

Quantitative approaches to the investigation of long-distance exchange

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Introduction

Both archaeologists and ancient historians have noted the lack of reliable statistics pertaining to the ancient economy, and have rightly cautioned against the generation of "pseudo-statistics" as a result. In the Mediterranean, archaeological data can be gathered in large numbers, making numerical analysis a statistically viable exercise. Pottery is an obvious candidate for statistical analysis, as studies documenting ceramic trends through time on such major ports as Benghazi¹, Carthage,² and Ostia³ clearly illustrate the potential of using quantitative data for interpreting long-distance trade. The growing application of quantitative analysis in Roman pottery makes it essential to define some of the assumptions and limitations inherent in both methodology and data, in order that these analyses are interpreted within a rigorously tested framework. Most studies undertaken to date have relied on comparisons of relative percentages of different pottery types, both within a site⁴ and among several sites.⁵

This same data can be more fully exploited by the application of computer-assisted multivariate statistical techniques, which allow for widespread comparison. This paper suggests the use of discriminant analysis, together with simple correlations, as methods for investigating late-Roman exchange.

Economic background

The use of ceramics for economic interpretation assumes a meaningful relationship between the ceramic record and the economy in general. It is, therefore, important to acknowledge the historical limitations to such an approach. Pottery would have played only a minimal rôle in the ancient economy. Regardless of which paradigm is adopted, agriculture, not industry, was the economic mainstay. Manufacture was generally on a small scale,⁶ although Garnsey and Saller⁷ suggest that pottery and textiles are two industries which may have operated on a somewhat larger scale. However, both historical and archaeological evidence suggest that in most cases pottery production was on a small scale and of limited economic importance. Exceptions are the red-slipped industries at Arezzo and La Graufesenque, which were relatively much larger concerns. Even the widely distributed African Red Slip wares, while large in aggregate, consist of individually small workshops.⁸ Little prominence is given to pottery by ancient authors, but such references that do exist tend to emphasise its functional properties as a container; exam-

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- 1 J. A. Riley, "The coarse pottery from Benghazi" in J. A. Lloyd (ed.), *Sidi Khrebish excavations Benghazi (Berenice)* 2 (Tripoli 1979) 91-467.
 - 2 M. G. Fulford and D. P. S. Peacock, *Excavations at Carthage: The British mission I 2. The Avenue du Président Habib Bourguiba Salamambo. The pottery and other ceramic objects from the site* (Sheffield 1984); J. A. Riley, "The pottery from cisterns 1977.1, 1977.2, and 1977.3" in J.H. Humphrey (ed.), *Excavations at Carthage conducted by the University of Michigan 1977* 6 (Ann Arbor 1981) 85-124.
 - 3 C. Panella, "Appunti su un gruppo di anfore della prima, media e tarda età imperiale" in *Ostia III* (Studi Misc 21, Roma 1973) 460-633.
 - 4 E.g. L. Anselmino, et al. "Cartagine" in A. Giardina (ed.), *Società romana e impero tardoantico III. Le merci, gli insediamenti* (Roma-Bari 1986) 163-95.
 - 5 E.g. M. G. Fulford, "Economic interdependence among urban communities of the Roman Mediterranean," *World Archaeology* 19 (1987) 58-75; id., "To east and west: the Mediterranean trade of Cyrenaica and Tripolitania in antiquity," *Libyan Studies* 20 (1989) 169-91.
 - 6 H. J. Loane, *Industry and commerce of the city of Rome (50 B.C.-A.D. 200)* (Baltimore 1938) 155.
 - 7 P. Garnsey and R. Saller, *The Roman empire: economy, society and culture* (Trowbridge 1987) 44.
 - 8 D. P. S. Peacock, F. Bejaoui, and N. Ben Lazreg, "Roman pottery production in central Tunisia," *JRA* 3 (1990) 59-84.