# An Experimental Approach to Understanding Bronze Age Pottery Using Case Studies from Cumbria and Wiltshire

Submitted by Clara Freer, to the University of Exeter as a thesis for the degree of Doctor of Philosophy in Archaeology, March 2023



I certify that all material in this thesis which is not my own work has been identified and that any material that has previously been submitted and approved for the award of a degree by this or any other University has been acknowledged.

## Abstract

The Bronze Age needs continued study, particularly the pottery. This thesis uses experimental approaches to understand the construction and function of vessels and the people using the vessels. Using a comparative approach between experimental assemblages and a range of original pottery from the two case study regions of Cumbria (less studied region) and Wiltshire (a more studied region), to understand patterns of function and identity.

Experiments were conducted to explore the construction, use and deposition of four common Bronze Age vessel forms. The construction of the pottery explores the time, resources and skills needed to make the vessels. While the use wear experiments look at the storage of constructed pots, the function of the pots as storage vessels, particularly the use of lids and signs wear on bases. It also considers the effects of weathering and of deposition on a vessel through long term experiments. Many of the experiments were conducted over several months to better replicate hypothesised use.

The data was explored within the broader context of the Bronze Age and what that can reveal about the people making and using the pottery. The patterns of wear seen during the experiments also occur on experiential and original pottery. Different degrees of production and use wear can be seen across burials, sites and regions indicating a broad function of vessels in Britain.

Understanding function helps with our understanding of the Bronze Age people and how they viewed and interacted with their everyday items. This thesis gives insight into Bronze Age pottery in the case study regions and the broader period when unglazed vessels were being made, used, and deposited.

## Acknowledgements

This thesis would not have been possible without the help, support and knowledge of my supervisors, Linda Hurcombe and Hajnalka Herold. Their support has been invaluable in getting me to the finish. I also want to express my gratitude towards the staff and students at Exeter University for their encouragement and support with helping transport pots and for keeping me company during firings.

A great many thanks to Sagnlandet Lejre staff and experiential participants who allowed me access to the pottery and their experiential experiences. Inger Heebøll, the potter at Sagnlandet Lejre, who granted me her time for an interview and for allowing me to tour her pottery. Also, to Rikke who agreed to share her experiences with experiential living and pottery use at Sagnlandet Lejre. Both their insights were incredibly beneficial to my research.

To Tullie House Museum for allowing me access to their assemblage, notably Elsa Price, who organised access and supported my research by inviting me to speak at their first Prehistory in Cumbria conference.

To Devizes Museum for allowing me to access data on their assemblage, which formed a substantial part of the data set.

I am incredibly grateful to the six potters of different skills who took part in my experiments by making vessels and sharing their insights from the experience. Without them, there would be few pots and less knowledge gained.

To my Grandparents, Trevor, and Brenda, who supported me in many ways but most notably allowed me access to their property to conduct long-term experiments undisturbed.

Thanks to my parents and siblings for their help, support, and belief in me. And finally, to Maud, my archaeology hound who helped visit sites, supervised experiments and provided many cuddles.

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# Chapter 1 Introduction

## 1.1 Introduction

This study aims to improve the understanding of the function and identity of Western British Bronze Age pots and the people using them. The three main objectives of this thesis are to study the functionality of the vessels within the domestic and funerary contexts, to study a range of Bronze Age pottery across the period and to gain insight into the regional and local identity of pots and the people using them.

In recent years, there has been concern amongst British archaeologists about the state of artefact studies in the country due to a decline in the number and availability of specialists (Cattermole 2017, 3). Despite this, archaeologists have continued to persevere in developing the research potential of artefacts. This has seen the development of techniques and approaches, such as residue analysis and chemical analysis, which have enhanced our understanding of past cultures (Skibo 2015, 195). Despite these advancements, British archaeology, particularly ceramic studies, is sometimes focused on the continuation of developing type series rather than exploring the artefacts (Orton and Hughes 2013, 234).

British pottery studies have been integral to the nation's archaeology since the discipline began. Pottery is a robust material which survives in the archaeological record (Woodward and Hill 2017, 1) and has been collected by amateurs and professionals since antiquity (Woodward 2008, 79). Due to the survival of pottery at many sites, it is deemed a valuable tool for dating contexts, creating chronologies, and tracing cultural interactions (Barclay et al. 2016, i). However, such a limited approach does pottery and archaeology a disservice. The study of pottery can reveal much more than dates. It can divulge technologies, trade networks (Barclay et al. 2016, 1) and, most notably, for this study, function, and identity (Orton and Hughes 2013, 246).

Studying society and people is a core tenet of archaeology, which can become lost in studying single artefact categories or single sites. Ceramicists have collaborated to form regional and period-specific societies through their joint interests. The Iron Age Pottery Research Group in the east of England and the First Millennium BC Ceramic Research Group focused on southern central England; joined to form the Prehistoric Ceramics Research Group in the 1980s (PCRG 2010, 1). Initially, the group was focused on Late Prehistory, but in 1994, they expanded into the Early Bronze Age and Neolithic (PCRG 2010, 1). In 1991, before their expansion into earlier Prehistory, the research group published a standard on analysing and publishing ceramics (PCRG 2010, 1). The original guide has since been updated to include the earlier periods and more up-to-date scientific approaches, such as bimolecular analysis and ceramic recording and conservation (PCRG 2010, 8). These more scientific approaches have been adopted into standard practice and have become routine at all levels of archaeological research.

The term pottery is defined in this study by the 2016 standard for ceramic studies, 'Pottery is defined as vessels made of fired clay, complete or fragmented' (Barclay et al. 2016.). This means that all forms of pottery vessels, intact or not, will be included in this study. Other clay-based items such as kilns, hearths, and weights, though interesting, will not be included in the study to keep them manageable. That is not to say that, where necessary, the broader context of the artefacts will be discounted. This broader contextual approach is essential to understanding the pottery and the people using it. The sites used in this study are all within the boundaries of the case study counties.

The Prehistoric Ceramics Research Group, in conjunction with the Study Group for Roman Pottery and the Medieval Pottery Research Group, published another standard for recording all recovered ceramics (2015, 1). Unlike the previous ones, this standard encompasses all three groups' periods to unify British pottery studies (Standard for Pottery Analysis in Archaeology 2015). Publishing the guides by The Prehistoric Ceramics Research Group and other groups has meant that compared to other material studies, ceramic studies are far more standardised (Cattermole 2017, 7). The standardisation of the reports allows for some regional comparison; however, most pottery studies depend on type series and reference collections (Cattermole 2017, 24). While there are benefits to well-established ceramic studies, there are drawbacks. The type series is a valuable addition to the archaeological record, but in some cases, they are overly invested and are subject to personal interpretations of the artefacts. Archaeologists have previously been overly focused on developing these series, perhaps to the detriment of expanding and developing ceramic studies through alternative assemblage approaches (Morris 2002, 58). Furthermore, a focus on typology has led to grouping pottery by morphology and assumed function (Evans and Recchia 2003, 188). The divisions of the assemblages have led to certain pottery forms being applied prestige over others; the result of this has been a focus on these more prestigious vessel forms.

After expanding The Prehistoric Ceramics Research Group into early Prehistory, the group also removed their geographical constraints, and more research was produced on Early Bronze Age pottery. However, there remain research gaps in the coverage of the country, both geographically and chronologically. The Early and Late Bronze Ages rarely appear together in literature, and instead, they are grouped with either the Iron Age or the Neolithic. This is partly due to the difficulty in dating the periods and the artificial nature of such boundaries. The Iron Age Pottery Research Group and First Millennium BC Ceramic Research Group focused on England, particularly the East, and the South. Although the group now covers the whole of Prehistory and has no stated regionalist preference in its research, there is still a bias in certain areas in the Bronze Age pottery studies. This may be partly due to the region's habitation leading to more excavation. However, it could also be due to access to archaeological resources: the northwest is an area excluded from invested research groups. Cumbria now has no dedicated archaeological unit or university department. Since the Carlisle archaeological unit ceased operation in 2001, the county now relies on Oxford Archaeology North, based in Lancashire (Barrowclough 2010, 7). There is also limited university interest in the region, with even the closest university departments Glasgow, Manchester, and Durham, choosing sites in different regions. Little major infrastructure is being undertaken in the county, so chance finds of sites are uncommon.

The beginning of the British Bronze Age is traditionally seen through the introduction of metal objects and new pottery forms, the most iconic being the Beaker (Hammersmith 2010, 109). Beaker pots are often found buried at significant sites, such as barrows or Neolithic monuments; this draws attention to the Beaker over the other vessels and makes it well known (Peters 2000, 351). This has led to Beakers being one of the better-studied vessels in the Bronze Age, and they have seemingly avoided the lack of interest which can plague other vessels. The Bronze Age has, in recent years, suffered from limited funded research for data led projects (Wilkin 2013, 23). Projects such as the Beaker People Project have been undertaken on the Beaker and the people being buried with them. There has been works published on the movement of Bronze Age people and the fundamentals of their lives, such as the journal article 'Beaker People: Migration, Mobility and Diet' in 2016 (Parker Pearson et al. 2016) and the book 'The Beaker People: Isotopes, Mobility and Diet in Prehistoric Britain' (Parker Pearson et al. 2016). However, for all that, these texts contain the name Beaker; the pottery itself is not the focus of these studies, and it is being used as a chronological marker for the period they wish to study. These studies focus on the bones and teeth and the scientific data that can be gained from these associated burials (Parker Pearson et al. 2019). When the pottery is discussed, it is often within a case study limited to a single region, such as northeast Scotland (Curtis and Wilkin 2019), one of twelve chapters in a new anthology on the Beaker people and the only one to reference the pottery in its title directly. As such, even a well-known form of pottery is often an afterthought within its area of research. Even in the more scientific branch of archaeology, pottery is still becoming a dating material rather than a valuable resource.

Internationally, similar neglect to the less glamorous pottery forms has been noted, and steps are being taken to address this. A recent book has been published on cooking pots in the Aegean Bronze Age (Hruby and Trusty 2017, 1) to focus on less seen and studied pottery. The cooking pots are valuable in giving information on social, economic, and technological trends as the less unique fine wares (Hruby and Trusty 2017, 1). Pottery studies abroad differ from the British studies they have taken, developed and fully embraced a functional approach since the 1990s (Evans and Recchia 2003, 187). Many of the studies are focused on use wear and the society and how the scientific approaches can aid understanding of the pottery. Skibo has undertaken much to look at use wear; in 1992, he published his first book, 'Pottery Function: A Use-Alteration Perspective' looking at use wear, which he developed into another book 'Understanding Pottery Function', in 2012 (Skibo 2015, 189). Other archaeologists have continued the exploration of use wear, and function, such as Vieugues' study on early prehistoric Bulgarian ceramics (2014) or Villing and Spatraros' book on the science of kitchen pottery in the Mediterranean (2015).

Use Wear analysis has been a growing field since the 1960s, although reports from the 1930s onwards have occasionally made mention of signs of use wear (Forte et al. 2018, 121). These earlier reports were focused on visual signs such as abrasions, spalling and evidence of cooking and fire traces (Forte et al. 2018, 121). As the study of use wear has developed, the study of the morphology and function of ceramics also developed (Evans and Recchia 2003, 187) as new insights were brought into the field. The use wear study in ceramics was aided by similar developments occurring concurrently in lithic and bone analysis (Forte et al. 2018, 122). American archaeologists, such as Skibo, have a history of using anthropological approaches when studying prehistoric archaeology and the ceramics from this period (Skibo 2015, 189). In the 1970s, archaeologists became interested in what was forming the patterns studied in use wear (Forte et al 2018, 121). Experimental archaeology has developed into a resource to answer the question of what was causing the marks and how they occurred and to give replicable results on the formation of use wear (Hurcombe 2008, 85). Ethnographic studies are also undertaken to give a comparable view of past societies. Skibo undertook many ethnographical studies and developed a reference collection for use wear based on his work over the 1980 and 1990s (Forte et al., 2018, 122). These ethnographic studies, although helpful, are only sometimes applicable to assemblages. More recent approaches still look at use wear and use experimental approaches. However, they also consider scientific analysis, such as Forte et al. (2018, 128), looking at Copper Age pottery in Italy through spectroscopic analysis and experimental archaeology. Macroscopic, petrographical, and residue analysis, such as lipid and chemical analysis used along with older techniques, give a more integrated view of assemblages rather than focusing on just one approach (Hruby and Trusty 2017, 3).

Furthermore, recent studies from continental Europe have examined society explicitly in connection with pottery. The usage of pottery, although an ever-developing field in ceramic studies, needs to be expanded upon more often to explore the society using them and the context in which they were used (Tomii 2018, 183). Because there is an undeniable connection between pottery and people, it would only exist with human intervention, so not studying humans limits the understanding of pottery. People do not exist in isolation, and the study of communication in archaeology has been growing for the last twenty years and has become established in the Mediterranean (Iancono 2016, 121). In Prehistory, there were no written records, so pottery is helpful in revealing patterns of manufacture, deposition, and communication (Hamilton 2002, 38). In Britain, the developed standards mean that there is, in most reports, a fabric description that can be used to define similarities and differences between regions (Hamilton 2002, 38). However, variability in recording makes comparisons difficult; use wear is only sometimes recorded in reports, and pottery forms found in domestic and funerary contexts can make the function of the vessel unclear (Morris 2017, 58).

A further difficulty in studying Bronze Age pottery is that many pottery forms need to vary significantly enough to be easily placed into neat typologies (Willis 2002, 5). The pottery is adopted only sometimes, not always linearly or at all. A form-based chronology is much looser than hoped (Willis 2002, 5). The benefit of this is that it can reveal the communication links and identity of the people making and using the pots. The decoration of the pottery can be as much a part of the character of the pot as the form (Morris 2002, 58). Decorating is a deliberate act and can be more time-consuming and fuel-costly, so to include it on vessels indicates the importance to the potter and users. Decorative elements can also be challenging to achieve, needing skill and technological knowledge, such as graphite burnished wear, which turns up periodically in European Prehistory (Kreiter et al. 2014, 140).

The material in the pot is also a significant indicator of identity. The Bronze Age developed into a time of settled homesteads (Halsted 2011, 10) and land clearances, potentially increasing or changing the landscape's importance to the inhabitants (Halsted 2011, 22). Incorporating their land and the settlements taskscape rhythm into the pot could make the pottery a symbolic part of their identity (Hamilton 2002, 40). It is known in the Cumbrian Neolithic that the Langdale stone was of such significance that communities settled around the quarries to control the resource (Fell 1950b, 7). It is unknown if the same was undertaken for clay as there needs to be more research into the topic, although only a few settlements are directly on clay beds (Hamilton 2002, 39). However, only recently has petrology been used to find the sites of production and the range of dispersal (Hamilton 2002, 39). Therefore, studying the region and site geology is essential to understanding the people and the pottery.

The North West and Cumbria have suffered stagnation in their Prehistoric archaeology. There has been little interest in the topic, with significant museums giving limited space to the period, and the new information being produced or reported on is sparse (Barrowclough 2010, 7). However, this is not due to a lack of established archaeology. The Cumberland and Westmorland Archaeology and Antiquarian Society have invested in the region for over a century and produced reports in their publication. However, the limited number of reports does not reflect the region's depth and breadth of Bronze Age archaeology. A study by Oxford Archaeology North in the 1980s and 1990s discovered over 13000 period specific features on the fells (Hodgson and Brennand 2004, 10). Furthermore, Cumbria had a very active prehistory of multiple henges and stone circles, several of which are of significant size, but these again have had limited archaeological investigation (Hodgson and Brennand 2004, 10).

In comparison, more southwestern counties have seen a prolific amount of research, such as Wiltshire with the recent Beaker People Projects, even if pottery is not a key focus, and the various reports produced on the assemblages from the Early, Middle and Late Bronze Age (Tomalin 1992; Leivers 2016; Tubb 2011). The understanding of the Bronze Age pottery in Wiltshire has developed significantly, aided by the interest and the number of archaeologists invested in the region as well as commercial development sites needing archaeological oversite. As such, it makes a good choice for a region in a case study. By such logic, Cumbria, with its stilted research and pottery in boxes wrapped up in newspaper from the 1960s when it was last of interest under Clare Fell and the prehistorians she worked amongst (Fell 1953; 1957; 1967; Hodgson 1940; Clough 1968) does not. However, the two counties lend themselves to each other. The established typology and reports can support the Cumbrian assemblage. However, understudied Cumbrian prehistory could be academically insightful when compared to the contrasting ideas and notions that proliferate through Wiltshire's research. The distance between the two counties can reveal communication across the country during the Bronze Age. Geology can give details on regional and local identities through petrological analysis. As such, these two contrasting counties are certainly suited for improving understanding the western British Bronze Age. Furthermore, given the breadth of the research questions, case studies allow insight and understanding within manageable constraints.

As the study of the Bronze Age itself is unbalanced, some regions are detailed, and others have fallen from the map. British Bronze Age pottery is, in some cases, well-known, and while assemblages have been looked at previously, they have yet to be studied. Bronze Age pottery has been left once more in the past. Cumbria has become one of the most forgotten, and its assemblages should be addressed. The longer it is left, the more they will become overlooked, and the harder it will be to bring them up to date with the rest of the country and the rest of the world.

This study attempts to bring about a greater understanding of Western British Bronze Age society and the identities of the potters and those who used the pottery through the analysis of the pottery. Archaeology is not about the artefacts alone but the people and society who made and used them. The people are gone, but traces of their culture remain, and these fragments can give insights into the past. Furthermore, this is an attempt to not only understand the people of the Bronze Age through their pottery but also to understand more about pottery and its role within society. The use of pottery in this thesis will be studied within three contexts: the domestic and the funerary contexts, the geographic context, and the chronological context. This study will fill the research gap in Cumbrian prehistory.

The next chapter in this thesis will discuss past research and the regions used in the case studies and how they will be used to cover the research question and individual objectives. It will also further expand upon the Bronze Age period in Britain and the two individual regions used within the study.

## 1.2 Research Aim and Questions

The main research aim is to further the understanding of Western British Bronze Age pots and the people using them. To achieve this aim, three research questions were developed:

1) To explore the relationship of pottery forms and function across the whole Bronze Age period in the west of Britain through two case study regions.

2) To understand local and regional identity in the west of Britain in the Bronze Age through analysis of pottery from two case study regions.

3) To understand the relationship between the pottery and the different contexts of domestic and funerary pots in two case study regions.

The research questions need different approaches to be answered. Chapter 2 to 4 will cover past research and define the areas of research. Chapters 5 and 6 will be focused on experiments and the production of data sets. Chapters 7 and 8 will focus on comparisons between the experimental data sets and original assemblages as well as discussion about the results. Chapter 9 will cover the conclusions.

# Chapter 2 Direction of Research

## 2.1 Period of Study

This thesis aims to study the Bronze Age in Western Britain. The chronology for the study is across the whole period of the British Bronze Age but with a focus on the Early Bronze Age. However, the boundaries between these periods are an artificial application imposed by archaeologists when developing typologies and discourse (Barrowclough 2010, 170).

Defining a conceptual period's start and end dates is problematic in the Late Neolithic early signs of metalworking and the presence of Beakers in the Scottish Chalcolithic (Wilkin 2016, 279). Furthermore, the transition into the Bronze Age did not coincide across the country. The Beaker period falls nebulously into the transition from non-metal to metal-using society, with signs of metal in some graves such as the Chalcolithic Amesbury Archer (Fitzpatrick 2009, 176) in Wiltshire and at Ewanrigg in Cumbria (Bewley et al. 1992, 328) which could otherwise lend themselves towards the Late Neolithic.

The dates often given for the Bronze Age are 2500 BC - 800 BC (Needham, 2005, 171). This is, however, a sweeping statement with dates rounded for ease of use, and they do not necessarily reflect the actual archaeology. Furthermore, the Bronze Age was not unilaterally adopted globally, so it is unwise to assume it was undertaken so within a country. Like many prehistoric periods, the Bronze Age is broken down into smaller periods to help further define the timeline (Barrowclough 2010, 7). These sub-periods are the Early, Middle and Late Bronze Ages (Table 2.1). The start time for the Cumbrian Bronze Age is later than the period in Wiltshire to the south. This time-lapse is seen in the accepted dates across Northern Cumbrian regions compared to more Southern Wiltshire (Needham 2005, 171; Barrowclough 2010 9 and 170 – 5; Tullett 2010, 5 – 6 and Fitzpatrick 2009, 176).

Table 2.1. The Table shows the start date for sub-divisions within the Bronze Age and the start date for the Iron Age in both Cumbria and Wiltshire. The difference at the beginning of each period can be seen, and Cumbria is later than Wiltshire by about a century for most of the Bronze Age (Needham 2005, 171; Barrowclough 2010, 9 and 170 – 5; Tullett 2010, 5 - 6 and Fitzpatrick 2009, 176).

| | **Early Bronze Age** | **Middle Bronze Age** | **Late Bronze Age** | **Early Iron Age** |
|---|---|---|---|---|
| Cumbria | 2350 BC | 1400 BC | 1000 BC | 750 BC |
| Wiltshire | 2470 BC | 1500 BC | 1150 BC | 800 BC |

These are defining the dates for these three sub-periods. Defining dates in the Bronze Age is difficult because of various factors, such as limited dating material and plateaus in the radiocarbon data (Needham 2005, 171). The plateaus cause broader than normal variation in the given date and mean the chronology is less refined. Unfortunately, there are plateaus at the start of our period (Needham 2005, 171) and again at the end (Tubb 2009, 20).

It has been suggested that the Bronze Age spread northwards from the south and east to the west, but the archaeological record does not support this theory universally (Wilkin 2016, 263). However, a chronology for Wiltshire and Cumbria can be found through artefact analysis. The Amesbury Archer found in Wiltshire is possibly the earliest metal object in the country, dated to 2470 BC (Fitzpatrick 2009, 176). The date of 2470 BC can often be rounded up to the closest date, thus giving the much-stated start date of 2500 BC. However, Cumbria artefact analysis and radiocarbon dates place the start of the Bronze Age almost a century later at 2350 BC based on current evidence (Barrowclough 2010, 9). The Beaker People Project has researched the start date of Beaker pottery use and through radiocarbon dating developed a range of dates (Jay et al. 2019, 75). Beakers were introduced to Britain in 2460 – 2330 Cal BC with their first use in funerary contexts in 2450 - 2325 in England and 2415 – 2315 cal BC (Jay et al. 2019, 75). They also theorise that beaker use ended 1805 -1650 cal BC although this can vary by region (Jay et al. 2019, 78).

The Middle Bronze Age in Wiltshire is generally accepted to have started around 1500 BC and is seen in the material culture change to Deverel-Rimbury pottery found in the south of Britain (Tullett 2010, 5). In Cumbria, where the Deverel-Rimbury pottery was not used, other material culture changes such as burial patterns and bronze artefact morphology are used to define the start of the Middle Bronze Age as 1400 BC (Barrowclough 2010, 175). The dates in Cumbria are influenced by the eight periods of metalwork dating for the Bronze Age, introduced by Needham in 1996. The artefacts are divided into different periods depending on style. These periods correlate with the subdivisions of the Bronze Age.

The Late Bronze Age in Wiltshire has significant differences in feasting habits (Darvill 2010, 234) and burial practices (Barrowclough 2010, 9). These changes in social practice again allow for artefact dating for the end of the Bronze Age. In Wiltshire, the Introduction of the post-Deverel-Rimbury plain wares indicates the start of the Late Bronze Age at around 1150 BC (Tullett, 2010, 5). The use of All Cannings Cross wares, in turn, dates the end of this period to around 800 BC (Tullett 2010, 6). However, in period six, transition into the Late Bronze Age, using Needham's dating morphology, there is only one known Cumbrian artefact (Barrowclough 2010, 171). This makes dating more difficult as there is only one data point. As such, the known activity in Cumbria datable to the Middle Bronze Age ends at around 1000 BC (Barrowclough 2010, 171). The last of the Bronze Age artefacts in Cumbria, is dated to 750 BC, this reflects Needham's periods (Barrowclough 2010, 170). The plateau in the radiocarbon dates and lack of interest in the period resulting in few artefacts (Barrowclough 2010, 10) makes defining a chronology complex in Cumbria. By 500 BC, there are known Iron Age settlements in Cumbria (Barrowclough 2010, 192). This means that the end of the Bronze Age likely occurred within the stated timeframe of Needham's periods. To encompass all the variations between the regions, the earliest date for the Bronze Age of 2500 BC and the latest date of 750 BC will be used. Although these dates are questionable, those presented in Table 2.1 will be used in this study.

### 2.2 Approaches and Interpretation of Assemblages

Archaeology is a comparative discipline, as a comparison is needed to understand the material record (Smith and Peregrine 2012, 4). Artefacts from Prehistory come without a written record, so looking at contemporary and archaeologically similar objects helps build our understanding. The comparison also points to studying changes and similarities over space and time (Smith and Peregrine 2012, 4). Comparative studies have a long history in archaeology. In the 1880s, Montelus used comparison to define six periods that demonstrated the spread of the Bronze Age across Europe (Smith and Peregrine 2012, 5). Comparison is still used in case studies, and typologies are developed in the ceramic record. However, more scientific dating techniques, such as radiocarbon dating, make the process less speculative and prone to misidentification (Wilkin 2016, 266).

There are different approaches to comparison. Intensive comparisons focus on fewer items in depth, while systematic studies look at larger samples and are often associated with anthropological studies (Smith and Peregrine 2012, 7). There is also the difference between synchronic studies, which focus on a particular time, and diachronic comparison, which looks across time (Feinman 2012, 27).

The data used in this study is a mixture of primary and secondary data. The data is from various source materials, grey literature such as site reports and, particularly, the pottery reports within publications. The site reports, and the pottery reports are used because the site reports, particularly those produced after 1991 and the production of the pottery standard (PCRG 2010, 1), have deposition positions and the broader context of the sites. However, other literature, such as ceramic reports and papers on pottery, such as those from Fell (1950a), will also be included as any subsequent work has yet to be produced on these sites or artefacts. Despite the lack of modern scientific analysis, these reports and papers are still helpful in giving information on the context and associated findings. They often contain in-depth local knowledge of the sites and period, which is particularly valuable for understanding local identity, which is one of the research questions in the thesis.

All the data used in the study has been studied quantitatively and qualitatively. This has allowed for alternative analysis on the same data sets. Multiple approaches to the data are made to attain the most from the data, which can sometimes be scarce. However, the absence of evidence is not evidence of absence, which is vital to remember in archaeology. Cumbria, as previously mentioned, has been less well studied and has more antiquated literature and is thus less able to provide the details expected in modern publications. This has led to a more systematic look at the Cumbrian pottery. Wiltshire offers a comparatively vast number of recent publications and a more intensive approach. However, a systematic approach to original and experimental data sets must be undertaken to be comparable to Cumbria. The pottery analysis itself will be undertaken in a comparative method. While some of the data in the study were created during archaeological experiments, the rest is sourced directly from the original pottery. Experimental data created during the thesis is compared to the original sherds to help understand the function of the pottery and the relationship the form has in the function. The original sherds were compared to the original sherds from different sites and regions to answer the question of local and regional identity.

Identity is defined in this study as the characteristics that distinguish an individual or cultural movement from others (Collins Dictionary). This could be the items they use, the patterns they use to express themselves, or the materials potters use. Identity can be clear, or it can also be nebulous, and people can have many different identities, personal, familial, and cultural. This makes exploring the identity of people both complicated and important (2.6.9). These clues and the patterns within them can make it possible to come closer to people, particularly those we have no written history for.

An understanding of function will be sought using pre-existing works brought together and collectively expanded upon. In some cases, organics found on the pottery have already been subject to scientific analysis, such as radiocarbon dating and residue analysis (Soberl 2011). Within this study, these reports can provide information on the function and possible regional variations in this function. Sherds have also undergone other forms of analysis, such as petrographic (Hallam 2015; Craddock and Freestone 1992; Tomalin 1992). The broader context of the pottery will also be considered, such as the depositional position and location (Walsh 2013, Waddington et al. 2018, Clark 2005). These artefacts can and have been used for the dating of the pottery by typological comparison and, in some cases, through radiocarbon dating. No destructive methods of analysis were undertaken within this study.

### 2.3 Clay, Temper, and Pottery Firing

Clay is a sediment usually of igneous origin and often seen in mud rock; rocks are formed from crystalline minerals and are the basis for all geological types (Rice 2015, 38). Clay is formed from rock-forming minerals, known as silicates, with a majority of silica, SiO2, in their platelet structure (Rice 2015, 37). The average composition of these three compounds is silica 39.34%, alumina 46.6% and water 13.9%, although as an average, these results vary from sample to sample (Rice 2015, 45). Because of the three leading composites, silicas, alumina and water, clay is considered a hydrous aluminosilicate. All clay has a combination of additional elements, but clay's most common elements are aluminium, iron, calcium, sodium, potassium, and magnesium (Rice 2015, 37). These elements are found because the clay particles have unsatisfied electrons and can, therefore, bond with these other elements, commonly occurring in the earth's crust (Rice 2015, 45).

To form the sediments, other materials must be worn down through various means, such as physical or chemical weathering together or in combination with other forces, such as biomechanical erosion (Rice 2015, 39). The effectiveness of these processes varies from rock type to rock type, giving different compositions to clays in different regions depending on the local geology (Taylor 2013, 124 and Landscape Assessment Chapter 3). All these different factors in forming clays affect their plasticity and usefulness in constructing pots. While prehistoric potters did not have the scientific backing for this knowledge, they would know that some clays make better pots and gather material from those sources.

Water in clay has a different classification, hydroxyls and interlayer water (Rice 2015, 61).

As previously mentioned, water is part of the molecular structure of clay, and these hydroxyls are structurally bound into the structure of the clay. Interlayer water is added to the clay during processing to make the material more plastic (Rice 2015, 61). Wedging the clay helps to align the platelets and improve the clay's plasticity and the pot's finished molecular structure. Plasticity is achieved because platelets weakly bond with the water, allowing them to move more freely against each other (Rice 2015, 92). Although too much water can cause the structure of the clay to weaken, the construction of a vessel cannot occur until the water between the platelets evaporates. This mechanical loss of water causes a vessel to dry and lose some elasticity (Rice 2015, 63). The loss of water also causes the platelets to become closer, which is seen in the shrinkage of a vessel and why cracking can occur. The greatest shrinkage happens perpendicular to the alignment of the platelets (Rice 2015, 92). Burnishing creates a smooth surface by aligning the platelets parallel to the surface (Orton and Hughes 2015, 90).

The hydroxyls bound into the clay are removed through heating during the firing process. Other materials are also removed from the dried clay vessel during the firing process. Carbon is often burnt off at temperatures of 600-700 degrees Celsius, as is molecular water (Taylor 2013, 131). Organics are burnt off from 200 degrees Celsius (Taylor 2013, 131). The organics are carbonised and released as carbon as either $CO_2$ or CO, depending on the availability of oxygen as $O_2$ to bond with the carbons (Rice 2015, 87). This carbonising can affect the colour of the vessel. Reducing atmospheres, those without much oxygen, produce black vessels due to carbon. Black cores in pots are common in open firings where the carbon inside the pot walls is not fully volatilised as carbon is not driven out due to temperatures not being high enough for a sustained period (Rice 2015, 88).

Temper is added to help control a vessels' shrinkage during drying and to change their resistance to external factors such as heat and mechanical shock, with finer tempers more resistant than coarse types (Brontsky and Hamer 1986, 96). However, different tempers have different thermal contraction and expansion rates, which can sometimes cause issues such as cracking and breaking in vessels. Some pots are made without any additional tempering. Instead, the clay used already has natural inclusions, such as the shell found in Kimmeridgian clay, which occurs in multiple parts of Wiltshire's landscape, such as at Westbury not far from the large midden site at Potterne (Birkelund et al.1983, 291).

Calcium, also found in clay and often added as a temper, can increase the vessel's strength and allow for finer vessel walls if heated over 1000 degrees Celsius, such as in bone china (Millson 2013, 67). However, the shell as a temper needs to be ground down and is mainly calcified before use. The shell calcification in pottery occurs from 600 degrees Celsius and continues at higher temperatures (Gosselain 1992a, 257). Calcification causes the shells to decompose, which produces Calcium Hydroxide. In a clay structure, the Calcium Hydroxide takes up more space than the Calcium Carbonate; this expansion can cause flaws or breakages in pots during firing or heating as the gas forces its way out of the pot wall often explosively (Brontsky and Hamer 1986, 97). Despite the risks, adding a shell to the pottery increases the thermal and shock resistance. Calcite is formed during the heating process of the shell. The calcite has a plate-like structure that increases the strength of the pottery wall (Feathers 2006, 92). However, there is the risk of chemical attrition to the pottery vessels, such as lime spalling. Spalling and even disintegration of the vessel occurs when the lime (Calcium Oxide) produced during the heating of the shell during firing absorbs moisture during the cooling process, producing quicklime (Feathers 2006, 92). The creation of the quicklime releases gases quickly, which cannot escape the walls of the vessels without causing cracks and material loss (Taylor 2013, 132). Adding salt or salt water to the clay can sometimes stop this, but it is unreliable, and damage can still occur (Millson 2013, 167). An alternative technique for firing that can be seen with other tempers is needed to achieve pottery without spalling. The temperature must remain relatively consistent with a constantly reducing atmosphere (Herbert 2008, 265).

Quartz is a crystalline mineral often found in clays either naturally or added as temper. When stone is added as temper, it has been ground down naturally, such as sand or through human means. The ground stones are generally locally sourced from whatever geology is present (Hallam 2015, 94). The types of stones used as tempers can affect the function of the pottery. Quartz stones have a higher thermal expansion rate than fired clays, which can cause breakages in pots during firing (Kilikoglou et al. 1998, 272).
Furthermore, silica can be subject to quartz inversion, a heat-induced change in the crystalline structure from the alpha to the beta form at 573 degrees Celsius (Hamer and Hamer 2004, 328). This increases the size of the crystal and back again during the heat and cooling process (Rice 2015, 306). A consistently high temperature is needed to control the size of the crystal temper within the clay during firing (Brontsky and Hamer 1986, 98).

The quartz in the sand is often fine enough not to be a cause of concern and is beneficial to the pot's survival. Sometimes, the inversion is such that the vessel cannot adapt, and this causes cracks and spalling (Rice 2015, 337). In most cases, however, the expansion counteracts the shrinkage due to the loss of molecular water and organics; the quartz can help maintain the vessel's structure during firing (Rice 2015, 97).

Natural fibres such as grasses, dung and hairs are added to pottery as tempers. Unlike stone or shell, natural fibres are readily available, and very little preparatory work is needed. They can also improve the clay's workability during the vessel's initial formation and limit shrinkage during drying (Taylor 2013, 124). However, hair and grasses are organic materials; they burn out during firing along with the natural carbon. This can mean areas are more porous and fragile as the burnt-out material leaves cavities in the pottery walls (Jeffra 2008, 157). As such, including such tempers seems counterproductive unless it expedites production (Jeffra 2008, 160).

The most successful vessels in an open firing are those with an open structure that allows carbon and water release (Taylor 2013, 124). Feldspars, a silica inclusion naturally found in many clays, help open the vessel and allow for the more effortless movement of the gases (Millson 2013, 67). After firing, the clay loses all plasticity.

The level of the clay firing can affect the pottery's nature. Prehistoric vessels tend to be fired at relatively low temperatures, with the maximum being reached, often peaking at about 800 Celsius and not reaching consistent vitrification (Livingstone Smith 2001, 1000). Vessels are not glazed in prehistory. As such, it is possible for liquids that are kept in the vessels to seep through the pot's walls, causing discolouration. Liquid Seeping through the pot walls can also, in cooking pots, reduce the effectiveness of the heat transfer and result in a higher fuel cost compared to unaffected pots (Orton and Hughes 2013, 251). Firing can be undertaken in a bonfire or a kiln, although there is such variation in firing methods that it can be challenging to determine the exact method used (Livingstone Smith 2001, 999). The temperatures reached during firing can also vary. The different methods used, and the combustion materials do not give significant variation in temperature (Gosselain 1992a, 244). Variability in firing times, however, does occur between firing methods. Open firing results in quickly reaching firing temperature, but at the cost of thermally stressing the pots due to rapid water loss, updraft kilns and covered pit fires take longer but potentially result in less firing loss (Gosselain 1992a, 257). Coarse pottery can be fired more successfully under the more stressful open firing technique as it has a more open matrix, allowing the steam to escape better than in finer pottery wares (Gosselain 1992a, 257).

### 2.4 The Study of Archaeological Ceramics

For the most part, the study of archaeological pottery has used the vessels found at sites to date the contexts and create chronologies. This is a function ascribed to vessels by modern archaeologists, but it is not the function for which they were initially produced. However, discovering these vessels' original functionality is only a relatively modern approach. Material culture studies developed in the 1970s and saw the development of different approaches from Marxist to structuralism and then post-structuralism (Tilley 2005, 7-8). During this time, great strides in understanding pottery have been made, but the approaches used individually have had problems (Wayesssa 2015, 388).

Ethnoarchaeological approaches began to gain favour from the 1980s onwards, and these studies have created insight into the use of pottery and developed information on the use wear (Morris 2002, 55). These studies are based on the use and function of whole vessels; only a few use just sherds (Skibo 2015, 192). Identifying the function of the vessels from which the sherds are found requires considerable effort. This is arguably why pottery studies have not ventured far beyond the established description of pottery by temper, colour, firmness, thickness, and decoration (Appendix A1). These descriptions give archaeologists insights into the production, potential uses, firing methods and the interaction the producers and consumers of these vessels had with each other and their environment. By comprehending these aspects of the pots, we can better understand what they were used for and, in turn, what the site was used for and about the people who used them (Morris 2002, 54).

Ceramic ecology was developed to incorporate the scientific side of pottery analysis into pottery studies and to understand how the raw materials combine into a functional vessel (Gosselain 1998, 79). This approach, along with function and use analysis, focuses on how the potter interacts with the environment to source raw materials and use these to produce a functional vessel. This analysis method has no room for individuality and expression of culture or heritage (Gosselain 1998, 80). To approach pottery in such a quantitative method only allows archaeologists to capture some of the nuances of the pottery. The anthropological approach will never truly define the past, but they offer insight.

Pots are containers; however, what they contain is not necessarily physical but symbolic. The production of pottery is a transformative method. Once fired, pottery cannot be reverted to the original clay. It can be ground down into grog, but it is never again malleable. The production of pottery goes beyond just making a pot. It has been associated with the human body which in some funerary practices sees the body changed by fire and broken down and in some cases even mixed or scattered (Fowler 2004, 24)

Kopytoff introduced the study of artefact life biographies (1986, 66). This approach demonstrated the interactions of the objects with their environment. Material culture is intrinsically part of people's histories. Wear and trace analysis can help build these object biographies and document the different uses items have throughout their life cycle (Orton and Hughes 2013, 252). This approach often focuses on outstanding and isolated artefacts, which can lead to generalisations and projection of ideas onto unrelated artefacts (Blanco -Gonzalez 2014, 443). Kopytoff's approach did, however, lead to the development of different ways of viewing artefacts and is still helpful in questioning the archaeological record. Hahn and Weiss (2013, 4) took the idea of the object biography and questioned the point at which previous studies have declared the end of the object's functionality. The deposition of the item is often seen as the end of the functionality and life of the item. However, they suggest that items can have multiple births and deaths, and those commonplace items can be reborn and deemed far more significant than initially intended (Hahn and Weiss 2013, 7). Once items are found in the archaeological record, they gain agency and function. In the case of pottery, it is often a chronological marker.

The approach of recording and not exploring functionality leaves questions about the people who made and used the pots, and as archaeologists, that is the basis of what we want to know. It does not inform us what vessels they were cooking with, which they were burying their dead in, and if they were the same. It also reveals nothing about the production. The functionality of the Bronze Age vessels is more than what we ascribe. It is what the makers attributed to it. To understand these questions, we must look at the vessels' functions and the elements that make up the vessels (Evans and Recchia 2001-3, 187). Temper may not initially seem significant in the grand scheme of things, but it can change a pot's symbolic and physical function as much as its form. Jones (2002, 162) suggests that the selection of the temper is significant in strengthening the physical pottery and ties to the potter's community and ancestors. The temper is part of the pots and the potter's identity. Individual aspects of a pot are potentially as significant as the finished vessel.

Pots were made for a purpose. The versatility of clay has meant that pottery has been used to satisfy the needs of the societies that used it. Despite this flexibility, clay vessels also require other resources for firing. Many known settlements are located within easy distance of different soil types and, therefore, most likely resources for making and firing (McCarthy 2000, 133), suggesting that part of the identity of Bronze Age society can be tied to the resources needed to make pots.

Pottery, which survives production, also must survive use. Pottery's function can change depending on the intended usage and if the vessel survives the elements and activities it is exposed to. Some pots were intended to have a single use before being broken and deposited, such as the Roman Picenum bread pots (Orton and Hughes 2013, 254). These pots were used for cooking the bread but had to be broken to get to the bread within (Gaius Plinius Secundus book XVIII cha, XXVII). These pots are like the disposable foil trays used in kitchens today. However, other pottery vessels have continued to be used and show signs of repair (Wilkin 2013, 158; Orton and Hughes 2013, 254). Neolithic pottery can often show signs of repair and continued use, such as that seen on the Isle of Man (Burrows 1997, 22). However, these repairs also accompany an alteration in function; the repair makes heating the vessel unsalable as it would undo the repair work (Burrow 1997, 215).

The form of a vessel type can change over time, likely through a mixture of alternative technologies and the emulation of other cultures as well as innovation and adaption. Such as the production of red-slipped vessels in the Roman period that emulated Samian wares (Willis 2011, 190). However, pottery can also emulate cultural objects beyond other pots. The Late Bronze Age pottery of Britain saw much change in both form and decoration, as well as in feasting activities, suggesting that the function of pottery is part of a greater cultural expression. Pottery forms can also be made to represent nonceramic items. Skeuomorphs are often seen as archaeological assemblages, and in some cases, skeuomorphic vessels could indicate the beginning of the acceptance of ceramic vessels by aceramic societies (Blitz 2015, 666). Other vessels show evidence of decoration designed to resemble construction methods used in perishable material cultural objects such as weaving or knitting (Blitz 2015 667). The form of vessels can also be seen in skeuomorphic vessels, such as the metallic wares from Mesopotamia, representing the period’s metal vessels (Broekmans et al. 2006, 220).

Surface treatment of skeuomorphs to resemble other materials also occurs. Some of the pottery from Late Bronze Age Wiltshire was given a haematite coating, perhaps intending to make it similar to the bronze vessels of similar shape (Avery 1981, 32-34). In Europe, also during the Late Bronze Age, some vessels were given a graphite coating during production. When fired under reducing conditions, this coating produced a metallic appearance (Kreiter et al. 2014, 140). Furthermore, these vessels are widespread across Europe and appear of high status due to the rarity of graphite in some regions where the vessels are found, such as Hungary (Kreiter et al. 2014, 140). The application of the graphite may have been undertaken to help with the distribution of heat across the vessel. However, achieving a high lustre shine involves more work than just slipping a pot. The application method includes burnishing the vessels.

Furthermore, the firing must constantly be kept at over 700 Celsius for the whole process (Kreiter et al. 2014, 140). This means that the fire had to be watched and maintained, and the potters had to have a high skill level and technical knowledge. This indicates a desire to have the vessels with a metallic finish, possibly undertaken to emulate the more valuable metal objects. However, despite these changes in appearance, the pottery still had to achieve its intended purpose.

Although clay can be seen as a cheaper resource than metals, particularly in Prehistory, it does not necessarily mean that the vessels are disposable items. The work and skill in creating some vessels, such as the graphite-coated ones, undoubtedly increased their worth. These items of high value may have been kept as status symbols of personal power or connections to other places. The vessels were used again later in life after their prestigious status was replaced by newer material.

