

The use of pierced pottery at Heybridge

Introduction

Vessels which have been pierced either before or after firing (and before or after breakage) have long been recovered from excavations. Perforations can occur as either single or multiple instances, the latter can be grouped or spread over the surface of the vessel. Very often these perforations have been dismissed either as repair holes or the like, or vessels have been given catch-all labels such as sieve/strainer, colander and cheese press. With little further thought, they are occasionally named 'incense burners' or even 'wine coolers'. Analysis, particularly of post-firing holes, is informative and a variety of alternative interpretations are given below. That such a large number of vessels were recovered at Elms Farm, which had either pre- or post-firing holes enabled the gathering of sufficient data for a wide-ranging study. In particular, the number of vessels with post-fired holes, in excess of 150, presented the statistical data for a comprehensive study of the phenomenon.

Pottery with one or more piercings can be divided into several groupings; the principal division is into either perforations which were made before firing or those made afterwards. Perforations made while the clay was malleable indicate that the vessel was manufactured to perform a specific function. Those made after the pot had been fired might have been for a variety of reasons and examples of these can be found below. Many works were consulted during this analysis and opinions as to the functions of pierced vessels are diverse. A list of comparanda appears in the research archive, along with full details and measurements for all of the vessels found at Elms Farm. A report by Dr Paul Sealey on the spouted strainer-bowls from Elms Farm, and a set of notes on cheese presses and funnels by C.R. Wallace, can also be found in the research archive. This study has benefited from their contributions.

Frequency and zonation

The number of vessels with post-fired perforations far exceeds those which were purpose-made. This might indicate difficulty in obtaining function-specific vessels, but more likely demonstrates the ease with which locally-made pottery could be adapted to suit the purpose required. The distribution of both purpose-made and utilised vessels follows a similar pattern (Fig.00). Three-quarters of the total were found in the southern and northern settlement zones. That few were recovered from either the central zone or the hinterland, indicates that the activity represented by the use of pierced pottery was largely domestic in character.

Zone	Northern	Central	Southern	Hinterland
M1 Strainers	4	1	6	-
M2 Strainers	1	2	5	2
Cheese Presses	3	2	1	-
Funnels	3	2	8	-
Total purpose-made vessels	9	7	20	2
Post-fired perforations	38	29	74	9
Totals	49	36	94	11
Percentage of total	26	19	49	6

Table 00. Distribution of all pierced pottery types by zone

Pre-firing perforations

Strainers and strainer-bowls

Vessels pierced with multiple holes before firing are perhaps easiest to assign a function. In general, such holes are small in diameter and closely-spaced, perhaps indicating the ease with which soft, or even leather-hard, clay can be pierced with a pin/needle, sharpened twig, or nail. The majority of these vessels may be considered to be purpose-made strainers, comprising a group of mainly bowl-shaped vessels with a panel of holes which is usually confined to the base (Gillam 1970, type 348; *Cam* 298; Going 1987, type M2). A second group, allied to these simple strainers, comprises spouted strainer-bowls (*Cam* 322/3; Going 1987, type M1). These vessels incorporate a pierced strainer-plate, which is applied to the vessel wall behind the spout. Once separated from the parent vessel by breakage, these strainer-plates can cause difficulties in identification due to the similarity with the panels from M2 strainers. Generally, M1 spouted strainer-plates are roughly finished on the side covered by the spout, as, during manufacture, the panel appears to be pierced after its attachment to the vessel, and is an internal surface not meant to be visible. In contrast, the panels from M2 strainers are usually well-finished, internally as well as externally, as both sides of the strainer panel are on view. Confusion with funnels (see below) can also arise when the spouts become detached. This problem is harder to resolve, unless identifying details survive. In her survey of late Iron Age pottery, Thompson (1982) describes two forms of strainer, both in grog-tempered fabric: S1 Strainers (1982, 559), which are equivalent to Going's M2, and S4 Strainer-spouted bowls (1982, 567), equivalent to Going's M1. Fragments of both types of strainer were found at Heybridge.

