17
Quantitative analysis of Etruscan cinerary urns

Paola Moscati
Istituto per l'archeologia etrusco-italica, CNR, Viale di Villa Massimo 29 - 00161 Roma, ITALY

17.1 Introduction.

A research project named 'Automatisation of Etruscan Corpora' was established ten years ago at the Institute of Etruscan and Italic Archaeology of the C.N.R. (National Research Council). The main purpose of this project is the use of information technology to file, classify and analyse homogeneous classes of artefacts belonging to the Etruscan culture. Some of the research work carried out as part of this project has been already completed, such as the quantitative analysis of about 1,000 Etruscan bronze mirrors (Moscati 1984; 1986).

Other research projects are continuing. Among these are the CAIE project, aimed at the establishment of an Automatised Corpus of Etruscan Inscriptions through the use of an Information Retrieval System (Pandolfini & Moscati 1992), and the *Volaterrae* project, aimed at the mathematical and statistical analysis and classification of the stone cinerary urns produced in Volterra in the Hellenistic period (Moscati 1990).

The initial phase of this last project consisted of the gathering of data on Volaterran urns. About 600 urns have already been published in catalogue form in the first three volumes of the Corpus of Etruscan Urns (CUE) (Cristofani *et al.* 1975; Cristofani 1977; Cateni 1986). Many urns have been added to this first sample: those preserved at the Guarnacci Museum in Volterra (not yet included in the CUE volumes) and those preserved in the Archaeological Museum in Florence, in other Italian and foreign museums and lastly in private collections.

The analysis of this class of objects was divided into two distinct sectors, one regarding the lids and the other the chests. This was done for two reasons: archaeological and technical. First, in the absence of excavation data, it is difficult to establish the relationships between lids and chests. Secondly, the different variables used to describe lids and chests would have been excessively high in number and this would have caused a considerable dispersion of information had they been analysed together.

Therefore, we began with the analysis of about 1,200 chests. On the theoretical basis that a quantitative classification of archaeological objects should privilege technical aspects, the metric and nominal variables chosen to describe the urns privileged the typological and morphological characters. Other than basic information such as storage place and inventory number, the variables chosen were the following: material, conservation condition, measurements, chest shape and type, legs shape and type, architectonical framing shape and type, and angular elements. Two other classes of information were also added. The first concerns spatial data related to the necropolis, such as find spot and, if known, funerary context; the second concerns iconographical data, i.e. the repertory of scenes represented on the front of the chests.

17.2 Quantitative analysis of a group of Volaterran urns.

In this paper we would like to give a general view of the methodological procedure followed with regard to the classification of archaeological objects belonging to the Classical period, in particular, concerning the quantitative analysis of a group of chests. Their selection is based on the iconographical subjects represented and is aimed at verifying whether, and to what extent, the iconography contributes to differentiation within the whole data sample under examination (Moscati 1991). The data set consists of 351 chests which are all characterised by scenes dealing with the Etruscan funerary world. There are seven iconographical subjects that reflect, in general, the subdivisions of Brunn and Körte (1916):

- leave-taking in which a man and a woman clasp hands (generally named *dextrarum iunctio*) (see Figure 17.1a)
- a dead man appearing to his living wife to fetch her to the underworld (see Figure 17.1b)
- journey to the underworld on foot
- journey to the underworld on horseback (Figure 17.1c)
- journey to the underworld in a covered car (=*carpentum*) (see Figure 17.1d)
- journey to the underworld in a four-horse chariot (see Figure 17.1e)
- procession of a magistrate to the underworld

From a technical point of view, the quantitative analysis proceeded in the first instance by the application of descriptive statistical techniques, whose use in an archaeological framework, especially in the classification of such a large number of examples, has recently been reconsidered (e.g. Fletcher & Lock 1991; Lock 1991). In particular, frequency analysis and crosstabulations, used together with the chi-squared test, t-test and variance analysis, allowed a first general survey within the sample to be carried out in order to obtain a detailed picture of the distribution and the importance of each variable, and to verify the significance, or otherwise, of the inter-relationships among the variables.