### 2.5 The History of Experimental Archaeology

Experimental archaeology has existed for centuries, driven by different cultural and social movements, from the Enlightenment and nationalism to the Romantics and Conservatives; people have attempted to use the past to argue their stance (Flores 2010, 33-35). The earliest archaeological experiments, however, were not undertaken by archaeologists but by antiquarians and enthusiasts, and they are not by our definitions experiments due to their lack of reproducibility. However, they do sow the seeds of a practice that would develop into the current practice.

Archaeological experimentation has often gone hand in hand with ethnoarchaeology, the study of cultures and the application of artefacts from the same need to escape the typological practice (Skibo 1992, 18). Ethnographic studies became more difficult as the twentieth century progressed due to the increasing development of communication, and the erasure of culture through empire was seen. (Flores 2010, 38). In the twentieth century, the current practice of Experimental archaeology started to take root and bloom. Forrest (2008, 62) credits Ascher with the first publication of the terminology, experimental archaeology, in 1961. Post-World War two, experimental archaeology became more scientifically rigorous, with variables and data being controlled and recorded for publication (Flores 2010, 38).

Over the last forty years following the publication of John Coles' work Experimental Archaeology in 1979, the practice has become more widely accepted into archaeological practice. However, the parameters of the practice are debated. Skibo defines experimental archaeology as the 'fabrication of materials, behaviours, or both to observe one or more processes involved in the production, use, discard, deterioration, or recovery of material culture' (1992, 18). Reynolds takes a more pragmatic view that experimental archaeology is undertaken in the scientific manner of a hypothesis being found and then tested (1999, 157). Reynolds, in 1999, is rather scathing on experiential archaeology, while more recent works accept the values in human experience.

Experimental archaeology can be conducted in the laboratory and the field. Laboratory tests are undertaken in conditions where the variables are more easily controlled, allowing a more easily reproducible data set (Skibo 1992, 21). Brontsky and Hamer did an early experimental laboratory test on temper strength in archaeological ceramics in 1986. Field experiments are often undertaken outside or in situations where the conditions are more natural and out of the control of the archaeologist (Skibo 1992, 23). Both approaches have value, and current experimental archaeologists balance them to get the most from their experiments. There has to be a balance in pottery studies between the personal and ideological importance of pottery and its form and function (Millson 2013, 150), and experiments can reveal that. It can show how trends adopted by potters are both beneficial and entirely superfluous for a pot's function.

### 2.6 Pottery Experimentation and Reproduction

In archaeological pottery studies, experimentation allows us to understand an otherwise highly fragmented material culture. Reproduction archaeology ranges from small items like pottery and lithics to whole buildings and boats (Llull Billings and LaFleur 2013, 3). Pottery has been reproduced for experimental purposes and museums (Taylor 2013, 122). The biggest issue in reproducing vessels for experimentation is that potters each bring their own approach to making pots (Taylor 2013, 127). Clay and inclusions are highly variable from period to region (Taylor 2013, 124), and the construction method, firing method, and form decoration are equally so (Rice 2015, 276). As such, it must be accepted that there is a limit to what we can get from the experiments. However, experiments can reveal the human quirks in artefacts. The definitive function of a vessel cannot be revealed from experimentation. Combined with other archaeological approaches, such as residue analysis, a more accurate view of how pots were made, used, and disposed of can be seen. A great deal of literature exists on pottery; however, it is often written by those who have no experience in making pottery, and thus, certain stereotypes can be seen which do not truly reflect practice (Taylor 2013, 125).

Previous experiments on British Bronze Age pottery have provided insight into the pottery within these studies. Through experimentation, Hammersmith (2010, 125) details the construction method of Beaker vessels and how they vary from the construction of similarly aged vessels. Taylor (2013, 132) also remarks on the professionalism of the Beaker pots over their contemporaries and the control shown in their firing to create the oxidised surface seen on some of the Wiltshire vessels. Taylor also compares the skill of amateur potters he has taught, and the pots produced. Taylor (2013, 125) found a correlation in quality, suggesting a local-level production for most prehistoric pots Tongue and groove joins have been suggested (Gibson and Woods 1997, 38) as joining coils while constructing pots. However, coil building is ruled out in the production of Beakers (Hammersmith 2010, 125), and many forms of joining clay can give a similar diagonal structure (Taylor 2013, 127). This could mean a more basic construction method than a taught cultural practice and is something an amateur potter could easily pick up.

The size and shape of the pots are more indicative of skill than the construction method. At Sagnlandet Lejre, the potter reproducing vessels thought small pots were more challenging because the vessel walls hamper the ability to work the clay. In contrast, the walls in a larger pot were more accessible (Heebøll Sagnlandet Lejre 2018). The thinner the walls, the more difficult it is to form the vessel (Hammersmith 2010, 119). While decorative forms such as a carination weaken the vessel and need more skill to make (Heebøll Sagnlandet Lejre 2018). The base of the vessel is also a sign of the potter's skill; the Bronze Age vessels all have flat bottoms, but the Neolithic before 3000BC have a rounded base, which makes the construction of them harder due to balance and form (Heebøll Sagnlandet Lejre 2018).

The firing reveals information on the potters. The Beakers, as mentioned, have an oxidised red colour, which involves careful control and the use of a kiln or proto kiln to achieve (Taylor 2013, 132). On the other hand, the black pottery favoured elsewhere in Prehistory has to be fired in a reducing atmosphere, which involves a kiln or earth clamp over an open fire (Heebøll Sagnlandet Lejre 2018). Either method shows an investment in time and resources to produce the pots in specific ways. Pottery firing, however, does not guarantee a pot. In an open fire, the survival rate of pots can be from 100% to 50%, while kilns can see an average of 75% survival (Heebøll Sagnlandet Lejre 2018).

The size of the pot can affect the firing. Taylor argues that smaller vessels can be fired in the prehistoric hearth due to the size and the likelihood of a fire occurring in this space reaching over 500 degrees and being sufficient to fire a pot (2013, 130). Smaller pots are more likely to survive an open firing than a larger vessel (Heebøll Sagnlandet Lejre 2018). They are easily dried around the hearth and could be easily transferred into and back out of the hearth fire (Taylor 2013, 132). Within the home, it would be possible to see if the pots are fired at 700 degrees, potentially possible in a hearth, pots taken on a cherry red glow (Taylor 2013, 131). However, the hearth is impossible for larger vessels, such as some Collared Urns, and they need to be fired outside. The firing of larger pots is difficult in open firings; the large pots with flat bottoms are often the ones which fail, and many have cracks running up the sides (Heebøll Sagnlandet Lejre 2018). So, even if the construction and skill shown by the potters are minimal, pyrotechnic knowledge is necessary to ensure a successful firing

## 2.7 Research Areas

### 2.7.1 Analysis of Use Wear and Functionality

Function is complex for archaeologists to define as function is not set (Orton and Hughes 2013, 246). Functionality is defined in this study as the overall task a vessel is made to fulfil and the tasks that it did during its life. Functionality by dictionary definition being more than decorative (Collins Dictionary). However, this can be viewed in different ways, such as the purpose of the vessel, the types of the information that can be taken from the vessel and finally, the function of the society and pottery's place within it (Orton and Hughes, 2013, 246). This study looks at the vessels' function, why they were made, how they were used, and their function within Bronze Age society.

The vessels from their creation are subject to external forces of both the environment and those who use them. This can create bumps and abrasions on them, which are clues towards their function (Skibo 2015, 195). The pottery once made was likely used differently depending on the intended function, such as a cooking pot versus a storage pot. Bowls and cups, which would be used possibly multiple times during a day for meals, could well have a shorter life due to the frequency of use. The same could be suggested about cooking vessels and their exposure to thermal shock, limiting their life (Muller et al. 2016, 3).

The method of use wear analysis can and has been successfully applied to prehistoric pottery, showing the uses people put their pottery to (Vieugue 2014, 629). However, despite these advances, it only partially answers all the questions surrounding how these marks were made. Furthermore, the variation in pottery firing can mean that different types of attrition marks can be left behind, even if caused by the same action (Skibo 1992, 108). Traces can carbonise organics or fats within the pottery walls. Analysis of organic residue has become an established part of the study of ceramics (Evershed 2008, 899). However, the absorbed residues most commonly found in pottery walls are invisible to human eyes (Evershed 2008, 904). Residue analysis does not always produce positive results; it only works on some vessels as the residue must be heated to get it within the pottery walls and broken down to the point that it can be analysed (Skibo 2015, 195).

### 2.7.2 Types and Signs of Use Wear

Although immensely versatile, pottery is not a hard material, particularly in prehistory, where they were not achieving firing conditions high enough to vitrify the clay. As such, the pottery can have many wear marks from the uses it was put through.

Attrition can occur due to moving at least one object against another. The speed of the movement and the vigorousness at which it occurs can also impact the type and strength of the mark left behind (Skibo 1992, 109). The abrasions that occur through friction are surface abrasions, scratches, and chips (Skibo 2015, 195).

Meanwhile, some attrition, called spalling, occurs through chemical reactions. A common cause of internal spalling is the fermentation process (Skibo 2015, 195). There can also be examples of chemical spalling due to inclusions decomposing into Calcium Oxide (Taylor 2013, 124) (Figure 2.1). The crystallisation of salt also leaves marks behind on vessels through chemical damage (Skibo 2015, 195). During manufacture, salt can also inhibit the decomposition of Calcium Carbonates and may have been deliberately added to combat spalling (Harry 2010, 18). Nevertheless, adding salt can also cause the clay to flocculate, possibly leaving marks behind (Llull Billings and LaFleur 2013, 6). Liquids such as water can alter the nature of attrition marks and speed up the damage rate (Skibo 1992, 109).

The type of attrition and its location on a vessel can indicate its function. However, the marks found on the vessels can be post-depositional rather than from use wear. One of the ways to determine if the vessel has attrition from use or deposition is how prevalent it is. If the vessel has abrasion across all the surfaces, post-depositional processes, such as finds processing can

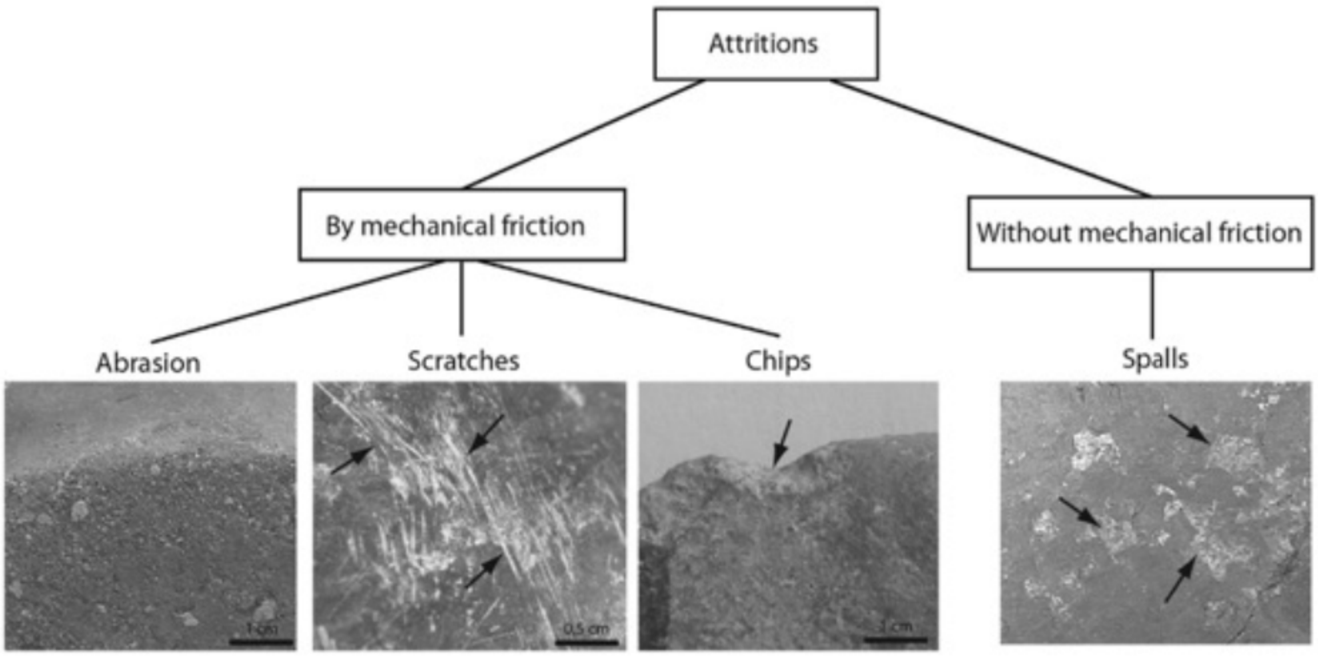



Figure 2.1 Different forms of attrition seen on pottery in the archaeological record (Vieugue 2014, 624 Figure 2.).

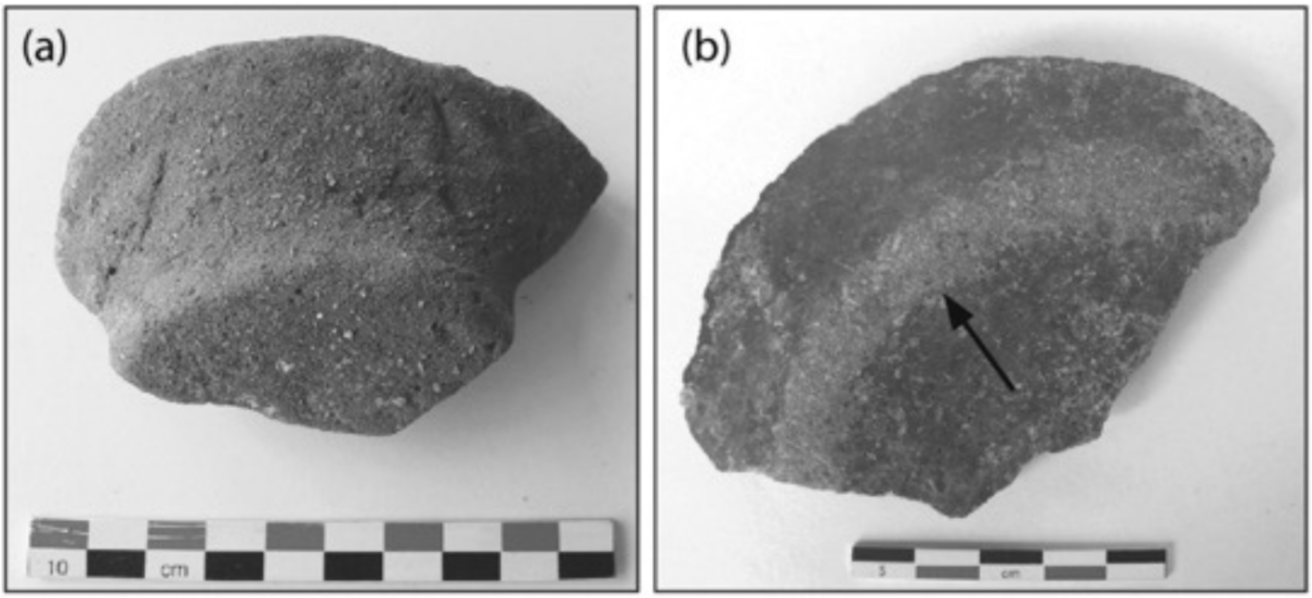



Figure 2.2 The difference between a) a worn pot likely caused by post-depositional processes and b) the use wear attrition on the base of a prehistoric pot likely caused through prehistoric use (Vieugue 2014, 624 Fig. 3.).

The rims and bases of pottery can show abrasion. The abrasion on the bases of pottery can be caused by the pottery being slid on rough surfaces (Vieugue 2014, 624). Rim issues could be caused during firing and cooling (Hammersmith 2010 112) (Figure 2.3). Damage can also occur on the rims of pottery if stored upside down. The movement of the pottery could cause abrasion and scratches; if very unlucky, chips could be taken from them. However, abrasion could also occur on pottery that has a lid. Bronze Age lids are rarely found, but some examples exist nationwide (Tomalin 2013 561). A lid that is removed and replaced regularly could result in damage. Similar marks are likely to be seen on lids made from pottery. Attrition is still likely to occur on the rims, even if they are not using ceramic lids. Leaning or banging spoons to remove drips can also cause damage to the rims of vessels, according to experiential experience (Sagnlandet Lejre 2016, 15) (Figure 2.4).

The internal surfaces of pottery can be marked in different ways. Heat can damage the inside (Hallam 2015, 195). Carbonisation can occur due to food remains burning and can often be found in a ring around the inside of the pot or on the base (Skibo 2015, 192). Scratches can also occur during cooking if things are stirred within the pot (Orton and Hughes 2013, 253) (Figure 2.5). The hot rock boiling method could cause more abrasion due to the stone’s hardness against the pottery’s base. The indirect hot rock cooking theoretically does not leave the sooting seen on other cooking vessels (Sassaman and Rudolphi 1993, 415). The fermentation process for milk and beer can cause spalling on the inside of the pottery (Vieugue 2014, 626).

The evidence for exposure to fire can be seen in many vessels through sooting. However, this can vary due to finds processing and age. When finds are processed this can wash off the outer surface layer of soot (Skibo 2013, 89 -90). Carbonisation can occur within the ceramic wall or on it as long as the wall has reached at least 300 degrees Celsius (Skibo 2015, 191). In cooking practices involving boiling liquids, carbonisation will not occur below the water line but will instead permeate the pot's walls (Skibo 2015, 191). Vessels tend to have a maximum and actual capacity, where it is sensible to stop to maintain usability (Skibo 2013, 30). Carbonisation happens when the organic foodstuff comes into contact with the vessel wall without water and burns. Because this occurs against the wall of the vessel, the carbonisation leaves a residue, which can either form a crust or become absorbed into the fabric of the wall, much like the soot on the wall of the external surface (Skibo 2013, 85).


Figure 2.3 Damage to the rim of vessel E34 during the firing process (Author's Photo).

Figure 2.4 Damage on rim of a vessel from Sagnlandet Lejre a chip of pottery has been lost due to knock from a spoon (Author's Photo).


Figure 2.5 Scratches on the inside of a vessel caused by stirring (blue circle) as well as carbonisation from burning caused during dyeing (red oval) from Sagnlandet Lejre (Author's Photo).

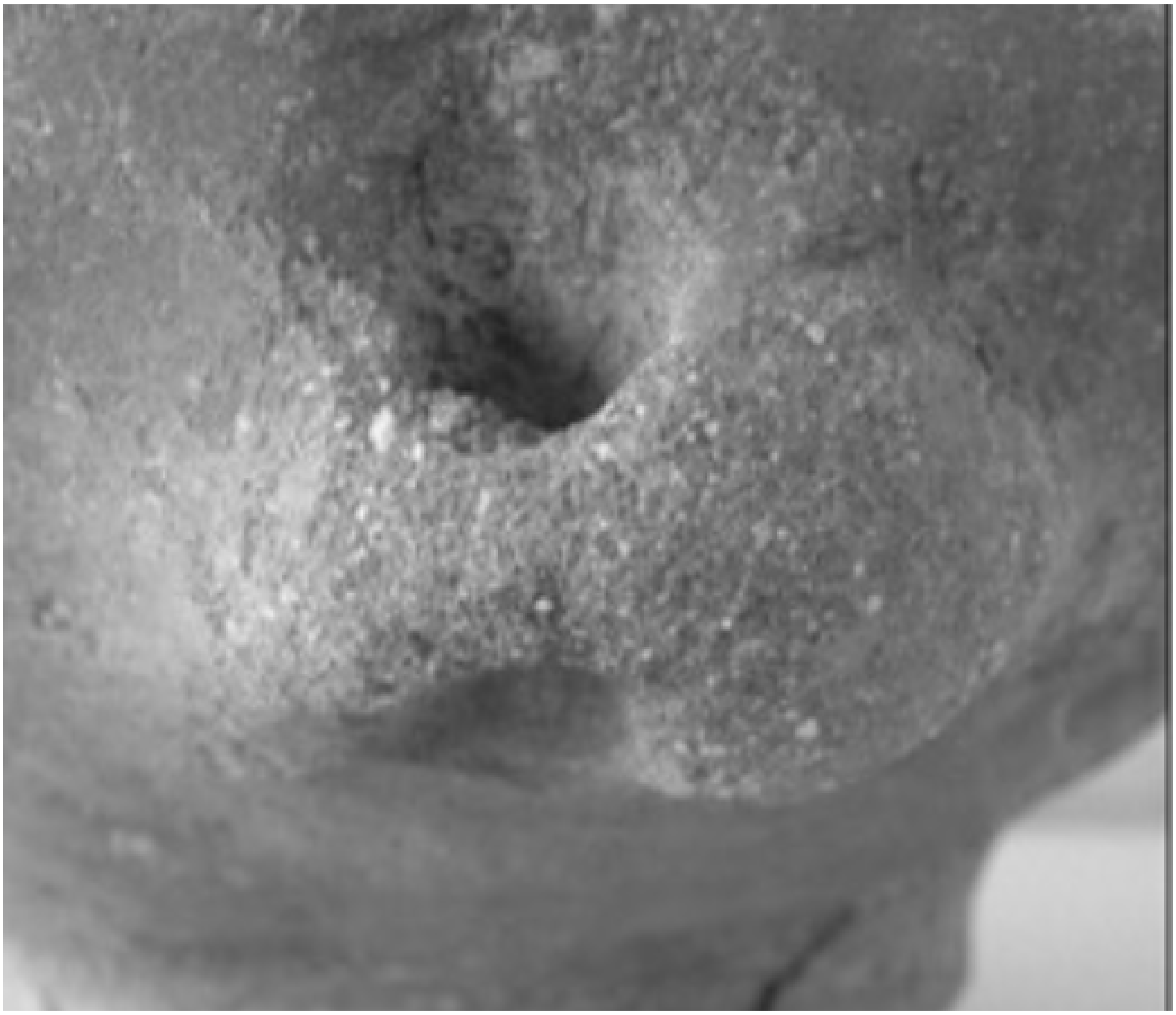


Figure 2.6 Abraded lugs from an archaeological vessel (Figure 6 Vieugue 2014, 626).

Handles on pots are a point of stress, which can result in them being damaged or even broken off. The presence of handles or lugs on vessels indicates that a vessel was likely intended to be picked up and moved. How the handle was made and where it was attached can also denote the intended function (Hopper 2000, 36). However, pictorial evidence shows that vessels could have handles added after creation, such as jars with woven handles used as water-carrying vessels (Orton and Hughes 2013, 248). Thick ceramic handles could also be added at creation, or extra clay can be added to form lugs (Orton and Hughes 2013, 254). However, this does not mean that the handles or lugs are protected. The nature of the handles, extending beyond the body of the vessels, leaves them open to knocks while handling them to lift, which causes friction and abrasion. If the pottery is hung from a handle or a hole, this can also cause abrasion (Figure 2.6). However, some vessels have too many perforations for suspension to be a purpose (Gibson 1986, 44). Ropes usually suspend a pot, a coarse material that, when pulled taut against the clay against the weight of the pot, causes significant attrition (Vieugue 2014, 626) (Figure 2.7). There is pictorial evidence of woven handles made for water-carrying vessels (Orton and Hughes 2013, 248).

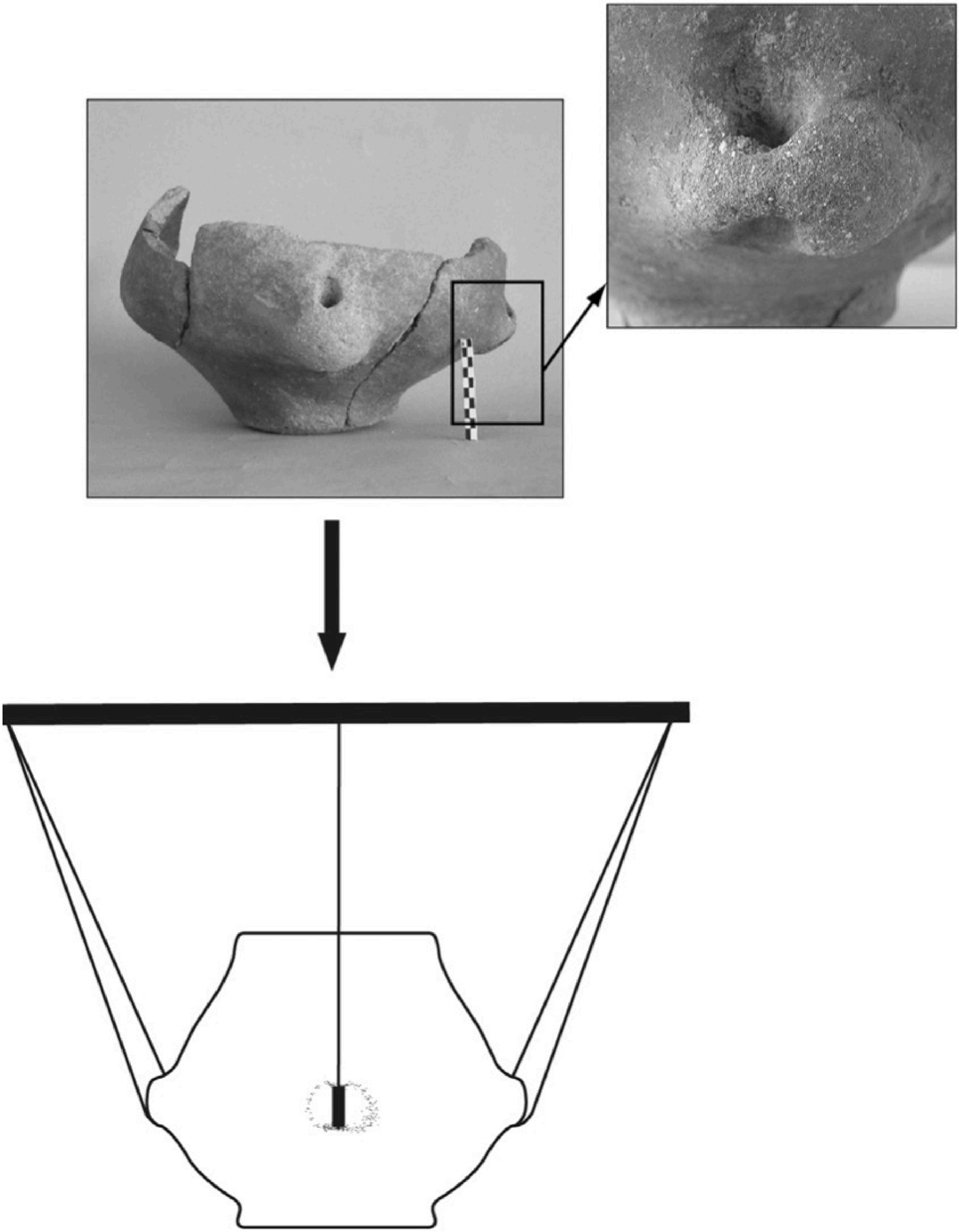


Figure 2.7 Theorised suspension method from lugs by Vieugue based of wear evidence on some vessels (Vieugue 2014, 626 Figure 6).

### 2.7.3 Residue Analysis

Although undeniably helpful, the use of wear analysis and experiments are subject to variations in results depending on the materials used (Hruby and Trusty 2017, 2). Due to its low firing temperature, prehistoric pottery can also limit the effectiveness of use wear analysis (Vieugue 2014, 628). That is not to say it is not helpful or worth doing, but having additional analysis methods can help support the data.

The analysis of Lipids has become, in recent years, an accepted tool of analysis (Evershed 2008, 895). Residue analysis is a helpful way to gain insights into the function of pottery and the people who use it for diet and cooking, which are integral to a society's survival (Hruby and Trusty 2017, 3). However, it is not without issues in use and interpretation and should not be considered a definitive answer for pottery function (Whelton et al. 2021, 17).

The current approach to residue analysis is most effective on unglazed wares, which makes it very useful in prehistory. The approach has revealed a lot about the foodways of the Bronze Age (Roffet-Salque et al. 2017, 631). The visible organic residue is known to archaeologists and occasionally appears in ceramic reports (Morris 2002, 58). However, the visible residues are rare due to them becoming lost through depositional and post-excavation losses such as cleaning and reconstruction (Roffet-Salque et al. 2017, 627). Most current residue analysis is undertaken on unseen residues perforated into unglazed pottery walls (Roffet-Salque et al. 2017, 627). Recent studies have revealed that some pottery, such as Bronze Age Red Lustrous Wares in the Mediterranean, were sealed with beeswax, which was otherwise unseen (Knappet et al. 2005).

Residue Analysis has been undertaken in both case study counties in the thesis. Soberl (2011) studied organic residue in Early Bronze Age funerary pots across Britain and intended pottery from Cumbria and Wiltshire. Other residue analyses have been and are being undertaken, and more data is becoming available. This study does not intend to add to the number of studies by analysing new samples. Instead, this study hopes to expand upon the data already gathered to understand more about the functionality of pottery. The lipid data from other studies will be discussed in later chapters. It will be discussed in the past research chapter and again in the discussion and analysis chapters for the original pottery.

### 2.7.4 Radiocarbon Dating

Radiocarbon dating is helpful for chronologies even within the Bronze Age (Gibson 2013, 35–46), which has plateaus affecting some dates far more than typologies (Needham 2005, 171). These dates and chronologies can be paralleled to other sites without datable material. The typological evidence of dated assemblages can also be applied to untested assemblages. This benefit is an increased understanding of the movement of ideas and people.

Radiocarbon dates are important in defining the transition of social practice. As previously mentioned, the artefacts are essential in many areas for the formation of chronologies. Therefore, through the different typologies, comparative studies can be undertaken. There is no intention of obtaining new radiocarbon dates through sampling in this study.

There are limited datasets from Cumbria, although some exist for the more significant cemetery sites at Ewanrigg (Bewley et al. 1992, 351) and Allithwaite (Wild 2003, 28 and 38). In Wiltshire, radiocarbon dating is more prevalent and notable sites such as Stonehenge and Durrington Walls have been tested and re-tested as the discipline has improved (Parker Pearson et al., 2007) This has proved that sites such as these have long uses through the Neolithic. Other projects, such as those by The National Museum Scotland and Sheridan (2003), although not directly within the study area, give radiocarbon dates for vessels within Scotland geographically close to Cumbria. The radiocarbon dates help us chronologically understand functional and social changes across the period, which is one of the objectives of this study.

### 2.7.5 Petrology

Other approaches, such as petrology, are helpful for the identification of sites used for material gathering and production, which in turn gives a greater understanding of local pottery production (Hamilton, 2017, 39). At the Middle Bronze Age site of Bishop Cannings Down petrology is used to source the clay beds and trace the distribution of pottery across the region (Tomalin 1992, 76). This allowed archaeologists to map the social interaction and alternative functions the pottery goes through, such as going from domestic storage to cooking or even into a funerary context.

Within the scope of this study, petrology is limited. It could also expand the understanding of the people sourcing the material. Although no new data collection is undertaken, the existing literature will be considered and included where pertinent. In Cumbria, petrological analysis has revealed that the stone used as temper in Food Vessels and Collared Urns was also used to make the stone implements (Freestone 1992, 340). In Wiltshire, it has been theorised that the stone debitage from the flint knapping was added into the pottery as temper (Woodward 2008, 295).

Petrology is helpful in the context of this study for understanding the local identity of the potters and the pottery. It can also help understand the function of the pottery through the effects of the temper in the pots and the effect it can have on the nature of the pot. This will be explored more thoroughly in the later chapters, with the geology of the case study regions covered in detail.

### 2.7.6 Experimental and Experiential Archaeology

With an understanding of the materials, it is possible to use them in scientific experiments. As discussed in previous chapters, experimental archaeology takes a tangible artefact and explores it to find the intangible. Like all experiments, a hypothesis is made and tested (Reynolds 1999, 157). Experimental archaeology is no different in using this scientific approach, and the same due rigour is applied to ensure that the results are reproducible. Experiential archaeology and re-enactment are not the same although data can be collected from both activities (Flores 2012, 170). Both of which could be more rigorous in data recording and reproducibility. However, there are benefits found in these activities.

Through experimentation, Hammersmith discovered that the construction method of Beakers varies from the construction of other Bronze Age forms (2010, 125). The coil-building method seen in the assemblages of British Bronze Age pots, such as Collared Urns (Taylor 2013, 127), was ruled out in the production of Beakers after experimentation (Hammersmith 2010, 125). So was pushing clay against a cord wrap, creating a distorted pattern (2010, 125). Hammersmith discovered that pots could be made in different ways, some being less time consumptive than others (2010, 125). Also, a potter could reproduce a pot after seeing one (Hammersmith 2010, 125); this theory of pottery being emulated by potters was also experimented on by Millson (2013, 155-7). After two weeks, Millson could routinely produce vessels of similar size and shape without previous pottery training (2013, 155-7). These two experiments theorise about the potters' skills and identity without explicitly exploring the ideas through experimentation. The experiments in this thesis explore these in detail using original pots to form the experiments and then compare the experimental pottery produced to examples from within the case study region.

In their experimental work, Millson speculated and tested the theory that small vessels could be dried and fired at a hearth (2013, 155). They also briefly speculate that the small vessels were made as and when needed, and they were, after two weeks, able to reproduce similar-sized vessels (Millson 2013, 155-7). The larger vessels take a longer time to make and fire.

Did professionals make pots? Beakers are often seen as professionally made pots due to their refinement and control in firing (Taylor 2013, 127). However, petrographic analysis shows the local production of other vessels in assemblages (Millson 2013, 241). Hammersmith argues that a potter could reproduce the appearance of a Beaker by sight. Therefore, they were not all produced by the same people, and culture initially introduced them to Britain (2010, 125). The Beakers construction method has also been much debated; there was a belief that Beakers were created using a cord wrap to support each additional coil, creating the distinctive cord pattern on some vessels (Hammersmith 2010, 111). This method was challenged in 2010 by Hammersmith, who found that pushing clay into a cord wrap left a distorted pattern (2010, 125). In her experiments, Hammersmith discovered that Beakers could be constructed in different ways, some of which were less time consumptive than others, and several could be constructed simultaneously (2010, 125). The term professionalism is perhaps a misnomer considering the local level of pottery production, which occurred in both case study regions during the Bronze Age.

Beaker pottery in assemblages primarily indicates a degree of skill in manufacture from the size, thinness of walls, and vessels' form. However, some outliers are thick, uneven, and poorly formed (Hammersmith 2010, 124). An experiment to see how different potters of varying skill levels manage to achieve is potentially worthwhile. While the results are as arguably subjective as the question, they will reveal if unskilled potters can produce the most basic pots.

In their 2013 thesis on prehistoric pottery in the Tyne Forth region, Millson looks at how easy it is to make prehistoric pottery (2013, 154). Questioning how long it takes an amateur to learn how to make a pot and the time and effort involved in this. They then look at the pot's survival when used over a fire. Does beeswax work as a sealant in cooking pots?

Furthermore, how quickly do the pots decompose when exposed to the elements? (2013, 152-153). Millson made a series of miniature Collared Urns and bonfire-fired them (2013 154). These vessels were then used in experimentation where a degree of failure occurred, leaving Millson to conclude that small vessels were made when needed and fired in the hearth (2013, 157).

Millson conducted an experiment where one vessel was buried, and a second was left exposed to the elements for eleven months, with the same replicated in Ontario as a control (Millson 2013, 154). As a control, a third was buried in different conditions (Millson 2013, 159). While the experiment does not reveal if the pots are from the same firing or clay source, it was discovered that the exposed vessel disintegrated while the buried ones remained intact. This raises the question of how quickly the damage became evident to the exposed vessel. Millson tested the durability of the pots when subject to weather conditions in a similar location of the sites for eleven months by burying them or leaving them on the surface. This saw the degradation of the vessels, while the ones in the ground saw some degradation and softening of wall structure due to moisture levels (2013, 159).

Experiential archaeology is also being considered in this study, even if not personally undertaken. Sanglandet Lejre in Denmark, an open-air archaeological museum, provides experiential experiences (Flores 2012, 56). The pottery at the museum is constructed and fired based on regional examples of pottery and used in the theoretical contexts in which it was found.

Data has been gathered from these vessels due to the rigour in the production and use of the pottery. Furthermore, the potters and several people using the pottery were interviewed, and their insight into the use and functionality of the pottery was gained.

This thesis aims to use the experimental approach to understand more of the function and use of the pottery and to understand the people behind the artefacts further. A methodology is followed to ensure this is undertaken within academic standards. All experiments have a hypothesis and experiments undertaken within this study will have with one, even if it is as simple as will use create wear marks. These hypotheses will be tested unbiasedly to ensure that the results reflect the true nature of the question asked. During the planning of the experiments, the different variables were considered and, where possible, controlled to ensure that reproducibility could be achieved. The active experiments were undertaken methodically, and all data was recorded and included in the experimental chapters.

Hypotheses tested within the study are intended to answer the research questions about pottery function. The life cycle of pottery will be tested in experiments focusing on different storage locations and the effects climatic conditions can have on the pottery. This experiment is being conducted to understand the everyday domestic use and storage of vessels and to explore the length of life a pot can expect. Further pottery experiments will be undertaken by looking at the wear pattern on the pottery and how they can be produced through different attrition actions. This will be undertaken to understand potential uses, and if pottery had more than one different use through wear patterns, it would also allow a greater understanding of the life of Bronze Age people and their pottery. Deposition experiments will help to see if signs of wear occur and will be compared to the original vessels. All the experimental vessels made with the study are based on actual archaeological examples to ensure the production of a more reliable and comparable data set. The pottery within each separate experiment is made within the same conditions and from the same source materials by the same person. They are also fired at the same time to limit external variability.

Due to the nature of pottery, a degree of vessel loss can be expected during production. This thesis will still use vessels that survive the firing but have received some flaws. These vessels, as well as any that break during transportation or use, are not discounted in the study as their failure contributes to a greater understanding of the fragility of pottery during use.

A more in-depth review of the experiments undertaken in this study will be discussed in a later chapter. The data from the experiments will be presented within that chapter, and later chapters will discuss the results and the appendices.

**2.7.7 Form**

Understanding the form and how this can be part of the pot's function is necessary. Rice states that the function of pottery can be divided into three broad categories: to be used as storage; to be used during processing or to be used in transportation (1987 208-209). Other types of containers existed, such as baskets and wooden or leather vessels; however, these are more challenging to find in the archaeological record, which often focuses on the durable material remains of metal, stone, and ceramic (Hurcombe 2014, 1). The vessel needs to have strength not just in use but also in the manufacturing stage (Orton and Hughes 2013, 251). The ratio between the wall's thickness and strength has to be considered for the survival of firing and the intended purpose; cooking pots tend to have thick walls (Orton and Hughes 2013, 250). Vessels with a thin wall are lighter and have a more significant volume-to-size relationship, which means they are potentially suitable for transport as long as the balance is not lost, causing weakness in the vessels (Orton and Hughes 2013, 251).

Vessels designed for travel have their adaptions, such as the medieval wine jugs or the Roman amphora, which were part of large-scale trade networks but can also be used in the domestic setting (Villing and Spataro 2015, 7). Vessels designed to be hung up will likely be smaller and have a handle or some hole, allowing the vessel to be hooked or suspended (Hopper 2000, 16). Meanwhile, vessels designed to stack, such as bowls, most likely have some degree of uniformity to allow them to stack, stay balanced, and decrease the risk of toppling over (Figure 2.8). At Must Farm there is significant evidence of complete pots in a domestic setting due to the nature of the sites collapse and the site has an estimated 128 vessels (Brudenell 2024, 761) Of these Pots 79 and 137 remain on burnt due to being stacked in side Pot 124 (Brudenell 2024, 749). This indicates that vessels were at least in the Late Bronze Age being stored in this manner.

Vessels with spouts indicate that the contents were poured. This could be water or grain. In smaller vessels, it could be a sign that the contents have significant value and that the owner wanted to control the distribution of the substances without spillage and waste (Hopper 2000, 36).

Lids can keep out material things such as people and animals and environmental factors like wind, rain, and condensation. Lids can also contain less tangible things, such as heat, which is helpful during cooking (Hopper 2000, 36). Lids do not need to be made of pottery and could be a later organic addition, such as woven reeds and other material used during basketry or even skins stretched and tied over the mouth of a pot. Lids could also be placed or secured with ties, wax and fat seals or weights; however, like the organic lids, these may no longer remain visible in the

archaeological record (Figures 2.8 and 2.9).
The base of the vessel is also indicative of function. Bases of pottery can be either flat or curved. Some have feet to improve the functionality of round-based vessels, allowing them to stand without additional equipment to suspend them. Although less stable, round-based pots have a theoretically improved resilience to thermal stress than flatter-based pots (Orton and Hughes 2013, 250). This suggests that they have the potential to function as cooking pots.

Furthermore, some pottery vessels are buried or partially buried as part of the function. The pots are buried to help keep the contents cool. Round-based pots are easier to bury as it is easier to dig a round hole than a flat-bottomed hole (Hopper 2000, 16). It makes sense to make round-based pots in these circumstances, although they can be more challenging to produce and store. They are also used as grave goods and buried along with or containing the deceased. Although all these features are functional and allow for increased usability of the vessels, they still need to be used to enhance their appearance. Functional does not necessarily mean utilitarian.

The Chaine Operatoire is a method used in defining function through form and the decisions that go into the production of a vessel. Those using the method first sort by technical group, such as the manufacturing process, then by technographic group through the petrofacies the third by the technomorphological and stylistic group looking at the morphological and stylistic choices (Roux 2016, 9). The method intends to trace the development of traditions and technologies through time, and through this the social groups, and how they interacted and transmitted ideas and technology (Roux 2016, 11).

Ceramic typometric analysis can be a method for understanding function through form (Roux 2019, 234). By looking at the height, maximum diameter, and mouth diameter archaeologists can distinguish between vessels intended for transporting liquid and vessels designed for cooking (Roux 2019, 234). However, the Chaine Operatoire works best with large homogenous assemblages and the application of other archaeological techniques and approaches. People are flexible and function of vessel can vary from the original one. Context and signs of use and scientific analysis can either back up the topometric approach or it can reveal alternative uses. In this study the Chaine Operatoire is considered and used in partnership with other methods as the assemblages are often too old or disjointed to offer easy analysis. Furthermore, the method only covers the initial function at time of construction not any subsequent ones that can be seen through use wear and scientific analysis.

Figure 2.8 Reconstructed Iron Age vessels at Sanglandet Lejre of different size and form stacked when not in use with some organic lids (Author's Photo).


Figure 2.9 A reconstructed organic lid from Sanglandet Lejre that shows signs of burning and material loss during use and would be unlikely to survive in the archaeological record (Author's Photo).

### 2.7.8 The Environment and Context

In areas where the climate is warmer, vessels tend to have smaller necks (Hopper 2000, 16). The smaller neck on a vessel is beneficial in limiting water loss through evaporation. Furthermore, whatever the climatic conditions, the smaller neck can limit the contamination the contents receive through insects and other creatures falling in. A smaller neck is also easier to seal or cover with a bung or lid. This can help manage other resources such as corks, wax, skins, and cloths. Closed openings can also be seen in bowls and cups from cold climates (Hopper 2000, 16). The smaller opening in these vessels is beneficial in limiting heat loss through convection or evaporation. The practicality of the form was likely influenced by external climatic conditions, which were likely known to the potters.

The sturdiness of the vessels in winter and freezing conditions is also to be considered (Orton and Hughes 2013, 251). The exposure to freezing conditions is something that the pots may have had to withstand. The potential of frost shattering may limit the life of the pottery in use at specific sites.

When archaeological pottery is found, it can be found within the final context of its use. How it was deposited can help us understand the function of the vessel. Ceramic material can be either primary refuse, secondary refuse, or refuse (Schiffer 1972, 162). Some vessels are found within burial contexts. This is either as a grave good or as a container for a cremation. Some of the vessels found in burial settings indicate that they were previously used in another capacity, such as cooking or fermentation (Perry 2011, 17-19). This can give an insight into the life and structures of the societies that used and were buried in them.

