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Baetican olive oil and the Roman economy

José Remesal Rodríguez

Research into the production and commercialization of Baetican oil may be considered to exemplify a global approach to history, in which all available sources of data for studying an economic phenomenon and its social and political implications are integrated. Economic data for the Roman period are scattered and, in many cases, anecdotal. If literary sources were the only available source for reconstructing the history of the production and commercialization of Baetican oil, we would conclude that Baetica was already exporting much oil during Strabo's time.¹ According to Pliny, its quality would have been good,² with those olives planted in pebbly soils yielding better fruit, and those on hillsides³ better still. One could cite other references from the poets.⁴ But we must integrate other sources of evidence, principally archaeological and epigraphic, and it is with their study that we, like Rostovtseff, have learned to write history with the help of archaeology.⁵ I aim also at a study which can be defined as 'microanalysis', by which I mean a study which starts with a clearly defined fact and encompasses all related information. For I believe that the only way to deepen our understanding of Roman economic organization is from the vantage point of small-scale studies. One must define the aim of one's research in spatial and chronological terms, in order to further our understanding of macro-economic phenomena. Very specific areas of study, although they may appear to be insignificant, will enable us to reinterpret our sources and advance our knowledge. This leads to the possibility of reinterpreting the economic history of the Roman world and its influence upon Roman social and political organization.⁶

The study of the production and commercialization of Baetican olive oil by means of Dressel 20 amphorae and their associated epigraphy is now sufficiently advanced to serve as a model for this kind of approach. This study also helps to overcome the old debate about 'primitivism' and 'modernism' in the Roman economy. Earlier historians, including M. I. Finley, were unaware of a mass of archaeological data with which Rostovtseff had been familiar.⁷ For the Roman economy amphorae are one of the clearest classes of information since their durability has ensured their survival. Everything was produced everywhere,⁸ and products from the most distant corners of the empire were found at many ports. We need now to create an interpretative

1 Strab. 3.2.6.

2 Plin., NH 15.8.

3 Plin., NH 17.31; Colum., RR 5.8.

4 Mart. 12.63.1. The literary references to the olive in Hispania were collated by A. Schulten, *Geografía y etnología antiguas de la Península Ibérica* II (Madrid 1963) 435-40. Reference to the agricultural economy of Hispania is made by J. M. Blázquez Martínez, *Historia económica de la Hispania romana* (Madrid 1978); id., *Economía de la Hispania Romana* (Bilbao 1978).

5 M. Rostovtzeff, *Iranians and Greeks in Southern Russia* (Oxford 1922) viii.

6 J. Remesal Rodríguez, *La annona militaris y la exportación de uceite btico a Germaniu* (Madrid 1986) 11-12, 109-12; id., *Heeresversorgung und die wirtschaftlichen Beziehungen zwischen der Buetica und Germanien* (Stuttgart 1997).

7 Elsewhere (J. Remesal Rodríguez, "Instrumentum domesticurn e storia economica: le anfore Dressel 20," *Opus* 11 [1992] 105-13, esp. 105), I have defended the view that there is one fact about Rostovtseff's life which assists us in understanding the development of his thoughts. He was a great traveller, which allowed him personally to observe that many identical artefacts, presumably of the same origin, were found at sites often separated by great distances. Furthermore, during his stay in Rome he was part of the group of 'young researchers' at the German Institute which also counted H. Dressel amongst its number; Rostovtseff was therefore aware of the latter's research at Monte Testaccio. The life and work of Rostovtseff is discussed by Andreau in his introduction to the French edition of his *Social and economic history of the Roman Empire* (Paris 1988).

8 Plin., Pun. 29.

model which explains commerce in the context of the empire's development, and for that the study of the production and commercialization of Baetican olive oil can help.

Brief history of research into Baetican production

In 1885 Bonsor was the first to publish evidence for a production centre of Baetican amphorae.⁹ Years later Clark-Maxwell published work which he had undertaken with Bonsor.¹⁰ Their surveys revealed a large number of Roman kilns at which were found many stamps impressed upon the same kind of amphora handle. Around the same time Dressel began his excavations at Monte Testaccio in Rome.¹¹ The site is formed from the remains of millions of amphorae. Dressel not only discovered the same stamps that had been found in Baetica but also saw that many amphorae carried annotations in black ink. The results of his work were published in CIL XV in 1891 and 1899. Dressel catalogued the type of amphora which he found at Testaccio by the number 20 on his typological table. He confirmed that it must have contained olive oil. Without knowing of the discoveries in Baetica,¹² he affirmed that they were indeed amphorae from Hispania, since amongst their notations appeared the names of *Hispalis* (Seville), *Corduba* (Córdoba), *Asfigi* (Écija), and *Malaca* (Málaga), and some references were made to the *ratio putrimoni* of Baetica and Tarraconensis.

In the year in which Clark-Maxwell published his survey, Hübner took account of Dressel's finds at the *Real Academia de la Historiu*, and in 1903 he drew together the threads of the work undertaken at Testaccio and in Baetica.¹³ Research on the topic was then abandoned and revived only in the context of a sterile discussion with colleagues who continued to deny the Baetican origin of Dressel 20 amphorae, despite Dressel's convincing arguments which had been supported by surveys in Baetica.¹⁴ At the end of the Second World War, E. Birley entrusted to a young pupil, M. Callender, the task of creating a corpus of amphora stamps found in Europe.¹⁵ Callender was assisted by the *Seminario de Historiu Primitivu del Hombre* (Madrid), which published his first article on the subject.¹⁶ In the same volume, its director

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- 9 G. Bonsor, "Marcas de alfares romanos," *Memorias de la Sociedad Arqueológica de Carmona* (1888) 56-62.
- 10 W. C. Clark-Maxwell, "The Roman towns in the valley of the Baetis between Córdoba and Sevilla," *ArchJ* 56 (1899) 245-305. The survey of the Guadalquivir valley was Bonsor's initiative and, although it was Clark-Maxwell who was the first to publish it and in his name alone, the joint work was undertaken in December of 1889 and April of 1890. The publication of Bonsor's work was delayed for several years even though it had been presented to the *Concurso Martorell* at Barcelona in 1892. The work was revised and enlarged with a survey of the Genil river from Ecija to the mouth of the Guadalquivir and published as *The archaeological expedition along the Guadalquivir (1889-1901)* (New York 1931) by the Hispanic Society of America, including an introduction reviewing the history of this research. There is also a Spanish translation entitled *Expedición arqueológica a lo largo del Guadalquivir* (Ecija 1989).
- 11 H. Dressel, "Ricerche sul Monte Testaccio," *AdI* (1878) 118-92; id., "Scavi sul Monte Testaccio," *BullCom* 1892, 48-53.
- 12 Bonsor, however, certainly knew about the work of Dressel: G. Bonsor, "Los pueblos antiguos del Guadalquivir y las alfarerías romanas," *Revista de Archives, Bibliotecas y Museos* 5 (1901) 837-57.
- 13 E. Hübner, "Nuevas fuentes para la geografía antigua de España," *BolRAcadHistoria* 34 (1899) 465-503; id., *EphEp* 9 (1903) 158 no.424.
- 14 A. Heron de Villefosse, "Deux amateurs narbonnais, Sextus Fadius Secundus Musa et P. Olitus Apollonius," *MémSocAntFr* (1914) 153-80; L. Cantarelli, "Il Monte Testaccio e la Gallia," *BullCom* 43 (1915) 41-46; P. Goessler, *Arae Flaviae. Führer durch di Altertumshalle der Stadt Rottweil* (Rottweil 1928).
- 15 Some years ago E. Birley informed me that Callender was one of his best students and that it was for this reason he entrusted him with such an enormous task. Callender undertook it with diligence. Personal reasons forced him to abandon his University career shortly afterwards.
- 16 M. Callender, "Las anforas del sur de España y sus sellos," *Cuadernos de Historia Primitiva* 3 (1948) 139-42.

Martinez Santa-Olalla published an article in which he made known the amphora typology just published by Pelichet¹⁷ and invited the undertaking of such work in Spain.¹⁸ However, it was Thévenot alone who pursued the study of Baetican olive-oil amphorae. He understood Dressel's ideas and began studies into the economic relationships between the different provinces of the empire.¹⁹ Callender's work was much delayed in publication,²⁰ and from the present point of view it had two major faults. He did not fully understand the information collected from Testaccio by Dressel, and he catalogued stamps alphabetically rather than following the system of nomina used by Dressel. Nevertheless, Callender's work was an important stimulus for Roman amphora studies.²¹ In 1969-70 a resurgence of research into Baetican olive oil occurred as a result of Ponsich's survey in Baetica,²² Rodriguez Almeida's resumption of the work of Dressel at Monte Testaccio,²³ and Chic Garcia's publication of the stamps of Bonsor and Ponsich together with some new examples.²⁴ The present writer began a survey of the region of Lora del Río (Seville)²⁵ and undertook some excavations at production centres for Baetican olive-oil amphorae.²⁶ In 1978 the first international congress on *Producción y comercio del aceite en la Antigüedad* (published 1980)²⁷ was held, showing the usefulness of amphorae for studying the ancient economy. Subsequently other international congresses have developed the study.²⁸

The nature of Baetican olive-oil amphorae ensures that their study has an advantage over other types of amphorae, for a number of reasons:

1. They exhibit more epigraphic information than any other kind of amphora, including: stamps, *tituli picti*, *ante cocturam* and *post cocturam* graffiti.
2. The production-area of these amphorae in the Guadalquivir valley has been systematically surveyed, revealing nearly 100 amphora production-centres (fig. 1).

