

The sherds tell a story: Roman rural potters in northwest London Clive Orton

Fragments of pottery are among the most frequently encountered remains recovered in the course of archaeological excavations, but their potential as sources of evidence is seldom fully explored. Here, pottery from a Romano-British site in the London area is discussed as an example of what can be learned about pottery production through a numerical approach to the evidence.

Many archaeologists regard the fragments of pottery found on their excavations mainly as sources of chronological evidence. For this evidence, they rely on the knowledge and experience of pottery specialists, whose interest in the pottery ranges far more widely than questions of dating. It extends, for example, to questions of where and how the pottery was made, how it was supplied to its consumers, and how techniques of production changed over time. Also, chemical analyses of organic residues of the contents of pots can provide valuable insights into their use.¹ An interesting question, which leads on from the techniques of making pots, concerns the social context of their manufacture, sometimes referred to as the mode of production.² This ranges from production within a household for its own use, to large-scale factory production with distribution of the products over a wide area. Questions can be asked about whether potters worked full time at their craft, or whether it was an activity ancillary to another, such as agriculture.³ Linked to this is the issue of

whether potting was, in historical periods, an urban or a rural activity.

Even to start investigating such questions requires the excavation of not just the kilns in which the pots were fired but also extensive potting areas, in which many related activities took place. In Britain today, most archaeological excavations arise from the needs of commercial development, and the archaeologists – who have to work under tight constraints of time and budgets imposed by development schedules – are rarely free to choose or extend the area of excavation. This means that the opportunity to excavate a complete potting area, for example, is very unlikely to arise. However, such an opportunity did arise in northwest London in the late 1960s and early 1970s, when an extensive area in a public open space, Highgate Wood, was excavated.⁴

Digging in the wood

The excavation revealed a small Romano-British pottery-production site, located some 8 km northwest of the Roman city of Londinium (Fig. 1). From about AD 90 to 140 it produced grey jars, beakers and bowls (Fig. 2), which are found in Londinium and other nearby sites of that date. Six pottery kilns of this period were found (Figs 3, 4), together with over a tonne of fragments of waster pots (Fig. 5).⁵ Although this sounds like a lot of pottery, as an accumulation of 50 years' debris it is not a huge quantity, and it led to debates about the nature of the production. The first question we asked was how many pots do all these fragments represent. Then we asked how much potting activity the pots themselves represent. Answers to these questions have implications for the way the work was organized. In the British climate, kilns such as these can have been fired only in the summer, so the question of activity comes down to the number of firing seasons that the pots represent.

Playing with numbers

To move the discussion onwards, we have to take a numerical approach. The first such attempt was made in 1997 by Paul Tyers, a freelance specialist in Roman pottery, who estimated the number of waster pots on the site at 2500–4500. This total must be the product of several factors: the number of firing seasons, the number of firings in each season, the number of pots in each firing, and the waster rate.⁶ Paul ascribed upper and lower limits to each of

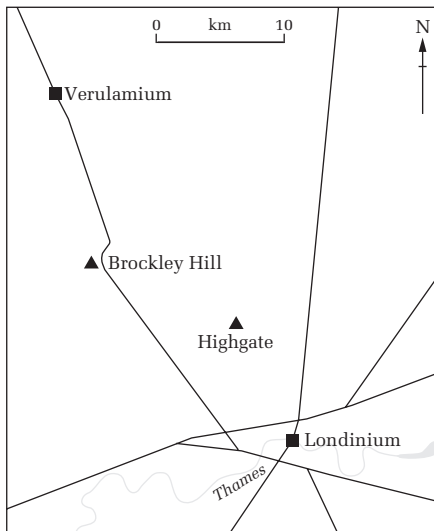


Figure 1 The location of the pottery-production site at Highgate Wood between the Roman cities of Londinium and Verulamium, and the contemporary Roman roads. Romano-British pottery kilns have also been excavated at Brockley Hill.