In some cases, pottery is found in domestic locations. This can be through discovering pottery on sites known to be settled or within the remains of households. At The Late Bronze Age site of Longbridge Deverill Cow Down, the pottery was found mainly on the front right side of the property, and it is suggested this is where the food preparation and serving occurred, given a potential function to these vessels (Webley 2007, 128). At Longbridge Deverill Cow Down, roundhouses underwent deliberate burning. The pottery has been deliberately packed into postholes after the burning on the right side of the property (Webley 2007, 136). The same right-handed deposition of pottery can be seen at Houghton Down, Hampshire, and very clearly at Bancroft, Buckinghamshire, and Dunston Park, Berkshire (Webley 2007, 130-131).

While these sites are Late Bronze Age and Early Iron Age, the patterns of distribution indicate pottery had a symbolic purpose even in domestic sites. This suggests it reflected the everyday usage of this vessel (Webley 2007, 136-38). A similar deposition on the left-hand side of the deliberately abandoned properties can be seen at Broom and Broomfield (Webley 2007, 138). The pottery is thus domestic, and we can define the function as cooking and serving wares. However, the deliberate placing of the pottery in the post holes does suggest that the pottery was not an abandoned pot but instead placed as part of a deliberate act of middening or as a particular deposit. The importance of middening practices is apparent in the Bronze Age, and there are many examples of large middens, such as those at Potterne and East Chisenbury (McOmish 1996, 75). So, unlike the pot for the Picenum bread, which was disposed of as an unwanted vessel, the pots in these properties become part of a large entity, and they function as a display of feasting and prestige and social discourse which was so apparent in the Bronze Age (Webley 2007, 140).

### 2.7.9 Symbolism and Identity

When studying pottery, it is essential to remember that the people who make it and those who are making it are integral to the whole process. Roux states 'identifying the function of vessels contributes directly to the sociological interpretation of techno-stylistic trees. The function of a recipient can be analysed in terms of use functions related to the mundane/utilitarian sphere, or sign functions related to the social and symbolic sphere' (2019, 233). This suggests that function can be twofold, utilitarian but also symbolic and therefore both the practical and the intangible should be considered in the study of function.

While we can analyse and discuss the importance of temper types to thermal and shock resistance, we must also question whether they were defining factors in the vessel's creation. They may have created pottery in these forms with these tempers, but it may have yet to be made through trial and error to increase the pottery to a maximum yield and minimum loss production method. Instead, it could have been undertaken because it has always been undertaken that way, and sometimes the most effective is different from what the potters are after (Skibo 1992, 38). Potters must be taught, and while there is human creativity, there is also an affection towards rules and comfort in tradition, be that in the form of the material. Pottery is nothing without those who make it.

Pottery tends to have a practical function but can also have a social and personal function. However, it can also have appeal, and this can be through decoration, or the symbolism attached to the piece. A cooking pot is, in many ways, a ubiquitous vessel, but it can be impractical in places with limited resources of clay and wood. However, in the Arctic, there are still examples of these pots being used in direct-fire cooking (Harry and Frink 2009, 335). So, the question, therefore, must be asked why, in a society which does not need a pot to cook food, there is no effort to make, fire, and use one. It is suggested that the pot was needed to fulfil a purpose made by society (Harry and Frink 2009, 340). People came to the area and decided to continue previous cultural practices, or they adopted the practices of others they met and saw without their being of significant benefit to them.

Identity with the thesis is seen as characteristics that distinguish an individual or movement from others (Collins Dictionary). Pottery can do more than create links with other or past societies. It can communicate information about the current society using them. It is argued that the artefact's creation embodies the identity of the creator and their society. They cannot be disconnected and viewed independently of all other factors (Hodder 2003, 122- 124). This can be seen when we view the typology of vessels; we can locate the transmission of ideas and the regional variation which expresses the personal identity. Fell, in 1950, discussed the northwest Beaker pottery, highlighting discernible identities in the decoration. Northern Beakers use straight lines to give a shaded appearance, while Yorkshire is known more for its Chevrons, while in the south, they lean towards zig-zag designs (Fell 1950a, 44).

It has been suggested by Manby (2004) that the Beaker pottery with handles is a skeuomorph of turned wooden artefacts. Turning wooden vessels with handles is more challenging than making one out of clay, and potters could easily continue the practice with less difficulty. The small handles on the vessels could be more functional due to the clay vessel's weight but may instead represent the wooden handle and are now only fulfilling a symbolic role. It has been argued that the decorations represent organic vessels that do not survive, creating a symbolic echo of previous practices (Hurcombe 2008, 103-105).

Pottery is a component of cooking. It can be used to store, prepare, and serve food. Food preparation is an act which considers that at the most superficial level, clean and unclean, a contaminated material can lead to ill health. This suggests that the pottery can also be clean and unclean, and there may be some form of mark to indicate which is which. Food residues in pots mainly leave tainting traces, which lead to certain vessels being assigned to cooking certain foodstuffs (Heron and Evershed 1993, 259). This indicator of whether a vessel is classed as clean or unclean may be as simple as decoration or as complex as its form (Orton and Hughes 2013, 260). The main factor is that pottery can silently convey information immediately. The function of the vessel must be apparent in its form, decoration, and placement to the society which uses it (Orton and Hughes 2013, 260). Not just to impart ideas of wealth and status but also to guard against ill health. Decorative art is not just an excellent addition but a significant factor in forming identity within societies (Braithwaite 1982, 88).

However, the decoration of vessels can sometimes raise more questions about the function than answers. Small cup vessels have existed since the Neolithic (Garrow et al. 2005, 145). In the Neolithic, their function is a drinking cup. However, in the Early Bronze Age, that function changes into a funerary one. This is partly because they have become scarce in the domestic context (Hallam 2015, 190). These vessels have been suggested to have help offerings for the dead and incense to burn at the funeral. It is, in fact, quite common to see the vessels called incense cups; however, there is a doubt about this function. When a sample was analysed, none of the cups showed strong evidence of organic residue (Gibson and Stern 2006).

The form of the cups does not lend itself towards containing liquids. There are many examples of low perforations in the pot's body, which would cause leakages (Figure 2.10). Meanwhile, the small mouths of the pots would hinder putting in and removing food from these vessels. (Hallam 2015, 191). In some cases, these vessels have decorative elements all over their outer surface and, in some cases, on the base of the pottery (Figure 2.11). These pots with decorated bases are more common in the country's northwest (Hallam 2015, 192). While they are decorated on the bases more frequently in the north, they only total 7% of the collection there, suggesting that viewing the base of the pottery is separate from its function (Hallam 2015, 194). Instead, it could have been a display of skill from the potter and the status of the person buried with it.

The cups show evidence of external heat damage, while a few have some less apparent internal heat damage (Hallam 2015, 195). This could suggest they were involved in the cremation process as offerings or as a chafing dish to keep the embers warm. The vessels could work well as chafing dishes, as they are small enough to be put around heat to keep food warm, and experimental and residence analysis evidence can point towards this. However, their presence in graves with un-burnt bodies throws doubt over this being a universal or even a proper function for these pots (Hallam 2015, 191). It is possible they had some form of function before the funerary rite as part of the funeral ritual (Needham and Woodward 2008, 33). However, this is unlikely in part due to their size, the lack of evidence of lipids present, and the society's removal of them from the domestic setting.

There are also connotations of the body found in pottery. This can be as explicit as a human figurine or a subtle indication. Jones suggests that the presence of pottery as grave goods in the Early Bronze Age reflects the body, the pots are placed with the body or even embracing it like a womb. The Beaker people are buried alongside the pottery, and in the case of cremation, they are placed into the pot (Jones 2010, 107). Treatment of the human body could be reflected the same through the process of fragmentation and heat and pottery remains being incorporated into new items or replacements (Fowler 2004, 24).

Furthermore, the pottery in these graves can be far more decorated than those in a domestic setting. It suggests that the decoration plays a role in the pot's function as a funerary item (Jones 2010, 108). Jones also argues that in the Early Bronze Age, the whole pot was placed into the grave, while later, there seems to be more of a token offering of a pottery fragment (Jones 2010, 107). This can be seen in the number of complete or near complete vessels we find in this period compared to the more fragmented remains later. However, Evans argues that in Cumbria, at least, the fragmentation of pottery was more deliberate and added in broken (Evans 2008, 100 -117). There is evidence that suggests fragments of pottery were scattered over bodies during the burial process in Cornwall (164) If there were some substantial or objectified value in a potsherd it could become an item of worth in exchange between people (Fowler 2004, 39).

Although there is a possibility that this fragmentation occurs due to later activity, interestingly, there is a different functional symbolism given to pottery in different areas. Potsherds acting as relics of past events, actions or people place a huge importance in understanding the use of the pots (Fowler 2004, 40). Understanding the symbolism behind the pot is only possible with the society that created them. The symbolism of an artefact is bound to the context in which it was discovered, and generalisation is a dangerous path to take (Hodder 1992, 13). The same can be suggested of functionality.


Figure 2.10 Vessel C63 with perforations in the lower part of the body from the assemblage in Cumbria ((Author's Photo) Appendix A1 Table A1.1 and A1.4 -C63)


Figure 2.11 An Accessory Vessel with a circle decoration on the base in the Cumbrian Assemblage ((Author's Photo) Appendix A1 Table A1.1 and A1.4 -C92).

# Chapter 3 The Bronze Age in The Case Study Regions

## 3.1 The Case Study Regions Defined

Two counties, Cumbria and Wiltshire, form the case studies. Both study regions are with the United Kingdom; both are within England and to the country's western edge (Figure 3.1). The countries are similar and lay to the western side of Britain. However, Cumbria is coastal and Wiltshire landlocked.


Figure 3.1 The geographical boundaries of Wiltshire and Cumbria, marked in red, both a similar size and their position to the west of the country. (Ordnance Survey - Author's Photo).

### 3.1.1 Cumbria

The county of Cumbria lies to the Northwest of England and abuts the Scottish border to the north and Northumbria to the east, while Lancashire lies to the south. The county is formed of two districts (Eden District Council 2023). It is one of the least populated counties in the country despite being the second largest in England by size, 681,685 hectares (Cumbria County Council 2023). The county is relatively modern in its current form after the union of two older counties, Cumberland and Westmorland, in 1974 (Cumbria County Council 2023). This reasonably recent union means that much of the archival material is not located centrally but within the old county boundaries.

### 3.1.2 Wiltshire

Wiltshire is a British county in the southwest of England and covers 1346 square miles with a population of around 684,000 people, of whom 30000 are military (Wiltshire IAG 2021, 3). The county is part of the North Wessex Downs, a recognised Area of outstanding natural beauty (North Wessex Downs AONB 2023). The North Wessex Downs span approximately 668 square miles (North Wessex Downs AONB 2023) and occupy parts of four counties: Berkshire, Hampshire, Oxfordshire, and Wiltshire (Kennet District Council 1998, 31). The county is divided into four districts; however, the archive material for the county is more easily sourced due to the counties administrative set up.

### 3.2 The Bronze Age Within Britain

The Bronze Age altered society; Neolithic traditions were changed or forgotten. The Bronze Age worldwide is synonymous with the introduction of new technologies and behaviours (Skinner 2000, 29). This alteration in technology can be seen most clearly with the introduction of bronze, which traditionally gives its name to the period. Initially, the metal artefacts were from softer, easier-to-work metals than bronze, such as copper, which were shaped into objects such as knives (Clarke 2011, 10). However, other metals were also present, such as gold (Barrowclough 2010, 142). As copper sources are not universal or easily accessible and Western Europe has limited copper ore compared to elsewhere (Fitzpatrick 2009, 179), the Bronze Age began at different times as the resources became available through trade or discovery.

The first known metalworking site in the United Kingdom is Ross Island in County Kerry (Fitzpatrick 2009, 180). The earliest gold object known in the country is found in Wiltshire. It dates from 2470 BC and was found in the grave of the Amesbury Archer (Fitzpatrick 2009, 176). The Amesbury Archer has been traced to the Alps through isotopic analysis of his remains, and he had travelled to Wiltshire, possibly bringing the knowledge of metalworking with him (Fitzpatrick 2009, 185).

However, the introduction of metal also indicates patterns of social change. New pottery forms are introduced, first the Beaker pots, Food Vessels, and then the Collared Urns (Barrowclough 2010, 142). However, despite these new ideas and technologies, the previous

Neolithic culture was continued through maintained use at Neolithic sites (Wilkin 2016, 282).

The burial sites give the best evidence of human occupation during this period, as many regions have no settlements (McCarthy 2000, 136). burials and monuments are more easily identified over settlements and are therefore excavated more frequently (McCarthy 2000, 136). Unfortunately, many of these sites were first excavated during the 19th and early 20th centuries during the expansion of the cities and the interest in antiquarianism. As such, these sites can be poor in the data they can provide, and in some cases, the material found has become 'lost'; archaeologists rely on a few sketches and descriptions for these sites, sometimes from newspaper reports (Hodgson 1956, 15).

### 3.3 Past Research in the Case Study Regions

Case studies within the thesis allow the study of Western British Bronze Age pottery and people within a reasonable and achievable scope. Counties are recognised across the country. Although more modern than Bronze Age boundaries, they have established regions; counties were chosen to be the defining regions of the case study areas. Two counties of relatively similar size were chosen to ensure the comparison was balanced. These are Cumbria and Wiltshire (Figure 3.2). Cumbrian prehistory has become neglected through disinterest (Barrowclough 2010, 7). However, in the context of this thesis, it plays a vital role as a case study region.

This study will give much-needed modern insight into the Cumbrian area. The inclusion of Wiltshire is beneficial in its similarities to Cumbria but more so through its differences. Both physically and in the number and quantity of literature produced about it in recent years. For the case studies, the geographical boundaries of Cumbria and Wiltshire counties shall be those in place at the start of this project in 2017 (Figure 3.3). Cumbria and Wiltshire's counties were chosen for their similarities and because of their differences and how these would allow a deeper insight into activity in the Bronze Age. The two counties are both on the western side of England, meaning they have similar weather as opposed to those on the east coast, which is climatically different due to the nature of the Irish Sea. More importantly, both counties were inhabited in prehistory, and both have networks of monuments in the landscape that predate the Bronze Age and show adaption during this period. Furthermore, Stonehenge, Long Meg, and her daughters show similar solar alignment, suggesting similarities between these two counties (Sparavigna 2017, 2-3. Darvill 2022, 324). Newgrange in Ireland, a Neolithic monument, and Maes Howe in Orkney also have a similar alignment, indicating a possible widespread communication of time and identity across the British Isles (Darvill 2022, 329).

Cumbria is geographically different to Wiltshire. Cumbria has a mixture of coastal and mountainous landscapes with valleys formed from glacial activity in the last ice age. Meanwhile, Wiltshire is landlocked, and most of the hills in the county are chalk, giving a different nature to the landscapes and how they were used in monuments and pottery. Wiltshire is also to the country's south, giving it better access to mainland Europe than Cumbria to the north. The difference from the north to the south allows the differences between these parts of the country to be seen.


Figure 3.2 The area of Cumbria marked out in red (Ordnance Survey -Author's Photo).

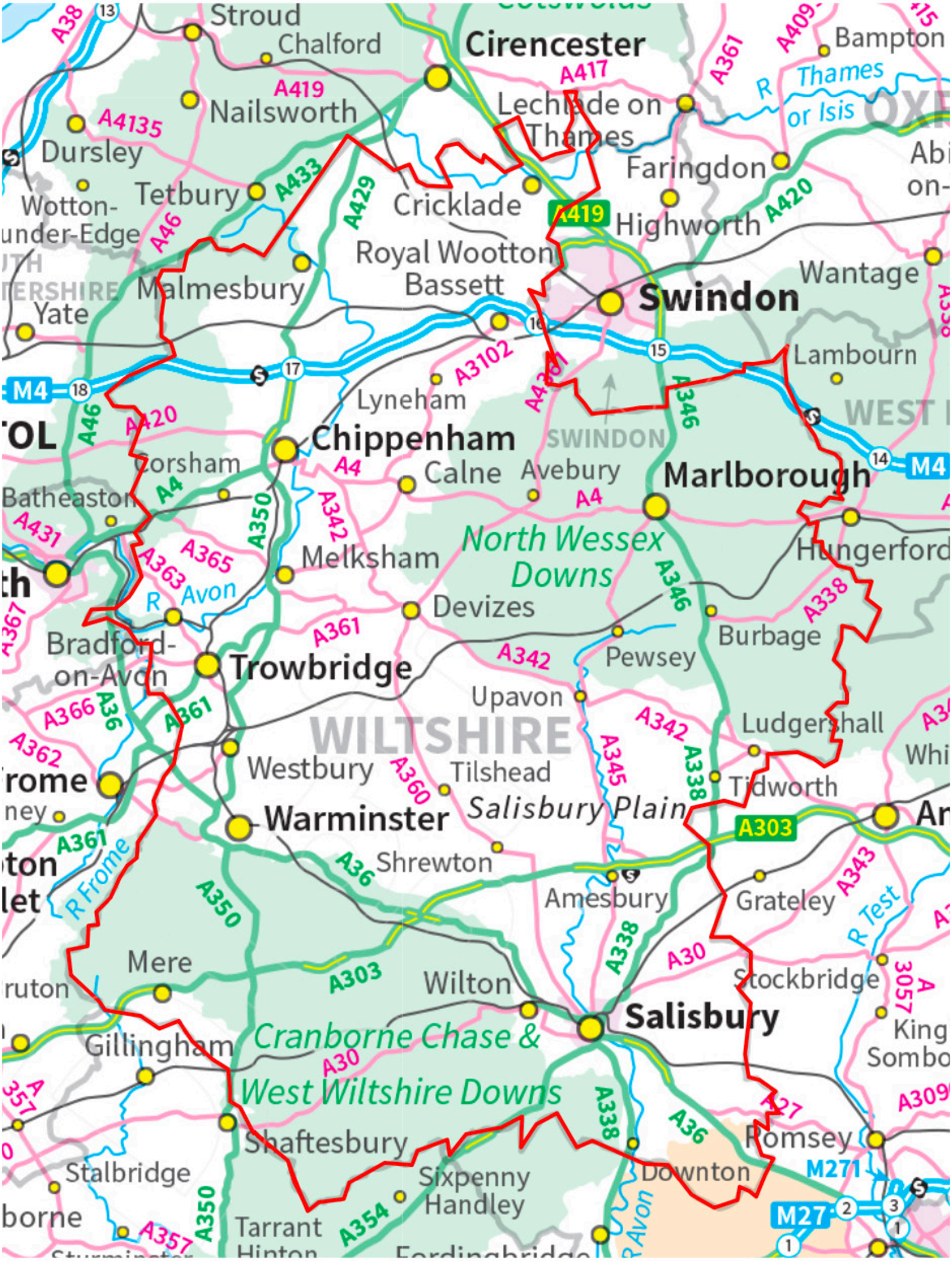



Figure 3.3 The area of Wiltshire marked out in red (Ordnance Survey Author's Photo).

However, despite these similarities and differences, more research needs to be undertaken about their respective prehistoric periods. When searches are run through publications of scholarly articles with keywords of Cumbria and Wiltshire for the past thirty years, significantly more results are found for Wiltshire. The imbalance is seen further in the analysis of the individual features of the prehistoric period. Avebury stone circle generates scholarly articles, while Long Meg and her daughters, a similarly large stone circle, produce no results (Table 3.1). As such, comparing a region that is understudied to another will result in a greater understanding of these areas through comparison and analysis.

Table 3.1 The frequency of use of terms from The Prehistoric Society Journal showing the imbalance in studies between Cumbria and Wiltshire broadly and for the last thirty years. The date 1973 reflects thirty years of work before the start of this thesis (Author's Photo).

| Search Term | All Results | Post-1987 Results |
|---|---|---|
| Cumbria | 4 | 4 |
| Wiltshire | 50 | 24 |
| Long Meg | 0 | 0 |
| Avebury | 29 | 21 |

While there is a disparity in research between the two case study regions, more research needs to be undertaken on the two places, as well as the study of Bronze Age pottery and how to analyse it. Research into Cumbrian prehistory may have declined in recent years, as seen by the limited number of publications in Table 3.1. However, there have been studies into the region for centuries, and this information still shapes our knowledge today.

The antiquarian movement, which developed in the 16th century, was active in Cumbria during this period with visits from noted antiquarians such as Machell and Stukeley (Clare 2007, 14). The antiquarians visiting the county were often far more interested in the Roman and medieval remains than prehistory ones (Harrison 1910).

However, this bias in the visitors' interests is a national trend, not a reflection of Cumbrian prehistory. Stukeley also studied Wiltshire and surveyed around Stonehenge and Avebury (Whitmore Morton 1990, 233). Since his work, many others have looked at the barrows and considered their placement in the landscape (Peters 2000, 346.) Inigo Jones, during the reign of King James I, documented Stonehenge, while John Aubrey was one of the first to attempt to understand Avebury (Field and McOmish 2017, 8). However, Sir Richard Hoare defined Wiltshire's early studies with his two-volume publication 'Ancient History of Wiltshire' in 1812. Hoare attempted a systematic appraisal of the county and worked with Croaker, a former employee of the Ordnance Survey, to document his fieldwork (Field and McOmish 2017, 9).

The dominance of antiquarians in archaeology was maintained into the 19th century, and many of the wealthier Victorian gentlemen in the county participated in archaeology on their estates, a famous example being General Pitt Rivers at Cranborne Chase, Wiltshire (Harding 2019, 37). Pitt Rivers carried out excavations on his estate, Cranborne Chase, where he pioneered the scientific approach to studying the importance of recording (Harding 2019, 37). He published his findings in five volumes from 1887 to 1898. John Thurnam, also excavating in Wiltshire, became a leading expert in the area and excavated several of the county's long and round barrows, even going so far as to re-open previously excavated sites (Field and McOmish 2017, 9). In Cumbria, Reverend Greenwell also analysed the county's barrows; he recorded his excavations in a book, 'British Barrows: A Record of the Examination of Sepulchral Mounds in Various Parts of England' (1877). However, he was not scientifically rigorous and recorded only a limited amount of his findings he also did not produced any section plans (Greenwell 1877). Much like in Cumbria, the 19th century also saw the expansion of archaeological study into the clergy. Reverend Yatesbury mapped sites within 25 miles of Avebury using field names to help with his search (Field and McOmish 2017, 9).

The Cumbrian antiquarian enthusiasts formed the Cumberland and Westmorland Antiquarian and Archaeology Society in 1866 (Cumbria Past 2018). The society was incredibly active during the Victorian period. They first recorded and excavated many of the sites known today, and the details were published in their transactions. These reports are primarily limited in the scientific rigour promoted by Pitt Rivers due to the mostly amateur excavation level and the individual's biases (Barrowclough 2010, 38). Some societies regularly published transactions about their activities in the Cumberland and Westmorland Antiquarian and Archaeology Society transactions (Cumbria Past 2018). One such member was Charles Dymond, who provided detailed plans of the sites he worked at as a former Civil engineer. For instance, he produced a coloured plan of the site known as King Arthurs's Round Table (1889), which is still available and usable by archaeologists today (Allen 2018, 303).

The scientific approach to archaeology grew in Wiltshire, and in the early 20th century, aerial photography of the county was produced as 'Wessex from the air' (Williams Freeman 1928, 508). The Royal Commission promoted landscape studies on the Historical Monuments of England based in Salisbury (Field and McOmish 2017, 10). In Cumbrian notable archaeologists of the region, the Collingwoods transitioned the society from antiquarianism into a more professional standard of archaeology and promoted the study of prehistory in the region (Barrowclough 2010, 41). Under the influence of the Collingwoods, women became more involved in the region's archaeology. One of these women, Clare Fell, was amongst the first people to study archaeology at Cambridge (Sharpe 2007, 7). Fell was interested in the prehistoric period and investigated the axe factories at Langdale (The Great Langdale Stone Axe Factory, 1950), as well as the connections Bronze Age Cumbria had with the rest of the country (Trans-Pennine communication in the Bronze Age, 1949). Her interests took her to other sites in the country, such as Star Carr. However, her main focus was Cumbria. She had a particular interest in artefacts, and she produced work on both lithic and pottery from the region from the 1940s onwards (Sharpe 2007, 11). In partnership with Winfried Pennington, she brought scientific techniques to the region's archaeology (Sharpe 2007, 14). Pennington, a botanist, furthered the study of pollen in the archaeological context and published works on this and the Northwest, such as 'The Lake District:

A Landscape History' (1973).

Fell's interest in the county and the artefacts saw a development in understanding the region's pottery through appearance and connections nationally. However, the function of these vessels should have been considered. Fell was often keen to promote the region's archaeology as she felt the county needed to be addressed in prehistory studies due to its distance from the capitals or any major university (Sharpe 2007, 12). Because of this, she feared that the Cumbrian prehistory studies were far less advanced than those in other counties and in danger of being forgotten. She produced work that she presented at conferences and journals outside the county, such as her paper 'The Cumbrian Type of Polished Stone Axe and its Distribution in Britain', published in the Proceedings of the Prehistoric Society in 1964. She aimed to gain national interest in the region and worked with other archaeologists to promote the area, and she became known for her talent in describing pottery (Sharpe 2007, 11).

Fell's presence in the Cumbrian archaeological scene and prehistory was very dominant. This may have led to stagnation in ideas, and for an extended period, there was a limited number of alternative theories offered, let alone accepted, about the region's prehistory (Barrowclough 2010, 48). This meant that her fears of Cumbria falling out of step with the prehistoric studies elsewhere in the country came to be.

The latter part of the 20th century saw the limited development of archaeological in the Northwest, through the councils watching briefs and the university projects such as Lancaster, Manchester, and Liverpool. Many of these units had yet to be operational. However, many new sites were found and recorded during their periods of activity and that of their predecessors. As the century progressed, archaeologists in Wiltshire stopped focusing on just monuments and looked to the wider landscape. Instead, they looked at how they fit into a more extensive network of monuments in the area. New sites are still being discovered throughout Wiltshire due to the advances of scientific study and the ever-changing and improving understanding of the prehistory within the county and the country (Field and McOmish 2017, 11).

### 3.4 Cumbrian Prehistory

The Prehistoric period in Cumbria spans from the last ice age to the arrival of the Romans, lasting around 8000 years (Barrowclough 2010, 7). The Neolithic period spanned from 4000 – 2500 BC and saw the beginnings of woodland clearance, although this was often not managed or was not long-lasting (Cumbria County Council 2011, 7). In the Bronze Age, there was evidence of the landscape being physically divided through monuments and boundaries and farmed (Evans 2008, 18 -23, 38). The Iron Age had continuous occupation from the Bronze Age. During this period, the county's inhabitants developed their agricultural network, founded in the Bronze Age. This system was a possible reason for the Romans' interest in it (Cumbria County Council 2011, 7).

The monuments associated with the prehistoric activity are numerous and take forms such as standing stones, cairns, and earthworks. These create a complex map of activity across the county. Many of these monuments have origins in the Neolithic but have continued use in the Bronze Age (Barrowclough 2010, 118). Long Meg and her daughters are north-western Europe's sixth largest stone circle (Burl, 2005, 46) (Figure 3.4). The circle is believed to be from the Late Neolithic, although Meg stands outside the circle and is possibly from the Early Bronze Age (Clare 2007, 44). The stone known as 'Meg' has rock art in the form of spirals and concentric circles. Similar carvings are found on the stone circles within the Long Meg complex (Burl 2005, 46), suggesting they are all part of the same activity.

Figure 3.4 Long Meg and her Daughters in the Eden Valley, Meg stands apart from her Daughters who form the circle (Author's Photo).

In Cumbria, the clearance of the established woodland can be seen through the pollen record, and the dates for this are placed at c.2000 to 1500 cal. BC (Barrowclough 2010, 146; McCarthy 2000, 133). This was most likely undertaken to clear land for agriculture, but evidence for this is more challenging in Cumbria than in other parts of the country (McCarthy 2000, 131). As the period progressed into the Middle Bronze Age, the settlers within the county developed large-scale field systems on the hills (Clarke 2011, 25). Lithic scatters locate human activity in areas of interest (Halsted 2011, 11). However, this technique was less useful as the Bronze Age progressed, and lithics gradually became less prevalent (Evans 2008, 34). Aerial photography has been utilised to help identify sites (Halsted 2011, 30); however, many sites have been destroyed or disturbed by more recent human activity, such as the nineteenth century and later agricultural action.

Occupation along the western coast of Cumbria appears to have continued from the Neolithic through the Bronze Age from the pattern of lithics (McCarthy 2000, 134). However, the changes in farming practices saw the settlements relocate to areas closer to the more suitable arable farmlands (Barrowclough 2010, 151). The land better suited to growing arable crops is higher land and often in the high valleys, meaning there is a shift away from the coastal settlements (Halsted 2011, 14). The coastal areas at Drigg and Eskmeals, which are dunes, have significant Bronze Age activity (Cherry and Cherry 2002, 12). The earliest prehistoric activity is at Morecambe Bay (Skinner 2000, 9). The area shows continued occupation from the Mesolithic through the Bronze Age (Skinner 2000, 16). A Bronze Age cremation cemetery site, Allithwaite, was nearby with radiocarbon dates ranging 2107 -1741 BC (Wild 2003, 28). Pollen evidence shows that woodland clearance occurred locally in the southwest coastal region between 2570 and 2140 cal. BC (Barrowclough 2010, 151). Despite the lack of settlement, there is evidence through the monuments and cemeteries that the coast and valleys were occupied (Skinner 2000, 33).

There are approximately two hundred metal objects from the Bronze Age in Cumbria; of these, the most common items are flanged axes and spearheads; after this, there are several palstaves, flat axes, and socketed axes, as well as a series of decorative metal pieces such as broaches and bands (Barrowclough 2010, 170). The first sign of metalworking in Cumbria can be seen between 2500 and 2050 cal. BC. (Barrowclough 2010, 171). There is some evidence to suggest that bronze items were being made at or near the burial sites of Ewanrigg, where a clay pipe was found, which is believed to have linked the bellows and the furnace used in metal making (Bewley et al. 1992, 343-344). There is also trace evidence of metal artefacts at Ewanrigg left on un-cremated bones, which have been stained blue-green colour during the corrosion of the item (Bewley et al. 1992, 328). Of the two hundred items, sixty-nine can be assigned to the Middle Bronze Age dating from 1500 to 1150 cal. BC (Barrowclough 2010, 171). From 1150 until 920 cal. BC, only one bronze item is found compared to the previous sixty-nine (Barrowclough 2010, 171). This is a significant decrease in metal usage. Although metal usage does increase again after this, it does not reach the same quantity as seen in 1500 to 1150 cal. BC (Barrowclough 2010, 171).

Like the Langdale axes found across Britain and western Europe in the Neolithic, the axes from the Bronze Age show a more significant connection to the rest of Europe, with Irish-style axes found in the county, particularly in coastal areas (Clough 1969, 2). However, a gold lunula terminal found in the Brampton area is of Irish style, although of the more ‘provincial type’ suggesting it is an imitation rather than a traded item (Boughton 2016, 21). The item still links to Ireland, and its location is much further inland than the axes (Boughton 2016, 21). Most metal artefacts are found in the coastal plains or the communication valleys, such as the Eden Valley, throughout the Bronze Age (Boughton 2016, 15) (Figure 3.1). These valleys and plains are where many of the monuments are located, as well as the pottery suggesting that not only were these routes commonly used, but the people using the pottery were also interacting with the metal artefacts. However, metal hoards are rare, with the only known discoveries at Ambleside, Hayton, Fell Lane, and Kirkhead Cave (Boughton 2016, 15).

### 3.5 Cumbrian Landscape Assessment

Cumbria is a large county covering 2613 square miles and has an extensive geographical range of coastal plains and cliffs to mountains, glacial valleys, and lakes. As such, it has a varied geological nature, and habitable land differs across the county. To understand past settlements, it is beneficial to understand the landscape in which they are placed and the materials available to the people there (McCarthy 2000, 131). A broader view of the people who made and used them is needed to understand an artefacts functionality. The landscape and the resources from it have a significant role in people's lives, and understanding this can help with understanding them and their possessions.

In 2009, a review of Cumbria's pre-existing landscape character assessment was undertaken (Cumbria County Council 2011, 1). It is this latest assessment which will be referenced in this study. The reason for this choice is that it is the most comprehensive and up to date of all the assessments undertaken on the landscape of this region.

The prehistoric landscape is, in many ways, very different to what we see today. Cumbria has a significant variation in types of geology, which alters the nature of the landscape and the uses it has seen through time (Cumbria County Council 2011, 6). Occupation in the county has been observed for over 10000 years (Cumbria County Council 2011, 7). However, due to the coastal and mountainous nature of the county, some of the landscape known to these earliest settlers has been lost to the sea due to changes in the sea levels as well as glacial activities (Cumbria County Council 2011, 7).

The Character assessment defines 13 different types of landscape within the county (Cumbria County Council 2011, 17). These different landscapes have different geologies, so a difference in the occupation patterns for the areas can be seen. Of the thirteen types of landscapes identified in the studies, ten have subcategories within them (Table 3.2) (Figure 3.5, 3.6, 3.7).

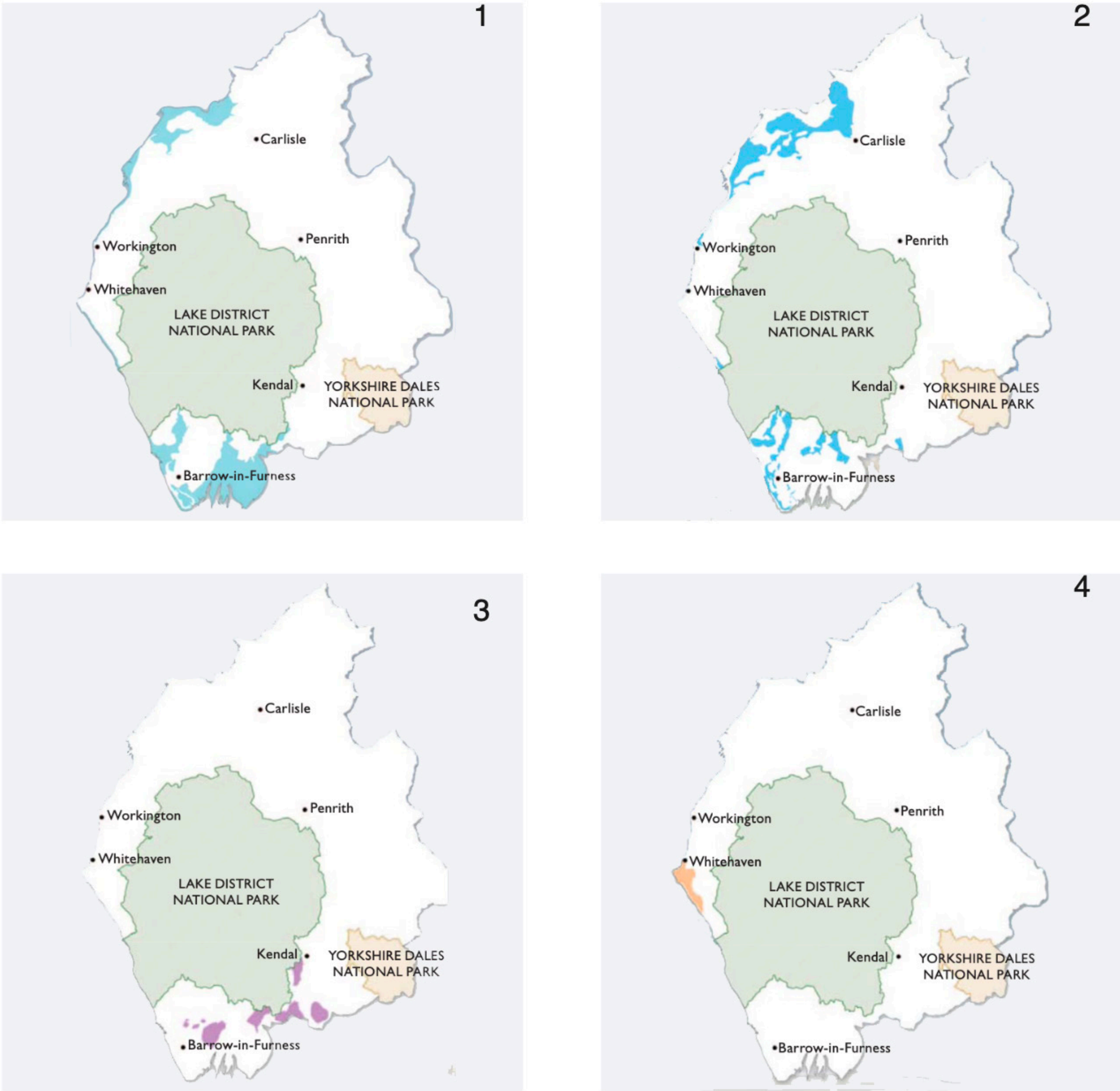



Figure 3.5 The Landscape Types 1- 4 from the Cumbrian Landscape Assessment (Cumbria County Council 2011, 26, 34, 50, 62).

Table 3.3 The different Landscapes their characteristics and archaeology found in Wiltshire (Author's Photo).

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Bay and Estuary | 1a | Intertidal Flats | Mudflats formed of mudstone with silt and sand with some pebbles | |
| | 1b | Coastal Marshes | Mudstone and carboniferous limestone with some Silurian slates | |
| Coastal Margins | 2a | Dunes and Beaches | Alluvium and or Boulder clay covered in windblown sand and or top soil | Some evidence for prehistoric settlements stone tools and fire. Ancient beaches further inland than today |
| | 2b | Coastal Mosses | Lowland raised mosses (peat bogs or mires) on top of Alluvium and or Boulder clay due to poor drainage | Some evidence for prehistoric track ways and pollen |
| | 2c | Coastal Plains | Mainly fluvial drift with alluvium and undulating bolder clay on top of Triassic mudstone and sandstone | |
| | 2d | Coastal Urban Fringe | Largely flat landscape Mainly fluvial drift with alluvium and undulating bolder clay on top of Triassic mudstone and sandstone | Rich haematite deposits and coal deposits |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Coastal Limestone | 3a | Open Farmland and Pavements | Lower carboniferous limestone with calcareous brown soils | Rich in Neolithic finds as well as some Bronze Age and stone circles |
| | 3b | Wooded Hills and Pavement | Lower carboniferous limestone with calcareous brown soils | Caves show evidence of prehistoric settlement |
| | 3c | Disturbed Areas | Glacial till and mineral veins on carboniferous limestone | |
| Coastal Sandstone | 4a | Coastal Sandstone | Permo Triassic red sandstone overlain with fluvial glacial drift and brown sandy soils | |
| Lowland | 5a | Ridge and Valley | Carboniferous rocks overlain by extensive glacial till and riverine sands and gravel | |
| | 5b | Low Farmland | Permo Triassic bedrock covered in thick glacial drifts forming sand and gravel eskers and low drumlins | Crop marks for prehistoric sites found |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| | 5c | Rolling Lowland | Carboniferous rock in some areas and Triassic mudstone and red sandstone both overlain in fluvial Glacial drift | |
| | 5d | Urban Fringe | Carboniferous rock in some areas and Triassic mudstone and red sandstone both overlain in fluvial Glacial drift | Evidence of prehistoric mounds and Neolithic activity as well and one of the largest Mesolithic sites in the northwest |
| | 5e | Drained Mosses | Triassic sandstone overlain by fluvio-glacial deposits with accumulated peat | |
| Intermediate Farmland | 6a | Intermediate Farmland | Carboniferous rock and permo Triassic sandstone covered in glacial drift | Evidence of prehistoric earthworks |
| Drumlins | 7a | Low Drumlins | Drumlins lie on carboniferous rock formed in the quaternary period | |
| | 7b | Drumlin Fields | Drumlins lie on carboniferous rock formed in the quaternary period show evidence of glacification with boulder clay deposits | |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| | 7c | Sandy Knolls and Ridges | Ridges and knolls formed from glacial alluvium overlying permo Triassic sandstone. Distinct Kame ridge formed from glacial melt gravel running 4km east of Brampton | |
| Main Valleys | 8a | Gorges | Gorges cut through permo Triassic sandstone | |
| | 8b | Broad Valleys | Range of geology overlain by fluvio-glacial drift and river alluvium. Cut through drumlin limestone | |
| | 8c | Valley Corridors | Silurian mudstone and sandstone overlain by till and gravel fluvial glacial deposits | |
| | 8d | Dales | Alston Moor has a stepped geology of mudstone, sandstone, and limestone of the Yoredale series bands with drumlin features | |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Intermediate Moorland and Plateau | 9a | Open Moorlands | Mixture of carboniferous grit stone and mudstone overlain with peat in the north and coal measures and Permian sandstone with pockets of peat in the west | Good preservation of prehistoric earthworks |
| | 9b | Rolling Farmland and Heath | A mixture of carboniferous limestone, Silurian slate, and grit stone | |
| | 9c | Forests | Carboniferous sandstone and grit stone overlain by peat | Burial cairns are relatively common |
| | 9d | Ridges | To the west is coal measures and sandstone to the south Silurian slate and igneous rocks | Prehistoric settlements and cairns |
| Sandstone Ridge | 10a | Sandstone Ridge | Premo-Triassic sandstone overlain by fluvial glacial deposits | |

| | Type | Sub Type | Geology | Archaeology |
| --- | --- | --- | --- | --- |
| Upland Fringes | 11a | Foothills | Predominantly carboniferous Limestone | Prehistoric stone circles and cairns |
| | 11b | Low Fell | Silurian gritstones | |
| Higher Limestone | 12a | Limestone Farmland | Carboniferous limestone overlain by glacial till | Stone circles and cairns |
| | 12b | Rolling Fringe | Carboniferous limestone overlain by glacial till but more transitional to glacial | |
| | 12c | Limestone Foothills | Carboniferous limestone overlain by glacial till | |
| | 12d | Moorland and Commons | Carboniferous limestone overlain by glacial till but underlain with Shap granite to the west | Important prehistoric landscape features and monuments |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Greensand Vale | 15a | The Vale of Pewsey | Upper Greensand deposits of Gault clay to the west | Bronze Age barrows on the higher ridges in the area |
| Limestone Lowland | 16a | Malmesbury-Corsham Limestone Lowlands | Limestone from the Great Oolite groups formed in the Middle Jurassic period | Bronze Age barrows |


Figure 3.6 The Landscape Types 5- 7 from the Cumbrian Landscape Assessment (Cumbria County Council 2011, 66,84,90).

