

The Potential for the Archaeological Study of Clay Tobacco Pipes from Australian Sites

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This paper proposes that clay pipes are an 'ideal' artefact because of a range of characteristics including cheapness, ease of discard, being marked and dated, and stylistic differences that may reflect socio-economic differentiation. It reviews the historical development of clay pipes in Australia and the early local manufacture of pipes. It discusses the Australian tobacco habits and examines issues of trade, marketing and consumption and how that affected people's acquisition and disposal of pipes. This section includes a discussion on the 'Squatters Budgerie' pipe which was made in Great Britain for the Australian market. It examines the usefulness of clay pipe remains in dating Australian archaeological sites.

If archaeologists had to describe an ideal artefact with which to understand the past it would need to have the following characteristics:

- a) be cheap and readily available, something commonly used in daily life;
- b) be easily breakable to encourage discard;
- c) when broken be likely to enter the archaeological record with little likelihood of scavenging or recycling;
- d) be able to survive harsh depositional environments;
- e) have manufacturer's names or other marks for easy dating;
- f) exhibit patterned variability in form through time;
- g) exhibit stylistic differences reflecting class, status, ethnicity and political affiliation;
- h) be depicted frequently in contemporary pictorial material, to enable inferences about the social context of its use to be made.

Is there such an artefact? The clay tobacco pipe certainly fulfils all of the above criteria yet, surprisingly, few published analyses of clay pipes are available from Australia and archaeologists have not taken advantage of these characteristics to expand our knowledge of the past. This paper provides an overview of the clay tobacco pipe in the context of Australian historical archaeology. It is not intended to be a definitive study but to give some basic contextual information and outline directions in which further research could be undertaken. The paucity of published clay pipe analysis, or even cataloguing to provide a basis for comparative research, reflects a more general lack of analytical artefact studies from Australian sites. One of the reasons there has been a reluctance among archaeologists to publish artefact studies has been the absence of useful contextual frameworks which place their assemblages in a broader social and economic context that relates to Australian historical archaeology. The plethora of studies of North American artefact categories seldom engages issues that are directly relevant to Australian archaeology.

Archaeological studies of clay pipes in Australia have generally focused on descriptive typology and the identification of pipe manufacturers. The first large assemblage published was from the convict barracks site at Port Arthur, Tasmania.¹ A comprehensive catalogue of the excavated clay pipes was produced, but the death of the excavator, Maureen Byrne, meant that a full report of the excavation was never published.² Since then there have been a number of major sites excavated which have produced substantial numbers of clay pipes including the Hyde Park Barracks and Royal Mint, the First Government House site, Lilyvale and Cumberland/Gloucester Street, all in Sydney, and the Little Lonsdale Street site in Melbourne (Fig. 1). These and other smaller collections produced by cultural resource management

excavations should be able to provide a basis for undertaking further analysis of clay pipes.

Although there are an increasing number of archaeological clay pipe studies globally there remains a strong element of antiquarian interest in clay pipe research. The main periodicals dealing with clay pipes, publishing material with a world-wide coverage, are the *Society for Clay Pipe Research Newsletter (SCPR Newsletter)* and *Clay Tobacco Pipe Studies* (now defunct). With the British Archaeological Reports occasional series *The Archaeology of The Clay Tobacco Pipe*, these three series contain important studies on assemblages, manufacturers and markets. Unfortunately, few of these are directly relevant to Australia as they mainly concentrate on English clay pipe industries prior to the nineteenth century, although information about the major exporters to the colonial markets is increasing.

The surviving evidence provides an opportunity to study both the specifics of clay pipe production and use, and to understand the formation of assemblages. The fragility of clay pipes and the resilience of their fragments once discarded makes them ideal for specialist analysis to reveal site history and formation processes.

THE MANUFACTURE OF CLAY PIPES

From the start of tobacco consumption in Europe in the late sixteenth century the most common form of use has been by smoking with a pipe, the earliest recorded being c.1580.³ Tobacco could also be taken by chewing, in cigar form or as snuff. During the seventeenth century local manufacturing centres throughout Europe produced distinctive regional forms of pipe showing a wide range of decorative styles which continually evolved.⁴ In 1788, when the colony of New South Wales was founded, taking tobacco had become acceptable behaviour for all classes and was second only to alcohol as a social narcotic.

Clay pipes used from 1788 onwards conformed to a basic shape - a hemispherical or egg-shaped bowl on top of a tapering stem (Fig. 2). The mouthpiece could either be moulded or left unformed. The base of the bowl could either be rounded or have a spur, which was a non-functional vestige of a broader foot that had originally allowed the pipe to be rested upright. The stem was generally straight and between 75 and 150 mm long, although longer and curved stems were also produced. Clay pipes are produced from fine clays which generally fire to a cream or white colour, although red, brown and black pipes were produced as well. Ballclay of a variety of compositions was used as the raw material, and need not have been kaolin, as is sometimes stated.⁵ The temperature of firing did not vitrify the clay so it remained earthenware, with a porous body. Because the porosity of the stem could peel skin from the lips of the smoker, the mouthpieces of pipes were often glazed, coated in sealing wax or simply soaked in beer.⁶

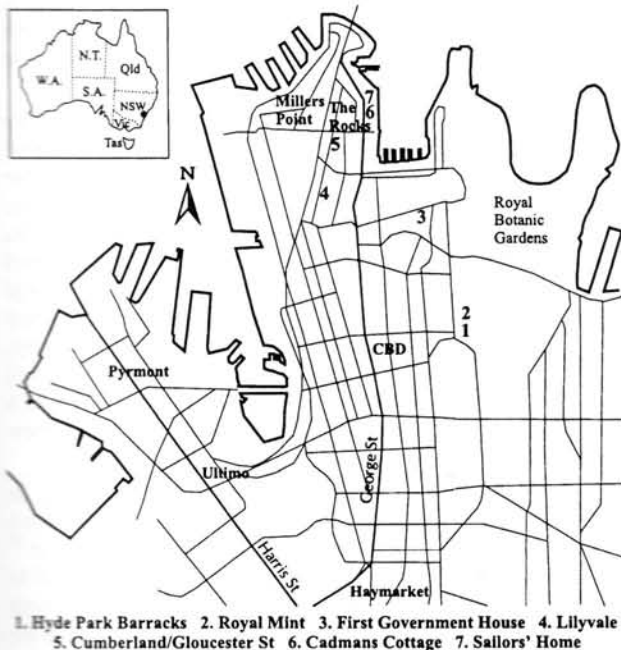


Fig. 1: Map of Sydney CBD and relevant archaeological sites. (Drawn by Tony Lowe.)

The technology of pipe making remained substantially unchanged from the seventeenth century onwards.⁷ The pipe was made by rolling a sausage of clay to the right length and thickness, and inserting a wire into the stem. This was put into a two- or three-part iron mould which created the final shape of the pipe, imparting any decoration or legend onto the stem or bowl. After it was removed from the mould the pipe was cleaned up and any flash removed. Stamps for additional decoration or advertising were applied at this stage. The pipes were then arranged in a kiln and fired. Once cooled, the pipes would be packed in straw or wood shavings in boxes or crates for transport.

The process was carried out by hand and a skilled pipe-maker could produce pipes at a rate of about 500 per day. This could be considerably increased by breaking down the process into separate tasks, or using steam-driven machines for various parts of the process. Factories varied from a single pipe-maker to the large Scottish export firms which employed several hundred people. Pipe-making was a recognised craft and quite distinct from other ceramic trades, although some pottery firms did make clay pipes.

A 1900 price agreement list reveals that the major Scottish exporters each had over 300 distinct varieties of pipes in their catalogues, and the firm of William White had produced 606 separate varieties.⁸ These included many personality or effigy pipes, with the head of a particular individual, such as Gladstone, and the commemoration of a particular event or political issue, e.g. 'Home Rule'. Other pipes were named after the design shown on the bowl, such as basketwork, a natural or humorous scene, ship, geometric or linear pattern or the abstract design of a novelty pipe. Pipes were also categorised by their size, stem shape, bowl type and overall form. Some of the main varieties were Irish, Cutty, TD, churchwarden and junk. Numerous sub-varieties based on size and added decoration were created, e.g. 'large Dublin Cutty' and 'small bent Crown Prince' (Fig. 3).

Most decoration was imparted by the mould, meaning that a new mould had to be created for each variety (Fig. 4). Some pipe-makers equipped their moulds with changeable inserts so that individual names or advertisements could be moulded onto a pipe upon request. Moulded decoration was either impressed or raised while stamped decoration, made after the unfired pipe

was released from the mould, was impressed. Stamped decoration could produce finer detail but was often not evenly impressed into the clay. A third decorative technique was rouletting, which produced dentated patterns around the bowl rim or stem. This was produced by a toothed wheel or special knife, again after the pipe was released from the mould. Occasionally, paint would be used to pick out particular features of a design.

