QUANTIFICATION OF ROMAN POTTERY OF THE MEDITERRANEAN

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Introduction

Excavations abroad are generally limited by time, money and usually storage space, so that there is an everpresent problem of dealing with the pottery rapidly while at the same time retaining the maximum information from it. It is the use of computers in the ordering and presentation of this information that is mainly discussed here but it is necessary to consider first of all the nature of the information required from a study of the pottery.

The Need for Pottery Quantification

Most research on Roman pottery of the Mediterranean to date has concentrated on determining as far as possible the chronology, typology and the provenance of various types of pottery. In all too many cases, however, the results have been based on selected pieces of pottery, often the larger or more distinctive pieces. It is not sufficient to know <u>that</u> a certain pottery type exists on a site. We really need to know how <u>common</u> it is in order to build up a clearer picture of the relative proportions of certain types of pottery in various parts of the Mediterranean at various periods. If this can be established, quantitative trade patterns can be plotted (especially for imported wares), and a more reliable basis for discussing possible chronological,economic, or social implications from the pottery can be obtained.

Several recent pottery publications have stressed the general importance of the quantification of various pottery types and wares and have published their quantitative results (Solheim 1960, Delougaz & Haines 1960, Orton 1970, Evans 1973, Panella 1974, Fulford 1975). It is rapidly becoming clear that for comparison of various results some form of standardisation of presentation of quantitative information is desirable, and, on the basis of research in this field in Libya, Tunisia and Palestine, it is felt that this can best be achieved with the aid of a computer. However, before discussing this approach, it is necessary to consider the first problem of any quantitative pottery study, and that is classification.

Classification of Roman Pottery of the Mediterranean

On Roman sites in the Mediterranean one has to cope with very large quantities of pottery, usually in very small fragments; for example about 80,000 sherds occurred from a 10 week excavation by the University of Michigan at Carthage in 1975. This means that although programmes of totally objective classification of Roman pottery are being attempted (Bennett 1974, Guenoche & Tchernia in press), detailed coding of form and fabric is too time-consuming to be praticable on most short-term excavations. The time factor is especially relevant if one accepts that totally objective coding and computer manipulation such as clustering etc. will only be effective for classification if the largest possible quantity of pottery from an archaeological context can be coded in the necessary detail.

It is with these considerations that, for the present at any rate, it has been decided more convenient to form Roman pottery typologies on Mediterranean sites along traditional lines. By this, recurrent or otherwise recognisable forms or fabrics are generally put into a type series while unidentified forms are recorded and drawn, or fabric samples taken, and are grouped into miscellaneous categories. In practice, as Roman pottery tends toward standardisation, a proportion of the pottery can be 'typed' on the basis of previous published works of various specialists, for example, the main fabrics and forms of Roman fine wares of the Mediterranean have been classified (Hayes 1972) as have a number of Western Mediterranean amphoras (Panella 1974). In addition about half of the coarse pottery on most sites fits into general form shapes.

The Sorting System

The following is a brief description of the system developed with Dr.J.W.Hayes on recent excavations at Caesarea (Palestine), Benghazi and Tocra (Libya), and on the current Michigan University excavation at Carthage (Tunisia). The pottery from each archaeological layer is sorted into types and the rims,bases,handles and body sherds (= R,B,H,S, respectively) of each type are counted and weighed separately - the weights serving as a check on the counts (Riley 1975). The pottery is divided into the components R,B,H,S, because the ease of identification of the components varies with each type, for example, body sherds are often very difficult to relate to specific forms. In addition, important information can also be gained through such a separation such as, for example, the minimum number of vessels (calculated through base or handle counts). Further information such as dimensions, sketches etc. are recorded in notebooks but not computerized.

Program 'POT'

As a result of the above system the eight basic items of raw data are the number and the weight of the R,B,H,S, of each type. These are processed by a simple computer programme 'POT' written in Algol-60 and run on the CDC 7600 computer at Manchester University. For a given layer the total counts and weights of the R,B,H, and of the R,B,H,S, for each pottery type, including the miscellaneous types, are expressed as percentages of the total R,B,H, and R,B,H,S, for that layer (see Fig.1). This gives the frequency of each type in each layer both of the total R,B,H, and of the total R,B,H,S, the former being significant when body sherds of certain types are not distinctive enough to be assigned to the type with confidence. It is often the case that several stratigraphical layers are combined into one level by the excavator at a later date. 'POT' can also combine the pottery data and results of any number of layers.

