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Citation of the article:

This is an Accepted Manuscript of a chapter published by Taylor & Francis in Australian archaeology in 2011, available at: https://doi.org/10.1080/03122417.2011.11961919

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Amalgamation of Archaeological Assemblages: Experiences from the Commonwealth Block Project, Melbourne

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Australian Archaeology Dec 2011 (in press)

Abstract

To study broader social changes such as colonisation and globalisation, a holistic approach that incorporates various data (historical documents, building remains, site formation and artefacts) and scales of analysis (household, suburb, city, national and global) is particularly important. Comparative studies between archaeological assemblages are a significant component of this endeavour. To enable such studies, consideration must first be given to the methodology required to amalgamate assemblages for analysis. A recent project designed to amalgamate the assemblages excavated from the Commonwealth Block, Melbourne, provides an opportunity to explore these processes. This paper discusses how consolidating site records, targeting significant deposits, locating artefacts, managing data and unravelling the history of an assemblage are important precursors to cataloguing and analysis when working with previously excavated assemblages.

Introduction

Drawing on material culture studies in a range of disciplines since the 1970s (e.g. Ames 1978; Douglas and Isherwood 1978; Glassie 1975; McCracken 1988), the relationship between material culture and society and its potential in historical archaeology has been firmly established within the discipline (e.g. Beaudry et al. 1991; Cochran and Beaudry 2006; Connah 1993; Deetz 1977; Lawrence 1998; Miller 1987; Schlereth 1985; Skibo and Schiffer 2008; Spencer-Wood 1987). It has also long been acknowledged that historical archaeology should contribute to understandings of broader social and cultural processes (e.g. Connah 1983; Karskens and Lawrence 2003; Karskens and Thorp 1992; Murray and Crook 2005; Staski 1987), and that the interpretation of material culture has an integral role to play in understanding society (e.g. Csikszentmihalyi 1993; Ferguson 1975; Lawrence 1998).

Comparative studies between assemblages are a significant and much needed component of the above endeavour (Gibbs 2005:3; Karskens and Lawrence 2003; Lawrence 1998). The difficulty in producing such comparative studies reflects the complexities of excavating,
cataloguing and managing data from large excavations over long periods of time, often with minimal resources. In addition, the rapid development of information technology since the 1990s has seen a dramatic increase in the complexity of the management of artefact data and analysis, and has led to a demand for methodological discussions on cataloguing techniques and comparability of data in the discipline (see Birmingham 1990; Crook et al. 2002; Lawrence 1998).

The primary aim of this paper is to respond to this demand by discussing the issues raised through the amalgamation of different assemblages from a large-scale urban site for the Commonwealth Block Project (an Australian Research Council-funded project by La Trobe University and Museum Victoria). The amalgamation of assemblages (whether from different seasons on one site or multiple sites) involves the review of historical information, consolidation of site records, consolidation of artefact catalogues and the review of artefact records in order to create complete and comparable site assemblages. In addressing the above aim, this paper first provides an overview of the development of urban archaeology in Australia to illustrate the potential significance of amalgamating multiple assemblages to facilitate comparative analysis. The Commonwealth Block assemblages are then used as a case study to explore the practical issues that emerged in the process of their amalgamation.

The Development of Urban Archaeology in Australia
From the early development of historical archaeology in Australia, cultural heritage management has been a major driving force and has generated a significant number of excavations conducted as part of the redevelopment of urban sites. This work constitutes the vast majority of research in urban archaeology, the consequences of which have been much discussed: namely, lack of time and money especially for post-excavation analysis of artefacts, and a stronger emphasis on methods and public engagement than research objectives and publishing (Birmingham 1990; Karskens 2006:270; Mayne and Murray 2001:2). This is not a new issue and is not unique to Australian historical archaeology (see Staski 1987:ix).

Another limiting factor on research has been the focus on the household in Australian historical archaeology (Bairstow 1991; Murray and Crook 2005:90-91). In the case of artefact studies, the major contribution prior to 2000 was the ethnographic reconstruction of individuals in the past (Lawrence 1998:8), an avenue feasible at the household level which
remains popular. While this body of work provides a significant glimpse into the past, as Bairstow (1991:57) noted, evidence for processes of urbanisation and social change is rarely gained from the study of a household. Expanding on this, Karskens and Thorp (1992:56) observed that there is ‘potential for research questions to draw together what seems scattered, unrelated, yet intriguing data’ in historical archaeology.

In the last 10 years, work in urban archaeology in Melbourne and Sydney has further highlighted the importance of comparative studies of assemblages and varying scales of analysis (household, suburb, city, national and global) in order to address themes such as globalisation, immigration, class, mass consumption, mass production etc (Gibbs 2005:3; Karskens and Lawrence 2003; Murray and Crook 2005:90-91; Murray et al. 2003:113-114; Murray and Mayne 2001:104). Notable studies include comparisons within urban neighbourhoods (e.g. Crook et al. 2005; Godden Mackay Logan 1999; Godden Mackay Logan et al. 2004a; Karskens 1999; Mackay et al. 2006; Murray and Mayne 2001), between cities in different countries (e.g. Brooks 2002; Lawrence 2003; Murray et al. 2003:128-133), and between cities, suburbs and rural areas (e.g. Ellis 2001; Hayes 2007; Lawrence and Davies 2011). A number of these studies compare data generated by different archaeologists and where this is the case the comparisons are based on potentially disparate datasets where different methods are applied to analysis (particularly calculation of MNIs, type series and matching sets analysis).

Cultural heritage management and the focus on households in Australian historical archaeology have two consequences that limit such comparative and broad-scale studies. First, site selection is frequently determined by access to the archaeological record as made available by development. As a result, comparisons are possible within city centres but rarely with other areas (particularly the suburbs). Second, different methods of artefact recording and analysis often complicate rigorous comparisons between different assemblages (Crook et al. 2002:26; Gibbs 2005:3; Hayes 2007:90). As Murray and Crook (2005:91) noted, improvements to artefact analysis are important to facilitating research at various scales, promoting the meaningful amalgamation of datasets and advancing interpretations.