Printing could be added with inked stamps either before or after firing for additional variation or to meet specific market demands. Brassey has published details of transfer-printed decoration on over 50 clay pipes from the Victoria Hotel in Auckland New Zealand.⁹ These pipes were manufactured by J.G. Reynolds of London and seem to date to around 1862. Examples of this form of decoration are rare survivals in archaeological contexts.

Manufacturers' names on pipes were generally placed along the stem, either in full or as initials (Fig. 5). The pipe-maker Thomas White, for example, is marked on pipes as 'THO WHITE', 'T.W.', 'TW & Co', 'WHITE & CO.', 'WHITE'S' and 'THO. WHITE & Co' among other variations.¹⁰ The place of manufacture was marked on the opposite side of the stem. In common with most manufactured goods the designation of place of manufacture was affected by the U.S. McKinley Tariff Act of 1891, which required that all goods imported into the United States had to be marked with their country of origin.¹¹ Most Scottish and English pipe-makers had used their street address or town of origin but this was changed to either 'England' or 'Scotland' after 1891. Less common in the nineteenth century was the practise of marking the maker's initials onto the spur (Fig. 5d). By the mid-nineteenth century the spur had decreased in size to a small remnant or was entirely absent on many pipe forms.

The potential exists to identify a maker's individual moulds. At the Barrack Lane site in Parramatta, New South Wales, about 50 pipe fragments were found which were marked 'J. ELLIOTT MAKER / MARKET ST WHARF'.¹² Joseph Elliott was a Sydney pipe-maker who operated between at least 1831 and 1837.¹³ Six individual moulds were used in the assemblage. Generic clay pipe moulds appear to have been cut into with a graver, producing fine angular lettering, which varied considerably in style and spacing among the moulds. All fragments were deposited close together, suggesting that pipes made from the different moulds were in circulation together. It should be possible to determine how many moulds were in use at any one time, which would provide a good measure of the health of the colonial clay pipe trade, as well as a detailed study of one pipe-maker's output over time. It could also be used to refine otherwise imprecise dating of a particular manufacturer.

Apart from clay, other pipe bowls were made from meerschaum, a soft stone suitable for intricate carving, or carved from wood species such as briar. These had stems and mouthpieces made from amber, carved bone and, later in the nineteenth century, vulcanite and other plastics. A separate American stub-stemmed pipe form, with a large clay bowl and detachable reed stem, is almost unknown from Australian sites.¹⁴ There is also considerable evidence of Chinese opium smoking equipment being used on the Australian and New Zealand goldfields, and later in the urban Chinatowns. The paraphernalia of opium smoking is quite distinctive, but is unlikely to be found outside the mining and Chinatown context.¹⁵

Clay pipes break easily and those with longer stems are especially fragile. Estimates of how long a pipe survives in normal usage based on contemporary accounts range from several days to two weeks.¹⁶ Heavier and thicker pipes were produced which were popular with labourers, but even these ended up in fragments. If a stem broke near the mouthpiece the pipe could be used, perhaps with the stem being reshaped first

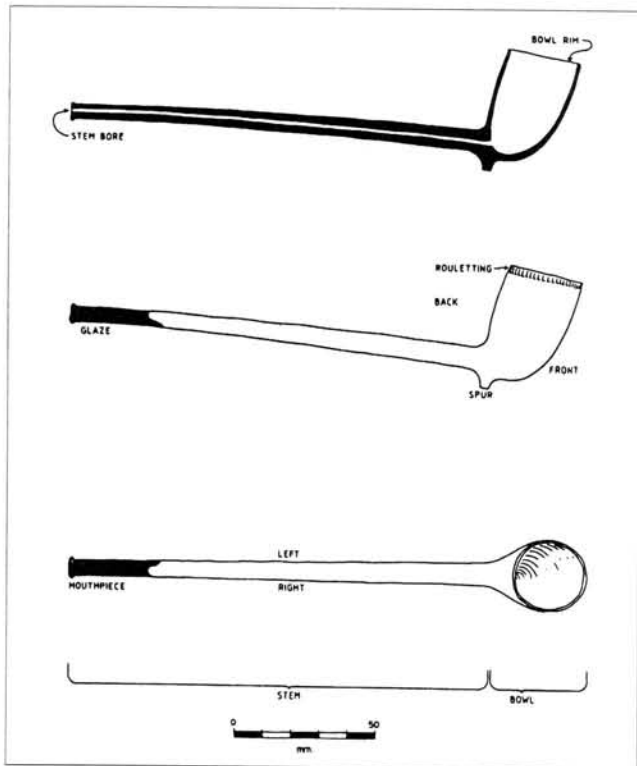


Fig. 2: Clay pipe terminology, showing the main features referred to in the text.

(Fig. 6f). However, a cracked bowl, or a stem broken too close to the bowl, was enough reason for a pipe to be discarded. The reuse of pipes with broken stems, either by the original smoker or someone seeking to save money, may be expected to reflect either poverty or difficulty in accessing reliable supplies of new pipes. No work has been done on the occurrence of pipe reuse to test this proposition.

Although there are various uses recorded for clay pipe fragments, such as gaming counters and whistles, it is unlikely that scavenging of fragments would have removed more than a very small proportion of the pieces entering the archaeological record.¹⁷ Evidence of use is commonly found on pipe fragments. Smoking tobacco leaves a black or dark brown residue within the bowl after a single smoke. Fowler records that Sydney pipe smokers treasured black, stained pipes and would wrap them in leather or even buy them already blackened.¹⁸ As teeth grip the stem near the mouthpiece they may chip off small pressure flakes of glaze or ceramic on upper and lower surfaces. Names were sometimes scratched onto pipes, perhaps to indicate ownership but possibly after breakage in the same way that ostraca were used as counters.¹⁹

The ubiquity of smoking among both Europeans and Aboriginal people following European contact is confirmed by dental evidence from skeletons, which sometimes show clear evidence of distinctive tooth wear attributed to clenching pipe stems between the teeth.²⁰

TOBACCO HABITS AND CLAY PIPE FASHIONS

In England taking tobacco was widespread through all social classes, but with considerable variation. The upper classes preferred snuff and cigars. Pipes were still popular, but the clay pipe was scorned in favour of a carved meerschaum or briar. Cigarettes were introduced during the Napoleonic Wars, and were always around thereafter. In Australia they did not predominate over pipes until the late nineteenth century, while clay pipes rapidly dwindled in popularity, with almost no use

after World War One. Chewing tobacco is recorded in Australia but it never reached the same popularity as in North America.²¹ Few, if any, clay pipe fragments are found in secure twentieth-century archaeological contexts.²²

Tobacco was one of the first colonial industries.²³ The moderate climate, the ease of growing and the ready market all encouraged tobacco growing as a profitable second crop for farmers in the early years of the settlement. It was never considered to be as good as the imported stuff, which was also usually twice the price. Clay pipes initially had to be imported to smoke it, but in 1811 D. D. Mann was able to observe that at least one pipe-maker was operating locally and 'the great propensity to smoking which prevails throughout the colony, causes an astonishing consumption of this article, and has well repaid the original speculator.'²⁴ Tobacco was also used as a treatment for scab in sheep and many pastoral properties grew tobacco for this purpose.²⁵

In discussing the broader context of tobacco use in Australia in his book *Under Fire* Walker notes the association between clay pipe smoking and low socio-economic status.²⁶ English social distinctions in tobacco use were transferred to Australia where clay pipes were associated most with labourers, convicts and especially the Irish. The Irish were the stereotypical labourers in nineteenth-century England, being employed as navvies in the construction of canals and railways. They also formed, as immigrants, a large proportion of the population of Scottish cities such as Glasgow and Edinburgh, which became centres for the export trade in clay pipes. The Irish were associated with a particular form of pipe - short-stemmed, thick and with a rouletted rim, robust enough to be smoked while doing physical work. The 'Emigrant Mechanic' records such pipes in common use in New South Wales.²⁷

The whole company was divided into minor groups of twos, threes, and fours, and the *dudeen* (a pipe with stem reduced to three, two, one or half an inch) was in everybody's mouth. I think there was not an individual in the room, but one female, who did not smoke more or less, during the brief time we sat there.

