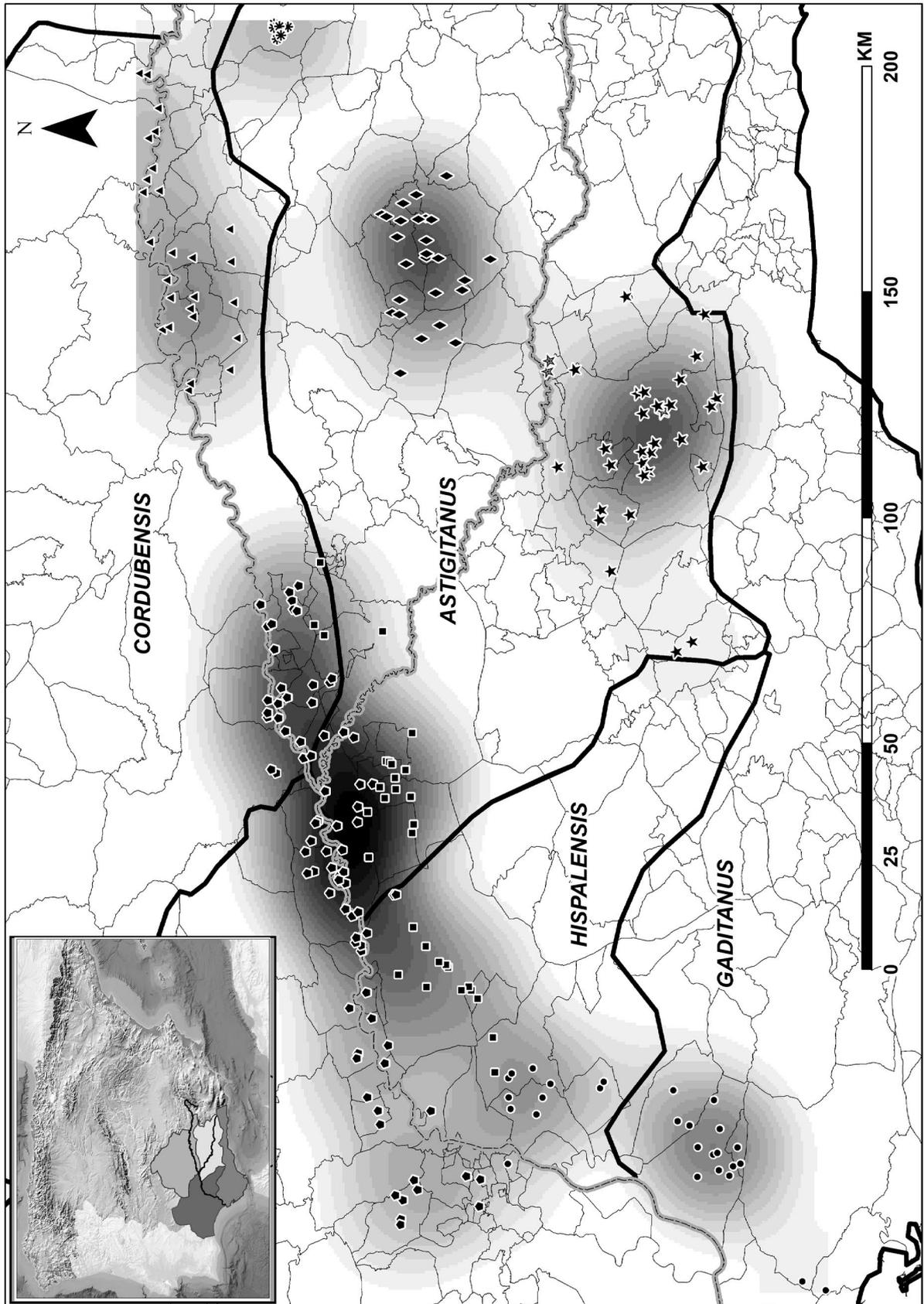


Figure 1. Olive oil presses in the four Baetican *conventus*.

With regards on the problem of understanding the ever-partial evidence, GIS is currently accepted in archaeology as a tool to map and model spatial phenomena from the past, which includes applications like predictive modelling. However, the inclusion of partial and/or poorly documented evidence<sup>16</sup> and non-environmental parameters<sup>17</sup> is a challenge that has only been taken up in the last five years and is still very much in development. This is coupled with an extension of GIS-based analysis to other techniques such as network analysis and Agent-Based Modelling. In the 1990s, criticism of GIS analysis came from the need to have a more developed theoretical support structure. Contrary to the criticism of the environmental deterministic approaches, parameters and techniques to include the human factor are being taken into account, such as the related ones to the decision-making procedures. It requires a larger academic involvement in order to reduce our dependency with respect to other disciplines, by creating our own agenda for digital archaeology. For example, predictive modelling is successfully used in cultural resource management to focus survey and economic efforts on preservation, regarding the expected patterns of settlement. On the other hand, predictive modelling requires more theoretical improvements to offer causal explanations of the observed phenomena. Theory and technique should be involved in a better relationship with the ‘messy data’ coming from multiple sources. In this sense, the creation of protocols and the performance of effective data mining are general goals. They will allow sharing of information across institutional and national boundaries. Furthermore, supra-regional GIS approaches provide a wider opportunity to incorporate the emerging technologies of Agent-Based Modelling and Social Network Analysis, as evidenced by the project ‘Finding the Limits of the *Limes*’.<sup>18</sup>

The EPNet paper on the modelling of the Baetican olive growing<sup>19</sup> is an initial attempt to solve these historic and methodological challenges. It combines data compilation with its geographical and quantitative modelling in order to propose a cliometric hypothesis. The main objective was to quantify the impact of the olive oil production in the riversides of the ancient *Baetis* and *Singilis* (current rivers Guadalquivir and Genil). The data compilation includes potteries of Dressel 20 and 23 amphorae, Roman olive oil presses and figures of the spread of the olive groves in years 1750, 1880, 1960 and 2010. Preliminary estimations have been proposed for the olive groves’ productivity, the workload carried out by the potteries and their distribution by *conventus* (Baetican districts). The calculated workload points to a spread of olive groves near to that of 1880. This is an economic feature related to a remarkable external demand of olive oil. Both by human consumption in Roman times or by industrial uses in 1880, the production was promoted to achieve similar results. Such a comparison encourages further research because it could be relevant in order to rethink the Roman economy, within the historiographic discussion between primitivists and modernists.

## 2.2. *Riparia-Vinea Ratio*

Meanwhile the econometric study of Roman olive oil is just an initial approach, a series of papers on the modelling of the *Riparia-Vinea Ratio* has been published by delving deeper into specific theoretical and practical matters. Based on a statement given by the Latin agronomist Columella (4. 30. 2), this Ratio

<sup>16</sup> Crema 2012; Cooper and Green 2016.

<sup>17</sup> Verhagen and Whitley 2012.

<sup>18</sup> <https://limeslimits.wordpress.com/> Verhagen and Whitley 2012; Verhagen 2018. ‘Finding the Limits of the Limes: Using spatial dynamical modelling to reconstruct and understand the development of the cultural landscape in the Dutch part of the Roman limes’, 2012-2017, Faculty of Humanities of the Vrije Universiteit Amsterdam, financed by NOW (The Netherlands Organisation for Scientific Research) under the VIDI Innovative Incentives scheme (project number 276-61-005).

<sup>19</sup> Martín-Arroyo 2019a.

concerns the proportion between the size of a vineyard and the riparian land required for growing reeds and osier-willows, which were used in the making of the vine training system (*uinea iugata*). In this case, the general objective of the modelling is to get a better understanding of the implications of this agronomic rule in the configuration of Roman settlement patterns and rural landscapes.

A first approach<sup>20</sup> on the exploitation of the riparian vegetation summarized the diversity of usages, species and land management strategies that are attested in the written evidence. A study area was selected to test the usefulness of the available GIS resources in the understanding of the relationship between Roman settlement and other landscape components. The diversity of riparian spaces and the previous research in the zone were the main criteria of the choice. The area is located on the Baetican coast, in the hypothecal *confinium* between the *municipium Gaditanum* and the *colonia Hasta Regia*.

A second paper<sup>21</sup> was focused on the riparian species related to the vine training systems by reviewing written sources. The study area was divided with Thiessen polygons surrounding the Roman rural sites. The related *riparia* and *non-riparia* land was quantified and analysed with regards to the Ratio. A third paper<sup>22</sup> offers some considerations on the utility and limits of the modelling. Furthermore, the typology of amphorae related to the grape-based products is analysed with respect to the research of the study area and the overall Baetican production of wine.

The fourth paper<sup>23</sup> compiled iconographic and arqueobotanic data in relation to the vine training systems and the Ratio. Geographic, cultural and economic factors on Roman viticulture are discussed with regards to some Latin and modern studies. Two systems of vine training could have coexisted in the study area, with and without supports respectively. The first one could be related to an Italic agricultural model imported to the *colonia Hasta Regia*, the second one to the Punic tradition, as maintained in the *municipium Gaditanum*. The results of the modelling were discussed in that sense. In this instance, the main improvement of the modelling consisted of the estimation of the self-sufficiency in the land plots, including manpower and trained vineyards. This self-sufficiency was weighted in units of exploitation and quantified within two versions of the model (Models 1 and 2, with and without the growing of reeds in the *riparia* land respectively).