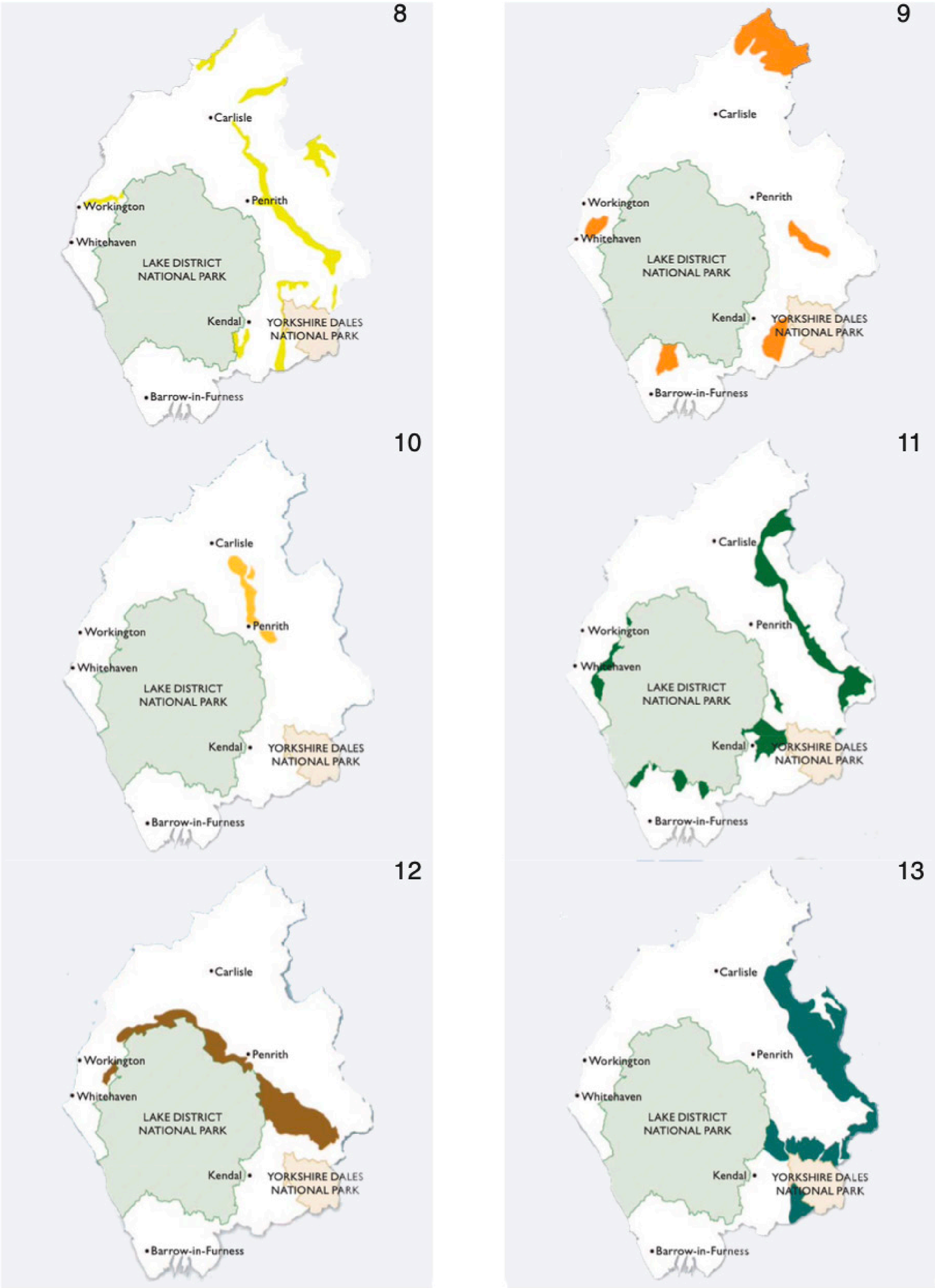



Figure 3.7 The Landscape Types 8 -13 from the Cumbrian Landscape Assessment (Cumbria County Council 2011,100, 116, 130, 134, 142, 156).

Table 3.3 The different Landscapes their characteristics and archaeology found in Wiltshire (Author).

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Open Downland | 1a | Horton Downs | chalk hills with plateaus which are formed by the Upper Chalk geology | The high hills sides often feature different forms of barrows |
| | 1b | Marlborough Downs | There is also a regular occurrence of Sarsen stones in the area particularly in the Marlborough Downs region | High concentration of Prehistoric monuments in this kind of landscape |
| Wooded Downland | 2a | Savernake Plateau | Upper chalk presence of clay with flint as well as Middle and Lower chalk | Rich prehistoric heritage with a multitude of burial sites |
| | 2b | Chute Forest | Upper chalk presence of clay with flint as well as Middle and Lower chalk | |
| | 2c | Witherington Wooded Downland | Upper chalk presence of clay with flint as well as Middle and Lower chalk | |
| | 2d | Cranborne Chase Wooded Downland | Upper chalk presence of clay with flint as well as Middle and Lower chalk | |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| | 2e | West Wiltshire Downs Wooded Downland | Upper chalk presence of clay with flint as well as Middle and Lower chalk | |
| | 2f | Fovant Down Wooded Downland | Upper chalk presence of clay with flint as well as Middle and Lower chalk | |
| High Chalk Plain | 3a | Salisbury Plain West | Belt of Upper cretaceous period chalk which runs across the county east to west | Many of the archaeological sites in this area have been preserved due to the military using the land |
| | 3b | Salisbury Plain East | Belt of Upper cretaceous period chalk which runs across the county east to west | |
| | 3c | Porton Down | Mainly Upper chalk although there is also Middle and Lower chalk present | |
| Low Chalk Plain and Scarp | 4a | Avebury Plain | Landscape forms a flat shelf with a steep scarp and is underlain by the Lower Chalk | Avebury Stone Circle also a number of Bronze Age burials and monuments |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Chalk River Valley | 5a | Kennet Chalk River Valley | Lower chalk with the heavier clay like formation | Rich history of settlement in river valleys due to the resources and networks that this can provide |
| | 5b | Lower Avon Chalk River Valley | Lower chalk with the heavier clay like formation | |
| | 5c | Bourne Chalk River Valley | Lower chalk with the heavier clay like formation | |
| | 5d | Upper Avon Chalk River Valley | Lower chalk with the heavier clay like formation | |
| | 5e | Wylye Chalk River Valley | Lower chalk with the heavier clay like formation | |
| | 5f | Ebble Avon Chalk River Valley | Lower chalk with the heavier clay like formation | |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Greensand Terrace | 6a | Warminster Terrace | Upper Greensand with slight Lower Chalk | Bronze Age round barrows |
| | 6b | Kilmington Terrace | Upper Greensand with slight Lower Chalk | |
| | 6c | Fovant Terrace | Upper Greensand with slight Lower Chalk | |
| Wooded Greensand Hills | 7a | Longleat-Stourhead Greensand Hills | Erosion of young chalk exposing the Upper Greensand which formed in the Cretaceous period | Later prehistoric earth works |
| | 7b | Donhead-Fovant Greensand Hills | Erosion of young chalk exposing the Upper Greensand which formed in the Cretaceous period | |
| | 7c | Bowood Greensand Hills | Younger Upper Greensand however at the bottom older rocks such a gault exposed by erosion | |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Limestone Ridge | 8a | Swindon-Lyneham Limestone Ridge | Different lime stone outcrops some outcrops have accompanying deposits of sandstone | Bronze Age round barrows |
| Limestone Wold | 9a | Cotswolds Dip Slope | Oolitic Limestone underlain by Limestone which formed in the Middle Jurassic and mudstone from the Great Oolite group | |
| Limestone Valleys | 10a | By Brook Limestone Valley | Middle Jurassic Oolitic limestone although there is also Lias group sandstone | |
| | 10b | Avon Limestone Valley | Middle Jurassic Oolitic limestone although there is also Lias group sandstone | |
| Rolling Clay Lowland | 11a | Calne Rolling Clay Lowland | Jurassic period Oxford clay, Ampthill clay and Kimmeridge also areas of Corallian and Cornbrash Limestone | |
| | 11b | Minety Rolling Clay Lowland | Jurassic period Oxford clay, Ampthill clay and Kimmeridge also areas of Corallian and Cornbrash Limestone | |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| | 11c | Trowbridge Rolling Clay Lowland | Jurassic period Oxford clay, Ampthill clay and Kimmeridge also areas of Corallian and Cornbrash Limestone | |
| Open Clay Vale | 12a | Thames Open Clay Vale | Mixture of Oxford and Kellerway clays and sands | |
| | 12b | Avon Open Clay Vale | Mixture of Oxford and Kellerway clays and sands | |
| Wooded Clay Vale | 13a | The Vale of Wardour | To the west is Kimmeridge clay with flints while more centrally is Portland Stone, to the east is Purbeck stone | |
| Forest Heathland Mosaic | 14a | Farley Forest | London and Reading clay formations and Bagshot sand | Bronze Age round barrows |
| | 14b | Landford Forest | London and Reading clay formations and Bagshot sand | |

| | Type | Sub Type | Geology | Archaeology |
|---|---|---|---|---|
| Greensand Vale | 15a | The Vale of Pewsey | Upper Greensand deposits of Gault clay to the west | Bronze Age barrows on the higher ridges in the area |
| Limestone Lowland | 16a | Malmesbury-Corsham Limestone Lowlands | Limestone from the Great Oolite groups formed in the Middle Jurassic period | Bronze Age barrows |

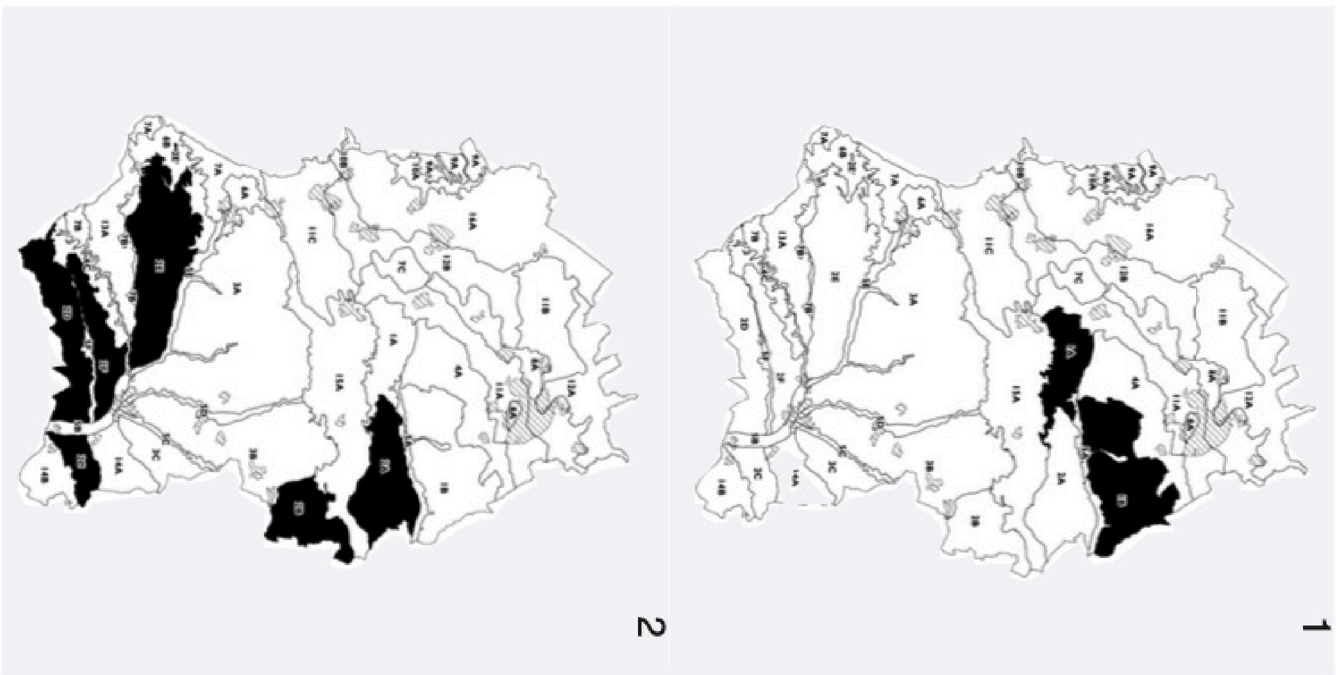



Figure 3.8 The Landscape Types 1 - 2 from the Wiltshire Landscape Assessment (Wiltshire County Council 2005, 50, 56)

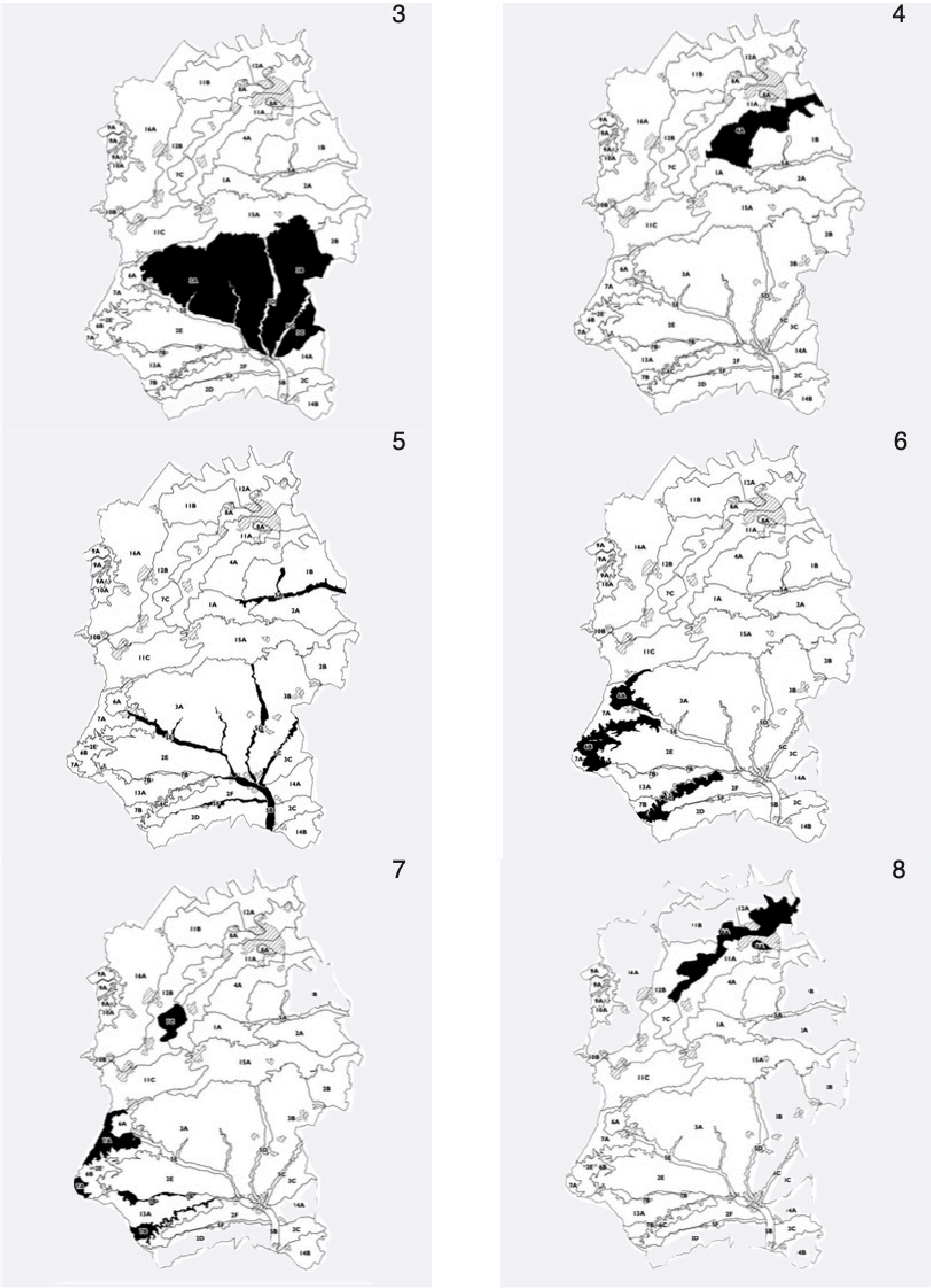



Figure 3.9 The Landscape Types 3 - 8 from the Wiltshire Landscape Assessment (Wiltshire County Council 2005, 67, 74, 81, 88, 94, 102)

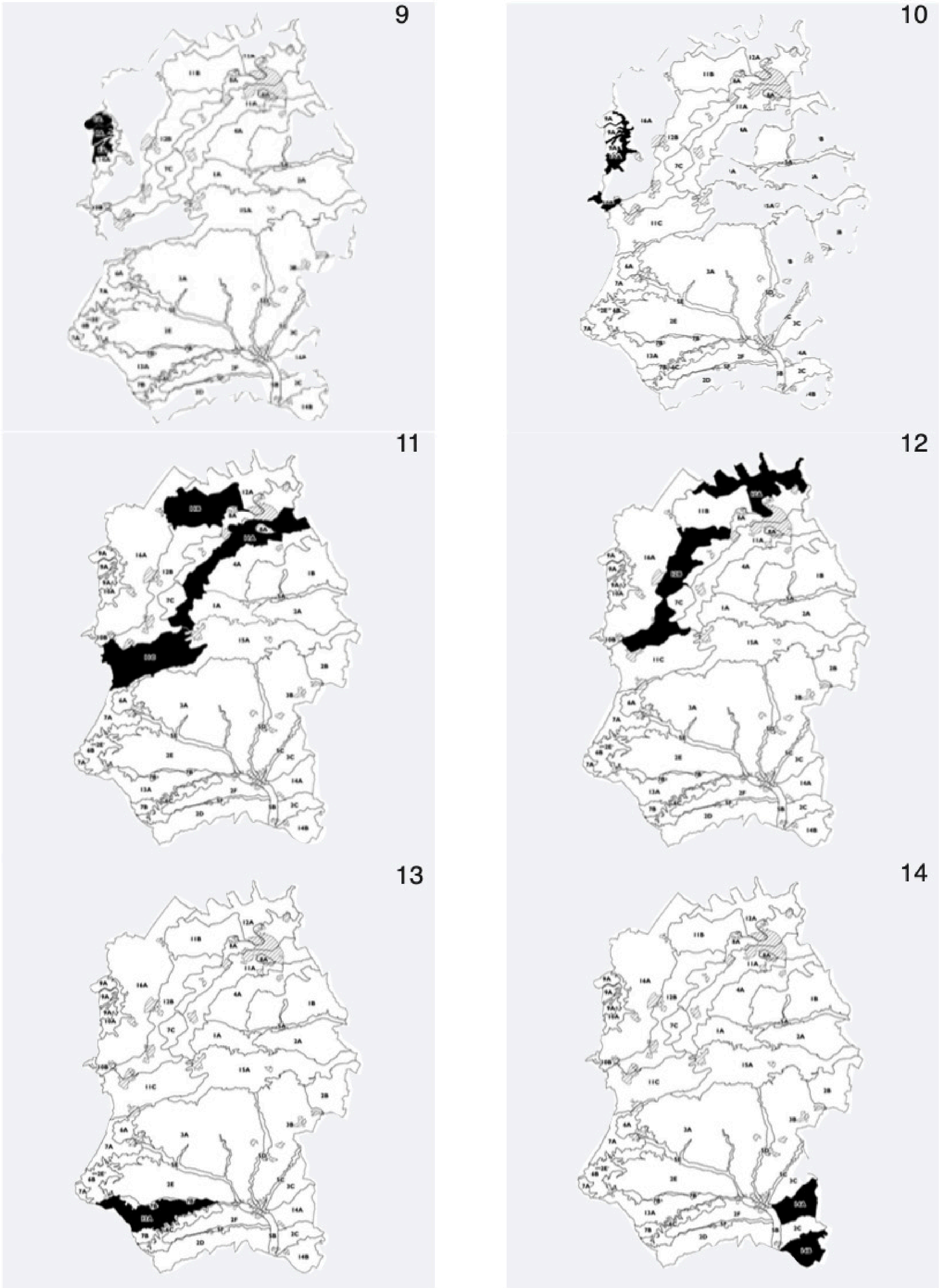



Figure 3.10 The Landscape Types 9 - 14 from the Wiltshire Landscape Assessment (Wiltshire County Council 2005, 108, 112, 118, 124, 130, 136).

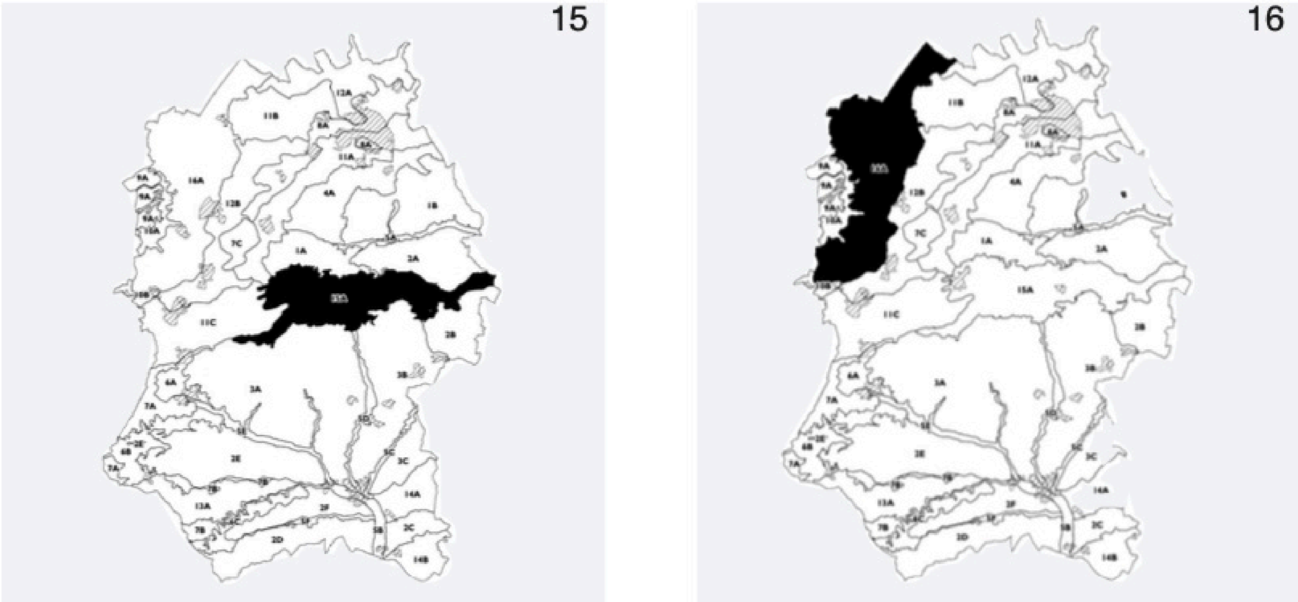



Figure 3.11 The Landscape Types 15 - 16 from the Wiltshire Landscape Assessment (Wiltshire County Council 2005, 142, 148).

**3.6 Wiltshire Prehistory**

The earliest occupation of Wiltshire is unknown (Field and McOmish 2017, 12); however, by the fourth millennium BC, we can see the adoption of a more settled lifestyle (Dakers 2018, 12). At the start of the fourth millennium, domestic animals were introduced, and farmers had abandoned arable farming in favour of livestock (Dakers 2018, 13). As the Bronze Age began in the county, arable farming practices again resumed, perhaps in support of a growing population which saw the land division (Dakers 2018, 13). The downlands saw intensification in occupation during the Bronze Age, leading to the deforestation of the woodlands and the development of enclosures and field systems (Wiltshire County Council 2005, 53). During the Middle Bronze Age, the farmers developed large-scale field systems on the hills (Clarke 2011, 25). Although these are again seen more in the chalk hills, this could be influenced by the destructiveness of later agricultural actions in the lowlands. These field systems often concur with associated outbuildings and roundhouses such as those at Rockley Down (Darvill 2010, 215). Southern England had strong ties to the continent during the Bronze Age, and the influence on the design of metalwork can be seen as well as in the pottery, and there is evidence in the southwest of trade across the channel (Darvill 2010, 225). The intensification of agriculture continued into the Iron Age, which began in the first half of the first millennium (Dakers 2018, 13).

Wiltshire is well known for the quality of its prehistoric monuments. Stonehenge (Figure 3.12) is perhaps the most famous of all the monuments, but Avebury, Silbury Hill, and the surrounding barrow cemeteries closely follow it. The monument at Stonehenge is, in many ways, a mystery to us and many different interpretations are given. Interestingly, Both Stonehenge and Long Meg and Her daughters in Cumbria have a strong argument for the astrological alignment

(Darvill 2010, 185).

Stonehenge, unsurprisingly due to its complexity, also has multiple stages of construction and alteration and construction going into the Bronze Age (Burl 2005, 82). Avebury stone circle is the largest in Europe; however, it was not built in one phase but over several. It is suggested that the north and south circles were first constructed around 2800 BC before the Bronze Age began; however, the two avenues are speculatively assigned to 2400 BC (Burl 2005, 82). This shows that, again, like in Cumbria, the monuments are seeing multi-periods of use and are transcending the periods. Also, the large artificial hill, Silbury Hill, is part of the Avebury complex. The time it took to make the monument is still uncertain. It is, however, believed that work ceased on the hill about 2400 BC (Burl 2005, 185). This puts the end date at the start of the Bronze Age; some Beaker pottery was discovered from excavations at the site summit in 2001 and 2007 (Marter Brown 2012, 2). However, these are few and in the company of much later sherds, so they are considered residual finds (Marter Brown 2012, 2).

West Kennet Long Barrow, within viewing distance of Silbury Hill, a Neolithic chamber tomb, had Beaker pottery within its top most deposits (Parker Pearson et al. 2007, 634). Some of the sherds are found in deeper contexts, possibly due to post-depositional movement. Beaker pottery also occurred at Durrington Walls in contexts dated to the mid to late third millennium BC predominantly Grooved Wares (Parker Pearson et al. 2007, 635). This suggests that the cultural traditions are more intermixed, and monuments remained key features for the people in the landscape after their initial construction. The building of large-scale landscape monuments continued through the Bronze Age into the Iron Age with extensive earthworks. In Wiltshire, the hillfort at Old Sarum rises from the landscape with two ramparts and a ditch in between. The hillfort dates to the Iron Age, despite evidence of Neolithic activity on the hilltop. However, the presence of the Ministry of Defence training grounds on the Salisbury Plain, Wiltshire, from the start of 1900 means that there is an area of the county which is much less disturbed agriculturally (McOmish 2002, p. viii).

Figure 3.12 Stonehenge one of the more well-known prehistoric monuments in Britain (Author's Photo).

As in Cumbria, the end of the Bronze Age in Wiltshire saw a change in social behaviour. Our understanding of the transitional period into the Iron Age is affected by a plateau in the calibration curve used in carbon dating (Tubb 2011, 44). This makes being able to date the end of the period as difficult. The plateau occurs between 800 and 400 BC (Waddington et al. 2018, 2). This has resulted in a focus on material culture to define changes in society through the end of the period. The large scale of these practices of enclosed meeting places developed around 1000 BC. However, the function of these sites has changed to communal feasting areas, and large middens, such as East Chisenbury, have developed at these sites (Darvill 2010, 234). At Potterne and East Chisenbury in Wiltshire, middening practice occurred in the Late Bronze Age (Halsted 2011, 65). The midden at East Chisenbury is notable due to its size, preservation, and stratigraphy (Waddington et al. 2018, 2). However, as a midden, it is not unique as there are around thirty large middens similar in nature found in the south of the country (Waddington et al. 2018, 3). The middening practice differs from Early Bronze Age practices in that it is not dismantled and worked into the ground as a fertiliser but instead left in situ. Of these middens, the largest are found in Wiltshire (Waddington et al. 2018, 3).

At East Chisenbury, an estimated half a million animal remains are buried in a mound that covers about one hundred years of use (Mulville 2008, 238). Single-family groups could not achieve the scale of the midden, which suggests that communal gatherings were similar to those which likely occurred during the use of the monuments at the start of the Bronze Age. The pottery found at the site suggests it came from different parts of the Wiltshire landscape, and the people using it came from various settlements across the county (Halsted 2011, 155). There was also a seasonality to the use of the middening sites. Potterne shows an autumn culling of the butchered animals, while East Chisenbury is a spring cull (Waddington et al. 2018, 3). The vessel forms change, and there is more variation in inclusions and decorations (Lawson 2007, 295). It has been suggested by Avery (1981, 32-34) that the change in vessel form reflects a change in the functionality of ceramic vessels. No longer are the vessels just ceramics; instead, they could be attempting mimicry of their metal counterparts.

The importance of stones, metal, and pottery in the Bronze Age cannot be dismissed. The cultural changes brought in by the arrival of bronze and later iron are gradual. This is reflected in the archaeology with crossovers of pottery wares, such as Durrington walls, which show transitional pottery middening from the Late Neolithic into the Bronze Age (Halsted 2011, 35).

### 3.7 Wiltshire Landscape Assessment

The landscape character assessment for Wiltshire was published in 2005, building on a publication from 1998 (Wiltshire County Council 2005). The region is divided into eleven separate areas in the 1998 publication. However, the later publication identifies sixteen different landscape types in the county (Figures 3.8, 3.9, 3.10, 3.11). The various areas identified in the 2005 landscape character assessment have different geological categories (Wiltshire County Council 2005). Like McCarthy (2000, 131) described Cumbria, those living in Wiltshire will use their environment differently depending on the available resources. Different materials used in ceramics could alter the functionality of vessels but could also show different trends in the county's prehistory compared to other areas. Unlike Cumbria, Wiltshire is a landlocked county it therefore does not have costal topography, this makes comparison interesting. Furthermore, it is founded on Chalk hills rather than glacial mountains.

Although only an overview of the county, the assessment shows that geology influenced the settlement of the Bronze Age people. The chalklands are favoured over the lowlands. Furthermore, there seems to be more evidence of monuments and burials in the chalkland than in the lowlands (Table 3.3). This could be because the monuments can be more easily viewed from far away on the hills. Alternatively, later agricultural actions have caused damage to large parts of the prehistoric landscape, especially in the flatter, more agricultural areas.

Nevertheless, it could also be because the chalk hills offered the requirements for Bronze Age life. The clay soil and the limestone areas show less evidence of prehistoric settlement. This could be due to the lack of natural resources or the water flowing on the land, making it unsuitable for arable farming.

Pottery production depends on a clay base, yet most of the Bronze Age activity is in areas defined by chalk with few clay caps (Wiltshire County Council 2005, 52-151). Therefore, some degree of sourcing must be needed for the clay, although there are other factors in deciding the location of the settlements. The material inclusions within the pottery under analysis will be of interest. Due to the varied nature of geology, the sources may be far more traceable in Wiltshire than in Cumbria. It may become apparent that other actions, such as trade within the region and beyond, can be distinguished.

Due to the availability of the pottery due to the pandemic the thesis is more heavily focused on the Cumbrian assemblage. As this is the less studied region the thesis is able to give insights in to Cumbrian assemblage and a broader context of Bronze Age through comparison with Wiltshire and from there the wider country.

# Chapter 4 Types of Pottery

## 4.1 The Pottery

This thesis does not aim to explore the regional variations seen in form and decoration. There are a great many theses and studies dedicated to form and regional typologies that help guide this thesis, but to cover the topic and the functionality in detail far exceeds the scope of this study. Wilkin has looked in depth at Northern Food Vessels (2013) and Scottish Beakers (2016), Hallam has studied the Accessory Vessels of the North (2015), Millson (2013) the Bronze Age pottery of the North East and Sheridan the Food Vessels of Scotland (2004), and Scottish Beakers (2006). Parker Pearson and colleagues have led projects looking at the Bronze Age, including the pottery (2016), Tubb has looked at the Late Bronze Age pottery of Wiltshire (2009), as has Mulville (2008) and, more recently, Leivers (2017). As well as specific pottery from sites in Wiltshire such as sites of Golden Ball Hill (Freer 2017), Silbury Hill (Marter Brown 2012), East Chisenbury (McOmish 1996) and Cumbria Greystokes Moor (Richardson and Hallam 1995), Ewanrigg (Longworth 1992) and Allithwaite (Wild 2003). Therefore, the thesis uses the general form, which guides typological classification and focuses on specific vessels from the assemblages. It also explores questions of function and identity in typological and regional-specific studies.

This chapter explores the four main types of pottery in this study: The Accessory Vessel, Beaker, Collared Urn and Food Vessel (Appendix A1). These are the four most frequently recognised vessels across the two study regions in the Bronze Age; they are also recognised vessel forms from antiquarian studies, which means there is some documentation about these vessel forms in the 19th and 20th centuries. Therefore, these types of vessels have associated archaeological data available through site reports. The quantity and frequency allow greater insight through comparison and experimentation, as there is more data about them. They also chronologically span the period starting in the Early Bronze Age, giving the study a greater breadth of time and the most conclusive look at Bronze Age pottery. While there are later and more regional variations of pottery forms, these are not recorded in detail in Cumbria and thus cannot be compared to the Wiltshire assemblage. Therefore, the study focuses on the earlier vessels, although vessels from the Late Bronze Age are discussed in the context of continued patterns of function and identity. Neolithic practices and pottery are mentioned in the same pattern to set the contexts of the four vessels.

Greenwell, previously mentioned in chapter 3, wrote in 1877 in his publication of British barrows that there were four forms of sepulchral pottery found across the country: Cinerary Urns, Incense Cups, Food Vessels, and Drinking Cups (Greenwell 1877, 66). These four groupings are still recognised today: Collared Urns, Accessory Vessels, Food Vessels, and Beakers. British Bronze Age pottery is distinguished from previous periods through various methods such as deposition, location, and form; e.g., the Bronze Age vessels have a flat base, unlike the majority of wares from the Neolithic, which were rounded, Urns are often found in cremations burials, these burials are often monuments to a single person (Gibson 1986, 35 and Whitmore Morton 1990, 45). A chronology of the different pottery forms has been developed through the various approaches and analyses, placing Beakers as the earliest form, followed by the Food Vessels, the

Accessory Vessels, and the Collared Urn (Sheridan 2004, 260). Though the names of the vessels suggest different functions, they are a hangover from antiquarian research, and the names bear little reflection on function as many have multiple uses. The Collared Urn form gained popularity while Food Vessels were still in use, and the practice of the Accessory Vessel continued (Sheridan 2004, 260). There is a degree of variation and adaptation in this chronology and the pottery forms across the country, as this chapter explores.

The purpose of these types of vessels has been long debated. Whether these vessels had a domestic presence in households before the funerary is discussed in this study. Although this question is nothing new, the author has speculated on the purpose of the vessels. Greenwell firmly rebuffs the idea of them ever being a part of the domestic use and critises many of his contemporaries in a section of his 1877 book subtitled 'Vessels of the Barrows not domestic' (Greenwell 1877, 102-108). However, many of his arguments are weak, and he admits that he has no alternative at the time of his writing for what constitutes a domestic vessel (Greenwell 1877, 106). This chapter intends to refrain from continuing the debate of the purpose or context of the vessels, as this will be discussed in later chapters. It is instead a place to highlight the different vessel forms being looked at in this thesis and a history of their study to date.

### 4.2 Beakers

Beakers got their name due to the assumption that they were drinking cups, although there was no evidence at the time of their naming. Still, lipid analysis indicates some were likely used to contain alcohol (Guerra Doce 2006, 255). However, Greenwell believed they would not retain any liquid long enough to be functional (1877, 106). Many believe that due to their size if they did, they would be used in communal drinking (Guerra Doce 2006, 251). Beakers are part of the most significant cultural movement of the 3rd millennium BC (Fitzpatrick 2013, 41). Beakers were a pottery style which came into Britain from mainland Europe at the end of the Neolithic and the start of the Bronze Age. The introduction of pottery has been debated since they were first found. However, there has been a prevailing belief that settlers from the continent introduced them, often called Beaker people (Fitzpatrick 2013, 41). This has been further corroborated in recent years through the scientific analysis of the bones of the earliest known Beaker burials. In Wiltshire, the Boscombe Bowman and his associated family group have been isotopically identified as migratory, and possible isotopic matches suggest Wales, Brittany, Portugal, The Massif Central and the Black Forest as possible locations (Evans et al. 2006, 318).

However, he is buried in Wiltshire with All Over Cord, S shape Beakers often associated with the Lower Rhine tradition (Fitzpatrick 2013, 50). Early Beakers have a distinct S-shaped curve and fine red fabric (Gibson 1986, 31). By the end of the Beaker period, the early 'S' form had broken down into a less defined form, and the decoration needed to be more rigorous in the application by about 1500 BC. Beakers no longer appear in the archaeological record (Gibson 1986, 34).

The grave of the Amesbury Archer, a near contemporary of the Boscombe men and buried 700 metres from them, contains another early example of Beakers. The Amesbury Archer has an extensive collection of grave goods with over a hundred lithics, some gold, arm guards and five bell Beakers (Fitzpatrick 2013, 50). Considering the burial practice of the time, five Beakers are a significant number for one person. The Amesbury Archer is, however, initially likely from a Sub-Alpine part of Europe (Evans et al. 2006, 311), where the Beaker tradition had been established already. The chronology of the Beaker pottery and its spread has occupied antiquarians and archaeologists alike, and many typologies have been formed through this (Sheridan 2006, 91). British Beaker pottery is part of a northern European tradition (Fitzpatrick 2013, 42), likely reflecting where the earliest Beaker people came from or through their journeys to Britain.

Beaker pottery in Wiltshire also came with copper, gold and later bronze. During this transition the way society treated their dead changed. Pottery began to commonly accompany a crouched inhumation (Clarke 2011, 11). There are over 1000 burials in round barrows around Stonehenge although not all are associated with Beakers (Darvill 2010, 198). However, these did not occur all at once, and there is, with the archaeological evidence, a shift from the Beaker inhumations to cremation burials. This suggests that the Beakers were ever slowly adopted or not universally used for several potential reasons, such as status, ethnicity, or even personal choice. These cremations were placed into a pit, possibly in organic containers, which have since perished, or ceramic vessels (Darvill 2010, 198). The Beaker pottery within Britain developed into different styles, and certain types can be identified. Long-necked Beakers are found across the country (Wilkin 2009, 321). However, these can be split into sub-groups of the Scottish northeast coast and southern Long-necked Beakers (Wilkin 2009, 321) (Figure 4.1). Of these vessels, only two northeast coast styles are found in Wiltshire, while twenty-five southern styles are found (Wilkin 2009, 321). This suggests that there is not only a north-south divide, seen in the chapter on Cumbria but also an east-west divide in the country’s Beaker style.

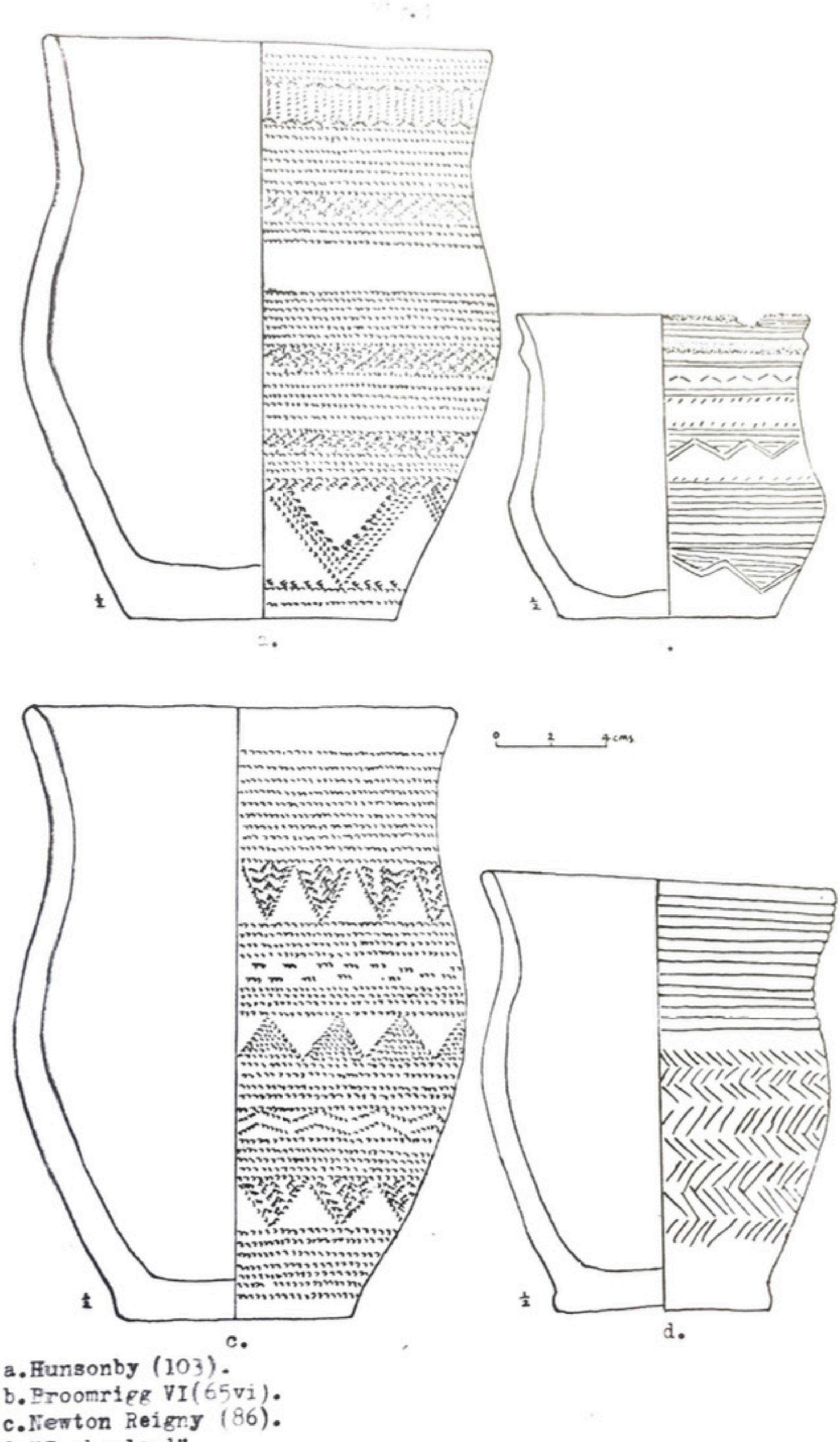



Figure 4.1 Example of different Beaker forms from Cumbria (Miscellaneous documents Tullie House Figure 4, 108).


Figure 4.2 Four Beakers from Cumbria showing the variation in decoration and form that can occur regionally even with only a small assemblage ((Author's Photo) Table A1.1 and A1.4).

Unlike in many southern counties, Beaker pottery is relatively uncommon in Cumbria (Boughton 2016, 15). The Beaker pottery, known, seems to be focused between the city of Carlisle and south towards Penrith, with other clusters being found around the coast (Fell 1950, 43). Most of the known Beaker pottery is from cairns and burial sites, and it was not until 1936 that any sherds were found in the coastal area of the county (Fell 1950, 43). Unfortunately, this means that the earlier discovered Beaker pottery needs to be better recorded to the point that, in some cases, the provenances of the pots still need to be discovered (Fell 1950, 44). The Beaker pottery sherds in the Cumbrian museums are comparable to those in other counties. They are much like that from Yorkshire, Durham, Northumberland (Fell 1950, 44). This comparison can be based on the form and the similarity in design to the vessels found.

The Beakers fall within two groups in Cumbria: cord-zoned Beakers, found in coastal areas to the south and west, and short-necked Beakers and Bell Beakers, found in the Eden Valley and Fells (Clough 1968, 2). However, there is a vessel from Skirwith Moor of the cord-zoned type, which is significantly different from other Beakers in the style of decoration, form, and fineness of the material (Fell 1950a, 44). This vessel, which is to the southeast of Cumbria, may have been brought into the county, possibly from Yorkshire, while the rest are likely made through local potters imitating the styles they have seen (Fell 1950a, 44). Fell speculates that the Beaker pottery entered the county via the communication valleys from the east, either from the Tee Valley or Irthing valleys and up the coast (Fell 1950a 45, 47). This variation in arrival networks might help explain the variation of Beaker forms, seen through the small number of Beakers found in the county (Figure 4.2). Another reason for the variation may be the context in which the Beakers are found. The pottery from the coastal areas and southwest with the cord-zoned style are found at settlement sites. In contrast, the other type of Beakers are found in crouched inhumation burials (Clough 1968, 3 and 7) like those previously mentioned from Wiltshire.

Despite the earliest Beakers being associated with Wiltshire and the southwest, they were seemingly quickly taken up around the country, where independent interpretations of the pottery and the culture occur. North of both case study regions, Scotland was just a little behind Wiltshire in gaining Beakers, and those present have a Dutch influence, also seen in the metalwork of the region (Sheridan, 2006, 99). This implies that there was continuous contact with the continent through the period, and people were moving around and transferring ideas through settlement and trade. At the same time, there are also areas where Beaker pottery was not used as much, such as southwest Scotland (Wilkin 2016, 264), near Cumbria, where a similar trend of absence in burial sites has already been noted.

Copper from Ireland was brought into Scotland (Wilkin 2013, 18), indicating a trade between the two regions. In Cumbria, many monuments have an Irish style, and some of the gold found north of Cumbria has patterns and forms very similar to those in Ireland (Boughton 2016, 21). However, the Irish Beaker tradition does not reflect that of Western Britain. In Ireland, the crouched inhumations are accompanied by Food Vessels rather than Beakers (Carlin 2012, 18). Furthermore, the Beakers are directly associated with the domestic setting and are more of an everyday pot than a vessel of funerary significance (Carlin 2012, 20). That is not to say there was no domestic use of Beakers in Britain. In Northamptonshire, a Beaker found in a grave had an internal residue line, which, when analysed, showed the presence of fatty acids below this

(Harding and Healy 2013, 582). However, the Irish Beakers are deliberately broken and placed in depositional pits, where they seem to be placed and quickly sealed (Carlin 2012, 21). This is similar to the practice in Cumbria, placing sherds in natural places of significance such as limestone fissures at Allithwaite in Cumbria (Evans 2008, 100 -117).

