CHAPTER 10

THE POTTERY DISTRIBUTION ANALYSIS

by

Pamela J. Rose

10.1 Methodology [1]

The problems posed by the pottery from the excavations at the Workmen's Village and the techniques employed to deal with it have already been summarised (Kemp 1981: 16-21). Since then, some modifications have been made to the cataloguing system to enable a more detailed record of each "diagnostic" piece to be made, and also to facilitate the computerisation of the data. [2] This has become necessary because of the great number of sherds from the site. The excavations since 1979 have produced 798,615 sherds altogether, of which almost 99,000 are "diagnostics"; of the latter, 52,000 have so far been recorded. The manipulation of such quantities of information by hand is clearly an immense task, even for such simple operations as, for example, adding up the number of occurrences of a particular rim type in one area. More complex tasks, involving several variables, would demand so much time as to be impossible in practical terms.

Up to ten variables are recorded for each of the diagnostic pieces: fabric, surface treatment, diameter (in the case of rims and some base forms), percentage of total vessel diameter represented by the sherd, its shape, the vessel-type or group of vessel-types to which it belongs, and finally any comments on the condition of the sherd (e.g. burning, wear, adhering material etc.). Both the fabric and surface treatment classifications are based on those developed by Dr. Colin Hope during his work on the pottery from the contemporary site of Malkata; fabrics which do not appear, on examination with a 10x handlens, to match any of those listed, are added to the

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[1] I would like to express my thanks to the Thomas Mulvey Fund of the University of Cambridge for a grant towards the costs of carrying out this work.

[2] The modifications to the system, which were begun in 1981, and the greatly increased experience in handling the sherds which has been built up, have rendered the sherd records for 1979 and 1980 incompatible with the current system. This earlier material has now been entirely re-catalogued, so that no loss of data has been involved, but at the time of writing had not yet been transferred to computer files. Consequently in the following discussions no comparisons are made with the preliminary results presented in the 1980 preliminary report (Kemp 1981: 18-19, Figure 7).

classification. At present thin-section analysis of a number of these additional types is being carried out by Mr. Paul Nicholson at Sheffield University. Sherd shape is recorded by reference to a corpus of profiles. The most difficult part of the recording process is to attribute the sherd to the specific vessel type from which it comes; indeed, this is so rarely possible that it is usually assigned to a group of similar types - and in many cases, for example that of simple silt-ware rounded bases, even this cannot be done. The specific vessel types are drawn from the pottery corpus created during the earlier excavations at Amarna, and published in the *City of Akhenaten* volumes, [3] supplemented by unpublished drawings of vessels from the 1973-74 University Museum of Pennsylvania Malkata excavations, and also of any new types found in the course of the current work. The vessel groups are also created from these sources but take into account as well the fabric, and in some cases the surface treatment, of the vessels, and also the similarity of rim shape, since most often it is a rim sherd which one is attempting to match to a group of forms. The terms used to describe the groups reflect the rim-orientated nature of the groupings. Often the groups resemble closely those of the *COA* corpus (e.g. *COA* types I, III, IV); in other cases these groups are split into smaller, more coherent units (e.g. *COA* type II, which has become my group 2 and 3, and type XV, which has been split into several different groups); and rarely they cut across the *COA* typology. Not every vessel in the corpus has yet been taken up into the group system, usually because the fabric of the vessel in question is not recorded in the corpns and no specimens of the type have been found during the recent work to enable this to be identified. A certain amount of "lumping" occurs in a few groups; this occurs because too few sherds from a vessel type have been found in the course of the current excavations to make it worthwhile to split the group into smaller units.

So far 39 vessel groupings have been created (Figure 10.1). Of these, 35 represent what I feel to be coherent units, the remaining 4 (nos. 32-34, 37) covering cases where a sherd could belong to one of two of these groups. If the sherd cannot be limited to either one or two groups, or is for some other reason unattributable, it is classified as group 0. In the list of groups that follows, the most basic criteria used for defining each are given, but any subdivisions within the group caused, for example, by differing surface treatment, or by the use of different fabrics for essentially the same vessel, are not given in detail. It is hoped that a more detailed breakdown of the groups can be provided at a later date when fabric analyses have been carried out, and preferably after examining sherds from other areas of Amarna, which will provide examples of forms not represented in the Workmen's Village. The reference to the *COA* corpus which follows the definition of each group is intended as a guide to the forms which make up the group, and to give some idea of the range of types found therein. The fabric descriptions given present a simplified version of Hope's terminology; and whilst it may be argued, for example, that the "mixed marl and silt" wares are in fact pure marl clays (see Bourriau 1981: 14), the fabrics themselves are visually distinct and it is only the terminology that may be questioned.

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[3] Henceforth abbreviated to *COA*.