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- 17 E. Pelichet, "A propos des amphores romaines trouvées á Nyon," *ZSchwArch* 8 (1946) 189-202.
- 18 J. Martinez Santa-Olalla, "Sobre el valor cronológico de las dnforas romanas," *Cuadernos de Historia Primitiva* 3 (1948) 135-39.
- 19 E. Thévenot "L'importation des produits espagnols chez les Eduens et les Lingons," *Revue Archéologique de l'Est* (1950) 65-75; id., "Una familia de negociantes de aceite establecida en la Bética en el siglo II: los Aelii Optati," *ArchEspArq* 25 (1952) 225-31; id., "Les amphores de provenance espagnol import&s dans le Département du Cher," *Revue Archéologique du Centre Est* 1964,203-16.
- 20 M. Callender, *Roman amphorae* (London 1965).
- 21 A historiographical study is to be found in Remesal Rodriguez (supra n.6).
- 22 M. Ponsich, *Implantation rurale antique sur le bas-Guadalquivir I* (Madrid 1974), II (Paris 1979), III (Madrid 1987), IV (Madrid 1991); id., "Marcas de dnforas de aceite de las riberas del Betis," *ArchEspArq* 55 (1982) 173-204.
- 23 E. Rodriguez Almeida, *Il Monte Testaccio. Ambiente. Storia Materiali* (Roma 1984).
- 24 G. Chic Garcia, *Epigrafía anfórica de la Bética I* (Écija 1985).
- 25 J. Remesal Rodriguez, "Economía oleícola bética Nuevas formas de análisis *ArchEspArq* 50-51 (1977-78) 87-142 (= *SaalJb* 38 [1982] 30-71). I began the survey in 1964, when such sites as La Catria and many others were being brought to light by agricultural work.
- 26 J. Remesal Rodriguez, "Transformaciones en la exportación del aceite bético a mediados del siglo III d.C.," in J. M. Blázquez and J. Remesal Rodriguez (edd.), *Producción y comercio del uceite en la untigiiedad* (Madrid 1983) 115-31.
- 27 In 1982 a second congress was celebrated: J. M. Bldzquez and J. Remesal (edd.), *Producción y comercio del aceite en la antiigiiedad. Segundo Congreso Internacional* (Madrid 1983).
- 28 J. H. D'Arms and E. C. Kopff (edd.), *The seaborne commerce of ancient Rome: studies in archaeology and history* (MAAR 36, 1980); AA.VV., *Amphores romaines et histoire économique* (ColLEFR 114, 1989); AA.VV., *Instrumenta inscriptu latina* (Specimina Nova 7, 1991 [1992]); W. V. Harris (ed.), *The inscribed economy* (*JR4* Suppl. 6, 1993); C. Nicolet and S. Panciera (edd.), *Epigrafia della produzione e della distribuzione* (ColLEFR 193, 1994).

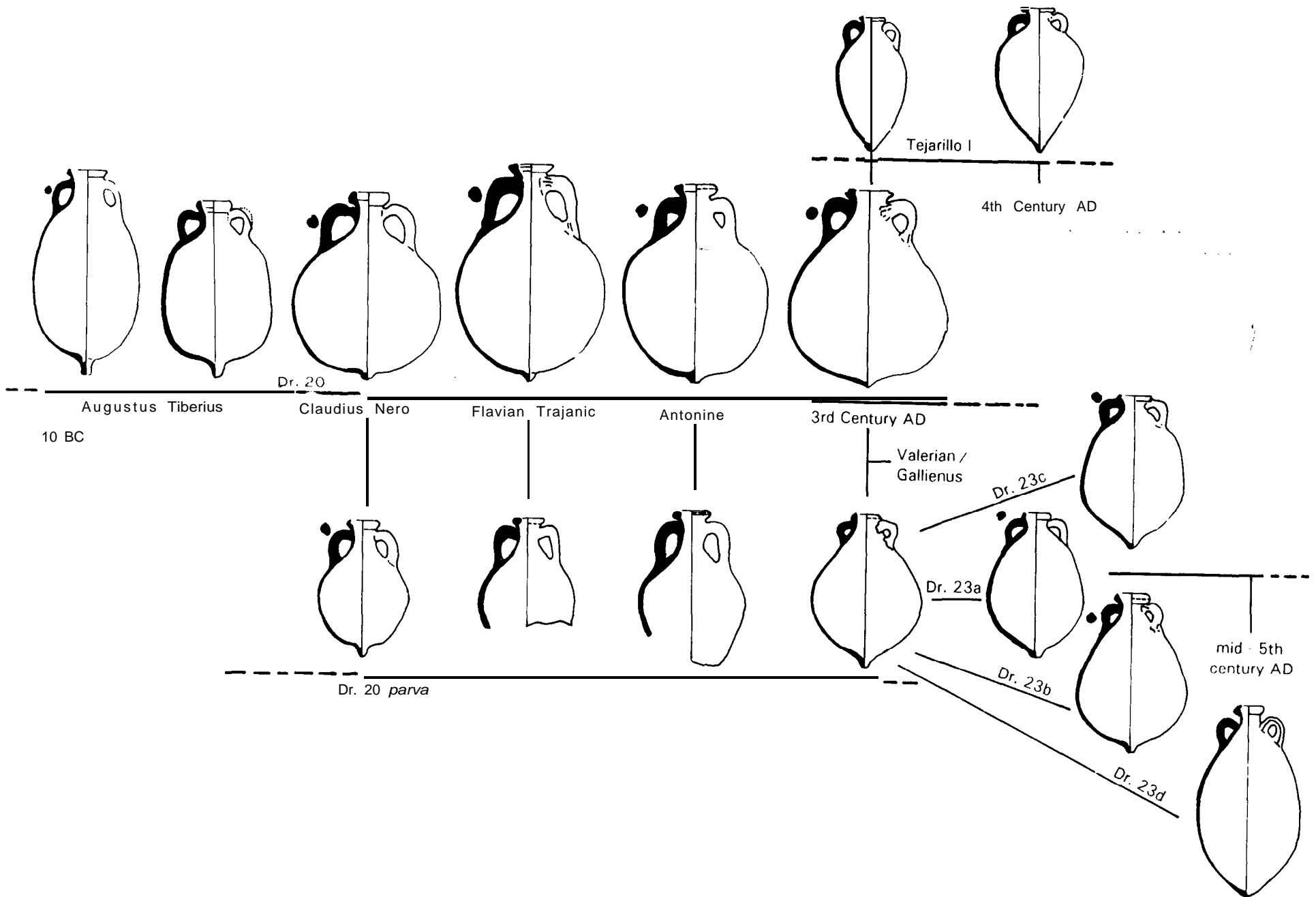


Fig. 2. Diagram showing schematic development of Baetican oil amphorae Dr. 20 and Dr. 23 (according to P. Berni *Las anforas de aceite de la Bética y su presencia en la Cataluña romana* [Barcelona 1998]).