The standardisation of cataloguing techniques and amalgamation of existing catalogues are significant issues which are complex to address. In a bid to begin to do so, Crook et al (2002) proposed ways to improve the efficiency and consistency of artefact catalogue production,
including improving the usability of previously excavated assemblages. The *Exploring the Archaeology of the Modern City* (EAMC) Project, which commenced in 2001, was initiated partly to examine the usability and research potential of stored archaeological assemblages from sites in Sydney (Crook *et al.* 2003:5, 2005). To further research and analyse the assemblages, the EAMC project consolidated data from different sites and excavation seasons into a custom-designed Microsoft Access database. The project highlighted many of the obstacles to working with previously excavated assemblages such as missing site records, inconsistencies and errors in artefact data, and access to assemblages. While significant advancements have been made in cataloguing and artefact management methods in the past 25 years, the process of resolving the above issues is complex and has not yet been fully addressed. This paper undertakes a targeted examination of these issues.

The amalgamation of data from different sites is an important methodological consideration in the objective of examining broader avenues of social and cultural processes in urban archaeology. The focus of this paper now shifts to the Commonwealth Block Project and the methods employed to amalgamate the assemblages from that site. The Commonwealth Block assemblage provides a useful case study for identifying common problems in the amalgamation of multiple datasets. The next section provides an introduction to the Commonwealth Block Project, followed by a summary of previous archaeological work at the site, while the succeeding sections will focus on the issues encountered and the methods used to amalgamate the assemblages.

**Introduction to the Commonwealth Block Project**

Building on previous archaeological work on the Commonwealth Block and that conducted by the EAMC team, the Commonwealth Block Project was initiated to consolidate, amalgamate and enhance the available site and artefact data for the whole site thereby allowing a more detailed analysis of the assemblage and new interpretations. The project also has a secondary objective, which is to develop a sustainable framework for the management of large archaeological collections (Smith and Hayes 2010). This paper contributes to these objectives by addressing the practical issues encountered during the project. The Little Lon and Casselden Place assemblages are used more heavily in the discussion as they have been the main focus of research by the Commonwealth Block Project.
Two databases were used to manage the Commonwealth Block assemblages: the EAMC database and Museum Victoria’s KE EMu (Electronic Museum) Collections Management System. The EAMC project developed a customised, relational database in Microsoft Access that incorporates artefacts, contexts and type series alongside historical documentation linking people to historical place (Crook et al. 2006a, 2006b; Crook and Murray 2006:5). The EAMC database is a relational database specifically designed for analysis of archaeological assemblages, and holds artefact data consolidated and generated by the EAMC project. By cataloguing the Commonwealth Block assemblages in this database, a level of consistency will be achieved with the data recorded by the EAMC project. EMu is a customisable database used by Museum Victoria and many other collection repositories to record objects and manage their collections. In addition to the usual tabs for collection management, conservation etc, Museum Victoria has incorporated custom historical archaeology tabs in the database to hold the specific fields required for historical archaeology collections. These tabs have been reviewed and updated by the Commonwealth Block Project team and Museum Victoria staff over the course of the project to ensure comparability between EMu and EAMC.

**Previous Archaeological Work at the Commonwealth Block**

In the second half of the nineteenth century, the Commonwealth Block (historically known as Little Lon) was a working class district characterised by housing, cottage industries and small business (Figure 1). Regarded as an area of crime, brothels and poverty, Little Lon received much attention from moral reformers towards the end of the nineteenth century. Yet archaeological investigations into the area have suggested a more complex history where the homogeneity of the slum stereotype is challenged by evidence for a sense of community among residents and many young families striving for respectability (Murray 2006:397; Murray and Mayne 2001:90). Towards the end of the nineteenth century, many ethnic minority groups, particularly the Chinese, were moving into the area and operating businesses, before the area changed again in the early twentieth century with the appearance of factories. In the late 1940s, the Commonwealth Government acquired the land and subsequently demolished the majority of the buildings in the area. High rise redevelopment was initiated in the late 1980s.

In 1987, proposed building works on the Commonwealth Block prompted the first season of excavation. A tight development schedule meant that the work was conducted in a limited
time and at short notice (McCarthy 1989). The area excavated comprised parts of sites A and C of the Commonwealth Block, approximately 6000m² (Figure 2). The excavation, conducted by four archaeologists with a team of volunteers over a four month period, revealed building foundations, hearths, cellars, cesspits and laneways. Due to multiple phases of occupation and demolition across the site concurrent with the excavation, all deposits, except for the 14 cesspits and some of the 11 rubbish dumps, were highly disturbed. Approximately 204,000 artefact fragments were recovered. The Port Arthur cataloguing system was used, as this was the only available standardised system at the time (Davies and Buckley 1987; McCarthy 1989:17). Artefacts were separated into three groups: inventory, accession and special finds. Inventory included artefacts with datable characteristics (decoration, maker’s mark etc) from stratified or undisturbed contexts while accession included artefacts from unstratified deposits or with no datable characteristics from stratified deposits (McCarthy 1989:106). Special finds were those interpreted by the excavators as having obvious significance, generally from undisturbed deposits (McCarthy 1989:19). All artefacts were catalogued, but due to financial constraints priority for analysis was given to inventory artefacts.

In 1990, excavation of the still extant Black Eagle and Oddfellows Hotels was conducted over a five week period prior to the redevelopment of the buildings (McCarthy 1990). Both hotels are located on Site B: the Black Eagle Hotel on Lonsdale Street, and the Oddfellows Hotel on the corner of Little Lonsdale Street and Little Leichardt Street (Figure 2). The same recording and cataloguing processes used for the Little Lon dig were employed. The excavations focused on underfloor deposits within the hotels, and although the deposits were highly disturbed a total of 1710 artefact fragments were recovered (McCarthy 1990:3).