Dudeen was an Irish word used to refer to clay pipes generally, but was already being used in the colonies to refer particularly to the thick pipes associated with Irish navvies in England (Fig. 7).²⁸ The range of pipes found in Ireland is large and the navy pipes are not characteristic of the assemblage, suggesting that they were adopted mainly among the emigrant Irish.²⁹

Echoing Mann later in the century is Fowler, who also noted with amusement that pipe smoking was ubiquitous among Australians. 'Everybody has one, from the little pinafored school-boy...to the old veteran who came out with the second batch of convicts'.³⁰

While accounts such as this make it clear that nearly all lower class men and women smoked, contemporary illustrations generally do not show women smoking with clay pipes unless it is the artist's intention to clearly indicate that these women were from the lowest class and probably devoid of civilisation or morals. Class distinctions in taking tobacco, and whether women were permitted to smoke (at least in public) can be traced in contemporary illustrations. The association of the clay pipe with lower class or status is affirmed throughout the nineteenth century. Portrayals of tobacco smoking among the middle class show it to have been almost as commonplace as the lower orders, at least among the men. There appears to have been no objection to tobacco *per se*, purely the manner in which it was ingested.

The role of tobacco as a cheap, socially sanctioned narcotic deserves comment. Tobacco was a common ration item for convicts and labourers *in lieu* of wages.³¹ As a habit-forming

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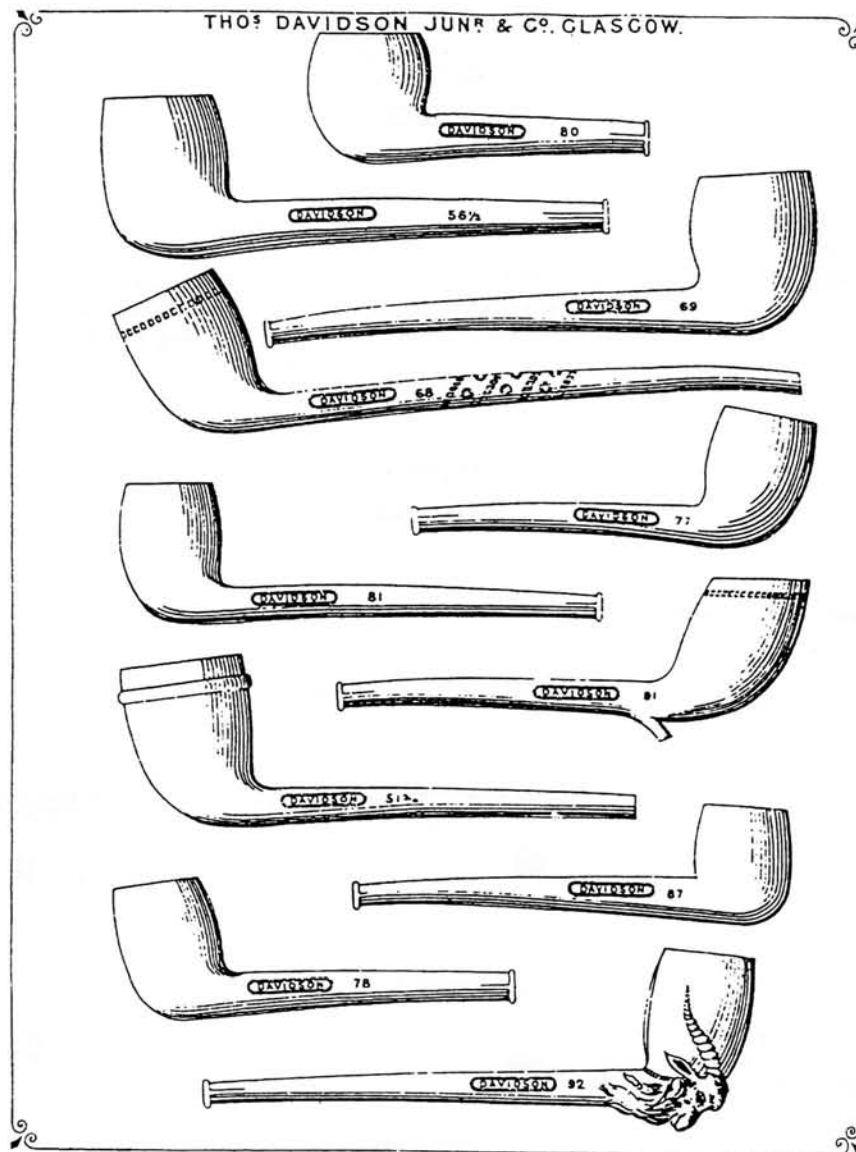


Fig. 3: Page from a Thomas Davidson and Co. catalogue showing a typical range of decorated pipe forms (Gallagher and Price 1987: 128). The varieties are (from top to bottom) Squatter, Long Meerschaum, Large Douglas, Large Carved Milo, Large Garibaldi, Weed, My Pipe, Short Congo, Gold Digger, New Billiard and Goat Head.

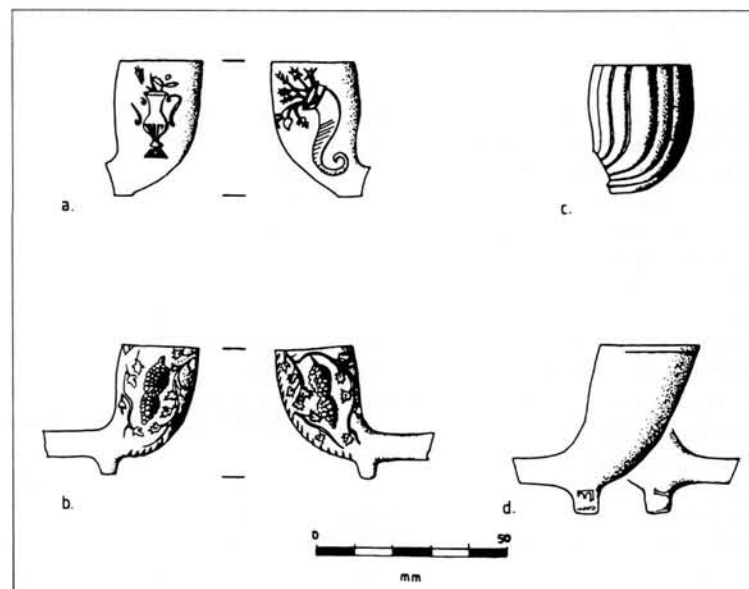


Fig. 4: Typical clay pipe bowls found in nineteenth-century Australian sites (all examples in the following figures are from Cadmans Cottage Historic Site, Sydney. (Drawn by Georgia Rennie.)

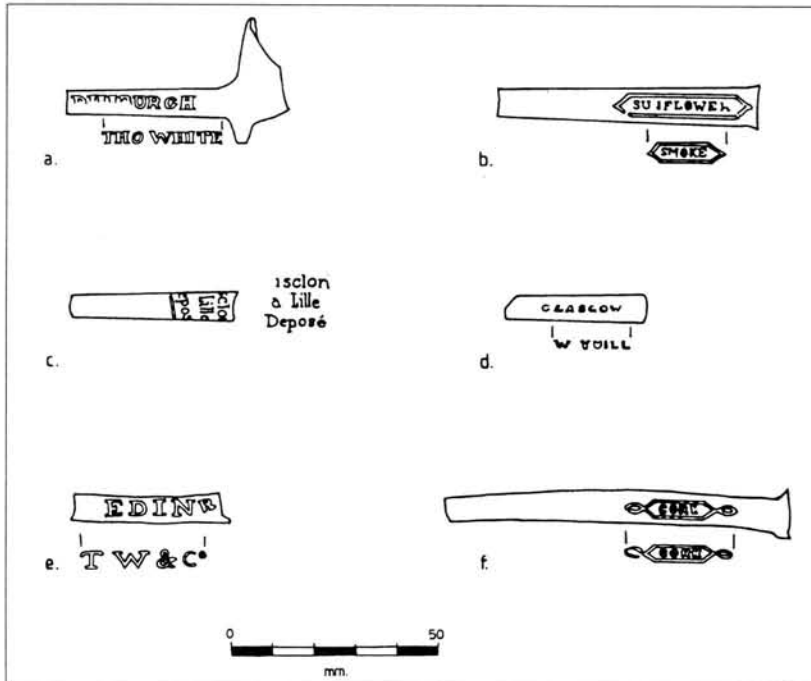


Fig. 5: Clay pipe stems, showing typical makers' marks and other stem markings. (Drawn by Georgia Rennie.)