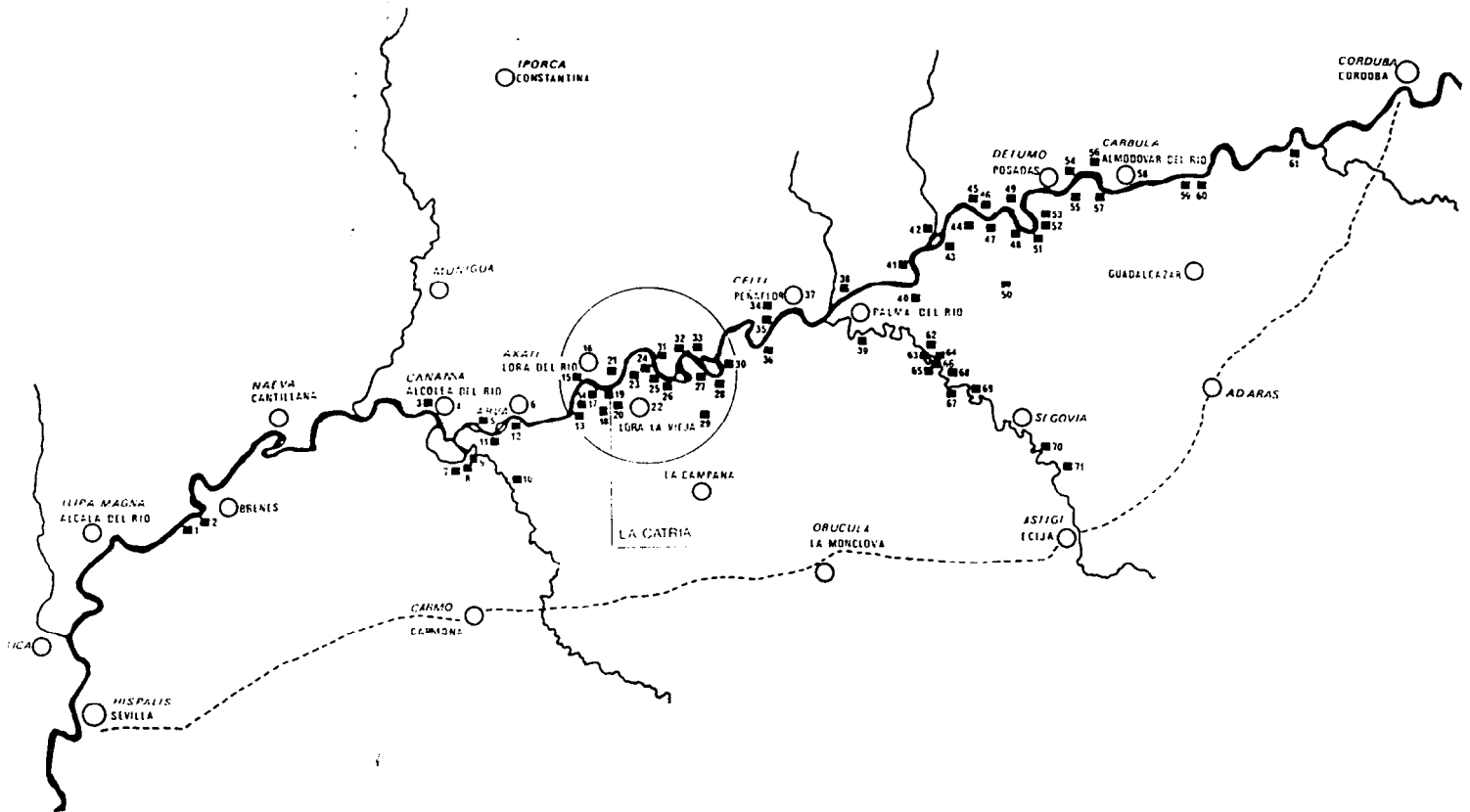


Fig. 1. Production sites of Dressel 20 amphora along the Guadalquivir (after J. Remesal Rodriguez, "Reflejos económicos y sociales en la producción de ánforas olearias béticas," in J. M. Blázquez Martínez, *Producción y comercio del aceite en la antigüedad* [Madrid 1980] fig. 1):

1. Cruz Verde; 2. Villar de Brenes; 3. Huertas de Alcolea; 4. Alcolea del Río; 5. El Tejarillo; 6. Arva; 7. Guadajoz; 8. Adelfa; 9. Juan Barba; 10. El Tesoro; 11. Mejfa; 12. Tostoneras; 13. Azanque-Castillejo; 14. El Judío; 15. La Estacada de Herrera; 16. Lora del Río; 17. Alamo Alto; 18. Cortijo de Mochales; 19. La Catria; 20. Catria Alta; 21. Huertas del Río; 22. Lora la Vieja; 23. Cortijo del Guerra; 24. Haza del Olivo; 25. Manuel Nieto; 26. El Acebuchal; 27. La Ramblilla; 28. Madre Vieja I and II; 29. El Marchante; 30. Las Sesenta; 31. La Mayena; 32. La Maria; 33. El Ben-o; 34. El Tesoro; 35. La Botica; 36. Calonje Bajo; 37. Peñaflor 38. Huertas de Belén; 39. Casas de Pisón 40. Cortijo de Romero; 41. Isla de la Jurada; 42. Cerro de los Vuelos; 43. Villacisneros; 44. Casa de Encinarejo; 45. La Umbría de Moratella; 46. Casa del Guarda; 47. La Correjidora; 48. Soto del Rey; 49. Haza de los Laticos; 50. Cortijo de Bramadero; 51. Barranco del Picacho; 52. La Dehesilla; 53. La Estrella; 54. Dehesa de Arriba; 55. Mingaobez; 56. Guadiato; 57. Villaseca; 58. Almodóvar; 59. El Temple; 60. El Temple (Este); 61. Cortijo de la Reina; 62. Malpica Sur; 63. Tierras del Judío; 64. Malpica; 65. Cortijo del Judío 66. Cortijo de Villalata; 67. Tarancón; 68. Las Valbuenas; 69. Isla Grande; 70. Alcotrista; 71. Las Delicias.

3. Dressel 20 amphorae are distributed around the empire, especially in the West. In typological terms they are easy to identify, and their evolution during the first three centuries A.D. is well known (fig. 2).

4. Dressel 20 comprises more than 80% of the amphorae at Monte Testaccio and nearly all its epigraphic material is associated with this type. The available inscriptions on Dressel 20s can be divided into three groups:

- a. stamps and *ante cocturam* graffiti refer to the production of the amphora;
- b. *tituli picti* provide information about the administration and transport of olive oil, as well as its production and that of the amphorae;
- c. *post cocturam* graffiti give information on the re-use of amphorae and their later owners.

Let us consider each of these points. In the first instance, kiln sites for Baetican oil amphoras concentrate on the banks of the Guadalquivir and Genil, rather than on different *fundi*, demonstrating that their management was unrelated to the production of the olive oil itself.²⁹ The reasons for this are twofold. First, the banks of the Guadalquivir and Genil provided a ready source of clay and water necessary for amphora production. Secondly, these workshops were close to the embarkation points for the export of the amphorae down river to the port of *Hispalis* (Seville), where they could be loaded onto large ships for long-distance transport. In this way the state was able to exercise tight control over their movement, as *tituli picti* on the oil amphorae demonstrate.

On the other hand, it is not known if all the owners of the olive-producing estates had the capacity to produce olive oil themselves, or whether they sold their olives to estates which did have oil mills. This question has been ignored by many of the researchers who have attempted to decipher the meaning of the inscriptions on the amphorae. First it is necessary to establish the proportion of owners of olive-producing estates that also had the capacity to produce olive oil. Next comes the need to know the proportion of small to large estates in the Guadalquivir valley during the Empire. I believe that the large number of municipalities between Corduba and Hispalis necessitated a high number of land-owners if only to make up the *ordo municipalis* for each of these towns. This is not to deny the existence of large properties in Baetica³⁰ so much as to take account of the complex social reality which lies behind the production of olives and oil and its reflection in the epigraphic record. In theory, we can propose at least the following possibilities: olive producers capable of manufacturing their own olive oil; owners of olive groves who lacked the capacity to produce their own oil, and who would either have sold the fruit or paid for it to be pressed in a mill before its sale. Thus one can posit the existence of mill owners unconnected to agricultural estates who would buy olives to transform them into oil, and of middle-men who would have bought olives and used the mills of others to produce oil. The latter would have had neither their own oil nor mills.

If the relationship between land-owners, the procurement of olives, the manufacture of olive oil, and its sale is hard to establish, the relationships in the organization and exploitation of amphora kilns are also difficult to understand. In 1978 I developed a model to explain how they functioned,³¹ distinguishing the following kinds of kiln:

- a. Kilns located on private estates
 - a-1) exploited by the owner of the estates for the packaging of his own oil alone;
 - a-2) producing containers for the estate where it was located and for neighbouring properties;
 - a-3) unconnected to its own estate and producing containers for others; either directly exploited by the owner, an actor, or leased to a *conductor*.
- b. Kilns situated on public land
 - b-1) leased to a *conductor*;
 - b-2) managed by a *procurator working* for the public administration.

²⁹ M. Ponsich, "Nouvelles perspectives sur l'olivier du Bas-Guadalquivir dans l'Antiquité," in *Producción y comercio del aceite en la antigüedad* (Madrid 1980) 47-56; id., "Le facteur géographique dans les moyens de transport de l'huile de Bétique," in Blázquez and Remesal (supra n.26) 101-13. This situation is different than that along the NE coast of Tarraconensis, where the production of amphorae is linked to the *villae*: V. Revilla Calvo, *Producción cerámica, viticultura y propiedad rural en Hispania Tarraconensis (siglos 1aC. hasta III d.CJ)* (Barcelona 1995).

³⁰ R. Etienne, "Les problèmes historiques du *latifundium*," *Mélanges de la Casa Velázquez* 8 (1972) 622-27.

³¹ J. Remesal Rodríguez, "Reflejos económicos y sociales en la producción de ánforas olearias béticas (Dressel 20)," in *Producción y comercio* (supra n.29) 131-52. Some interest lies in comparing this to that published by F. Mayet, "Les figlinae dans les marques d'amphores Dressel20 de Bétique," *Hommage à Robert Etienne* = REA 88 (1986) 2825-306, on the same subject.

Papyri which record the leasing contracts of kilns suggest that the above model was possible³² and that it can be refined, to distinguish two new kinds of kiln management:

- a-4) kilns rented out to *conductores* working, in the first instance, for the owner of **the fundus** and selling the surplus crop to neighbouring estates;
- a-5) kilns working under the direction of various *conductores*, each of whom established different relationships with the owner; or kilns which were partially rented out, with the estate-owner retaining control over only a part.³³ The papyri also show that the owner had to provide the *conductores* with raw materials, clay, water and wood, as well as the appropriate tools.