The label for each type (up to 15 characters in this case) is coded in numerical terms and printed by means of a procedure consisting of conditional statements. This may seem unwieldy, but by doing this the data manipulation is kept simple, the labels can easily be changed, and the output is presented in a format suitable for publication. As the potential number of pottery types and archaeological layers is very large, and as eight arrays are required for each, there is a heavy demand on large core memory. In practice, each job can amalgamate up to 20 layers with each layer containing up to 500 pottery types, or 80 layers with 125 types: where these limits are exceeded the job has to be segmented.

It is felt that the simplicity of 'POT' is an important advantage as program manipulation such as format changing etc., and data manipulation such as de-bugging and interpretation can be performed to a very large extent by the archaeologist, without constant recourse to the computer specialist.

Conclusion

The method of quantification described above has been put into practice on the sites mentioned above and the results are very encouraging, especially in plotting the quantitative distribution of late Roman amphoras in the Mediterranean (see Riley 1975,1976, in press)

When more quantitative results have been established throughout the Mediterranean, a further method of analysing their interrelationships will be required. In the meantime, it is hoped that it has been shown how even a simple use of computers in archaeology can have very important and far reaching results, and that consideration of their use is essential in any attempt to standardize the presentation of quantitative information with regard to pottery studies.

Acknowledgements

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COMBINATION SK S100(1)(3)(5)

TYPE	NO. OF RIMS	NO. OF BASES	NO. OF HANDLES	NO. OF SHERDS	PERCENT NO. RBH	PERCENT NO. RBHS	WT. OF RIMS	WT. OF BASES	WT. OF HANDLES	WT. OF SHERDS	PERCENT WT. RBH	PERCENT WT. RBHS
MISC, AMPHORAS	1	0	4	136	9.6	23.8	30	0	100	2305	8.6	36.8
MISC,WEST,AMPH.	0	0	0	3	0.0	0.5	0	0	0	370	0.0	5.6
MISC.LOCAL AMPH	1	0	0	0	1.9	0.2	20	0	0	0	1.3	0.3
E.R.AMPHORA 1	0	0	1	0	1.9	0.2	0	0	100	0	6.6	1.5
E.R.AMPHORA 8A	0	0	2	4	3.8	1.0	0	0	270	380	17.9	9.8
MISC.TRIP.AMPH.	0	0	0	2	0.0	0.3	0	0	0	40	0.0	0.6
MID R.AMPH. 3	0	0	0	1	0.0	0.2	0	0	0	10	0.0	0.2
MID R.AMPH. 8	1	0	0	0	1.9	0.2	20	0	0	0	1.3	0.3
MISC.COOK WARE	0	0	2	110	3.8	19.1	0	0	20	335	1.3	5.4
CORE.COOK WARE	0	0	0	8	0.0	1.4	0	0	0	20	0.0	0.3
E.R.COOKWARE 1	1	0	0	0	1.9	0.2	20	0	0	0	1.3	0.3
E.R.COOKWARE 6	1	0	0	0	1.9	0.2	50	0	0	0	3.3	0.8
M.R.COOKWARE 1	1	0	0	0	1.9	0.2	5	0	0	0	0.3	0.1
MISC. PLAIN	7	5	1	226	25.0	40.9	60	130	10	1050	13.3	18.9
MISC.POSS.GRIT	8	1	0	45	17.3	9.2	80	20	0	610	6.6	10.7
ROUGH CAST WARE	1	0	0	0	1.9	0.2	20	0	0	0	1.3	0.3
MISC. LIDS	4	0	1	0	9.6	0.9	60	0	50	0	7.3	1.7
MID R.PLAIN 1	1	0	0	0	1.9	0.2	40	0	0	0	2.7	0.6
MID R.PLAIN 1A	2	0	0	0	3.8	0.3	210	0	0	0	14.0	3.2
TILE FORM A	1	0	0	0	1.9	0.2	80	0	0	0	5.3	1.2
LOOM WEIGHT C	1	0	0	0	1.9	0.2	5	0	0	0	0.3	0.1
MISC. JUGS	2	0	1	0	5.8	0.5	35	0	30	0	4.3	1.0
POSS.GRIT JUGS	0	0	1	0	1.9	0.2	0	0	40	0	2.7	0.6
TOTALS	33	6	13	533	100.0	100.0	735	150	620	5120	100.0	100.0
TOTAL RIMS BASES AND HANDLES				52				1505				
TOTAL RIMS BASES HANDLES AND SHERDS				585				6625				

AVERAGE WEIGHT PER SHERD = 11.3 GRAMS