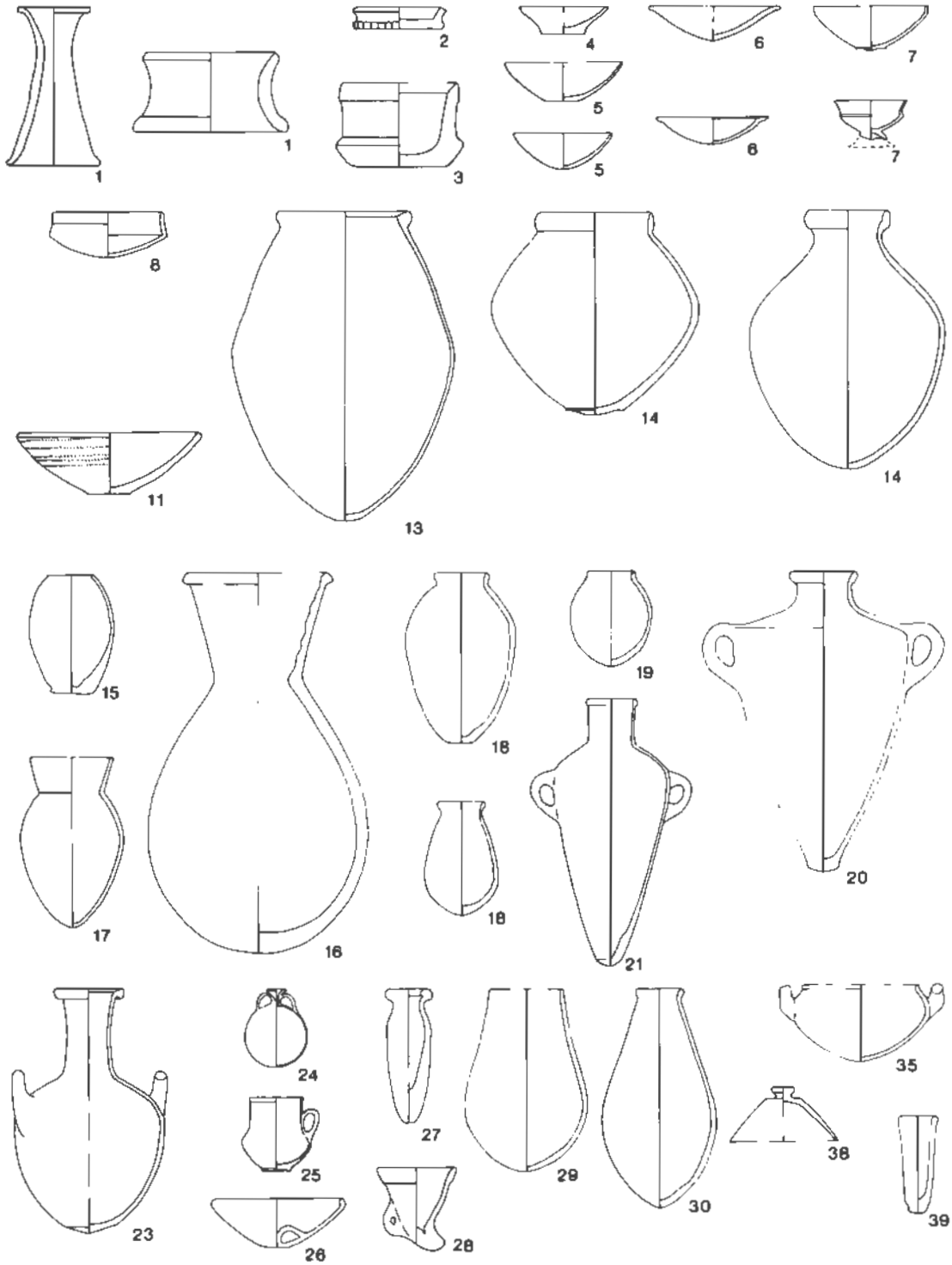

Figure 10.1. The basic vessel groups occurring in the Workmen's Village pottery sample.

1. **Potstands**. Nile silt ware, surfaces usually untreated. The group incorporates as separate subgroups both the ring stands *COA* type I and the tall stands type XXII.

2. **Platters**. Coarse silt ware, surface untreated. *COA* types II.4-6.

3. **Heavy straight-sided supports**. Silt ware. *COA* types II.1 and 2.

4. **Small footed bowls**. Silt ware, uncoated or red slipped. *COA* types III.4, III.9.

5. **Simple bowls**. Silt ware, usually red slipped, occasionally polished. *COA* types III.3, III.5, etc.

6. **Bowls with out-turned rims**. Silt ware, falling into two subgroups: those without coating, and those with a red slip (sometimes polished). *COA* type IV.

7. **Carinated bowls**. Several fabrics used for these; frequently decorated with horizontal black or red bands below the rim, and/or rim ticks. *COA* types V.1, VI.8, IX.14.

8. **Cooking bowls**. Silt ware, uncoated. *COA* type V.7.

9. **Shallow bowls with upright rim**. Silt ware, usually uncoated. *COA* type VI.9.

10. **Shallow carinated bowls**. Silt ware, uncoated or red slipped? *COA* type VI.11.

11. **"Hearths"**. Silt ware, uncoated or with red rim band, occasionally all-over red slip, sometimes appearing polished. *COA* type VII.

12. **Fancy vessels**. A "lumped" group. Silt ware, in three subgroups: one, either uncoated or with red slip (*COA* type X.2, XX.5); the second, of more elaborate style, blue-painted (*COA* type X.3); the third, the so-called "cobra bowls" (see Kemp 1981: 15, Figure 6).

13. **Meat jars**. Usually a hard mixed marl and silt fabric with cream slip. *COA* type XI.1, XII.1.

14. **Jars with upright thickened rim**. Marl-silt mixed fabric, certain forms showing banded decoration around neck and rim ticks. *COA* type XI.7, XIV.2.

15. **Hole-mouth jars**. Silt ware, uncoated. Includes *COA* type XI.6, although much closer parallels to the type of hole-mouth jar found in the Workmen's Village are found elsewhere, including Malkata (see for example Holthoer 177: Plate 18, form BB2 185/ 511:137).

16. **Large biconical jars with thickened rim**; *zirs*. Silt ware, usually uncoated, but occasionally showing traces of blue-painted decoration. *COA* type XIII.1, XIII.8.

17. **Biconical jars with plain rim**. Silt ware, almost invariably red slipped. *COA* type XIII.13, XXV/3 (earlier *COA* typology number).

18. **Jars with short flaring rim**. Silt ware, uncoated or red slipped. *COA* type XIV.4, XV.7, XV.8, XIX.7.

19. **Jars with upright rim**. Silt ware, uncoated or red slipped. *COA* types XIV.9, XV.5.

20. **Amphorae with short flaring rim**. Subdivided by fabric into those of Canaanite origin, and those of Egyptian manufacture. *COA* type XVI.1.

21. **Amphorae with long necks**. Mixed marl-silt fabric, cream slipped surface, sometimes polished. *COA* type XVII.1.

22. **Vases**. Various fabrics: something of a "catch-all" designation since vessels of this type are found so rarely in the Workmen's Village. *COA* types XV.18, XIV.8, XXI.2.

23. **Vases with turned-over rim**. Mixed marl-silt fabric, cream polished surface. *COA* types XVII.10, XVIII.3.

24. **Pilgrim bottles**. Usually a mixed marl-silt fabric with cream polished surface, but rarely occurring in non-Egyptian fabrics. Subdivided by size of vessel. *COA* types XVII.12, XVII.14.

25. **One-handled jugs**. Mixed marl-silt fabric, cream polished surface. *COA* type XX.11.

26. **Spinning bowls**. Usually a mixed marl-silt fabric, uncoated. *COA* types XXIII.3, XXIII.6.

27. **"Crucibles"**. Silt ware, uncoated. *COA* type XXI.3.

28. **"Crucibles"**. Silt ware, uncoated. *COA* type XXIII.8,9,10,11.

29. **Large vessels with inward-sloping rim**. Silt ware, uncoated, or sometimes with traces of blue-painted decoration. *COA* types XV.1, XIV.11.

30. **Hole-mouth vessels with thickened rim**. Silt ware, usually red slipped, rarely blue-painted. *COA* types XV.9, XV.15.

31. **Miscellaneous**. Types encountered very rarely. *COA* types XXI.1, VIII.2, XXI.6.

32. Sherd belongs to group 17 or group 18.

33. Sherd belongs to group 18 or group 19.

34. Sherd belongs to group 19 or group 17.

35. **Handled carinated bowls**. Silt ware usually with a red slipped surface. *COA* type XX.3.

36. **Spouted vessels**. Various fabrics; exceedingly rare, and not recorded as occurring in the *COA* corpus. The single example from the Workmen's Village is blue-painted.

37. Sherd belongs to group 21 or group 25.

38. **Lids**. Various fabrics and surface treatments. *COA* type XXIII.2, LXXXI/254 (earlier *COA* typology number).

39. **Cylindrical bread moulds**. Coarse silt ware, uncoated. *COA* type XV.24.