Surviving remains of the kilns show that they must have covered large surface areas and that they manufactured amphorae for the hinterland of each kiln. At the kiln of La Catria,³⁴ amphora fragments extended over some 20 ha; that of El Tejarillo was composed of a line of 5 kiln;³⁵ at Arva they covered a large area between the town and banks of the Guadalquivir.³⁶

As most olive-oil amphora kilns functioned over a long period, I have suggested that they should be studied individually, so that the differences and *modus operandi* of each can be established.³⁷ The information provided by amphora stamps and *ante cocturam* graffiti is important here and leads to the question of their meaning.

stamps

Traditionally, the stamps have been interpreted as potter's marks. Thus Bonsor attempted to compare the initials on the stamps with those of individuals attested on stone inscriptions found in the region, on the basis that the potters' names were of servile origin and derived from their patrons. Dressel made the same assumption and ordered the stamps on the basis of epigraphic criteria, namely by the letter which he interpreted as the initial of the *nomen*. Callender popularized the practice of listing stamps by the first initial, owing to the difficulty of interpreting several stamps. Recently, Rodriguez Almeida³⁸ and I³⁹ have supported Dressel's system (despite certain difficulties) because its advantages for interpreting and ordering some stamps become clear. Other scholars, however, prefer to follow the system of ordering stamps by the initial letter.⁴⁰

32 POxy. 50 (1983) nos. 3595-97; H. Cockle, "Pottery manufacture in Roman Egypt," *JRS* 71 (1981) 87-97; J. Hengstl, "Einige juristische Bemerkungen zu drei Topferei-Mieturkunden," in *Studi in onore di Arnaldo Biscardi* IV (Milan 1983) 663-73; K. Strobel, "Einige Bemerkungen zu den historisch-archologischen Grundlagen einer Neuformulierung der Sigillatenchronologie für Germanien und Raetien und zu wirtschaftsgeschichtliche Aspekten der römischen Keramikindustrie," *Miinsterische Beiträge Ant. Handelsgeschichte* 6.2 (1987) 75-115; G. Foti Talamanca, review in *Iura* 34 (1983 [1986]) 250-52; H.-A. Rupprecht, review in *ZRG* 102 (1985) 521-22. See also *PMerton* 2.76; *PTeb.* 2.342; *PLondon* 3.994.

33 J. Remesal Rodriguez, "Die Erforschung der Werkstätten im Lichte der Reproduzierten Inschriften," *Specimina Nova* 7 (supra n.28) 157-76; id., "Instrumentum domesticum e storia economica. Le anfore Dressel 20," *Opus* 11 (1992) 105-14.

34 Remesal Rodriguez (supra n.25).

35 Ponsich vol. 1 (supra n.22) 145 no.54; Remesal Rodriguez 1983 (supra n.26); id., "El aceite bético durante el bajo Imperio," in *Homenaje al Prof. J. M. Blázquez Martínez* (Antigüedad y Cristianismo 7, 1991) 355-61.

36 Bonsor 1931 (supra n.10) 22 ff.; *ibid.* Spanish edition 1989, 52 ff.; Ponsich vol. 1 (supra n.22) 155 no.64.

37 Recently, see J. Remesal Rodriguez, "Mummius Secundinus. El Kalendarium Vegetianum y las confiscaciones de Severo en la Bética (HA Severus 12-13)," *Gerion* 14 (1996) 195-221.

38 E. Rodriguez Almeida, "Bolli anforari di Monte Testaccio I," *BullCom* 84 (1974-75) 199-248; id., "Bolli anforari di Monte Testaccio II," *BullCom* 86 (1978-79) 107-37.

39 Remesal Rodriguez, *ArchEspArq* 1977-78 (supra n.25) 87-142.

40 G. Amar and B. Liou, "Les estampilles sur amphores du Golfe de Fos," *Archeonautica* 4 (1984) 145-211.

The amphora stamps on Dressel20 are a complex system which is difficult for us to understand. They were clearly understood in Baetica by those who used them, but this may not have been so in the many different parts of the empire to which the amphorae were exported. The simplest comprise three letters, which represent the initials of the *tria nomina* of a free-born individual: some can be identified with members of the decurional class,⁴¹ the senatorial order, or even emperors.** I have defended the view that the *tria nomina* recorded on the stamps refer to the owner of the oil contained in the amphora.⁴³ This refers to the owner of the oil at the moment it was packaged in its container in Baetica, although one cannot say whether the name is that of the producer of the oil or the person who bought it for packing and export. For other scholars, the stamps with *tria nomina* refer to the owner or manager of the kiln⁴⁴

Apart from *tria nomina*, the stamps can refer to the names of potters, servile names indicated by the cognomen in the genitive or the nominative, followed by *F(ecit)*,⁴⁵ the names of *figlinae*, the notation *Portus*, the status of the individual: *C(larisimus) V(ir)* or different combinations of the above. This illustrates the complex typology of stamps. Thus I have suggested that the stamps should be analyzed on the basis of individual production centres, since this allows one to explain how each functioned through its long existence. The only way to understand the complex world of olive-oil production and its containers is by analyzing the distinctiveness of each producing centre and its historical development. In this sense I believe that my contribution has been to define what I have termed 'families' of stamps: in other words, to group together by *nomina* all stamps produced at the same centres. In this way it has sometimes been possible to distinguish members of the same family, at times spanning several generations.⁴⁶

Graffiti

Graffiti inscribed before the firing of the amphora also carry information which, by definition, refers to the moment of the vessel's manufacture.⁴⁷ Graffiti are relatively rare at production centres in Baetica, which makes it difficult to relate them to stamps. Recent excavations at Monte Testaccio, however, have yielded many examples, and analysis is beginning to explain their function.⁴⁸ There is a great variety of graffiti with very different content. Many re-

41 J. Remesal Rodríguez, "Ölproduktion und Ölhandel in der Baetica: ein Beispiel für die Verbindung archäologischer und historischer Forschung," *Münsterische Beit. Ant. Handelsgeschichte* 2.2 (1983) 91-111.

42 Remesal Rodríguez (supra n.37).

43 Liou and Tchemia (infra n.44) suggest that I have "a confused belief" concerning this matter. I have always maintained the same interpretation (of course, Spanish is a language rich in synonyms and it is necessary to contextualize phrases; and historical reality cannot be seen in terms of "black and white"; at each moment, in my opinion, the historian should be aware of the various and changing social reality, so that from the perspective from which I have considered the problem I have expressed this idea in one form or another.

44 D. Manacorda and C. Panella, "Gezeichnetes instrumentum und Sozial- und Wirtschaftsgeschichte: Amphoren," *Specimina Nova* 7 (1991) 10-18; D. Manacorda, "Appunti sulla bollatura in età romana," in Harris (supra n.28) 38-54; B. Liou and A. Tchernia, "L'interpretation des inscriptions sur les amphores Dressel20," in *Epigrafi della produzione* (supra n.28) 133-56.

45 In the 1st c. A.D., however, there existed stamps with the *cognomen* alone and which referred to a free-born individual, such as the long series of stamps C. SEMPRONI POLICLYTI which appear as both a fully developed *tria nomina* and in the form POLICLYTI (*Archaeonautica* 1 [1977]).

46 Remesal Rodríguez (supra n.25). This criterion has become fashionable in large measure because it is gratifying to the historian to find and establish links between names. However, this should be done rigorously, since one runs the risk of creating false historical 'facts' in expanding the initials of the *tria nomina* into a specific name, or relating it to other stamps with the same initials that were produced in different places.

47 Baetican olive-oil amphorae were made in separate sections. First the globular body was created, then the rim and upper body were added, and finally the handles. This demonstrates that there was a division of labour in the manufacturing process and that more than one person may have been involved.