Figure 2 A reconstructed waster jar from Highgate Wood, probably intended for storage; the jar is 15–20 cm in diameter and the white-slip decoration on its upper half is characteristic of the Highgate kilns.



Figure 3 Kiln 3 under excavation at Highgate Wood in 1968; it has been sectioned and half the contents removed, leaving two complete but broken vessels in situ (scale bar 6 inches).



Figure 4 Kiln 4 under excavation at Highgate Wood in 1969, showing the remains of the flue (lower left) and the firing chamber (centre and upper right), with its central pedestal (in front of the scale bar) and fire bars (between the holes beyond the scale bar) that supported the platform on which the pots were placed for firing (scale bar 6 inches).

these factors, based on ethnographic evidence and the experience of modern potters. For example, the number of pots that could be stacked in a kiln was estimated to be between 150 and 250. This estimate, and those for the number of firings per season and the waster rate, could then be multiplied together to calculate upper and lower limits for the remaining factor: the number of firing seasons. Disappointingly, the first calculation gave limits of from 1 to 150 seasons. As we knew from finds of pottery in Londinium that the chronological span of the production was about 50 years, the discussion was no further forwards.

At this stage, Paul asked me to consider the problem from a statistical point of view.⁷ This involved building a statistical model of the problem, from which a confidence interval of the value of an unknown factor can be calculated.⁸ The consensus from various versions of the model was a 95 per cent confidence interval of 4–40 firing seasons. Lest this evoke a cynical response to what may appear to be a statistical rabbit out of a hat, let me explain the general principles involved.⁹ Within the range of possible values of each factor, the extreme values (i.e. those near the end of each range) are less likely than those near the middle. When we multiply two factors together, a combination of two unlikely values is even less likely, and by the time we have multiplied three or four factors, some combinations are very unlikely indeed. This means that the extreme ends of the range as originally calculated (1 firing season and 150 seasons) are so unlikely that they can reasonably be discarded. The actual outcome of from 4 to 40 firing seasons is a product of the mathematical detail.

Social implications

This outcome may still seem extremely vague, but actually it is precise enough to be useful, because the evidence from Londinium suggests that this sort of pottery was being produced over a period of about 50 years. The implication is that the pottery was not being made here every year. The quality and standardization of the pottery suggest that it was being made somewhere every year, so we can infer that the site at Highgate Wood was used by itinerant potters, who visited it and several other production sites cyclically.¹⁰ We can imagine them moving periodically from one site to another, building a kiln and firing it for perhaps a season or two, before moving on to another site. When they return, perhaps ten years later, they build another kiln, and so on. If this is the case, we might expect to find similar complexes in a zone at a similar distance from Londinium, which must have been the main market for their products. Alternatively, it may have been part of a locally dispersed area of pottery production, such as those recorded in Hampshire near Farnham and in the New Forest, and in north Oxford.¹¹ So far, none such



Figure 5 Part of a dump of waster pottery found at the Highgate Wood site in 1967, under excavation.

has been found, except for a possibly similar complex elsewhere in Highgate Wood, but much of the zone is now part of the inner suburbs of London, and the survival of kiln sites is unlikely.

More questions

Why might potters behave in this way? One explanation lies in the sources of raw materials, of which the main ones are potting clay, sand (to add to the clay), water and wood (for fuel). Clay and water would have been easy to obtain locally, but the demands on wood to fire a kiln repeatedly may have depleted the immediate area rapidly. Because wood is the most demanding of the raw materials (in the sense that more of it is needed than clay, sand or water), it probably would have made more sense to move on than to stay and gather fuel from a wider and wider area. To assess the plausibility of this suggestion, we need data on the quantities of wood needed to fire such kilns, and the likely productivity of local woodlands. Because these will probably be available as ranges of values, a statistical exercise similar to that described above would then be needed. The outcome might shed interesting light on Roman woodland management in the area. Alternatively, the potters may have moved farther afield to find new markets for their products, having temporarily satisfied the needs of Londinium.