The intention of the pottery analysis is to assess quantitatively the various groupings present in each area of the site, and to examine any variation in the frequency of types revealed by this. Simple quantification of the field data is not entirely satisfactory without some modification: differential breakage rates, caused by either the relative hardness of the various fabrics, or by use, would produce a distorted picture of the pottery assemblage. To compensate for this, the number of complete rims of each vessel type is calculated from the addition of the "percentage preserved" of rim sherds agreeing in fabric, surface treatment, diameter and shape, and this figure is taken as an indication of the number of vessels present in each excavation area. (In calculating this, there will be a tendency for the estimated number to err on the high side, since sufficient changes in rim shape can occur around the diameter to indicate the presence of two, rather than one vessel. This has been especially noticeable in the case of the group 11 hearths where considerable variation in rim shape within a single vessel can be seen. Variation in the diameter around the rim of a vessel is a further complicating factor, and again leads to an over-estimate of numbers). This figure is also compared with the number of bases present from each group - although these are harder to assign since some base types tend to belong to more than one group. This enables any discrepancies between the number of vessels derived from the rim and base data to be examined. In this report, frequency histograms are given firstly as derived from the unmodified rim sherd data, and secondly of the estimated number of vessels present (as derived from the rim data, this being the more accurate measure of the two). The exception to this is square M10, for reasons discussed below.

It might be suggested that the need to estimate the number of vessels present in any area could be obviated by reconstructing them on site. Whilst this is partially true (for example, in the case of Chapel 571 below, where the number of sherds was sufficiently small, and the types of at least some of the vessels distinctive enough to make this possible), the number of sherds from most areas, their size and their worn state make this an unrealistic proposition for an excavation season of limited duration. In the case of the pottery so far examined from the Workmen's Village, a large amount of it comes from areas of rubbish disposal where one would not necessarily expect all the sherds of a broken vessel to be present, or, if present, all to be in the same stratigraphic context: sherds could be dropped during the process of disposing of the newly broken vessel, and later get incorporated into a different phase of rubbish disposal or disappear altogether. This process is not restricted to pottery from identified rubbish dumps. The nature of occupation of a settlement site implies constant use, breakage, and disposal of pottery, and even if abandoned and thereafter left undisturbed only a very small proportion of the pottery in use throughout the period of occupation will remain in its exact original position. The task of identifying joins becomes immense, since one then not only has to take into account the area immediately surrounding, say, an *in situ* base, but also rubbish dumps and, perhaps, intervening areas. Given these constraints, the necessity to use a recording system capable of dealing with potsherds rather than complete pots is obvious. The aim of the recording must be in some way to arrive at a figure

for the pottery "population" of an area, which is the only way that useful comparisons between areas, and eventually between sites, can be made.

10.2 Chapel 571

Adjoining sherds from a number of vessels have been found scattered throughout this chapel, because of which the pottery has been considered as a whole rather than in smaller units. In very few cases do the sherds of a vessel appear to have remained exactly in the spot where broken.

The most conspicuous feature of the chapel pottery is the presence of a number of tall stands (a subdivision of group 1; *COA* type XXII), of both hollow supporting form and with vessel incorporated into the stand (see Chapter 12). These vessels show a greater degree of localisation within the chapel than any other group. Three came from within the sanctuary; sherds of another were found in the forecourt and annexe. However, since the rim forms of both types of stand closely resemble those of group 6 bowls, it may well be that the unslipped, gypsum-coated "bowl" rims in fact come from further stands. Three such groups of rim sherds can be distinguished bringing the probable total number of stands to seven; two clusters came from the chapel annexe, and the third from the interior of the chapel. The latter showed traces of burning on the interior. Of the remainder of the group 6 bowls, at least four separate vessels are present, of which two have burnt interiors. One is a small dish, *COA* type IV.7, probably used as a lamp; the other is a plain red slipped bowl. The use of this shape of vessel for the burning of incense in offering scenes is well known (Nagel 1938: 176-181); unfortunately, no trace of adhering incense has been found in any of these vessels, although it has been seen on vessels from other areas of the site (and still gives off a pleasant perfume when heated!). The other group 6 vessels are red slipped, in 2 cases polished, and in one case with an adhering gypsum coating.

Biconical jars (group 17) contribute the greatest number of vessels to the pottery assemblage from the chapel. At least nine were present (equivalent number of bases; the rim data suggests the presence of at least six), sherds of which occur in all parts of the building. These show no trace of the gypsum coat seen on the stands, but frequently have traces of a black substance around the rim on both the interior and exterior of the vessel: these are presumably traces of the original sealing of the jar.

"Hearths" (group 11) also occur in large numbers in this part of the Village: at least eight vessels are present (number of bases), and rim data suggests the same number. All but two of these have a red rim band. Only one vessel shows any trace of burning, on the interior of the vessel, but three have thick gypsum coatings over the entire surface.

Two almost identical bowls of *COA* type VI.8 (group 7) have been reconstructed. These stand out for being examples of a fabric other than the soft brown silt ware which is otherwise universal in the chapel, and also for being decorated. The fabric in this case is Hope's III.1 (a marl-silt mix with