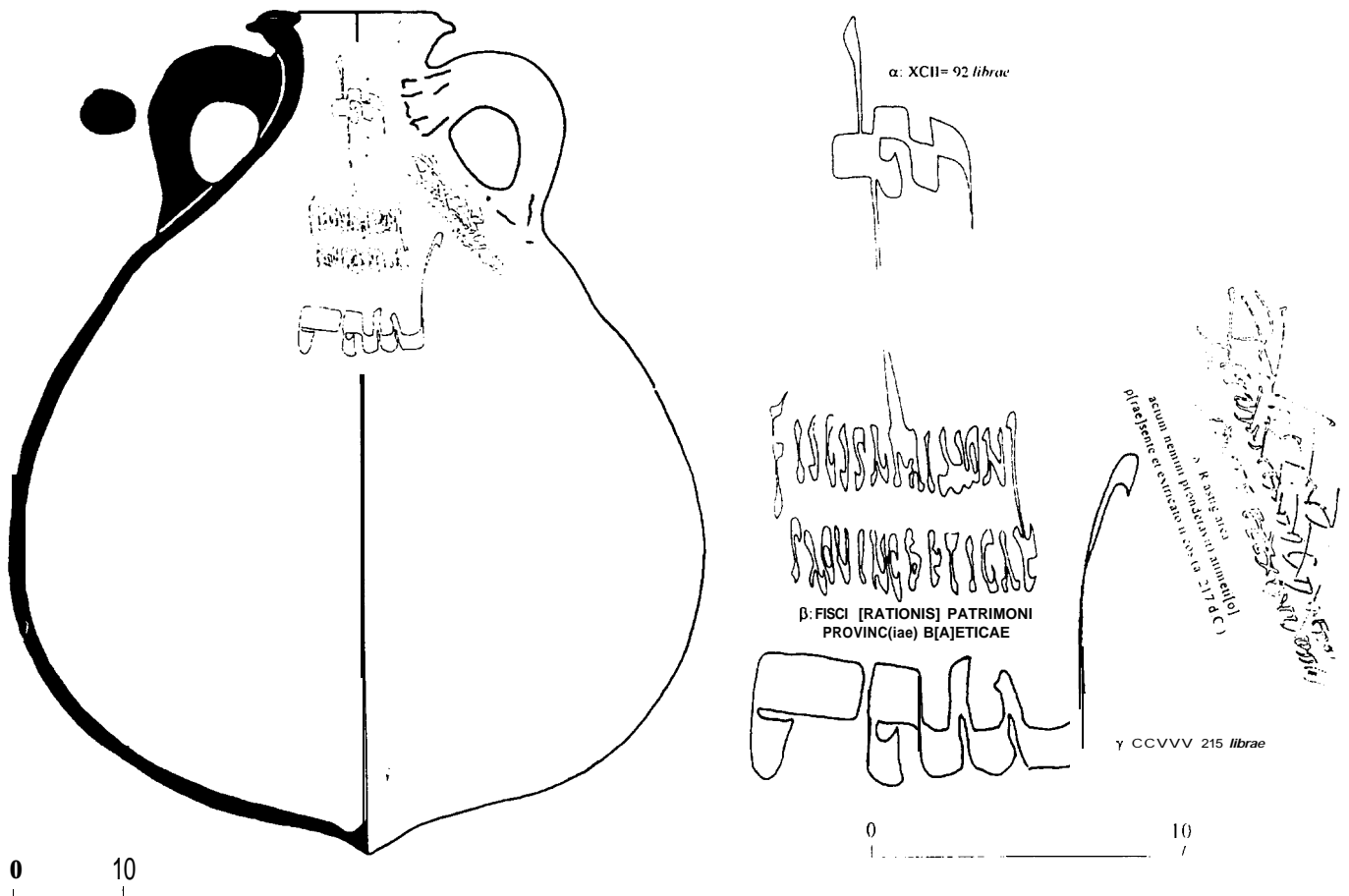


Fig. 3. Example of a Dressel 20 amphora showing details of the *tituli picti*.

present numbers and symbols (which may also represent numbers). The main issue is to establish who carved these graffiti and what rôle they were intended to serve. Some might have been the work of the potters themselves, while others may be ascribed to those who controlled their work. In my view, we will only be able to understand Dressel20 graffiti when we have a series that can be related to stamps from the same production centre. The *post cocturam* graffiti are not related to the production area but refer to the receipt of the amphora and its possible re-use. The majority of known *post cocturam* graffiti consists of initials for names (sometimes complete names in the genitive) and, frequently, quantities. In the latter case, however, it is not clear whether the symbols refer to the oil carried by the amphora or to products that were subsequently stored in it.⁴⁹

Tituli picti

The most complex information is contained in the painted inscriptions on the amphorae, the *tituli picti*. Dressel discovered that, apart from the stamps on the amphorae from Testaccio, there were also numerous written notations, which he deciphered and ordered in the following way (fig. 3):

a: this symbol is located on the neck of the amphora and indicates its tare.

⁴⁸ Recently, E. Rodriguez Almeida, "Graffiti e produzione anforaria della Betica," in Harris (supra n.28) 95-106, has proposed a systematization of these graffiti. However, his analysis of the context of production in Baetica does not take into account much earlier work.

⁴⁹ Numerous examples are published in S. Martin-Kilcher, *Die römischen Amphoren aus Augst und Kaiseraugst 1: Die sudspanischen Ölamphoren* (Forsch. Augst 7, 1987).

β: this is found below the **α** and comprises a name in the genitive which Dressel interpreted as that of the producer of the oil. Today it is believed that this is the name of the individual concerned with the commercialization or transport of the oil.

γ: below the **β** was written the net weight of the amphora contents.

δ: this was written to the right of the preceding notation and is quite complex. It comprises a barred **R** which was a record of the control carried out — *R(ecensitum)*; a record of the fiscal district from which the amphora was exported; a consular date; the name of a *ponderator* or *acceptor*; the name of a place or kiln; and other elements whose meaning is still open **to discussion**.

These inscriptions contain much that is useful for broadening our understanding of Roman society, economy, law and politics, while the consular date gives absolute dates for these documents and related stamps. Thus they help date a huge number of stamps found at a multitude of sites. Of added interest is that they represent one of the few pieces of statistical data from the empire.

There is no general agreement on the interpretation of these *tituli picti*. The first problem is to establish the role of the individuals referred to in the **β** inscription. A series of inscriptions tells us that they were involved in the commercialization and distribution of olive oil. The problem lies in the fact that the inscriptions refer to various names — *mercatores*, *negotiatores*, *diffusores*, *navicularii* — whose conceptual and functional differences are difficult to define.⁵⁰ A passage in the Digest (60.6.6.3) clearly distinguishes between *negotiatores qui annonam Urbis adiuvant item navicularii, qui annonae Urbis serviunt*. I have suggested that these *navicularii* were transporting olive oil which belonged to the Roman state, a service for which they received a compensation payment (*vecturae*).⁵¹ The degree and ways in which the *negotiatores*, *mercatores* and *diffusores* 'adiuvabant' has not yet been well defined. Moreover, we do not know when the same person began to carry out one or other rôle.⁵² The term *diffusor* has also generated considerable polemic,⁵³ but recently my interpretation whereby the *diffusor* could represent an individual who acted as an intermediary between producers and traders, seems to have gained acceptance.⁵⁴

Behind this polemic lies the more important question of determining how the Roman state intervened in the distribution of foodstuffs for the *annona* and commerce in general (see below). The constituent elements of the **δ** *tituli picti* were already described by Dressel in his introduction to CIL XV. From 1972 Rodríguez Almeida made new contributions to the debate.⁵⁵ *Archaeonautica 1* (1977) published an interpretation which, in large measure, coincided with that of Rodríguez Almeida.⁵⁶ In 1979 I expressed my own opinion in a review of *Archaeonau-*

50 The current state of the discussion can be seen in F. Taglietti, "Un inedito bollo laterizio ostiense," in *Epigrafia della produzione* (supra n.28) 157-93, esp. 178 ff. and bibliography, to which must be added Remesal Rodríguez (supra n.41) 91-111; P. Herz, *Studien zur römischen Wirtschaftsgesetzgebung. Die Lebensmittelversorgung* (Historia Einzelschr. 55, 1988); and L. de Salvo, *Economia privata e pubblici servizi nell'Impero Romano. I. Corpora naviculariorum* (Kleio 5, Messina 1992) with bibliography.

51 Recently, J. Remesal Rodríguez, "Sextus Iulius Possessor en la Bética," in *Estudios en homenaje al Dr. M. Ponsich* (Gerion Anejos 3, 1991) 281-95.

52 Liou and Tchernia (supra n.44) esp. 137, misunderstand my words and have not cited well-known works of mine.

53 To the above-cited work of Taglietti (supra n.50) can be added M.-G. Granino Cerere, "D. Caecilius Abascantus, *diffusor olearius ex provincia Baetica*," in *Epigrafia della produzione* (supra n.28) 705-19.

54 Remesal Rodríguez (supra n.41); Taglietti (supra n.50) esp. 180. The contrary opinion is expressed in B. Liou and J.-M. Gassend, "L'épave Saint Gervais 3 à Fos sur Mer (milieu du IIe siècle ap. J.-C.). Inscriptions peintes sur amphores du Betique. Vestiges de la coque," *Archaeonautica* 10 (1990) 153-257.

55 His opinions are synthesised in Rodríguez Almeida (supra n.23); id., *Los tituli picti de las ánforas olearias btticas* (Madrid 1989).

56 D. Colls, R. Etienne, R. Lequement, B. Liou and F. Mayet, "L'épave Port Vendres II et le commerce de la Betique à l'époque de Claude," *Archaeonautica 1* (1977) 93 ff.

