

Sourcing Clay Pipes from Stroudwater, Gloucestershire

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Pipe Supply in the Stroudwater catchment

Following its introduction from the New World in the 16th century, the smoking of tobacco gradually spread throughout England and by c.1630 it was commonplace. Clay tobacco pipes, made from fine white clay from the outset, were initially a London monopoly but even during this period regional production was clearly taking place. One of the earliest documented centres outside of London was Bristol where in 1619 Richard and Ann Berriman took John Wall as apprentice pipe maker (Jackson & Price 1974, 11).

Gradually, the making of tobacco pipes spread to smaller towns and in Gloucestershire. There are references to pipe manufacture in Gloucester itself by the 1660s at the latest, also Awre, Chipping Camden, Coleford Slimbridge, Westbury on Trym, and Wickwar (Peacey 1979, 52).

There is a single reference to a Stroudwater pipe maker, William Dower, whose son was apprenticed to a weaver before 1644. No pipes which could be Dower's products are yet known nor can we be certain that he was operating in the Stroudwater area.

Most of the evidence for clay pipe production and use in central Gloucestershire comes from archaeology, mostly stray finds rather than excavation. Up until c.1650 there are few pipes in evidence and the few marked pipes from this period were probably made at Bristol.

After c.1660, as elsewhere in England, the number of clay pipes found increases dramatically and in the Stroudwater catchment these came mainly from four sources: Wiltshire; Broseley; Bristol and Gloucester.

The Wiltshire pipes are by far the most numerous and are known from stem marks and their distinctive, but unmarked, bowls. Makers include Edward Higgins, Giles Chaperline, William Chaperline, Thomas Jones and William Taylor (Peacey 1979, Fig 11 Nos 115-124). These makers were working at places such as Salisbury, Malmesbury and Marlborough.

The remaining sources are represented in the Stroudwater catchment in much lower quantities and with a similar share of the market. The Broseley industry, although established in the Ironbridge Gorge area early in the 17th century, expanded dramatically after c.1660 culminating, by c.1680, in distinctive new forms distributed downriver to Bristol and beyond.

The Bristol industry in the main concentrated on the supply of pipes to Bristol itself and export. However, certain makers supplied Gloucestershire, for example Edward Lewis, Philip Edwards and an unidentified maker using an initial "AN" stamp.

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Although the Gloucester industry has a paucity of marked pipes, the forms are quite distinctive and have been found on sites throughout the Stroudwater catchment as well as northern Gloucestershire and the Forest of Dean.

Whilst these four centres account for the vast majority of attributable pipes there are numerous unmarked pipes whose origins are uncertain. Before c.1670 these unattributed pipes may account for three quarters of all the pipes found in the area and although they decline in numbers during the later 17th and early 18th centuries they were still present.

The occasional pipe made outside the region occurs on sites in the Stroudwater catchment but these can be interpreted as being the personal belongings of travellers passing through the area.

Pipeclays

As a possible means of attributing some of the unmarked and typologically indistinct pipes to production areas, we have chosen to analyse the clay from which the pipes were made. White-firing pipeclay is limited in its outcrop and the main sources in England appear to have been: Coal Measure seatearths; Middle Jurassic estuarine clays and Tertiary Ball Clays.

Coal Measures outcrop in the Forest of Dean and the Bristol and North Somerset Coalfield, and white-firing clays from this source were used in the medieval period for pottery production at Ham Green, Pill, and at Bristol itself (Barton 1963; Price 1990-1991). They were also readily available in the Ironbridge Gorge and were used for production of Broseley pipes both before c.1640 and between c.1670-1700, as established by chemical analysis of pipes from production sites in the locality (Peacey and Vince 2003).

The Middle Jurassic clays were extensively used in south Lincolnshire and Northamptonshire (for example, in the medieval period at Stamford). By the early 18th century, the pipeclay from Northampton Field was said to be one of the finest pipeclays in the country (Morton 1712). Similar clays might well occur in Gloucestershire but there is no evidence for their exploitation.