### 4.3 Food Vessels

Early antiquarians called Food Vessels to differentiate them from Beakers and Collared Urns, distinguishing them through their heavier moulded rims and small stature. The name became accepted but does not indicate use (Gibson 1986, 35). The theory was that the Food Vessel was added to graves containing an offering of food for the dead (Greenwell 1877, 103). Food Vessels are generally between 100mm and 200mm in height (Gibson 1986, 35). Larger Food Vessels are mainly found with cremated remains within them; it was believed that these vessels had been scaled up to hold the remains. However, larger-sized vessels are also found domestically (Gibson 1986, 40). The decoration of the vessels in the north of the country covers the whole of the pot, while in the south, it is focused on just the upper body and is often much more straightforward in design (Sheridan 2004, 257) (Figure 4.3).


Figure 4.3 C103 A decorated Food Vessel from Cumbria (Table A1.1 and A1.4 -C103) next to W50 from Wiltshire showing the difference in decoration style (Author’s Photo And Devizes Museum Accession number: DZSWS: X147( Table A1.2 and A1.3 -W50) ).

Food Vessels in England are believed to overlap with the Beaker period, while in Scotland, they are viewed as successional to the Beakers; this is a general view that does not consider regional variations (Wilkin 2013, 49-50). Needham suggests that the Food Vessel was a response from the indigenous people in the face of the Beaker culture (2007, 44). However, this is likely more complex, as the Food Vessel can also be associated with the individual internment, which defines the Beaker tradition and may be more of a preference and an indication of the adaption of different cultures (Wilkin 2013, 18). In Ireland, Food Vessels instead of Beakers are found in the crouched inhumation graves (Carlin 2012, 18), and it could be from this influence that the Scottish practice began.

The Irish Food Bowl vessel is theoretically of the same tradition as the British form of Food Vessel but within a reflection of the individual cultures (Wilkin 2013, 56). The Irish Food bowls are considered one of the earliest forms of Food Vessel, with the vase form coming later; however, there is a connection between these vase forms and the British Food Vessels such as the Yorkshire vase type (Wilkin 2013, 56 -58). Despite this, there is little evidence in Cumbria where there is an otherwise noted Irish connection of Irish-style Food Vessels, with only one known, and it needs to have a secure provenance (Hallam 1993, 45-48). However, the Irish food bowl did make it to the Isle of Mann and southwestern Scotland; therefore, the Cumbrian people perhaps deliberately choose not to adopt the style. Furthermore, in Cumbria, there are only twenty-six identified Food Vessels, fewer than found in the neighbouring counties, such as Northumbria with one hundred and forty-seven and the Isle of Man with sixteen showing a proportionally larger uptake (Wilkin 2013, 111).

There is a scarcity of Food Vessel burials in Cumbria, particularly in the south (Clough 1968, 14). The Food Vessels are again being found in the context of monuments, with over half the Food Vessels being found at cairns and within three stone circles (Wilkin 2013, 118). This limited frequency of vessels is more likely a choice rather than a lack of exposure. It is likely part of the Cumbrian cultural absence of single internments during the period (Wilkin 2013, 114). However, fragmented Food Vessels show a pattern of deliberate deposition of fragments, which are part of the Cumbrian culture and may be linked to Neolithic practice (Wilkin 2013, 114; Evans 2008, 100). The Food Vessels are also often associated with other finds, such as Beakers and, in some cases, metalworking (Clough 1968, 17). At Thursby, two Food Vessel urns were discovered in a sandpit along with a human burial (Fell 1967, 17). Another Food Vessel was found near Lazonby in a burial cist (Fell 1973, 347). However, these are more of the exception rather than the norm. At Bewcastle, three Food Vessels were found; these were in two cists, with the two in the primary cist having lugs (Hodgson 1940, 159). However, Bewcastle is geographically distant from most other sites and very close to Northumbria. It may have been part of a different cultural group with alternative boundaries in the Bronze Age.

Cumbria is one of many regions that reflects a unique approach to blending cultures in the form of Food Vessels. In Wiltshire at Old Sarum, a Food Vessel with thin walls more reminiscent of the Beaker pottery than the northern Food Vessels was found (Wilkin 2013, 76). At Cherhill in north Wiltshire, a Food Vessel sherd was discovered during excavation. The sherd is stylistically similar to the southern-ridged food vessels (Smith 1983, 90). However, the sherd is large and in excellent condition compared to the other sherds it was found with, suggesting that it may have been placed deliberately with the others (Smith 1983, 90). The other sherds are all earlier Beaker and Peterborough Wares, further suggesting that there was significance in the deposition of the sherd. This suggests that the Food Vessel at least in Cherhill was considered to have the same level of importance in the funerary setting as the early vessel forms.

### 4.4 Accessory Vessels

Accessory Vessel is a term associated with small ceramic vessels found within primarily funerary settings of the Early Bronze Age (Gibson 2004, 270). The Accessory Vessels are sometimes called pygmy cups, grape cups, Aldbourne cups, Fenestrated cups, or incense cups after locations of discovery, a prominent feature or perceived purpose (Hallam 2015, 1). The cups range in style and skill of production. Thumb pots, easily formed and undecorated, are classed alongside much more elaborately decorated vessels (Gibson 1986, 44). The grape cups in Wiltshire are highly decorated with external balls of clay added in what could resemble a bunch of grapes (Figure 4.4). It has been speculated that the applied balls do not function apart from making the vessels highly decorative (Hallam 2015, 2); however, they could help grip the form. Many others are decorated through marks on the clay, even on the base; in some cases, perforations through the vessel occur (Figure 4.5) (Walsh 2013, 78). Perforations may have a more functional aspect and also be for suspension. However, some vessels have too many holes around the rim and upper body of the vessel for the suspension to be the purpose (Gibson 1986, 44), although they could still be functional and be used for affixing a lid.

Despite their frequent association with larger vessels, the small vessels can also be found alone or in isolated deposits. Several instances exist where a small vessel is found alone in a funerary setting, suggesting an independent function of the larger urn-type pots (Hallam 2015, 3). However, in the last decade, these vessels have been looked into as a whole rather than through typological and regional focuses, such as Longworth’s study of the contracted mouth vessels in 1967 and Allen and Hopkins in 2000 looking at the vessels from Lincolnshire. The smaller vessels have been noted in the archaeological record for many years. Sir Richard Colt Hoare first differentiated the smaller vessels from larger forms in the 18th century while exploring the barrows of Wiltshire (Hallam 2015, 6). It is from these accounts that the name incense cup was derived as they were described as ‘Thuirbulum’, a small funerary vessel used for the burning of frankincense in classical literature (Hallam 2015, 6).

It was suggested in the 19th century that the incense cups were suspended over the fire (Greenwell 1877, 81), possibly via the perforations. Others during this period suggest that they were used to contain the ashes of a single part of the body (Greenwell 1877, 81), much like the canopic jars from the Egyptian tombs. The funerary nature of these small vessels was also seen in the early barrow excavations of Cumbria. Like in the southwest, these vessels are found amongst cremations and inhumations (Kavanagh 1977, 76). Greenwell does mention the fact that there was a suggestion by some of his fellow antiquarians that the vessels were of domestic origin; however, he firmly dismisses this out of hand (1877, 81). Likely out of personal bias, he opposed the idea of multifunctional items crossing between life and death, perhaps due to his Victorian cultural views. However, the exact purpose eluded Greenwell, unsure how to correlate the design, form, and quality variations. W. Owen Stanley and Albert Way, also in the 19th century, suggested after studying the vessels from the North of Wales and Anglesey that they were chafing dishes for moving a small number of embers either to the funeral pyre to start it or from the pyre to the grave (Greenwell 1877, 81).


Figure 4.4 W253 a Grape Cup from Wiltshire with the applied balls making it resemble a bunch of grapes ((Devizes Museum Collections Accession number: DZSWS:X23) Table A1.2 and A1.3 - W253)


Figure 4.5 A Decorated base of a vessel C92 from Skirwith Moor Cumbria the vessel also has perforations through the walls ((Author's Photo) Table A1.1 and A1.4 -C92).


Figure 4.6 C38 Accessory Vessel from Ewanrigg shaped like Armorican Vase a Anse ((Author's Photo) Table A1.1 C38).

Wiltshire and Cumbria have a relatively large number of Accessory Vessels in their assemblages. However, this is different in other regions. In Ireland, the number of vessels found by 1977 across the whole country was 70, of which only 46 had known burial contexts (Kavanagh 1977, 64). Of these vessels, the vast majority are found along the eastern coast of Ireland and many towards the northeast (Kavanagh 1977, 65). The Irish Sea is between Cumbria and northeastern Ireland, and the style of vessels is similar between these two places. (Hallam 2015, 88). However, the Irish Accessory Vessels are not often associated with a Collared Urn as they are in both Wiltshire and Cumbria and elsewhere in the British Isles (Kavanagh 1977, 76), suggesting that there was a regional variation in application and function of the vessels.

The Accessory Vessels' forms vary; some can be considered miniaturisation of the larger vessels found in the funerary setting (Hallam 2015, 91). Miniaturisation is present in Bronze Age culture; there is evidence that bronze artefacts, such as battle axes, were scaled down, as seen in McLaren's work in Scotland (2012, 71). While there is no evidence of miniature axes in northwestern burials (Hallam 2015, 11), there is a miniature bronze tool in Wiltshire with unknown provenance, potentially from a regional grave (Hallam 2015, 91). These small items have been suggested to be associated with children; O'Donnabhain and Brindley, following work in the Netherlands, look at the prevalence of Accessory Vessels in the graves of children in Ireland (1990, 19). Therefore, it has occasionally been assumed that this means the smaller versions are toys (McLaren, 2012, 197). However, this has become disproven as they are found equally amongst adults and children, and burial practices do not significantly differ in Wessex, regardless of interned age (McLaren, 2012, 234). Accessory Vessels are found at many child inhumations, and beads are associated with child cremations. there are a series of locations in Wiltshire, such as Snail Down and Blake Fir, where these vessels are found (McLaren 2012, 227-8).

In Cumbria near Kirkoswald, an Accessory Vessel containing twelve beads was found at the site of a double inhumation (Ferguson 1895, 390), which may indicate a similar but independent practice occurring in Cumbria. Ewanrigg C38, a Bronze Age cemetery site, has an Accessory Vessel in the style of the Armorican Vase a Anse (Figure 4.6), which is found in Wiltshire and the south coast (Hallam 2015, 22). These vessels are found in conjunction with burnishing techniques found mainly in Wiltshire and the Isle of Wight, suggesting that this was a regional variation in pottery technology and form (Tomalin 1988, 215). This further indicates that ideas and forms were being translated across Britain and only used selectively; for example, the grape cups from Wiltshire are absent in Cumbria (Hallam 2015, 86).

Jones (2013, 368) argues that the Accessory Vessels continue an older tradition of remembrance and are a way to explore vessel forms and designs. This may explain some of the designs in use and designs seen in the vessels between the two case study regions and even further afield into Ireland. Jones also agrees with the much earlier assessment of Greenwell (1877, 105) that these vessels are not domestic and that they are quickly made and fired rapidly and, in some cases, show signs of improvisation, such as a vessel from Wyle in Wiltshire (Jones 2013, 368). Furthermore, Jones, in essence, agrees with Greenwell (1877, 105) about the quickly made low production value of the Accessory Vessels by giving examples from Wiltshire and Scotland of pots affected by spalling, cracking, and distortion through production rather than use (2013, 368).

### 4.5 Collared Urns

Collared Urns are the most geographically widespread Early Bronze Age vessel forms in Britain (Gibson 1986, 42). The vessel forms are either bipartite or tripartite (Gibson 1986, 42). This means they have two or three sections that make up the body, ie the collar, the walls and sometimes a third part the shoulder. The urns have been called overhanging rim urns and crowned urns by archaeologists, but they are all the same style (Longworth 1961, 263). The Collared Urn tends to be the most significant form of pot found in Bronze Age deposits (Woodward 2000, 5). The range of the vessel height is from 200mm to 500mm; the depth of the collar is also inconsistent, with some of them being as much as a third of the whole vessel (Figure 4.7).


Figure 4.7 A range of Collared Urns from Cumbrian sites showing the difference in form and size ((Author's Photo) Table A1.1 and A1.4).

In some cases, the collar is only distinguished by a small change, such as a cordon,cmaking the distinction between the Collared Urn and the Cordoned Urn difficult (Gibson 1986, 42). The disproportionately small base on some of the Collared Urns is possibly due to the potters previously shaping round bases instead of flat ones and continuing with earlier pot construction methods (Longworth 1961, 267). The vessel's origin is debated, but it is believed that they developed from Peterborough Ware, particularly the Fengate type wares (Longworth 1961, 276; Gibson 1986, 42). The urns were once considered a mainly funerary item but have also been found in domestic contexts (Walsh 2013, 78). The so-called Accessory Vessels are strongly associated with Collared Urns and have been found in the same settings (Walsh 2013, 78). It has been suggested that the collar on the urn makes them unusable as a drinking vessel and that the Accessory Vessels may have been used as decanters (Harding and Healy 2013, 582). However, the previously discussed perforations doubt this is a universal function.

Greenwell theorised that if they were to be used in the domestic setting, they would not be for cooking as the narrow base would not allow for sitting in the fire, and the only thing they could if ever use to cook would be a 'Semi-fluid mess, like porridge' (1877, 105). Under scientific analysis in the last few decades, Collared Urns have sometimes shown residue signs of containing foodstuffs. Evidence shows that in Northamptonshire, a middling-sized, decorated vessels were used as cooking vessels through the residue and wear left behind (Harding and Healy 2013, 582). At Thorny Down in Wiltshire, Collared Urn sherds were found at the settlement site, which is believed to be from the Late Bronze Age: three sherds were found, one north of hut XI, while the other two were from the ditch feature (Ellison 1987, 386). The presence of only a few sherds does not detract from that; in this case, the sherds are linked to a domestic setting rather than a funerary one. The sherds are believed to be part of a settlement at the site, and Collared Urns did exist concurrently with Deverel Rimbury pottery (Ellison 1987, 386). This would date the pottery comfortably into the early Middle Bronze Age when wares were used.

In the nineteenth century, it was suggested that under the collar of the vessels, a cord could be wrapped to suspend the pottery if it was not in use or being used as a storage vessel, an argument Greenwell dismissed without consideration (1877, 105). Instead, Greenwell, somewhat grudgingly, suggests that the collar could be used to fasten a lid to cover remains in a funerary setting (1877, 105). This a valid suggestion considering there are many examples of the Collared Urns being inverted in the grave; at least four such examples were found in a small cemetery in Cumbria (Wild 2003, 38). While there is significant evidence that bags of organic material were used in non-turned cremation burials, such as at Allithwaite (Wild 2003, 38) and Blake Fir (McLaren 2012, 220), Greenwell may have been correct in suggesting lids as an alternative to bags when urns are involved. There is some evidence of lids for ceramic vessels during the Bronze Age. Late Bronze Age biconical urns from Hockwold in Norfolk have lids, although they are only up to 140 mm in size (Harding and Healy 2013, 580). At Shearhill and Cheselbourne, both in Dorset in the south of Britain, Deverel Rimbury pots (again later than the Collared Urns) are found with lids, this time for pots around 240 mm in size (Harding and Healy 2013, 580).

Furthermore, there is evidence that food vessels and Irish vases during the Early Bronze Age have ceramic lids, with examples in the north of England (Wilkin 2012, 261). Therefore, it is not a significant leap of logic to suggest that there were organic ones for other vessel forms. Lids are just as valuable for the domestic. Due to the organic nature of the lids, it is not necessarily easy to determine their presence; however, in northern Lancashire just south of the Cumbrian border, a large Collared Urn from a cremation burial was found with a cover (Longworth 1984, 219), while at Durrington walls in Wiltshire, a piece of cloth was discovered in association with a Middle Bronze Age Collared Urn (Pugh 1953, 236). Although the stepped internal rim present in some examples of the Collared Urn could be for positioning a ceramic, woven or wooden lid that may not need a fastening.

Collared Urns are relatively numerous in Cumbria, especially compared to the number found in Northumbria (Wilkin 2012, 112). However, they were adapted into funerary practice in the north later than those seen in the country's south (Sheridan 2004, 260). The decoration on the Collared Urns and Food Vessels in Cumbria is notably like that seen in the Neolithic, suggesting that there was also a continuation of tradition (Fell 1967, 19). However, there is also evidence in vessels of external influences in the form of the vessels seen in the county. This suggests that although the Cumbrian people were doing things their way, they were not exempt from the cultural patterns seen across Britain.

### 4.6 Regional Variation in the Bronze Age

As the previous sections indicate, a regional variation in pottery occurs and can spread nationally. However, distinct forms can arise which do not become widespread. In the North-west, there is a regional Cordoned Urn (Gibson 1986, 49). The Cordoned Urn may be a north British and Irish adaption of the Collared Urn (Sheridan 2004, 259). To the south in Cornwall, Cornish Urn types were developed. The vessels are a regional derivative of the collared and cordoned urns but with handles around a carination towards the top of the vessel (Gibson and Woods 1997, 71). The south of Britain has Biconical Urns, otherwise known as Wessex, handled urns, or Horseshoe Handled urns, that are not seen elsewhere in the country as the name may suggest (McLaren 2012, 224). These vessels' dates are harder to tie to the chronology, with some suggesting an affinity for the previously discussed pottery. In contrast, others consider them more on par with the Deverel Rimbury style pottery (Figure 4.8) (McLaren 2012, 224).

Figure 4.8 Deverel Rimbury style pot rim from Round House eaves at Bishops Canning Wiltshire made with Kimmerdigian clay (Devizes Museum Accession number: DZSWS:2004.202.56.11).

Deverel Rimbury Ware, while not featured in this thesis, is a highly decorated Middle Bronze Age pottery found predominantly in the country's south with connections to the north of Continental Europe (Dyer 2002, 101). The vessels are believed to stem from the Grooved Ware, and Beaker traditions and vessels of this type are typically either globular, bucket or barrel-shaped (Gibson1997, 72). Like Beakers, these urns had a cremation-based function, with the bucket shape being the most common of the three variations (Dyer 2002, 101). Within the Deverel Rimbury tradition were the sub-regional groupings of the Dorset group, the Cranborn Chase group from around the Wiltshire area, and the Ardleigh group to the southeast (Gibson and Woods 1997, 71). Bucket and barrel-shaped urns are also seen in the country's north through the Middle to Late Bronze Age. However, these are separate from the Deverel Rimbury tradition, and the length of use of these forms is potential until the Roman British forms are introduced (Gibson and Woods 1997, 72).

This is a brief overview of this period's main pottery types in British assemblages. The ability to typologically sort pottery is a great help in understanding use trends. However, the outdated names and views of the pottery hinder when it comes to deeper understanding. The pottery, however, needs more exploration. This will be undertaken in the experimental chapter where these four primary pottery forms, Accessory Vessel, Beaker, Collared Urn, and Food Vessel, will be used.

**4.7 Original pottery in the Case Study Regions**

Due to the nature of the assemblages in the case study counties, different approaches must be taken to select material for the study. Accessibility to collections played a significant role in including the pottery to be analysed and will determine the sites included in the study. To be able to cover the whole county, the time period and the different funerary and domestic contexts, a range of sites were needed. In Cumbria, most of the county's pottery is incorporated in the study as primary data because of the smaller assemblage. The inclusion of so much of the assemblage is due to a significant proportion of it being stored at Tullie, which is willing to give research permission. In Wiltshire, the situation is more difficult due to the number and size of some assemblages. East Chisenbury has 2769 sherds weighing 23.371kg; 97.6% of this by weight is from the Late Bronze Age /Iron Age transition (Leivers 2017, 12). The pottery from this site is, by quantity, comparable in many ways to the whole of Cumbria. As such, a degree of selection will be needed in Wiltshire, and accessibility will play a part in the final sites used due to the more dispersed nature of the collections.

Those sites accessible to sherds under 5cm were discounted due to the limited ability to impart helpful information on function and decoration. Unidentified sherds or vessels were not included. Sherds and complete vessels were analysed, and vessels which have undergone later reconstruction will also be included.


Figure 4.9. The sites within Cumbria marked with a pink cross (Ordnance Survey - Author's Photo)


Figure 4.10. The sites within Wiltshire marked with a pink cross (Ordnance Survey - Author's Photo)

### 4.8.1 Approaches to the Bronze Age Pottery in the Case Study Regions

Pottery from the Bronze Age has been sourced and analysed within the two study region sites to gain data and provide insight into local identities. Pottery has been sourced from different contexts and localities to gain the necessary depth to the study. These sites are intended to cover the whole geographical area and chronological period. While every effort is made to cover the whole region geographically, the study is constrained to sites which have already been excavated and pots with known find locations. Additionally, it may not be possible to have a complete chronological spread across the region due to the difficulties in identifying sites. If these holes in the archaeological record are discovered, no excavations are planned to fill the gaps in these areas. Only pottery identified as belonging to a Bronze Age vessel and most vessels are only included if they have a known form to control the amount of data. This does skew the data towards certain vessel forms. ((Table 4.1, Figure 4.9) Appendix A1 Table A1.1) ((Figure 4.10) Appendix A1 Table A1.2). Other sites within and outside the study area will be discussed to help understand the regional similarities and differences. The pottery from the sites ranges from Early to Late Bronze Age.

Table 4.1 The 29 sites from Cumbria and the 33 from Wiltshire listed alphabetically, (Author).

| **Cumbrian Sites** | **Wiltshire Sites** |
|---|---|
| Ainstable | Aldbourne |
| Aldoth | Amesbury |
| Aughtree Fell | Avebury |
| Bewcastle | Beckhampton |
| Bromfield | Bishops Cannings |
| Brownrigg Fell | Cherhill |
| Cardurnock | Codford St. Mary |
| Clifton | Collingbourne Ducis |
| Ewanrigg | Collingbourne Kingston |
| Garlands | Durrington |
| Grayson lands | Figheldean |
| Greystokes | Golden Ball Hill |
| Holmrook Hill, | Hilperton |
| Hunsonby | Idmiston |
| Irton, | Kingston Deverill |
| Lacet Hill | Little Bedwyn |
| Lazonby/Great Salkeld | Market Lavington |
| Little Mell Fell | Mere |
| Mecklin Park | Milston Down |
| Moorhouses | Milton Lilbourne |
| Old Parks | Netheravon |
| Penrith | Ogbourne St Andrew |
| Ravenglass | Ogbourne St George |
| Rickerby House | Pewsham |
| Skirwith Moor | Potterne |
| Springfield | Roundway |
| Thursby | Upavon |
| Waterloo Hill | Upton Lovell |
| | Warminster |
| | West Overton |
| | Wilsford |
| | Winterbourne Stoke |

The sites have all been sourced due to the accessibility of the pottery; Twentynine sites in Cumbria and 33 sites in Wiltshire. The literature at these sites varies because some have been untouched since the Victorian period, such as Garlands in Cumbria. According to Museum records, many vessels were recovered during historical excavations. If the study were to exclude all sites which predate the introduction of the first pottery standard introduced by the Prehistoric Ceramic Research Group in 1991, most pottery from Cumbria, as well as much from Wiltshire, would have to be discounted and, in turn, leave the study with a sparse amount of data. Further analysis of the two counties and the types and forms of pottery found within them during the study period will be covered in later chapters.

### 4.9 Discussion of Vessels from the Case Study Region

Petrographic analysis of sherds in Cumbria, show that most pottery is manufactured locally (Cherry and Cherry 1992, 14). The clay used was not processed to remove the inclusions found within the pottery. However, there is some evidence that additional material was added into the clay as temper as these inclusions are more angular than the naturally occurring material (Cherry and Cherry 1992, 20). The frequency and the type of tempering of the pottery vary from potter to potter across the region (Cherry and Cherry 1992, 21). The inclusion of sand as a temper indicates the end of the Bronze Age and the transition into the Iron Age as vessels were taking on a finer appearance (Hamilton 2002,46). Furthermore, the combination of the tempers becomes more complex (Woodward 2008, 294).

The county's geology further influences the choices made in pottery production. While the Neolithic favoured shell-tempered wares, the Early Bronze Age saw increased grog-tempered wear in all vessel forms (Hamilton 2002,45). At Ewanrigg in Cumbria, there is an example of a Beaker with grog tempering, which in turn shows an example of grog, meaning this vessel is made from at least two others that had been ground down (Bewley et al. 1992, 340). At Porton Down in Wiltshire, the vessel forms in the Early Bronze Age show evidence of grog tempering (Leivers 2016, 57). This use of grog, however, declined in the Middle Bronze Age.

The temper of the vessels in Wiltshire during the middle to Late Bronze Age is predominantly burnt flint. The size of the flint within the vessels varies from large to very fine (Woodward 2008, 107). This implies a degree of separation of tempers, which could have been undertaken through sieving. The potters will likely use any available resources with local production. The flint flakes likely are from the detritus of flint knapping, which was still occurring during this period (Woodward, 2008, 111). These flakes were then burnt and ground up. The potters were also possibly using the sieves for grain to sieve the temper into the different sizes seen (Woodward 2002, 295). The pottery production was likely undertaken on an as-needed basis to replace vessels. They did not have specialised equipment and instead adapted what they had when they needed to make new pottery. As such, the industrial pottery making seen at Bishops Cannings Cross is slightly more unusual, although not unique in the southwest (Hamilton 2002, 48). However, in the north, such as in Cumbria, the pottery was much more individual (Hamilton 2002, 48). This may reflect the Cumbrian rejection of certain vessel forms seen in Wiltshire.

The firing technology used in the Bronze Age varied. In Cumbria, it is noted that the

Collared Urn at Greystokes is far better fired than the relatively contemporary ones from Ewanrigg but has yet to reach the sintering point meaning it was underfired (Richardson and Hallam 1995, 35). It has been suggested by Longworth (1992, 346) that the barely fired pottery is a choice of the potters rather than a lack of knowledge or technique. At Ewanrigg, pottery can be compared to the clay tube believed to be part of a metal smelting furnace, which is well-fired in oxidising conditions (Craddock 1992, 345). The very presence of the pyrotechnical equipment indicates knowledge and control of firing, which is deliberately unutilised in the pottery (Figure 4.11). The local production and the low firing level indicate that these pots were never intended to function as long-distance transportation urns. The vessels could well be made for the transportation of the dead and be intended for a short life and eventual burial.


Figure 4.11 The Accessory Vessel and clay pipe from Ewanrigg showing different levels of firing technology ((Author’s Photo and Hallam Figure 5,23) Appendix A1 Table A1.1 and A1.4 -C38).

At Bewcastle in Cumbria the main Food Vessels of the Cumbrian assemblage was found in two cists. (Hodgson 1940, 159). Food Vessels C103 (1977.95.1) C104 (1977.95.2) were found in the main cist and are similar in size and apperance, the vessels were laying side by side with their bases to the west wall in a sand lined cist (Hodgson 1940, 158). While C105 (1977.95.3) was found in a secondary cist base upwards (Hodgson 1940, 158) (Figure 4.12). Inverted burial was common in Cumbria with it occurring also at Allithwaite (Wild 2003, 38). At Allithwaite the vessels were inserted in limestone fissures in the landscape (Wild 2003, 40). In this situation only sherds are deposited into the limestone fissures rather than whole vessel (Evans 2008, 100 -117). This is not a practice not seen in Wiltshire, rather pottery is deposited into barrows or in some cases post holes.

At Bishops Canning petrology proves the sourcing of local, materials continues into the Middle Bronze Age (Tomalin 1992, 76). The production of the barrel urns at Bishops Cannings Down is seen through the close exposure of the Kimmeridge clay with an outcrop within two miles of the settlement (Tomalin 1992, 75). However, the clay beds themselves, although present, are not easily identified due to being overlain, most commonly by Greensand. This might explain why other sites near to the clay source have very few if any Kimmeridge clay vessels. Through excavations at Bishops Cannings Down a trough like feature was found at the site which had large amounts of evidence for having held Kimmeridge clay while another feature contained a cache of fossils possibly used as the additional temper previously noted (Tomalin 1992, 75).

The domestic site also has pottery found within certain patterns of distribution (Barrett et al. 1991, 206). indicating pottery had a function and defined areas within the domestic setting. There are also possible indications of pottery-based industry at the site showing potter may have been a specific role with society (Hamilton 2002, 48).

Potterne and East Chisenbury are Late Bronze Age sites known for the large middens of feasting ceramics (McOmish 1996, 75). At these sites the careful deposition of pots seen in the earlier Bronze Age were forgotten and deliberate breaking of vessels seems to occur possibly after a single use due to the quantity found (Waddington et al. 2018, 3). East Chisenbury has over 23kg of pot sherds (Leivers 2017, 12) but seems to be used only at specific times of year when the animal bones are analysed, they are from a spring culling (Waddington et al. 2018, 3). This suggests that pottery was likely made in the spring, or else they would need a large area to store so many vessels over winter.

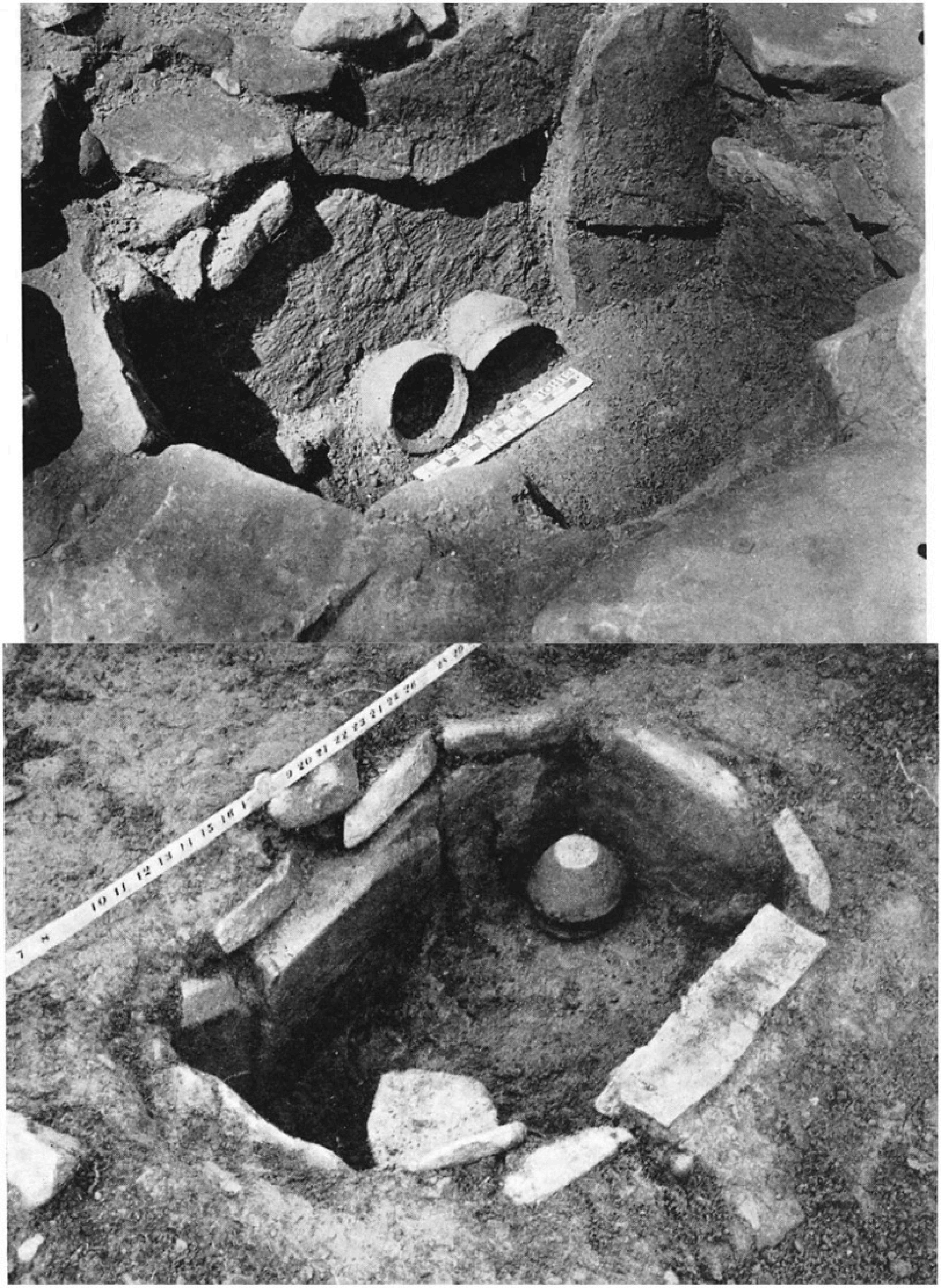


Figure 4.12 The excavation photos of the Bewcastle Food Vessels showing the position of the vessels with in the cists (Hodgson 1940, 13 Figure 5 and Figure 6).

# Chapter 5 Experiments in Pot Construction

## 5.1 Experimental Hypothesis and Previous Experiments

Analysing the original pottery data and reading the existing literature has given rise to many questions that could be explored through experimental archaeology. Only some of the proposed questions will be feasible within this study. These questions are excluded due to time, financial and material restraints upon this thesis, not their academic worth.

How were the pots made, particularly those taller than 30cm? During the Bronze Age in Britain, pots were made using hand-built methods, although no overarching construction method is seen in the archaeological record (Taylor 2013, 125). However, there is evidence of tongue and groove joints, a diagonal bevel used in prehistory bonding clay coils, from the sherds' fracture patterns and analysis of assemblages (Gibson and Wood 1997, 38).

However, beyond the mechanics of bonding clay, how is it possible to construct a 45cm tall vessel with a 33cm rim and only a 12cm base? Millson reiterates Rice's suggestion that a slab method was used in some vessels as it gives fewer points of weakness in the vessel's body (Millson 2013, 58). Various methods of potting exist. While the process can be intuitive, the construction of larger vessels is often a sign of a skilled potter, and these vessels are more prestigious due to the time and resources associated with their construction. The potter's skill and different construction methods could be explored by constructing large vessels to see if vessels of size and replicated form can be achieved. The pots could be made from clay and temper equivalent to that seen in the original pottery and made to the same form and thickness as in the archaeological record. Pots must be fired; the firing technology is unknown, but kilns are unlikely because there is no direct or consistent evidence. The production of pottery will be a crucial sign of success.

Pottery is relatively abundant in the prehistoric record, second only to lithics on prehistoric sites (Woodward 1995, 195). However, how much clay, temper, wood, time, and space go into making and storing pottery? How resource-heavy is pottery production? Is pottery a more significant material and consumptive resource investment than previously considered? This experiment examines the quantities needed to make pots and fire vessels in weight and time. The experiment aims to record the quantity of material used to make and fire a pot.

## 5.2 Intended Experimental Research Questions

To understand the nature of experimentation, it is first necessary to understand the materials used and the intended outcomes of the experiment. An experiment must consider what is being tested and how the outcome will be measured.

This study aims to replicate vessels from Cumbria in size and form and as close as possible to the source material to give insight into the Cumbrian vessels at a 1:1 scale and add to the understanding of Bronze Age vessels in Britain. This thesis poses questions similar to Millson's but is based on the Cumbrian pots. Furthermore, this thesis looks in more detail at the functionality of the pottery, the people making them and then using them.

**Questions:**

How much material and time does it take to make a vessel?

How possible is creating a full-scale replica from an assemblage with limited potting skills possible?

Does storing clay make a difference in producing pottery?

What is the survival rate of pots during construction, firing and storage?

These questions are to be answered through practical means. However, a series of experiments with multiple interlinked hypotheses was chosen rather than undertaking a separate experiment for each question.

### 5.3 Experimental Approach

All the experiments in this study are based on the Cumbrian assemblage. Pots made during the experiments are numbered in tables and referred to by these numbers from that point onwards. Cumbrian pottery is being used as it is the least researched out of the two case studies. Therefore, it provided a point of comparison to the Wiltshire assemblages while benefiting local and national research.

The experiments are long-term due to the nature of how pottery is produced and theoretically used. Therefore, experimental locations that would be secure for the research period were sourced. To limit the variables that would affect the pottery and potentially impact the reproducibility of the results, they were not necessarily in the case study regions. The experimental areas used are in Devon and Cumbria. The site in Devon was as it was available to the Author and the resources available there. The Author chose the Cumbria site for its security and accessibility. The rationale for choosing a site in Cumbria was that it would better emulate the materials and conditions to which the Cumbrian Pottery assemblage was subject.

In reproducing the vessels, care was taken to make the pottery to scale, and the form was emulated as closely as possible. The decision to recreate vessels to scale was made to make the pottery comparable to the pottery from the Cumbrian assemblages. The measurements used in producing the research vessels were gathered when the pottery assemblages were analysed.

As mentioned in the previous section, the time and resources available to this study limit how much could be done; from the initial ideas mentioned at the start of the chapter, a more condensed experimental programme was produced. The resources needed to make vessels were be recorded in all the experiments and used to create a data set. The production of larger pots and the amount of skill needed to produce one can be explored concurrently. The survival of the vessels will be judged at several stages: drying, firing, post-firing, and pre-use.

### 5.4 Construction Experiment 1- Shrinkage of Tempered Clay

This construction experiment looked at the shrinkage rates of tempered pottery. Understanding shrinkage explores the amount of clay or additional tempering material needed to make a vessel. To do so, it looks at a single vessel from the Cumbrian assemblage. The vessel is the Skirwith Moor Vessel (Table 5.1). This experiment looks to see if different temper concentrations affect the shrinkage rate of the vessel. Six vessels of the same weight were made, ranging from no temper to 50% sand temper, with 10% increases between each. This experiment was conducted in the University of Exeter grounds and laboratories.

#### 5.4.1 Construction Experiment 1, Original Pottery Influence

The pot is a decorated Accessory Vessel (Figure 5.1). The vessel is the smallest of the Accessory Vessles in the Cumbrian assemblage. It was chosen so that only a tiny amount of clay and temper could be used during this initial stage to understand the shrinkage (Appendix A1).


Figure 5.1 The Skirwith Moor (C92) vessel that is the focus of this experiment (Author’s Photo).

Table 5.1 The location, measurements and museum code for the vessel listing, location, form and dimensions (Author).

| Vessel Number | Site | Location | Vessel Type | Height (mm) | Base (mm) | Rim Diameter (mm) |
|---|---|---|---|---|---|---|
| C92 | Skirwith Moor | Skirwith Moor | Accessory Vessel | 71 | 67 | 49 |

### 5.4.2 Construction Experiment 1, Sourcing Material

The clay was sourced from a natural clay bed on the University of Exeter grounds. This clay was used as it was readily available to the Author, and its composition is known. Furthermore, the clay is known to fire well into vessels.

A temper of sand was chosen as many of the Cumbrian assemblage vessels have sand within the fabric. However, how much of this naturally occurs in the clay is unknown (Hallam 2015, 99-100). All tempers in the northwest region are considered suitable opening agents instead of shell or flint (Hallam 2015, 100). It was decided that this would be reproduced in this experiment with coarse sand. Commercial sand was bought because no other sand was available for the Author.

### 5.4.3 Construction Experiment 1, Material Processing

At this point, the Author had no access to clay beds in Cumbria; however, the University of Exeter has a naturally occurring clay bed producing clay of yellow or red colour. Both the red and yellow clays have a proven record of firing well. This clay was chosen for the experiment as it is known to produce clay suitable for pot production. The wet clay was dug up from the site and brought into the ceramic laboratory. Once inside, the clay was pressed through a sieve with 1cm mesh. This step removed natural debris such as leaves, twigs, and some more prominent natural inclusions. The clay was then passed through a finer mesh sieve at 5mm to remove more minor natural inclusions.

Water loss causes the contraction of the vessel; therefore, it was decided that the wet clay would be used rather than allowed to dry to ensure that the same amount of water was in each vessel at the start of the experiment. The wet clay was then wedged for ten minutes to homogenise it. The wedged clay was set aside for use.

The final weight for each vessel was 100g; therefore, the vessel's ratio of clay to sand was pre-calculated (Table 5.2). The quantities of both materials were weighed out to within 0.5g on electric scales for accuracy (Figure 5.2).

Table 5.2 The increases in the temper percentage and the weight of the sand and clay ((Author) Appendix A2. Table A2.1).

| Vessel Number | Temper (%) | Clay Weight (g) | Sand Weight (g) |
|---|---|---|---|
| E1 | 0 | 100 | 0 |
| E2 | 10 | 90 | 10 |
| E3 | 20 | 80 | 20 |
| E4 | 30 | 70 | 30 |
| E5 | 40 | 60 | 40 |
| E6 | 50 | 50 | 50 |
| slab | 25 | 75 | 25 |


Figure 5.2 The sand and clay weighed out for the 30% temper vessel before being mixed with water and wedged (Author's Photo).

### 5.4.4 Construction Experiment 1, Pot Production

The clay was wedged to remove air pockets, make the material homogenous and ensure a more even shrinkage rate. The wedging process was undertaken for 10 minutes.
Pinched-out methods are known in Bronze Age Accessory Vessels from the case study region (Hallam 2015, 36). The pinching forms the vessel; this works well with small pots (Taylor 2013, 128). The pre-weighed clay and the sand were combined through kneading for five minutes. The Author's hands were dipped into cold water to stop the material from sticking to their hands, but no additional water was added. Each vessel uses all the clay to create a pot of similar shape and form to the Skirwith Moor vessel C92.

The kneaded clay was formed into a ball, and a hole was made in the middle by pushing their thumb three-quarters of the way through. Water dipped on the hands was used to aid the process, although this was limited to only eight times to ensure the same amount of water was added. The sides of the clay were pinched to thin out the wall of the clay ball. With the thumb inside and the fingers of the same hand outside, the clay in between was gently squeezed. The squeezing of the clay thinned it out and increased its size. As the hole became wider, both hands were used to form the vessel evenly and create the shape, and the sides formed outwards. Callipers were used to ensure the vessel did not become too thin, too wide, too tall or the rim opening too large; a tolerance of 10 mm to the original vessel was allowed as the vessels were still wet. The clay was only wedged once, and a single attempt was used to make each vessel so they were created slower than they could have been.

A slab of clay at 25% sand to 75% clay was rolled out to 4mm thick, the same thickness as the Skirwith Moor vessel. A line of 10cm was drawn in the clay while still soft it was about 2mm deep. This was done so that the shrinkage could be monitored by comaping the wet to the fired length. Each vessel was then measured across the base, rim, and height.

The Accessory Vessels and the clay slab were left to dry for three weeks in the ceramic lab at the university. They were placed away from drafts, with the base on wooden slabs to help draw out the moisture. They were left untouched during this process.

### 5.4.5 Construction Experiment 1, Pot Firing

The pots were added to a bonfire in the university's experimental area for other purposes. The Author could not attend the whole process, only the start and the finish. Due to this, very little data is available for this firing.

The firing was undertaken in an open fire with unseasoned wood. The vessels were warmed at the edges of the fire. Preheating the pottery to about 200 degrees removes the free water, making it more likely to survive firing (Taylor 2013, 131). They were then pushed with large sticks into the embers once the fire was established. They were not added too quickly as there was still water to remove. Once the pot darkens, it is safe to cover it in burning material (Taylor 2013, 131). Once added to the fire, the vessels remained within the embers until they died roughly two hours later. The pots were retrieved after the embers had cooled. This was an additional hour and a half after the fire died.

### 5.4.6 Construction Experiment 1, Results

The construction of the vessels was possible with 100g of raw material. The different temper ratios affected the elasticity of the clay. From the 30% temper ratio onwards, it was noted that the clay became much drier due to the sand temper and was more prone to cracking as it was worked. The vessel at 50% temper to clay was challenging to form, reflected in the final dimension measurements as it significantly outlies the other vessels (Table 5.3). The limited addition of water to eight hand dips across all the vessels affected the vessels with the higher temper ratio far more than those with less. The vessels of 30% temper and over were firmer when kneading and shaping and more abrasive on the potter's hands.