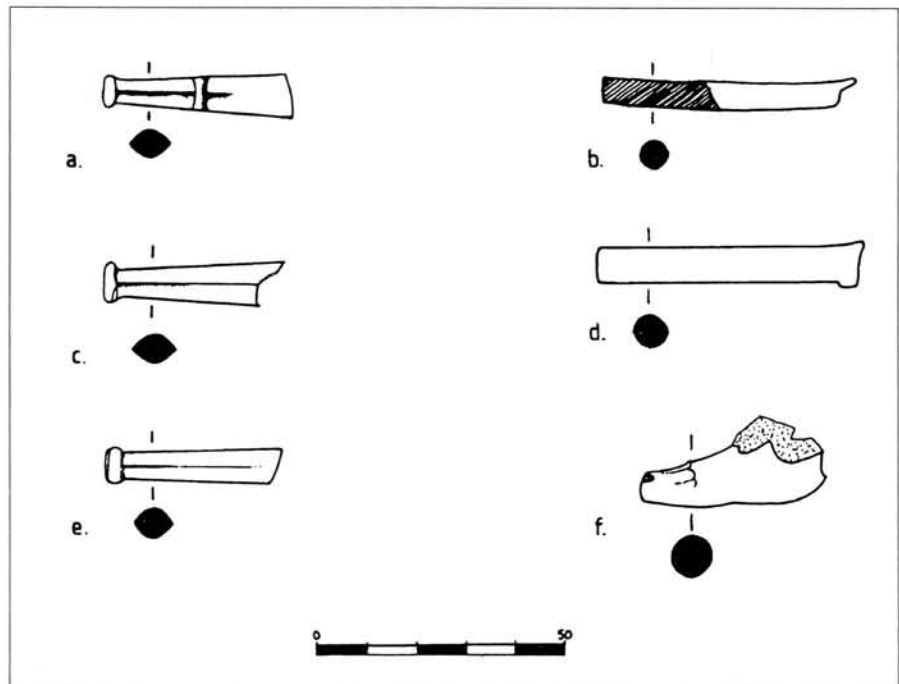


Fig. 6: Clay pipe mouthpieces. 6a and c have been sealed with red wax, 6b has yellow-brown glaze, 6f has been reshaped following breakage. (Drawn by Georgia Rennie.)

substance it also had a potential to serve as a way of ensuring continuing dependency in an economic relationship. In towns there would be no problem in getting alternative supplies of tobacco and pipes, but in rural areas these would have to be transported and bought at substantial cost. The supplier of tobacco and pipes, such as a squatter or religious mission, could hold a strong measure of control over their labourers or charges, as they would have to rely upon the employer continuing to satisfy their habits, and as they were partly paid in rations had no cash to pay for an alternative supply.

Marginalised Aboriginal populations receiving tobacco in their rations from a pastoral station, mission or government agency developed a dependency upon the supplier that was as much physiological as economic. Most descriptions of Aboriginal people living in camps on stations or near European settlements note that both men and women smoked.³² This helped to reinforce the common nineteenth-century perception of the Aboriginal as brutish and uncivilised.

In the upper and middle classes smoking was associated with leisure and contemplation, as a contrast to the working class, where smoking was associated with work and raucous entertainment. The smoking rituals of the wealthy were elaborate. The smoking room enhanced the exclusive male nature of smoking for leisure, and it was not considered polite to smoke in mixed company. Ladies did not smoke, although from the late nineteenth century smoking cigarettes became popular as a way of showing that you were a modern woman, with just a hint of feminism.³³ Ceremony was attached to the offering of cigars after dinner to guests, and suitably engraved pipes, cigar snippers, ashtrays and cigar cases were among the most personal of presents. The most lavish of these smoking requisites were made of gold and silver. Not surprisingly, these do not commonly enter the archaeological record.

While not gender-specific, tobacco and smoking reflected contemporary attitudes to both class and gender, and had a role in reinforcing existing divisions within society. There was

considerable social variation in the way tobacco was used in Australia. Clay pipes have a very clear association with lower socio-economic status. Particularly interesting is the possibility that the habit-forming properties of tobacco were used to reinforce patterns of economic dependence in rural areas.

TRADE, MARKETING AND CONSUMPTION

The movement of clay pipes from their place of manufacture to the market in the Australian colonies is a complex issue, for which only fragmentary statistics are available. Archaeological evidence provides important supplementary information on issues of trade, marketing and consumption and has the prospect of clarifying and expanding the available data. As each colony managed its own trade and imposed tariffs and charges on goods being brought in for use in the colony, and on goods which were brought in for the purpose of forwarding to a subsequent destination, the study of import and export can become confusing. General trade figures usually do not differentiate between exports which originated in the colony or those which had arrived the previous week on another boat and had sat waiting on the wharf for transfer elsewhere.

Imports to the Colonies

Colonial clay pipe production was negligible compared to the volume of imports. Some import figures are available and reveal a trade that was eventually to be measured in tons. The main supplier of pipes to Australia was Great Britain, predominantly from Scotland. The Scottish industry developed in the early years of the nineteenth century, displacing the export clay pipe trade from London, Bristol and Southampton.³⁴ The reliance upon pipes from Great Britain was such that D. D. Mann noted in 1811 that 'tobacco-pipes, which, some years ago, at the cheapest periods cost sixpence each, are now manufactured in the settlement, of a very good quality, and are retailed for one penny each'.³⁵

For the earliest years of the colony, to about 1850, most of the detailed information about imports has to be inferred from archaeological remains. Examples of pipes made by French, Dutch, American and German makers have been found at First Government House, Lilyvale and Cadmans Cottage. However, because of the time range covered and the possible introduction of individual pipes brought by ships' crew into the port, the

discovery of non-British pipes at places with maritime associations should be treated cautiously.³⁶

Imports were brought to Australia by ship in a variety of containers. Trade records of the late nineteenth century describe clay pipes in boxes, cases, packages and tons.³⁷ One shipwreck in Australian waters containing large numbers of clay pipes has been excavated.³⁸ The brig *Tigress* sank in the Gulf of St Vincent in September 1848 (near the end of a voyage from Scotland). Among her cargo for Adelaide were 50 boxes of clay tobacco pipes. Although none of the boxes were recovered intact, all of the identifiable pipes recovered archaeologically were produced by Thomas White and Co. of Edinburgh. The majority of pipes found were of two particular designs - an Irish harp/thistle combination and a three-masted ship under sail/anchor and cable combination. Three further designs - two geometric and one stamped TW - were also recorded, but were less common.

The *Tigress* find suggests that in this instance pipes were imported into Australia as cargoes from a particular manufacturer, an important consideration in understanding the distribution of particular clay pipe types. Pipes were not mixed from different manufacturers prior to shipping to the colonies. It will be important to establish whether only a small proportion of each manufacturer's range was exported in quantity, or if the full range of hundreds of pipe types listed in the makers' lists would have been available in Australia.

The collapse of colonial production by the 1840s coincided with the rise of the Scottish exporters, who began producing pipes specifically for the Australian market. However, before they took over the trade there was a period in the mid-nineteenth century when Dutch pipes appear to have been imported in large quantities, and may have even dominated the market.³⁹

Some indication of the volume of imports is available in colonial statistics. Maclehoose says that in 1836 over one million pipes ('8172 gross') were imported.⁴⁰ Later statistics speak in terms of cases or packages, but the number is estimated by Wilson and Kelly to be between 5 and 25 million per year.⁴¹ Victorian statistics indicate 2.9 million were imported in 1878 and 4 million in 1881.⁴²

The country of origin of clay pipe imports to New South Wales and Victoria for three sample years (Tables 1, 2) is deceptive in that probably all of the pipes listed as imported