Ball clays do not occur in the county but from early in the 17th century they were being shipped from Poole and the Isle of Wight to London for the use of pipemakers there. Originally deposited over a wide part of southern and eastern England, they now form isolated outcrops, Bovey Tracey in south Devon, Peter's Marland in North Devon, the Poole area in Dorset, the Isle of Wight and around the rim of the Thames Basin. There are probably other isolated outcrops such as at Chitterne, Wiltshire, which was being exploited in the seventeenth century. Although the earliest reference dated 1646 recording pits upon the Cowdowne of Chitterne does not specify the type of clay being extracted, that it was tobacco pipe clay becomes clear in a later document since a licence was issued in July 1651 by Henry Powlett to Edward Ffrripp and Christopher Merriwether to dig "thirtie loades of clay to make tobacco pipes out of upon the downe of Chittern Mary" (Lewcun 1987). Chitterne is

situated on the Chalk downlands, 17 miles northwest of Salisbury and presumably the clay survived in a swallow hole in the chalk.

The samples (Table 1)

Twenty samples were chosen for analysis. They were selected to reflect the four major sources with five samples taken from each source.

For the Wiltshire pipes, all the samples were taken from pipes stamped "Ed Higgins" and consist of stray finds from Brimscombe, Stroud and Tetbury. They probably all date from c.1690-1720.

The Bristol pipes consist of: a pipe stamped "EL" found at Brimscombe, made by Edward Lewis who was operating between 1631 and some time before 1652 (Jackson & Price 1974, 53); a pipe stamped "IN" from Nailsworth made by an unknown Bristol maker (1974, No.188); a pipe stamped "PE" found at Bisley, made by Philip Edwards I or II (Peacey 1979, No.140; Jackson & Price 1974, 42). Philip Edwards I was operating between 1649 and 1683 and Philip Edwards II was operating 1680 until 1703. A pipe stamped "RN" from Stroud made by Richard Nooney who was operating from before 1652 until some time after 1699 (Jackson & Price 1974, 59). a stamp marked "WC" from Dursley, made by any one of a number of Bristol makers (e.g. William Carter, William Cooper, William Cissel, or William Cherrington (Jackson & Price 1974, 37-38).

The five Broseley samples are also all from stamped pipes: AB found at Stroud (Peacey 1979, No.164); ED found at Stroud (Peacey 1979 No.156); Edward Taylor found at Chalford; John Hartshorne found at Chalford (Peacey 1979, No.146) and John Jones found at Brimscombe (Peacey 1979, No.167). All these pipes were Broseley Type 5, dated c.1680-1720.

The Gloucester samples consist of five unmarked pipes, whose bowls are all typologically typical of Gloucester products. These samples were chosen from sites in Gloucester and were comparable with a series of samples previously analysed from the Quay Street kiln (Peacey 1996), Appendix 4). Those from India Road and College Yard are Gloucester Type 9 (Peacey 1979, Fig.2). That from the East Gate is Gloucester Type 6 (Peacey 1979, Fig.1). Those from Clare Street are both Gloucester Type 11 (Peacey 1979, Fig 2,). All the samples are from types dated c.1690-1720 whereas the Quay Street kiln is dated c.1670-1700.

Microscopic examination

Small flakes were chipped from the edges of each sample and the fabric was then examined at x20 magnification using a binocular microscope. None of the Bristol or Gloucester pipes revealed any inclusions and all had a conchoidal fracture, confirming that the clay employed for making these pipes was extremely fine in texture. Each one of the Broseley pipes, however, revealed several small rounded clay pellets, of similar colour to the body of the

pipe. Such clay pellets were particularly common in the early 17th-century pipes sampled from Broseley but are nevertheless visible in each of these samples, all of which are later in date. Finally, the Wiltshire pipes all had a scatter of fine, well-sorted angular grains, probably quartz, up to 0.05mm across which are absent from the other samples.

Chemical Analysis

Samples of each pipe were snapped off and the outer surfaces removed mechanically. The remaining sample was then crushed to a fine powder and submitted to Royal Holloway College, London, where it was analysed using Inductively Coupled Plasma Spectroscopy. A range of major elements was measured as percent oxides (App.1) and a range of trace elements was measured in parts per million (App.2).

Silica was not measured but could be estimated by subtracting the total measured oxides from 100%. These silica estimates (Fig 1) indicate a similar silica content for the Bristol, Gloucester and Wiltshire samples whilst the Broseley pipes include three with low silica contents and two with silica contents in the same range as the remainder, thus giving a wider standard deviation and lower mean for the Broseley group.