A fifth paper<sup>24</sup> increased the number of archaeological sites from the original 73 to 225, involving new geographical and civic zones. Methodological details on GIS analysis and quantification of the results were offered in a complete set of maps and graphics. The size of the resulting vineyards was contrasted to the ideal sizes of cationian and collumellian plots in order to offer new perspective to the historiographic discussion on the land properties in Roman times. The results of Models 1 or 2 were quantified and summarized with specific figures, showing the remarkable impact of some small changes in the parameters of the modelling.

<sup>20</sup> Martín-Arroyo and Trapero 2015.

<sup>21</sup> Martín-Arroyo 2016.

<sup>22</sup> Martín *et al.* 2017: 205-208 and 216-218.

<sup>23</sup> Martín-Arroyo and Remesal 2018.

<sup>24</sup> Martín-Arroyo and Castro in press.

### 3. Amphorae epigraphy from Pompeii: contexts, contents and structures

#### 3.1. An overall perspective of the inscribed amphorae from *Pompeii* and its surrounding area

The eruption of Vesuvius generated paradigmatic archaeological contexts in *Pompeii* and the surrounding area. From the beginning of the excavations under the Bourbons to the current archaeological missions, the singularity of such contexts attracts international scientific interest. Furthermore, this area is recognised as a UNESCO World Heritage site since 1997.

Amphorae epigraphy is an essential piece of evidence for the understanding of these exceptional contexts. Most of these inscriptions has been recorded in the *CIL IV* (1871-1970) and in a later compilation.<sup>25</sup> In relation to this information, research interest in the Roman economy increased rapidly, with studies like those of Remark (1912), Day (1932), Andreau (1974) and Tchernia (1986). However, the lack of overall visions, cross-references and typological studies limited the scope of the results.

The diversity of the Pompeian epigraphic cases highlights the complexity in the understanding of the amphorae record.<sup>26</sup> The revision of these inscriptions has been carried out by researchers such as Panella (1976; 1977) and Marangou-Lerat (1995). However, few *tituli picti* have been preserved in the stored amphorae. Only recent excavations of intact *lapilli* deposits have provided new inscriptions of this type.<sup>27</sup> Furthermore, the research has paid little attention to the record of the *tituli picti*, in marked contrast to the importance given to archaeological trenches and structural studies. Epigraphic analysis has been limited to certain amphorae types and epigraphic repertoires.<sup>28</sup> There is a lack of comprehensive systematic studies about issues such as the epigraphic parallelisms between different types of amphorae or the contextual relationships in specific domestic spaces.

Although most of the documented *tituli picti* come from *Pompeii* and its surroundings, some complementary evidence is relevant to its interpretation. Some epigraphs show the extent of certain business circles, beyond the cases that could be interpreted as exclusively Vesuvian. Thus, as well as in the Pompeian cases, the *gens Claudia*<sup>29</sup> and the wine from *Lyttus*<sup>30</sup> have also been recorded on Cretan amphorae from *Roma* and *Ostia*.<sup>31</sup>

The amphorae epigraphy of *Roma* has been a fundamental reference source ever since the works of Dressel. Already in the work of this author we can distinguish a minority and a majority epigraphic set. On the one hand, the *tituli picti* from *Castra Praetoria* were written on a heterogeneous and relatively small set of amphorae.<sup>32</sup> On the other hand, the inscriptions from Monte Testaccio were written mostly on the Dressel 20 type. The huge volume of the latter set is compiled in the CEIPAC database. Within the EPNET Project, efforts have been made to offset the deficiencies in the documentation relating to wine and salted fish-based products. In that sense, a systematic study of *CIL IV* has been carried out.<sup>33</sup> When comparing these records with the information available in Rome, remarkable similarities and

<sup>25</sup> Giordano and Casale 1991.

<sup>26</sup> Peña 2007.

<sup>27</sup> Timby 2004; Bernal *et al.* 2014.

<sup>28</sup> Peña 2007b.

<sup>29</sup> Martín-Arroyo in press, a; Martín-Arroyo 2020a.

<sup>30</sup> Martín-Arroyo 2020b.

<sup>31</sup> Casaramona *et al.* 2010: 116 and 120; Rizzo 2014: 325.

<sup>32</sup> Lagóstena 2002-2003.

<sup>33</sup> Martín-Arroyo and Remesal 2017.

differences are found. For example, the quantity of Cretan amphorae recorded in the excavations of the Nuovo Mercato di Testaccio<sup>34</sup> stands out, as well as their number among the Vesuvian *tituli*, reaching 31% of the inscribed amphorae<sup>35</sup> (Fig. 2). On the other hand, the Dressel 20 amphorae hardly appear in the Pompeian context,<sup>36</sup> despite their massive influx to *Roma*.

This sort of comparison can be implemented within the study of the respective epigraphic evidence and their archaeological contexts. Quantitative studies can reinforce such research, as shown in the case of the Terme del Nuotatore in *Ostia*.<sup>37</sup> In addition, the study of supply networks and port systems has reached a high degree of international scientific interest, as shown by the European Research Council grants to the Portus-Limen and EPNet projects.

In relation to the development of the epigraphic methodology for these Pompeian inscriptions, three aspects have been considered: description, criticism and analysis. Groups of inscriptions have been selected according to the amphorae typology or other factors. General descriptions have included quantitative and spatial approaches. A Geographic Information System database has been developed with the available digitalized cartography. Kernel Density maps and other outcomes are expected to be useful tools for the forthcoming research, as shown in a previous paper.<sup>38</sup>

Academic appraisal has been focused on the archaeological and historiographical contexts.<sup>39</sup> The relationship between the inscriptions and the objects on which they are inscribed can be stated in time and space, regarding aspects such as their residual character or their distribution in sets for storage or sale. Evaluation of the bibliography states how a good technical record of the inscriptions and the accumulation of similar cases allow corroboration or refutation of the readings. These factors have been considered in particular cases to determine new interpretations of the *tituli picti*.

The analysis consists of the identification and comparison of semantic contents and epigraphic structures. The Codex methodology simplifies this task. Codex proposes the conceptual deconstruction of inscriptions into categories comprising products, personal names, figures, consular datings, symbols, vestiges or uncertain readings. Every concept is transcribed as a letter or symbol. Additional features, such as the language (Latin or Greek; upper or lowercase letters respectively) or a certain degree of uncertainty (added question mark), are incorporated by modifying these letters. Furthermore, another set of symbols includes the spatial relationship of the concepts or changes in the colour of the inks. The resulting strings of characters can be easily commented upon and compared in texts and tables or analysed in databases in order to cluster them and resolve uncertainties. Some of the initial outcomes show an interesting relationship between the Crétoise 2 amphorae (Pompeii VIII; PO08) and the Cilician Pompeii 13 (PO13) (Fig. 2). Structural patterns and the use of inks point to similar contexts for both amphorae types in the trade route from *Alexandria* to *Roma*.<sup>40</sup>

<sup>34</sup> Casaramona *et al.* 2010.

<sup>35</sup> Martín-Arroyo *et al.* 2017: 183.

<sup>36</sup> Manacorda 1977: 131.

<sup>37</sup> Rizzo 2014.

<sup>38</sup> Martín-Arroyo 2018b: esp. fig. 3.

<sup>39</sup> Martín-Arroyo 2018b.

<sup>40</sup> Martín-Arroyo 2019b and 2020.