The vessels all survived the firing process. The slab with the measurement line on also survived. The line on the slab was measured before the pots were fired in case it broke during firing. The line had contacted from 10cm when wet to 9cm when dried (Figure 5.3). The line length after it was fired was unchanged at 9cm. This shrinkage indicates that a flat slab of clay lost 10% of its size during drying.

All the vessels experienced shrinkage. The average shrinkage of the vessels was calculated for each of the three measurements taken when wet height, base, and rim (Table 5.1). The average loss has been calculated to be 10%, although the results are unexpectedly variable. The vessels were moved from the university. During this transportation, the vessel made at 50% temper started to disintegrate, and very quickly broke apart despite being successfully fired. All the other vessels remain intact and can be handled post-firing.

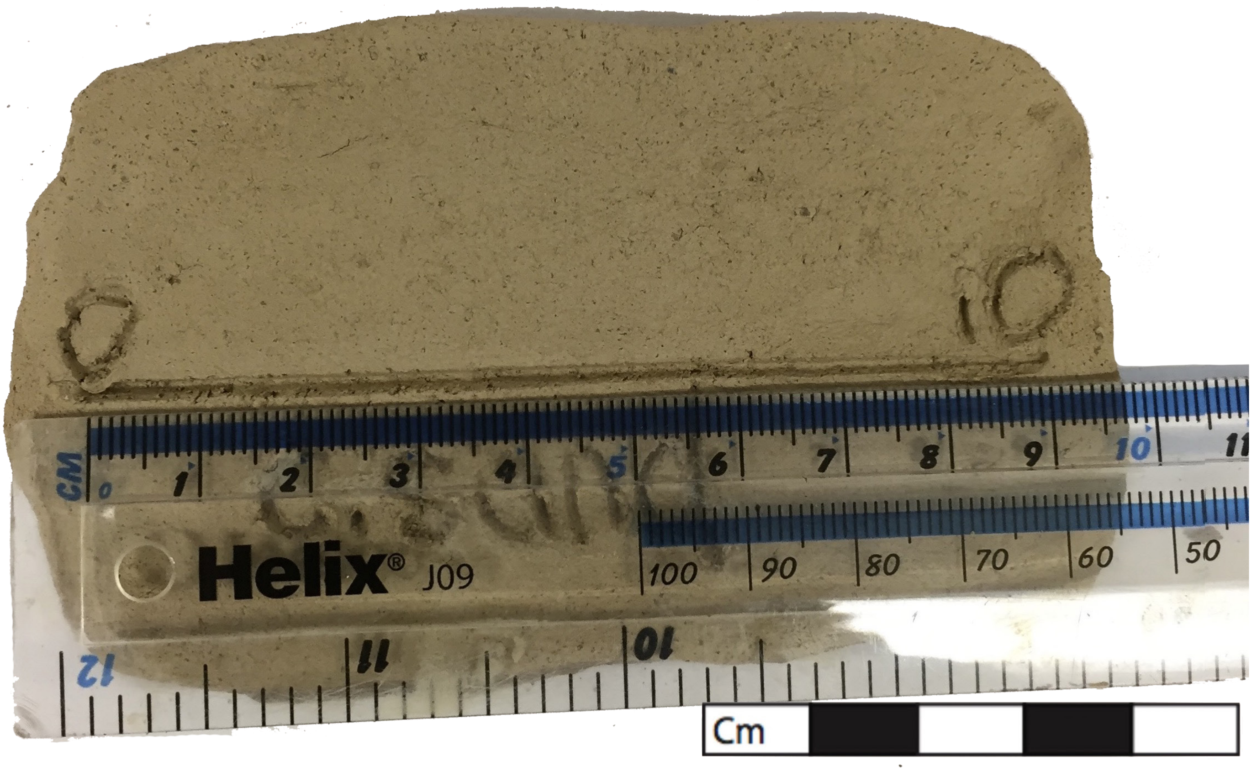



Figure 5.3 The clay slab showing the shrinkage of the line drawn in the wet clay from 10cm to 9cm after drying (Author's Photo).

Table 5.3 The shrinkage of the vessels across the different temper ratios (Author).

| Vessel Number | Temper Frequency | Wet Weight (g) | Wet Height (mm) | Wet Base (mm) | Wet Rim (mm) | Dried Height (mm) | Dried Base (mm) | Dried Rim (mm) | Average Shrinkage Height % | Average Shrinkage Base % | Average Shrinkage Rim % |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E1 | 0% | 100 | 49 | 29 | 46 | 47 | 25 | 43 | -4.082 | -13.793 | -6.521 |
| E2 | 10% | 101 | 50 | 30 | 40 | 46 | 24 | 34 | -8 | -20 | -15 |
| E3 | 20% | 100 | 54 | 31 | 46 | 47 | 26 | 38 | -12.963 | -16.129 | -27.391 |
| E4 | 30% | 100 | 51 | 33 | 38 | 45 | 27 | 35 | -11.765 | -18.182 | -7.895 |
| E5 | 40% | 100 | 48 | 31 | 43 | 42 | 27 | 34 | -12.5 | 12.903 | -20.930 |
| E6 | 50% | 100 | 39 | 28 | 46 | 39 | 26 | 40 | 0 | -7.143 | -13.043 |

## 5.5 Construction Experiment 2 – Resource Intensity and Form Reproduction

This experiment aimed to answer one of the leading research questions of the thesis by attempting to explore the identity of the Bronze Age potters. It aims to do so by looking at how resource-intensive pottery production is and if it is possible to produce a vessel like those seen in the assemblages without specialised training or equipment. The pottery produced need to be comparable to the original for the experiments to have any value within the thesis. Therefore, an experiment was designed based on the original pottery from the Cumbrian assemblage.

The previously mentioned experiments by Millson (2013, 152-157) looked at how long it takes for a novice potter to make a vessel. This study intends to explore this idea further by seeing if a novice can reproduce a likeness of different vessel forms. Furthermore, Millson (2013, 157) suggests that the pots were made as and when needed in the hearth, a local personal production that is likely by novice to moderate potters.

However, this raises the question: how long does it take to replace a vessel if the pottery is made as and when needed? Moreover, if a single vessel was needed, how many should be made due to failures during production?

This experiment examines how to reproduce a vessel and how much raw material, such as clay and temper, is needed to make even the smallest vessels. The experiment was undertaken in three stages: the material's collection, the vessel's making, and the vessel's firing.

### 5.5.1 Construction Experiment 2, Original Pottery Influence

The pottery in this experiment is based on the Cumbrian assemblage from Tullie House. They were chosen because they are abundant in the case study regions and many sites. The average height is 62.7mm, the rim diameter is 69mm, and the base is 36mm.

Three vessel forms were selected to for inspiration in the experiment; Vessel C38 (1987.30.4), from the Ewanrigg burial site to the west of the county, vessel C69 (1999.824) and C64 (1977.25.23) both are from the Garlands burial site in Carlisle to the east of the county ((Figures 5.4, 5.5, 5.6) Table A1.1 and A1.4).


Figure 5.4 Vessel C68, partially reconstructed, from Garlands site Cumbria ((Author's Photo) Table A1.1 and A1.4 -C22).


Figure 5.5 Vessel C69  (base facing up) from Garlands site Cumbria ((Author's Photo) Table A1.1 and A1.4- C69).


Figure 5.6 Vessel C38 from Ewanrigg Cumbria ((Author’s Photo) Table A1.1 and A1.4 -C38).

### 5.5.2 Construction Experiment 2, Sourcing Material

The material used within the experiment is essential. The original pottery was likely made from local clay and sand (Hallam 2015, 94). Store-bought and processed clay and sand were discounted for materials sourced, dug, and processed by the Author. Clay from the University of Exeter was used. A temper of Brampton Kame sand belt sand from Cumbria was used as the sand was likely available to some of the Cumbrian potters and readily available to the Author (Figure 5.7).

The sand and clay were sourced six months before the experiment and left to dry for six months in the University of Exeter ceramics lab. This was undertaken to reduce the water content in the materials so that more accurate weights of materials could be gained. This means more accurate measurements of the raw materials used could be recorded.

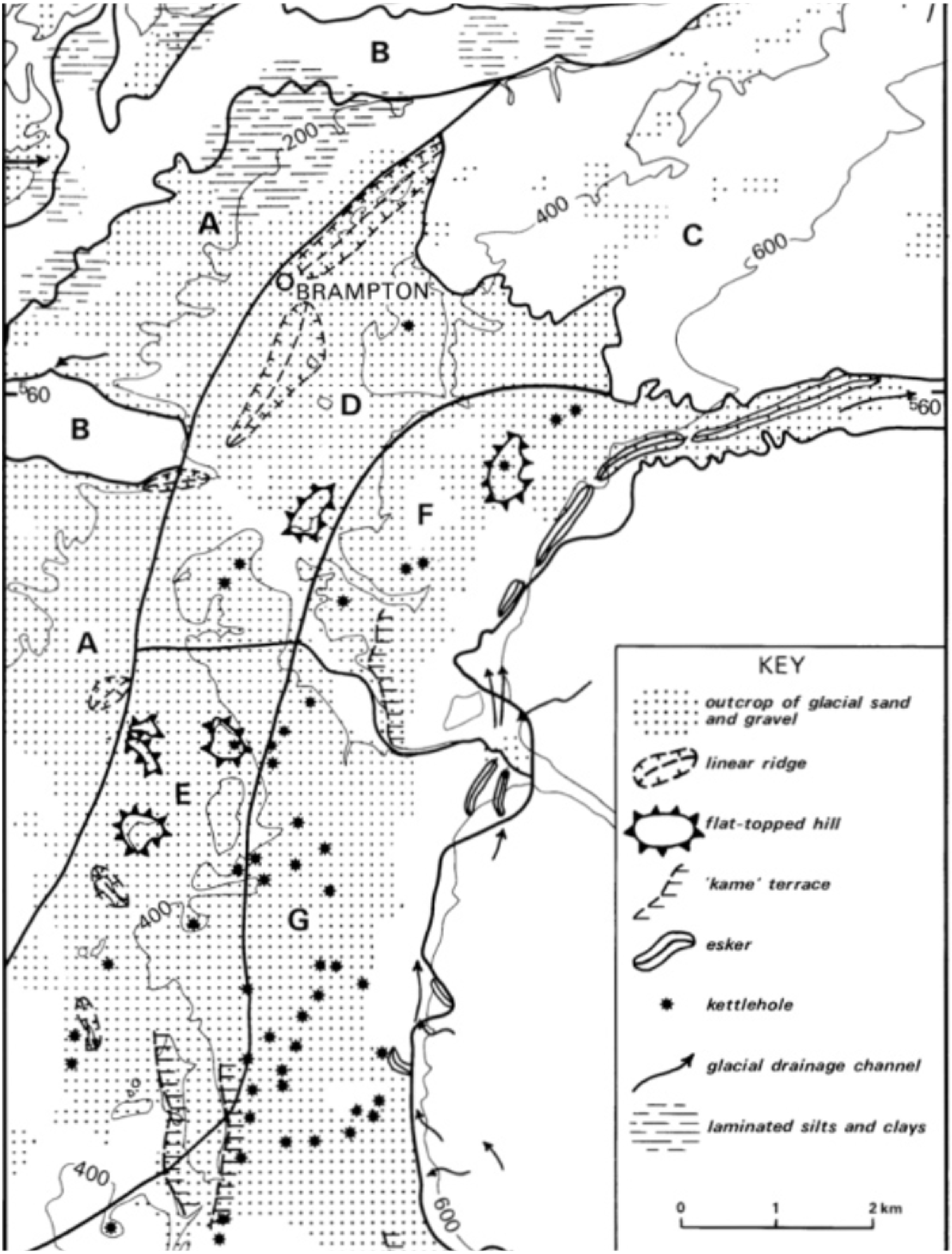



Figure 5.7 The Brampton Kame sand belt is 7.5 miles from the Garlands site and part of the same landscape (Cumbrian Landscape type 7c Figure 3.6) (Figure 2 Jackson 1979, 5)

### 5.5.3 Construction Experiment 2, Material Processing

Clay was extracted from the natural clay bed, which is known to have the correct plasticity to make pottery. The raw clay was taken to the lab and left to dry for over six months until no moisture was evident. The lumps of dried clay were then manually ground down using a saddle granite quern stone to form a powder and smaller lumps of dried clay. The grinding of the clay took several hours. There were stones and organic materials also present amongst the ground clay.

The combination of clay, grit and organic materials was then passed through a large sieve of 10mm mesh to remove the organic material, large stones and remaining large lumps of clay. The sieved material was then reground and passed through a 5 mm mesh sieve to remove smaller pieces of natural material and stone (Figure 5.8, 5.9). The sand dug from the kame belt was also passed through the 1cm mesh sieve to remove the larger gravel stones and then through the 5mm mesh to remove the smaller gravel stones. This was undertaken as the original Accessory Vessels, while tempered with sand, were of a finer fabric than the more substantial vessels, such as the Collared Urn (Figure 5.10, 5.11)

### 5.5.4 Construction Experiment 2, Pot Production

The original pottery likely has inclusions of twenty to thirty per cent. Hallam's assessment of Cumbrian Accessory Vessel fabric using the PCRG inclusion density chart puts Cumbrian pottery at common, translating to 20 -30% inclusion (2015, 96) (PCRG 2010, 49). This frequency was reproduced in the experimental pots by adding a temper. The dry weight ratios were calculated, and the necessary material was weighed using electronic scales to exact gram weights. The weight of the dry material used was recorded for each vessel (Table 5.4).


Figure 5.8 The clay, before being processed, is lumpy with traces of natural plant materials (Author’s Photo).


Figure 5.9 The clay, after being processed, ground, and passed through the 5mm sieve to remove the large and natural inclusions (Author’s Photo).


Figure 5.10 The finer fabric of C64 (1977.25.23) Accessory Vessel from Garlands (Table A1.1-C64) with small irregularly dispersed inclusions, but with two perforations in the wall, the vessel is resting on its rim to show the exposed internal fabric of the vessel on the base (Author's Photo)


Figure 5.11 Collared Urn C65 (1977.25.24) (Table A1.1-C65) the coarse fabric with large inclusions is frequently seen in the fabric from Garlands (Author's Photo).

Table 5.4 The weights of each vessel during various stages of the construction for the Accessory Vessels. The weight of sand and clay are both dry weights before they are combined, and the water is added (Author)

| Vessel Number | Sand Dry (g) | Clay Dry (g) | Temper Quantity % | Wet Combined Weight (g) | Water Added Measured % | Fired Weight (g) |
|---|---|---|---|---|---|---|
| E7 | 40 | 120 | 25 | 236.8 | 48 | Broke |
| E8 | 20 | 80 | 20 | 117.9 | 17.9 | 80.4 |
| E9 | 40 | 120 | 25 | 235.6 | 47.25 | broke |
| E10 | 50 | 130 | 28 | 237.1 | 31.72 | 141.3 |
| E11 | 50 | 150 | 25 | 263.9 | 31.95 | broke |
| E12 | 30 | 70 | 30 | 118.7 | 18.7 | 90.6 |
| E13 | 20 | 80 | 20 | 119.2 | 19.2 | 84.8 |
| E14 | 20 | 80 | 20 | 121.3 | 21.3 | 86.6 |
| E15 | 20 | 80 | 20 | 116.9 | 16.9 | 84.2 |
| E16 | 25 | 100 | 20 | 143.8 | 15 | 111.3 |
| E17 | 50 | 150 | 25 | 268.1 | 34 | 173.8 |
| E18 | 50 | 150 | 25 | 267.3 | 33.65 | 172.8 |
| E19 | 50 | 150 | 25 | 262.4 | 31.2 | 172.3 |

The dry clay and sand were mixed, water was added, and the clay was brought to a workable consistency and wedged. Wedging homogenised the clay and removed air pockets. The vessels were hand-built, and the joins between clay were based on the diagonal Coil joining method seen in original vessels from this period (Wilkin 2014, 74). The size of the Accessory Vessels lent themselves to a pinched-out base described in Pot Production 5.4.4 with a coil added to build up the wall and form the rim. The Coil was added by roughing the two joined surfaces and applying a slip between the two clay pieces. The slip was made by mixing water with the clay to make a thin consistency. The clay was then smoothed to seal the join. The clay on the outside of the vessel was pushed downwards. At the same time, the clay on the inside was pushed upwards to create a solid join and a consistent wall thickness.

Thirteen vessels were made in the three Accessory Vessel forms. Callipers were used to recreate the measurements of the original pottery in the experimental vessels. A tolerance of 5mm was given due to shrinkage. Three vessels were made in the Garlands C69 (1999.824) style, and six in the Garlands C68 (1999.823). style and four in the Ewanrigg C38 (1987.30.4) style (Table 5.4).

The wet pots were measured and weighed once formed, and the data was recorded. Additional features from the original vessels in the Cumbrian assemblages were added, such as perforations (Figure 5.10). These were reproduced using a bone pin pressed through the clay from the outside towards the inside. The decoration was added to a few vessels to aid in identifying the vessels through the experiment and to see if decoration or perforation affected the vessels during drying. The patterning on the bases of the other vessels was undertaken to allow for identification at later points in the study.

### 5.5.5 Construction Experiment 2, Pot Firing

The constructed clay vessels were left to dry unsupported for a month, based on wooden boards in a ventilated room. They were then fired in an open fire using gathered wood (Table 5.5).

The firing was undertaken in December, and the weather conditions were damp. The wood gathered from the surrounding forest was dried after use. The fire was built up and used to dry the ground for 10 minutes before the pots were placed on the edges to avoid moisture from the ground. The pots were rotated as they warmed to give equal exposure to the heat. This was undertaken for 10 minutes. They were moved closer using a hand and then a firm stick to push the pots onto the embers carefully and positioned them on the fire's outer edges once significantly warmed (Figure 5.12). Once on the embers, they heated faster and showed signs that the organics were burning out due to smoke and the change in sounds the pots made. The fire was increased after 20 minutes by rebuilding the pots and rekindling the embers to flame (Figure 5.13).

Figure 5.12 The pots are placed on the edges of the fire to warm through before they were moved onto the burning material to start the firing process (Author’s Photo).

Figure 5.13 The pots within the rekindled fire burning over the top of them (Author’s Photo).

Figure 5.14 Some of the pots, shown in the blue circles, within the fire embers after all the combustible material had been burnt through (Author’s Photo).

After an hour, the fire could die down to embers as all the gathered wood had been consumed. The fire consumed about 10 kg of unseasoned wood, which left the pots mostly concealed within the ash and embers (Figure 5.14). After a further half an hour, the pots were slowly moved out of the embers towards the edges using a large stick to carefully move them before being removed from the fire once cool enough to touch (Figure 5.15). Even people unused to handling pottery were able to use sticks to move the pots within the fire without damaging them (Figure 5.15)

The time to heat the clay and fire the pots into a ceramic was relatively short, 20 minutes, as seen in Table 5.5. The firing was completed within the space of three and a half hours. This includes the time to clear the land and when the ashes were banked. If the fire was pre-existing and did not need to be built for the experiment, such as a hearth or the pots were allowed to cool with the embers, the times would have been even less.

Figure 5.15 The pots were moved to the edge of the fire area using sticks to move the pots as they were too warm to touch (Author's Photo).

Table 5.5 The action taken during the pot firing and the time it took place (Author).

| Time | Event |
|---|---|
| 12:00 | Ground cleared to make a bonfire and fire wood collected and sorted |
| 12:30 | Fire lit |
| 12:40 | Pots placed at edges of fire |
| 12:50 | Pots moved onto edges of fire |
| 13:10 | Wood placed above of pots to build up the fire |
| 13:20 | Additional wood placed over pots to rebuild the fire |
| 13:30 | Last of additional wood placed over pots |
| 13:50 | Fire dying back |
| 14:00 | Fire reduced to embers |
| 15:00 | Pots moved to the edges of the embers |
| 15:05 | Pots moved further back from the fire |
| 15:20 | Pots taken away |

### 5.5.6 Construction Experiment 2, Results

Vessels E7 and E9, based on the same style vessels C69 (1999.824), failed during firing. This form is based on the Ewanrigg C38 shaped like the Armorican Vase a Anse found mainly with Wiltshire and the south coast. The third vessel of this style survived. These were the only two vessels not to survive the firing. The nature of the break (Figure 5.16) shows that part of the wall exploded outwards, breaking the vessel. This suggests there was likely a flaw in how the pots had been constructed, leaving a point of weakness, likely an air bubble that rapidly expanded and blew out the wall of the vessel. However, the broken wall reveals that the vessel's fabric fired well. The surviving pots were measured and recorded. All the pots were photographed to record the colour and condition of the vessels, including those that broke during firing (Figure 5.16) and their weight (Table 5.6). The pots were then transported to Cumbria. During this process, Vessel E16 was based on the original Vessel C68 (1999.823). broke. This was the only vessel over 10cm and had shown no sign of damage during the firing.

The results show the ability to consistently recreate vessels, with several pot types made within a few grams after the firing. It also shows that specific forms require a more experienced hand than others due to the failure of two out of three Accessory Vessels C69 (1999.824). The weights show that there can be between 10 – 20% loss in weight from dry material to finished vessel weight (Table 5.6).

The construction of these vessels also showed that the amount of water added could vary between 15 - 50% (Table 5.4). The vessels at 20% temper range between 15 and 21.3% water when the vessel is wet. The vessels at 25% temper range from 31.2 to 48% water. The vessel at 28% temper is 31.72%, while the one at 30% is 18.7% water. Vessels E7, E9 and E11 were all 25% temper vessels; two (7 9) had the highest water % at 48 and 47.25. The vessels at 25% temper used significantly more water than all the other temper groups (Table 5.7). This could have been a factor in causing them to break.


Figure 5.16 Vessel E7 broke during firing; the shape of the break indicates that part of the wall blew outwards when firing and damaged the section of the wall and rim above it ((Author's Photo) Table A2.1).

Table 5.6 the weights and the percentage of weight change during the production and firing (Author).

| Vessel Number | Dry Combined Weight (g) | Wet Combined Weight (g) | Fired Weight (g) | Dry to Wet % Increase | Wet to Final % Decrease | Dry to Final % Decrease |
|---|---|---|---|---|---|---|
| E8 | 100 | 117.9 | 80.4 | 17.9 | 31.81 | 19.6 |
| E10 | 180 | 237.1 | 141.3 | 31.72 | 40.4 | 21.5 |
| E12 | 100 | 118.7 | 90.6 | 18.7 | 23.67 | 9.4 |
| E13 | 100 | 119.2 | 84.8 | 19.2 | 28.86 | 15.2 |
| E14 | 100 | 121.3 | 86.6 | 21.3 | 28.61 | 13.4 |
| E15 | 100 | 116.9 | 84.2 | 16.9 | 27.97 | 15.8 |
| E16 | 125 | 143.8 | 111.3 | 15.04 | 39.78 | 10.96 |
| E17 | 200 | 268.1 | 173.8 | 34.05 | 35.17 | 13.1 |
| E18 | 200 | 267.3 | 172.8 | 33.65 | 35.35 | 13.6 |
| E19 | 200 | 262.4 | 172.3 | 31.2 | 34.34 | 13.85 |

Table 5.7 The average water % added to the vessels during the construction by temper % indicating temper percentage affects the amount of water needed to hydrate the clay to workable plasticity (Author).

| Temper % | Average Water % |
|---|---|
| 20 | 18.1 |
| 25 | 37.7 |
| 28 | 31.72 |
| 30 | 18.7 |

The results also show no loss of vessels during the drying but during firing (Table A2.1). There was a 15.4% loss rate of vessels during firing. During the moving of vessels away from the firing site, after they cooled, there was a 9.1% loss of the surviving vessels. The disparity in some of these results will be explored in a later chapter.

### 5.6 Construction Experiment 3 – Collared Urn Reproduction

Following the first and second experiments, a more detailed one was undertaken, looking at vessels larger than the Accessory Vessels. The pots in this experiment were made based on the Cumbrian examples of vessels, such as Collared Urns from the Garland cemetery site and vessels from Greystokes, Waterloo Hill and Ravenglass ((Figure 5.17 - 5.19) Table A1.1).


Figure 5.17 Original Vessel C89 influenced the form of the experimental vessels in this construction experiment ((Author’s Photo) Table A1.1 - C-89).


Figure 5.18 Original Vessel C72 influenced the form of the experimental vessels in this construction experiment ((Author’s Photo) Table A1.1 - C-72).


Figure 5.19 Vessel C73 influenced the form of the experimental vessels in this construction experiment ((Author’s Photo) Table A1.1 - C-73).

### 5.6.1 Construction Experiment 3, Original Pottery Influence

Six vessels from various sites of the Cumbrian assemblage were chosen as vessels of interest for this experiment. The Author visited three vessels (Figures 5.17, 5.18, 5.19), highlighted in green in Table 5.8. The other three vessels were on display at various locations and unavailable for study.

Table 5.8 Vessels used to influence form and dimensions; blank spaces are because this data is not available (Author).

| Vessel Number | Site | Location | Vessel Type | Height (mm) | Rim Diameter (mm) | Base (mm) | Collar (mm) |
|---|---|---|---|---|---|---|---|
| C101 | Waterloo Hill | Aglionby | Collared Urn | 163 | 152.5 | 66 | 42 |
| C54 | Garlands | Carlisle | Collared Urn | 184 | 160 | 97 | |
| C76 | Greystoke | Greystoke | Collared Urn | 181 | 195 | 125 | |
| C89 | Ravenglass | Ravenglass | Collared Urn | 155 | 152.5 | 101 | 62 |
| C72 | Garlands | Carlisle | Collared Urn | 132 | 122 | | 40 |
| C73 | Garlands | Carlisle | Collared Urn | 140 | 130 | 90 | 44 |

The six vessels are at the small end of the Collared Urn height scale; all are under 190mm (Table 5.8). The average height for the whole Cumbrian assemblage is 275.647mm (Table 5.9). However, these smaller vessels are found across various sites in Cumbria (Figure 5.20). Ravenglass is a coastal site in the southwest of the study region. Therefore, they are of interest to this thesis due to their widespread use and frequency of appearance.

While Garlands and Waterloo Hill are to the northeast of the case study region, they have different depositional practices. The Garlands vessels are from a burial site with many graves, and the Waterloo Hill vessel was deposited in a sandpit. In contrast, Greystokes is central in the region and sits with the Eden Valley.

The Author believes that progressing from small accessory vessels to larger vessels will be beneficial in understanding the amount of material and time needed to make vessels. The tallest Collared Urns in the Cumbrian assemblage are over 40cm tall compared to the Accessory Vessels, which are, in some cases, just over 4cm tall.

Table 5.9 shows the average dimensions of Collared Urns in the Tullie House assemblage and the average of the vessels chosen to influence the pottery in this experiment (Author).

| | Average Height (mm) | Average Rim diameter (mm) | Average Base (mm) | Average Collar (mm) |
|---|---|---|---|---|
| Collared Urns Cumbria | 275.647 | 210.611 | 102.3 | 80.1 |
| Construction Experiment Three Urns | 159.1167 | 152 | 95.8 | 47 |

**5.6.2 Construction Experiment 3, Sourcing Material**

The clay was chosen due to its successful performance during firing and its availability to the Author as a Cumbrian source that had yet to be located. The clay was sourced from the same clay bed as the vessels mentioned in 5.4.2 and 5.5.2. The clay, therefore, possesses the same qualities previously mentioned.

However, the pots were made from different clay colours: red and yellow clay. The clay is from the same clay bed seam but excavated a few hundred meters apart, resulting in slightly different colours. The variation in clay colour led to the classification of Yellow and Red/ Yellow clay, where the two types were combined (Table 5.10).

The temper used in these vessels was the sand from the Brampton Kame sand belt. The sand was chosen as it was quickly accessible for the author, and it is from the research area of Cumbria and possibly of the same geological heritage as sand used during the Bronze Age. The sand was gathered and then dried in the oven at 100 degrees celsius for an hour. It was then stored inside a heated house for six months to dry it further. The times taken to make the vessels were recorded (Table 5.11).


Figure 5.20 The Site of Ravenglass to the southwest of Cumbria, Garlands by Carlisle, Waterloo Hill near the River Eden, and Greystoke near Penrith in the centre of the study region (Ordnance Survey - Author's Photo).

### 5.6.3 Construction Experiment 3, Material Processing

The clay was dried for different lengths of time: the yellow clay for a year and the red clay for six months. Both clay types had completely hardened before use with no visible evidence of moisture. The different types of clay were prepared using the same dry processing method described in 5.5.4. The temper sand was sieved only once, leaving it coarser than in 5.5.4. The original vessels have large inclusion sizes, as seen in (5.5.3 Figure 5.11).

Temper of twenty per cent was weighed out in the dry weight for five of the six pots. The temper for the sixth pot was judged by eye, and then the temper weight came in just under the twenty per cent mark at 19.6% (Table 5.12). A combination of red and yellow clay at a dry weight ratio 50:50 was used for four of the six pots. The other two were made from 100% yellow clay. This combining of clay types was undertaken due to the limited amount of yellow and red clay and the desire to make six vessels rather than four. While ensuring that one vessel was not made from a different material from the other five, thus ensuring they were all comparable.

The clay was then hydrated, divided for each pot, and wedged for roughly ten minutes (Table 5.10), and then the temper was kneaded in before being formed into each vessel. The clay for each pot was roughly divided into three balls: the smallest one for the body, the middling-sized one for the base, and the largest for the collar.

### 5.6.4 Construction Experiment 3, Pot Production

The bases of the vessel were formed by making a pinch pot. The pinch pot base comprised roughly 5cm of the vessel's base. After this, the Author's fingers could not reach deep enough to work the clay efficiently, so clay coils were added. A short drying time was needed to allow the clay in the base to harden but not reach the leather hard stage. This was achieved by placing the base in the sun for 30 minutes before adding the next coil. Otherwise, the pot slumped under the weight of the new coil. Based on Hammersmith's Beaker vessel construction method (2010, 113), average thick coils of clay, between 4 and 5cm tall, were used to make these pots. This was undertaken to reduce the connections and weak points in the vessels. The coils were joined like the smaller ones in Pot Production 5.5.4. The joining surfaces were roughened, and a slip was added before the join was sealed by pushing the clay on the outside down over the join, and on the inside, the clay was pushed up over the join. After adding a coil, the vessel was placed outside the sun base to dry for 20 to 30 minutes.

After adding the collar, the vessels were placed in the sun to further harden for an hour before being put on a wooden board, base down, to dry in the University of Exeter ceramics laboratory. The height of the vessel, the rim diameter, the height of the collar, the diameter of the base, and the wet weight of the pot were recorded. This was repeated for the other five vessels; they used all the clay that had been weighed out for their construction.

Table 5.10 The dimensions of the six pots made during this experiment when wet and when dried (Author).

| Vessel Number | Clay | Wet Weight (g) | Wet Height (mm) | Wet Rim (mm) | Wet Base ((mm) | Wet Collar (mm) | Dried Weight (g) | Dried Height (mm) | Dried Rim (mm) | Dried Base (mm) | Dried Collar (mm) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| E 20 | yellow | 1961.83 | 159 | 143 | 91 | 59 | 1495.5 | 154 | 143 | 89 | 56 |
| E 21 | yellow | 1953.57 | 164 | 125 | 96 | 51 | 1498.4 | 164 | 121 | 94 | 47 |
| E 22 | red/yellow | 1856.71 | 142 | 137 | 89 | 46 | 1458.7 | 137 | 134 | 86 | 42 |
| E 23 | red/yellow | 1884.81 | 143 | 117 | 89 | 57 | 1464.8 | 137 | 116 | 86 | 52 |
| E 24 | red/yellow | 1807.01 | 148 | 133 | 87 | 51 | 1466.1 | 141 | 132 | 85 | 41 |
| E 25 | red/yellow | 2906.76 | 178 | 173 | 91 | 53 | 2297.9 | 178 | 166 | 83 | 47 |

Twenty-four hours after being completed and drying inside, the decoration was added to the collars and bodies of each vessel. The vessels were then placed rim down to encourage the drying of the bases. The decorative collar and shoulder pattern helped to differentiate each vessel and allow the measurements to be taken from the same point in the future. Two of the three original vessels viewed had decoration on the rim and shoulder. As such, the addition here is unlikely to detract from the experiment.

The pots, when drying, were left upside down to limit the widening of the base. If the still-wet vessel were upright, they slumped under the weight of the body and collar. It was also noted that the pots were drying on their rims more stable due to the narrow bases. Pot 25's base dried faster than the body, resulting in a different shrinkage that left the base bowed outwards rather than flat, making it slightly unbalanced. The other pots were unaffected by this. The pots were left to dry for three weeks before they were fired. The data was gathered at every stage (Table 5.12).

Table 5.11 The time in minutes it took to construct one vessel from plastic clay to adding decoration.Active time from the potter is marked in green (Author).

| Pot Construction | Time Taken (Minutes) |
|---|---|
| Wedging clay | 10 |
| Kneading clay | 10 |
| Splitting clay into balls | 2 |
| Pinching base | 15 |
| Drying base in sun | 30 |
| Forming coil | 10 |
| Joining coil | 10 |
| Drying body in sun | 30 |
| Forming collar | 15 |
| Joining collar | 15 |
| Drying vessel in sun | 60 |
| Drying inside | 1440 |
| Adding decoration | 15 |

Table 5.12 The different weights for each pot at different stages during the production of the vessel (Author).

| Vessel Number | Colour of the Clay | Clay (g) | Sand (g) | Dry Weight (g) | Temper (%) | Wet Weight (g) | Dried Weight (g) | Fired Weight (g) |
|---|---|---|---|---|---|---|---|---|
| E 20 | yellow | 1200 | 300 | 1500 | 20 | 1961.83 | 1495.5 | 1392.3 |
| E 21 | yellow | 1200 | 300 | 1500 | 20 | 1953.57 | 1498.4 | 1399.1 |
| E 22 | red/ yellow | 1200 | 300 | 1500 | 20 | 1856.71 | 1458.7 | 1380.6 |
| E 23 | red/ yellow | 1200 | 300 | 1500 | 20 | 1884.81 | 1464.8 | 1393.2 |
| E 24 | red/ yellow | 1200 | 300 | 1500 | 20 | 1807.01 | 1466.1 | 1388.2 |
| E 25 | red/ yellow | 1900 | 464 | 2364 | 19.6 | 2906.76 | 2297.9 | 2181.9 |

### 5.6.5 Construction Experiment 3, Pot Firing

The pots were fired in an open fire with damp ground and unseasoned wood during March. The fire was started without the use of modern fire-starting materials. An estimated 10kg of wood with varying moisture contents was consumed over several hours.

Once the ground dried out, for about 35 minutes, the vessels were placed around the edges of the fire, propped up by two logs at 45 degrees with the bases pointed towards the fire (Figure 5.21). The pots were rotated every five minutes by 90 degrees to warm them evenly (Table 5.13). This was undertaken so the bases did not take on any moisture and the thickest part of the vessel, the base, warmed through.

Figure 5.21 The pots were propped up by logs so the bases could be warmed through before being added to the fire (Author's Photo).

Figure 5.22 The pots were placed on the embers, and the branches were laid over them to build the bonfire around them (Author's Photo).

Once the fire had burnt out on the side closest to the pots, they were lifted and carefully placed onto the exposed embers after 35 minutes of burning and one hour of warming. The fire still burning on the other side of the bonfire was built up, and branches were laid over the pots to encourage the flames over the pots (Figure 5.22).

After ten minutes, the fire had spread over the branches covering the vessels, obscuring them from view. After 35 minutes, the fire began to die down as all the wood had been consumed. Half an hour after the fire died, the embers around the pots were slowly removed using a stick to reveal the vessels. Fifteen minutes after they were first uncovered, the vessels were rolled to the edges of the embers using two sticks. Half an hour after the first move, the vessels were moved further out of the embers onto the edge of the firing area again using two sticks. Five minutes later, the pots were cool enough to touch and removed from the firing site. The fire temperatures were recorded when the vessels showed signs of firing stages being reached. The firing took just over four hours (Table 5.13).

Table 5.13 The timings and temperatures for the firing in Pot Experiment Three measured using laser thermometer at centre of the fire (Author).

| Time | Firing Event | Pot Temperature (Degrees Celsius) |
|---|---|---|
| 09:40 | Fire started. | 10 with wind chill |
| 10:15 | Pots placed on the edge of fire. | 70 |
| 11:15 | Pots placed on the embers. | 400 - 700 |
| 11:37 | Pots in the fire 1 hour and fire built up completely obscuring them. | 660 - 800 |
| 11:47 | Pots covered by the fire and completely obscured. | 700 - 800 |
| 12:24 | Fire begins to die down. | 580 - 650 |
| 13:00 | Pots slows uncovered from embers. | 400 - 550 |
| 13:15 | Pots brought to edge of the embers. | 180 - 120 |
| 13:45 | Pots brought further out of the embers. | 80 - 30 |
| 13:50 | Pots removed from the fire. | 20 - 40 |

### 5.6.6 Construction Experiment 3, Results

The vessels made during the experiment were made to match the original vessels. This was undertaken with height being the lead factor and by trying to replicate the base, rim, and collar dimensions. Reproduction was only successful across some of the vessels (Table 5.14).

Table 5.14 The pots from Construction Experiment 3 compared with the original vessel they were built to replicate the paired pots have the same-coloured shading in the Table (Author).

| Vessel Number | Dried Height (mm) | Dried Rim (mm) | Dried Base (mm) | Dried Collar (mm) |
|---|---|---|---|---|
| E20 | 154 | 143 | 89 | 56 |
| C101 | 163 | 152.5 | 66 | 42 |
| E21 | 164 | 121 | 94 | 47 |
| C76 | 181 | 195 | 125 | |
| E22 | 137 | 134 | 86 | 42 |
| C73 | 140 | 130 | 90 | 44 |
| E23 | 137 | 116 | 86 | 52 |
| C72 | 132 | 122 | | 40 |
| E24 | 141 | 132 | 85 | 41 |
| C89 | 155 | 152.5 | 101 | 62 |
| E25 | 178 | 166 | 83 | 47 |
| C54 | 184 | 160 | 97 | |

Vessel E21 was made with 1500g of dried raw material. However, more was needed to make a vessel as tall as the one trying to be replicated, Vessel C76 1992.46.1. It was, however, the tallest vessel managed with 1500g of raw material at 164cm. Vessel E25, made with 1900g of raw material, came close to the dimensions of C54 (1977.25.10) after being fired (Table 5.14). Vessel E22 came the closest to all the vessels to the original (Table 5.14). Vessel E23 was taller than the original C72 (1999.827). Nevertheless, the original had a wider rim. If the clay had been formed differently, it could have been made to match more accurately.

All the vessels survived the firing without significant cracks or material loss. They all have a few vertical hairline cracks likely caused by thermal shock due to them running vertically up the pot walls rather than horizontally, indicating construction flaws where coils join. The data on weight changes from these vessels during the making and firing process are very consistent. There is little deviation from the mean in all the categories (Table 5.15). The data shows a slight difference between the yellow and the red/yellow clay. Yellow clay (highlighted yellow in Table 5.15) had a more considerable increase in weight when the water was added, and a smaller weight decrease from raw to dried.

Furthermore, the two yellow clays show the most significant decrease in weight from raw material to fired weight. This could reflect the drying times the clay was subject to. The yellow clay dried for a year, and the red clay for six months. This could indicate that the red clay still had a higher moisture content, though both appeared dry. The red/yellow clay combination weighs less when hydrated, which further indicates the presence of residual moisture in that clay.

From hydrating the clay to adding the decoration, the time to make a vessel was 1662 minutes or 27.7 hours. This time does not include the time taken to dry the clay or the sand or grind the clay into a powder, which takes 120 minutes or two hours of grinding while drying adds between six months or a year. The difference between a year and six months is noticeable in the results from this experiment, and the year drying for clay could occur as it did in this case. The year drying adds 8760 hours. They were dried for three weeks, 504 hours after being made. They were then fired for 4 hours and 10 minutes. The total time to prepare, make and fire the pots in this experiment was 9297.9 hours, just over 387 days. (Table 5.16). This time could be significantly reduced and the active time when potting is much less. Only 472 minutes or just under 8 hours involved active participation, such as preparing material, forming the pot, or maintaining the fire during the firing. Furthermore, the construction method meant several pots could be made in sequence. While the base of one pot was drying in the sun, a second could be formed in time. This helped save time during construction. It also meant that the pots were subject to the same conditions during construction during this experiment.

Table 5.15 The weights of the vessels at various stages during production measured in grams and the percentage weight loss during the process. The yellow clay is highlighted yellow, and the yellow/red clay is orange (Author).

| Vessel Number | Raw Combined Weight (g) | Wet Combined Weight (g) | Dried Weight (g) | Fired Weight (g) | Raw to Wet % Increase | Raw to Dried % Decrease | Wet to Final % Decrease | Raw to final % decrease | Dried to final % decrease |
|---|---|---|---|---|---|---|---|---|---|
| E 20 | 1500 | 1961.83 | 1495.5 | 1392.3 | 30.79 | 0.3 | 23.77 | 7.18 | 6.9 |
| E 21 | 1500 | 1953.57 | 1498.4 | 1399.1 | 30.24 | 0.11 | 23.3 | 6.73 | 6.63 |
| E 22 | 1500 | 1856.71 | 1458.7 | 1380.6 | 23.78 | 2.75 | 21.44 | 7.96 | 5.35 |
| E 23 | 1500 | 1884.81 | 1464.8 | 1393.2 | 25.65 | 2.35 | 22.28 | 7.12 | 4.89 |
| E 24 | 1500 | 1807.01 | 1466.1 | 1388.2 | 20.47 | 2.26 | 18.87 | 7.45 | 5.31 |
| E 25 | 2364 | 2906.76 | 2297.9 | 2181.9 | 22.96 | 2.8 | 20.95 | 7.7 | 5.05 |

Table 5.16 shows the time taken during different stages of making a single pot during the construction experiment shown in hours (Author).

| Pot Making Activity | Time In Minutes | Time In Hours |
|---|---|---|
| Drying clay | 525600 | 8760 |
| Clay preparation | 120 | 2 |
| Pot making | 1662 | 27.7 |
| Pot drying | 30240 | 504 |
| Pot firing | 250 | 4.2 |

**5.7 Construction Experiment 4 – Natural Clay Bed Accessory Vessel Reproduction with Potters of Different Skill Level**

A clay bed in Cumbria within two miles from the Garlands cemetery site was sourced by the Author, and a test firing was needed to see if the clay was viable for forming vessels. After only seeing the vessels in photos, three potters of various skills made two Accessory Vessels each. This experiment not only sought to test the clay but also the ability of potters to imitate Bronze Age forms. In her reconstructions of Beakers, Hammersmith suggests that many Beakers were made locally by imitating forms (2010, 125).

**5.7.1 Construction Experiment 4, Original Pottery Influence**

Photos of all the Accessory Vessels in the Cumbrian Assemblage were shown to the three potters, along with their dimensions. The potters were asked to make two, each with influence over the forms given. This was undertaken so that the potters could imitate the vessels of their choice.

**5.7.2 Construction Experiment 4, Sourcing Material**

Clay was sourced within two miles of the Garland Cemetery; the source is on the side of the river opposite the site (Figure 5.23). This experiment used no temper as the clay had naturally occurring sand and grit inclusions at about 20% in the wet clay. Millson has suggested that some geological tempers were about 20% in the Cumbrian material, and some could be naturally occurring (2013, 96). Furthermore, this experiment tested the clay and adding inclusions could have adversely affected the clay.