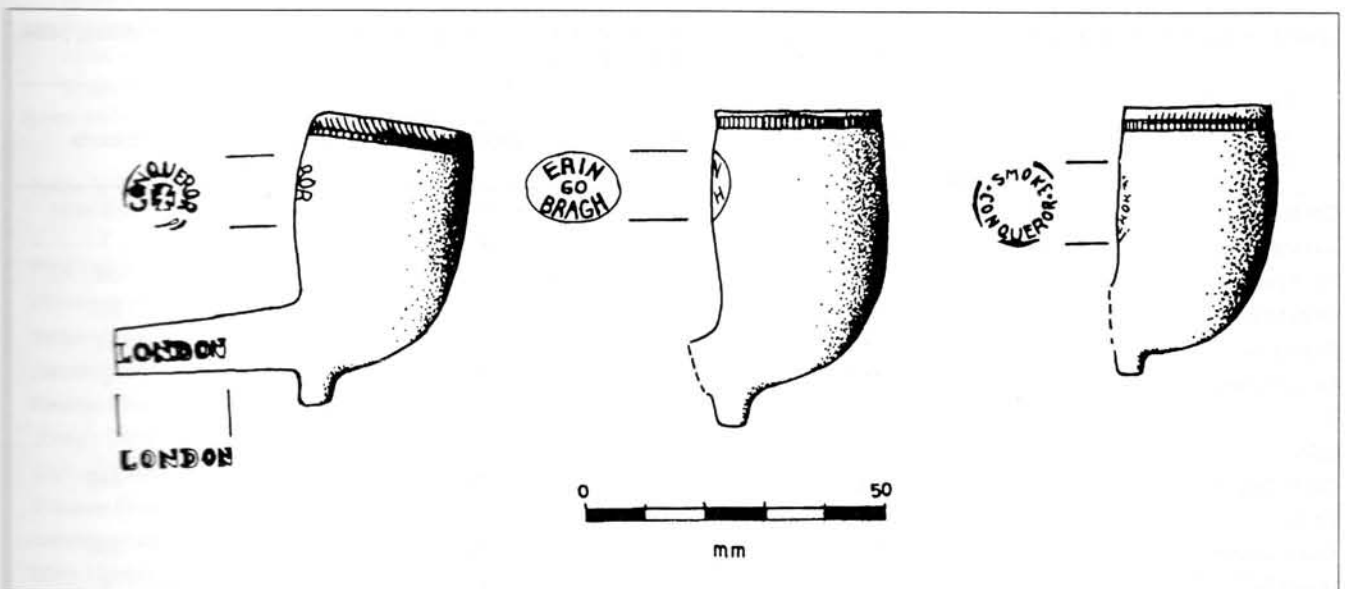


Fig. 7. Irish navy-style clay pipes (dudeens) showing the characteristic rouletted rim and thick stem. (Drawn by Georgia Rennie.)

from the other British colonies were products of Great Britain being trans-shipped. Intercolonial import and export within Australia was only a small part of the total trade and much of this appears to have occurred along the rural borders, such as the Riverina which, although in New South Wales, had stronger economic ties to Melbourne and Adelaide than Sydney. For example, at Moama on the Murray River, seven boxes of clay pipes were imported from Victoria to New South Wales in the last three months of 1864, while nine boxes went in the opposite direction in the same period.⁴³

Although the colonial statistics are notoriously difficult to use a systematic study should be able to establish general patterns of clay pipe importation, re-export and trade structure.

Export from the Colonies

In 1831 Sydney clay pipe maker Joseph Elliott claimed to be able to expedite export orders,⁴⁴ and already by the start of the nineteenth century it is claimed that pipes made in New South Wales were being sold in England and Europe.⁴⁵ Apart from these early instances, our knowledge of both the export of colonial clay pipes or of the re-export of British pipes to other colonies is derived from trade statistics. Typical trade figures (Tables 1, 2) show that although there were many individual destinations, these were almost all either aimed for the Pacific islands, or to the other Australian colonies. For the years 1869-1881 the value of export pipes ranged between 4 percent and 12.6 percent of the value of pipe imports for the same period.⁴⁶

It is unclear whether pipes destined for the Pacific and other Australian colonies were ordered direct from Great Britain, or whether orders were placed with merchants in Sydney, who filled them from available stock. Some answers may be available from a close analysis of assemblages in the Pacific islands and work on the records of key merchants.

Production in the Colonies

Despite Sydney's early development of a pottery industry to cater for local demand there does not appear to have been any commercial production of clay pipes in Australia until William Cluer began production in about 1804.⁴⁷

The data on local production is scanty and relies heavily on the 1828 Census. Systematic work by Wilson indicates that there were at least 11 pipe-makers operating in Sydney within the period from 1804 to before 1850 (Table 3). The reliance

upon the 1828 census may falsely suggest a peak around that particular date. What is clear, however, is that there was a real decline in local manufacture in the late 1830s and 1840s.

The cause of the decline can only be guessed at. It may have coincided with the general collapse of the colonial economy in the early 1840s, or may have been brought about because the small local pipe-makers could not compete with increasingly cheap Scottish and possibly Dutch imports. In December 1831 Joseph Elliott advertised that he was reducing his wholesale price of pipes from 5 shillings to 4 shillings per gross. A week later the price was reduced further to 2 shillings 6 pence.⁴⁸ Elliott survived to operate for another seven years.

Among the names of known Sydney pipe-makers are two Cluers and three Elliots. The family relationships of the individuals are unclear, but it was common in Britain for several generations of the same family to continue a trade in pipe-making, either in succession or operating simultaneously.⁴⁹ According to Wilson the operations all appear to be small, some of the pipe-makers having products appearing under their own name, while a few worked as employees of other pipe-makers.⁵⁰

The presence of Mary Cluer, also known as Mary Morgan (Table 3), is not surprising, as many women traditionally worked with their husbands in the smaller pipe-making firms, perhaps with several apprentices. Mary (Morgan) Cluer's experience of continuing to operate as a pipe-maker after the death of her husbands was a common one in the nineteenth century among pipe-making families.⁵¹

Trade figures for Victoria in 1864 note that locally made pipes were being exported to New South Wales and New Zealand. No mention is made in Victorian production statistics of the presence of clay pipe manufacturers, but this may be because of the small size of the industry or because it was a minor sideline of the larger potteries.⁵²

Consumption

This is the least understood part of the life-cycle of clay pipes and the one where archaeological evidence needs to be relied upon the most. Having already noted the general social distinctions in the consumption of tobacco and the use of clay pipes, it is possible to examine in more detail particular situations where pipes were used, to get an understanding of how the archaeological data reflects social or economic behaviour in particular circumstances.

Table 1: Imports and exports of clay pipes in selected years, New South Wales only. (Statistical Register of New South Wales, 1864, 1878, 1881.) Figures represent number of cases per annum.

	1864		1878		1881	
	Imports	Exports	Imports	Exports	Imports	Exports
	(cases)		(cases)		(cases)	
Great Britain	1290	294	2955		5862	1
Victoria	94	1	455	4	292	7
Sth Australia		1	212	7	114	26
Queensland	10		2	310	5	397
Tasmania		1		2		21
New Zealand		577	1	57		2
Pte. De Galle	9		1			
USA		1	3			
South Sea Is.	3	55	9	175	18	440
China			2		4	
New Caledonia		183		184		308
Honolulu				1		4
Cape Gd Hope	17					
Germany					43	

Table 2: Imports and exports of pipes (clay, wood and meerschaum) in selected years, Victoria only (*Statistical Register for the Colony of Victoria, 1864, 1878, 1881.*)

	1864		1878		1881	
	Imports (packages)	Exports	Imports (packages)	Exports	Imports (packages)	Exports
Gt Britain	639		20459		27825	
N.S.W.		90+6*		1474		563
Sth Aust.		40				88
Qld.		20				9
Tas.		16		160		809
NZ.	1	387+5*		570		480
WA.		8		6		67
Hong Kong	158					
Samoa						908
Suez	4					
Rotterdam	42					
Fiji						62
Hamburg		4			160	
Charente	63					
Ceylon	9					

* Note: denotes Victorian manufacture

Clay pipes were probably distributed from a wide variety of shops, pubs and other outlets. Tobacconists were a major supplier of pipes and smokers' requisites and account for most of the known examples of Australian firms advertising directly upon clay pipes. Examples marked 'DIXSON' and 'SAYWELL', both tobacconists, are common, and are found on imported pipes, meaning that Scottish firms produced the pipes to order. Advertising for particular brands of tobacco, such as 'Conqueror' and 'Sunflower', is also common.

In addition to specialist suppliers, there would probably be no problem in buying a clay pipe in any pub, corner store or workingman's establishment. Many English pubs supplied them free to drinkers, a practice which may also have operated in the colonies. Fowler records:

...the cutty is of all shapes, sizes and shades. Some are negro heads, set with rows of very white teeth - some are mermaids, showing their more presentable halves up the front of the bowls, and stowing away their weedy fundamentals under the items. Some are Turkish caps - some are Russian skulls...⁵³

While this clearly expresses the diversity of known pipe types and the range found in some assemblages, at other sites

Table 3: Pipe-makers operating in New South Wales between 1804 and 1844. Based on information from Wilson (1988).

Pipe-maker	Known working dates
William Cluer	1804 - 1821
William Dark	1828
James Dickens	1828
George Elliott	1828
Joseph Elliott	1831 - 1837
Samuel Elliott	1832 - 1837
Thomas Frost	1828
Jonathan Leak	1822 - 1839
Mary Morgan	1821 - 1832*
Thomas Rowland	1828

* Note: Mary (Morgan) Cluer, wife of William Cluer, operated his pipeworks during his absence overseas in 1821-2, and from after his death in 1824. Reverted to the name Mary Cluer in 1832.

there is a very restricted range of pipe types represented.