In 1995, a third season of archaeological investigation took place over three days at 17 Casselden Place (Figure 2) ahead of the renovation of the cottage. The building on this site is one of the few remaining nineteenth century cottages on the Commonwealth Block. The investigation aimed to monitor the removal of floors and record the underfloor deposits; a 1m x 1m test trench was also excavated within the cottage (Lane 1995:1). A total of 1335 artefact fragments of nineteenth and twentieth century provenance were recovered (Lane 1995:8).

The proposed development of the remainder of Site B led to a test excavation in 2001 (Phase 3 Testing) to establish the archaeological potential of the area and identify areas of high
archaeological sensitivity (Howell-Meurs et al. 2001a, 2001b). Testing focused on an asphalt car park over the majority of Site B (Figure 2). This testing proposed a more detailed archaeological investigation of the site. A total of 4646 artefact fragments were recovered during this testing phase.

A fifth and final season of excavation was conducted by a team of archaeologists and volunteers over five months in 2002 and 2003, and involved the excavation of the majority of Site B prior to commercial development (Figure 2) (Godden Mackay Logan et al. 2004a). The dig uncovered similar features and deposits to the 1987 excavation including 25 cesspits and 9 rubbish pits. Approximately 296,000 artefact fragments were recovered and an extensive programme of cataloging and analysis by a team of artefact specialists was undertaken. Excluding the Phase 3 Testing artefacts which are housed at the Heritage Victoria Centre for Conservation and Research, the assemblages are all housed at Museum Victoria.

Additional post-excavation work has been undertaken on the Commonwealth Block assemblages. The Vanished Communities project which commenced in 1998 aimed to integrate historical and archaeological data to tell new stories of Little Lon (Murray and Mayne 2001; Murray and Mayne 2002). An archaeological research assistant was employed as part of the project to catalogue and analyse artefacts from the buildings along Casselden Place (Murray and Mayne 2002). A number of archaeological research theses have also been undertaken on the Commonwealth Block and tend to focus on one artefact group and/or household (Courtney 1998; Mezey 2005; Muir 2008; O’Connor 2008; Ricardi 2003; Smith 1995; Wackett 2003). A significant body of published work has been produced on the archaeology of the Commonwealth Block (including Mackay et al. 2006; Mayne and Lawrence 1998; Mayne et al. 2000; Murray 2005, 2006; Murray and Mayne 2001).

**Issues Encountered and Methods of Amalgamation**

In the following sections, the four main areas important to the process of amalgamating the Commonwealth Block assemblages will be discussed: site records, artefact records, locating artefacts and cataloguing. The issues encountered in these areas and the methods used to address them are presented.

**Site Records**
Site records are a vital part of any archaeological assemblage (Childs and Sullivan 2004:4; Drew 2004:55; Schacht 2008:21; Smith and Hayes 2010:183), and for the Commonwealth Block Project, gathering and consolidating site records was important not only for understanding the site, but also for identifying households and deposits of interest for further research.

**Consolidating Site Records**

At the start of the Commonwealth Block Project, it was important to take stock of the available site records. The various site reports were all part of Museum Victoria’s library; however, other excavation documentation including context sheets, trench books, plans, photographs, reports and artefact data was not held with their associated assemblage at the Museum. The once exception was Little Lon, for which the entire archive was lodged by the excavator with the Museum (McCarthy, pers. comm., 17 May 2011). This included site records and an extensive historical resource of information compiled from primary sources for each household on the Commonwealth Block. For the other three Commonwealth Block assemblages held at the Museum and the Phase 3 Testing, it took quite some time to track down the excavation documentation. The original excavators and Heritage Victoria were contacted for access to all available site records and artefact data not housed at the Museum.

While the majority of records were recovered, some information was not available. Though originally deposited with the Museum, level books and some photographs were missing from Little Lon (Murray and Mayne 2001: 92). Original context sheets and site records were not available for the Black Eagle and Oddfellows Hotels dig or the Phase 3 Testing; however, contexts were summarised in the reports. A small number of context sheets from both Little Lon and Casselden Place were missing.

All available information is now in the process of being accessioned into the Museum’s collection as research files and recorded in EMu in much the same way as the artefacts and given trackable, barcoded locations. Not all of the original records were created on archival quality paper with archival quality ink and some have deteriorated with age, but were still legible (for a full discussion of archival considerations see Drew 2004; Kenworthy *et al.* 1985). Funding is being sought to scan as much of the documentation as possible (including thousands of hard copy context sheets and historical records) and attach it to the EMu research file records.
In order to make sense of the site, it was necessary to first consolidate the context sheets into a useable and searchable format in the database. It was a painstaking process to enter data from the context sheets, especially where descriptions were given in free-text paragraphs rather than in dedicated fields with standardised terms. Many context sheets included only brief descriptions and lacked diagrams. A number of different trench supervisors were responsible for site recording for both the Little Lon and Casselden Place excavations, and the method of description, level of detail and terminology used differed between supervisors. Inconsistencies were also noted on many of the context sheets.

Information on all artefact-bearing deposits for the five seasons of excavation was entered into the EAMC database: a total of 4075 contexts. The data were entered using existing EAMC terminology to describe deposit types. The process of data entry of the context sheets allowed for standardisation of recording across the five excavation seasons and for fast and efficient searching of deposits by area, phase or type (cesspit, underfloor deposit etc). The system of recording phases used for Casselden Place, with a number referring to the historical time period (e.g. 3 = 1849-1890), proved useful when later entered into the database, allowing contexts to be searched and grouped by phase. Where descriptions made this possible, the phasing system was retrofitted to the data from the previous four excavations. However, the Vanished Communities project revealed that the phase allocation charts for Little Lon were not strictly accurate when applied to deposits as the phases were defined by bluestone footings, demolition, in situ demolition etc and many deposits had a mix of nineteenth century and more recent artefacts (Williamson 1998:2).