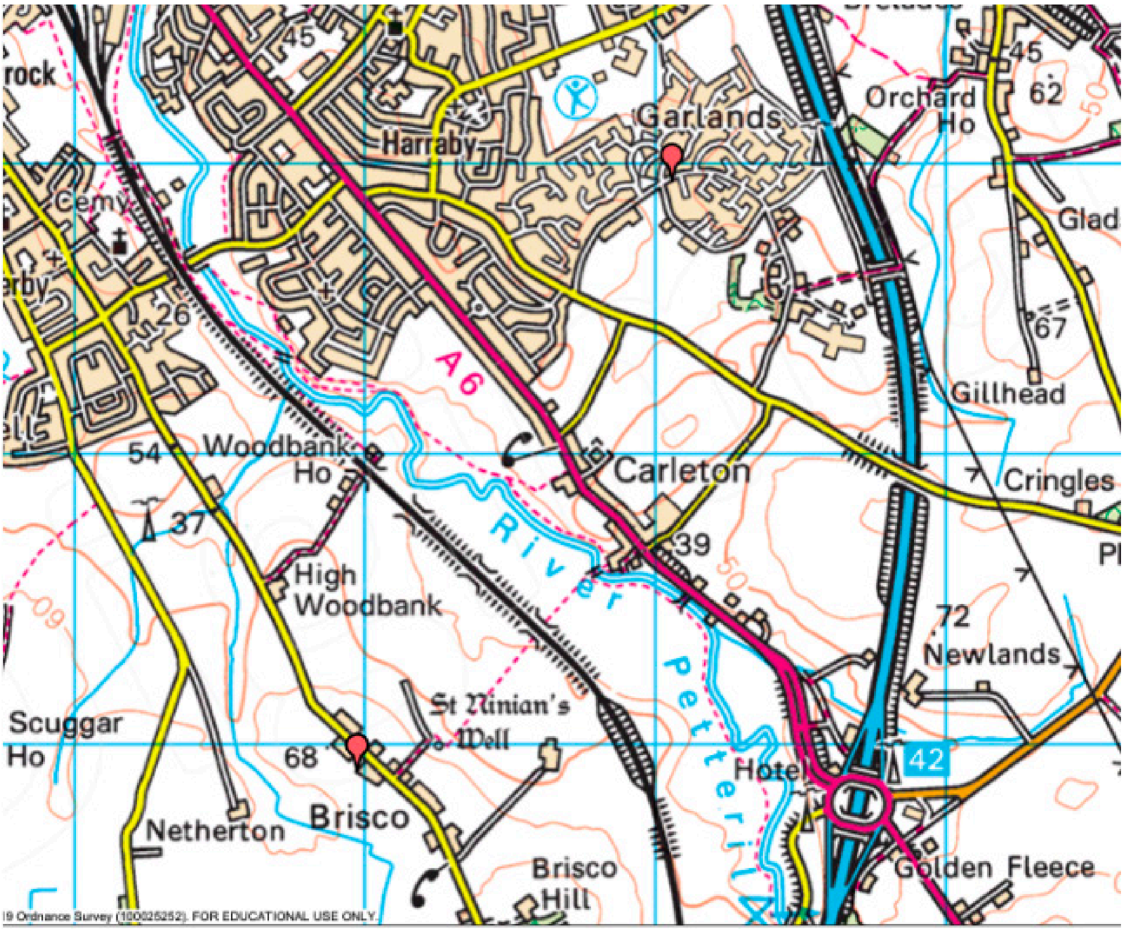



Figure 5.23 A map shows the sourced clay's location and the site at Garlands with red pins and the river Petteril and floodplain between them (Ordnance Survey - Author's Photo).

### 5.7.3 Construction Experiment 4, Processing Material

A sample of clay was extracted from the ground. The clay bed was reached with a mechanical digger as the clay bed lay about a meter beneath the surface. The extracted clay was taken to the experimental site in Cumbria. The clay was then put into buckets about a third deep and broken into small lumps by hand. Water was slowly added into the bucket to hydrate the mixture until it was all dissolved, creating a slip. This was left for twenty-four hours to dissolve fully. After twenty-four hours, the clay was gently stirred and then allowed to settle for 10 minutes. The clay liquid was slowly and carefully poured into a second bucket through a fabric bed sheet. The soil and large inclusions were left in the bottom of the first bucket where they had settled. The water slowly dripped through the cloth into the second bucket. The fabric sheet was suspended to not sit in the drained water. This was left outside for twenty-four hours in a shelter.

The clay was still dripping after the day had passed, so it was left for another day. After twenty-four hours, the clay was removed from the sheet, spread on wooden boards, and placed in the sun to encourage it to dry. After it had dried to a workable consistency, it was wedged for 15 minutes. The clay was then divided into three and given to the potters. There was no weight requirement to make the vessels. It was left to the individual potter to determine how much to use.

### 5.7.4 Construction Experiment 4, Pot Production

The amateur, who is to be referred to as Potter 1, produced two pots, one in a pinched-out form and one half pinched out half coiled. The first vessel they made was based on the Ewanrigg Vessel C38 (1987.30.4), seen in Figure 5.6. The second vessel is based on the Roose cup from Barrow in Furness, but the rim became exaggerated due to the coils and became more like a flower pot.

The intermediate potter, Potter 2, made their vessels by pinching the base and adding coils to build the wall. These vessels were based on the Skirwith Moor Accessory Vessel C92 (Figure 5.1) and the Old Park Vessel C86 (1949.109.3)

The trained ceramicist Potter 3 made a vessel based on Garlands C68 (1999.823), (Figure 5.4). They made this by building up coils. The second was based on Broomrigg C22 1951.81.3. However, they enclosed the rim far more than the original. They built it using coil, paddle, and anvil techniques. Coils are built up and a paddle and anvil (often a rounded pebble) are used to push the clay out to form the desired shape.

The production of the six pots (Table 5.17) took under an hour with three potters. Potter 2 was faster than the other two potters. Potter 1 struggled with forming, and Potter 3 had more challenging forms and a more perfectionist approach. The pots were dried inside for two weeks before they were fired.

Table 5.17 The number of the pots made by each potter and the pot that influenced them (Author).

| Potter | Vessel Number | Original Influence |
|---|---|---|
| 1 | E26 | Ewanrigg C38 |
| 1 | E27 | Roose cup (only viewed through photos) |
| 2 | E28 | Old Parks C86 |
| 2 | E29 | Skirwith Moor C92 |
| 3 | E30 | Garlands C68 |
| 3 | E31 | Broomrigg C C22 |

### 5.7.5 Construction Experiment 4, Pot Firing

The firing was undertaken in a kiln. This was undertaken to control the temperatures exposed to the vessels better and save combustible resources for future firing if the test vessels survived. All six vessels, two each for the potters, were fired. All survived the firing, which reached 800 degrees, and the cherry red glowing stage was observed when the pots were at this temperature.

### 5.7.6 Construction Experiment 4, Results

The test firing resulted in six successful clay pots similar in shape and size to the original vessels from the Cumbrian region. Only the vessels made by the amateur when coiling and pinching showed signs of hairline cracks. These cracks ran horizontally along the joins of the coils. This vessel could have failed in a bonfire firing.

The intense red colour from the oxidising nature of the firing matches other clay objects from the area. An 18th-century fired brick (Figure 5.24) made roughly fifteen miles from the clay source has the same colour, while underfired bricks from the 19th century are paler and closely reflect the dried nature of the unfired pots (Figure 5.25).


Figure 5.24 A test pot held next to an 18th century brick and the red local red sandstone above it showing the similarity in colour between the two fired clay objects and the local sand (Author's Photo).


Figure 5.25 The fired clay vessel beside a poorly fired brick that has become weathered, showing the difference in colour between the paler, badly fired brick and the richer red coloured fired clay vessels (Author's Photo).

### 5.8 Construction Experiment 5 – Cumbrian Assemblage Replication with Potters of Different Skill Levels

This experiment builds on the experiment from Pot Construction Experiment 4. It used the three potters of varied skill and wet-processed Cumbrian clay. However, in this experiment, larger vessels were planned. In the reconstruction of the Beakers experiment, Hammersmith suggests that many Beakers were made locally through imitation of forms (2010 125). This experiment aimed to see if different skill levels affected the outcome of pottery making on a larger scale.

#### 5.8.1 Construction Experiment 5, Original Pottery Influence

The influence in this experiment was only limited to the county of Cumbria. Any vessel from the case study region during the Bronze Age could be made as long as they were not an Accessory Vessel. Images of the different vessels and their dimensions were provided so that the potters could attempt to recreate a full-scale replica.

### 5.8.2 Construction Experiment 5, Sourcing Material

This construction experiment uses the clay extracted from near the Garlands site (Figure 5.23). The clay fired well in the kiln test and was easy to form. No temper was added as the natural inclusions in the clay contribute to the material.

### 5.8.3 Construction Experiment 5, Processing Material

More clay from the Cumbrian clay bed was extracted. The same wet processing method described in Processing Material 5.4.3 was used to produce more clay at a larger scale. Several buckets of clay were used. The clay was put in sheets to dry. However, the clay froze during this time due to an unseasonably cold spell. This slowed down the drying process as the clay needed to thaw. Once dry, the clay was spread out on wooden boards in the sun to dry out. Once completely dry, it was ground up and then rehydrated to a workable consistency.

The workable clay was gathered in a pile for use. Potter 4, experienced, and Potter 6, amateur, were given 15 minutes (Table 5.18) to wedge clay. This was undertaken to compare the skill levels needed to prepare the material. Potter 4 managed to wedge twice as much clay by weight during this time, but the plasticity was deemed to be similar.

### 5.8.4 Construction Experiment 5, Pot Production

Potter 4, an amateur Potter 5, an intermediate skilled potter and Potter 6, A skilled potter, were shown full-scale photos of a series of different Bronze Age vessels. The photos showed the side view, the base view, and the top view of the vessels. Dimensions for the vessels were also provided. The respective potters then used the clay.

Based on one of the photos, the three potters were told to reproduce a vessel. The photos were kept in the production area for reference during the making period. Potters 4 and 6 used the clay they had wedged, while Potter 5 used the additional clay wedged by Potter 4. All the potters kneaded their clay. Potter 6 reproduced an example of a Beaker, while Potters 4 and 5 attempted a Collared Urn.

All the vessels were made through a mixture of pinch pot and coil building. For Potter 5, it soon became apparent that going over 15cm at the angle necessary to reach the rim width with the correct wall thickness in these vessels is impossible in one sitting. The clay buckled and slumped downwards, and the vessels had to be kept inverted on a wooden base to counteract this. The clay was allowed to sit and harden before further layers were added. Unfortunately, when they returned after 18 hours, the clay rim had over-hardened, and the next coil and the new layers did not successfully bond. Potter 4 also had issues with the vessel slumping over the height of 15cm and left the vessel to dry before returning to work after 18 hours. However, they had left their pot base down and added other height and a collar to their pot.

Potter 6 used the paddle and anvil technique to try to re-shape their Beaker vessel after it had slumped during the 18-hour drying period, leaving it squashed on the base. Potter 5 started producing a second Collared Urn and attached a collar after leaving the vessel's body to dry for three hours (Table 5.18).

Twenty-four hours after completing their vessels, the potters had the opportunity to decorate them. Potter 6 burnished their vessel; they rubbed a smooth pebble over the external surface when the vessel was leather hard to smooth off the clay creating a smooth and slightly shiny surface. Potter 4 added decoration to the collar and base of their vessel. Although the collar had slumped inwards during drying, they did not attempt to rectify this. Potter 5 worked to smooth the surface of their vessel and fill in the hairline cracks that had appeared during the initial drying period. The decoration took between half an hour and two hours.

The pots (Table 5.19) were dried in a covered wood store for five months. The collars on the vessels made by Potter 5 cracked off during the drying period. The collars were abandoned, and no attempts were made to reattach them. However, they were not discounted from the firing.

Table 5.18 The time taken by Potters 4, 5 and 6 to make their pots. Note Potter 5 made two pots after their first failed during the stage, continuing to form pot 1 (Author).

| **Event** | **Potter 4 Time Taken in Minutes** | **Potter 5 Time Taken in Minutes** | **Potter 6 Time Taken in Minutes** |
|---|---|---|---|
| Wedging the clay | 15 | N/A | 15 |
| Forming the pot | 45 | 30 | 30 |
| Leaving the pot to harden | 1080 | 1080 | 1080 |
| Continuing to form the first pot | 35 | 45 | 30 |
| Leaving the pot to harden | 1440 | 180 | 1440 |
| Continuing to form the second pot | N/A | 20 | N/A |
| Drying | N/A | 1440 | N/A |
| Pot decorating | 120 | 45 | 30 |

Table 5.19 The vessels produced by the three potters during this experiment (Author).

| Potter | Vessel | Vessel Number |
|---|---|---|
| 6 | Beaker | E32 |
| 5 | Collared Urn x 2 | E33 and E34 |
| 4 | Collared Urn | E35 |

**5.8.5 Construction Experiment 5, Pot Firing**

The pots were fired in the same firing as pot firing 6.5, and the details are given later in this chapter in section 5.9.5 Construction Experiment 5, Pot Firing.

**5.8.6 Construction Experiment 5, Results**

The three potters all produced vessels with varying degrees of success. Potter 6, experienced in using clay, could process more material than the less experienced potter.

While the vessels produced are not accurate replicas of the source material they were trying to emulate, they did succeed in emulating the form, if not the technicality. The forms of the vessels reflect the image shown to them. The results are not the originals' proportions, weights, or wall thickness. The Beaker by Potter 6 has thicker walls than the originals, and the base slumped as it dried, deforming the shape. Hammersmith's (2010, 125) experiment shows that it is possible to build Beakers by hand rather than in a mould, although she suggests that the parts are built in sections. Building in sections was partly undertaken by Potters 5 and 6. However, Potters 5 and 6 only built in sections in reaction to how the clay formed rather than as a predetermined method. This, however, increased the time it took to make each vessel as they needed to leave it time to dry. If multiple vessels were produced, the time might have been better utilised.

All four of the vessels produced suffered from construction issues. Parts of the vessels slumped for potters 4 and 6. While Potter 5 lost the collars on both their vessels. This indicates that the potters need the skill to imitate a vessel they have only seen.

All four vessels suffered minor vertical hairline cracks during the firing. However, none suffered horizontal cracks, so the joins survived the firing. Vessel E34 was knocked when removed from the fire, and a part of the rim was fractured. The rest of the vessel remained intact and theoretically usable.

### 5.9 Construction Experiment 6 – Reproduction of Collared Urns Larger than Average

The previous construction experiments have led the Author to discover more about how to produce vessels. This construction experiment aims to use the knowledge gained in the previous experiments to build Collared Urns that exceed the Cumbrian assemblage average size.

#### 5.9.1 Construction Experiment 6, Original Pottery Influence

The Cumbrian assemblage Collared Urns influence this experiment as they are the largest and most frequently found vessel. No single vessel is the influence in this experiment, which aims to produce a vessel over the average size of the Cumbrian assemblage (Table 5.20). The average height is just over 27cm, with a base of just over 10cm. The rim is 21cm, and the collar is over 7cm, making the pots very top-heavy (Table A2.4).

Table 5.20 The average dimensions of the vessels in the Tullie House Assemblage (Author).

| | **Average Height (mm)** | **Average Rim Diameter (mm)** | **Average Base (mm)** | **Average Collar (mm)** |
|---|---|---|---|---|
| Collared Urns Cumbrian Tullie House Assemblage | 276 | 210.6 | 102 | 80.1 |

#### 5.9.2 Construction Experiment 6, Sourcing Material

The Cumbrian sourced clay used in Construction Experiments Four and Five was also used in this experiment. Due to the natural inclusions in this clay, no additional tempering material was added.

### 5.9.3 Construction Experiment 6, Processing Material

The clay used in this experiment was left over from the wet processing in Construction Experiment 5. The clay used during this experiment was left to dry on the wooden boards in the sun till it had hardened. The clay was removed from the wooden boards and stored for three months.

The clay was a mixture of hard lumps and flakes. The lumps of clay were ground between a smooth granite stone and a piece of wood until they were powder. This took about 45 minutes. The clay was then rehydrated to a workable consistency. If too much water was added, it was placed on the wooden boards to dry in the sun till it was workable.

The plastic clay was then wedged into small batches that the Author could manage for about ten minutes each. This process took 70 minutes.

### 5.9.4 Construction Experiment 6, Pot Production

The pots were formed concurrently based on Hammersmith's research (2010, 125). All six vessels were constructed at the same time by building in sections. A section of wedged clay was taken and kneaded for five minutes before a pinch pot base was created in about 10 minutes. The diameter for the top of the base was recorded. This was undertaken twice, and the three bases were about 4cm tall. These were placed on wooden boards in a covered area to dry.

More clay was taken from the wedged pile, kneaded, and turned into slab coils about 3.5cm tall. The slab coil was made by forming a ball and pushing the thumb through, creating a pinched-out coil. This was undertaken so that there was no join in the coil, potentially weakening it. The coil tapered so that the coil's base was the same diameter as the rim of the base and the top wider. The diameter of the top of the coil was recorded, and then the coil was placed on a wooden board and in the woodshed alongside the bases. The forming of the coil took about 15 minutes, including kneading the clay before use. This was repeated two more times, although the height of the coil slabs was higher (Table 5.21).

Table 5.21 shows the heights in mm of the slab coils and the base before the pots were constructed (Author).

| Vessel Number | Base (mm) | Coil 1 (mm) | Coil 2 (mm) | Coil 3 (mm) | Collar (mm) | Wet Height (mm) |
|---|---|---|---|---|---|---|
| E36 | 42 | 36 | 34 | 35 | 90 | 235 |
| E37 | 45 | 53 | 49 | 57 | 60 | 264 |
| E38 | 48 | 45 | 52 | 56 | 84 | 285 |

The second set of tapered coil slabs was intended to stack on top of the first coils. They were formed with the same method of measuring the base's diameter to match the previous slab coil's rim. The clay kneading took four minutes, and the construction took 12 minutes per slab coil. The three slab coils and other constructed parts were placed on wooden boards. The third set of tapered slab coils was formed. The kneading took four minutes, and the construction took 15 minutes each. These were placed with the others.

Clay was taken to form the collar and kneaded for five minutes, and then the collar was formed in the same method as the coil slabs, only with vertical sides. Furthermore, the collar was designed to sit over the most oversized coil slab top. This would make the coil insert inside the collar and create the distinctive overhand seen on the Collared Urn. The collar took 15 minutes to form. This was repeated twice to make a set of three collars.

Constructing all the clay sections for the three vessels took 351 minutes or 5.85 hours (Table 5.22). No significant breaks were taken during construction, and the time to take the pots to the store also factors in the comfort and sustenance breaks for the potter.

Table 5.22 shows the time it took to create the three vessels' sections in Construction Experiment 6 (Author).

| Activity | Time Taken Per Stage Minutes |
|---|---|
| Wedging | 70 |
| Kneading bases | 15 |
| Forming bases | 30 |
| Taking to the store | 5 |
| Kneading coil set 1 | 12 |
| Forming coil set 1 | 33 |
| Taking to the store | 5 |
| Kneading Coil set 2 | 15 |
| Forming Coil set 2 | 36 |
| Taking to the store | 5 |
| Kneading Coil set 3 | 15 |
| Forming Coil set 3 | 45 |
| Taking to the store | 5 |
| Kneading Collar | 15 |
| Forming Collar | 45 |

Figure 5.26 The slab coils, collars, and bases with the first coil joined on wooden boards (Author's Photo).

The bases and the first slab coils were retrieved from the store, taking 10 minutes. The pots were placed on wooden boards. The rim of the base and the base rim of the slab coil were scored, and a slip was added. The coil was then added to the base. The clay on the inside of the pot was sealed over the joint, and the clay on the outside was pushed down over the joint. This took about ten minutes per pot. The pots were photographed (Figure 5.26) with all the other coils and collars before being moved into the wood store and covered in damp hay.

After eight hours, the pots and the second slab coils were joined using the same method as the first. The coils took ten minutes to attach per pot. The pots were placed on wooden boards and in the wood store under damp hay.

Twenty-four hours after the last collar was complete, the third set of slab coils was attached to the pots. The process took about 15 minutes as the clay needed slightly rehydrated before joining the two sections. The pots were placed back on the wooden boards. The collars had water added to the rims with a damp cloth, and they were turned over, so the base was on top. These were placed back in the wood store under damp hay.

Forty-eight hours after the last collar was constructed, the collars were added to the pots. The collars were hydrated by running a wet cloth on the rims. The rim of the pot was also hydrated in this method. Rough scoring was undertaken around the inside of the collar from the base up about 1cm. The pots outside edges were also scored around 1cm high. The slip was added to the pot and the collar along the scored area. The collar was then slotted over the pot, so the pot sat within the collar. The pot’s clay was pushed over to meet with the collar and create a smooth internal surface while also sealing the join. This took about 20 minutes. The pot was then placed rim down on the wooden board. The dimensions of the vessel were recorded (Table 5.23). The same method of attaching the collar was used on the other two pots, and the three vessels were then returned to the wood store covered in damp hay. The pots were left to dry under the hay for two months before they were fired.

Table 5.23 The weight in grams and the dimensions of the three dry-processed vessels in the third pot construction experiment were taken when the vessels were still wet (Author).

| Vessel Number | Wet Weight (g) | Wet Height (mm) | Wet Base (mm) | Wet Rim (mm) | Wet Collar (mm) |
|---|---|---|---|---|---|
| E36 | 4400 | 235 | 70 | 165 | 90 |
| E37 | 5700 | 264 | 87 | 187 | 60 |
| E38 | 6000 | 285 | 112 | 186 | 84 |

### 5.9.5 Construction Experiment 6, Pot Firing

The pots from this experiment and Construction Experiment 5 were fired together. A meter square of dried logs and timber was sourced. A pit two meters by one meter and 30cm deep was dug. A pit was chosen as it has been theorised larger vessels are too big for hearth firings and this has also been observed in ethnographic studies by (Gosselain 1992b, 574). The pit was lined with modern combustible materials. The fire started. The pots were placed alongside each other to slowly warm through after the pot had been burning for half an hour. The pots were turned 90 degrees every five minutes to warm them through. After 15 minutes, the outside edge of the pot furthest from the fire was 70 degrees Celsius (Table 5.24).

After an hour of warming the pots, still rotating them every five minutes, the fire was banked by adding greenwood with leaves. The pots were placed on the embers, and no flames were present when they were placed. The embers were at 500 degrees Celsius when the pots were added (Table 5.24).

The fire was rekindled, and combustible material was over the top of the pots so that the embers fell, burying the pots. The pots were noticed to glow a cherry red colour (Figure 5.27). They were visible after being in the fire for one hour and forty-five minutes (Table 5.24). This implies the vessels had reached 800 degrees Celsius like those in the test kiln firing in Construction Experiment 4.

After all the wood had been burnt, the fire was allowed to die back naturally. As the fire banked and the pots cooled, some audible cracking indicated the pots might have been cooling too quickly and were cracking. Ash was encouraged over where the pots lay and were left in the fire pit overnight to cool slowly before being removed the following day (Table 5.24). No rain fell overnight, nor was there a dew.

Figure 5.27 The pot within the fire pit under the burning material glowing a dull cherry red. The pot is within the blue circle (Author’s Photo).

Table 5.24 The timing for the firing of the pots from the third construction experiment and the condition of the pots during this. The temperature was taken with a digital thermometer and is in degrees Celsius (Author).

| Time | Pot Temperature | Fire temp Degrees Celsius | Event |
|---|---|---|---|
| 11:15 | 11 | 11 | Fire started |
| 11:16 | 11 | 290 | Fire burning |
| 11:45 | 86 | 500+ | Pots moved by the fire and warming one sided |
| 11:50 | 110 | 500+ | Pots moved by the fire and warming on other sided |
| 11:55 | 128 | 500+ | Pots turned to even out warming and the ashes spread |
| 12:00 | 90 | 500+ | Pots 70 degrees Celsius on side away from fire |
| 12:45 | 100 | 500+ | Fire embers banked with green wood |
| 12:50 | Covered by combustibles | 500+ | Pots added to the fire |
| 13:35 | Covered by combustibles | 500+ | Pots started glowing |
| 14:00 | Covered by combustibles | 500+ | More wood added |
| 14:45 | Covered by ash | 500+ | Fire died down to ash |
| 15:00 | Covered by ash | 480-515 | Temperature on the surface of ash |
| 15:15 | Covered by ash | 450-500 | Temperature on the surface of ash. Cracking heard so ashes encouraged over the vessels |
| 15:20 | | 450-430 | Temperature on the surface of ash |
| 15:30 | 400+ | 425-380 | Temperature on the surface of ash |
| 16:00 | | 390-315 | Temperature on the surface of ash |
| 17:00 | | 360-240 | Temperature on the surface of ash |
| 18:00 | | 230-180 | Temperature on the surface of ash |
| 19:00 | | 210-130 | Temperature on the surface of ash and 320 under the surface |
| 20:00 | | 350 -270 | ash stirred |
| 09:00 | | 20 | Pots removed from fire |

### 5.9.6 Construction Experiment 6, Results

The construction of the vessels in sections worked well. The initial construction of the sections was time-intensive; however, the joining took very little time once they were made. It was also possible to leave the sections for longer lengths of time than if the potter were constructing a vessel through other methods (Table 5.25).

Table 5.25 The length of time each section of the pots was left before being joined was recorded in minutes (Author).

| Section | Time Drying During Construction in Minutes. | Time Drying Until Joined in Minutes |
|---|---|---|
| E36 base | 266 | 276 |
| E37 base | 251 | 261 |
| E38 base | 236 | 246 |
| E36 coil 1 base | 216 | 226 |
| E36 coil 1 rim | 216 | 696 |
| E37 coil 1 base | 201 | 211 |
| E37 coil 1 rim | 201 | 691 |
| E38 coil 1 base | 186 | 196 |
| E38 coil 1 rim | 186 | 676 |
| E36 coil 2 base | 164 | 174 |
| E36 coil 2 rim | 164 | 1614 |
| E37 coil 2 base | 147 | 637 |
| E37 coil 2 rim | 147 | 1597 |
| E38 coil 2 base | 130 | 620 |
| E38 coil 2 rim | 130 | 1580 |
| E36 coil 3 base | 105 | 1555 |
| E36 coil 3 rim | 105 | 2995 |
| E37 coil 3 base | 85 | 1535 |
| E37 coil 3 rim | 85 | 2975 |
| E38 coil 3 base | 65 | 1515 |
| E38 coil 3 rim | 65 | 2955 |
| E36 collar | 40 | 2930 |
| E37 collar | 20 | 2910 |
| E38 collar | 0 | 2890 |

The rim of coil three on Vessel E37 was left unworked for 2995 minutes, just under 30 hours from when it was formed to when it was worked. Whilst this shows that a significant length of time is needed to form a vessel, three pots were formed in this time, not just one.

The aim to create a vessel over the average height of the Cumbrian Collared Urn assemblage was achieved. Vessel E38 was over this height, although the other two needed help managing (Table 5.26). However, Vessel E38 reached close in all the dimensions.

Table 5.26 The wet clay measurements of the vessels against the Tullie House Collared Urn assemblage (Author).

| | Height (mm) | Base (mm) | Rim (mm) | Collar (mm) |
|---|---|---|---|---|
| Collared Urns Cumbrian Tullie House assemblage average | 276 | 102 | 210.6 | 80.1 |
| Vessel E36 | 235 | 70 | 165 | 90 |
| Vessel E37 | 264 | 87 | 187 | 60 |
| Vessel E38 | 285 | 112 | 186 | 84 |

Looking at the individual Collared Urns in the Tullie house, Assemblage Vessel E37 is similar to Garland's Vessel C54 (1977.25.10), and Vessel E38 is close to 1975. 25.9, also from Garlands. Furthermore, vessels 36 and 37 have a small base-to-rim ratio, making the Collared Urns distinct. They also have a wide collar, which the vessels are named for.
Unfortunately, Vessels 36, 37, and 38 suffered large vertical cracks (Figure 5.28), rendering them unusable. This makes recording dimensions for the vessels more difficult as the base and rim diameters are not intact. The cracks occurred vertically, indicating that the break was due to thermal shock. This means the pots were constructed well, as they show no indication of horizontal cracks occurring along the joins. If the firing had been undertaken differently, smaller with the same combustible material, the embers might have better protected the vessels. The rim diameter of Vessel E38 is 186 mm, so ideally, at least 190 mm of embers would have been needed to cover the vessel, which was not achieved during this pit firing.


Figure 5.28 Vessel E37 cracked in half vertically after the firing. Despite the break, the vessel was otherwise sound and resembled those from the archaeological record (Author's Photo).

### 5.10 Construction Experiment Conclusions

A more detailed discussion of the results and findings from this chapter will be discussed in chapters Seven and Eight. The results will also factor in the original pottery discussed in the previous chapter and the use of experiments conducted in the next chapter.

This chapter has explored the construction of the Bronze Age vessels and the time and resources that go into making a pot. During the experiments, 38 vessels were made (Table 5.27). Twelve vessels are Collared Urns, twenty-five are Accessory Vessels, and one is a Beaker. While these experiments give a good insight into what is needed to make a pot, they also open up more questions. Such as why they needed such large Collared Urns.
Furthermore, how much can be stored in a small Collared Urn? These can be explored through the use wear experiments. Other questions include how many Collared Urns can make at once. Are tempered by the practical question. What can be undertaken with that many pots once they have been made?

Moreover, where could they be stored? While it is essential to know how the vessels were made, it is also important to know why. These experiments have highlighted the difficulties of making a pot. People only spend time, energy, and resources on vessels if they have a purpose for the final product. Therefore, a series of experiments using the pots made in the construction experiments were undertaken.

If the Author had more time and resources, they would have conducted further experiments with different potters to see how they reproduced vessels through visual emulation and how well they succeed. While experiments by Hammersmith (2010), Millson (2013) and this author are valuable, they are undertaken after closely studying the original vessels, likely in more detail than those who emulated the pots did as the author at the least took measurements down to the millimetre of the different components of several vessels. Construction Experiments Four and Five show that making a vessel by just looking is challenging for even trained ceramicists. The potters in these experiments only had one attempt to make the vessel or two attempts for Potter 5.

We do not know how many vessels were formed in the raw clay and never fired until the potter was satisfied enough to attempt a firing. This is something that can only be discovered through experimentation with many potters. Even then, it is subjective to the potter's performance. That individual element is too variable and cannot be reliably recreated in experiments, like all the pots during this experiment.

During the experiments, the pots made by the Author were noticed to have a slight right-hand twist to their bodies. This was consistent across all the vessels. Such quirks may be seen in pots made by other potters. It is noted at Must Farm that the pots in the N class have points which attribute a connection even if there are multiple variations within the form suggesting a taught style of potting within the community (Brudenell 2024, 778). A large enough assemblage of Bronze Age pots to be linked to one potter for this to be known. While interesting, an experiment looking for individual expression in potters will likely reveal little about the potters other than we are all individuals.

Table 5.27 The numbers of the post made in the experiment, their form, and their condition at the end of the Construction experiments (Author).

| ID | Vessel Number | Type | Experiment | Condition |
|---|---|---|---|---|
| E1 | 1 | Accessory Vessel | 1 | Intact |
| E2 | 2 | Accessory Vessel | 1 | Intact |
| E3 | 3 | Accessory Vessel | 1 | Intact |
| E4 | 4 | Accessory Vessel | 1 | Intact |
| E5 | 5 | Accessory Vessel | 1 | Intact |
| E6 | 6 | Accessory Vessel | 1 | Intact |
| E7 | 7 | Accessory Vessel | 2 | Broken |
| E8 | 8 | Accessory Vessel | 2 | Intact |
| E9 | 9 | Accessory Vessel | 2 | Broken |
| E10 | 10 | Accessory Vessel | 2 | Intact |
| E11 | 11 | Accessory Vessel | 2 | Broken |
| E12 | 12 | Accessory Vessel | 2 | Intact |
| E13 | 13 | Accessory Vessel | 2 | Intact |
| E14 | 14 | Accessory Vessel | 2 | Intact |
| E15 | 15 | Accessory Vessel | 2 | Intact |
| E16 | 16 | Accessory Vessel | 2 | Intact |
| E17 | 17 | Accessory Vessel | 2 | Intact |
| E18 | 18 | Accessory Vessel | 2 | Intact |
| E19 | 19 | Accessory Vessel | 2 | Intact |
| E20 | 20 | Collared Urn | 3 | Intact |
| E21 | 21 | Collared Urn | 3 | Intact |
| E22 | 22 | Collared Urn | 3 | Intact |
| E23 | 23 | Collared Urn | 3 | Intact |
| E24 | 24 | Collared Urn | 3 | Intact |
| E25 | 25 | Collared Urn | 3 | Intact |
| E26 | 26 | Accessory Vessel | 4 | Intact |
| E27 | 27 | Accessory Vessel | 4 | Intact |
| E28 | 28 | Accessory Vessel | 4 | Intact |
| E29 | 29 | Accessory Vessel | 4 | Intact |
| E30 | 30 | Accessory Vessel | 4 | Intact |
| E31 | 31 | Accessory Vessel | 4 | Intact |
| E32 | 32 | Beaker | 5 | Intact |
| E33 | 33 | Collared Urn | 5 | Intact |
| E34 | 34 | Collared Urn | 5 | Chipped |
| E35 | 35 | Collared Urn | 5 | Intact |
| E36 | 36 | Collared Urn | 6 | Broken |
| E37 | 37 | Collared Urn | 6 | Broken |
| E38 | 38 | Collared Urn | 6 | Broken |

The construction experiments highlight the time needed to make pots, from the same step in the chaîne opératoire locating a clay bed to later steps gathering the raw clay and any tempering material. Even the wet processing method, which is significantly quicker than the dry method, takes several days. After that, the material needs to be prepared.

Constructing pots takes time, therefore it is worth making several concurrently or in sections. The weather conditions and the focus of the potter are the same for each section this way and more likely to combine without issue. However, this still takes time, and pot-making is a challenging activity. Drying the vessel also takes an extended length of time. The pots in Experiments One through Four were dried inside centrally heated buildings. Experiments Five and Six dried the pots in covered areas but were still exposed to weather changes and varied temperatures. This did not affect the pots, as none of the vessels showed signs of breakage due to excess moisture.

The experiments also reinforce the fact that clay with different tempers shrinks by varied amounts. When averaged, the height of the experimental vessels shrunk by 8.2%, and the bases, on average, shrunk by 14.96%. The rims shrunk 15.13%, but on average, the combined rims, bases, and heights shrunk 12.763%. This means that they did not shrink uniformly, likely due to the different thicknesses of these parts. The rims shrunk the most, but they were the thinnest and most exposed to the air, a significant factor in drying clay. While the bases were the thickest and least exposed to air, they contacted the least

Some vessels did, however, break during firing. Vessels E7, E9, E36, E37 and E38 broke during the initial firing process (Table 5.27). Vessels E7 and E9 broke due to construction issues, and E36, E37 and E38 due to cooling issues. Overall, the experiments showed a 13.2% breakage rate during firing. Vessel E11 broke completely after firing, and Vessel E34 lost a portion of the rim after being knocked. Therefore, only 31 out of the 38 vessels survived intact so that they could be used. That means there was an 81.6% survival rate across these experiments. Alternatively, 84.2% if Vessel E34 is included.

This indicates that if pots were being made, they were being made or fired in groups due to the failure rate. Holding a firing for a single vessel that might not survive is not a viable use of combustible material, which takes time to gather and dry. As indicated by Millson (2013, 157), small vessels could be fired in hearths. The smaller vessels in Experiments One through Five did not seem adversely affected by cooling quickly or not being buried and slowly cooled in the embers. If the hearth were burning, it would be a possible use of resources to add a dried pot to an existing fire and remove it a few hours later. Several pots in this experiment were only in the fire for two hours so that they could be undertaken in the hearth and fired when needed if the dried vessel was made and stored in a dry location.

The next chapter looks at the use of the fired vessels and the time frame of use and wear over several months. The vessels made in this chapter will be used in the experiments in the next chapter.

# Chapter 6 Experiments in Use Wear

## 6.1 Experimental Use Aims

This chapter continues the experimental themes seen in the previous chapter. The vessels used in this chapter were featured in Chapter 5, Experiments in Pot Construction. The vessels were created as experiments; however, they will be used in experiments in this chapter (Table 6.1). The experimental theme in this chapter is use wear. The pots will be used situationally over a series of themed experiments to try and understand how the vessels could have been used. Understanding use makes it possible to understand more about those making pots, why they made them in the forms they did, and for what purpose they were used.

Much like the previous chapter, experimental questions were formulated to develop a series of use wear experiments. Use wear experiments can damage the vessels and broken or weakened vessels are unsuitable for future experiments. Even significantly static experiments, such as weathering or storage, can result in damage. Therefore, consideration of the use of each vessel in the experiments was needed to get the most out of those made. Damage can explain the use and reveal ways vessels were not used. Any damage that occurs does not necessarily indicate failure in these experiments but is instead a sign of success.

What is the life cycle of a pottery vessel? Pots break, and there is plenty of evidence in the archaeological record for the middening of broken sherds. However, how long does it take for a vessel to fail? Were replacements easy to make quickly, or were there pre-made vessels waiting for use? The experiments undertaken for Chapter 5 and other archaeologists' research show that small vessels can be made locally (Hallam 2015, 94, Millson 2013, 157 Taylor 2013, 132). Millson says a small vessel can be formed in 15 minutes (2013, 156). The experiments undertaken by the Author show that the larger vessels over 20cm need a longer time due to the walls slumping during drying. However, the series of experiments by the Author shows that vessels made concurrently reduce the time, and multiple vessels should be made as there is a failure during firing. Just over 80 per cent of the Authors' vessels survived the firing. Many archaeologists, including Gibson (1981), discuss the batch size of the locally made vessels. Less frequently discussed is where the vessels were stored if more survived the firing than desired.

Vessels can take up space, so where would they be stored to maintain their form and functionality without taking up significant space resources? Moreover, does the storage of a vessel affect the life cycle? Experiment 6.1 examines where vessels can be stored and if the conditions affecting them leave traces. Do vessels store better inside or outside? It has been suggested that Food Vessels could be suspended (Wilkin 2013, 161), but does doing that leave signs of use compared to being left on the ground?

Furthermore, many Bronze Age vessels are found whole because of how they were deposited in grave settings (Millson 2013, 159). Being buried could have protected the vessels. Furthermore, are there any signs of damage that could be misinterpreted as use wear on the buried pots? Experiment 6.1 aim to explore the signs of use wear of stored vessels. Does the location of a vessel's storage affect the survival rate, and does it leave any signs of use wear? If so, are these viewable on an original vessel? It also looks at the life of the pottery vessels post-deposition. Does being in the ground, even short term, affect the vessel and change its appearance? If so, is this also seen in original vessels?

Considering the previous question on the life span of a pot, how quickly do signs of use begin to show on pottery? Millson noticed that when using vessels during cooking, some vessels that survived firing failed during their first cooking attempt. In contrast, others survived 15 attempts (2010 165). How were the pots used, and can signs of use be detected after even a short period? Use Wear, along with scientific analysis such as reside analysis, is vital in defining the function of a vessel; however, how quickly does this appear and how quickly does this become apparent on a vessel and do all signs of use leave a visible trace for analysis? This experiment tests a series of replica vessels for short-term use based on believable activity such as lifting and replacing vessels from a shelf. After the period of use has passed, the vessels will be analysed for signs of use wear and compared to the original vessels.

What was the function of large vessels? This question looks at the Collared Urns over 30cm tall. As stated, Millson (2013, 156) discovered that not all vessels survive as cooking pots. The author found that the time taken to form larger forms is longer than for smaller vessels. Would a larger vessel have been risked in a cooking situation? To reduce the chance of cracking, experiential vessels must be at least half filled with liquid (Sagnlandet Lejre 2016, 15). The application of use wear and studies and residue analysis can answer if these vessels were used in a cooking context; however, more is needed to determine their functionality. Were they used as storage vessels and not as cooking vessels?

The larger the vessel, the less movable it theoretically is. People are significantly more likely to drop heavy or unwieldy items. Some large vessels could be used as storage vessels. If so, are there any signs of use in a storage vessel? And how would a vessel such as a Collared Urn function as a storage vessel? Were lids able to be fitted to a pot? Hallam (2015, 50) discusses lids in the context of Accessory Vessels. Hallam notes that lids are not typical and are only found on a few of Yorkshire's Accessory Vessels in the Northern Assemblage (2015, 51). Lidded Food Vessels are rare, with only five confirmed in the British Isles (Wilkin 2013, 261). These vessels are noticeably smaller than the average vessels and contain Irish motifs and decorative styles (Wilkin 2013, 262).

The author has made large clay discs, over 30cm in diameter and under 2cm thick, for previous experimental work and has experience drying and firing large flat clay shapes (Freer 2021, 73). The disks warped and cracked during drying and were too fragile to move; the Author believes that clay is not a reliable material for creating large vessel lids.

It is possible that the lids were made from organic material as the clay discs were challenging to form (Freer 2021, 73), and when one was found with an Accessory Vessel, it was ill-fitting (Hallam 2015, 50). Lids were possibly made from organic materials, if they were used at all. This experiment aims to look at the benefits of a lid. It will also explore how an organic lid could be made and attached to a vessel with a large rim diameter.

Can one of these vessels be used more than once for storage and cooking in different situations? This question will be answered through a combination of experimental archaeology and the exploration of existing lipid data.

All the experiments in this chapter are intended to last at least three months, with many aiming to last six months. However, the Author believes that time is essential in understanding the use of historical items such as vessels. Many of them were intended to function for extended periods, so we must experiment with them for extended periods to successfully recreate the signs of use and gain an understanding of function.

Table 6.1 All the pots from the previous construction experiments highlighted green were used in the following experiments in this chapter (Author).

| Vessel Number | Type | Construction Experiment | Condition | Temper % | Use Wear Experiment |
|---|---|---|---|---|---|
| E1 | Accessory Vessel | 1 | Intact | 0 | No |
| E2 | Accessory Vessel | 1 | Intact | 10 | No |
| E3 | Accessory Vessel | 1 | Intact | 20 | No |
| E4 | Accessory Vessel | 1 | Intact | 30 | No |
| E5 | Accessory Vessel | 1 | Intact | 40 | No |
| E6 | Accessory Vessel | 1 | Intact | 50 | No |
| E7 | Accessory Vessel | 2 | Broken | 25 | No |
| E8 | Accessory Vessel | 2 | Intact | 20 | 1 |
| E9 | Accessory Vessel | 2 | Broken | 25 | No |
| E10 | Accessory Vessel | 2 | Intact | 28 | 1 |
| E11 | Accessory Vessel | 2 | Broken | 25 | No |
| E12 | Accessory Vessel | 2 | Intact | 30 | 1 |
| E13 | Accessory Vessel | 2 | Intact | 20 | 1 |
| E14 | Accessory Vessel | 2 | Intact | 20 | 1 |
| E15 | Accessory Vessel | 2 | Intact | 20 | 1 |
| E16 | Accessory Vessel | 2 | Intact | 20 | 1 |
| E17 | Accessory Vessel | 2 | Intact | 25 | 1 |
| E18 | Accessory Vessel | 2 | Intact | 25 | 1 |
| E19 | Accessory Vessel | 2 | Intact | 25 | 1 |
| E20 | Collared Urn | 3 | Intact | 20 | 3 |
| E21 | Collared Urn | 3 | Intact | 20 | 3 |
| E22 | Collared Urn | 3 | Intact | 20 | 4 |
| E23 | Collared Urn | 3 | Intact | 20 | 4 |
| E24 | Collared Urn | 3 | Intact | 20 | No |
| E25 | Collared Urn | 3 | Intact | 19.6 | No |
| E26 | Accessory Vessel | 4 | Intact | <20 | No |
| E27 | Accessory Vessel | 4 | Intact | <20 | No |
| E28 | Accessory Vessel | 4 | Intact | <20 | No |
| E29 | Accessory Vessel | 4 | Intact | <20 | No |
| E30 | Accessory Vessel | 4 | Intact | <20 | No |
| E31 | Accessory Vessel | 4 | Intact | <20 | No |
| E32 | Beaker | 5 | Intact | <20 | No |
| E33 | Collared Urn | 5 | Intact | <20 | 2 |
| E34 | Collared Urn | 5 | Chipped | <20 | No |
| E35 | Collared Urn | 5 | Intact | <20 | 2 |
| E36 | Collared Urn | 6 | Broken | <20 | No |
| E37 | Collared Urn | 6 | Broken | <20 | No |
| E38 | Collared Urn | 6 | Broken | <20 | No |

## 6.2 Use Wear Experiment 1- Vessel Weathering and Signs of Use in Storage and Deposition

This experiment aims to look at the longevity of a vessel when not in use every day, such as when a vessel stands empty awaiting use or as a storage vessel put aside. Does a static vessel develop signs of damage after six months while empty?

