

Rebuild broken amphorae in the Testaccio (II).

by Domènec Ruiz, Jordi Pérez González, Luce Prignano, Ignacio Morer, Antonio Aguilera and José Remesal Rodríguez

domenec.ruiz@gmail.com

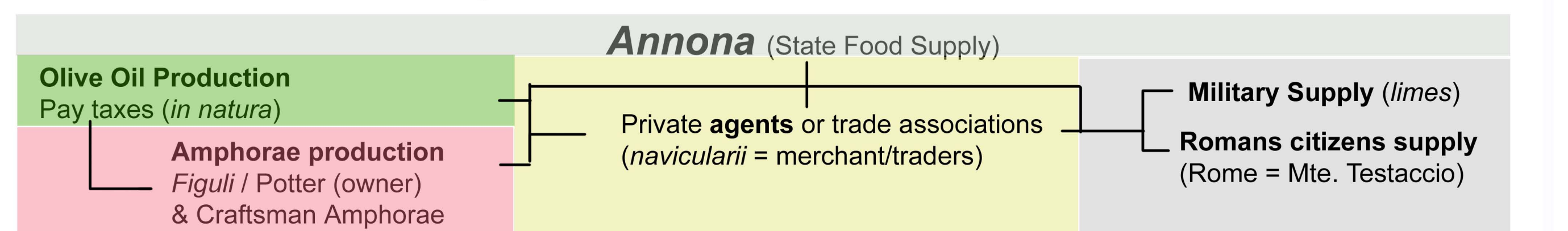
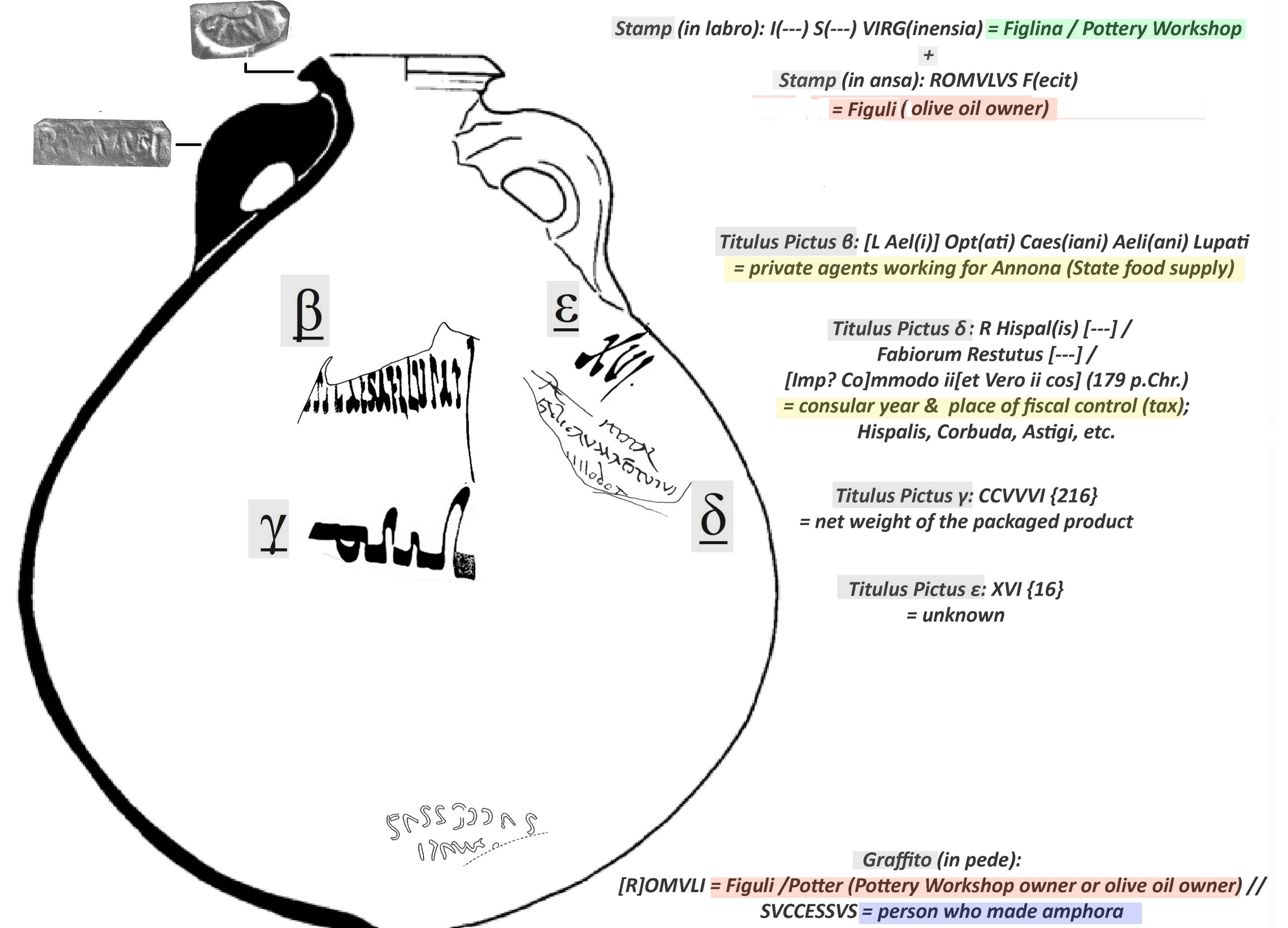
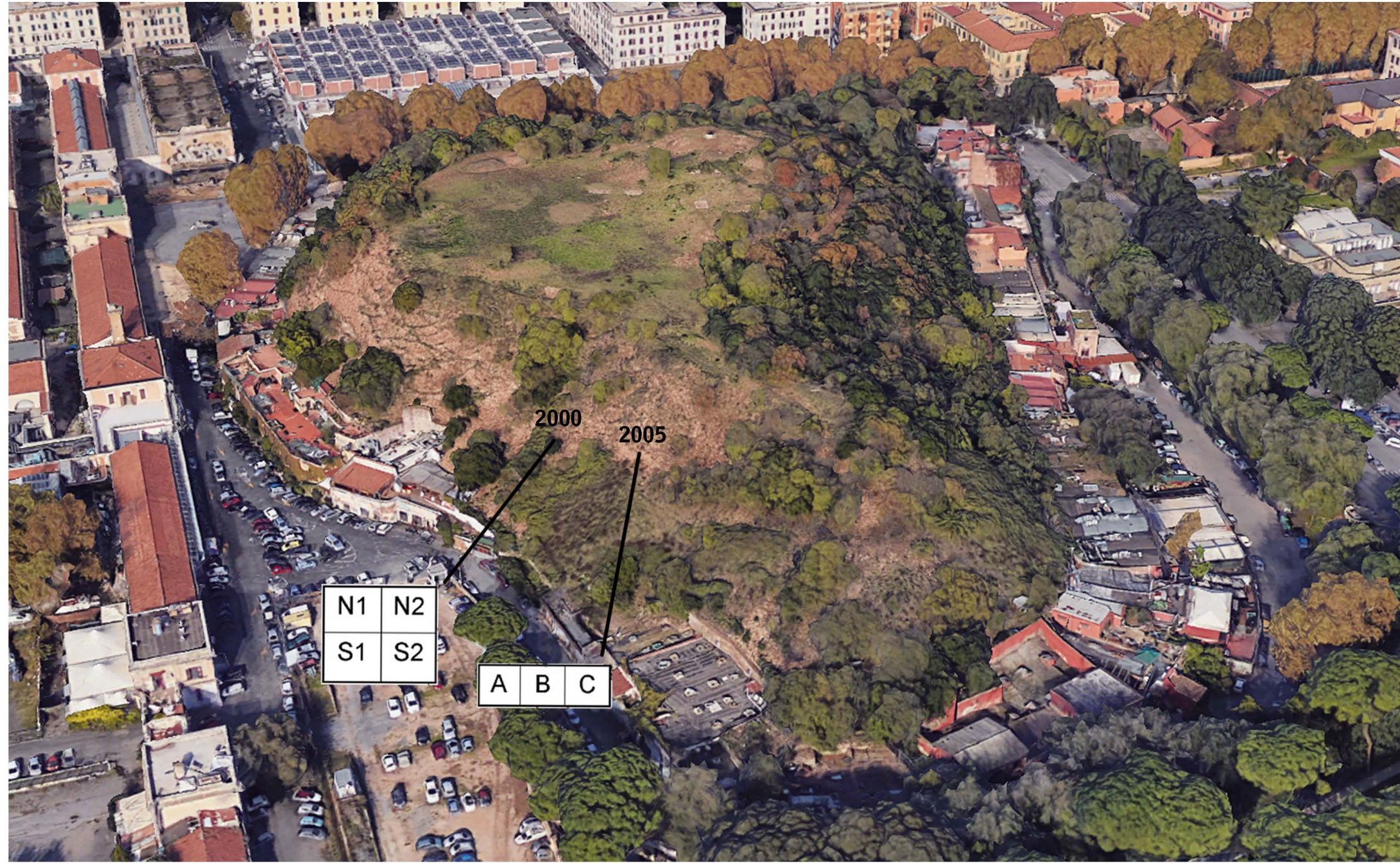
jperezg@ub.edu