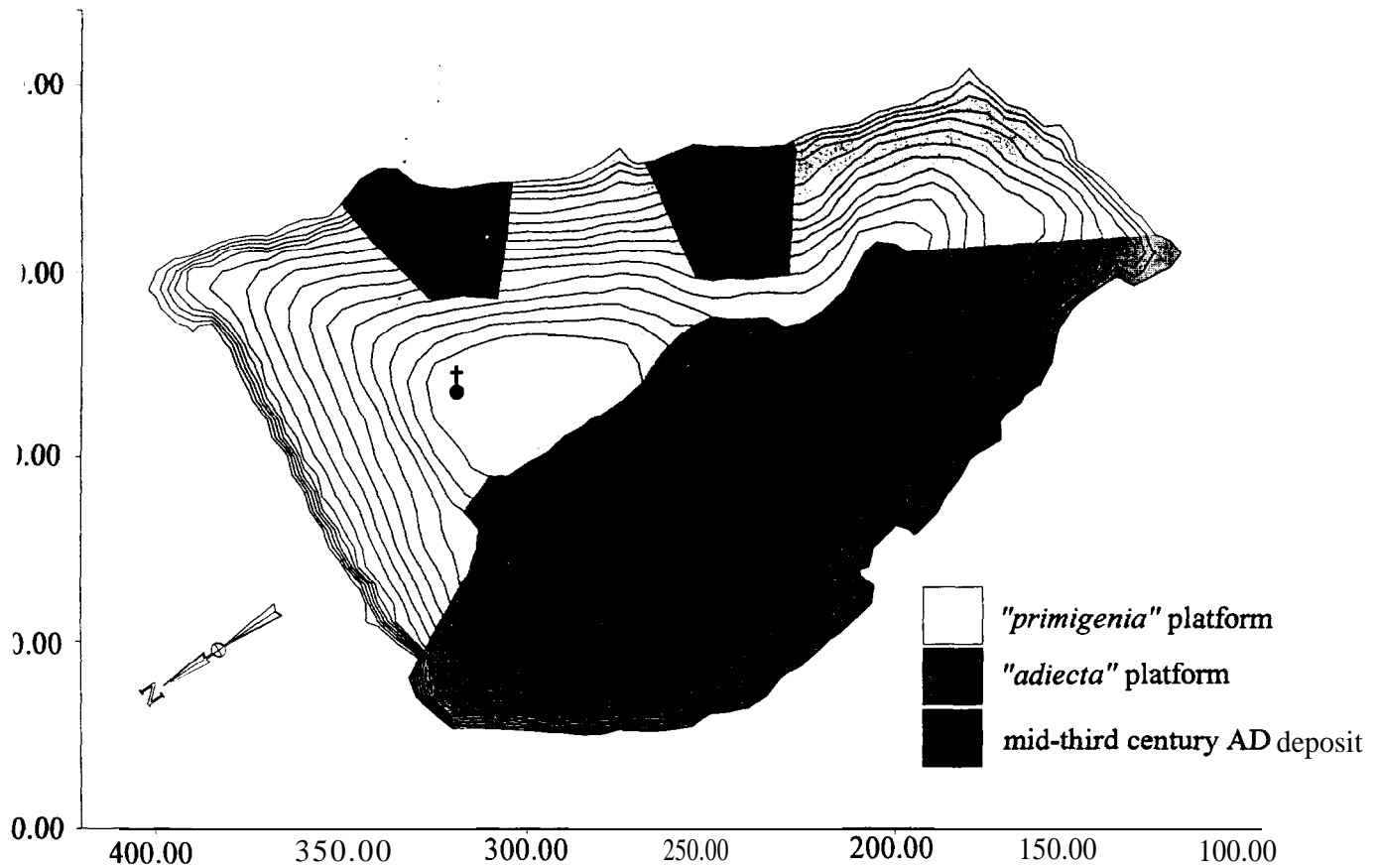


Fig. 4. Monte Testaccio showing the location of the different dumps.

tica.⁵⁷ My opinion drew from research centered in Baetica, and suggested that the name of the *publicanus* and his representatives should appear in the *titulus pictus*; others, however, suggest that the name of the owner of the oil should be present.⁵⁸ My suggestion that the town names which appear in these *tituli* do so as 'fiscal districts' seems, on the other hand, to be generally accepted.

Monte Testaccio

So far this paper has focused upon the current state of the question, which is necessary if one is to understand the significance of recent work at Monte Testaccio. The development since the 1970s of research on the production areas in Baetica and at Testaccio since the 1970s made excavations at the latter necessary.⁵⁹ They had two objectives: a) to shed light upon the structure of the hill and to confirm or reject current hypotheses; b) to collect new information so as to make comparisons with known data.

Monte Testaccio lies at the foot of the Aventine, between the Tiber and the Aurelian Wall.⁶⁰ This was a district where large *horrea* which stored products ferried up-river from

57 *ArchCl* 31 (1979) 379-89; this review, which was known to Liou and his collaborators, was the focus of criticisms of my work.

58 G. Chic Garcia, in *Epigrafía anfórica de la Bética* II (Seville c.1988), is of the same opinion.

59 The excavations began in 1989 under the direction of J. M. Blázquez, with the financial support of the Spanish Ministry of Culture, and under the control of the Italian authorities.

60 The first historical reference to the hill is an 8th-c. inscription preserved in the atrium of Santa Maria in Cosmedin. Testaccio always belonged to the Roman people and during the Middle Ages it was the scene of feasts related to the 'Cuaresma'; religious fairs and popular festivals were held at the site until the 19th c. Historical references to Testaccio were mostly collected by D. Orano, *Come vive il popolo a Roma*.

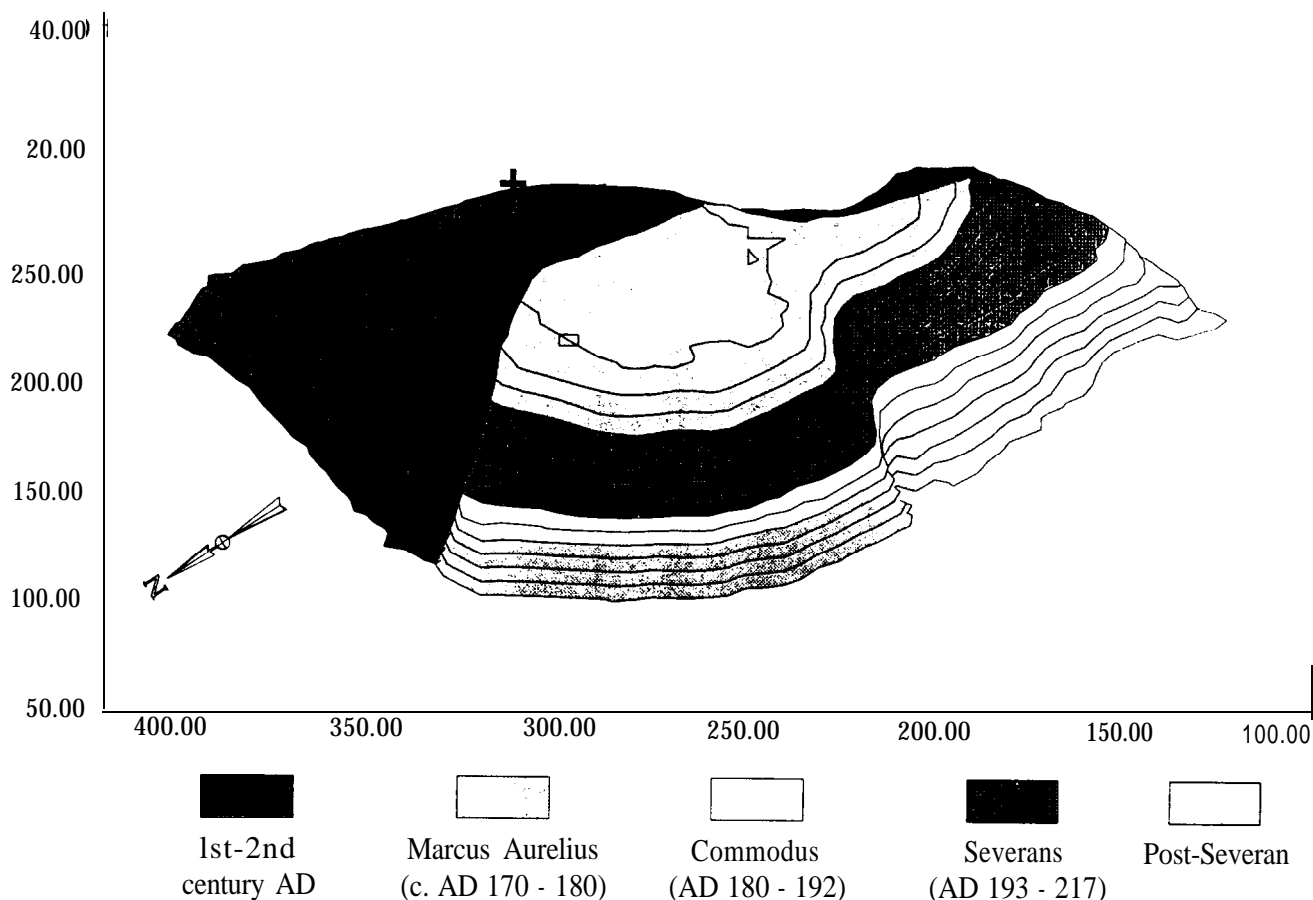


Fig. 5. Western platform of Monte Testaccio showing the deposits of the 1st-2nd c., the reigns of Marcus Aurelius (c. 170- 180), Commodus (80- 192), the Severan dynasty (193-2 17), and the post-Severan period.

Ostia were built. The mound has a perimeter of more than one kilometre and a height of more than 40 m; it is formed entirely of amphora fragments, with no earth matrix. The excavation of 1m³ of 'earth' is the same as 1m³ of archaeological deposit (fig. 4). Popular tradition supposes that the hill is composed of tribute-bearing amphorae from the provinces, reflecting the power of Rome. But tradition is mistaken. The hill is comprised of olive-oil amphorae alone, and of these more than 80% come from one region — Baetica.

After Dressel's work, Testaccio was almost completely forgotten. Interest was re-awakened during the 1960s when Rodriguez Almeida began to collect surface materials and to re-examine Dressel's material, which led him to propose a hypothesis about the composition of the hill. He suggested that it has been formed in two phases. The first was a platform with a rectangular base, which probably began use in the Augustan period and grew in height until the middle of the 2nd c. Subsequently, another platform on the western side was developed and was used until Severus Alexander. The last material to be dumped at Testaccio dated to the reign of Gallienus and was found by Rodriguez Almeida on the eastern side of the hill (at a point called H-8).⁶¹ Excavations undertaken between 1989 and 1992 confirmed the main tenet of Rodriguez Almeida's hypothesis, that the hill was composed of two platforms ascribable to the dates that he proposed (figs.5-6). However, they also modified his ideas to some degree. The discov-

Saggio demografico sul quartiere Testaccio (Pescara 1912) chapt. 1. See also Rodriguez Almeida (supra n.23).