Also problematic was the fact that not all artefact-bearing deposits from Little Lon could be allocated to a historical household. A grid of 10m by 10m trenches were laid out across the site and deposits were allocated to these trenches. As such, artefacts from surface deposits could not be associated with households; however, contexts allocated to features such as rooms and cesspits could be associated with households using the context sheets and unit drawings (Murray and Mayne 2001:94).

In the absence of diagrams on many context sheets, it was difficult to associate multiple deposits from within a cesspit or other feature for both Little Lon and Casselden Place. Where possible, the groupings were reconstructed and recorded in the EAMC database,
which has a system for associating contexts into a ‘master context’, essentially giving each context in the cesspit or subfloor deposit an ID number that links them (Crook et al. 2006a:59-60). This work to consolidate and data enter site information facilitated an understanding of the site and allowed archaeologically valuable deposits to be identified.

**Identifying Deposits of Interest**

Due to the size of the assemblages, it was decided to prioritise for cataloguing a selection of households that best represented different occupation types across the site. The Little Lon report detailed a shortlist of seven households that had stratified cesspits and detailed historical records that would form the basis of analysis (McCarthy 1989:107). For Casselden Place, eight households were identified from the historical information compiled for the Little Lon project as being of particular interest (Godden Mackay Logan et al. 2004a:17-28); however, this list was not revised after the excavations to take into account archaeological integrity. As the research objectives of these projects differ to those of the Commonwealth Block Project, all excavated areas from the Little Lon and Casselden Place excavations were reviewed and considered for the shortlist for this current project, taking into consideration both the historical record and the presence of stratified deposits.

In order to identify households of interest for the Commonwealth Block Project, a review of context sheets, trench reports, historical reports and excavation photographs was undertaken. The first step in creating this shortlist required the identification of stratified, intact deposits. Deposits within the houses on the Commonwealth Block were largely mixed deposits of nineteenth- and twentieth-century artefacts. Those deposits likely to have the most integrity and therefore, research potential were cesspits, refuse pits and underfloor deposits. Location, type, associated structure, summary of history and dates were recorded for each stratified deposit. The process of filtering this large body of material was significantly labour intensive, and as this information was compiled well after the excavations there is room for error and some interpretations may be inaccurate. In addition, there is a possibility that important deposits not highlighted in the reports have been overlooked.

While cesspits and rubbish pits were comparatively easy to identify by the context sheets and reports for both Little Lon and Casselden Place, other potential deposits of interest were harder to distinguish. In many cases, it was not clear from the context sheets whether ‘underfloor’ referred to deposits pre-dating the construction of houses in the 1840s and
1850s, deposits below the level of the original floorboards filled with demolition rubble, or artefact-rich deposits formed by accidental loss of objects falling through floorboards, thus making it difficult to distinguish potentially valuable deposits. A number of underfloor deposits were identified during the Little Lon dig, many described as containing ‘rubbish/silt’. In addition, McCarthy (1989:23) described in situ deposits from Little Lon as ‘those contained within and below the level of remaining footings’. However, it was not stated whether the artefacts were accidental loss artefacts or post-demolition rubbish. Murray and Mayne (2001:98) noted that these deposits contained a mix of nineteenth century and modern artefacts. For the Casselden Place dig, only one underfloor deposit (4.210 on Lot 78) was identified in the report as containing accidental loss artefacts (Godden Mackay Logan et al. 2004b:210). For both sites, it is possible that other high integrity underfloor deposits of accidental loss artefacts exist, but identifying them from the context sheets and reports is difficult.

Once deposits of significance and integrity were detailed, factors such as location of the Lot (i.e. Site A, Site B and Site C), type of deposit (i.e. different types of cesspits – barrel, bluestone, brick lined etc) and historical information on the type of occupation (i.e. families, singles, tenanted with frequent changeovers, owner occupied, business, brothel etc) were considered. The final shortlist for full analysis includes a total of 14 cesspits across 12 households, which combined provide a comprehensive picture of the Commonwealth Block. Further attempts will be made to identify intact underfloor deposits from these 12 households by a physical inspection of the artefacts. This has not yet been possible because of the way the artefacts have been housed.

Assemblage Records
In addition to the site records, managing the available artefact data was an important early step for the Commonwealth Block Project. In some cases, multiple datasets existed for the same artefacts and required consolidation. The impact of artefact discard also required consideration.

Managing Artefact Data
The original artefact data in electronic format was available for the 17 Casselden Place and Casselden Place artefacts. The artefact data for the earliest digs (Little Lon, and Black Eagle and Oddfellows Hotels) was originally recorded in HyperCard, which was considered the
most suitable database system for handling archaeological data available at the time (McCarthy 1989:20). This programme was last updated in 1996 and no longer sold after 2004. Although the excavator retains this database in HyperCard, it requires conversion to a modern software programme. This data was available through the EMu database, but was missing some fields including box location. The Phase 3 Testing artefact data was available from Heritage Victoria’s catalogue.

The Little Lon, Black Eagle and Oddfellows Hotels, and Casselden Place data was in Museum Victoria’s EMu database and was actively used to manage the collection. The Little Lon and Black Eagle and Oddfellows Hotels data was originally imported into Texpress, the Museum’s database at that time, and was transferred it into EMu sometime after the system was upgraded in 2000-2001. The Casselden Place data was imported directly into EMu at the completion of the post-exavcation work with additional data fields added to EMu to house archaeological artefact information. Both the Little Lon and Casselden Place artefact data were imported by the Museum without review. One consequence of this was that the 1998 Little Lon and later 1990 Black Eagle and Oddfellows Hotels data was uploaded together, appearing as one excavation in the database. A second consequence was that artefacts recorded as ‘discarded’ in the Casselden Place spreadsheet were uploaded to EMu as active records. Records for the 17 Casselden Place material were never transferred into EMu, meaning that while these artefacts were housed at the Museum they were not officially registered into the collection.