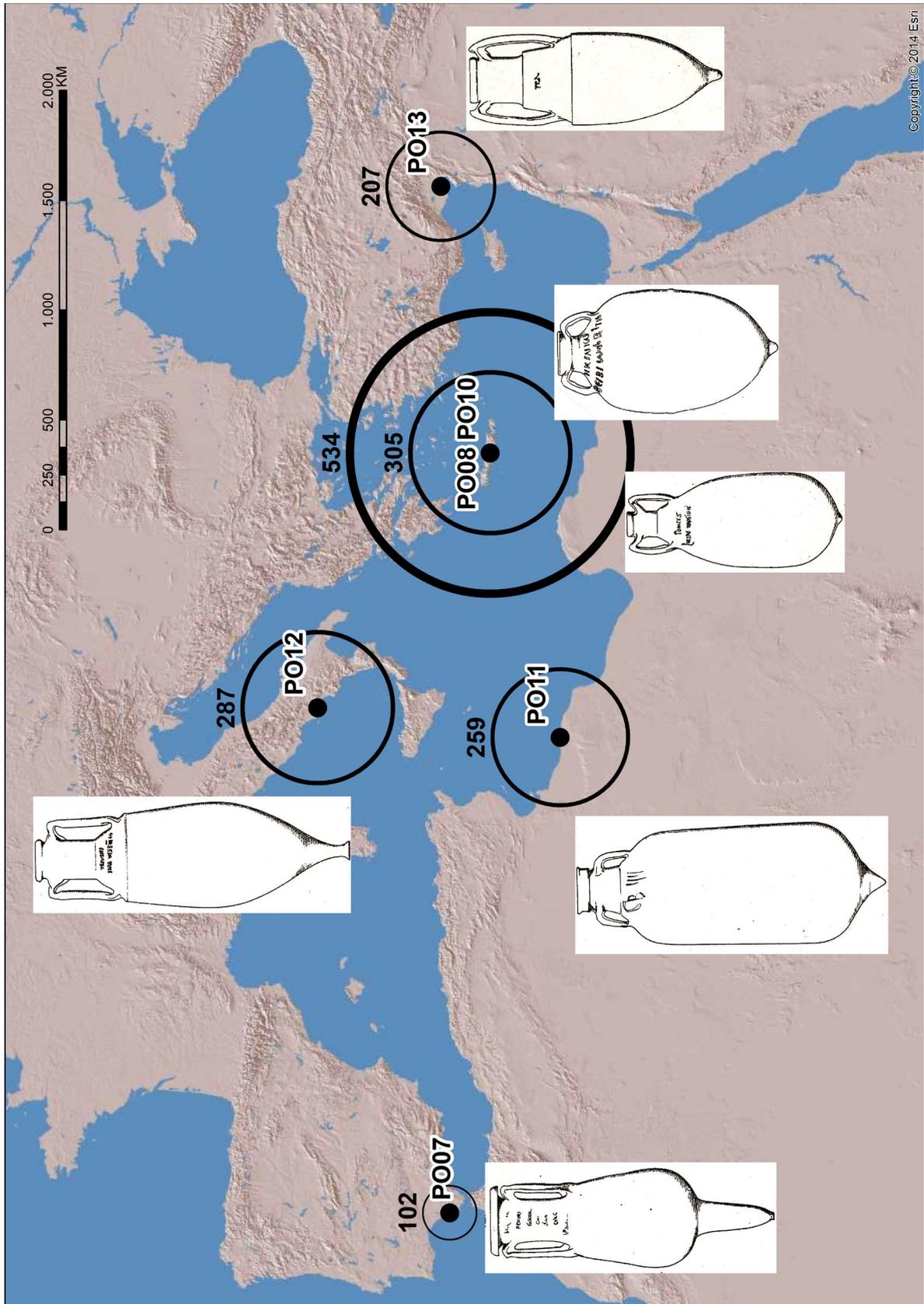


Figure 2. The most recorded amphorae types in the *CIL* IV and some complementary sources. Central productive locations and quantitative graphic of amphorae by type.

### 3.2. The case of *Sextus Pompeius Amarantus*: evidence of the high degree of specialization in the Roman distribution of wine

A typology of places of finding has been defined from the *CIL* data on the domestic contexts from *Pompeii* and *Herculaneum*.<sup>41</sup> This typology is useful in order to understand aspects of the use cycle of amphorae. A total amount of 534 PO08 amphorae were studied, from which 239 (44,8%) do not have recorded information on the functionality of their respective places of finding. The types of spaces are:

1. Distribution establishments, where the contents from amphorae were sold or consumed by customers (75 amphorae; 14%): *caupona*, *taberna*, *thermopolium*.
2. Domestic spaces for storage and private consumption of amphorae contents (13; 2,4%): *apotheca*, *culina*, *horreum*, *repositorium*, *triclinium*.
3. Other domestic spaces where empty amphorae were in stock or being reused (90; 16,9%): *atrium*, *balneus*, *cella*, *cella servilis*, *conclave*, *crypta*, *cryptoporticus*, *cubiculum*, *impluvium*, *latrina*, *ludus*, *membrum*, *palaestra*, *peristylum*, *porticus*, *posticum*, *tabulatum*, *tablinum*, *sub scala*, *vestibulum*, *villa*, *xystum*.
4. Craft spaces, where the amphorae would contain raw material or would be used in a different way with respect to their original purpose (5; 0,9%): *cella vinaria*, *fullonica*, *officina tinctoria*, *pistrinum*.
5. Marginal spaces, outdoors or of ephemeral structure, or intended for livestock; where the amphorae were deposited without a specific function or without containing a product of considerable value (112; 21%): *ambulacrum*, *area*, *area sub dio sita*, *cellula rustica*, *cors*, *equile*, *hortus*, *membrum sub dio sita*, *piscina*, *praedium*, *sepulcretum*, *sepulcrum*, *solarium*, *stabulum*, *tabernaculum*, *trichila*, *via*, *viridarium*.

These functional types can be chronologically clustered in order to detect sequences related to the *tituli picti*. In that sense, there are primary uses (amphorae found in functional spaces from types 1 and 2), reuses (3 and 4) and marginal uses/discards (5). Approximately a third of the 295 PO08 amphorae is involved within each chronological category: 88 (29,8%), 95 (32,2%) and 112 (37,9%) respectively. Consular datings on PO08 amphorae offers a minimal temporal framework from 52 to 78 A.D. for the complete process from the arrival to the discarding of the amphorae with the preserved *tituli picti*. Factors such as the progressive disappearance of the inscriptions must be considered with respect to the observed ratio.

The limits in the use of these categories must be reviewed with the help of study cases. Beyond other Pompeian *domus* where mainly olive oil or fish-based products were attested by amphorae,<sup>42</sup> the case of the *Domus Amaranti* (I, 9, 11-12) (Fig. 3A) must be highlighted from a previous paper. Here a remarkable quantity of Eastern wine amphorae were found. Berry (1997) described structures and groups of artifacts from excavations of 1952-1935 and 1995-1996 (Fig. 3B-E). She defined the house as a group of buildings affected by the earthquake in 62 A.D. and occupied by the *Sex. Pompeius Amarantus'* *caupona* after that. It could have been abandoned before 79 A.D., according to its ruinous state and the absence of other objects such as common ceramics. Evidence of unfinished rehabilitation was found elsewhere in the *Domus*. The remarkable presence of amphorae (especially in the *atrium*) and the skeleton of a mule (I, 9, 12, 4) were interpreted as evidence that housing still had some commercial use.

<sup>41</sup> MARTÍN-ARROYO 2018b: 160-163.

<sup>42</sup> *Domus* IX, 9, 6-7 and I, 12, 8 (*Bottega del Garum*) for both types of amphorae contents respectively.

Berry did not recognise the homogeneity of the amphorae record. She did not correlate the contents and provenances of a majority of wine Eastern amphorae found in the *Domus*. She performed a search of the relevant *CIL* inscriptions, citing them in association with the different spaces in which they were found. She mistook certain typological equivalences,<sup>43</sup> but identified the set of amphorae Crétoise 1 (AC1) (with some AC3) located in the northwestern corner of the *atrium*.<sup>44</sup> She also indicated the Aegean origin of certain amphorae, such as those inscribed with the name *Sex. Pompeius Amarantus*.<sup>45</sup> She also reviewed the excavation of remaining *lapilli* in the *viridarium* behind the *caupona* and the related finding of amphorae. This ensemble of amphorae was fundamentally composed of Campanian Dressel 2-4 stacked face down in the southeast corner. On the other hand, a group mainly composed of Aegean and Cretan amphorae with Greek *dipinti* was found in the southwest corner. These amphorae were generally preserved in worse conditions, some of them laying on one side, not in a vertical position. Inscriptions were observed in 15 of these amphorae, but no more information is given about them.<sup>46</sup> In the other *viridarium* (I, 9, 12, 8) an indeterminate number of amphorae was found in six separated groups.<sup>47</sup> The records of the excavations of the 50s also show amphorae next to the east and west walls of an intermediate room (I, 9, 12, 6), some of them with black ink *tituli*. Berry linked these amphorae with a group of *CIL* inscriptions whose location is not stated, most of them with black ink inscriptions. In addition, several amphorae appeared next to the west wall of the *tablinum*.<sup>48</sup> Only one inscribed amphora was found in the *caupona*<sup>49</sup> and another in the adjacent room (I, 9, 11, 4).<sup>50</sup>

The pictures taken in the 50s and the plan of the 1995-1996 excavations can be complemented by the study of the distribution of amphorae (Fig. 3B-E). Other photographs show the concentration of fragments (I, 9, 12, 4) or their storage in boxes (I, 9, 12, 3 and 10) in 2009.<sup>51</sup> It is difficult to make a typological cataloging and quantification of the amphorae from these documents. However, some information could be specified from them.

In the *CIL* compilation, 8 PO08<sup>52</sup> appear related to the *atrium*; furthermore, 1 PO08<sup>53</sup> and 1 PO12<sup>54</sup> were deposited in the *impluvium*. The negative n.º. 1601 of the Soprintendenza Archeologica di Pompei shows the northwest corner of the *atrium* and its *impluvium* in 1952 (Fig. 3D). From this photograph, there were 17 amphorae in the *impluvium*: 8 PO08, 2 PO10, 3 PO13 and 4 of doubtful ascription due to their fragmentation or partial view. The northwest corner would offer 1 PO12, 57 AC1 and another 5 amphorae difficult to identify due to their inverted position, fragmentation or partial photography. The existence of other amphorae in the *atrium* could be considered. Alternatively, the 9 PO08 of the *CIL* would outnumber the 8 PO08 from the photograph. Some of the amphorae that could not be typologically identified in the photograph could correspond to the remaining PO08 from the *CIL*. Thus, it can be said that practically all PO08 of the *atrium* carried *tituli*.

<sup>43</sup> Berry 1997: 107-111, footnotes 2-7. The mistaken equivalences: Mau VIII/Dressel 10, Mau XIII/Dressel 4, Mau XLII/Dressel 12 and Mau V/Dressel 29.

<sup>44</sup> Berry 1997: 113, note 9.

<sup>45</sup> Berry 1997: 122.

<sup>46</sup> Berry 1997: 114-116.

<sup>47</sup> Berry 1997: 107.

<sup>48</sup> Berry 1997: 109.

<sup>49</sup> *CIL IV* 10322 (PO08).

<sup>50</sup> *CIL IV* 10359 (PO10).

<sup>51</sup> See the respective *Domus* in the web site *Pompeii in Pictures*.

<sup>52</sup> *CIL IV* 10438, 10439 (5 amphorae), 10401 and 10472.

<sup>53</sup> *CIL IV* 10455.

<sup>54</sup> *CIL IV* 10420.