61 Rodriguez Almeida (supra nn.23 and 55).

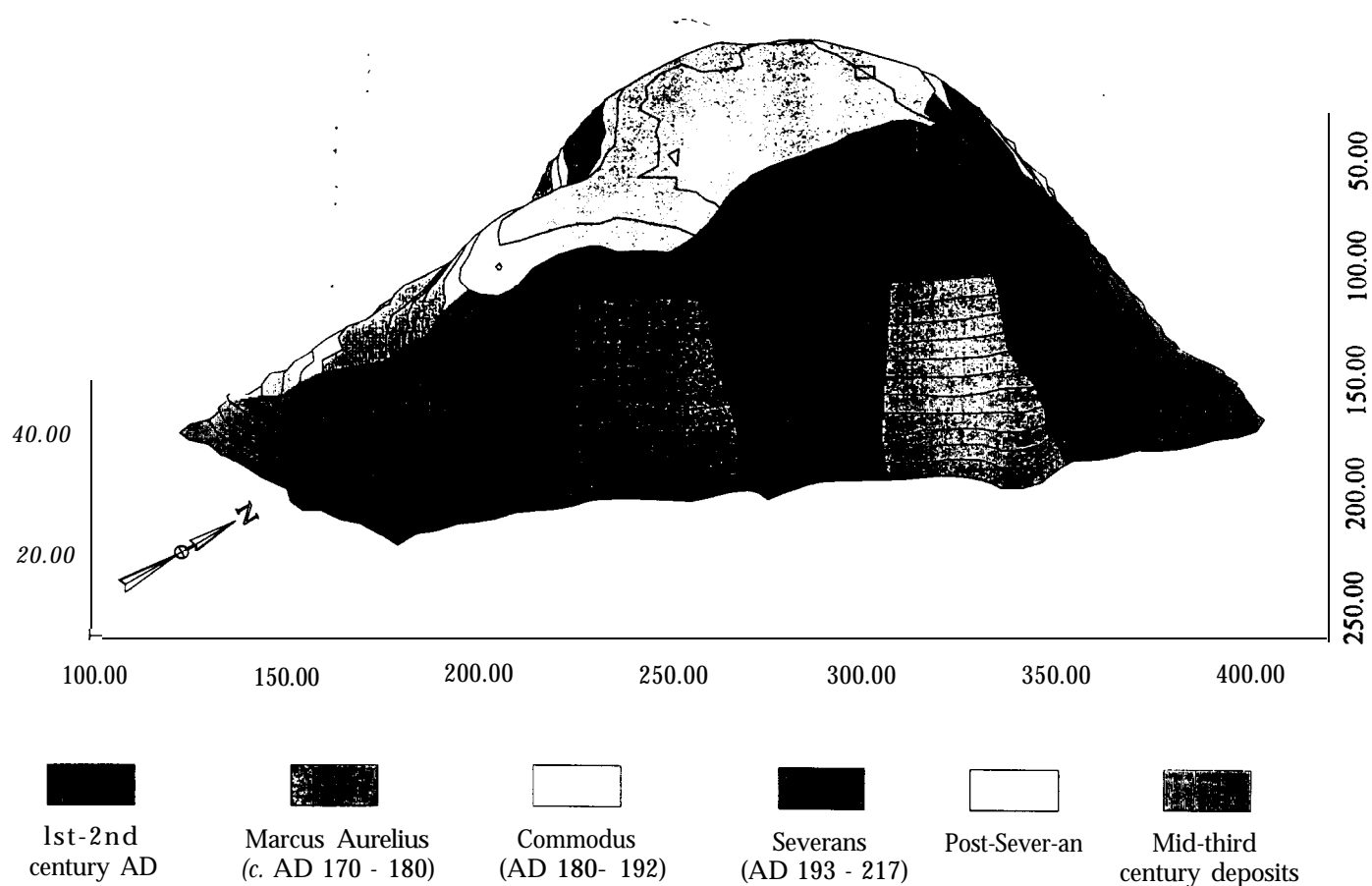


Fig. 6. Eastern platform of Monte Testaccio showing the deposits of the 1st-2nd c., the reigns of Marcus Aurelius (c. 170-180), Commodus (180-192), the Severan dynasty (193-217), the post-Severan period, and the mid-3rd c.

ery of a wall of amphorae demonstrated that the hill was composed of two stepped platforms with a different profile than that proposed.⁶² The most recent excavations have confirmed this hypothesis. The platforms have a stepped profile, and the base of the first platform is wider than previously thought. The wall of amphorae also provided a novel piece of information which helps explain the mechanics of amphora dumping. The hill grew in the following fashion. First there was first created a row of amphorae without bases whose interior was filled with other amphora sherds to weigh them down. Material was then dumped behind this row and once the height of the first row of amphorae was achieved (maximum diameter of 60 cm) another row was formed; this ran parallel to the first but was set back a short distance to form a slope (fig. 7). This not only showed how the hill had been built up but also that the natural layers of Testaccio had a thickness of c.60 cm. The excavation also revealed that dumping on Testaccio was localized. This suggests that amphorae produced at a particular place in Baetica travelled together and were thrown away at the same time – a fact which sheds light on the mechanisms of commerce. The arrangement of the material also suggests that the Baetican amphorae were carried to the hill intact and were broken on site, whereas African amphorae were broken up in the *horrea*.

62 The disparity between the criteria proposed by Rodriguez Almeida and the present writer can be seen in their respective chapters of the first report on the Testaccio excavations in J. M. Blizquez Martinez, J. Remesal Rodriguez and E. Rodriguez Almeida, *Excavaciones arqueológicas en el Monte Testaccio* (Madrid 1994).



Fig. 7. Amphora wall at Monte Testaccio.

Some interesting discoveries were made during excavations along the eastern side of Testaccio in 1993 and 1994. First, the track up the hill which Rodriguez Almeida considered ancient actually corresponded to a path opened to allow cannons up the hill to defend the Porta di San Paolo against French attack in 1849.⁶³ Next, it was possible to check that the consular dates on the *δ tituli picti* were a feature of the 2nd c. A.D. since some examples of known 2nd-c. date which lacked a consular date had comparatively simple *δ tituli picti*. The *sondage* discovered a large group of African amphorae with epigraphic information, hitherto virtually unknown. The *tituli picti* on these amphorae are simpler than those on their Baetican counterparts. Those referring to the names of merchants are represented by initials alone, written in relatively large letters in faded red ink, while the possible control-marks are represented only by a name in the genitive written in black ink, similar to those on Baetican amphorae of Claudian date.⁶⁴ As the African amphorae had been broken into small fragments, it was much more difficult to reconstruct their epigraphic information.

The 1995 season revealed that at Rodriguez Almeida's point H-8 there was material datable to the reign of Gallienus – one layer of 252 and another of 254. Computer analysis of the data on the stamps collected by Dressel suggested that in the zone known as *orienfe I there* was not only late material but also a dump of material of the mid 3rd c.⁶⁵ This re-opens debate about the formation of the eastern side of the hill.

The Monte Testaccio excavations involved the collaboration of a team of geologists from the University "La Sapienza" of Rome under the direction of O. Grubessi. The results of their archaeometric analyses are very interesting. Being able to study material with the same

⁶³ Orano (supra n.60) 49 ff.

⁶⁴ Known from material published in *Archeonautica* 1 (1977).

⁶⁵ J. Remesal Rodríguez, "Los sellos en ánforas Dr. 20. Nuevas aportaciones del Testaccio," in *Epigrafia della produzione* (supra n.28) 93-110.

stamps from Baetica and Monte Testaccio, they developed an appropriate methodology⁶⁶ and established relationships between variations in stamps and fabric. Once a substantial body of material has been analyzed in this way, it will be possible to understand the techniques and procedures of manufacture, and their relationship to the stamps. This team has also undertaken 'gravimetric' analyses of Testaccio, which have provided surprising revelations about the composition of the hill and information about its earliest phases.⁶⁷ It seems that the area of Testaccio was originally marshy and that depressions in the ground were levelled up, prior to the construction of a small hillock which would form the nucleus of the hill. It has also been possible to determine the density of present-day Testaccio. By calculating its 'weight' and the weight of individual amphorae, the total number of amphorae at Testaccio can be estimated with greater precision. They suggest that Testaccio still contains at least 24,750,000 amphorae, representing some 1,732,500,000 kilos of olive oil. When this figure is divided by the 250 years of the hill's history, it represents about 7,000,000 kilos of olive oil per year. If one bears in mind that much material is missing from Testaccio, given that not all the olive-oil amphorae arriving at Rome ended up at Testaccio, one can gain a rough idea of the volume of oil arriving in Rome, with most of it originating in Baetica.⁶⁸

Attention has focussed hitherto upon the extent of the available data, in connection with which there are numerous research possibilities.⁶⁹ Currently, the creation of corpora of stamps at both the regional and local scale is contributing to our understanding.⁷⁰ It remains to review the contribution that these studies are making to our understanding of the political economy of the empire. In general, the development of amphora studies has enabled us to overcome the old debate about 'primitivism' and 'modernism' in the Roman economy, since amphorae (particularly Baetican olive-oil amphorae) have shown how a wide range of products from diverse regions occurs at many sites.

66 O. Grubessi, L. Lazzarini, "Progetto Testaccio, Roma, uno studio archeometrico delle anfore Dressel 20," in F. Burragato, O. Grubessi, L. Lazzarini (edd.), 1. *European workshop on archeological ceramics* (Rome 1994) 229-49; F. Burragato, L. Lazzarini, P. L. Di Russo, "Caratterizzazione chimico fisica delle anfore nord-africane del Monte Testaccio: nota preliminare," *ibid.* 143-54; F. Burragato, P. L. Di Russo, O. Grubessi, "Le anfore africane di Monte Testaccio (Roma): considerazioni sulla composizione, nota II," *Estudis sobre ceràmica antiga* (Proceedings of the European Meeting on Ancient Ceramics, Barcelona 1995) 115-18; J. Remesal Rodriguez, "Epigrafia y archeometría: el programa Testaccio," *ibid.* 109-13.