CHAPEL 571

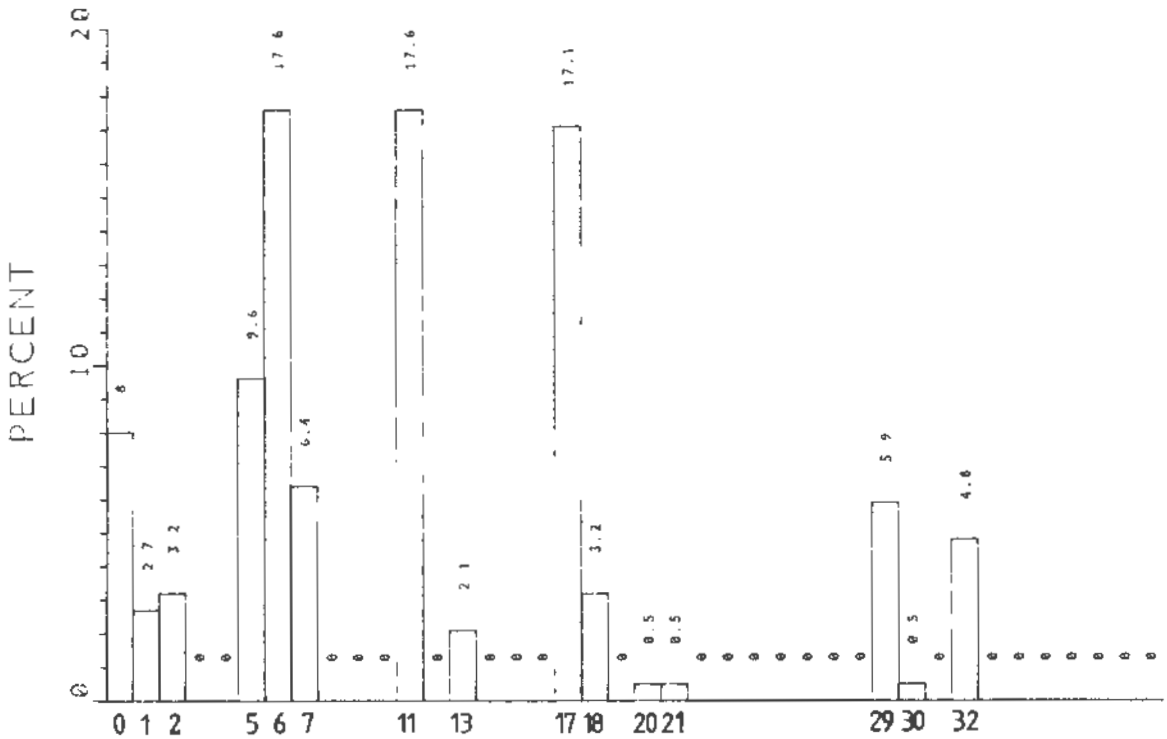

FIGURE 10.2 GROUP PERCENTAGES

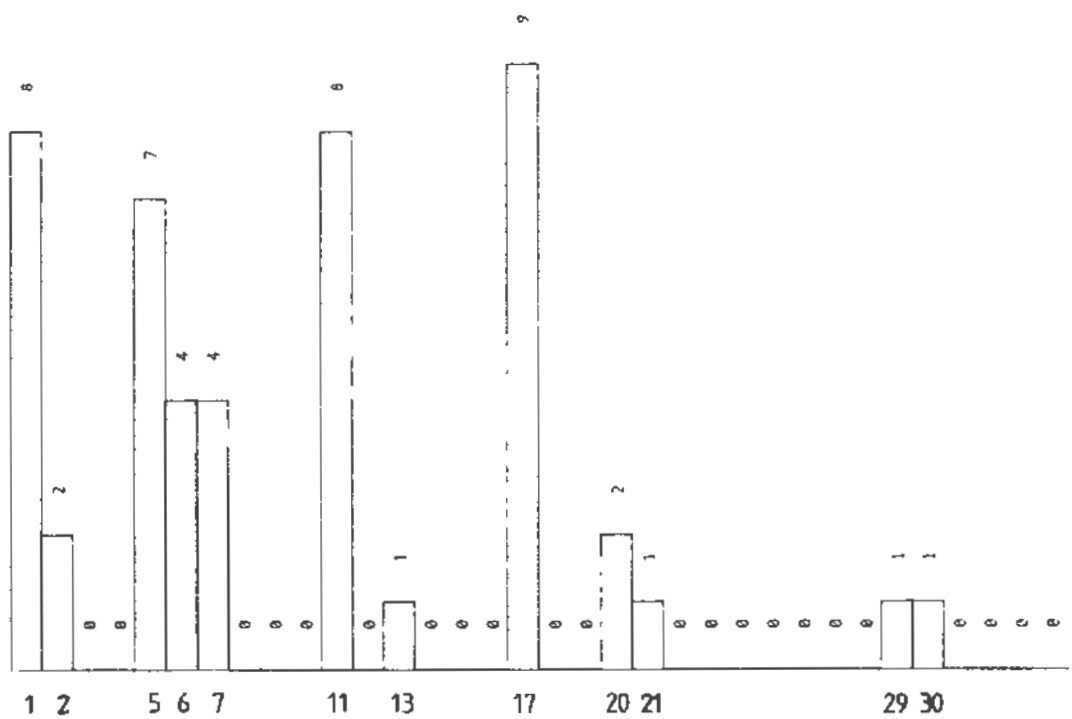

FIGURE 10.3 ESTIMATED NUMBER OF VESSELS

Figures 10.2 (above) and 10.3 (below). Bar-graphs of pottery from Chapel 571.

white-firing surface), and the decoration groups of black rim-ticks. The other group 7 "vessels" are both represented by single sherds, one a blue-painted vessel of *COA* type IX.19, the second of type V.15, decorated with black horizontal bands below the rim. None of these shows any trace of burning or gypsum coating. The single sherds may be surface debris, out of its original context, and not part of the original chapel assemblage.

Large parts of 2 platters (group 2) were also found, from various contexts within the chapel.

Considerable numbers of rim sherds from group 5 bowls were found scattered throughout the chapel. Base equivalents suggest a total of five vessels, rims at least seven - although it is noticeable that the rim equivalents rarely add up to even 50% of a vessel. This probably indicates that at least some of the sherds have moved to their find spot from some other area of the site. One such vessel is however almost certainly from the chapel, since the sherds are thickly coated with gypsum.

Large parts of single vessels found include: most of a meat jar (group 13) from the chapel annexe (T5 [623]); a large vessel belonging to group 29 but of a type not occurring in the *COA* corpus, sherds of which came from all parts of the chapel; the greater part of a small silt ware drop-shaped vessel *(COA* type XV.11) from the chapel annexe (U5 [542]), and part of a low ring stand.

Very few examples of sherds from handled storage vessels were found, apart from a large (reconstructed) fragment of an amphora of apparantly non-Egyptian fabric. In body shape it closely resembles *COA* type XVI.1, but both neck and base are missing and the fabric is not that of the usual Canaanite jar. Thin section analysis of sherds from this vessel is being carried out. One handle fragment from a true Canaanite jar, and a rim fragment from an Egyptian imitation were recorded, also one rim and handle fragment from a group 21 amphora; these seem insufficient to infer that such jars formed part of the pottery assemblage in 571.

None of the chapels excavated by Peet and Woolley shows exactly the same range of forms or quantity of pottery as seen in 571. The latter is presumably the result of recording only complete pieces, or pieces judged to be important in the context in which they were found (cf. Chapel 552, for which 3 fragments of tall stands are recorded, although none is typed to a precise form). The forms recorded from the chapels consist almost entirely of groups 1 (both tall and ring stands), 5 and 6. Biconical jars were recorded from only one context, the shaft associated with Chapel 525, and the same shaft produced the only group 7 carinated bowl. One group 11 hearth is listed in Chapel 521. The only hint of other vessel types within the chapels themselves is the mention of a tall footed goblet *(COA* type IX.15) from 530. [4]

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[4] A bread mould (group 39) was found in "Chapel" 523, but this building was not really a chapel, see Chapter 2. It belongs with others found in the dump above the Main Chapel, cf. Figure 2.13.

The contrast between the pottery assemblage from Chapel 571 and those of the earlier chapel excavations poses an interesting problem. Is the lack of group 17 jars and hearths due to the pottery recording system employed by Peet and Woolley, that is, that no complete specimens of the types were found; or does the pottery from 571 reflect a situation differing in some way from that prevailing elsewhere? The presence of the annexe to the chapel may provide the answer, possibly serving as storerooms for articles and commodities needed for use in the chapel itself. Unfortunately, the scattering of sherds from all types of vessels within the chapel complex has made this impossible to verify.

10.3 Chapel 570

Too few sherds have as yet been recovered from the chapel complex adjacent to 571 to comment on the pottery in detail. It is worth noting, however, that amongst the 58 sherds, none is from tall stands or hearths, and only one group 6 bowl sherd is included; but over half the sherds are from group 17 biconical jars. A large number of body sherds from a blue-painted jar, of which the form was not ascertainable, were found in the forecourt of the chapel.

10.4 Square M10

The rubbish-filled quarry pit (cf. Figures 6.3, 6.4), of which square M10 forms a part, is the only area of the site so far to have produced large enough quantities of sherds from a stratified sequence to be able to consider chronological changes in the pottery. However, because the quarry fill is secondary refuse (i.e. not in the spot, or even in the area where originally broken), and because only a small area of the total fill is considered here, only the unmodified rim sherd data alone is given, with no attempt to assess the number of vessels represented.

In keeping with an area of rubbish disposal, the sherds are of a small size in all levels of the fill: over 90% of rim sherds constitute 10% or less of the total rim diameter of the vessels from which they come. The lowest level does, however, show only just over 90% in this size range, whereas the uppermost has 97%. The intervening levels show a steady increase from base to top.