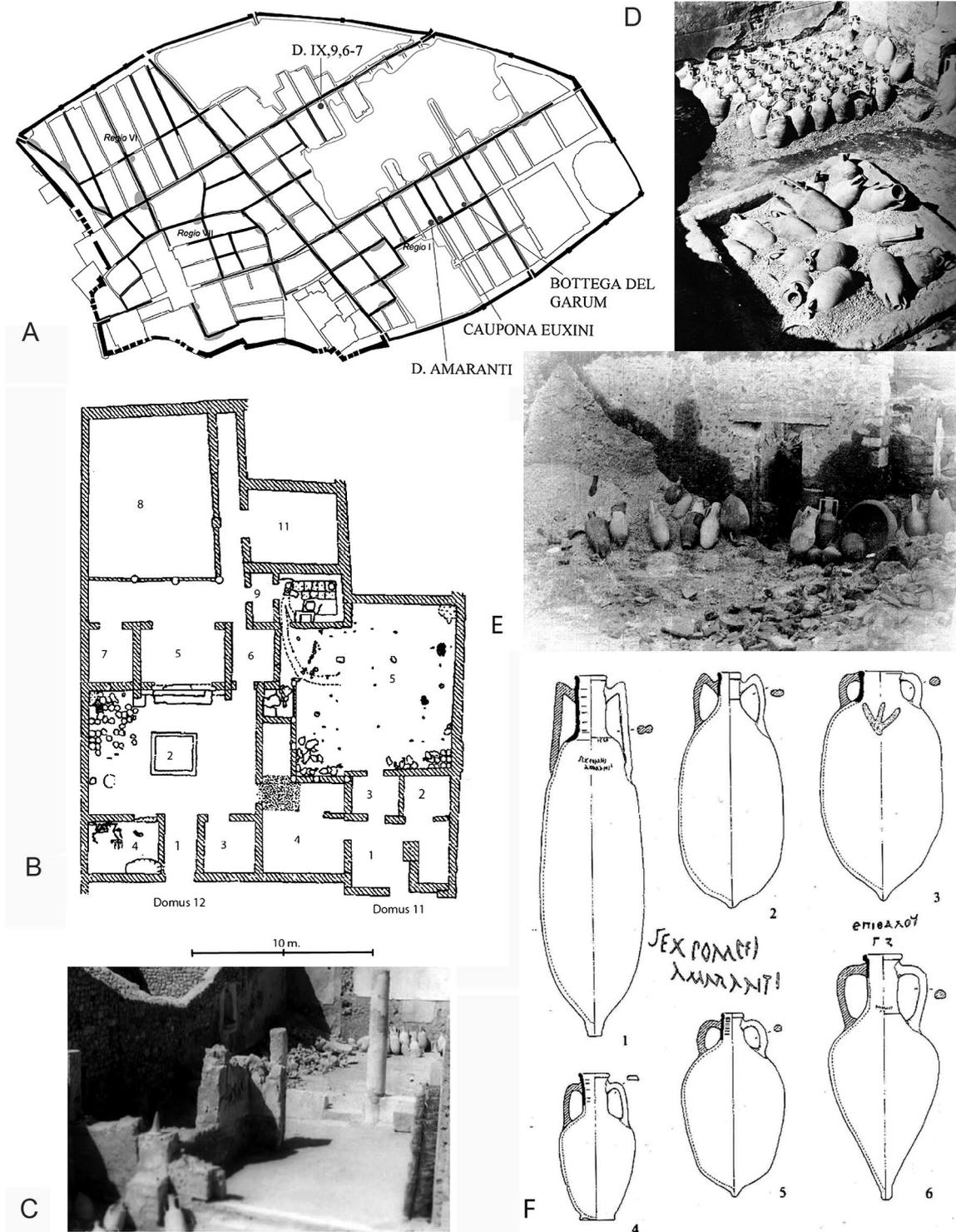


Figure 3. A. Location of referred *Domus* on the map of the urban activity of *Pompeii* (from Viitanen et al. 2013, p. 65, fig. 3). B. Plan of the *Domus Amaranti* with the remained archaeological layer from 79 A.D. that was excavated in 1995-1996 (from Fulford and Wallace-Hadrill 1998b: 86, fig. 9). E-C. Photographs after the excavations of 1952-1953: C. View of the *tablinum* and *viridarium* 8; D. *Impluvium* and northwest corner of the *atrium* (from the website *Pompeii in pictures*); E. View of the *viridarium* 5 towards the Southeast (from Berry 1997: 115, fig. 4). F. Amphorae of the levels of 79 d.C. (Timby 2004: 386, fig. 6).

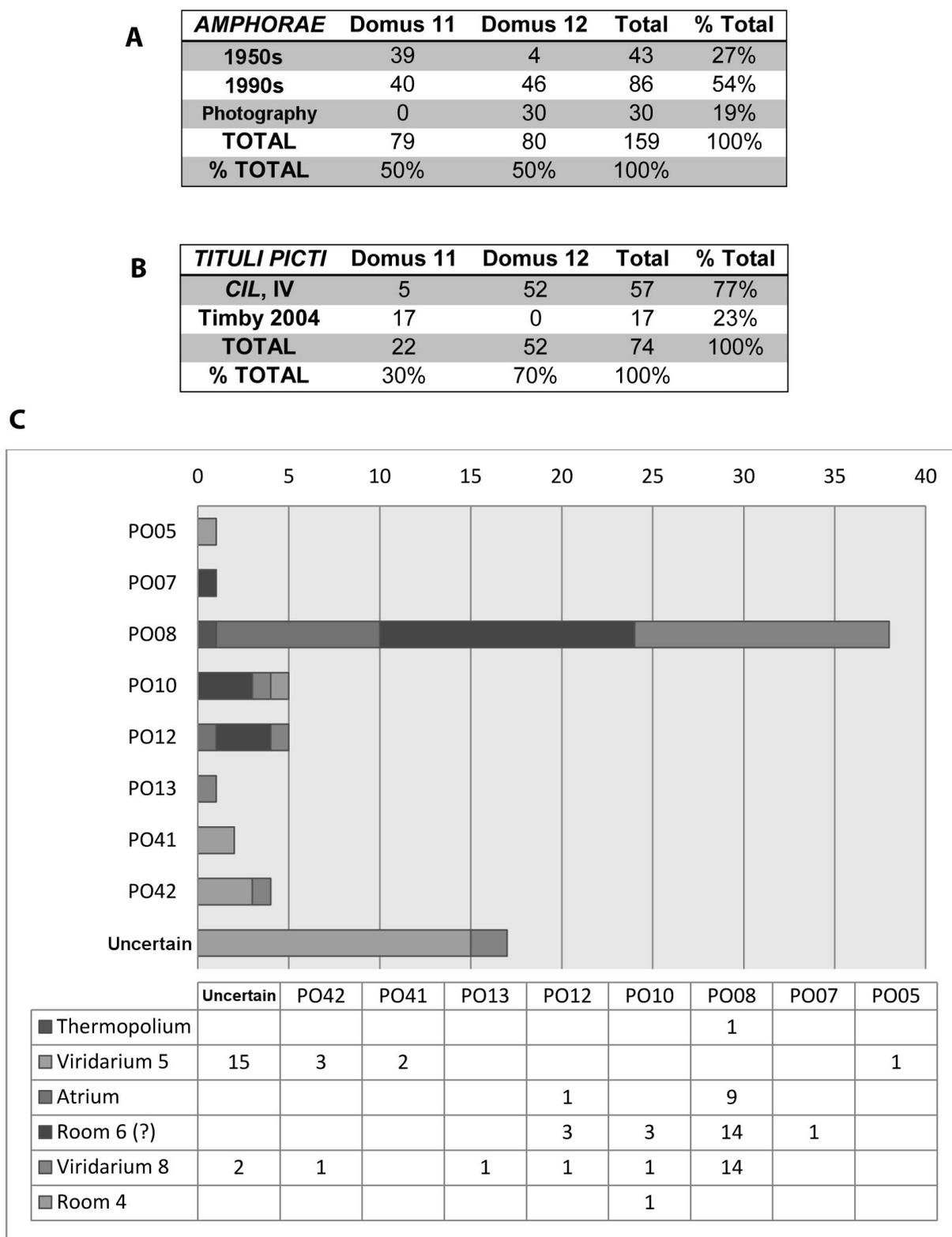


Figure 4. Quantification of amphorae found in the 79 A.D. archaeological level of the *Domus Amaranti* by number of objects (A), by presence of *tituli picti* (B) and by types of amphorae and functional spaces (C).

It is convenient to add another perspective on the deposit of AC1 from the photographic negative 1601. Berry related the skeleton of the mule (I, 9, 12, 4) and the vertical position of the AC1, “and therefore presumably full”, to some commercial activity still carried out in 79 A.D. It could simply have been risky to stack the empty AC1, by the shape and size of their mouths and feet. In the same lot appeared inverted amphorae and other objects that suggest a provisional accumulation, related to the partial abandonment and/or rehabilitation of the house. In this sense, the remains of a Dressel 2-4 full of *cocciopesto* were found in the southwest corner of the *atrium*.<sup>55</sup>

Continuing on about the excavations in the 90s, the quantification of the amphorae from the archaeological level of the 79 A.D. was not exhaustive, nor was the typological research. The main purpose of this research was to determine chronological sequences for the different building techniques used in *Pompeii*, with special attention to the information coming from archaeological trenches.<sup>56</sup> From these trenches, the resulting percentages of amphorae dating from the 1st century B.C. and 1st century A.D. are elevated, but they do not reach their almost exclusive presence from the 79 A.D. level. The Aegean amphorae are well represented, although not in the proportion to the level of 79 A.D. The Italian productions are in the majority and the Aegean ones are similar in volume to the African and Iberian ones. The most common Aegean types are AC1 and AC2.<sup>57</sup>

Regarding the level of the 79 A.D., Timby indicated that 43 amphorae were removed according to the inventories of the 50s (Fig. 4A).<sup>58</sup> During the excavations of the 90s, 86 amphorae were counted.<sup>59</sup> A total amount of 80 amphorae can be counted in the photograph of the *atrium* of the *Domus* 12 (Fig. 3D). Since 50 amphorae were removed from the *Domus* 12 in the 50s and 90s, another 30 amphorae can be added to the count. The general count of the amphorae indicates a fairly homogeneous distribution between both *Domus* 11 and 12. The typology of these objects gives a predominant place for the AC1 form, with a total of 62 amphorae (57 + 5) that represents more than 36% of the total. The Dressel 2-4 type (equivalent to PO12) with 23 (5 + 18) exceeds 13%. The AC2 computed in this way are 6 (2 + 4), exceeding 3%.