M1 strainer-bowls fall into two classes, *Cam* 322 and *Cam* 323 (Hull 1958, fig.121; 1963, fig.105). Although there is significant variation in detail within both types, the broad categories are useful because they derive from two quite different metal prototypes; a rounded and a carinated form respectively (Sealey 1999, 119, 121). Sherds of both forms were identified at Elms Farm, plus fragments of strainer-plates which could have come from either vessel type, amounting to a minimum of eleven vessels; all are grog-tempered. These vessels are not common, although examples have been found elsewhere in Essex, notably at Sheepen (Niblett 1985, fig.33) and Ardleigh (Sealey 1999, fig.82). A rounded strainer-bowl was found at Langford Junction, Heybridge, in the 19th century, and incorporated into the Fitch Collection (Wickenden 1986, fig.26.31). Carinated spouted strainer-bowls have late Iron Age origins, but the devolved, rounded form continues into the 2nd century. The vessels from Elms Farm are all from 1st century AD contexts, and the two rounded strainer-bowls (Fig.00 no.00) are the only examples of the *Cam* 322 family to come from late Iron Age contexts in Britain. A further example of the rounded type was found at Chelmsford in a context dated AD120-40 (Going 1987, 35, M1.1; fig.26.189).

These vessels have long been regarded as British accessories at wine-drinking ceremonies, but current evidence demonstrates rather that a form of 'Celtic beer' was being prepared (Sealey 1999, 122-3). This drink is attested in texts such as the Vindolanda Tablets, and known in antiquity as *cervesia* (Bowman and Thomas 1983, 91 no.12). Only three of the ten contexts with spouted strainer-bowls at Elms Farm also have wine amphoras and the lack of associations between strainers and wine amphoras lends weight to the view that the drink served was a native brew, as has

been noted elsewhere (Sealey 1999, 123). It is also significant that there were no spouted strainers among the impressive suite of imported fineware, Dressel 1 wine amphoras and grog-tempered vessels from pyre-debris pit 15417 (ref. burials).

Class M2 strainers are more common, although no intact or even substantially complete examples were found at Elms Farm. These vessels usually take the form of shallow wide-mouthed bowls, sometimes with round or sagging bases, but more often flat-based. The type-vessel for *Cam* 298 (Hull 1958, fig.67.89) has an out-turned rim and grooves on the shoulder. A similar vessel, but with a sagging base, appears in May's catalogue of Roman pottery from Silchester (1916, 119, type 70), but the vessel illustrated by Gillam (1970, type 348) has a hemispherical profile with a thickened, slightly out-turned rim. The piercings of the latter extend beyond the base to cover the bottom half of the vessel. The recovery of intact vessels is relatively rare, and unless fragments of the strainer are found, identification is difficult. Rim and upper wall sherds would probably be classed as bowls. Fragments of strainer panel do not in themselves indicate the full form of the vessel. This is the case at Elms Farm, where eleven fragments of strainer panel were found. Ten of these are flat, some with the lower wall of the vessel still present, and the eleventh is curved. Enough survives of the walls of six examples to indicate that they came from bowl-shaped vessels. The curved sherd could have come from either a sagging base, such as the Silchester type 70, or from a hemispherical vessel like Gillam's type 348. Although this type of strainer is relatively common, there are few published examples, perhaps demonstrating the usually fragmentary nature of such vessel finds. There is one example in the Fitch Collection from Heybridge (Wickenden 1986, fig.26.38) and a grog-tempered bowl, half-complete, came from Ditch CF101 at Woodham Walter (Rodwell 1987, fig.22.146). M2 strainers are a long-lived type, occurring throughout the Roman period.

Funnels

A vessel class which may be allied to strainer-bowls, and which can also be misidentified if fragmentary, is the funnel (Going 1987, 35, class N). A detached funnel spout could be mistaken for the spout from a strainer-bowl, rimless spouts probably mistaken for flask fragments or flagon necks, and rim and upper wall sherds would be classed as bowls. Their function seems to be straight-forward, but funnels could have been used in conjunction with cloth, or other organic material, in order to act as strainers. Going gives the vessel class four sub-types, although the N1 funnel depicted could be a handled bowl (1987, fig.18), and there is very little typological difference between the remainder (N2-N4). Other published examples are very rare; a near-complete example, in Verulamium Region parchment ware, was found at the King Harry Lane site (Rigby 1989, fig.36.12). A second near-complete funnel was found at Baldock (Rigby 1986, fig.134.386). Interestingly, this vessel is in mica-dusted ware, normally taken as an imitation of metal prototypes. A variation of the form, in hard buff ware, was found at Richborough (Cunliffe 1968, pl.lxxvi, no.594). This vessel had an internal perforated strainer-plate attached at the junction between the body and the spout. One of the funnels from Elms Farm has a similar attached strainer-plate, but this funnel is in grog-tempered fabric. No complete funnels were found at Elms Farm, but fragments from twelve different vessels were identified; one in Colchester buff ware, six in grog-tempered fabric and the remainder in black-surfaced ware. It seems that funnels had their origins in the late Iron Age, although

Thompson does not include funnels in her corpus (1982). The form seemingly continued late into the Roman period.