The range of forms encountered in the M10 pottery is far greater than that in either of the other areas discussed, even though in many cases the particular group may be represented in a level by only one or two sherds. The largest number of groups in any level is 26 in [75], and except in level (5) and (6/7/8) where the sample sizes are small, there are between 21 and 26 groups in each. Approximately the same range of types is seen in the pottery recorded from the earlier excavations within the Workmen's Village (the presence of pottery identifiable as to group from the publication is marked with an asterisk in the table of rim frequencies against its appropriate group,

TABLE 10.1: GROUP PERCENTAGES FOR M10

GROUP	1	2/3	5	6/7/8	75	79-88	
0	22.6	21.7	34.6	25.1	24.5	32.7	
1	0.5	0.3	-	0.4	0.6	1.3	*
2	0.4	0.6	3.8	0.4	1.6	1.3	*
3	-	-	-	-	-	-	*
4	-	-	-	-	-	0.2	
5	51.1	57.6	15.4	44.8	41.9	27.2	*
6	3.7	3.4	3.8	1.3	3.1	1.3	*
7	0.7	0.7	-	0.4	1.0	3.3	*
8	0.2	-	-	-	0.2	0.2	
9	0.1	-	-	-	-	-	
10	-	-	-	-	-	-	
11	2.8	1.9	11.5	5.4	7.1	8.9	*
12	0.2	0.2	-	-	1.4	0.7	*
13	0.9	0.2	-	0.9	1.1	1.6	*
14	0.8	0.5	3.8	1.8	2.9	3.1	*
15	0.1	0.1	-	-	-	-	*
16	0.6	0.3	3.8	4.0	2.6	3.8	*
17	3.9	3.8	3.8	4.9	3.9	3.8	*
18	1.6	1.4	7.7	1.8	2.3	1.6	*
19	-	-	-	-	-	-	
20	0.7	0.6	-	-	1.6	3.1	
21	1.5	0.5	-	2.2	0.6	1.8	*
22	-	-	-	0.4	0.2	0.2	
23	-	0.1	-	-	-	0.4	*
24	-	-	-	-	0.2	-	*
25	-	-	-	-	0.3	-	
26	0.1	-	-	-	0.2	-	*
27	-	-	-	-	0.2	-	*
28	0.1	-	-	-	0.2	0.4	*
29	-	0.1	-	-	-	-	
30	0.1	0.2	-	-	0.2	0.2	
31	-	-	-	-	-	-	
32	7.2	5.9	11.5	5.4	2.1	2.0	
33	-	-	-	-	-	-	
34	-	0.1	-	-	0.2	-	
35	-	-	-	-	-	-	*
36	-	-	-	-	0.2	-	
37	-	-	-	-	-	-	
38	-	-	-	0.4	-	0.2	
39	-	-	-	-	-	-	
N	987	1077	26	223	621	449	

see Table 10.1).

According to the excavators (Peet and Woolley 1923: 65) large storage jars were the commonest vessels in the Village, followed by bowls. Unfortunately no indication of the type of storage jar is given. Certainly if all storage vessels

(groups 13 to 21) recorded in the house lists are considered together, they do form the commonest "type"; however, when broken down into more homogeneous groups, no single group even approaches the number of group 5 bowls catalogued from the Village. If the excavators were referring to only one type of vessel, all record of this has been lost, and nothing in the quarry pottery suggests a preponderance of anything other than group 5 bowls. This situation could be a result of differential breakage, in that smaller, more portable, and more frequently used vessels such as bowls are more susceptible to being broken, and thus are relatively more common in rubbish deposits; but the great discrepancy, most noticeably in the upper levels, and still by no means negligible in the lowest, makes this unlikely. This may again be a factor of the old recording system, which only took complete vessels into account; interpretation is further complicated by the double renumbering of the original pottery corpus, which in some cases has made it impossible to recognise the vessel type referred to.

Red slipped bowls comprise 16% of the total assemblage of complete vessels from the Village which can be attributed to the "group" system; the next largest groups are platters (group 2), meat jars (group 13), biconical jars (group 17) and the so- called "crucibles" (group 27), each forming 6% of the total. The most marked difference between the Village pottery and that from the quarry occurs in respect of the crucibles: only 1 sherd has been identified from the quarry. It may be, however, that because of their distinctive and unusual form a disproportionate number of this type of vessel was recorded. The large quantity of group 5 sherds from M10 presumably reflects the high totals within the Village.

Decorated sherds form only a small part of the pottery from M10. Blue painted pieces outnumber those decorated in linear style, except in level (6/7/8) where they occur in equal numbers, and the quantity of both decreases from the top to the base of the sequence - the two uppermost levels containing 3.5% and 2.7% blue-painted and 1.7% and 1.0% linear respectively, and the lowest 6.9% and 5.4%. The increase in percentage of linear-decorated pieces is accounted for by the increase in group 7 bowls; that of the blue-painted sherds can unfortunately only be attributed to an increase in closed-form silt ware jars of various forms.

Discounting level (5), where the number of sherds is too few to be useful, striking variations in percentage within various groups can be seen in every level of the sequence except (1) and (2), which are very similar in content. [5] The reduction in percentage of group 5 bowls from the top to the base of the sequence is most noticeable. This may be a chronological difference, or may reflect different areas from which the quarry fill came; or it may be connected with the fact that the lowest levels contain fewer sherds of a larger size although the overall decrease in sherd size is very slight. Since the number of pottery groups represented is as great in the lowest level as in the uppermost, and perhaps therefore reflects derivation from the same source, it

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[5] Level (1), it should be noted, is merely the disturbed surface material, representing modern digging into level (2).

may be that the differences are chronological and indicate differing needs of the inhabitants.

10.5 The *Zir*-Area

The pottery from the *Zir*-Area presents greater problems of interpretation than that of Chapel 571 or square M10. Both the state of wear of the sherds (on average 14% of sherds per square being unattributable to group), and their small size (at the most, no more than 20% of the pieces in each square are of a size greater than 10% of the complete vessel diameter; the average figure is 12%) make the task of analysing the assemblage, and especially of assessing the number of vessels in use, difficult. Both the wear and size of sherds is presumably due both to intense activity in this part of the site, and to the exposure of the site to the elements.

Within each grid square, sherds from groups other than 16 *(zirs)* and 20 (short necked amphorae) rarely occur in sufficient numbers to indicate the original presence of a complete vessel, and it is only in the case of some of the *zirs* that concentrations of sherds lying in the immediate vicinity of emplacements still containing the lower part of a vessel can be taken to have come from that particular pot. There are a few exceptions to this; one occurs in square H8, where a substantial part of a group 13 meat jar was found in the sub-surface deposits, another in square F6, in which sherds were found making up an almost complete vessel of *COA* type XV.3. Sherds of an identical vessel were found in squares I7 and I8.

It is not clear how far the sherds from a vessel have spread over the area: if sherd size and wear are indeed reflections of concentrated activity, the sherds have probably moved a considerable distance from their original position. Comparison of individual sherd records from vessels with well-defined rim types, fabrics and surface treatments suggests that fragments from the same vessel could be found in up to seven different, and not necessarily adjoining, squares. The lack of structures inhibiting the spread of fragments is a factor in this. Because of these problems, the pottery from this area is presented in terms of frequency data derived from unmodified group counts; estimates of the number of vessels in use in the *Zir*-Area will be given at the end, but, because of the nature of the pottery, must be considered inaccurate.