luceprignano@ffn.ub.es

ignacio.morer@gmail.com

antonioaguilera@ub.edu

remesal@ub.edu



Historical analysis: the Mount Testaccio.

The Testaccio is an artificial hill formed in the Sub-Aventine plain, almost one kilometer in perimeter and almost 50 meters high, formed by the remains of millions of amphorae. About 85% came from the *Baetica* (Andalucía) containing olive oil in the known as Dressel 20 type.

The high concentration of the same epigraphs makes us think about the existence of **controlled unloads**. We believe that there should have been an administration of the mountain and responsible for their maintenance and organization of the unloads. The excavation of Mount Testaccio is particular, as there is no soil or well-defined strata, but only amphorae and more amphorae where you can only excavate by creating an artificial system, which we have established by dividing the boreholes into 1m. square packets from which we extract the materials of 20 by 20 cm. Among our documents are *tituli picti* with consular dating, we can establish, in a safe way, the stratigraphic succession. In some cases we have been able to reconstruct the epigraphic set of an amphora. In some cases, less frequent, we have found or reconstructed fragments in which stamps and *tituli picti* have been attached. This is the ideal of our excavation, find fragments in which the information obtained through the *tituli picti*, thanks to its union with a stamp we can refer to the specific place from which the amphora was exported in the *Baetica*, so we would get to reconstruct our information at a **microhistorical** level.

To see the correlation between materials that we can not physically unite, we try to apply other methods, as is the case here. In this work we want to apply **new methods** to try to better relate our different materials in order to establish, through statistical methods, a better correlation between our materials.

The asymmetric index

The modified asymmetric index from A to B is defined as: $O_{A \rightarrow B} = 2 \frac{S_B}{N_A} \sum_{i=1}^k \min(Q_{iA}, Q_{iB})$

analogously from B to A as: $O_{B \rightarrow A} = 2 \frac{S_A}{N_B} \sum_{i=1}^k \min(Q_{iA}, Q_{iB})$