Considering the lack of published examples, and thus implied rarity as a vessel class, it is noteworthy that so many examples were found at Elms Farm. The number of funnels, in conjunction with the relatively large number of strainer-bowls, suggests perhaps that ale-making was a common activity. There is a fragment from a curious cone-shaped vessel at Elms Farm [Fig.00, archive 3004] which may have been made in order to perform the function of a funnel. Presumably, fragmentary vessels, such as flagon necks, could have been used as makeshift funnels, too. A coarse grog-tempered jar found at Kelvedon (Rodwell 1988, fig.84.139) had the rim and base removed and was then carefully filed down perhaps to make a funnel. An enigmatic sherd in coarse oxidised ware illustrated by Symonds and Wade (1999, fig.6.28, no.826) may belong to this vessel class. There is no description, but the illustration implies use as a funnel at least after breakage, if not before. Funnels and makeshift funnels may have been used to transfer liquid from barrels into narrow-necked vessels, or for decanting wine from amphoras into flagons. Jars with holes made in their bases after firing (see below) could also have been utilised in this way, either as strainers or funnels, or as a combination of both.

Cheese presses

A further vessel type which has pre-firing holes is the cheese press or cheese wring (Gillam 1970, type 350; *Cam* 199), six examples of which occurred at Elms Farm. These are usually thick-walled and flat-bottomed, with internal concentric ridges and channels in the base, and a high central point. They are pierced at intervals along the base of the channels, and also in a row along the mid point of the vessel wall. Flat, correspondingly pierced and ridged discs, known as cheese press lids, were also made. Both types of cheese press are not common in Britain, so the six examples found at Elms Farm represent a relatively large collection, second in Essex only to the number found at Colchester. There are four instances of the vessel itself, two in black-surfaced ware and two in Colchester buff ware, the latter pierced with square holes. There are two examples of the cheese press 'lid', also in black-surfaced ware.

Seven cheese presses, all in buff ware, were found at *Camulodunum* (Hawkes and Hull 1947, tables, pp 277-81). None was found in pre-Neronian contexts (Hawkes and Hull 1947, 256). Part of a typical base in red-buff ware, with concentric ridges and perforations, was found in the kiln excavations of 1959 (Hull 1963, 134). Further examples have been found in the *colonia*, mainly in buff ware and most commonly in 2nd century levels (Symonds and Wade 1999, 476). Most cheese presses made in the Colchester kilns are pierced with circular holes (Symonds and Wade 1999, fig.6.27, nos 797-802), although some are pierced with square holes, probably by using a nail (fig.6.27, nos 803-8). Further cheese presses in other fabrics, including sandy grey wares, occur in the *colonia* (e.g. fig.6.82, no.804). It would appear that these vessels were manufactured for the inhabitants of the *colonia*, probably indicating a military association, and that the main period of use was between the mid 1st and early 3rd centuries. Cheese presses were also made nearby at Ardleigh, mainly in Roman grey ware (Going 1999, fig.103, nos 137-40).

Examples from elsewhere in Britain mainly follow the mid 1st to early 3rd century dating of the Colchester vessels. At Dragonby, Swan noted that, in the latter part of

the 1st century AD, the use of cheese presses (and tripod vessels) was not intrinsic to the local native traditions of preparing and serving food (May *et al.* 1996, 576). Pottery cheese presses seem to be an early Roman introduction, and the evidence at Elms Farm does not conflict; the stratified examples coming from contexts of mid 1st to mid 3rd century date. Later production of the form is attested at the Oxfordshire kilns (Young 1977), but their distribution does not seem to be widespread. There seems little reason to doubt their function as cheese presses. The diameter and hole-spacing of Roman pottery vessels accords with those of the post-medieval chessil or chesset (Vince 1982, 46-7), although the post-medieval vessels are wooden. The probability is that the majority of Roman cheese presses were also wooden, perhaps thus explaining the apparent rarity of pottery examples.