In the EMu database, the artefact records for Casselden Place generally corresponded with the physical artefacts apart from unrecorded object movements between boxes. However, for Little Lon there were major discrepancies between the data in EMu and the physical objects. In the 1990s, when the Little Lon data was added to Texpress, registration numbers with an LL prefix were added to each electronic record. However, these registration numbers were never physically recorded with the artefacts. Although the original artefact numbers were retained in the electronic records, problems have resulted where artefacts have been removed for exhibitions. In a number of instances, fragments with different original artefact numbers were conjoined, without the records in EMu being updated to reflect this change. Similar problems have occurred with additional research that has been conducted.
Additional cataloguing work for the Vanished Communities project was done in Microsoft Excel prior to the allocation of registration numbers to the artefact records. The data was not consolidated with existing Museum data upon completion of the project, so although records had been split and numbered, the additional records were not included when registration numbers were applied to the records. Although the Vanished Communities project applied a new numbering system, the numbers are not recorded on the majority of the artefacts catalogued (the reason for this is unclear but is possibly the result of a rehousing project started by the Museum). As a result, the cataloguing work conducted for the Vanished Communities project had to be disregarded for the Commonwealth Block Project. Similarly, additional work conducted by students (including Courtney 1998; Mezey 2005; Muir 2008; O’Connor 2008; Ricardi 2003; Smith 1995; Wackett 2003) which potentially created more detailed records on the Commonwealth Block assemblages has not been consolidated with the Museum’s data. Further, a lack detail in the reporting on these projects has made it difficult to determine exactly what additional work was done, whether it was completed, how the data was managed and in some cases where the artefacts were housed on completion of the project.

Data for each of the excavations was transferred into EAMC. For Little Lon, Black Eagle and Oddfellows Hotels, and Casselden Place the data was taken from EMu to ensure that any changes made to the records by the Museum were reflected in EAMC. The 17 Casselden Place data was transferred into EAMC from the original Excel catalogue, and the Phase 3 Testing data from Heritage Victoria’s database. The Commonwealth Block Project has reviewed the 17 Casselden Place catalogue, and allocated Museum Victoria registration numbers to the artefacts. Upon completion of the project, the data will be uploaded to EMu thereby registering this material into the Museum’s collection.

In terms of managing the available data, the Commonwealth Block Project has developed systems to meet both archaeological and Museum needs. While cataloguing was done in the EAMC database, consideration was given to maintaining consistency with Museum Victoria’s EMu database. Fields were adjusted in both databases to allow data transfer between the two and ensure that all relevant information will be captured in EMu. A test run data transfer from EAMC to EMu was conducted in the first year of the project and involved a considerable amount of work. However, now that the procedures are established for data transfer from an archaeological database to EMu, the process is in place for Museum Victoria
in the future. In addition, full documentation of the processes used will allow future researchers to use EAMC for cataloguing and maintain a system for updating EMu.

With regard to future accessibility of the data, it will be available both via EAMC and EMu. The EAMC database is freely available via the La Trobe University website and will be updated with the Commonwealth Block data upon completion of the project. As EAMC runs in Microsoft Access, one of the most readily available database programmes, this data will be widely available. The data will also be accessible via Museum Victoria’s EMu database and lodged with the museum in Microsoft Excel format. The EAMC and EMu database programmes will be continuously updated to allow continuity of access and readability into the future.

**Impact of Artefact Discard**

The discard of artefacts can influence the analysis and interpretation of assemblages and consideration of the impact of this is important for the Commonwealth Block Project. The various final reports for the Commonwealth Block assemblage lacked sufficient detail on the collection strategy with regard to which artefacts were kept, how sampling was undertaken, which artefacts were analysed in detail, and the reasons behind these decisions (Godden Mackay Logan et al. 2004c:2-3; McCarthy 1989). Where detail of the collection strategy was not clear, confident analysis of the assemblage may be compromised.

The Little Lon report does not provide details of what artefacts were kept or discarded (McCarthy 1989). However, McCarthy (pers. comm., 17 May 2011) advised that all artefacts from stratified contexts were kept while artefacts from fill or demolition deposits were generally discarded. Discard was recorded in the HyperCard database, which is currently not available in a readable format. For the original Casselden Place cataloguing, artefacts were prioritised according to the research significance and integrity of the deposit from which they were recovered; ranked as ‘high’, ‘medium’ or ‘low’ (Godden Mackay Logan et al. 2004c:2-3). Artefacts from deposits of low significance and integrity as listed in the report were sampled and the artefacts kept were those most likely to provide dates for the deposit. However, the criteria used to determine which deposits were ranked as ‘low’ were not described. Presumably they were surface, highly disturbed or modern deposits.
It is common for bulky building materials, non-cultural objects and artefacts in highly disturbed surface deposits to be discarded as they can consume a considerable amount of resources for both cataloguing, analysis and storage, but with little or no immediate or future research value (Childs and Corcoran 2000). Sampling of a small percentage of these materials is considered sufficient. It appears that such items were discarded from both the Little Lon and Casselden Place assemblages. During the Little Lon excavation, at least some large architectural materials were collected. McCarthy (pers. comm., 17 May 2011) advised that a representative sample of nineteenth-century building materials were kept and that modern materials were discarded. In the original Casselden Place Microsoft Excel database, a total of 149 artefacts were recorded as ‘discarded’ including building timbers and modern rubbish. Most of these were from contexts not listed in the report as being of ‘low’ significance and no corresponding context sheets could be found to confirm what the deposits were. It was not clear whether modern materials from mixed deposits were discarded, although general inspection of the assemblage suggests that the majority of (though not all) modern materials were discarded.