As regards the remaining amphorae, wine was the predominant content, especially the varieties from the Eastern Mediterranean. The exception would be a single fragment of PO07.<sup>60</sup> Other types drawn by Timby can be compared to those from the tables *Vasorum Formae* of the *CIL*. One of these amphorae (Fig. 3F4) resembles the PO20. It is described as a Campanian amphora and it has not been related to any particular content. Another amphora (Fig. 3F3) is compared by Timby to the Apulian productions, but it equally resembles the PO10 form. Among the specimens classified as Eastern types, the amphora in the Fig. 3F1 fits the PO41's shape and that in the Fig. 3F6 fits the PO42's shape. The AC1 and AC2 (PO08)

<sup>55</sup> Berry 1997: 109 and 113-114.

<sup>56</sup> Fulford and Wallace-Hadrill 1998a; Fulford and Wallace-Hadrill 1999.

<sup>57</sup> Timby 2004: 389-391.

<sup>58</sup> Timby 2004: 388. The removed 39 amphorae from the *Domus* I, 9, 11 but just 5 amphorae were recorded in the *CIL* (Fig. 4A and B). Approximately a dozen of amphorae appears completely excavated in the photography of the *viridarium* (Fig. 3E). After consulting the photographic archive, Fulford and Wallace-Hadrill stated that a certain amount of amphorae laying or leaning against the walls in the northwestern sector of the *viridarium* 5 have disappeared in 1995. Fulford & Wallace-Hadrill 1998a, p. 140 and Fulford and Wallace-Hadrill 1998b: 90-91.

<sup>59</sup> Timby 2004: 386-388. Timby referred 48 amphorae with respect to the *Domus* 12. Two of them were identified in archive photography. These two amphorae have not been identified in archive photography (Fig. 3E) and they have not been included in the correspondent count (Fig. 4A). Timby stated 39 complete or semi-complete amphorae in the *Domus* 11. However, her count by amphora type allows incorporate a total of 40 amphorae (Fig. 4A).

<sup>60</sup> *CIL IV* 10395. Timby proposed the identification of a Dressel 21-22 (PO04) amphora from the archive photography related to the *Domus* 12. Timby 2004: 387.

types were drawn too (Fig. 3F2 and 5). It is possible to add the presumed wine content and Cilician origin of the PO05 type (Fig. 4C).<sup>61</sup> In addition, another amphora would come from the surroundings of Tyre.<sup>62</sup>

The epigraphic results are quite different for both *Domus* (Fig. 4B). Timby recorded 17 amphorae with *tituli picti* from the excavations of the *viridarium* 5,<sup>63</sup> 14 of their respective inscriptions have not been transcribed or drawn. These later amphorae have been counted among those with an uncertain type (Fig. 4C). Fig. 3F3 is also included as an uncertain form. Figs. 3F1 and 6 correspond to the PO41 and 42 types respectively. The type PO08 carries the majority of inscriptions, surpassing 51% of the total of objects and 66% of those to which a specific form has been assigned. The PO08 is also preponderant in the set of the *tituli picti* from the *CIL IV*, although with smaller figures that approach 20%.<sup>64</sup>

The *Domus Amaranti* would be mainly occupied by an establishment concentrating on to the sale of wine in bulk and/or wholesale, using mainly Eastern wines. *Sextus Pompeius Amarantus* would be its administrator and/or owner sometime between 62 and 79 A.D. This hypothesis is supported by different theories of a functional and chronological nature. The *Domus* is characterized by the poverty of building materials and decoration, with evidence of unfinished construction-repair and marginality or abandonment. The lack of tableware also contradicts the idea of a residential use,<sup>65</sup> as well as the location of the stable. The functionality proposed by the historiography<sup>66</sup> does not seem to be proved by the artifacts, the structural conditions or the epigraphy of the *Domus* in the 79 d.C., at least in the consulted bibliography. There is no evidence of food preparation nor its public consumption, although the counter of the *Domus* 11 can be related to its sale. The structural conditions do not suggest prostitution or accommodation as contemporary activities to the deposition of amphorae.

The interpretation as *thermopolium* can be related to the presence of a kitchen (I, 9, 11, 3), but it is contradicted by the aforementioned absence of other testimonies. The indications of higher rooms over this part of the *Domus*, as well as over another supposed kitchen (I, 9, 12, 9),<sup>67</sup> suggest an alternative interpretation. Other superior rooms were completely ruined, like those that would cover rooms 3 and 4 of the *Domus* 12.<sup>68</sup> However, the rooms over the so-called kitchens could have been *apothecae* or *fumaria*. In these rooms the amphorae were smoked to give the wine a more aged flavour. In any case, exposure to the sun on rooftops and other spaces could have been a parallel practice with the same purpose.<sup>69</sup> For the rest, the opening of a door from room 4 of the *Domus* 11 communicated this space with the *atrium* of the *Domus* 12 and the other related marginal rooms, where presumable empty amphorae would be deposited.<sup>70</sup> Perhaps the rooms 4 and 2 were used for storage in the *Domus* 11. The scarcity of amphorae in such spaces could indicate that the business had ceased. The same hypothesis cannot be firmly proposed for room 1, in which the counter is located, since the *lapilli* was removed here

<sup>61</sup> Rizzo 2014: 340. See the Pompeii 5 type in the catalog *Roman Amphorae: a digital source*. University of Southampton, 2005 (Updated 2014).

<sup>62</sup> Timby 2004: 389.

<sup>63</sup> Timby 2004: 388.

<sup>64</sup> Martín-Arroyo *et al.* 2017: 183; Martín-Arroyo and Remesal 2017: fig. 8.

<sup>65</sup> Berry 1997: 120; Timby 2004: 388. This latter author compares the tableware record with that from the *Domus* I, 9, 13.

<sup>66</sup> The commentaries on the inscription *CIL IV* 10322 refer to a *thermopolium* in the *Domus* I, 9, 11. Laurence 1994: 83, Map 5.3, located a *popina* in the southern side of the *Insula*. Berry 1997: 104 used the denominations given by Della Corte (1958) for the *Domus* 11 and 12 as *Lupanar di Amarantus* and *Casa di Q. Mestrius Maximus* respectively. McGinn 2002, p. 38 stated some differences between both *Domus* in order to distinguish them as *lupanar* and *caupona* respectively.

<sup>67</sup> Berry 1997: 108-109 and 111; Fulford and Wallace-Hadrill 1998b: 82.

<sup>68</sup> Fulford and Wallace-Hadrill 1998b: 86.

<sup>69</sup> Brun 2003: 86.

<sup>70</sup> Fulford and Wallace-Hadrill 1998b: 100.

in a previous moment to the archaeological excavation. If there were amphorae and the despoilers had not been interested in them, they would have left them. Or maybe the full amphorae were recovered after the eruption, perhaps along with other objects of greater value. In any case, the ruinous state of the counter<sup>71</sup> can also be related to a previous cessation of the business. On the other hand, the sale of wine in bulk or wholesale would not require a presentation as careful as expected for retail. In fact, the *Domus* seems to be in a busy corner, in relation to other establishments and public spaces, but in a relatively peripheral or secondary position with respect to other indicators of urban activity.<sup>72</sup>

There is a conflict between the proposal of *Sextus Pompeius Amarantus* as owner or tenant of the *Domus* and the finding of a *signaculum* with the inscription *Q. Mestr. Maximi*. However, this finding is not decisive and the seal may belong to another phase of occupation of the *Domus*. Neither the presence of a *rogator* in an electoral inscription or the *tituli picti* of the amphorae are decisive,<sup>73</sup> but both facts together reinforce the hypothesis of habitation in the case of *Sextus Pompeius Amarantus*.<sup>74</sup> Its name appears on two PO41 from the *viridarium* 5 in the *Domus* 11.<sup>75</sup> One of them could be a graffiti,<sup>76</sup> a form of writing that is usually related to the habitual possession of a ceramic pot, instead of a commercial indication. Another *titulus*<sup>77</sup> was written on a PO12 amphora (equivalent to the Dressel 2-4 type). The provenance of this type of amphora is uncertain, because it was produced in several places along the Mediterranean. Then the hypothesis of the commercial indication becomes weaker because close points of departure cannot be attested for both amphorae, within the likely commercial sphere of the same trader. In addition, by its location in the *viridarium* 8, it offers an epigraphic coincidence that links the amphorae sets from both *viridaria*.