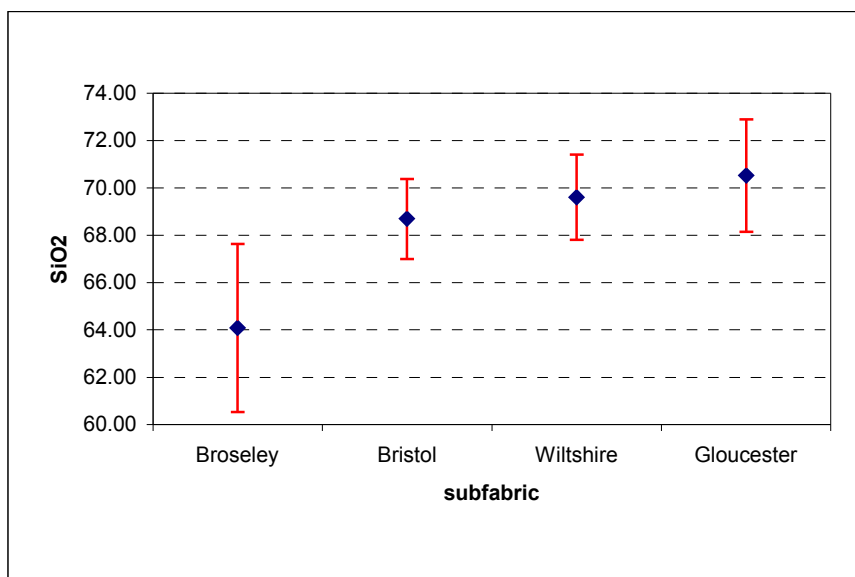


Figure 1

The chemical data were normalised to Aluminium and factor analysis used to examine the dataset (Fitch 2001). This found five significant factors underlying the variation in the data. A plot of the two most important factor scores shows that the Broseley pipes have strong negative F1 scores whilst the Bristol and Gloucester pipes can be distinguished from the Wiltshire pipes by their F2 scores. There is no clear separation of the Bristol and Gloucester pipes and neither could any difference between those two groups be seen in the remaining factor scores.

It seems, therefore, that there were three different sources of pipeclay employed. The Broseley pipes have the same chemical compositions as pipes from two production sites at Broseley and a sample of clay from Ironbridge Gorge (Fig 3). There is less similarity between the two groups of pipes and the clay sample, indicating that the clay sampled is not the source of the pipeclay used at Broseley. However, it is sufficiently similar to demonstrate that all the sampled Broseley pipes were made from local Coal Measures seatearths.