The discard of ceramic and glass body fragments has a greater potential to affect analysis and interpretation (Crook et al. 2003:35). Brooks (2005: 23-24) argues that ceramics in particular should never be culled and that what one researcher deems to be undiagnostic and undecorated body fragments may in some cases be important for future research, and may contribute to MNI calculation particularly when mending is carried out. Though no discard of body fragments took place from the Casselden Place assemblage, an inspection of the Little Lon artefacts does suggest that glass and ceramic body fragments were discarded from parts of the assemblage. McCarthy (pers. comm., 17 May 2011) advised that body fragments were catalogued and subsequently discarded. As discarded artefact records were not copied to the EMu database and the HyperCard database is not currently available, it is not possible to examine the numbers and types of discarded body fragments for the Little Lon assemblage at this time.

While the discard of certain artefacts is necessary for efficient processing and curation of archaeological assemblages (Childs and Corcoran 2000), it can be problematic for analysis when it is not fully documented in the excavation reports (Brooks 2005: 25; Schacht 2008: 162). As a result of the uncertainty over which artefacts were discarded, analysis based on the
minimum number of items will be compromised and interpretation must take this into consideration.

**Locating Artefacts**

With an assemblage housed across over 2000 boxes, how the Commonwealth Block artefacts were sorted, housed, labelled and tracked had a significant impact on accessibility for cataloguing.

**Housing**

As cataloguing work for the Commonwealth Block Project focused on priority deposits, the first step was to locate all artefacts from these deposits. This was more straightforward for the Little Lon assemblage as it was housed by context, though divided between Inventory and Accession. The need to wash Accession artefacts hindered progress and an audit of artefacts loose on shelves and not returned to their boxes was required. For Casselden Place, the material was housed by material type, but not by context or type series. Lists were generated from the EAMC database with the box location of all artefacts from a context, but there were significant discrepancies between the list and the contents of the boxes. It became apparent that there were many missing artefacts from both Little Lon and Casselden Place.

There are three possible explanations for these artefacts to be missing from the assemblages. First, they had their location changed but not updated in EMu. Research and reboxing projects conducted on the Commonwealth Block assemblages by both archaeologists and museum staff have resulted in the untracked movement of artefacts. Second, they were on display. The Museum has used the assemblage for at least two major exhibitions and generally recorded the artefact movements and display locations. However, for the Little Lon material the joining of objects from different original artefact numbers was done for display purposes. In many cases, this was done without creating new records for the joined artefacts and has meant that many registration numbers apply to both an artefact on display and fragments left in storage or there are multiple registration numbers for one conjoined vessel. Third, artefacts were returned from display but not returned to their original location, were never returned from a finished display or were returned without labels so that provenance has been lost (Williamson 1998:4). It is possible that some of these missing artefacts are located in the store, but with inaccurately recorded locations. In order to locate any such artefacts, a full box audit is being undertaken.
Archival standards in place by the time of the Casselden Place dig were much improved from those in place for the Little Lon dig. For the Little Lon material, stapled plastic and paper bags were used with archival quality tags recording the original artefact number (i.e. Trench/Unit/Artefact number). Many of the paper bags had severely deteriorated and artefacts had fallen into the bottom of boxes thereby losing their provenance. There were also several instances where artefacts had broken in storage. The Inventory part of the assemblage had been rehoused sometime in the last 10 years into large corflute boxes, while the Accession material remained in large cardboard boxes. For Casselden Place, 46 x 24 x 10cm Corflute boxes were used for the majority of artefacts, with metal housed in sealed tubs with silica to absorb condensation and inhibit corrosion. Artefacts were bagged in ziplock plastic bags with Heritage Victoria site number, contextual information and registration number hand-written on the bag and on an archival quality Tyvek tag.

The Commonwealth Block Project is rehousing the assemblages by historical lot, then by meaningful context grouping (cesspit, underfloor deposit, rooms etc) within that area, then by material and type. This not only allows artefacts to be catalogued in order of priority of deposits, but also facilitates the calculation of minimum numbers. The assemblages were housed in accordance with generally accepted archival standards (Childs and Corcoran 2000; Heritage Victoria 2004; Society for Historical Archaeology 1993; Sullivan and Childs 2003). All boxes were replaced with 46 x 24 x 10cm Corflute boxes, bags replaced with ziplock polyethylene bags, all staples removed from the bags and adhesives removed from the artefacts.

In addition to artefact washing and rehousing, more complex conservation issues have also arisen. Due to the large size of the assemblage, the Museum (having limited resources) has prioritised items going on display for conservation, and the majority of the assemblage has not had further condition assessment since accession into the collection. Devitrified glass, rusted metal, decaying coins and mouldy leather in the assemblage require attention. Conservation requirements were noted in the EAMC database as they arose, and will be addressed by the Museum Victoria conservation department in the near future.

Labelling and Tracking
Artefact and box labelling are also a vital part of accessing assemblages. A significant problem exists with the object labelling of the Little Lon artefacts. As noted above, the registration numbers that were added to the electronic records by the Museum were never physically recorded with the artefacts. The Little Lon artefacts included the original Tyvek tags with the context and artefact number, but not the new registration number. Although the original numbers were also recorded in the database, adding the registration numbers to the physical artefacts has been difficult as many of the records have been changed since the registration numbers were applied to the data, particularly for exhibition purposes and the Vanished Communities project. Any discrepancies were recorded and new records created where necessary. For Casselden Place, LL prefix registration numbers were used from the outset, but as they were hand-written the inevitable problem of human error has resulted in many duplicate numbers. In some cases, the correct record could not be identified in the database and the artefact was renumbered with full explanation given in the database.

The Commonwealth Block Project has developed a system, in negotiation with Museum Victoria, to relabel all artefacts and boxes. The aim is to apply object barcodes and box locations for every artefact in the Commonwealth Block assemblages: a project which is ongoing. The boxes are barcoded according to Museum Victoria’s practices; and a new system has been developed for the object labels. The EAMC database has a feature allowing printed labels to be produced directly from the database including the site name, artefact number and context. Barcodes are added for each artefact with a number from Museum Victoria’s sequence, but printed via EAMC using barcode font freely available over the internet. Archival quality, foil backed labels have been approved by Museum Victoria’s conservation department for this purpose. The inclusion of a barcode facilitates inventory control: with a hand-held scanner used with a laptop or Museum Victoria’s Wireless Input System for EMu (MVWISE), this streamlines the process of tracking artefact movements. Simplifying this process encourages accurate tracking which, along with improvements to artefact housing, will greatly improve access to the assemblage.