The purpose-made cheese press fragments found at Heybridge demonstrate the diversity of form and detail which can occur with these vessels. The vessels would probably have been used to produce small 'family-sized' cheeses, perhaps made from goats' or sheep's milk. It seems unlikely that the flat, pierced discs commonly known as lids would have performed such a function, as the vessel holes allow excess liquid to drain off while a weight is applied to the cheese from above. It is possible that the discs were used to press cheese in conjunction with other vessels, jars or wooden bowls perhaps, or used for stacking small cheeses during pressing. The necessity for pottery cheese presses to have the internal ridges cannot be satisfactorily explained. The comparable, wooden, post-medieval chessets appear to have plain, smooth, internal surfaces. Frequent cheese-making at Heybridge was highly likely, given the obvious presence of sheep/goats (ref.), and the range of domestic, manufacturing and preparation activities attested in this essentially agricultural settlement.

Other vessels

Other vessel types with pre-firing perforations are uncommon site finds. These include triple vase cups which can have a pierced plate between the cup and the base-ring (Gillam 1970, type 344; *Cam* 494), and bowl-shaped vessels with an internal pierced flange, variously described as colanders, 'wine-coolers' or 'incense-burners' (Gillam 1970, type 349; *Cam* 387). Neither of these vessel types was definitely identified at Elms Farm. The *Cam* 387, in particular, is usually found on sites with Roman military associations, and is normally in a pale self-coloured fabric, sometimes red-painted as at Silchester (May 1916, 119, type 71). An example in Local Marbled Ware occurred at London (Davies *et al.* 1994, 123; fig.104.679), also recorded by Marsh (1978, 181, type 45) where parallels are cited, followed by a discussion of their possible function. Given the rarity of this vessel type, it is unsurprising that none was found at Elms Farm. The choice of fabric, coupled with its rarity, might indicate that it is a specialised tableware not in common usage.

Post-firing perforations

In comparison with the vessel types with pre-firing holes, vessels which have been pierced after firing are perhaps more difficult to allocate a definite function. They are also more prolific. The excavations at Elms Farm produced more than 150 examples of vessels pierced in this way, for which detailed data are held in the archive. Conclusions cannot be drawn from the many pierced sherds which are now isolated from the parent vessel, giving little clue as to their function. However, the assemblage contains enough substantial fragments and reasonably complete vessels to allow several observations to be made. These observations go some way towards an understanding, or at least an appreciation, of this phenomenon. Most vessels are pierced in the base (65%), and the fewest through the neck, below the rim (8%). Of the holes which appear in bodysherds, very few could be assigned to the shoulder of the vessel (seven out of 41 examples), although the highest individual hole counts recorded were in the shoulders of jars (12 and 13 respectively). The probable reason for this high figure in vessel shoulders is discussed below. Single holes were the most frequent at 72% of the total pierced vessel assemblage; single holes in bases being the most common of these. The fragmentary nature of the assemblage is demonstrated by Table 00 below, where it can be seen that most body and rim sherds recovered have single holes only, giving no indication of the number of holes once present in the vessel. Complete bases with multiple holes are relatively rare, with only twelve definitely having three or more holes, although the large number of fragmentary bases makes the calculation of numbers difficult. At least forty of the part-bases examined could have had more holes than were extant, and a significant proportion, almost half of the total, obviously did. Bases with multiple holes are thus certainly under-represented in the sample. The number of holes per vessel, as found, and their position on the vessel is shown in Table 00. The figures represent the holes in complete vessels or whole bases; for these the exact number can be given. Brackets around a figure indicate the number of holes present in an incomplete base or in a sherd, i.e. the minimum likely to have been present when the vessel was whole.