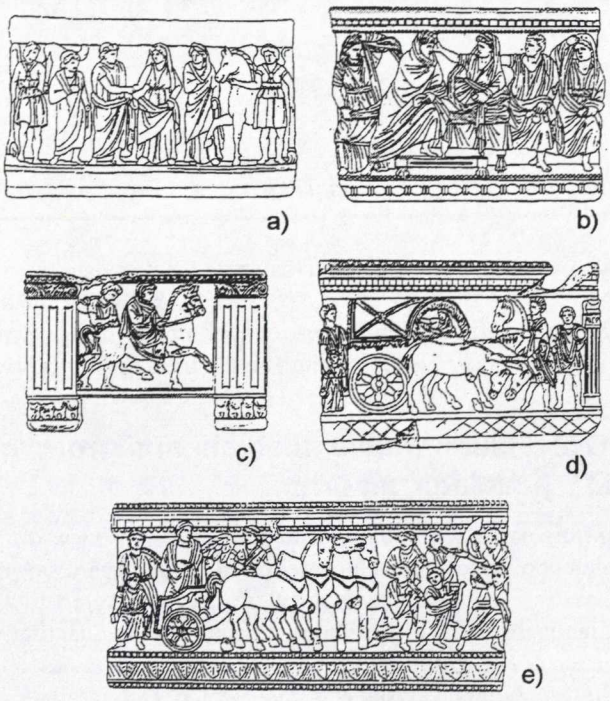

Figure 17.1:
a) *dextrarum iunctio* (Brunn-Körte III 61, 5);
b) dead man appearing to living wife (Brunn-Körte III 65, 5);
c) journey to underworld on horseback (Brunn-Körte III 69,1);
d) journey to underworld in *carpentum* (Brunn-Körte III 80, 4);
e) journey to the underworld in quadriga (Brunn-Körte III 84, 2).

The examination of the results obtained through these statistical techniques allowed us to arrive at some preliminary conclusions. These concern not so much the workshops – a premature step and not easy to carry out only on the basis of a group selected for iconographical series – but rather the manufacturing modalities and the diffusion of the chests characterised by scenes dealing with the moment of death (see Figures 17.2 and 17.3).

As the selection of this group was made *a priori*, on the basis of iconographical rather than morphological criteria, it must be pointed out that, from a procedural point of view, the validity of our considerations have been verified through the examination of the entire data sample and through the comparative study of it. In fact, this comparison allowed us to obtain certain general data, which in part confirmed and integrated already known facts, and in part modified them. In this respect, it is necessary to remember that the only statistical results available, concerning the subjects represented on the chests and the material used for their production, date back to a study carried out at the beginning of this century on a total of 600 examples (Niccolai 1928).

The quantitative analysis showed that the chests with *dextrarum iunctio* constitute the group with the most homogeneous characteristics. There are 106 chests, 98 of type 'F' (parallelpiped chest with projecting framing), mostly in tufa and only 7 in alabaster, surely a more precious material. For the most part (about 70 cases), they are characterised by the presence of simple framing, such as flat and plain superior and inferior mouldings.

The subject under consideration was widely produced from the end of the 2nd and throughout the 1st century BC. Probably because of its repetitive character, both in form and in iconography, this group never came under particular study in the archaeological literature as was the case for the major part of the later production. Standardised dimensions, typical of tufaceous production, as well as simplified technical, typological and iconographical characteristics, allowed us to assign these chests to a workshop specialised in the production of very simplified tufaceous urns.

The flat, plain inferior moulding is an element that characterises this group, and, more generally the later standardised production. This was also demonstrated in the comparison with the remaining sample of urns (about 800 cases), which shows a quantitative disproportion: in our group the percentage of this kind of moulding is 70% while in the remaining sample it is only 19%.

The scene of the dead husband summoning his grieving wife to the underworld is present on 68 chests; 61 are of type 'F', of which 45 are in tufa and 23 in alabaster. As far as superior and inferior mouldings are concerned, there is a more homogeneous distribution within examples characterised by simple framing and those with mouldings decorated in bas-relief. Therefore, manufacturing modalities of these chests appear less standardised. In fact, their characteristics go from simplified and standardised to more elaborate typological and iconographical solutions: a dichotomy to which the presence of examples in tufa and in alabaster corresponds.

From an iconographical point of view, the greater variety confirms that this motif derives from a model used also for more complex scenes of different mythological subjects. From a typological point of view, it is comforting to note the highly significant association between the flat, plain inferior moulding and the superior moulding of type 'D' (from top to bottom: beading, double listel, dentils and a flat cornice). This association characterises the greater part of the urns already assigned to the so-called atelier of Poggio alle Croci, active in the first half of the 1st century BC (Martelli 1974-75). This gives rise to optimism that this kind of approach can result in useful information concerning the different workshops.

Less widespread is the journey to the underworld on foot, which appears on a total of 8 chests. This contrasts with the typological, morphological and iconographical variety which characterises chests with representations of the journey on horseback to the underworld which is due to the wide popularity of this subject and to its presence over a long chronological period, including the most antique phase. This scene appears on a total of 69 chests, 35 in tufa and 29 in alabaster; 20 chests are not of the more frequent type 'F', as they lack framing.