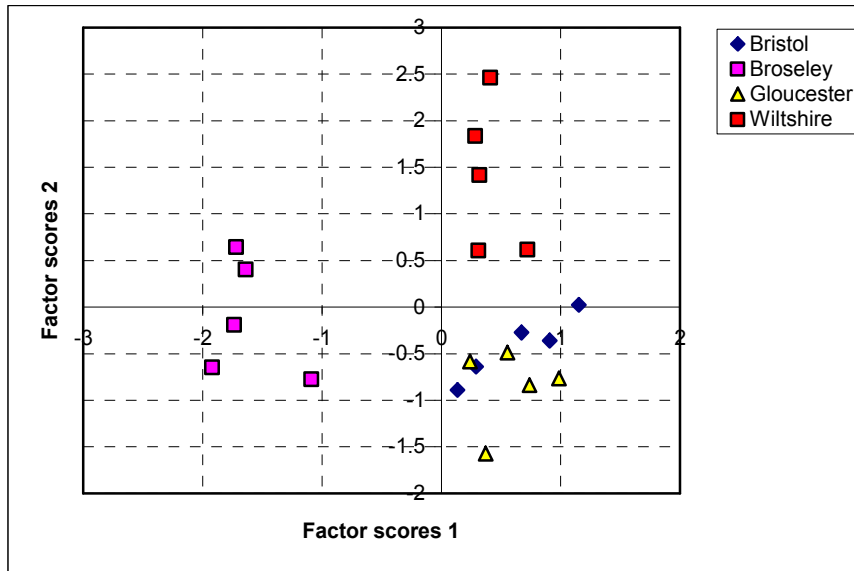


Figure 2

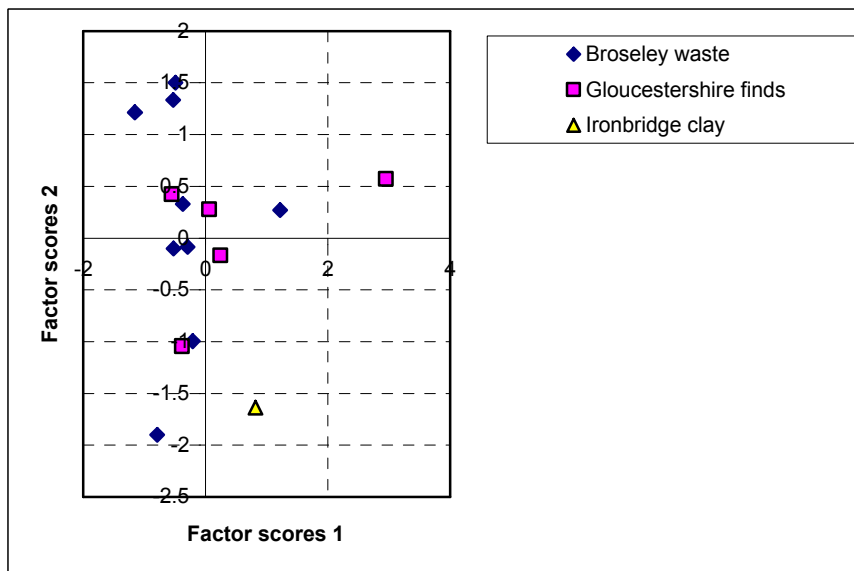


Figure 3

The Bristol and Gloucester pipe data were compared with that from a sample of pipes from the Quay Street kiln in Gloucester. Factor analysis again indicates that the samples all form a single cluster but that within this cluster a subgroup is formed by the Quay Street samples. This is consistent with all three groups utilising the same general clay source. The most likely

source of clay is the Marland Beds near Petrockstow in North Devon (1948, 62). The Bideford and Barnstaple port books indicate the shipping of pipeclay which can only be from the Marland Beds to Bristol (Grant 1983, 40). It is therefore likely that the Gloucester pipemakers also got their pipeclay from north Devon, either directly or transhipped at Bristol. Two samples of clay from the modern clay pit at Peter's Marland were compared with Bristol and Gloucester pipe data but show a difference in chemical composition (although they are more similar to the Wiltshire pipes than to the other samples).

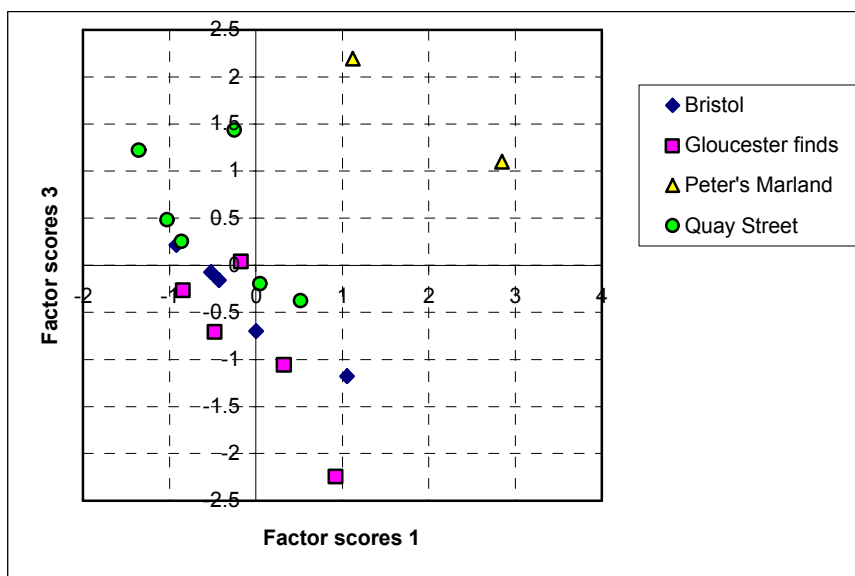


Figure 4

Finally, the data from the Wiltshire pipes was compared with the Peter's Marland data and with a range of wares made from Tertiary white-firing clays from Surrey and Hampshire. Four factors were found and a biplots of the first two shows one large cluster, indicating the general similarity of the clays. A plot of the third and fourth factors (Fig 5) indicates that the Wiltshire pipes can be distinguished from Kingston ware products from Kingston and Southwark by their F4 scores and from samples of various wares produced at Farnborough Hill by a combination of both factors. The most similar samples to the Wiltshire pipes in this analysis are the Peter's Marland clays. These results certainly suggest that the Wiltshire group ("Gloucestershire sites" in Fig 5) was made with a Tertiary pipeclay and the lack of similarity to Laverstock wares, which were made immediately to the southeast of Salisbury, strongly suggests that this Reading Beds clay was not used by Ed Higgins. It is highly unlikely that the Marland beds were being utilised by Wiltshire pipemakers and a closer source of Tertiary clay must be sought. No samples of clay from Chitterne, or of pipes made from that clay have been analysed nor have we included pipes or clay analyses from south Devon or Dorset. We cannot therefore identify the source of clay used by the Wiltshire pipemakers but can say that it is different from that used at Bristol and Gloucester.