An example of deliberate choice in pipes is from Cadmans Cottage in the Rocks. A number of pipes were recovered from excavations in 1988.⁵⁴ A large proportion of these were of the *dudeen* (Irish navy) variety - thick-walled and short-stemmed with a rouletted bowl rim (Fig. 7). Several of these had Irish slogans or symbols on the bowl, such as shamrocks and 'ERIN GO BRAGH'. Some of the stems were stamped with the word 'CORK', a variety found in several pipe-makers' catalogues. The context of the finds, many dating from the 1860s and 1870s during the use of the Cottage as part of Sydney Sailors Home, was from the height of sectarian violence between Anglo-Saxons and Irish in Sydney. So intense was the sectarianism that in 1868 the travelling Prince Alfred was shot by a would-be assassin, the self-confessed Fenian (Irish liberationist) Henry O'Farrell.⁵⁵ Ironically the assassination attempt took place at a fund-raising picnic for the Sailors Home.

While we have no documentary evidence that there were Irish occupants at Cadmans Cottage, the predominance of Irish pipes strongly supports their presence. The sailors who stayed at the Home were both from international vessels and inter-colonial ships. The Irish-born formed a large proportion of the colony's transport workers and labourers during this period.⁵⁶

The parading of an identity through pipes, in this case Irish, is very clear.⁵⁷ Pipes, like other accessories, can serve as a clear and unambiguous identifier of a person's social affiliation and hence have an important role in socially divided societies.⁵⁸ Occurring in a time when there was sectarian violence, the display of Irishness cannot be seen as a neutral act, but one charged with the desire to identify with a faction and to confront.

Interestingly, no Irish pipes are recorded from Port Arthur, which covered the same period, nor are they common in Canada. The Port Arthur authorities may have deliberately suppressed their use as a provocative symbol.⁵⁹

There appears to be a consistent difference between some sites that exhibit large numbers of pipes with a great amount of variability, while other sites seem to be dominated by one or two types of pipe, with a small number of other types represented. Whether this reflects a difference in site function

and consumption patterns or represents vagaries in archaeological sampling is unclear. It is an issue that needs to be explored further.

THE COLONIAL MARKET

A unique colonial market for particular clay pipe styles existed from at least the 1830s onwards, in the sense of a group of consumers in a particular place with preference for a restricted variety of types of pipe decoration. Walker notes that one of the reasons the Scottish manufacturers had such extensive ranges was to be able to cater to the diverse tastes of the different colonies, such as the West African preference for large bowled pipes.⁶⁰

Evidence of a distinct Australian market consists of certain pipe types which were clearly produced with the Australian colonies in mind. One example is of pipes with a stem marked 'SQUATTERS BUDGEREE', which has been found on a number of Australian sites (Fig. 8). The term '*budgerie*', meaning good, was derived originally from Aboriginal languages around Port Jackson, and eventually entered colonial slang.⁶¹ One maker has been identified from a field survey of a pipe-making location in Rainford, northwest England.⁶² A stem fragment which features a partial 'SQUAT...' / '...GEREE' was found among possibly redeposited kiln waste in a field. It has been tentatively attributed to David Swallow, a pipe maker who operated in the area from c.1860 to 1880.

Further evidence that local consumers had particular tastes, which may have been considered unorthodox, can be found in a report prepared by Governor Ralph Darling, on the bushranger Jack Donahoe, the Wild Colonial Boy. In September 1831 Donahoe was killed and Darling notes:

A pipe maker was permitted to take a cast of his head showing a bullet wound in the forehead...The pipe maker made clay pipes, the bowl bearing a facsimile of the cast, and these pipes had a large sale.⁶³

Although the pipe-maker referred to is not known, Sydney pipe-maker Samuel Elliott produced a pipe showing the head of King William at about the same period.⁶⁴ Whether this monarch had a particular meaning to the colonial smoker is not known, but the production of such effigy pipes appears to have been quite common in the Australian colonies in the 1830s. Many fragments of effigy pipes have been found on colonial sites of this period, and the designs appear to be stylistically similar to the King William pipe, possibly indicating colonial

production. Effigy pipes of a much finer standard were produced by French and Dutch manufacturers and imported into Australia, including a fine shrouded death's head bowl found in the demolition layers of the First Government House site c.1845.⁶⁵

From the mid nineteenth century the Scottish manufacturers also began producing pipes for the colonial market. McDougall produced a variety of pipes for this market, including a variety called 'Sydney', available in small, medium and large sizes, as well as 'Carved Sydney', 'American Sydney' and 'Sydney cutty'. William White produced short and long 'Australian', 'Bent Squatter', 'Kangaroo' and many other examples are known.⁶⁶ The earliest of these pipes can be dated to the 1850s from the manufacturers' price lists, and this coincides with the dramatic population increase brought about by the gold rushes. From then on all of the Scottish pipe-makers regularly added Australian titles to their range.

The existence of a colonial market with particular preferences prompts a number of questions, including the need to better define what those preferences were and whether they were uniform throughout colonial society or differed according to class or origin. Of interest too is how well did the preference for particular types of pipe relate to other aspects of the creation of a colonial, and ultimately national, identity.⁶⁷

DATING

Clay pipes are routinely used to date deposits through direct determination of *terminus post quem*, generally based upon their manufacturers, but there are other dating techniques which may prove useful in the Australian context.⁶⁸

The first dating procedure is typological, based upon the identification of the products of individual pipe-makers, who are able to be dated by reference to trade directories and censuses. As nearly all pipes are marked with makers' initials or names this is feasible for a large proportion of assemblages. During the last third of the nineteenth century there was a trend away from marking every pipe type, and many examples found in Australia carry no maker's name. The work of Oswald provides an encyclopaedic overview of the clay pipe industry in Britain, and research is continually refining local chronologies of clay pipe manufacture.⁶⁹

The work presented in Davey is especially relevant to Australian clay pipe research as it deals exclusively with Scottish pipe-makers, many of whose products dominate late

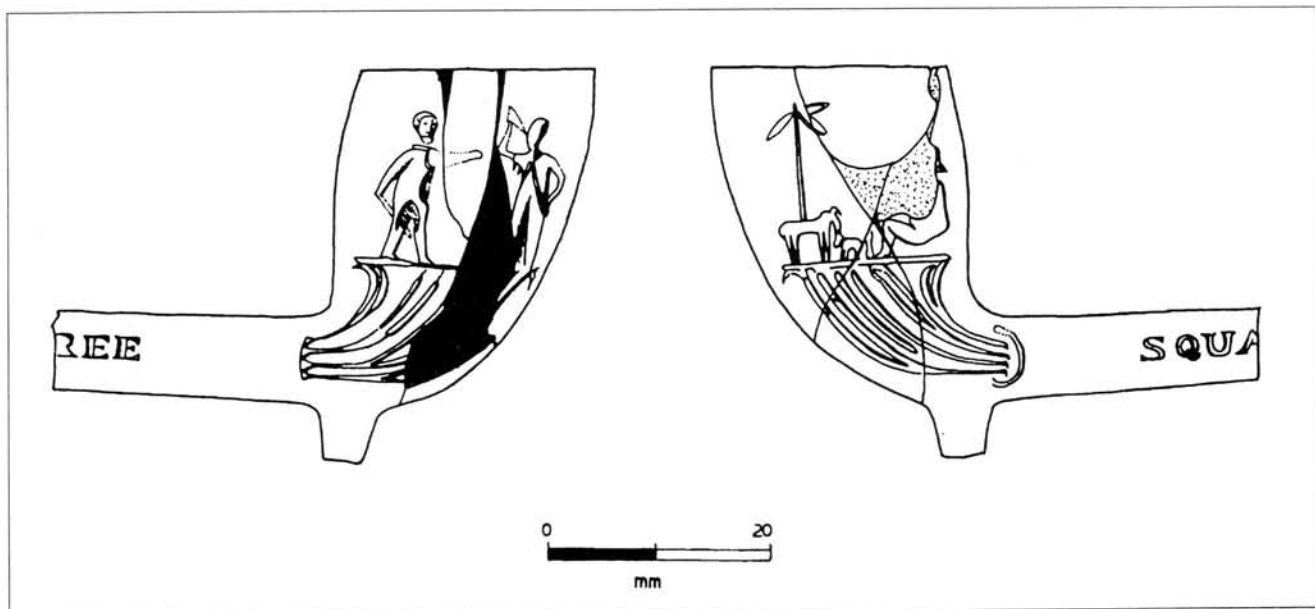


Fig. 8: The 'SQUATTERS BUDGEREE' pipe, produced for the Australian colonies, and commonly found on nineteenth-century Australian sites. (Drawn by Georgia Rennie.)

mineteenth-century clay pipe assemblages in Australia.⁷⁰ Unfortunately many of the major exporters to Australia, such as McDougall and William White, operated for long periods and so may not provide useful dating information on the basis of a manufacturer's name on a stem.