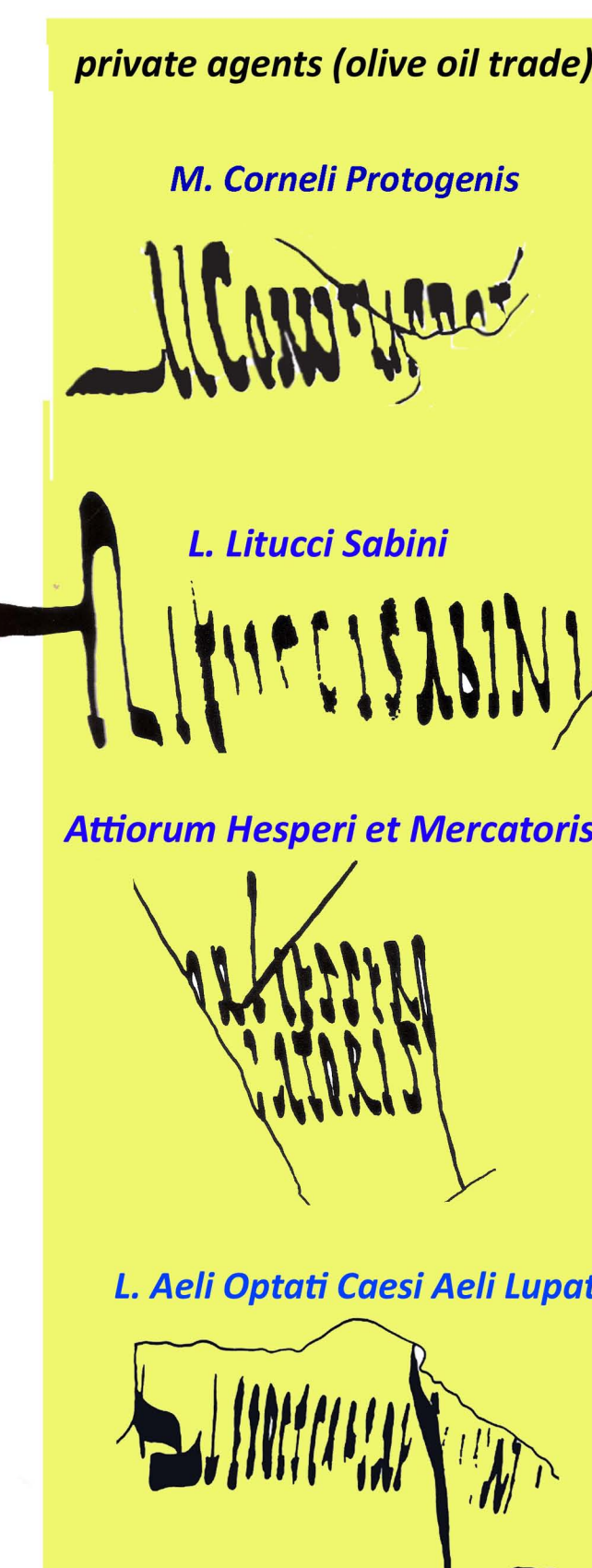
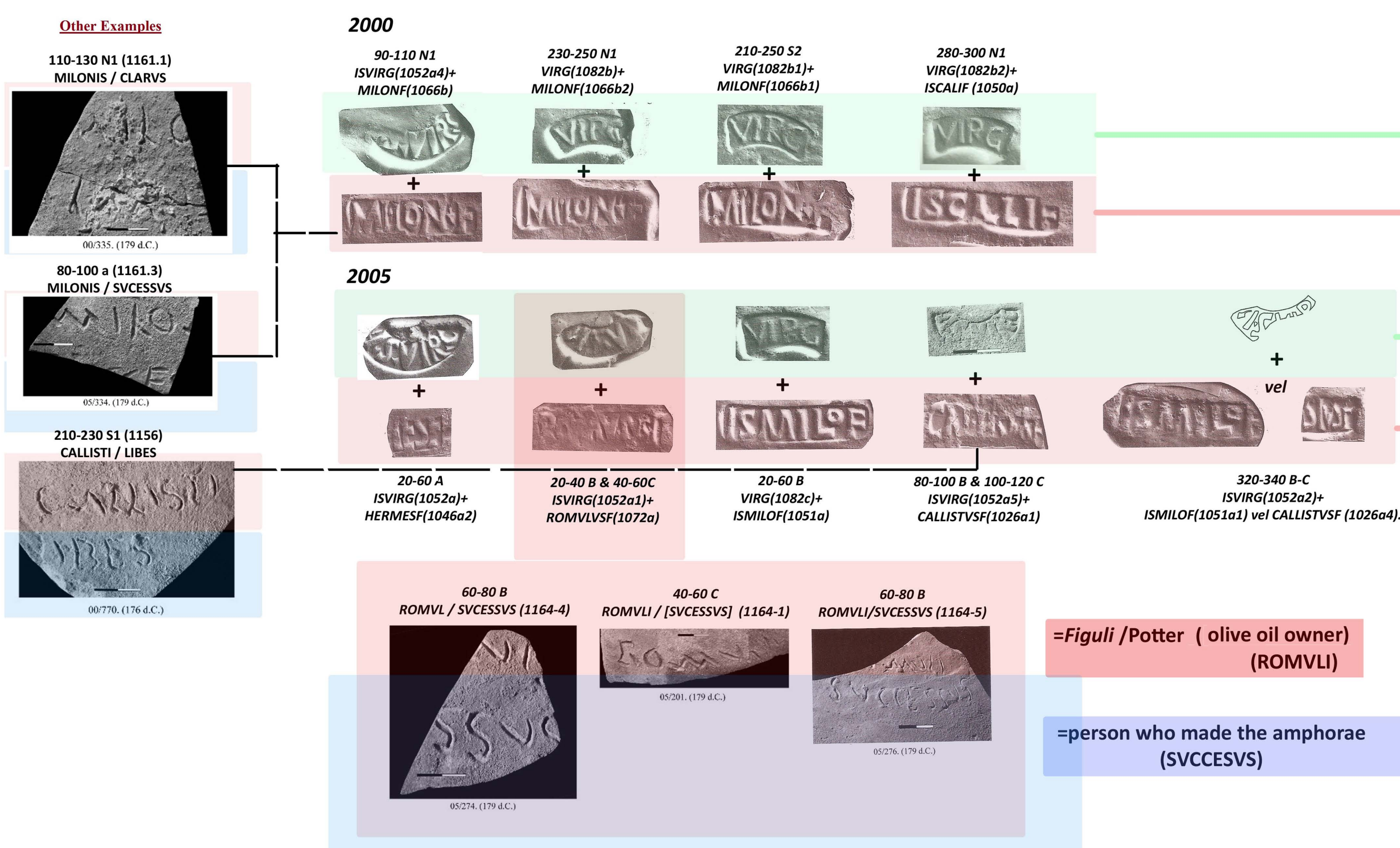
$O_{A \rightarrow B}$ indicates the superposition of A with B and $O_{B \rightarrow A}$ the superposition of B with A. k is the number of existing boxes and SA (or SB) is the quantity of objects of the class A (or B), where there are objects of the class B (or respectively A). In other words, when we are looking for an association of a certain *tituli beta* A with a stamp B, SA corresponds to the number of *tituli* A that have appeared, in the boxes where we have found the stamp B. NA is the number of total objects of the class A found in the excavation. Q_{iA} is the quotient between the number of objects A in the box i and the total number of objects of both classes A and B in all the boxes where they coincide. Q_{iB}, NB are defined similarly.