The amphora with the inscription *Sex. Pompei Amaranti* was classified as Dressel 2-4 Aegean (Fig. 3F1), similar or equivalent to the PO41 or Dressel 5 type.<sup>78</sup> Another amphora of this type was found in the *Euxinus' caupona* (I, 11, 11) (Fig. 3A). It carried a *titulus* which mentioned *Euxinus*.<sup>79</sup> In a parallel case to the *Amarantus'* one, he also appears as a *rogator* of the same candidate.<sup>80</sup> *Q. Postumius Proculus* was presumably son of *Q. Postumius Modestus* (duumvir in 56-57 A.D.) and colleague in their candidacy with *M. Cerrinius Vatia*. The candidacy would date from an indeterminate moment under the Flavian dynasty.<sup>81</sup> This fact reinforces the hypothesis on the *Amarantus'* period of activity, which is related to the building phase after the earthquake in 62 A.D. *Amarantus* was probably occupied in the sale in bulk and/or wholesale of wine, mostly of those with Eastern provenance, from the years before the eruption of 79 A.D.

<sup>71</sup> Berry 1997: 110-111.

<sup>72</sup> See the location of the *Domus Amaranti* in the maps from Viitanen *et al.* 2013 and Poehler 2017.

<sup>73</sup> Mouritsen 1988: 13-27.

<sup>74</sup> CIL IV 9829a: *Q(uintum) Postum(ium) Proculum aed(ilem) o(ro) v(os) f(aciatis) / Amarantus Pompeianus rog(at) / Papilio*.

<sup>75</sup> Berry 1997: 122; Fulford and Wallace-Hadrill 1998b: 89; Timby 2004: 388. The latter author mentioned three Aegean Dressel 2-4 amphorae, maybe making a mistake in the count of objects from the *Domus* 11.

<sup>76</sup> Berry 1997: 122: *SEX POMP* painted on its belly. Fulford and Wallace-Hadrill 1998b: 89: *SEX POMP* incised faintly on its belly.

<sup>77</sup> CIL IV 10362b: *Sex. Pa( )*. Here, the proposed reading is: *Sex. P(ompei) A(maranti)*.

<sup>78</sup> Rizzo 2014: 315-318; Martín-Arroyo 2018c: 72.

<sup>79</sup> AE 1967, 86d: *Pompeis / ad amphitheatr(um) / Euxino coponi(!)*. Véanse las imágenes del sitio web Pompeii in Pictures.

<sup>80</sup> CIL IV 9851: *Q(uintum) Postum(ium) M(arcum) Cerrinium / aed(iles) o(ro) v(os) f(aciatis) / Euxinus rog(at) / nec sine Iusto scr(ibat) Hinnulus*.

<sup>81</sup> Franklin 2001; Camodeca 2002: 68-69. Camodeca proposed an overall data in the 70s of the first century A.D., more precisely by the years 73-77 A.D.

### 3.3. On the nature of names: Roman onomastic, networks and the case of the *Ti. Claudii*

Personal names have a remarkable presence in the amphorae epigraphy, but understanding the role of these people involved in trade is still difficult. Producers of the contained food, traders or consumers could be mentioned in *tituli picti*, but even within these categories, relevant nuances can be made in order to research the historical implications of these inscriptions. Homonymy, bad preservation or fragmentation of inscriptions, and use of abbreviations are some of the problems to deal with. In this respect, challenges in Epigraphy include the proposition of new questions and methodologies. Within the EPNet Project, a network (Fig. 5) has been created by linking the *tituli picti* on PO08 amphorae with the general distribution of Greek names in the Roman Empire.<sup>82</sup> A considerable labour of data mining has been performed by crossing the information from different databases in an automated and probabilistic way. Beyond the amphorae epigraphy, the departure hypothesis and the resulting methodological approach can be used with different databases, for example, in the research of the mobility of families or communities.

New technologies are useful, but traditional epigraphic analysis is still necessary, particularly within the systematic review of sources. In the case of the *tituli picti*, this type of analysis requires a full understanding of inscriptions, which involves the amphorae, inks, transcriptions, semantic contents, relationships between contents and *tituli* from the same and different amphorae, etc. In this respect, when dealing with the more 2500 *tituli picti* from the *CIL IV*,<sup>83</sup> the selection of study samples has been a quite important point in the work plan. The focus on the PO08 type, with over 500 amphorae, was a decisive step in this direction. But even more targeted samples have been required within the group of the PO08 amphorae. In that sense, the study of just 11 yellow marks has deserved a full paper,<sup>84</sup> by showing the multiple relationships that can be established within a higher number of inscriptions. On the research of the semantic contents, a paper has been dedicated to the *titulus* ΛΥΤΤΙΟΣ.<sup>85</sup> This *titulus* names a variety of the Cretan wine that was attested in 66 inscriptions, including 49 PO08 amphorae. The majority of the wine amphorae showed no indication about the contents, which were quite standard for the same amphora type or were tested by buyers. For example, as pointed by the epigraphic evidence, the Crétoise 4 type probably contained aged wine.<sup>86</sup> The exhaustive review of the Vesubian record showed a wide variety of cases (reuses in Latin or Greek context, translations, abbreviated forms...). All of them are attested by a short number of inscriptions. It has encouraged the research of factors of differentiation in the rare case of the ΛΥΤΤΙΟΣ: raw material, winemaking techniques and historical-geographical conditions. In the rest of cases, the attentive examination of the inscriptions has allowed the refuting of some erroneous interpretations. Frequently, the identification of the contained product results from the mistaken reading of an abbreviated personal name.

Even when the personal names are the most frequent semantic content, no more than two or three individuals from a single family (*gens*) appear in the researched inscriptions, just attested each one of them by a few amphorae. There is a remarkable exception pointed out by the historiography: the *Ti. Claudii*. An exhaustive review of the evidence provides a total amount of 106 objects on which a minimum of 34 individuals (*cognomina*) are attested. From this group, 25 individuals are mentioned on Cretan amphorae, mostly in Greek. The PO08 type is predominant one more time (Fig. 6).<sup>87</sup>

<sup>82</sup> Martín-Arroyo *et al.* 2017: 180.

<sup>83</sup> Martín-Arroyo and Remesal 2017.

<sup>84</sup> Martín-Arroyo 2019b.

<sup>85</sup> Martín-Arroyo 2020b.

<sup>86</sup> Martín-Arroyo 2019b: esp. 464

<sup>87</sup> Martín-Arroyo in press, a.