A second approach is also typological, but relies upon the information available in the pipe-makers' catalogues. Fortunately, complete price lists dating to 1900 are available for all of the Scottish exporting pipe-makers.⁷¹ These lists provide a sequential catalogue number for each type of pipe, the name of each pipe variety and price per gross. Assuming that the catalogue numbers were given as new clay pipe types were introduced, the personality pipes, representing popular figures or, occasionally, political issues, to provide approximate dates for the introduction of all types.

A comprehensive list of all identified personality pipes from the Scottish manufacturers' price lists is being prepared.⁷² As the sequence of personality dates identified to date are generally consistent with the numbering sequence they can be used, albeit with caution, in extrapolating the dates of introduction of other pipe types.

A third dating technique is based upon the calculation of mean dates from a sample of clay pipe stem fragments. This technique was originally developed by Harrington, who noted that the average diameter of the stem bore decreased through time.⁷³ Dating an assemblage was done by producing a histogram of stem bore diameters, and comparing it with the Harrington histograms. Binford developed a regression formula which used individual pipe stem diameters and a mean calculated which produced a single mean date for an assemblage.⁷⁴

Noël-Hume used a well-dated sample of clay pipe stem fragments to test the Binford formula.⁷⁵ The formula only appears to work well only between 1680 and 1760, probably because at the latter date a practical minimum stem bore diameter was reached. Experiments on Australian assemblages confirm this.⁷⁶

CONCLUSIONS

The aim of this paper was to provide a context for further research into clay tobacco pipe assemblages from sites in Australia and elsewhere. While generally descriptive it is hoped that enough information on the social and economic role of clay pipe use has been provided to assist in providing a greater depth of interpretation than has been previously published.

It has only been possible to sketch some of the social relationships which can be investigated by clay pipes. Clearly, clay pipes had a use as an indicator of class, and from this smoking picked up a connotation of low status which was used to depict and stereotype people. Within Aboriginal and other marginal communities which existed on the fringes of settlement or in dependent situations tobacco may also have been a tool of social and economic control.

The economic circumstances within which clay pipes were produced, traded and used were also only able to be studied as a series of particular examples. These showed that the archaeological evidence was able to usefully supplement the historical record and to develop an understanding of the processes involved which are not available from documentary sources. Especially important is the identification of a colonial market which preferred certain products and was catered for by the creation of particular types of pipe to appeal to that market. The consideration of the developing self identity of Australian consumers and their use of tobacco pipes to represent their social or political attitudes and affiliations requires further work, but has been shown to be a particularly promising area of research.

The creation of further dating tools based upon the formal characteristics of individual pipe types or assemblages require more development. Opportunities exist to define the introduction date of identifiable types of personality and other pipes that act as temporal markers.

Dating pipes by stem diameters does not appear to operate well in the nineteenth century, but further consideration and systematic recording of other gradual changes, such as diminution of spurs or changes in the lettering of makers marks may provide important dating clues for use in archaeology.

This paper has been general both because it is attempting to describe the social context of clay pipe use, and also because there is a real lack of available material on clay pipes in Australia. Few studies, whether descriptive or analytical, have ever been fully published, and until this is reversed the potential that clay pipes offer as ideal artefacts will not be fulfilled. We would certainly argue that far more effort needs to be spent in making the results of archaeological excavations accessible, and that this is especially important for clay pipes, which are found on most sites, and have abundant analytical potential.

Nearly every topic raised in this paper requires further research. Most of the examples come from New South Wales, and it is reasonable to ask whether this was typical of the other colonies. There are quite good reasons why it would not necessarily be so at all. We have shown that productive research on clay pipes from Australian sites is possible, and that the archaeologist is not confined to the production of typologies. The potential exists to conduct research on the use of clay pipes, the mechanisms of the trade, their symbolism and their archaeology from sites all over Australia. This framework is therefore offered as a starting point to allow future studies to be better directed towards questions that matter. Nothing in this paper is considered to be definitive, nor is any of it likely to remain unchanged by later research. We began this paper with a description of the many reasons why clay pipes were worthy of study. It is our hope that this paper has gone further in showing how such studies can be done, and how they can build up a better picture of Australian colonial life.

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ABBREVIATIONS

AND	Australian National Dictionary
HCTPS	Historic Clay Tobacco Pipe Studies
SCPR	Society for Clay Pipe Research
SH	Sydney Herald

NOTES

- 1 Dane and Morrison 1979.
- 2 Jack 1986.
- 3 Walker 1977.
- 4 Fresco-Corbu 1982.
- 5 Walker 1977:211-244.
- 6 Oswald 1975, Walker 1977.

- 7 Walker 1977 provides detailed accounts of clay pipe manufacture.
- 8 Gallagher 1987.
- 9 Brassey 1991.
- 10 Gallagher 1989.
- 11 Godden 1964:11.
- 12 Higginbotham 1991.
- 13 Wilson 1988.
- 14 One example was found at Lilyvale, The Rocks, Sydney. G. Wilson pers. comm.
- 15 Etter 1980, Ritchie 1986, Wylie and Fike 1993.
- 16 Walker 1977:3.
- 17 Huey 1974; Walker 1976; Parker 1988.
- 18 Fowler 1859.
- 19 King and Pogue 1987.
- 20 M. Green pers. comm., also a series of papers in *SCPR Newsletter* 50 (1996).
- 21 Walker 1977.
- 22 Authors - personal observation.
- 23 Walker 1984.
- 24 Mann 1811:43.
- 25 Kiddle 1962:63-64.
- 26 Walker 1984.
- 27 Harris 1847:5.
- 28 Sharkey 1988:38.
- 29 Walker 1977:327.
- 30 Fowler 1859.
- 31 Walker 1984:15-19.
- 32 E.g. Birmingham 1976:313-314.
- 33 Walker 1984.
- 34 Arnold 1977, Gallagher and Sharp 1986, Walker 1977.
- 35 Mann 1811:43.
- 36 Studies of shipwreck material show that 'odd' pipes seem to be common items among crews' personal effects, e.g. *Vergulde Draeck* - Jack (1990), *HMS Pandora* - Davey (1989).
- 37 *Statistical Register of New South Wales*, 1864:Table 41.
- 38 Harris 1986. Another wreck the *Blencathra*, wrecked at Currie, King Island, also contains a large number of clay pipes made by Davidson. Some of these have been collected by local divers and one of the authors (IMS) is studying the collection.
- 39 Wilson and Kelly 1987.
- 40 Macle hose 1839:183.
- 41 Wilson and Kelly 1987:1.
- 42 *Statistical Register for the Colony of Victoria*.
- 43 *Statistical Register of New South Wales*, 1864:Tables 86, 87.
- 44 SH 26.12.1831.
- 45 Lawson 1971, quoted in Wilson and Kelly 1987:1-2.
- 46 *Statistical Register of New South Wales*, 1869-1881.
- 47 Higginbotham 1987; Wilson 1988.
- 48 SH 26.12.1831: 3; SH 2.1.1832: 3.
- 49 Walker 1977.
- 50 Wilson 1988.
- 51 Walker 1977:174.
- 52 Arnold Levin operated as a pipe maker in Melbourne from 1872 to at least 1888. Kris Courtney pers. comm.
- 53 Fowler 1859.
- 54 Gojak 1989, 1995.
- 55 Amos 1988.
- 56 McConville 1984.
- 57 Gojak 1991.
- 58 Wobst 1977.
- 59 Dane and Morrison 1979 for Port Arthur. For Canada see Walker 1983, with Kraemer 1988 and Alexander 1986 for a contrary perspective.
- 60 1983:18.
- 61 AND:102.
- 62 Gojak 1995; Dagnall 1996; Ron Dagnall pers. comm.
- 63 Quoted in Meredith 1982.
- 64 Wilson and Kelly 1987:18, Type 012.
- 65 Wilson and Kelly 1987-cover illustration.
- 66 Gallagher 1987.
- 67 Gojak 1991.
- 68 E.g. Dane and Morrison 1979.
- 69 See Oswald 1975 *SCPR Newsletter*, the *Archaeology of the Clay Tobacco Pipe* series and *Historic Clay Tobacco Pipe Studies*.
- 70 1987.
- 71 Gallagher 1987.
- 72 Stuart and Gojak in preparation.
- 73 Walker 1972.
- 74 Walker 1972.
- 75 Noël-Hume 1970.
- 76 Dane and Morrison 1979.