The *zirs* appear to have been "recycled" if damaged. Several necks have been found embedded in the ground serving as stands for further vessels, and a number of loose rim sherds show the characteristic inward-sloping wear pattern of well-used potstands. In at least one case, the upper part of the vessel above the point of minimum diameter has been removed (whether deliberately or by accident is not clear), and the broken edge smoothed down flat, thus keeping the vessel in use. In one instance a piece broken anciently from a *zir* rim had been stuck back in place with gypsum plaster. The only other group showing any traces of reuse are the group 13 meat jars, two rim fragments of which had had the upper rounded part of the rim ground down

to a flat surface; the reason for this is unknown.

Unfortunately, it has not been possible to give much attention to the stratification of the area: too few sherds are present in most units to produce useful results.

The pottery assemblage from each square within the area is remarkably homogeneous. The groups represented are primarily large closed-form storage vessels: *zirs* (group 16), amphorae (groups 20 and 21), and meat jars (group 13); also smaller closed forms (groups 14 - usually *COA* types XIV.2 and XI.7 - , 17 and 18). Open forms (groups 5, 7 and 11) are in the minority. A small number of pieces from other groups are found, in each case too few over the whole area to suggest the presence of anything like a complete vessel, and they occur only in surface units. These have undoubtedly moved from their original area of deposition - in this case almost certainly from areas containing debris from, or similar to, the interior of the village, to judge from the range of groups represented (2, 3, 6, 15, 23, 24, 26, 28, 30, 34 - see Table 10.1 of group percentages from M10). They constitute only 3% of the pottery from the surface units, and have not been included in the sherd analysis. However, the presence of recognisably "disturbed" material within the surface pottery raises the possibility that other sherds, coming from groups which also occurr in the *Zir*-Area proper, have been incorporated into the data. If the sherds derive from village debris, group 5 bowls are the most likely wanderers; and in fact a much greater variation is visible between the sub-surface units and those from the surface for this group than any other. This variation seems to be more obvious in the western part of the area, where the percentage drops by between 6% and 10%; the eastern part remains more constant, showing a drop of 3-4%: however, since not all squares contain sufficient sub-surface material to enable comparisons to be made, the differences between east and west may be illusory.

The clearest indication of the original types of pottery in the *Zir*-Area comes from those sherds embedded in the hard-packed surface on which the *zir*-emplacements stood (see Figure 10.6). Too few sherds were found to enable a square by square comparison of groups present to be made, and the surface has been considered as a single unit. By far the commonest vessels are the group 16 *zirs*, rims of which form 22% of the total assemblage, followed by group 20 amphorae (13.3%) Of the latter about half the sherds are of Canaanite fabric; of the rest, about one third are from Egyptian-made imitations of the type, and the rest of a fabric of uncertain derivation - it is sufficiently dissimilar to both Egyptian clays and the usual Canaanite ware to be classified as a separate fabric. It is hoped that thin sectioning will throw some light on its origin. Next most common are the group 17 biconical jars (11.4%), group 21 amphorae (8.3%), group 14 jars (7.2%) and meat jars (5.7%). Open forms constitute only 9% of the pottery, about equally divided between groups 5 and 11 (4.2 and 4.5% respectively), with a few sherds of group 7 carinated bowls.

More detailed studies of the distribution of vessel types within the *Zir*-Area only become possible by including surface material in the analyses; and, since the range of spreading of the sherds is not clear, it seems worthwhile only to examine variation for the types occurring most commonly, i.e. *zirs*, amphorae