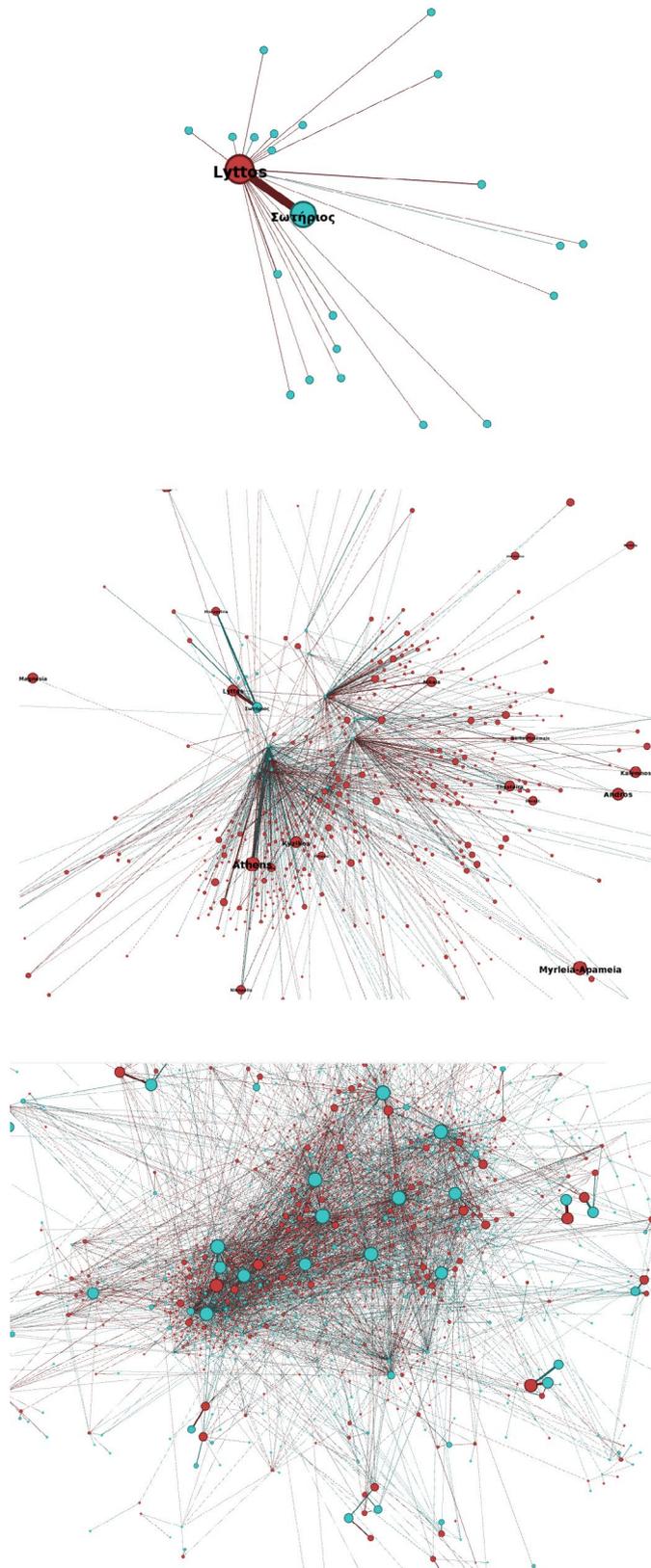
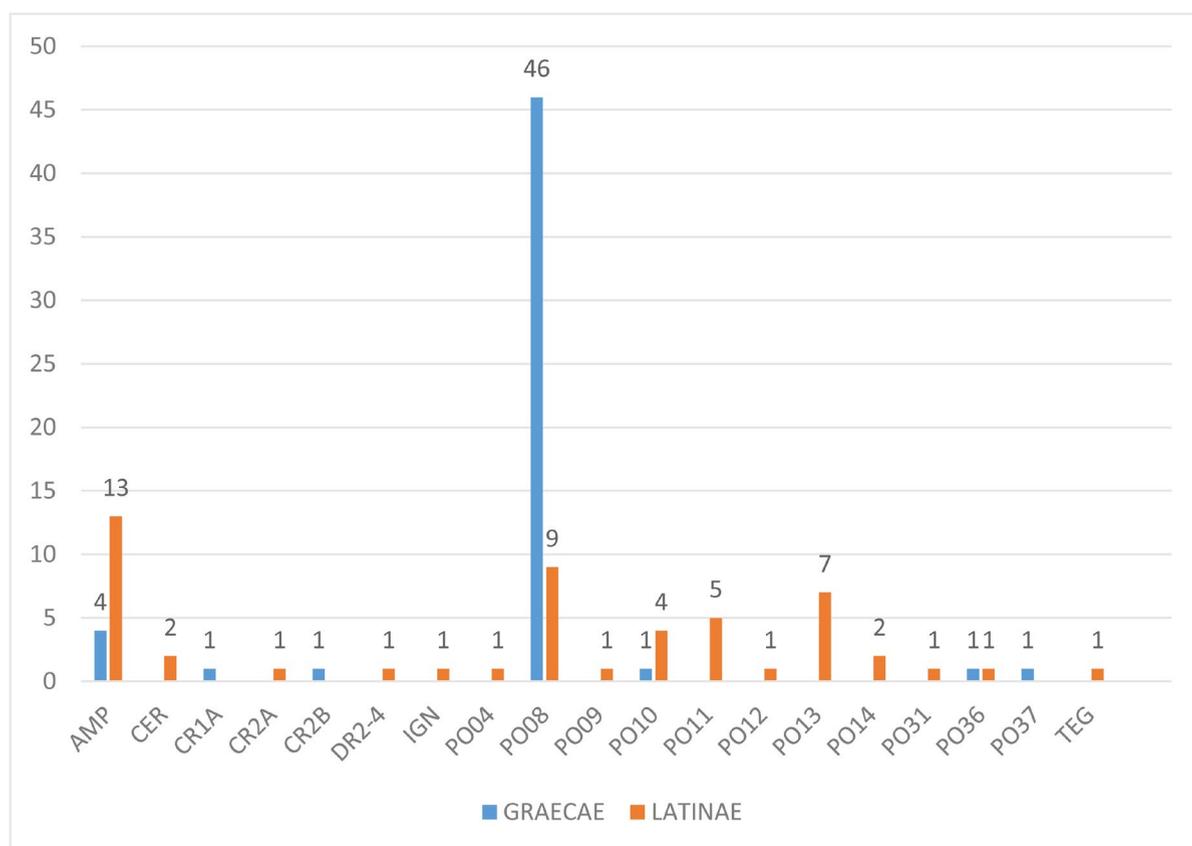


Figure 5. Examples of increasing complexity in the network by linking names from the PO08 amphora epigraphy (blue nodes) and places (red nodes) where these names are attested (Martín-Arroyo *et al.* 2017: fig. 3).

It has usually been assumed that the *Ti. Claudii* were imperial freedmen, without further reflection on the historical implications of this statement, not being challenged. The EPNet research carried out exploration of other hypotheses with respect to the Cretan wine in three types of contexts: production, distribution, and consumption.

In relation to the production, the payment of *vectigalia* from the Cretan *praefectura* of *Capua*, neighbouring city of *Pompeii*, has been considered an explanatory factor in the abundance of Cretan amphorae.<sup>88</sup> In some way, the export of Cretan wine would have benefited from this relationship with the Italian Peninsula. However, the scarcity of other epigraphic evidence about the *Ti. Claudii* in Crete makes it difficult to support this hypothesis. Only a prominent family group in the province *Creta et Cyrenaica* must be mentioned in this respect.<sup>89</sup>



**Figure 6. Typology of carrying objects and language used for the *Tiberii Claudii*'s inscriptions. Typology of objects: *ignotae* (IGN), *tegula* (TEG), ceramic pot (CER), amphorae (AMP), amphora types Pompeii (PO), Dressel (DR), and Crétoise (CR) (Martín-Arroyo in press, a: fig. 3).**

With regard to the distribution, the benefits of the grain-supply route from *Alexandria* to Rome, and particularly with the stopover of *Puteoli*, has been the main explanatory hypothesis for the plentiful record of Cretan amphorae.<sup>90</sup> The presence of Eastern amphorae, especially the Cilician PO13, has been

<sup>88</sup> Marangou-Lerat 1995: 157 and 159; Tchernia 2007: 61-63; Rizzo 2014: 324.

<sup>89</sup> LARONDE 1998: 335-337 and 339.

<sup>90</sup> Tchernia 2007: 61-63; Rizzo 2014: 324.

highlighted in the epigraphic study with respect to this route. The cases of the *Ti. Claudius Orpheus*, vector of a cargo of wheat,<sup>91</sup> and the imperial freedmen *Potiscus*<sup>92</sup> must be mentioned too. Furthermore, *Τιβέριος Κλαύδιος Ἐπαφρόδιτος* is mentioned in 16 amphorae, mostly PO08.<sup>93</sup> A *signaculum* carries the abbreviated form *Ti. C. Ep.*<sup>94</sup> and a military diploma dated in 71 A.D. mentions *Tiberius Claudius Epaphroditus*, *Antiochesus*, and *Tiberius Claudius Demosthenes*, *Laudicenus*.<sup>95</sup> The nearby location of one of these amphorae and the *signaculum* must be highlighted in order to interconnect these pieces of evidence.<sup>96</sup> This case again poses the question of who were the *Ti. Claudii*, by suggesting that their common promotion to the citizenship (or at least for some of them) and their commercial relationships could be related to an Eastern military context.

In relation to the contexts of consumption, the case of the duumvir *Ti. Claudius Verus* has been explored, by focusing the aforementioned question on the role of the local elite. However, the supposed remarkable reach of the researched trade network and the Pompeian evidence, encourage the detailed examination of the case of *Eutyclus*, by investigating in the hypothesis of the imperial freedmen. The *titulus pictus* 10326 (ΘΥ / ΒΙ; *inferius* TI · CLAVDI EVTVC, see Fig. 7) refers to this *Caesaris l(ibertus)*, as proposed by the finding of a *signaculum*. Della Corte was interested in this Latin name, reproducing it first in the *Notizie degli Scavi di Antichità*<sup>97</sup> and then in *CIL* IV. Its reading does not offer doubts in *praenomen* and *nomen*, but it requires the restitution *Eut[y]c(hi)* for the *cognomen*. It was written in black on a PO10 amphora, similar to the Crétoise 3 type, as well as the Greek *tituli* on the same amphora. The combination of *tituli* ΘΥ / ΒΙ appears in 16 other Cretan amphorae distributed by *Pompeii*.<sup>98</sup> In a PO10 of this group is attested the abbreviation in red *C·P·E*.<sup>99</sup> This abbreviated *tria nomina* would appear in a second phase in the life of this amphora, passing from a Greek context to another Latin one. The *tria nomina* *Ti. Claudius Eutyclus* would have a parallel epigraphic context. The reading proposal given by Della Corte, however, refers to different locations in the Vesuvian archaeological area. While the *titulus* 10326 was found in the Pompeian *domus* II·XI·1, the *signacula* that identify the freedman *Eutyclus* (Fig. 7) appeared in the Villa “Santini” (Boscotrecase).

The *signacula* were found in 1904 in a closet of the *apotheca g*, located in the servile or rustic atrium (part A in the plan of the *villa*). The transcriptions of their respective inscriptions are TI·CL·EV·T and EVTYCHI / CAESARIS·L.<sup>100</sup> Mau suggested in 1909 that the *villa* was owned by *Agrippa* or *Agrippa Postumus*, a proposal accepted by Della Corte. This suggestion was based on a *titulus pictus* (6499) on a PO25 amphora found in the same *villa*, among other epigraphs. Rostovsev examined the epigraphic evidence alluded to

<sup>91</sup> *CIL* IV 5894.

<sup>92</sup> *Epigraphische Datenbank Clauss-Slaby*: EDCS-21200392, 22600530-22600531, 22600552, 22600624, 22600629, 22901258, 22902019, 38701834, 40100143-40100144 and 62000167.

<sup>93</sup> The PO08 record in *CIL* IV 5942, 6408 (six amphorae), 9764-9765, 10443-10444 (three amphorae) and 10889 (two amphorae). On the amphora 9765, only the *cognomen* is attested. Furthermore, the *tria nomina* is attested in an undetermined type of amphora; see in this respect *CIL* IV 10890.

<sup>94</sup> *CIL* X 8058,9.

<sup>95</sup> *Epigraphic Database Roma*: EDR126381.

<sup>96</sup> One of the four amphorae from *CIL* IV 6408 was found 7 Oct. 1880 in *atrio aedium* IX 7, 4. This location could be related to that of the *signaculum* found 17 Mart. 1879 in IX, 7.