67 M. Di Filippo, O. Grubessi and B. Toro, "'Progetto Testaccio'. Un esempio di applicazione del metodo gravimetro nell'area archeologica del Monte Testaccio (Roma)," *Actes du Colloque de Péigueux 299.5* (Suppl., *Revue d'Archéométrie* 1996) 31-36.

68 The traditional level of olive-oil consumption in the Mediterranean diet is c.1 kilo per person per month, which suggests that Baetican imports to Rome were sufficient to maintain 1 million inhabitants for 7 months, per year.

69 J. M. Blázquez Martínez, "El Programa Testaccio," *RendLinc* ser.9, 6 (1995) 791-808; *id.*, "The latest work on the export of Baetican olive oil to Rome and the army," *G&R* 39.2 (1992) 173-88.

70 For example one may cite the works of Remesal Rodriguez (supra n.6); Martin-Kilcher (supra n.49, and two subsequent volumes in 1994); J. Baudoux, *Les amphores du nord-est de la Gaule* (DAF 52, 1996). Alternatively one may mention the many studies of material from underwater sites published in *Archaeonautica*. Currently CEIPAC (Center for the Study of Provincial Interdependence in Classical Antiquity; World Wide Web Address: <http://www.ub.es/CEIPAC/ceipac.html>) has a data-base of some 15,000 amphora stamps, as well as information from the current excavations at Monte Testaccio. Corpora of Dressel 20 stamps from Britain and Germany have recently been published: J. Remesal Rodriguez (supra n.6), and C. Carreras Monfort and P. P. A. Funerí, *Britannia y el Mediterraneo. Estudios sobre el abastecimiento de aceite bitico y africano en Britannia* (Barcelona 1998).

The prevailing opinion about supply in the Roman empire has its origins in the works of van Berchem⁷¹ and Pavis d'Escurac.⁷² The former defended the view that the Roman state did not organize the military supply-system until the reign of Severus. The latter suggested that the function of the *praefectura annonae* was limited to supplying grain to Rome. My work on Dressel 20 amphorae found at military camps in Germania, however, has produced a new theory.⁷³ Essentially it is that Augustus had to organize an extensive empire with limited resources. His most important political supports were the Roman *plebs* and the army. Augustus gained the loyalty of the former by assuring that they would not only be provided with grain but all basic foodstuffs. Of these, grain and oil were produced in provinces which were allowed to pay their tribute in kind. Wine, however, was controlled by the Roman senatorial elite. Because he declined to intervene in its price, as Suetonius says, Augustus did not include it as an annony product.⁷⁴ Thus, food was the benefit which the Roman *plebs* derived from conquest. This model does not mean that Roman *plebs* received free olive oil from Augustus onwards. Instead, the emperor had a large quantity of olive oil at his disposal, received as tribute from the provinces, the price of which could be regulated by the state to prevent it rising too high for the *plebs*. *The same* could have been true for grain, except that the *plebs* received this in terms of *frumentationes*. As Dio Cassius states and has been argued elsewhere, one of the duties of the *praefectus annonae* was to regulate the market prices of basic commodities at Rome.⁷⁵

Augustus created an army stationed along the frontiers which swore loyalty to him and not to the Republic, since he was their paymaster. This payment was not made in coin, I believe, given that at least two-thirds of military pay was discounted for maintenance costs. Food, clothing, weapons, and maintenance were facilitated by agents of the emperor, who received these products either as payment in kind from provincials, through purchase on the open market by the state, or as requisitions made by the state itself. All of this generated a compensatory network between provincial authorities and Rome which formed a complex economic system. Despite the limits of the Roman economy stressed by defenders of the 'primitivist' model, the Roman empire was capable of creating a large-scale economy over an area four times larger than today's European Union, and one based on a single system of coinage, a single language, and a consistent administrative system.

Given the need of the Roman state to redistribute the resources necessary for the Roman *plebs*, the army, and the administration at Rome, these became the driving force behind the economy in the early Empire. It was the continuing needs of the Roman imperial administration which transformed and, in large measure, conditioned the development of the Roman empire.⁷⁶ This interpretation, recently criticized from a different methodological standpoint,⁷⁷ demands a re-interpretation of the Roman imperial economy. Herz, De Salvo, and Jacobsen, for example,

71 D. van Berchem, "L'annone militaire dans l'Empire romain au IIIe siècle," *MémSocAntFr* 10 (1937) 117-202; id., *Les distributions de blé et d'argent à la plèbe romaine sous l'Empire* (Genève 1939); id., "L'annone militaire est-elle un mythe?" in *Armée et fiscalité dans le monde antique* (Paris 1977) 117-202.

72 E. Pavis d'Escurac, *La Préfecture de l'Annone, service administratif imperial d'Auguste à Constantin* (Rome 1976).

73 Remesal Rodríguez (supra n.6); id., "Die Organisation des Nahrungsmittelimportes am Germanischen Limes," in *Studien zu den Militärgrenzen Roms III* (Stuttgart 1966) 760-67; id., "Die *procuratores Augusti* und die Versorgung des römischen Heeres," in H. Vettters and M. Kandler (edd.), *Akten des 14. Internationalen Limes/congress I* (Wien 1990) 55-65.

74 Suet., *Aug.* 42.1.

75 Cass. Dio 52.24.6; Remesal Rodríguez (supra n.6) 85.

76 J. Remesal Rodríguez, "El sistema annony como base de la evolución del imperio romano," in T. Hackens and M. Miró (edd.), *Le commerce maritime romain en Méditerranée Occidentale* (PACT 27, 1990 [1995]) 355-67.

77 C. Carreras Monfort, *Una reconstrucción del comercio en cerámicas la red de transportes en Britannia* (Barcelona 1994).

take one side in the argument,⁷⁸ while the 'Finley' group takes the other. Gamsey and Saller's comments about military supplies in the Roman empire⁷⁹ can be understood only after taking into account the arguments put forward here. However, these are only known to them indirectly through appearing in Whittaker's work,⁸⁰ some of whose affirmations are unjustified.⁸¹ Others, like Harris, oppose the argument without providing any counter-arguments.⁸² Whichever theory one chooses to espouse, the important point is that the *minuzie epigrafiche*, as Dressel called the amphora inscriptions, are now a starting-point for discussion of the ancient economy.

It is important to study the economic relations between Rome and the provinces in the context of the redistributive system discussed above. In this way one may establish the relative importance of each province. The importance of Hispania, and particularly Baetica, can be explained by the fact that Augustus not only converted it into a great supplier for Rome, but also transformed it into the logistical base for the armies stationed in the western provinces (a development which also facilitated the access of *Hispani* into the Roman elite). The concession of *ius latii* to Hispania by Vespasian must be understood in relation to the development of the idea of *limes* in the western provinces in that period. Thus a gesture which appeared to be a privilege was in fact a means of better controlling and exploiting the province and guaranteeing the maintenance of the army in the west. Proof comes from the fact that, one generation later, the *Hispani* protested about the *italica adlectio*.⁸³

From this perspective, one can understand the virtual monopoly amongst the western provinces that Baetican olive oil enjoyed. This was true of both the military context, where its use was promoted by the administration, and in the civilian sphere, where it was a consequence of the norm created by the state. Chapter 29 of Pliny's Panegyric to Trajan embodies the argument. Clearly aware of the importance of the control of foodstuffs by the Roman empire, Pliny compares the *cura annonae* of Pompey with the actions of Trajan. He points out that Trajan had surpassed Pompey by having constructed roads and ports throughout the empire and by having succeeded in establishing the economic equilibrium of the empire, in which the *fiscus* intervened in free trade. This helps explain the presence of products from throughout the Roman world in all markets.

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⁷⁸ Herz (supra n.50); de Salvo (supra n.50); G. Jacobsen, *Primitiver Austausch oder freier Markt?* (Pharos 5, St Katharinen 1995).

⁷⁹ P. Gamsey and R. Saller, *The Roman Empire. Economy, society and culture* (Berkeley 1987) 88 ff.

⁸⁰ C. R. Whittaker, *Les frontières de l'Empire romain* (AnnBesançon 390, 1989).

⁸¹ Remesal Rodríguez (supra n.7).

⁸² W. V. Harris, "Between archaic and modern: problems in the Roman economy," in id. (ed.) (supra n.28) 11-29, esp. 17, where this writer's hypothesis that control of the *annona* begins with Augustus is attributed to P. Le Roux. Harris writes, "A recent claim that as early as Augustus it was the government that imported olive oil from Baetica to Rome is a fantasy; evidence for a trend in this direction begins only under Marcus Aurelius", at which point his arguments cease, without citing his sources. The existence of Monte Testaccio and the amphorae which comprise it belie his arguments.

⁸³ The earliest Hispanic protests date to the reign of Trajan (SHA, *Marc.* 11.7). The *Hispani* also protested at the *consilium* celebrated at Tarraco under Hadrian (SHA, *Hadr.* 12.3). Marcus Aurelius discovered ways of benefitting Hispania (SWA, *Marc.* 11.7). See Remesal Rodríguez (supra n.6) 76.