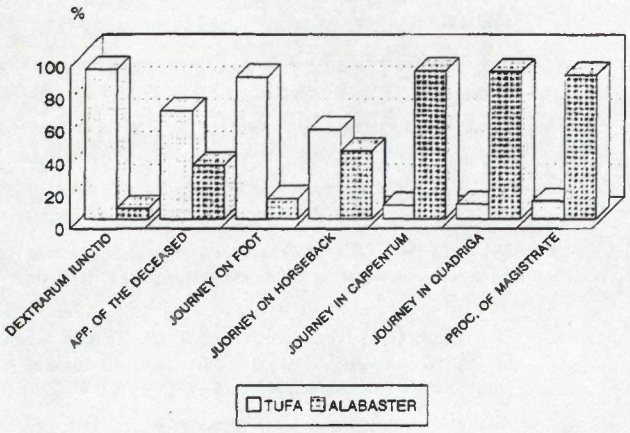

Figure 17.2: Distribution of the variable 'material' with reference to the subjects represented.

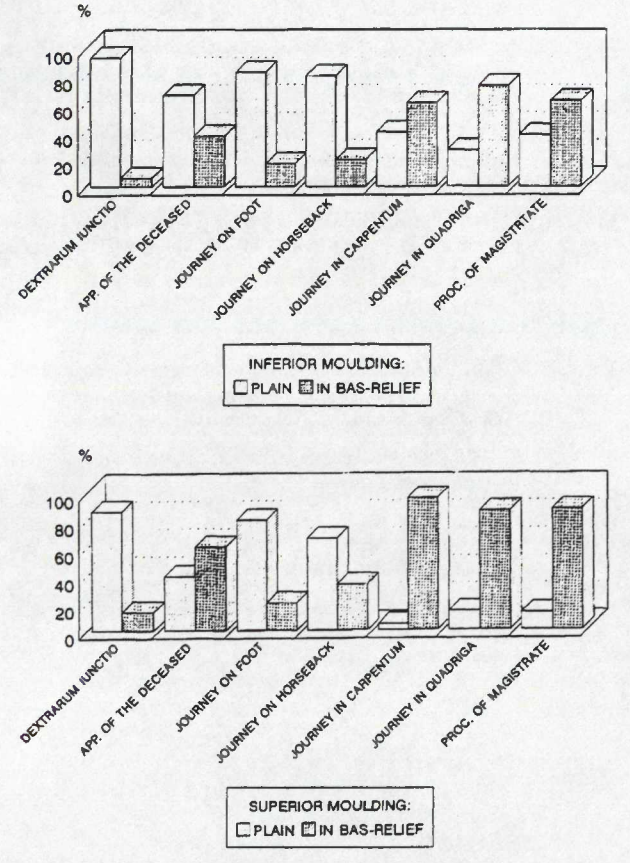

Figure 17.3: Distribution of framing types with reference to the subjects represented.

The scene composition varies, ranging from examples with a lone horseman, or one followed by an attendant on foot, which are generally present on chests in which two fluted pillars frame the very slightly deepened field, to examples where the horseman is accompanied by a greater number of figures, including winged demons, which are often present on chests without framing or only with simple inferior moulding. A significant association was found between this scene and the presence of the superior moulding of type 'M', decorated with Ionic cymatium. However, the analysis of the remaining sample made the result less exclusive, as this type of moulding is to be found on another 28 chests bearing different scenes, generally mythological.

A greater typological and iconographical standardisation was found again in the chests with the representation of the journey to the underworld in *carpentum*, a subject which characterises the later production of urns (1st century BC – 1st century AD). This subject appears on a total of 49 urns. In 90% the superior moulding is decorated in bas-relief; in 23 cases the inferior moulding is also decorated in bas-relief, while in 15 cases it is flat. Production is for the most part in alabaster (47 cases) and the measurements are almost always standardised. As proof of the uniformity in the production of this group, a mean values analysis of the chest measurements relating to the 7 different funerary groups indicated a differentiation of the chests characterised by the journey in *carpentum*. These chests, in fact, are of reduced proportions, even smaller than the tufaceous examples.

The significance of the presence on these chests of several types of framing was also validated after comparison with the remaining sample of data, as they are rarely present outside this group. For example, the inferior moulding decorated with a lozenge motif, here present in 8 cases out of a total of 49, is present in only 6 cases out of the remaining 800 chests. As conclusive verification of this group homogeneity, a cluster analysis was also carried out, based on the dimensions and the chest and framing types. The results of the analysis confirmed our hypothesis, except for a smaller number of examples with diverse characteristics.

Particular attention should be given to the last two subjects under consideration: the journey in a four-horse chariot to the underworld (33 cases, of which 30 in alabaster) and the procession of a magistrate to the underworld (9 cases, of which 8 in alabaster). The chests belonging to these two groups are quite different from those relating to the more standardised production. On the whole, the elements which characterise these chests are: a greater attention to detail, the richness of framing decoration, the choice of alabaster and greater dimensions. These elements indicate that these examples pertain to the contemporary production of chests bearing mythological scenes. From a more strictly social point of view, these elements underline the desire to celebrate through these monuments the civil function of the customers.