<sup>97</sup> Volume of the year 1958, p. 167, n. 477bis, with figure in *tabula* VII.

<sup>98</sup> On PO08 amphorae: *CIL* IV 9750-9751, 10425-10429 y 10431. PO08-10: *CIL* IV 10430. PO10: 6367, 6375, 9752 (two amphorae) and 10360. Undetermined amphora type: *CIL* IV 10424 (two amphorae). The *titulus* ΘΥ is attested in other amphorae too.

<sup>99</sup> *CIL* IV 10360.

<sup>100</sup> Della Corte 1922: 459-460.

by Mau.<sup>101</sup> It includes two *tegulae*<sup>102</sup> and an inscription relating to the *pagus Augustus Felix Suburbanus*,<sup>103</sup> all of them mentioning *Postumus* and with consular dates of 11 and 7 a.C. respectively. As a piece of the same evidence, a wall graffiti mentioned a *Caesaris Augusti femina mater*.<sup>104</sup> The epigraphy and decorative wealth of the town support this hypothesis of imperial ownership. However, the readings extracted from the amphorae evidence are questionable. Rostovsev offered this interpretation from the copy of the *titulus* 6499 given by Mau: ΝΕΙΚΑΣΙΟΥ Ἀγρ(ίππου) [*ac*]toris (Fig. 7). Then he indicated that the same Greek name is connected to the *Agrippa*'s one in the *tituli* 6995-6997. Furthermore, the title ΔΙΣ(ΠΕΝΣΑΤΩΡ?) would be added to the latter of them (Fig. 7). Firstly, these last three amphorae do not refer to ΝΙΚΑΣΙΟΣ.<sup>105</sup> Neither does any of the *tituli* on the other 11 amphorae from the Villa "Santini".<sup>106</sup> Other *tituli* show similar names, but they were found in other Pompeian locations.<sup>107</sup> Secondly, the readings Ἀγρ(ίππου) [*ac*]toris and ΔΙΣ(ΠΕΝΣΑΤΩΡ?) are questionable with respect to the transcription of the characters and their interconnections. Within the *titulus* 6499, the Greek letter Π was written in a stylized form, superimposed on the Γ. Next to these supposed Greek characters, other Latin letters appear together. There is no separation in this unique string. The character A corresponding to the word *actor* does not exist. The C is actually a well-defined T. The S appears on a lower line. Despite being in Greek, the aforementioned abbreviation in the *titulus* 6997 has been linked to the Latin term *dispensator*. In addition, it is preceded by other Greek characters in a continuous string. On the other hand, ΚΛ ΛΥΣΙΛΙΟΣ appears in the same *titulus*, perhaps *Cl(audius) Lucilius*<sup>108</sup> and maybe related to the *Ti. Claudii*.

The case of *Eutyclus* is connected to a larger sphere of study. Therefore, it is convenient to examine the scope of the imperial rustic properties in Campania, its impact on the wine economy, and the related activity of the imperial freedmen. Della Corte identified five imperial *villae* in the environs of *Pompeii* from indirect evidence, mostly epigraphic.<sup>109</sup> Three of these *villae* belonged periodically to individuals named *Ti. Claudius Eutyclus*, *Anicetus* and *Amphio* respectively. The *signacula* were interpreted as evidence that these imperial *procuratores* continued to manage (*Amphio*)<sup>110</sup> or eventually acquired (*Eutyclus*) such properties. This would happen in the framework of a process of liquidation of properties from the Julio-Claudian dynasty by *Vespasianus*, as noted by Rostovsev.<sup>111</sup> However, the relation between properties and owners through the *signacula* must be questioned, considering the ancient usefulness of these objects and the meaning of their locations in the Pompeian contexts. One of these findings would affect, for example, the examined case of *Sex. Pompeius Amarantus*. In any case, the presence of the properties of the imperial house and its managers, can be understood as probable taking into account the testimonies mentioned in relation to the Villa "Santini". The later Neronian relationship with the Pompeian *Poppaei*<sup>112</sup> can also be considered, since the freedmen of *Claudius* were able to continue serving the imperial house under Nero.

<sup>101</sup> Rostovsev 1933: p. 34, n. 26,31.

<sup>102</sup> Della Corte 1922: 478. See Della Corte 1954: 345.

<sup>103</sup> *CIL* X 924.

<sup>104</sup> *CIL* IV 6893.

<sup>105</sup> This name from the catalogue *LGPN* is proposed as the more similar form to the genitive ΝΕΙΚΑΚΙΟΥ.

<sup>106</sup> *CIL* IV 6920, 6937, 6945-6946, 6952-6953, 6961, 6979, 7004, 7007 and 9542.

<sup>107</sup> *CIL* IV 6498, 9799 and 10458 (two amphorae).

<sup>108</sup> The Greek *cognomen* is not recorded in the *LGPN*. The assimilation to *Lucilius* is proposed here. This name is recorded in the *Onomasticon Provinciarum Europae Latinarum*. Apparently, some vestiges of ink between the Κ and the Λ could be read as a point to distinguish the initials of the *praenomen* *Kaeso* and a *nomen*. The short distance between both letters points to the reading as an abbreviated *nomen* starting with ΚΛ.

<sup>109</sup> Della Corte 1954: 344-364.

<sup>110</sup> Sogliano 1895: 211.

<sup>111</sup> Della Corte 1954: 341. Della Corte included a footnote and commentary to the chapters III, VI and VII from Rostovsev 1933.

<sup>112</sup> Della Corte 1954: 58-69 and 243-253.

CIL IV 10326

*superius*

ΘΥ

ΒΙ

*inferius*

ΤΙ. ΚΛΑΥΔΙΟΥ ΕΥΤΥΧΟΥ

Della Corte 1922: 460

·ΤΙ·ΚΛ·ΕΥ

ΕΥΤΥΧΟΥ  
(CAESARIS·Ι·

CIL IV 6499

ΝΕΙΚΑΚΙΟΥ  
ΑΓΓΤΟΡΙ  
Σ

CIL IV 6997

Κ.Λ. ΑΥΤΥΧΟΥ  
ΑΡΙΣΤΟΤΕΛΕΙ

Figure 7. Inscriptions related to the case of *Ti. Claudius Eutychus* (Martín-Arroyo 2020a: fig. 2).

The wall *titulus* 9189 was written with a charcoal in Villa Iuliana or “dei Misteri”. It includes the name *Ti. Claudi Ani[ce]t[i]*. This *tria nomina* also appeared in some Cretan amphorae. In addition, there is a *torcularium* and a *cella vinaria* in the *villa*. From such evidence, Della Corte related the activity of *Anicetus* with the production of wine. Also three wall graffiti in the Villa “Santini” offer indirect evidence about the dedication to the viticulture of the lands to this property. They indicate the presence of considerable quantities of stakes (up to 1300), which were carved (*acutos, quadri*) and stored (*in acervo magno*). Another accumulation of stakes was found in another Pompeian *villa* with *torcularium* and *cella vinaria*, similar to what was described for the Villa “Santini”. The stakes (*pali*) were used in the vine training systems, according to the written sources. In addition, the use of the trellis is archaeologically attested in *Pompeii*. The Latin agronomy also recommends the self-sufficiency in the production of these supports for the properties with vineyards. Therefore, a hypothetical framework can be proposed in which large imperial properties were exploited in a complex way for the production of wine, including different functional spaces. Some individuals would be in charge of managing the economic activity in these country estates, as proposed in the cases of *Eutyclus* and *Anicetus*. Such individuals could have participated in a wide commercial network, exporting the production from the *villae* and importing other wines, particularly the Cretan ones. This network of imperial freedmen, their own freedmen, and their descendants, would be the *Ti. Claudii* mentioned on the amphorae. Even if they were only mentioned occasionally on some amphorae, the large quantity of the resulting *tituli picti* would explain their remarkable presence in the record.

#### 4. Conclusions

The benefits for the research of a systematic compilation of data have been shown by allowing critical and exhaustive analysis. The complementarity of different sources is equally required for the full understanding of the evidence. The computational management of epigraphical and geographical databases has proved to be highly convenient for the implementation of new approaches of historical research. However, the multiplicity of factors and contexts in which the evidence was generated must not be forgotten. They deserve equally systematic and exhaustive approaches by considering as wide a range of hypotheses as possible, the evidential weight of various testimonies and arguments, and the selection of the most probable explanations. This type of approach requires the focus of the research to be on specific matters and case studies.

With respect to the specific matters and case studies summarized in this chapter, several historical perspectives can be offered. The case of the Ratio Riparia-Vinea reveals the tensions between environmental and technological determinism on the one side, and the search for profit in a market economy on the other side. It offers the possibility of discussing this economic complexity avoiding an absolute conceptual abstraction, concentrating on specific problems, factors, contexts and figures as references. From a wider perspective, similar tensions have been considered in the case of the olive oil production. The imperial politics in Rome and the *limes* and the related demand of olive oil could have promoted a high volume of production, as pointed out by the preliminary result of the econometric study carried out. The complexity and magnitude of the described Roman economic system would allow a high degree of specialization, as suggested by the case of *Amarantus*, focused on supplying wine. The influence of the interventionism of the imperial house has been discussed in this respect, concerning its rural properties in *Pompeii* and the activity of the *Ti. Claudii*. Additionally, the commercial success of the Cretan wine must be highlighted too and its historical bases must be rethought, as well as the type of social origins and links that positioned the *Ti. Claudii* in such a trade network. The overview of

these cases depicts a panorama in which, despite the limits of a preindustrial technology, politics, social structure, and consumption promoted some modernizing features of the Roman food economy.

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