ZIR AREA

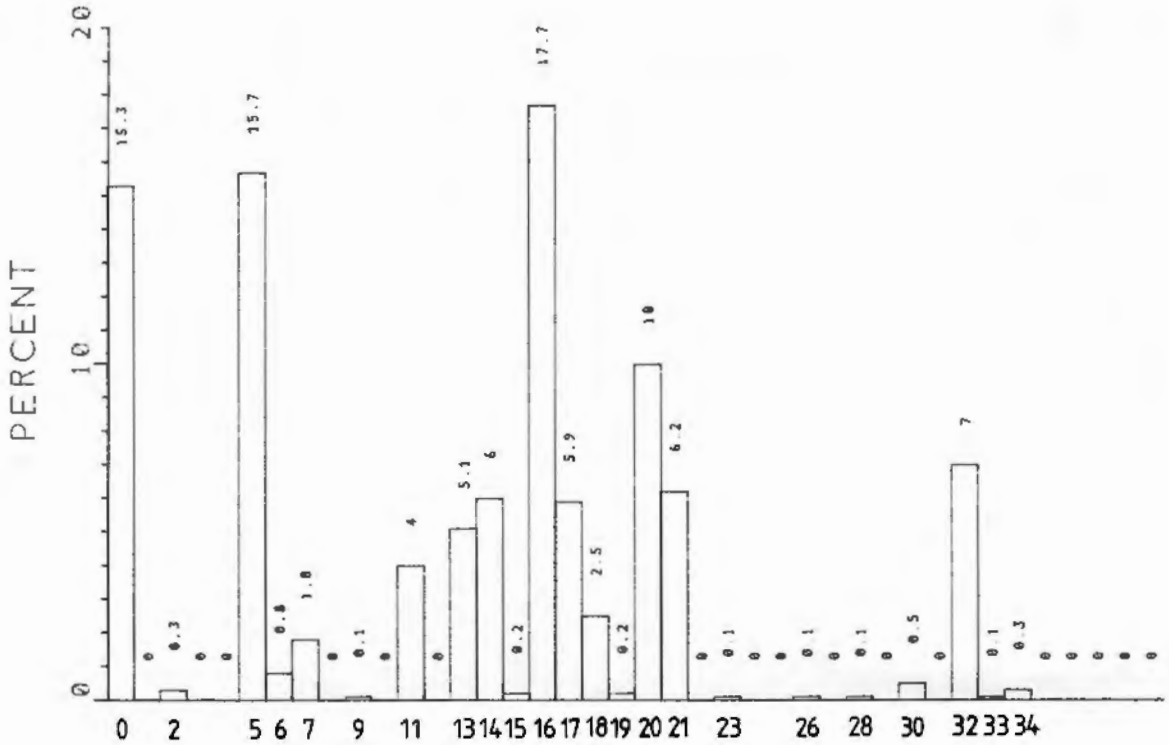

FIGURE 10.4 GROUP PERCENTAGES

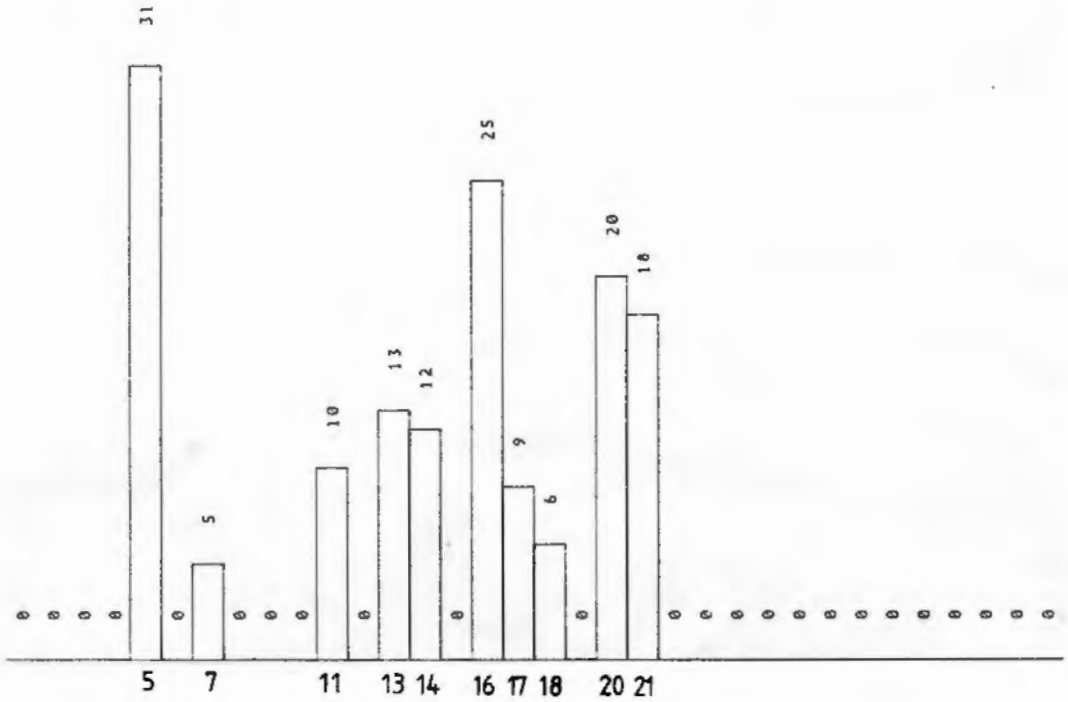

FIGURE 10.5 ESTIMATED NUMBER OF VESSELS

Figures 10.4 (above) and 10.5 (below). Bar-graphs of pottery from the *Zir*-Area.

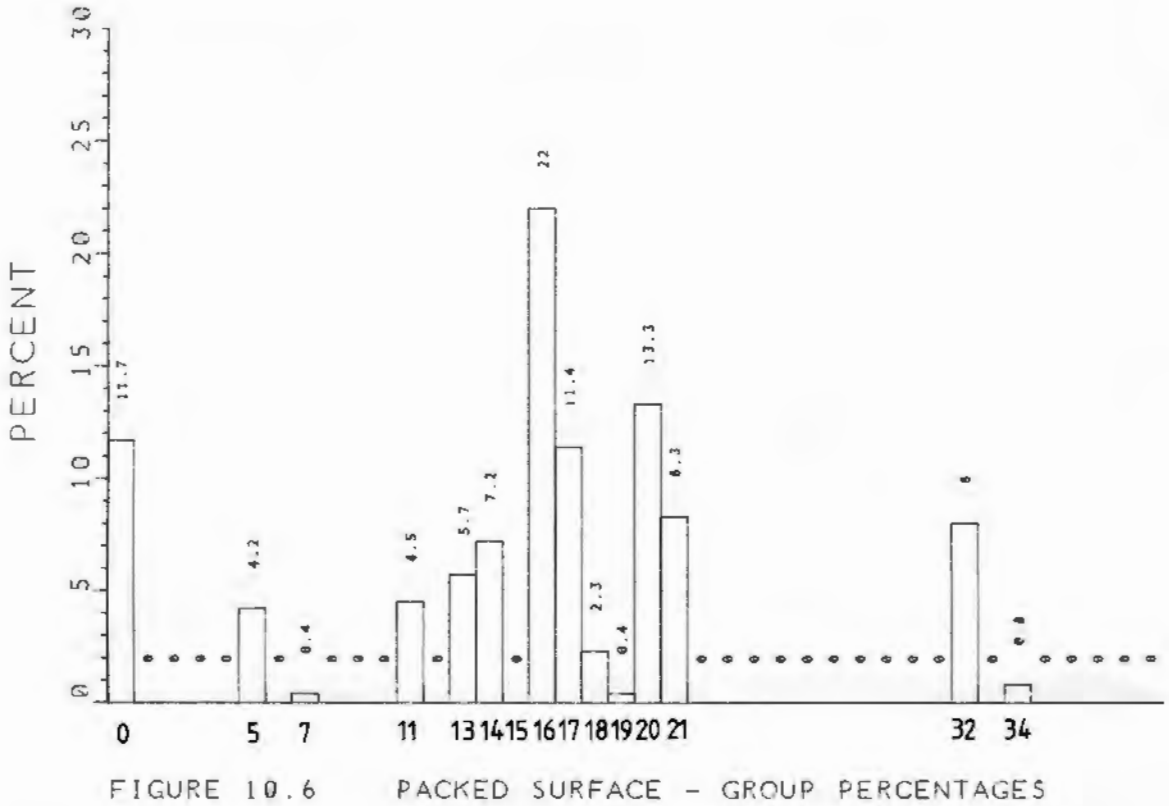

Figure 10.6. Bar-graph of pottery from the *Zir*-Area.

and group 5 bowls, where numbers of sherds are sufficient to postulate the presence of complete vessels within a limited area. It is noteworthy, however, how consistent the percentages are for the other less common types throughout the area: group 13 varies between 2% and 8% (average 5.3%), group 14 between 3% and 9% (average 5.7%), group 7 between 1% and 5% (average 2%) and group 11 between 1% and 7% (average 3.7%). Group 17 shows more variation, although only in two squares does it approach the numbers indicated by the packed surface material, in I6 (13%) and J7 (10%). Otherwise it varies between 1% and 9%.

Squares G9 and H9 are not included in the distribution analysis: the nature of their sherd content differs from that of the rest of the area. Numbers of sherds are much higher, their size is even smaller and they show considerably more wear. Groups represented are the same as in the other parts of the area, though the percentages are slightly different; this is most clear in the higher numbers of group 21 amphorae (10% and 12%), which can almost certainly be attributed to the fact that small worn cream-slipped amphora sherds (especially from handles) are more easily recognised than those of any other group. In all, these sherds give the appearance of being deliberately discarded rubbish, cleared away from the central area of activity and disposed of in the nearest convenient spot. Their size and wear would be the result of prolonged trampling before being removed.

Zirs (group 16). Range of variation between 9% (square H6) and 27% (I6); in square I7 the percentage rises to 32%, but the total number of sherds is only 47. Areas with high percentages of *zir* sherds correspond fairly well with areas containing definite *zir*-emplacements (i.e. those still containing fragments of the vessel), though neither square I7, with its single emplacement (and its low total number of sherds) nor J7 (22%) fit readily into this, unless the sherds are derived originally from the *in situ* vessels. The higher level in G7 (23%) is more surprising, since it contains no emplacements. It is possible that the sherds have spread into the square from the adjacent emplacements in H7. The figure for G7 rises to 26% if the surface contexts are excluded, and in the squares where sub-surface percentages can be calculated, these mirror fairly closely those from the total assemblage.