The following example shows the idea of this index. Let us consider an excavation where it has been found the object A and the object B in the following form. The objects are classified in different boxes.

A	A	B		A	
				A	A
B	A			A	
		B	A	B	A

One can observe in this example that B is found with A, but A is not found always with B. In this case, $O_{A \rightarrow B} = 6/11$ and $O_{B \rightarrow A} = 10/11 = 0.91$. B coincides with A almost in its totality, for reaching that 100% it is necessary another object B in the left box placed at the top.

Proposal for Traceability of Figlina Virginensia (174, 176-179 AD)



The construction of an 'inscription network' formed by stamps and *tituli picti* Beta using the asymmetric index allows us, first, to visualize how the network correctly groups the stamps of the same production area and that they could be on the same object, e.g. those produced in the Figlina Virginensia, ISVIRG, ISMILOF, MILONF, etc. (2000) or ISVIRG, MERMES, MILONF, ISMILOF, etc. (year 2005) and second, which of the *Tituli* Beta could once be on these objects.

In this way, using this method we can propose several of these private agents linked to the marketing and distribution of olive oil amphorae produced in the Virginensia: M. Corneli Protogenis (2000, 2005), L. Litucci Sabini (2005), Attorium Hesperii and Mercatoris (2000), L. Aeli Optati Caesi Aeli Lupati (2005) ...