Position	Number of holes per vessel								Total
	1	2	3	4	5	7	12	13	
Base	38 (30)	1 (8)	5 (7)	4 (1)	3	(1)	-	-	98
Body	1 (27)	2 (5)	(3)	-	-	(1)	(1)	(1)	41
Rim	(12)	-	-	-	-	-	-	-	12
Total	108	16	15	5	3	2	1	1	151
Percentage	72	11	10	3	2	1	<1	<1	

Table 00. Number of holes per vessel, with their position on the vessel

Where measurable, hole diameters seem to show some patterning (Table 00). Holes in bases tend to range between 2 and 10mm, with occasional examples in the range 11 to 20mm. Two clusters form around 5mm and 10mm. Holes in bodysherds are heavily biased towards the lower end of the range, with 29% measuring 3mm, and an additional even spread between 5 and 19mm. Few holes made in the neck of a vessel exceed 3mm, although only twelve examples of pierced necks were recorded. Very nearly all perforations (*c.* 90%) seem to have been drilled, mainly from outside the vessel, but, in a few instances, from the inside. For a complete vessel, drilling from the inside must have proved difficult, unless the vessel had a wide mouth. Just ten of the vessels in the study had holes made from the inside, eight of which are single and

central in bases. Holes made from the inside are perhaps more likely to indicate utilisation after vessel breakage.

Position	Hole diameter (mm)																			Total
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	18	19	20		
Base	5	3	8	9	6	8	3	7	10	2	1	1	2	2	1	1	1	2	73	
Percent	7	4	11	12	8	11	4	10	14	3	1	1	3	3	1	1	1	3		
Body	1	11	6	1	3	2	2	2	2	1	1	-	2	-	-	1	1	-	38	
Percent	3	29	16	3	8	5	5	5	5	3	3	-	5	-	-	3	3	-		
Rim	2	6	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	12	
Percent	17	50	8	8	8	8	-	-	-	-	-	-	-	-	-	-	-	-		
Total	8	20	15	11	10	11	5	9	12	3	2	1	4	2	1	2	2	2	123	
Percent	7	16	12	9	8	9	4	7	10	2	2	1	3	2	1	2	2	2		

Table 00. Hole diameter in pierced vessels

Besides circular, or near-circular holes, there are twelve examples of jars with a single, large, sub-square perforation made in the base. These vary in dimensions from as little as 16 x 17mm to 40 x 48mm, with an average of 22 x 27mm. Quite how these holes were made is unclear, and it is not known how easily a hole can be knocked through a jar base without breaking the vessel. The base may have been drilled first, in which case some of these sub-square holes could have been formed through breakage and the vessel may have had several holes originally. However, this possibility appears not to be the case for every example; there is evidence that the majority of these holes have been made carefully with a pointed instrument. Even within the single category of holed bases, there is likely to have been a diversity of intended use. This is demonstrated in the wide range found in the count, size, shape and configuration of the perforations.

The distribution of vessels across the site by Area is uniform, but with slightly more vessels appearing in Area Q, in the southern settlement zone, than elsewhere. This is accounted for in part by the number of pierced vessels (at least twelve, discussed below) which were found in the fills of the same pit, 17177. Table 00 shows the distribution of perforated vessels across the site by settlement zone. It can be seen that the highest proportion occurred in the southern settlement zone, which is characterised by a large amount of pitting, thought to be essentially of domestic character..

Zone	Northern	Central	Southern	Hinterland
Number	38	29	74	9

Table 00. Distribution of post-firing perforated vessels by settlement zone

Pierced sherds occur in a number of different feature types, with more than half coming from pit fills, and 14% coming from ditches and gullies. Within these two classes of feature, most occurred in top or single fills, with the highest proportion within intermediate fills of pits. Layers and spreads account for a further 15% of pierced sherds and another 13% were found with the unstratified material. The variety of feature types coupled with the concentration of pierced sherds in pits of the southern zone suggests that the deposition of most pierced vessels is likely to be associated with domestic rubbish deposits. The fragmentary nature of the pottery, the number of grog-tempered pierced vessels found in contexts of later date than the currency of the pottery, plus the high percentage recovered from top and single fills, lends weight to this suggestion. The distribution through time reveals a higher

percentage of pierced vessels in the late Iron Age and early Roman period, with 74% either occurring in contexts dating up to the late 1st century AD, or being grog-tempered vessels of intrinsic late Iron Age date.