Amphorae (group 20). Range of variation between 4% (J6, J8) and 13% (G6) (square H8 contains 23% rim sherds from a total of 66 pieces). The lowest percentages are most noticeably at the extreme east of the area: I7, I8 J6 and J8 all contain less than 6% of group 20 sherds, whilst J7 rises to 10%. The sherd percentages otherwise remain relatively consistent.

Amphorae (group 21). Range of variation between 2% (H6) to 10% (I6) (13% in I7 but the sherd total is low). No clear patterning is visible in the distribution of this type. The sherds occur in considerably smaller numbers than the group 20 amphorae except in squares G7, I8 and J8.

Bowls (group 5). These form a harder category to analyse, because of the possibility of contaminating material from elsewhere. The range of variation is between 3% (J7) and 37% (J6). Most noteworthy is the high percentage of bowls in squares H6 (37%) and J6, and the small number (4.8%) in the intervening square I6. J8, containing 23% bowl sherds is also high; I7 and J7 are low (6.4% and 3.3% respectively) - though the size of the assemblage is too low in I7 for certain conclusions to be drawn from the figures. The rest of the area contains between 11% and 18%, with no apparant patterning, except possibly the lower percentages (11%-12%) in squares G7, G8 and H8.

The significance of these variations is hard to assess. Perhaps the clearest variation is that of the group 5 bowls with remarkably high percentages in H6 and J6 (a feature which is maintained also in the sub-surface units). In the former, the high figure corresponds to a low percentage of *zirs* and group 21 amphorae (9% and 2%); in the latter, to a low number of both group 20 and group 21 amphorae - and also to the fact that only 5% of this assemblage could not be attributed to group (11% in H6).

It has been suggested (Chapter 5) that square J8 represents something rather different in nature from the surrounding area. Whilst sherds from the units making up this square are few, they show exactly the same range of forms as elsewhere in the *Zir*-Area.

The contrast between the packed surface sherds and those from all deposits is striking for groups 5, 7 and 17. In the case of the bowls, it may be that these were not kept in the area, but were brought in by individuals for drinking or for transfering the contents of large immovable vessels to smaller more portable ones, e.g. groups 14, 17 and 18; although the diameter of the bowls will only allow them to fit into the upper "funnel" of a complete *zir*. None of the pottery types is suitable for removing the contents of either type of amphora; presumably this was done by hand or by tipping the vessel. If the latter was the case, a different type of support would be needed from the *zir* emplacements which were built up around the body of the vessel: since potstands other than the few reused *zir* necks, and the two gypsum and limestone stands are entirely absent, the amphorae were presumably supported in looser, shallow mounds of stones. The smaller storage vessels were presumably supported by pressing them into the ground, creating the numerous shallow rounded depressions seen in the *Zir*-Area. The same may apply to the group 7 bowls; the reason for the lack of biconical jars is obscure.

Decorated pottery occurs in all squares of the *Zir*-Area, constituting at the most 9% of the assemblage for both blue-painted and linear-decorated sherds. Painted pieces in both styles usually occur in roughly equal numbers. Blue-painted pieces come from a wide range of forms, most commonly *zirs* and simple biconical jars; sherds also occur from what appears to be a painted version of *COA* type X.6 (from a subsurface context), a finer, more thinly-walled XV.1, and an open bowl of group 5 type. In all cases the decoration is in the form of plain bands and bands of petals. Numerous decorated body sherds were found, all from closed-form silt ware vessels. No trace of any blue-painted decoration was found on non- silt ware fabric. The linear style is here usually found on vessels of *COA* type XI.7, and consists of rim ticks and cross-hatched banding encircling the shoulder (see *COA* I, pl. XII, no. 1 for two complete examples found in 1922). The second major category with this type of decoration is group 7 (carinated bowls); the only other type of vessel is represented by at least 5 sherds (including rim, handle and base) of *COA* type XIX.4 (see *COA* I, pl. XLIV, no. 1 for the type of decoration). These fragments were spread over four squares: G6, H6, G7 and G9. This may suggest the presence of such a vessel in one of the former squares, sherds of which were, on the breaking of the vessel, swept away with other rubbish from the area.

All the sherds from the *Zir*-Area have been used to calculate the number of vessels in use. No square by square estimate has been made, for reasons given above. The figures given are likely to be over-estimates, at least in the case of the group 5 bowls and group 11 hearths; however, in some groups, most noticeably 13, 14, 16 and 21 similar sherd records frequently added up to one or more complete vessels. Figures were calculated without reference to the group percentages, but in most cases seem to mirror these in terms of relative frequency. An exception to this is the high numbers of group 13 meat jars when compared to their relatively low sherd percentages. This is because the sherds from this particular type are bigger than those of most other groups, only those of groups 20 and 21 being larger; the size difference would also account for the higher numbers of group 21 amphorae. Estimates of numbers derived from base counts indicate roughly twice as many vessels in groups to

which a single base type can be attributed; similarly, the estimates from base types belonging to several groups are usually considerably higher than the sum total of vessels from those groups as taken from the rim percentages. The discrepancy arises from the difficulty of calculating the percentage preserved of many bases, and in being over-generous in attributing distinctive sherds which are either known or can be seen to come from near the actual base of a vessel to the vessel itself. The estimated numbers for all vessel groups given in Figure 10.5 are therefore taken from the rim data.

The group 14 vessels break down into three different types: *COA* type XIV.2 (9 vessels), type XI.7 (3 vessels) and two others which are not attributable to a precise type. The vessel of *COA* type XIX.4, a type which had not previously been incorporated into the group system because no examples had been found during the current excavations, has been included here in group 21; ideally it should belong to a distinct category.

10.6 Conclusion

The analysis of the sherds from different areas around the Workmen's Village clearly indicates that each was characterised by a distinctive pottery assemblage. These are distinguished by both the presence of types found only in one context (for example, the tall stands in Chapel 571), and by differences in the frequency of occurence of other more common types. Future examination of the sherds from the other areas of excavation will, it is hoped, produce either further distinctive groupings of vessels, or groupings showing similarities to those already known, thereby suggesting possible similarities in use.

The interpretation of the different assemblages is considerably more difficult, since in only a few cases is the use of a specific vessel type known; most pottery must have served a multitude of purposes, and even the "known" types were probably reused after their contents had been finished. Thus interpretation as yet can only be of the most simple kind: areas of storage, or area of religious use. Indeed, it may well be that the significance and use of each and every assemblage will never be fully understood.

However, the potential of the pottery analysis is greater than simply pinpointing areas of similarity in use, or deducing the characteristic pottery assemblages of types of buildings. A preliminary survey of sherds collected during work at the North City (Kemp 1983: 15-21), carried out by Paul Nicholson of the University of Sheffield, indicates a very different bias in both the relative frequencies of fabric types and of forms to the situation at the Workmen's Village. One deduction from this might be that the pottery associated with buildings belonging to members of a higher social class differs quantitatively from that of the lower orders - in this case the "status" wares seem to be the hard amphora fabrics with cream polished slip, from amphorae, pilgrim bottles and one-handled jugs (groups 21, 24 and 25). Thus excavations over a wider area, at Amarna and at other sites, may well provide insights into social conditions governing pottery distribution and into the Egyptian

pottery industry itself.

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