BIBLIOGRAPHY

- ALEXANDER, L. T. 1986. 'Clay pipes with Irish affiliations', *Historic Clay Tobacco Pipe Studies* 3:69-75.
- AMOS, K. 1988. *The Fenians in Australia 1865-1880*, University of New South Wales Press, Kensington.
- ARNOLD, C. J. 1977. 'The clay tobacco-pipe industry: An economic study,' in D.P.S. Peacock (ed.) *Pottery and early commerce: Characterization and trade in Roman and later ceramics*, Academic Press, London, pp. 313-336.
- BIRMINGHAM, J. 1976. 'The archaeological contribution to nineteenth-century history: Some Australian case studies', *World Archaeology* 7:306-317.
- BRASSEY, R. 1991. 'Clay tobacco pipes from the site of the Victoria Hotel, Auckland, New Zealand', *Australian Historical Archaeology* 9:27-30.
- DAGNALL, R. 1996. 'Squatter's budgerie pipe', *Society for Clay Pipe Research Newsletter* 50:53-55.
- DANE, A. and R. MORRISON. 1979. *Clay pipes from Port Arthur 1830-1877*, Department of Prehistory RSPacS, Australian National University, Canberra.
- DAVEY, P. (ed.) 1987. *The archaeology of the clay tobacco pipe. X. Scotland*, British Archaeological Reports, British Series 178.
- DAVEY, P. 1991. 'Stone pipe from the wreck of HMS Pandora', *Society for Clay Pipe Research Newsletter*, 30:23-24.
- ETTER, P. A. 1980. 'The west coast Chinese and opium smoking', in R.L. Schuyler (ed.) *Archaeological perspectives on ethnicity in America*, Baywood Publishing, Farmingdale, pp. 97-101.
- FOWLER, F. 1859. *Southern lights and shades*, quoted in B. Groom and W. Wickman (eds), *Sydney - The 1850s: The*

- Lost Collections, Historic Photographs Collection, University of Sydney.
- FRESCO-CORBU, R. 1982. *European pipes*, Lutterworth Press, Guildford.
- GALLAGHER, D. B. 1987. 'The 1900 price list of the Pipe Makers' Society', in P. Davey (ed.) *The archaeology of the clay tobacco pipe. X. Scotland*, British Archaeological Reports, British Series 178, pp. 142-164.
- GALLAGHER, D. B. 1989. 'TW pipes: Their origins and development', *Society for Clay Pipe Research Newsletter* 22:1-7.
- GALLAGHER, D. and R. PPRICE. 1987. 'Thomas Davidson and Co., Glasgow', in P. Davey (ed.) *The archaeology of the clay tobacco pipe. X. Scotland*, British Archaeological Reports, British Series 178, pp. 110-138.
- GALLAGHER, D. B. and A. SHARP. 1986. *Pypes of tabaca: Edinburgh tobacco pipemakers and their pipes*, City of Edinburgh District Council Museums and Art Galleries, Edinburgh.
- GODDEN, G. A. 1964. *Encyclopaedia of British pottery and porcelain marks*, Barrie and Jenkins, London.
- GOJAK, D. 1989. Cadmans Cottage archaeological project 1988: Interim report to Comrealty Pty Ltd, report held by National Parks and Wildlife Service, Sydney.
- GOJAK, D. 1991. Ethnicity and nationalism in nineteenth-century Sydney, paper presented to 1991 Rocks and Millers Point Historical Archaeology Workshop, Sydney.
- GOJAK, D. 1995. 'Clay tobacco pipes from Cadmans Cottage, Sydney, Australia', *Society for Clay Pipe Research Newsletter* 48:11-19.
- HARRIS, A. ['Emigrant Mechanic'] 1847 (1964). *Settlers and convicts: Recollections of sixteen years' labour in the Australian backwoods*, Melbourne University Press, Melbourne.
- HARRIS, C. A. (compiler) 1986. *The discovery and survey of the wreck of the Tigress*, Society for Underwater Historical Research Inc., North Adelaide.
- HIGGINBOTHAM, E. 1987. 'The excavation of buildings in the early township of Parramatta, New South Wales, 1790-1820s', *Australian Historical Archaeology* 5:3-20.
- HIGGINBOTHAM, E. 1991. Report on the archaeological excavations in Macquarie Place, Sydney, New South Wales, report to Peddle Thorp and Walker, Sydney.
- HUEY, P. R. 1974. 'Reworked pipe stems: A 17th century phenomenon from the site of Fort Orange, Albany, New York', *Historical Archaeology* 8:105-111.
- JACK, R. I. 1986. 'Clay tobacco pipes exported from Scotland to Australia in the nineteenth century: Some preliminary observations', *Historic Clay Tobacco Pipe Studies* 3:124-134.
- JACK, R. I. 1990. 'Clay pipes from Thailand', *Society for Clay Pipe Research Newsletter* 27:15-18.
- KIDDLE, M. 1962. *Men of yesterday: A social history of the Western District of Victoria 1834-1890*, Melbourne University Press, Melbourne.
- KING, J. A. and D. J. POGUE. 1987. 'An unusual pipestem find from St Inigoes Manor, Maryland' *Historical Archaeology* 21 (1):102-104.
- KRAEMER, E. 1988 'An Irish theme pipe from the South Ryerson School site,' *Profile: Newsletter of the Toronto Chapter, Ontario Archaeological Society* 7 (1):10-11.
- LAWSON, W. 1971. 'A history of industrial pottery production in New South Wales', *Journal of the Royal Australian Historical Society* 57:17-39.
- MCCONVILLE, C. M. 1984. Migrant Irish and suburban Catholics 1851-1933, unpublished Ph.D. thesis, University of Melbourne.
- MACLEHOUSE, J. 1839 (1977). *Picture of Sydney and strangers' guide in New South Wales for 1839*, facsimile edition, John Ferguson, Sydney.
- MANN, D. D. 1811 (1979). *The present picture of New South Wales 1811*, facsimile edition, John Ferguson, Sydney.
- MEREDITH, J. 1982. *The Donahoe Ballads*, Red Rooster Press, Ascot Vale.
- NOEL-HUME, I. 1970. 'Tobacco pipes and smoking equipment', in I. Noël-Hume *A guide to artifacts of colonial America*, Alfred A. Knopf, New York, pp. 296-313.
- OSWALD, A. 1975. *Clay pipes for the archaeologist*, British Archaeological Reports, British Series 14.
- PARKER, K. 1988. 'A use for broken pipe stems', *Society for Clay Pipe Research Newsletter* 17:12-13.
- RITCHIE, N. 1986. Archaeology and history of the Chinese in southern New Zealand during the nineteenth century: A study of acculturation, adaptation and change, unpublished Ph.D. thesis, University of Otago.
- SHARKEY, O. 1988. *Common knowledge: The Irishness of everyday things*, McPhee Gribble, Melbourne.
- STATISTICAL REGISTER OF NEW SOUTH WALES
STATISTICAL REGISTER FOR THE COLONY OF VICTORIA
- STUART, I. M. and D. GOJAK. in preparation. Comprehensive list of personality pipe types produced by nineteenth-century Scottish exporters.
- SYDNEY HERALD
- WALKER, I. C. 1972. 'Binford, science and history: The probabilistic variability of explicated epistemology and nomothetic paradigms in historical archaeology', *Conference on Historic Site Archaeology Papers* 7 (3):159-201.
- WALKER, I. C. 1976. 'Alternative uses for clay tobacco pipes and tobacco pipe fragments: Some notes', *Historical Archaeology* 10:124-127.
- WALKER, I. C. 1977. *Clay tobacco pipes with particular reference to the Bristol industry*, Parks Canada, History and Archaeology 11.
- WALKER, I. C. 1983. 'Nineteenth-century clay tobacco-pipes in Canada', in P. Davey (ed.) *The archaeology of the clay tobacco pipe. VIII. America*, British Archaeological Reports, International Series 175, pp. 1-87.
- WALKER, R. 1984. *Under fire: A history of tobacco smoking in Australia*, Melbourne University Press, Melbourne.
- WILSON, G.C. 1988. Preliminary list of Sydney clay tobacco pipe makers and distributors, unpublished manuscript.
- WILSON, G. C. and A. KELLY. 1987. *Preliminary analysis of clay tobacco pipes from the First Government House site, Sydney*, Department of Planning, Sydney.
- WOBST, H. M. 1977. 'Stylistic behaviour and information exchange', in C.E. Cleland (ed.), *For the Director: Research essays in honour of James B. Griffin*, Anthropological Papers, Museum of Anthropology, University of Michigan, No. 61, pp. 317-342.
- WYLIE, J. and R. E. FIKE. 1993. 'Chinese opium smoking techniques and paraphernalia', in P. Wegars (ed.), *Hidden heritage: Historical archaeology of the overseas Chinese*, Baywood, Amityville, pp. 255-303.