Conclusion

This statistical approach is, of course, not limited to kiln sites, but could be used to refine the outcomes in any archaeological problem where estimates have to be based on factors that are themselves only estimates. Other possible uses include the estimation of past population sizes in a

settlement or region, and I am currently using this approach to estimate the intensity of the use of pottery in medieval Novgorod, Russia (see a brief discussion, in an article I published in AI 1998/99, of the pottery found at Novgorod).

Notes

1. The chemical extraction of organic residues from pottery is a very complex process; see R. P. Evershed, C. Heron, S. Charters, L. J. Goad, "The survival of food residues: new methods of analysis, interpretation and application", in *New developments in archaeological science*, A. M. Pollard (ed.), 187–208 (London: Proceedings of the British Academy 77, 1992).
2. This term was first used in relation to pottery by David Peacock in *Pottery in the Roman world: an ethnoarchaeological approach* (London: Longman, 1982). There he lists, on pp. 8–11, eight modes of production: household production, household industry, individual workshops, nucleated workshops, the manufactory, the factory, estate production, military and other official production.
3. For a discussion of such issues in medieval pottery, see C. Orton, "Diffusion or impedance – obstacle to innovation in medieval ceramics", *Medieval Ceramics* 9, 21–34, 1985.
4. The site was excavated between 1966 and 1974 by Tony Brown and Harvey Sheldon, working from the University of Leicester's Department of Extra-Mural Studies. It was funded by the Epping Forest and Open Spaces Committee of the Corporation of London and reported in the magazine *London Archaeologist*: A. E. Brown & H. L. Sheldon, "Early Roman pottery factory in N. London", *London Archaeologist* 1(2), 39–44, 1969; "Highgate 1969", *London Archaeologist* 1(7), 150–54, 1970; "Highgate Wood 1970–71", *London Archaeologist* 1(13), 300–304, 1971; "Highgate Wood: the pottery and its production" *London Archaeologist* 2(9), 222–31, 1974. Study of the pottery has continued since then, and has included the experimental manufacture of replica pots on site, see Anon., "The Horniman Museum kiln experiment at Highgate Wood – part 1", *London Archaeologist* 2(1), 12–17, 1972 and Anon., "The Horniman Museum kiln experiment at Highgate Wood – part 2", *London Archaeologist* 2(3), 53–9, 1973. The pottery is currently being studied by Paul Tyers, whose need for statistical advice brought me back to the site 30 years after I helped to excavate it. I am grateful to him for reviving my interest in this site, to Harvey Sheldon for providing illustrations for this article, and to both of them for permission to publish it and for commenting on the text.
5. Wasters are pots that have been broken or made unusable in the firing process, and are discarded on site. Some production sites are known for their enormous heaps of wasters.
6. The waster rate is the proportion of pots in a firing that are unusable. It may vary greatly from one firing to another; what is of interest here is the long-term average.
7. This request exemplifies the kind of consultancy that university archaeologists,

such as myself, occasionally undertake and which can reinforce our main lines of research very positively.

8. A confidence interval is a range of values that has a chosen probability of including the unknown value. For example, a 95 per cent confidence interval has a 95 per cent probability of including the unknown value.
9. But not the mathematics, which are explained in detail in C. Orton, "Never underestimate the power of a model", in *Archaeological informatics: pushing the envelope CAA2001*, G. Burenhult (ed.), 495–99 (Oxford: British Archaeological Reports International Series 1016, 2002).
10. This is not a new idea, see Anon. (1973) and Brown & Sheldon (1974: n. 4 above); what is new is the contribution to this debate made by statistical analysis.
11. See M. A. B. Lyne & R. S. Jefferies, *The Alice Holt/Farnham Roman pottery industry* (London: Council for British Archaeology Research Report 30, 1979), M. G. Fulford, *New Forest Roman pottery: manufacture and distribution, with a corpus of pottery types* (Oxford: British Archaeological Reports 17, 1975) and C. J. Young, *The Roman pottery industry of the Oxford region* (Oxford: British Archaeological Reports 43, 1977).