**Cataloguing**

Working with the different existing records for the Commonwealth Block assemblages has presented a range of challenges. The cataloguing of artefacts from the selected households for the Commonwealth Block Project involved resorting, updating terminology, and enhancing the data by applying tools for analysis.
**Working with Existing Records**

Each of the Commonwealth Block excavations used different methods for cataloguing and the varying datasets needed to be amalgamated to further their comparative and interpretative potential. However, although each catalogue is different, as Crook *et al.* (2002:31) noted there is significant overlap between historical archaeological catalogues in terms of the fields used to describe the ware, form, manufacture, decoration and function for each artefact. The terminology used for such fields is generally analogous even when variations occur (e.g. whiteware and fine earthenware). The changes to functional classification terminology that have taken place over the last 20 years were more significant, but have not presented an insurmountable problem. Generally the terminology used was comparable and as such could be updated to the current EAMC system. The existing terminology for each of the assemblages was matched by Crook to terminology in the EAMC system. Microsoft Access database queries were then used to update this data in the records and copy the original functional classification into the record administration field.

Before the commencement of cataloguing, it was necessary to resort the assemblages to associate fragments from individual artefacts, identify conjoining fragments and facilitate the calculation of MNIs. The Inventory and Accession items from Little Lon were amalgamated for cataloguing as there were conjoins across the groups for any given deposit. Within each ‘master context’, the ceramic and glass tableware was sorted and grouped to vessel level (except in the case of small fragments) and bottles, jars and other artefact types by form. To achieve this, the bulk bags that constituted the Accession part of Little Lon assemblage were split. For example, from one Little Lon cesspit (57/13), 2% of records were consolidated with other records while the splitting of mixed bags resulted in a 65% increase in the total number of records. In contrast, from one Casselden Place cesspit (1.010), 28% of records were consolidated with other records while the total number of remaining records only increased by 6%. This difference was the result of fewer bulk bags in the Casselden Place material, but also the lack of rigorous sorting of this assemblage. The original project team sought to identify single artefacts; however, the report states that due to the vast number of artefacts and duration of the project, fragments from one context were catalogued months apart complicating this process (Godden Mackay Logan *et al.* 2004c: 8). This is evident in the assemblage, and the benefits of calculating MNIs are also noteworthy. For this Casselden Place cesspit (1.010), 40% of all ceramic records could be consolidated with artefacts in other
records (i.e. body and rim fragments from the same vessel that had originally been bagged separately in multiple records). In contrast, the glass and stoneware container assemblage, where MNIs were calculated, required no consolidation. However, this may be partly the result of the ease of sorting glass and stoneware bottles in contrast to decorated ceramics.

The most time consuming aspect of cataloguing has been recording the movement of fragments between records in cases of conjoining fragments or fragments from the same vessel. A customised sub-form was added to the EAMC database to track object movements in a way that met the Museum’s requirements. This was to ensure that when new records were created, fragments were moved between records, or records were retired this was recorded. In addition, where records have been changed as a result of joining and display, every attempt was made to relate fragments back to their original artefact number and retrospectively record their movement to a new record. Previous registration numbers, quantity and weight of fragments moved, and an explanation for the movement were included. This process allows the Museum to keep track of previous exhibition history and conservation treatments, and also caters for archaeological requirements providing explanations where the original reports no longer relate to the artefact records. After updating terminology, resorting the assemblages and recording artefact movements, more detailed cataloguing was then possible.

Tools for Analysis
To improve the research value of the assemblage, a range of tools for analysis were included in the cataloguing for the Commonwealth Block Project. MNIs, type series and matching sets analysis had not been systematically or extensively included in the earlier catalogues. MNIs were not calculated for the Commonwealth Block assemblages, apart from the glass and stoneware containers from Casselden Place (Godden Mackay Logan et al. 2004c:229-288). The type series was created only for the Casselden Place 2002-2003 and Vanished Communities catalogues. Both type series grouped records with identical patterns and shape and the types were illustrated in pencil in a master document. Matching sets were not recorded in the catalogues for any of the assemblages. The importance of recording such details has long been advocated (e.g. Birmingham 1990:19; Crook et al. 2002) and forms an important part of the current project.
It is now widely accepted that MNIs are essential for analysis and should be done as a part of cataloguing as fragment counts do not accurately represent the original number of artefacts discarded (Brooks 2005:21-22; Crook et al. 2002:30; Lawrence 2006:380; Miller 1986; Sussman 2000). While the recording of MNIs in a database is complex, the EAMC database provides a useful system for this where the MNI is recorded in one record (e.g. a dark green bottle base) and linked to potentially associated records (e.g. a dark green bottle finish) using an ID number (Crook et al. 2006a:30; Crook and Murray 2006:29). A free text field allows for recording what attribute the MNI is based on, which can then be reviewed from the database when the cataloguing of a context is completed. Further, records which comprise small body fragments can be appropriately given a MNI of 0 thus acknowledging that they may belong to a number of vessels that have been attributed an MNI, but without being excluded from analysis (Brooks 2005:23; Crook and Murray 2006:29). This streamlines the manual checking of MNIs at the completion of cataloguing and subsequently allows MNIs to be quantified directly from the database for a range of queries in the analysis phase. It also allows for MNIs to be reviewed by future researchers.