Vessels with post-firing holes are common site finds, with a widespread distribution in Britain, but very many are dismissed with little further comment (*e.g.* at King Harry Lane; Rigby 1989, 203), particularly if not interpreted as repairs. A large number of vessels were recorded at Roman Colchester (Symonds and Wade 1999), where they are described as sieves or strainers (*e.g.* 1999, 416; fig.6.82). At Kelvedon, several pierced vessels are illustrated, including three recovered from 1st and 2nd century graves. All three contained the cremated bone; one jar had four holes drilled in the base, and the other two jar bases each had a single central hole made after firing (Rodwell 1988, figs 87 and 88). Vessels with post-firing holes were found in the late Iron Age cemetery on the route of the A27 bypass at Westhampnett (Mephram 1997, 130). The jar in Burial 20384 had two holes just under the rim, one either side of a dunting crack. Another from Burial 20029 had a row of repair holes on either side of an ancient break. Finds of pierced vessels found in graves are commonly assigned a ritual function in themselves (*e.g.* Great Dunmow; Going 1988, 23), although closer study might reveal a more mundane reason for the piercings. This is evidently the case with the pots from Westhampnett, at least.

It can perhaps be seen that pierced pots in burials do not necessarily hold any particular significance. The selection and deposition of functional vessels in graves is common practice. At King Harry Lane, the obviously-repaired vessels outnumber those pierced with just one or two holes each. Even these holes could have been functional; those near the rim used for suspension, for instance. This is true of the bowl from burial 20451 at Westhampnett (Fitzpatrick 1997, fig.91); the vessel could quite easily have functioned as a cheese press before deposition in a grave. The perforated cinerary containers at Kelvedon (Rodwell 1988, fig.87, G5, G14; fig.88, G74a) may also have held no additional ritual significance as a result of being pierced. There is evidence that cinerary containers are not necessarily new, unused vessels. Many have external sooting, or interior lime-scale, and the fact that repaired vessels are routinely found in graves may demonstrate a prior role. That a pierced vessel may have had a mundane function did not preclude its use in a funerary context, although pre-existing holes may have influenced its selection. By analogy, it can be suggested that the piercing of any vessel had little religious or superstitious significance, although ritual aspects probably cannot be entirely ruled out.

Although large numbers of pierced vessels are found on sites throughout Britain, studies have not normally been carried out. A study of sorts was made a number of years ago for vessels found at the Meare Lake village (Bulleid and Gray 1948). The number of vessels with holes recorded was seventeen, most made after firing (1948, 20). Use as sieves was implied for all examples. A variety of functions for more recent finds has been postulated, ranging from the mundane – strainers, sieves, funnels – to the more imaginative – chafing dishes, braziers, flower pots and beehives. Pierced jars found in an abandoned fish-pond at Shakenoak, Oxfordshire, were thought to have been associated with fish-farming (Brodrigg *et al.* 1978, 18; Hands 1993, 154). More recently, at Brightlingsea, the lower half of a flagon which has a pierced base and regularly-spaced holes along the girth was thought to have been ‘ritually killed’ (Martin 1996, 313). However, this vessel might just as easily have

functioned as a cheese press. Establishing a ritual connection is very difficult unless it can be demonstrated that holes were made at the time of deposition, or other factors are present that would indicate a ritual deposit. That pottery was used in ritual connections is not in dispute, although the frequency of this activity is not likely to be high. Of the 150 or so pierced vessels at Elms Farm, only six vessels, less than 4% of the total, could reasonably be interpreted as having been ritually holed.

Ongoing excavations at Dovehouse Field, Cressing, have revealed just such a deposit (Bennett (ed.) 1999, 218). A number of vessels, along with loomweight fragments and apparently-selected animal bones, were found in the terminal of a late Iron Age ditch. A large, near-complete tazza-bowl (*Cam* 210) from the group had a square hole cut in the centre of the base. The pot had evidently been well used; the exterior is sooted and the interior is coated with a limescale deposit. The hole had been cut through the deposit, but the edges of the hole remain limescale free. The pot had clearly been deposited not long after the hole had been cut through the base. The composition of the deposit, coupled with its location in the terminal of the ditch, indicates a likely ritual explanation both for the deposit and for the pierced pot. A tentative case could be made for suggesting that single, large, sub-square holes cut into the centre of vessel bases are more deserving of a ritual explanation. Three of the jars found in ditch 25274, see below, each had single, large, central holes (archives 3103, 3104, 3106), and were likely to have been intact when buried. The single central perforation in the cinerary container in grave 74 at Kelvedon (Rodwell 1988, fig.88) appears to be large, and a section of the rim is also absent (Rodwell 1988, 119). An accessory vessel in the same grave, flagon 74b, has a circular hole in the side (Rodwell 1988, fig.88). There is difficulty in assigning a function for this perforation, and a ritual explanation could be proposed for the holes in both the flagon and the urn.