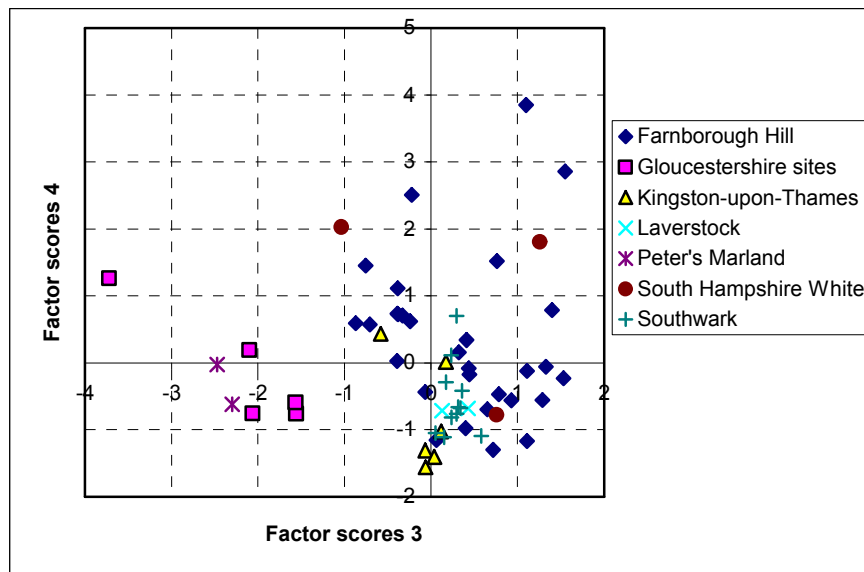


Figure 5

Conclusions

Twenty samples of clay tobacco pipes from sites in the Stroudwater catchment which were attributed to a provenance either by stamps or their distinctive typology were analysed using Inductively-Coupled Plasma Spectroscopy.

Multivariate statistical analysis of the compositional data indicates that three distinct sources of pipeclay were employed:

- Coal Measure white-firing clays were used by Broseley pipemakers dating between the 1680s and 1720s. The same clay source was employed for the production of two groups of clay pipes sampled from production sites at Broseley, dating respectively to c.1620-1640 and c.1680-1700.
- A single clay was used at both Bristol and Gloucester, and the sampled products from these two cities cannot be distinguished. The fine texture of the clays used allows us to discount a Bristol/Somerset Coal Measures source for this clay. In view of the documentary evidence for the transport of North Devon pipeclay to Bristol, it is likely that the Bristol and Gloucester pipes were made from north Devon pipeclay. However, there is a mismatch between the Bristol and Gloucester samples and the two from Peter's Marland.
- A third distinguishable source of pipeclay was used by a Wiltshire pipemaker, Ed Higgins, who was married in Salisbury in 1698 and whose pipes are found in the Salisbury area and in great numbers in the Stroudwater valleys. He was the major supplier of clay pipes to the Stroudwater valleys between c.1690 and c.1720. This third source might be located in Wiltshire (although we have another mismatch, between the Higgins pipes and the white-firing clay used at Laverstock, on the

outskirts of Salisbury) or it may be that Higgins was importing ball clay from Poole or elsewhere on the south coast.

The ability to attribute pipes in the Stroudwater catchment one of three groups may allow us to assign pipemakers known from their stamps but not from documents to one of these groups and possibly also to track the movement of pipe makers from one area to another, even if they continued to use the same stamps. Conversely, the fact that Ed Higgins' pipes are chemically distinct suggests that he had not moved to the Stroudwater valleys in which case it is likely that he would have utilised the same pipeclays as Bristol and Gloucester makers, whatever their origin.

Finally, this methodology will allow us in future to suggest source areas for even unmarked or fragmentary pipes based on the chemical signature of the pipeclay used.

Acknowledgements

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