17.3 Conclusion

In conclusion, this preliminary analysis of a group of urns and the comparison with data belonging to the entire sample allowed us to verify and integrate with quantitative data knowledge already acquired and to lay the foundations for some general methodological considerations. First of all, as has been demonstrated, the variables which contribute to the characterisation of the chests are mostly technical and typological. The

subsequent examination of the entire sample of data, which would also include the application of multivariate statistical techniques, should be therefore based on this kind of information. In fact, these variables will assume a considerable importance in the discrimination of the whole production.

In this respect, we must point out that in archaeological studies carried out on the urns, specific types of framing have been considered as countermarks, i.e. distinctive trade-marks of single workshops (e.g. Pairault 1972, 62-76; Maggiani 1977). It will therefore be interesting to verify the presence or otherwise of a significant interrelationship between the two mouldings that frame the inferior and the superior part of the chests. Some preliminary results have already been achieved applying this kind of procedure (Moscati 1990, 58-65).

Iconographical information relative to the scenes represented on the front and on the sides of the chests, does not necessarily have a determinant function in the identification of workshops. Iconographical variables, however, constitute an exterior element which permit us to verify the choices made within each atelier. In this way, they can carry out a basic role in evidencing both the diffusion of specific iconographical subjects in well defined chronological periods and the relationship between the choice of these subjects and the people who commissioned them.

Finally, the procedure followed in this paper opens the way to some more strictly methodological considerations, which concern both the quantitative approach and, more generally, the archaeological analysis of homogeneous groups of objects. In fact, the decision to carry out this preliminary analysis on a single group of urns was suggested by the desire to demonstrate that an *a priori* choice of a sample, however objective it may be, can be validated only when we possess the whole sample of data. Only in this way, as we have tried to show, can the exactness of the choice be verified and the results obtained be validated through comparison.

References

BRUNN, H. & KÖRTE G., 1916. *I rilievi delle urne etrusche*, III, Roma-Berlin.

CATENI, G. (ed.) 1986. *Corpus delle urne etrusche di età ellenistica. Urne volterrane 2. Il Museo Guarnacci*, 2, Pacini, Pisa.

CRISTOFANI, M. *et al.* 1975. *Corpus delle urne etrusche di età ellenistica 1. Urne volterrane 1. I complessi tombali*, Centro Di, Firenze.

CRISTOFANI, M. (ed.) 1977, *Corpus delle urne etrusche di età ellenistica 2. Urne volterrane 2. Il Museo Guarnacci*, 1, Centro Di, Firenze.

FLETCHER, M. & LOCK, G. 1991. *Digging Numbers. Elementary Statistics for Archaeologists*, Oxford University Committee for Archaeology Monograph 33, Oxford.

LOCK, G. 1991. 'An introduction to statistics for archaeologists', in S. Ross, J. Moffett & J. Henderson (eds.), *Computing for Archaeologists*, Oxford University Committee for Archaeology Monograph 18, Oxford, 57–95.

MAGGIANI, A. 1977. 'Analisi di un contesto tombale. La tomba Inghirami di Volterra', in AA.VV., *Caratteri dell'ellenismo nelle urne etrusche*, Firenze.

MARTELLI, M. 1974-75. 'Contributo alla classificazione delle urne volterrane: l'officina di Poggio alle Croci', *Dialoghi di Archeologia*, 8: 213ss.

MOSCATI, P. 1984. *Ricerche matematico-statistiche sugli specchi etruschi*, Contributi del Centro Linceo Interdisciplinare, 66, Accademia Nazionale dei Lincei, Roma.

MOSCATI, P. 1986. *Analisi statistiche multivariate sugli specchi etruschi*, Contributi del Centro Linceo Interdisciplinare, 74, Accademia Nazionale dei Lincei, Roma.

MOSCATI, P. 1990. 'L'analisi Quantitativa nell'archeologia di epoca storica', *Archeologia e Calcolatori*, 1, 39–80.

MOSCATI, P. 1991. 'Méthodes quantitatives et problèmes iconographiques', in *Actes du Colloque Européen 'Archéologie et Informatique'* (Saint-Germain-en-Laye, Novembre 1991), in press.

NICCOLAI, A. 1928. 'Sul materiale in cui sono scolpite le urne cinerarie di Volterra', *Studi Etruschi*, 2: 419.

PANDOLFINI, M. & MOSCATI, P. 1992. 'CAIE: progetto per un Corpus Automatizzato delle Iscrizioni Etrusche', *Archeologia e Calcolatori*, 3: 207–218.

PAIRAULT, F.-H. 1972. *Recherches sur quelques séries d'urnes de Volterra à représentations mythologiques*, Ecole Française, Rome.