The consensus from a number of reports seems to be, however, that the majority of vessels with post-firing perforations in the lower body were used as strainers or in cheese-making. Jars with bases having a single central hole could perhaps have been used as funnels. The contextual evidence at Elms Farm certainly supports a view that the vast majority were use-vessels; there are few examples where a ritual explanation could be substantiated. Exceptions which might have ritual significance are the two pairs of jars from ditch 25274, a jar from pit 20008 (KPG17), and the near-complete *Cam* 204 jar recovered from pit 14579 [ref. ritual]. The latter has a large irregular hole at mid-girth, which appears to have been deliberately made rather than be accidental damage. The pedestal may also have been deliberately trimmed away, although pedestals were luted onto the body and this may simply have become detached. The deposit of two pairs of jars in the same ditch, 25274, is noteworthy, however. Each pair was buried approximately 2m apart, apparently intact except for the central piercing in the bases of three of them, and the small hole in the base of the fourth. It is not certain that the perforations were part of the procedure which led to the jars being placed in the ditch. Most of the pierced vessels from Woodham Walter had single central holes in the base, including two in the large ceramic assemblage recovered from Ditch CF101 (Rodwell 1987, fig.22, nos 133, 141). This is now thought to perhaps represent a closure deposit, or rite of termination (Wallace 1989, 172), although Rodwell considered that the deposit was the result of a 'domestic calamity' (1987, 39). The two pierced vessels have lost separate ritual significance against the mass of other pottery buried with them.

Although many of the previously postulated functions for holed vessels are unsatisfactory, the specific functions for the pierced vessels found at Heybridge are hard to define, mainly due to the lack of conclusive evidence once pots are discarded. Repair holes are perhaps the easiest to categorise, although the smaller the vessel fragment the more difficult this becomes. When a large part of the vessel is present (cf. Fig.00 archives 2183, 3105), pairs of holes on either side of a crack are easily identified as repairs. The shoulder hole in the jar from pit fill 4140 (Fig.00 archive 1308) is probably from a repaired vessel, although only a small part of the jar remains. A hole pierced in the wall of a *terra nigra* platter (cleaning layer 8500, not illus.) is also likely to be for a repair. These holes are close to a break, which may be an old fracture re-broken, accompanied by the loss of the sherd with the opposing repair hole. Holes in rim sherds could also have served to repair dunting cracks in whole pots (cf. the repaired vessel from Westhampnett), although suspension is another possibility. It may not be a coincidence that most holes found in the body or neck of a vessel measure 3-4mm. This hole diameter could well be the optimum size for the use of organic ties in repairs. As many vessels are functional, their repair might be seen as allowing their function to continue and that it might be less trouble to repair a pot than invest in a new one. This is likely to be an explanation for the more commonly-recorded repair of samian vessels. The supply of samian into Britain was probably not constant, and periodic difficulty in obtaining replacement vessels might have been encountered.

Larger holes in the body, some measuring as much as 12mm, are just as difficult to interpret. Similar holes in the bodies of amphoras have been described as tapping holes for the easy extraction of the contents (Evans 2000, 297). Single holes in small sherds provide very little information, unless the sherd has also been shaped (for instance, spindle whorls ref.). A flagon bodysherd (pit fill 7128, not illus.) has had several small holes drilled from the inside. As this can only have been done with difficulty to an intact flagon, the sherd must have been pierced after breakage, perhaps to serve as a strainer, or as a weaving-tablet. Another example from pit fill 9569 (not illus.) has had a single hole drilled from inside the base. The interior surface of this vessel is very worn, possibly from stirring. Most holes, though, are pierced from outside the vessel and thus assigning a function is less clear.