The Commonwealth Block Project developed a new type series for use across the Commonwealth Block assemblages. The original conception of a type series in historical archaeology was to organise an assemblage into representative examples and repeats with the two boxed separately. Representative types thus provided a quick reference to the assemblage as a whole. The type series has more recently been driven by the need to streamline cataloguing and assist in analysis with the separately boxed reference no longer always created (Crook et al. 2002:33-34). For the Commonwealth Block Project, the type series is conceptualised quite differently and follows the EAMC format. The emphasis is on grouping artefacts in the same way that an analysis does, thereby facilitating analysis. Here, factors such as use and value are considered in determining types.

The calculation of matching sets has become a common practice in artefact cataloguing (e.g. Casey 2005; Crook et al. 2005; Fitts 1999; Hayes 2007; Wall 1992) and adds an additional layer of information to the analysis of ceramic and glass tableware. The EAMC database includes a section for recording matching sets where each set is given a name and ID number (Crook and Murray 2006:32-34). A set is recorded where two or more vessels match and each set is recorded as one of three types: an actual match as indicated by maker’s marks or a unique pattern, a complementary match as indicated by slight variations in the pattern or
fabric and complementary common sets such as Willow that appear to be made by various manufacturers (Crook and Murray 2006:32). In addition, flaws on ceramic table and teaware were noted. Full details of all analytical techniques will be included in the Commonwealth Block Project report. This, along with the inclusion of these tools for analysis within the catalogue, both enhances the research potential of the selected household assemblages and means that the information is available for future comparative studies.

**Conclusion**

As the Commonwealth Block Project has shown, the amalgamation of datasets is possible but requires significant time and resources. Developing an understanding not only of the site, but also of exactly what has been done with the assemblages over time was an important first step. A significant amount of work was required to gather and make sense of the available site information. The related difficulty of identifying deposits of interest from the records means that significant deposits may be overlooked for further analysis. The lack of documentation of additional research and lack of data consolidation at the completion of such projects has meant that this work could not be used in a broader analysis of the site. It has also created a complex record history that required unravelling. While data transfer and consolidation are difficult processes and detailed reporting is time consuming, these processes are essential to maintaining records and subsequently managing assemblages.

The difficulty of accessing the assemblages was due in large part to the lack of artefact tracking since the artefacts were deposited with the Museum and it appears that a number of artefacts have now been permanently lost from the assemblage. The lack of documentation on artefact discard at the time of excavation and the loss of artefacts after storage may have an impact on the research potential of the assemblages. Any new analysis of the Commonwealth Block assemblages will have to be based on what is present in the assemblage and not what is missing (i.e. absence of a particular type of item will be inconclusive and MNIs will likely be underestimated). The above problems are not unique to the Commonwealth Block, but frequently occur with large-scale archaeological assemblages where available resources need to be stretched in order to deal with the sheer volume of material recovered, both during and after excavation.

While these factors are limiting, they do not render further meaningful research on the Commonwealth Block impossible and the site remains an important one for urban
archaeology globally. The assemblages have significant potential in the quest for comparative analyses because of their scale and the already existing research on the history and artefacts. Once amalgamated, and with the addition to the catalogue of tools for analysis such as MNIs, type series and matching sets analysis, the Commonwealth Block assemblages will provide a point of comparison to other urban assemblages. While there are a number of potential avenues of enquiry for comparative studies, this work will initially form the basis of the Suburban Archaeology project (an Australian Research Council-funded project held jointly by La Trobe, Melbourne and Deakin Universities). Historical research will be combined with comparative analyses on previously excavated assemblages across Melbourne: the Commonwealth Block, Viewbank Homestead in Melbourne’s outer suburbs and 300 Queen Street in the CBD. In addition, new sites of archaeological interest in Melbourne’s suburbs will be targeted for excavation. The Suburban Archaeology project will be the first in Australia to comprehensively compare the material culture of households from different parts of the city and suburbs thus facilitating research into the processes that formed the basis of class construction in the colony of Victoria.

There has been a move in recent historical archaeology towards research questions that address broader social processes and previously excavated assemblages provide a potentially valuable resource in addressing such questions. As such, there is an increasing interest among historical archaeologists to work with previously excavated assemblages. These factors demand that historical archaeologists address the practical issues of amalgamating multiple assemblages, which have been described in this paper. Though doing so is not a straightforward process, this paper has argued that these issues can be addressed and has suggested some approaches.
Figure 1 Location of the Commonwealth Block, Melbourne (Source: Wei Ming, La Trobe University. Originally published in Murray and Mayne 2002).
Figure 2 Site layout of the Commonwealth Block showing the extent of each excavation: Little Lon, Black Eagle Hotel, Oddfellows Hotel, 17 Casselden Place, Phase 3 Testing and Casselden Place (Source: Wei Ming, La Trobe University).
Acknowledgements

This paper is based on research for a current Australian Research Council-funded project *A Historical Archaeology of the Commonwealth Block 1850-1950* undertaken by La Trobe University and Museum Victoria (chief investigators are Professor Tim Murray and Dr Charlotte Smith). *Suburban Archaeology: Approaching an Archaeology of the Middle Class in 19th Century Melbourne* is an Australian Research Council-funded project jointly held by La Trobe, Melbourne and Deakin Universities (chief investigators are Professor Tim Murray, Associate Professor Susan Lawrence, Associate Professor Andrew Brown-May and Dr Linda Young). Thanks go staff in the Archaeology Program at La Trobe University and the History and Technology Department at Museum Victoria. Thanks also to Noriaki Sato for his invaluable input on the framework of this paper. For reading early drafts and providing valuable comments I thank Tim Murray, Susan Lawrence, Penny Crook, Peter Davies and Justin McCarthy. I also thank the Australian Archaeology Editorial Advisory Board, Jonathan Pragnell, Samantha Bolton and an anonymous reviewer for their useful comments. The enthusiasm and commitment of the team of volunteers who worked on the project is greatly appreciated: Paul Pepdjonovic, Joanne Blackbourn, Edwina Kay, Rachel Raisbeck, Michael Lever, Georgia Bennet, Rebecca Mirams and Justine Law.
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