The difficulty in allocating functions is highlighted by the recovery of at least twelve jars with post-firing holes from the fills of pit 17177, part of a complex of intercutting pits in the easterly part of the southern zone. No pierced vessels were found in any of the other pits in the complex, but two further examples came from contemporary ditch 25179. A ritual function seems unlikely as the vessels are fragmentary and, although large parts of some pots are present, most seem to have been deposited when already broken. Also, the contents of the intercutting pits are typical of a normal domestic assemblage. As far as can be ascertained, the pierced vessels all have holes cut through the base only; three have central sub-square perforations, two have single, off-centre round holes and five have multiple holes. Not enough survives of the remainder for comment, although three bases are sufficiently complete for illustration (Fig.00 archives 1-3). The number of pierced vessels found together deserves mention, but all that can be said is that whatever purpose these vessels had served, most of the activity seems to have been carried out in this part of the settlement.

Spindle whorls

Although some spindle whorls were purpose-made, many are examples of stray sherds pierced after firing in order to perform a specific function, far divorced from the function of the original vessel. Spindle whorls should fall within certain weight and diameter ranges in order to properly function, and it follows that a broken vessel might provide only a few sherds which would fulfil the conditions for re-use. In her study of spindle whorls, Crummy (1983, 67 and 94) suggests that the overall diameter should be no greater than 50mm with a central hole diameter of not less than 5mm, although the weight of the sherd is not stipulated. The weight is also necessary in order to determine the size of the thread which would have been produced (Barber 1991, 52). The spindle whorls from Elms Farm average 28g, and this may be the optimum for production of a substantial woollen thread.

Normally, holes in sherds which have been reworked for use as spindle whorls were drilled from both sides of the sherd. Presumably the hole would be drilled centrally first and then the edges trimmed into the circular shape required for ease of spinning. Once a shaped and utilised sherd has subsequently broken, however, its function can be obscured. Not all small pierced sherds are putative spindle whorls and the vessels with holes that performed a different, but equally important, day-to-day function are probably under represented. Measurements, including the weight, might provide a method of segregating pierced-vessel sherds from spindle whorls.

Conclusion

The majority of pots with post-firing holes were likely to be functional vessels performing everyday domestic tasks. This is borne out by the evidence of their deposition in rubbish pits, although disposal as rubbish obscures specific function. Complete, or near-complete, vessels might yield more information, even so, identification of the function of such vessels is fraught with difficulty. More in-depth analysis of pierced sherds, such as examination of residues or even just the recording of limescale, would help in the understanding of the function of the vessels from which they derive. Limescale deposits which cover the edges of a hole might indicate a different function for a vessel than one where a hole is cut *through* the deposit. The determination of when in the life of the vessel it might have been pierced may be a small detail, but it is a potentially important detail.

Nevertheless, the uses to which pierced vessels might have been put seems multifarious. The range of functions posited is large and all suggestions are valid. Use as strainers and cheese presses is particularly viable, especially in the light of the apparent scarcity of the purpose-made vessels. Mundane uses for complete or near-complete vessels, such as braziers or funnels, carry equal weight. Holes made under the rim could be for the securing of lids, besides for suspension of the pot. Even vessels with single, large, central holes, postulated as having more ritualistic potential, could have an equally down-to-earth use. The basal hole is reminiscent of modern-day flower-pots, and the limescale deposit in some vessels might indicate prolonged use as something as basic as a flower-pot. Even protracted use as a cooking pot would not preclude a further function as a flower-pot, once a hole was cut through the base. Vessels used for cooking and discarded because of rancid internal remains would be eminently suitable for such a re-use.

Ad hoc utilisation of the sherds from broken vessels is also likely. One flagon sherd, pierced from the inside after breakage, has already been mentioned (p.00 above). Sherds, whether pierced or not, lend themselves to further uses, separate from their original function as part of a vessel. The most obvious of these uses is as spindle whorls, but sherds might be pierced for use as plumb-bobs, and in braid-making. Jar bases might be used to fit inside the necks of large vessels and then pierced to facilitate pouring, for example. These need not necessarily have been re-shaped, especially if opportunistic use was made of such a base.

Finally, use in a ritual context cannot be discounted, although the evidence at Elms Farm indicates that the likelihood of this, in the vast majority of cases, is remote. Mundane, domestic functions are the more realistic option. The number and range of vessels found at Elms Farm, which catered for those functions, gives an insight into the activities and industries undertaken by the inhabitants of Heybridge. It perhaps also gives an insight into their inventiveness and willingness to re-use and recycle vessels, and parts of vessels, on a daily basis.