While some vessels, such as cooking pots and drinking vessels, saw daily or even multiple daily uses, others were used less frequently as they were not needed and were being stored or used to contain things. Many ceramic objects may have sat untouched in out-of-the-way locations for long periods, possibly months before they were needed. This experiment aims to reproduce this by placing vessels in three different conditions and leaving them for six months to see how they fare with the conditions they are subject to. This experiment aims to see if similar results happen over a shorter period.

### 6.2.1 Use Wear Experiment 1, Location

The length of time since the Bronze Age and the vagaries of the climatic changes across this period, culminating in extreme wet weather conditions at around 2950 cal BC (Turney et al. 2016, 79), cannot be replicated. However, the weather from winter to summer in the Cumbrian study location should indicate the effects the pots can be subject to.
The experiment occurred in a secure private residence in Cumbria, and the vessels were left undisturbed over six months in different locations across the site (Figure 6.1). The site was chosen due to its availability to the Author and the knowledge that it would remain secure and undisturbed by people or potentially destructive animals such as dogs and chickens.

A weather station 1.8 miles from the site also meant that weather data for the site could be collected. The secure site in Cumbria is 151.5 meters above sea level on the outskirts of a rural hamlet. The weather station is 111 meters above sea level on the outskirts of a town. Despite the difference in altitude, the proximity of the weather station gives a close gauge for the temperature, rainfall, wind speed, and direction. The weather station provides data to the metrological office for reporting the forecast. It is, therefore, a reliable data point for the experimental site to rely upon.

Furthermore, the weather station has been operational for many years, and the data for the past years are available. This means the conditions the vessels experience can be compared to subsequent and previous years to determine if the conditions were outside the norm, potentially causing unexpected results.


Figure 6.1 The boundary of the secure site in Cumbria is drawn in red, and the site is situated 151.5m above sea level (Ordnance Survey - Author's Photo).

### 6.2.2 Use Wear Experiment 1, Pottery Used

This experiment used the ten surviving vessels from Construction Experiment 2. Only intact vessels were used in this experiment so that signs of damage due to weather conditions would be more clearly detectable (Table 6.2). Small hairline cracks were permitted, but they were recorded in detail before the experiment began to document any changes.

The broken vessel over 10cm and the failed pots during Construction Experiment 2 were excluded from the use wear experiment. The vessels from the first experiment were chosen despite needing Cumbrian clay due to their accuracy in recreating the size and form of the Cumbrian assemblage and their smaller size and thinner walls, meaning they like to demonstrate the effects of weathering over a short timeframe.

Furthermore, all the vessels were made from the same source of clay that had been prepared and fired under the same conditions by the same person. This means the pots are comparable as the material they are made from will not be a variable in how they react.

The different temper quantities in the vessel still reflect the Cumbrian Accessory Vessel's temper percentage (Hallam 2015, 96). The pots are comparable; however, it is also possible to compare them with those from the experiment with different temper percentages to see if they differ.

Table 6.2 The weights and temper quantities in the vessels used in Use Wear Experiment 1 from Construction Experiment 2 (Author).

| Vessel Number | Sand Dry (g) | Clay Dry (g) | Temper Quantity % | Wet Combined Weight (g) | Water Added Measured in % | Fired Weight (g) |
|---|---|---|---|---|---|---|
| E8 | 20 | 80 | 20 | 117.9 | 17.9 | 80.4 |
| E10 | 50 | 130 | 28 | 237.1 | 31.72 | 141.3 |
| E12 | 30 | 70 | 30 | 118.7 | 18.7 | 90.6 |
| E13 | 20 | 80 | 20 | 119.2 | 19.2 | 84.8 |
| E14 | 20 | 80 | 20 | 121.3 | 21.3 | 86.6 |
| E15 | 20 | 80 | 20 | 116.9 | 16.9 | 84.2 |
| E16 | 25 | 100 | 20 | 143.8 | 15 | 111.3 |
| E17 | 50 | 150 | 25 | 268.1 | 34 | 173.8 |
| E18 | 50 | 150 | 25 | 267.3 | 33.65 | 172.8 |
| E19 | 50 | 150 | 25 | 262.4 | 31.2 | 172.3 |

### 6.2.3 Use Wear Experiment 1, Method

The experiment began on the 1st of January and continued to the 1st of July. This was undertaken to cover the winter and summer conditions in the study region. The local weather station recorded and published the results, providing weather data for the experimental period and the time preceding and following.

All the vessels were left empty during this experiment as the different forms would need different quantities of material to fill them. This may also have affected the results due to different weights and surface exposure to the pot's internal surfaces. Furthermore, by leaving them empty, there is less chance that wildlife would disturb them and possibly inflict damage that could be misinterpreted as weather damage.

Three of the ten vessels, E12, E14 and E16, were based on the museum example C68 (1999.823); these vessels were buried (Figure 6.2, Table 6.3). The vessels were placed rim up in a pre-dug hole, and 10 cm of soil was placed on top of them. The soil was pushed around the vessels and firmed on top by gently standing on the disturbed soil to settle it into place. The three buried vessels were empty when buried.

The same style of vessel was chosen so that they could be comparable. Vessels E12 and E16 were in a sandier soil type, and E14 were in loamy soil near trees. Vessels E12 and E16 were buried 30cm apart in the same area. Vessels E14 and E16 have the same temper percentage to study any difference in the results of moisture gain in different soil types. Vessel E12 has a higher temperature percentage; it was buried in the same conditions to be comparable to Vessel E16.

These three vessels were buried to act as controls for the Cumbrian assemblage vessels, all recovered from the ground and likely gained some wear marks. The positions were marked so they would not be disturbed during the experiment and could be retrieved at the end of the experimental period.

Three vessels, E15, E17 and E18, were put in covered positions outside the experimental area (Figure 6.2). All the exposed vessels had a southwesterly facing exposure to equalise the effects of the weather. All three vessels had one external wall facing out of the protective shelter, exposing it to the weather conditions. Vessel E17 was placed into a covered stone crevice resting on stone (Figure 6.3). Vessel E15 was placed in a crevice in a stone wall resting on stone (Figure 6.4). Vessel E18 was placed under a wooden shelter resting on earth (Figure 6.5). All the vessels were empty and placed upright. These vessels were placed to recreate the potential surfaces a pot could be stored upon in a domestic setting while also giving an element of protection to the vessels they could have had in rudimentary storage shelters or under the eaves.

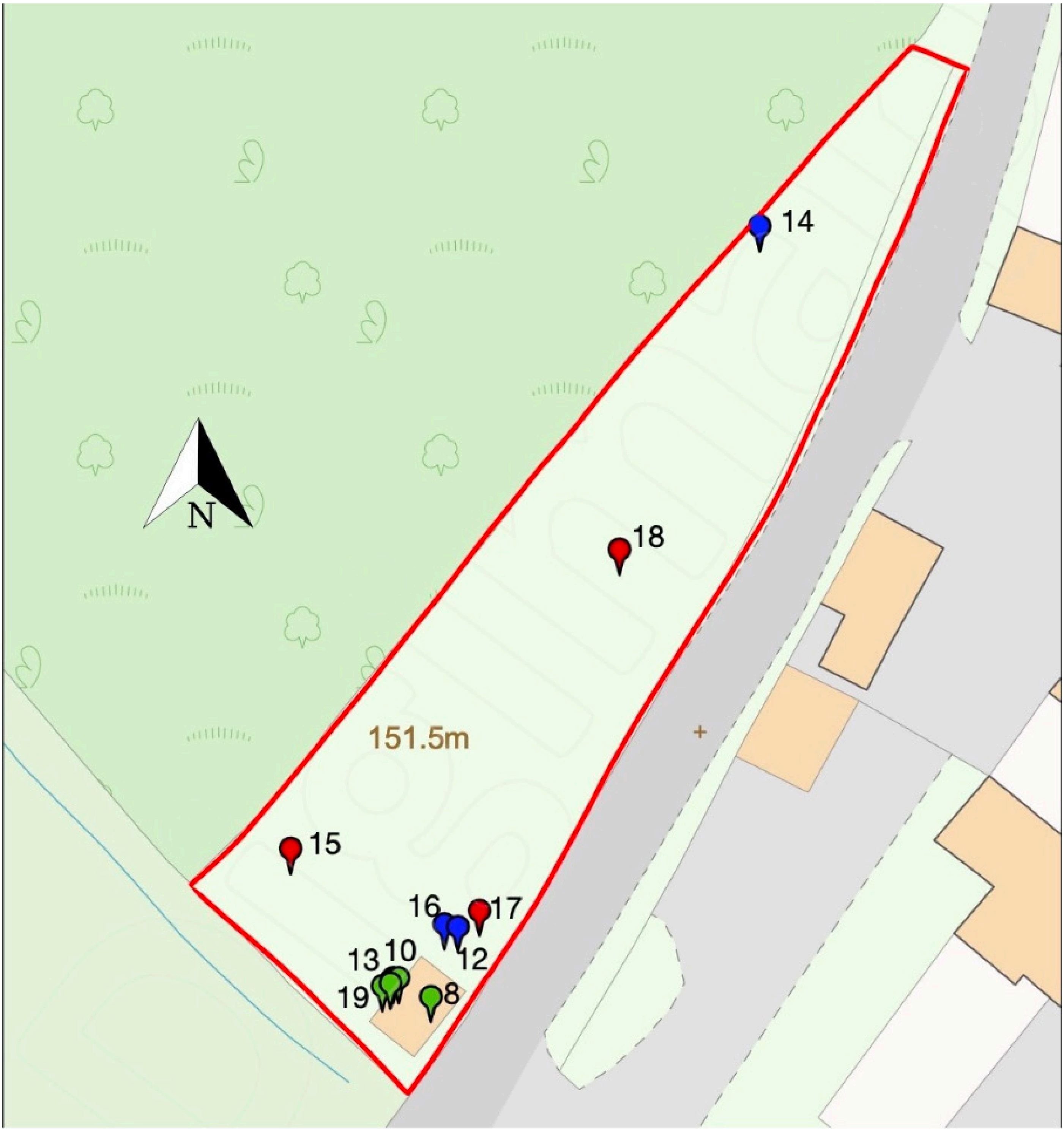



Figure 6.2 The location of the vessels, with identifying number, within the experimental site; the red markers are the exposed vessels, the blue markers are the buried vessels, and the green markers are the vessels inside the outhouse (Ordnance Survey- Author's Photo).

Table 6.3 The vessels and their fired weight and post-experimental weight in grams and the position they were placed at in the experimental area (Author).

| Vessel Number | Position | Fired Weight (g) | Temper Quantity % |
|---|---|---|---|
| E8 | Hanging wooden shelter. | 80.4 | 20 |
| E10 | Inside wooden shelter clustered with two other pots by an external wall. | 141.3 | 28 |
| E12 | Buried in sandy soil, 10cm deep. | 90.6 | 30 |
| E13 | Inside wooden shelter clustered with two other pots by an external wall. | 84.8 | 20 |
| E14 | Buried in loamy soil, 10cm deep. | 86.6 | 20 |
| E15 | Resting on stone in a stone crevice but has an exposed face. | 84.2 | 20 |
| E16 | Buried in a sandy soil, 10cm deep. | 111.3 | 20 |
| E17 | Resting on earth under wooden shelter but has an exposed face. | 173.8 | 25 |
| E18 | Resting on earth under stone cover but has an exposed face. | 172.8 | 25 |
| E19 | Inside wooden shelter clustered with two other pots by an external wall. | 172.3 | 25 |

Figure 6.3 Vessel E17 was placed under a stone crevice and resting on earth on the 1st of January; the shelter is open in a south westerly direction (Author's Photo).

Figure 6.4 Vessel E15 placed with the crevices of a stone wall resting on stone with a south westerly exposure at the start of the experiment (Author's Photo).


Figure 6.5 Vessel E18 was placed under a wooden shelter resting on earth at the start of the experiment with a south westerly exposed face (Author's Photo).


Figure 6.6 Vessels E10, E13 and E19 inside the unheated outhouse by an external wall, in a basket at the start of the experiment (Author's Photo).


Figure 6.7 Vessel E8 was suspended by natural fibres through the perforations from a wooden beam in the middle of the unheated outhouse at the start of the experiment (Author's Photo).

Four vessels, E8, E10, E13, and E19, were placed within a wooden, unheated outhouse (Figure 6.2). The vessels were rim up like the experiment's other vessels (Figure 6.6). Natural fibres suspended Vessel E8 through the perforations in the vessel wall (Figure 6.7). The natural fibre string was tied to a wooden beam in the middle of the structure. The vessel had 30cm between the beam and the top rim of the pot. These two locations were chosen to represent vessels used within a household or stored within an outhouse.

After one month, the visible pots E8, E10, E13, E15, E17, E18 and E19 were inspected for signs of damage and weathering (Table 6.4). These vessels were photographed to record the appearance of vessels but were otherwise not touched. Signs of damage looked for were new cracks, growth of existing cracks, material loss or changes in the fabric's colour. Vessel E17 had started to fragment and the walls of the vessel were significantly damaged.

On the 1st of April, the visible pots E8, E10, E13, E15, E17, E18 and E19 were inspected for signs of damage and weathering for a second time (Table 6.4). This coincided with a late snowfall; the three exposed outside vessels were more significantly affected. Vessel E18, under the stone shelter, remained the same as before. The shelter kept out the snow, and plants grew up in front of the shelter, adding further protection for the vessel (Figure 6.8). Vessel E17 had further broken, and the sherds had broken down into smaller pieces. However, the wooden shelter protected the vessel from the snow (Figure 6.9). Vessel E15 in the stone crevice had become damp, and the water had frozen; this encased the vessel in ice (Figure 6.10).

The pots remained undisturbed until they had spent six months exposed to the weather and photographed in situ. Vessels E12, E14 and E16 remained undisturbed in the ground for six months. As such, no visual documentation occurred at the one-month mark. The pots were excavated using archaeological practice after six months had elapsed. Pots E12, E14 and E16 were photographed in situ before being lifted. The other seven vessels were photographed before being removed from the experimental site. The pots were taken to an inside site where they were photographed and weighed; the buried pots were emptied of the soil before being weighed (Table 6.5).


Figure 6.8 Vessel E18 in the stone shelter resting on earth behind the plants and protected from the snow; hidden by the grass and not visible on the 1st of April (Author's Photo).

Figure 6.9 Vessel E17 resting on earth (in the red circle) after three months of the experiment in the wooden shelter, which remains clear of snow (Author's Photo).


Figure 6.10 Vessel E15 on the 1st of April in the stone crevice resting on stone encased in ice but showing no further signs of frost damage. The area of old frost damage is circled in red (Author's Photo).

Table 6.4 The condition of the vessels observed after one month of the experiment and six months (Author).

| Vessel Number | Position | Fired Weight (g) | Condition After One Month | Condition After Three Months | Condition After Six Months |
|---|---|---|---|---|---|
| E8 | Hanging wooden shelter. | 80.4 | Intact | Intact | Intact little sign of change |
| E10 | Inside wooden shelter clustered with two other pots by an external wall. | 141.3 | Intact | Intact | Intact little sign of change |
| E12 | Buried in loamy soil, 10cm deep. | 90.6 | Buried | Buried | Vessel has darkened through moisture gain |
| E13 | Inside wooden shelter clustered with two other pots by an external wall. | 84.8 | Intact | Intact | Intact little sign of change |
| E14 | Buried in a sandy soil, 10cm deep. | 86.6 | Buried | Buried | Vessel has darkened through moisture gain |
| E15 | Resting on stone in a stone crevice but has an exposed face. | 84.2 | Frost fracture on the external facing wall | Frost fracture on the external facing wall and encased in ice | Vessel has no further fractures but has become mossy |

| Vessel Number | Position | Fired Weight (g) | Condition After One Month | Condition After Three Months | Condition After Six Months |
|---|---|---|---|---|---|
| E16 | Buried in a sandy soil, 10cm deep. | 111.3 | Buried | Buried | Vessel has darkened through moisture gain |
| E17 | Resting on earth under wooden shelter but has an exposed face. | 173.8 | Vessel walls have crumbled and vessel no longer intact | Vessel walls have further crumbled and vessel no longer intact and the sherds are damp but not frozen and no snow is within the shelter | Vessel had disintegrated and not all of it was recovered |
| E18 | Resting on earth under stone cover but has an exposed face. | 172.8 | Intact | Intact shelter has shielded the vessel from the snow | Hairline fracture has widened slightly |
| E19 | Inside wooden shelter clustered with two other pots by an external wall. | 172.3 | Intact | Intact | Intact little sign of change |

### 6.2.4 Use Wear Experiment 1, Results

The pots all gained moisture, with those in the wooden structure taking on the least and the ones buried the most (Table 6.5). The vessels that had gained the most weight due to moisture also had visual indicators. They were significantly darker in colour than before the experiment began or compared to those within the experiment that had not (Figure 6.11, 6.12). The vessels inside the wooden structure were partially undamaged after six months. Vessel E19 had a hairline crack at the start of the experiment, which became slightly worse by the end (Figure 6.11).


Figure 6.11 Vessel E19 after six months of the experiment (above) compared to it at the start (below), the hairline crack in the red circle has slightly widened and lengthened (Author's Photo).


Figure 6.12 Vessel E12 after being in the sandy soil for the whole six months (above), compared to the vessel before the experiment began (below) when it was a much lighter colour (Author's Photo).

Table 6.5 The percentage change in weight for the vessels after the experiment measured in grams and percentage change (Author).

| Vessel Number | Position | Fired Weight (g) | Temper Quantity % | Weight After Six Months (g) | % Change From Start to End of Experiment |
|---|---|---|---|---|---|
| E8 | Hanging wooden shelter. | 80.4 | 20 | 81.4 | 1.244 |
| E10 | Inside wooden shelter clustered with two other pots by an external wall. | 141.3 | 28 | 142.6 | 0.92 |
| E12 | Buried in sandy soil, 10cm deep. | 90.6 | 30 | 110.3 | 21.744 |
| E13 | Inside wooden shelter clustered with two other pots by an external wall. | 84.8 | 20 | 85.5 | 0.825 |
| E14 | Buried in a loamy soil, 10cm deep. | 86.6 | 20 | 98 | 13.164 |
| E15 | Resting on stone in a stone crevice but has an exposed face. | 84.2 | 20 | 90.8 | 7.838 |
| E16 | Buried in a sandy soil, 10cm deep. | 111.3 | 20 | 136.9 | 23 |
| E17 | Resting on earth under wooden shelter but has an exposed face. | 173.8 | 25 | 162.9 | -6.271 |
| E18 | Resting on earth under stone cover but has an exposed face. | 172.8 | 25 | 175.8 | 1.736 |
| E19 | Inside wooden shelter clustered with two other pots by an external wall. | 172.3 | 25 | 173.8 | 0.87 |

The most damage was seen on those vessels placed outside, with two out of three vessels losing material. Vessel E17, which had been placed under the wooden cover, suffered significant damage within the first month, rendering it unusable as a vessel (Figure 6.13). The vessel walls broke into small sherds and fell onto the surrounding ground, becoming friable. The base remained visually intact but was much darker and looked soft and easy to mark. After six months, the pot had broken further, and no vertical walls remained. The fallen sherds had broken apart further and travelled up to 15cm away from the location of the pot through gravity and animal disturbance. The damage meant that not all vessels could be collected by the end of the six months (Figure 6.14). The small clay sherds became challenging or had broken down to the degree that they were not located. This is why Table 6.4 shows a percentage loss of weight for that vessel (Figure 6.15).


Figure 6.13 Vessel E17 shows the vessels' walls had collapsed into sherds after one month of resting on earth under the wooden structure (Author's Photo).


Figure 6.14 Vessel E17 after six months, the pot had further broken, and the sherds surrounding the vessel became smaller and more distant from the vessel (Author's Photo).


Figure 6.15 The remains of Vessel E17 were gathered after the experiment, the base remained intact, but the walls of the vessels were in small sherds (Author's Photo).


Figure 6.16 Vessel E15 with a frost fracture on the side after one month; the area of damage is within the red circle (Author's Photo).


Figure 6.17, Vessel E15, with the area of frost fracture on the side and the green algae and moss growth after the experiment ended (Author's Photo).

Vessel E15 suffered a frost fracture to the outside wall within the first month, removing a fraction of the external wall. The fractured sherd was very thin and did not create a hole in the vessel wall, although the damage was unsightly. The sherd was not recovered as it became friable and lost. The vessel otherwise remained stable, but it gained some hairline cracks around the site of the frost fracture (Figure 6.16).

Frost likely contributed to the speed at which Vessel E17 broke apart; however, by the time the sherds were collected, they were too degraded to detect any signs of the damage. Vessel E18 was also exposed to the same conditions but suffered no material loss due to frost. However, a few hairline cracks were exacerbated, like those on Vessel E19 (Figure 6.11). The growth in the size of the hairline cracks did not affect the vessels significantly (Table A2.3).

Despite not being as damaged, both vessels still saw an increase in weight due to moisture (Table 6.5). Vessel E15 also gained weight from plant material such as algae (Figure 6.17). The moisture gain is visible in the darker colour of the vessel walls and the green from the algae, which is deeply settled into the fabric of the vessel. When the vessel recovered, it had become covered in plant matter and could not be seen. Vessel E18 had also become obscured by undergrowth, but no plants were growing upon it. However, it had become covered in cobwebs and dried leaves. Much of the natural material, such as leaves, cobwebs, and plant material, was removed from all the vessels without damaging the fabric of the pot. This was undertaken before they were weighed.

The local weather station recorded the weather during the six months of the experiment. The weather at the experimental site is 111 meters above sea level, while the experimental site is 151.5 meters above sea level. However, the actual temperatures at the site may be a degree or so cooler than what was recorded due to the higher elevation and more exposed nature of the site.

The average temperature dropped below freezing on thirteen days in January, two days in February, one day in March and two days in April. This means there were at least eighteen days when the vessels were exposed to freezing temperatures where frost damage could occur. January and May had a lower-than-average daily Minimum temperature, while the other months were above average (Table 6.6).

The daily maximum temperature in the year of the experiment is below average for January and May (Table 6.7). The cooler month of January was likely more damaging for the vessels than the cooler month of May due to the frequency of cold days.

Table 6.6 shows the average daily temperature minimum in degree Celsius for the experimental period’s last decade; the experiment year is highlighted in green (Crabtree 2021).

| | Jan | Feb | Mar | Apr | May | Jun |
|---|---|---|---|---|---|---|
| 2021 | -0.4 | 1.8 | 3.9 | 1 | 5.8 | 10.2 |
| 2020 | 4 | 2.5 | 2.7 | 4.9 | 7.2 | 10.6 |
| 2019 | 0.7 | 3.9 | 3.6 | 4.6 | 6.3 | 9.6 |
| 2018 | 2.2 | -0.4 | 1.4 | 5.2 | 7.9 | 10 |
| 2017 | 2.1 | 3.5 | 4.8 | 4.9 | 8.6 | 11.2 |
| 2016 | 3.1 | 0.8 | 2.5 | 2.9 | 7.2 | 10.1 |
| 2015 | 1.5 | 1.2 | 2.6 | 3.6 | 6.2 | 9.4 |
| 2014 | 3.4 | 3.3 | 4 | 6.1 | 8.2 | 10.8 |
| 2013 | 2.2 | 0.2 | -0.5 | 3.5 | 6.2 | 9.1 |
| 2012 | 2.1 | 2.3 | 4.6 | 3.2 | 5.9 | 8.9 |
| 2011 | 0.5 | 2.9 | 2.3 | 6.4 | 7.6 | 9.3 |
| Average | 2.8 | 2.4 | 2.2 | 4 | 7.6 | 9.4 |

Table 6.7 The average daily Temperature maximum in degrees Celsius for the past decade for the experimental months of the experimental year is highlighted in green (Crabtree 2021).

| | Jan | Feb | Mar | Apr | May | Jun |
|---|---|---|---|---|---|---|
| 2021 | 4.1 | 6.6 | 9.7 | 11.1 | 13.8 | 19.2 |
| 2020 | 7.8 | 7.3 | 9 | 13.2 | 16.2 | 17.8 |
| 2019 | 5.6 | 9.8 | 9 | 12.6 | 13.8 | 16.9 |
| 2018 | 6 | 4.8 | 6.3 | 11.2 | 16.6 | 19.6 |
| 2017 | 6.5 | 8 | 10.6 | 11.3 | 16.8 | 17.4 |
| 2016 | 7.4 | 6.4 | 8.8 | 10.5 | 16.2 | 18.6 |
| 2015 | 6.2 | 6 | 8.4 | 11.8 | 12.5 | 16.8 |
| 2014 | 7.3 | 7.6 | 9.5 | 12.4 | 14.5 | 18.2 |
| 2013 | 5.5 | 5.9 | 4.6 | 9.8 | 13.3 | 17.4 |
| 2012 | 6.8 | 6.6 | 11.8 | 9.3 | 14.4 | 14.9 |
| 2011 | 4.7 | 8 | 9.1 | 14.7 | 14.1 | 15.9 |
| Average | 7.7 | 8.6 | 7.9 | 9.9 | 15.9 | 16.2 |

Daily rainfall for the experimental year was above average in March, April, and June (Table 6.8). Rain fell on seventeen days in January, fifteen days in February, twenty-three days in March, eleven days in April, fourteen days in May and fifteen days in June. March and May are above average for rainfall in the year of the experiment.

The January of the experiment was cooler; it was not wetter than usual. There was no rain for the first five days of the year. Moisture within the fabric of the vessels expands, which causes frost fracture. The moisture in the air and ground may have started to seep into the pots' fabric, but it was not until the 6th of January, when 3.3mm of rain fell, that the pots were first exposed to very damp conditions.

Table 6.8 The average daily rainfall in mm for the experimental period over the past decade; the experimental year is highlighted in green (Crabtree 2021).

| | Jan | Feb | Mar | Apr | May | Jun |
|---|---|---|---|---|---|---|
| 2021 | 4.6 | 3 | 2.7 | 0.2 | 2.3 | 0.7 |
| 2020 | 3 | 6 | 2.4 | 0 | 0.4 | 3.5 |
| 2019 | 1.3 | 2.1 | 4.5 | 1.5 | 2.1 | 2.5 |
| 2018 | 3 | 2.3 | 1.3 | 1.6 | 1 | 1.4 |
| 2017 | 1.5 | 2.4 | 3.3 | 0.9 | 1.4 | 4.3 |
| 2016 | 4 | 2.8 | 1.1 | 1.8 | 0.9 | 3.1 |
| 2015 | 4 | 2.1 | 2.7 | 1.8 | 4.1 | 1.4 |
| 2014 | 3.1 | 4.6 | 3.1 | 1.4 | 3.7 | 1.7 |
| 2013 | 2.4 | 1 | 1 | 1.4 | 2.6 | 1.3 |
| 2012 | 1.9 | 1.2 | 0.6 | 2.9 | 2.2 | 4.4 |
| 2011 | 2.8 | 3.7 | 1.7 | 1 | 3.6 | 1.9 |
| Average | 2.9 | 2.8 | 2.2 | 1.3 | 2.2 | 2.4 |

Table 6.9 The daily average wind speed in km/h for the experimental period over the past decade, the experimental year is highlighted in green (Crabtree 2021).

| | Jan | Feb | Mar | Apr | May | Jun |
|---|---|---|---|---|---|---|
| 2021 | 12.2 | 14.5 | 15.8 | 13 | 11.7 | 11.7 |
| 2020 | 17.5 | 22.6 | 16.2 | 14 | 13.1 | 13.6 |
| 2019 | 12.8 | 14 | 18.5 | 12.1 | 12.6 | 12.8 |
| 2018 | 16.9 | 11.8 | 16.2 | 14.9 | 12.7 | 12.4 |
| 2017 | 13.2 | 15.7 | 15.6 | 15 | 13.4 | 14.8 |
| 2016 | 14.9 | 14.5 | 11.7 | 13 | 12.4 | 9.9 |
| 2015 | 18.9 | 13.6 | 16.8 | 13.1 | 16.5 | 12.7 |
| 2014 | 14.2 | 18.1 | 15.6 | 13.3 | 11.7 | 8.6 |
| 2013 | 13.3 | 11.6 | 11.8 | 16 | 13.7 | 11.5 |
| 2012 | 17.2 | 14.1 | 12.5 | 13.7 | 12 | 11.5 |
| Average | 12.2 | 17.1 | 16.1 | 16.2 | 20 | 14.6 |

The wind speed for the experiment was above average in January and March (Table 6.9). The wind in January was 12.8 km/h, while the average was 12.2 km/h. In March, the wind was 2.4 km/h above the average. The wind speed is interesting as it can blow material into the vessels, such as the dried leaves found on Vessel E18. It can also direct the rain towards vessels. The three exposed vessels, E15, E17 and E18, had a southwesterly exposure.

The wind blew in a southwesterly direction 25 times out of the 181 days of the experiment, 13.8% of the time (Table 6.10). Of those days, fifteen were also days on which it rained. Therefore, the vessels were at an increased risk of exposure to the weather for 8.3% of the time of the experiment.

There were no days of southwesterly wind in May, and in April, there was only one at the very start (Table 6.10). The 1st of April also had the second-highest daily rainfall, although it was snow at the experimental site. According to the Beaufort wind force scale (Table 11), the average wind speed was wind force 2, a light breeze on the 1st of April with gusts reaching the scale of Wind force 4, a moderate breeze. The wind strength may be why no snow made it into either the wooden shelter with Vessel E17 or the stone shelter with Vessel E18.

The strongest wind gusts on a rainy southwesterly wind were on the 5th of March when winds reached 30.4 km/h, and wind force five was classed as a fresh breeze. The strongest gusts occurred on the 12th of March, with speeds of 48.7km/h recorded; wind force 6 was a strong breeze. The 12th of March had a westerly wind and 7.8 mm of daily rainfall. The pots in exposed conditions were likely affected due to the conditions. It is also likely that Vessel E8, suspended in the wooden outhouse, was moved by these stronger winds as they made drafts within the structure.

None of the weather events recorded over the six-month experiment noticeably differed from the rest of the data sets for the previous and subsequent years. As such, no damage sustained by the vessels can likely be attributed to a single weather event. Rather, the vessels were exposed to a series of weather conditions that can be considered within the normal range for the present day.

Table 6.10 The rain fall and wind direction for every day of the experiment, the months are highlighted different colour and days that have rain, and a south westerly wind are highlighted in bold (Author).

| | Jan | | Feb | | Mar | | Apr | | May | | June | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0 | NE | 0.2 | NE | **1.7** | **SW** | **15.8** | **SW** | 0.7 | W | **3** | **SW** |
| 2 | 0 | SW | **0.3** | **SW** | 5.8 | W | 8.2 | NW | 7.7 | SE | 0.2 | W |
| 3 | 0 | SW | **10** | **SW** | 25.5 | W | 4.3 | SE | 0 | NE | 0 | W |
| 4 | 0 | W | 0.3 | W | 2.2 | W | 0.2 | SE | 0 | NE | 12 | SE |
| 5 | 0 | W | 7.2 | SW | **12.3** | **SW** | 0 | SE | 0 | NW | **0.3** | **SW** |
| 6 | 3.3 | W | **2** | **SW** | 7.5 | W | 0 | E | 0 | SE | 0 | W |
| 7 | 0.5 | NW | 8 | W | 0.2 | NW | 0.2 | SE | 5 | SE | 13.5 | E |
| 8 | 0 | NW | 9.5 | W | 9 | W | 0 | SE | 1.8 | E | 13 | W |
| 9 | **0.3** | **SW** | 2.5 | W | 6 | W | 0 | SE | 0.2 | E | 0 | NW |
| 10 | 0 | W | 0.3 | W | 4.8 | W | 0 | SE | 1 | SE | 0 | E |
| 11 | 0.6 | W | **0.3** | **SW** | 16.7 | W | 0 | W | 0.2 | NW | 1.8 | E |
| 12 | 0.4 | W | 0 | W | 7.8 | W | 0 | SE | 0 | NW | 7.5 | E |
| 13 | 0 | NW | 0 | W | 5 | NW | 0 | SE | 0 | NW | 4.2 | NE |
| 14 | 0.2 | W | 0 | SW | 4.2 | W | 0 | SE | 0 | W | 0 | SW |
| 15 | 1.8 | W | 0 | SW | 20 | W | 0 | SE | 0 | E | 0 | SW |
| 16 | 1 | W | 0 | SW | 5 | W | 0 | SE | 0 | SE | 4.5 | W |
| 17 | 0 | SW | **2.5** | **SW** | 1.5 | W | 0 | SE | 0.5 | E | 0 | W |
| 18 | 0.5 | S | 1 | W | 0.8 | W | 0 | SE | 0 | W | 0.5 | W |
| 19 | 0 | SE | 7 | W | 0 | W | 0 | S | 0 | W | 1.3 | W |
| 20 | 0 | W | 7 | SW | 0.7 | W | 0 | W | 0 | NW | 1 | W |
| 21 | **4.8** | **SW** | 0 | W | 0.3 | W | 0 | NW | 0 | W | 0 | W |
| 22 | 0 | W | 0 | SW | 2.5 | W | 0 | SE | 0 | W | 0 | SE |
| 23 | 0.5 | W | 0 | SW | 0 | W | 0 | SE | 0 | W | 9.2 | SE |
| 24 | 2.3 | W | 0 | S | 0.5 | NW | 0.8 | SE | 0 | W | 0 | E |
| 25 | 0 | W | 0 | W | 0 | W | 5.2 | S | 18.3 | W | 0 | E |
| 26 | 11.2 | NW | 0 | S | 0 | W | 0.5 | S | 0 | NW | 0 | SE |
| 27 | 0 | NW | 0 | NW | 0 | W | 9 | NE | 6.7 | W | 0 | SE |
| 28 | 7.5 | W | 0 | SE | 0 | W | 0.2 | SE | 0.3 | SE | 0 | SE |
| 29 | 4.5 | W | | | 0 | W | 0 | SE | 6 | W | 2.5 | W |
| 30 | **0.3** | **SW** | | | 0.2 | SE | 1 | NW | 12 | W | 1 | W |
| 31 | 0 | E | | | 0 | SE | | | 4 | W | | |

Table 6.11 The Beaufort wind force scale is used by meteorologists to describe wind conditions as they are measured 10 meters from the ground (Royal Metrological Society Editor 2018)

| Wind Force | Description | Wind Speed Km/h | Wind Speed Mp/h | Wind Speed Knots | Specifications |
|---|---|---|---|---|---|
| 0 | Calm | <1 | <1 | <1 | Smoke rises vertically. Sea like a mirror |
| 1 | Light Air | 1-5 | 1-3 | 1-3 | Direction shown by smoke drift but not by wind vanes. Sea rippled |
| 2 | Light Breeze | 6-11 | 4-7 | 4-6 | Wind felt on face; leaves rustle; wind vane moved by wind. Small wavelets on sea |
| 3 | Gentle Breeze | 12-19 | 8-12 | 7-10 | Leaves and small twigs in constant motion; light flags extended. Large wavelets on sea |
| 4 | Moderate Breeze | 20-28 | 13-18 | 11-16 | Raises dust and loose paper; small branches moved. Small waves, fairly frequent white horses |
| 5 | Fresh Breeze | 29-38 | 19-24 | 17-21 | Small trees in leaf begin to sway; crested wavelets form on inland waters. Moderate waves, many white horses |
| 6 | Strong Breeze | 38-49 | 25-31 | 22-27 | Large branches in motion; whistling heard in telegraph wires; umbrellas used with difficulty. Large waves, extensive foam crests |

| Wind Force | Description | Wind Speed Km/h | Wind Speed Mp/h | Wind Speed Knots | Specifications |
|---|---|---|---|---|---|
| 7 | Near Gale | 50-61 | 32-38 | 28-33 | Whole trees in motion; inconvenience felt when walking against the wind. Foam blown in streaks across the sea |
| 8 | Gale | 62-74 | 39-46 | 34-40 | Twigs break off trees; generally, impedes progress. Wave crests begin to break into spindrift |
| 9 | Strong Gale | 75-88 | 47-54 | 41-47 | Slight structural damage (chimney pots and slates removed). Wave crests topple over, spray affects visibility |
| 10 | Storm | 89-102 | 55-63 | 48-55 | Seldom experienced inland; trees uprooted; considerable structural damage. Sea surface largely white |
| 11 | Violent Storm | 103-117 | 64-72 | 56-63 | Very rarely experienced; accompanied by widespread damage. Medium-sized ships lost to view behind waves. Sea covered in white foam, visibility seriously affected |
| 12 | Hurricane | 118+ | 73+ | 64+ | Devastation. Air filled with foam and spray, very poor visibility |

### 6.3 Use Wear Experiment 2 - Signs of Wear with Daily Use of a Storage Vessel

This experiment aimed to look at the signs of use on a vessel being moved daily. In particular, the wear that different surfaces can cause on the base of a pot over six months of minimal use. Minimal use is defined in this experiment as a vessel being removed and replaced on the surface once a day, such as a shelf.

Use Wear Experiment 1 indicates that vessels left within a sheltered position, either partially exposed or covered, can survive through winter and summer conditions for at least one season. While gaining a small amount of moisture, the vessels in the sheltered wooden structure were not damaged and remained structurally intact. This led to the question, could a vessel in an inside storage location that is used minimally gain traces of use wear? Moreover, if so, how prevalent would these marks be? Furthermore, what form would they take on the vessel?

#### 6.3.1 Use Wear Experiment 2, Location

Due to global circumstances, this experiment was conducted in Cumbria in a centrally heated room. The room was locked to keep out animals and other people to avoid disturbing the experiment.

#### 6.3.2 Use Wear Experiment 2, Pottery Used

This experiment aims to see what use wear traces appear on a vessel over a short time and whether this can indicate a possible function for some vessels in the Cumbrian assemblage. The vessels used in the experiment were used from the fifth pottery experiment. Vessel numbers E33 and E35 were used in this experiment (Table 6.12). Vessel E33 was made by Potter 5, the intermediate potter, in Construction Experiment 5. Vessel E33 is a Collared Urn-style vessel, although the collar broke off during drying. Vessel E35 is also a Collared Urn made by Potter 6, an amateur potter.

Table 6.12 The Vessels used in this experiment are of similar size and form despite being made by different potters during Construction Experiment 5 (Author).

| Vessel Number | Form | Construction Experiment | Potter | Base (mm) | Height (mm) |
|---|---|---|---|---|---|
| E33 | Collared Urn | 5 | 5 | 75 | 154 |
| E35 | Collared Urn | 5 | 6 | 72 | 157 |

The two vessels used were selected as they had the fewest hairline fractures on the base and were deemed stable enough to survive being handled every day for six months. They were also a size seen in the assemblages that were used for small-scale storage. The vessels were recorded before the experiment and checked for signs of damage present. The weight of the vessel was recorded.

Furthermore, both vessels are of a similar size. Vessel E33 has a base of 75mm, and Vessel E35 has a base of 72mm. Considering the experiment looks at wear upon the base, having a similarly sized base area makes the vessels more comparable. Both vessels are of a similar height; Vessel E33 is 154 mm, and Vessel E35 is 157mm. This means that there is a similar amount of body for the Author to pick up and put back down. This will ensure equal handling of the vessels during the picking up and putting down.

Both pots are made from untempered natural clay from the Cumbrian source (Construction Experiment 4). Neither pot received any post-construction burnishing, meaning the clay bases' surface is the same texture. The clay used was processed similarly, and the inclusions should be similar across the two vessels.

### 6.3.3 Use Wear Experiment 2, Method

The data from the weathering experiment guided the selection of the base material and the location where the experiment was conducted. The two materials could be shelved inside or in a shelter. Soil would not be easily reproduced in the inside conditions of the three pots placed in Use Wear Experiment 1. As such, a stone and wooden surface were used in this experiment. A polished Cumbrian slate and a hewn kiln-dried hardwood birch block were chosen. The wood was kiln-dried so that moisture would not affect the vessel, as seen in the use 6.2.4 Experiment Results. These two bases were chosen to represent two different interior surfaces where a pot could be stored. Neither base material had any modern coatings on it. Modern materials could alter the surface and affect the experiment. While the stone was polished and the wood levelled with a mattock, a similar finish could have been possible in the Bronze Age. Both materials would have been available within Cumbria during the study period.

Before the experiment began, the bases of the two vessels were photographed (Figures 6.18, 6.19), as were the two bases the vessels were placed upon (Figures 6.20, 6.21). The bases were placed side by side on a level surface out of the way of drafts and doors so they would not be knocked on or disturbed for the length of the experiment. Vessel E33 was placed on the slate base, and Vessel E35 was placed on the wooden base (Table 6.13). Both bases were stable, and the vessels sat flatly on them.

Table 6.13 The number of the vessel and the material on which it was placed for the six months of the experiment (Author).

| Vessel Number | Location |
| --- | --- |
| E33 | Slate base |
| E35 | Birch base |

The pots were left empty during the experiment so that the contents did not affect the results by spilling or changing weight due to environmental factors, such as taking on moisture or growing mould. No contents in the vessel would also mean they would not attract vermin, which could disturb the experiment.


Figure 6.18 The base of Vessel E35 before the experiment began the hairline crack formed during the firing process Pot Firing 4.5 is highlighted in red the other marks are from construction (Author's Photo).


Figure 6.19 The base of Vessel E33 before the experiment began the hairline crack formed during the firing process Pot Firing 4.5 has been highlighted by the red oval (Author's Photo).


Figure 6.20 The base of the slate shelf before the experiment began (Author's Photo).


Figure 6.21 The hardwood birch shelf before the experiment began (Author's Photo).

The experiment lasted six months. Once a day, the pot was picked up and then put back onto the same surface base by the same person. While the base was lifted, it was not placed on any other surface, so the experimental base material was the only contact with the base of the vessel for six months.

The pot was not picked up with particular care, nor was it put down so. The pot was put back within the same spot that it was lifted off from to keep the experimental area contained. The movement was undertaken to mimic removing an everyday item from the cupboard and putting it back, such as a jar or food container. The picking up and returning motion sometimes resulted in a slight twisting motion to help stabilise the grip on the vessel. However, there was no intended attempt to create wear on the base by twisting the vessel or pushing it along the base.

A possible dragging motion occurred as the pot was brought up or put back down in some cases. The picking up and placing back down of the vessel only lasted a few seconds, one or two at most. During the experiment, the pot's base was not touched. Nor was any dust produced, touched, or removed from the experimental area. This is the best-case scenario for maintaining the debris on the base of the pot and shelf. The bases of the pots or the shelves were possibly cleaned in actual use situations.

After six months, the base of the vessels and the stone and wood bases were re-documented. These were compared to the ones from the start of the experiment. The signs of use wear after six months of minimal use were recorded.

### 6.3.4 Use Wear Experiment 2, Results

The two vessels survived through the repeated handling for six months despite the hairline cracks from the firing. The repeated lifting and replacing of the vessels created a small amount of clay dust from the base of both vessels (Figures 6.22, 6.23). The vessel on the wooden base produced less dust than the one on the stone despite being a rougher material.


Figure 6.22 Clay dust from Vessel E33 on the slate shelf after six months of being picked up and put down once a day (Author's Photo).


Figure 6.23 Clay dust from Vessel E35 on the hardwood Birch base after six months of being picked up and put down once a day (Author's Photo).


Figure 6.24 The compacted dust on the base of Vessel E33 the scratches within the red circles, an arrow to the right indicates the direction of the scratches (Author's Photo).

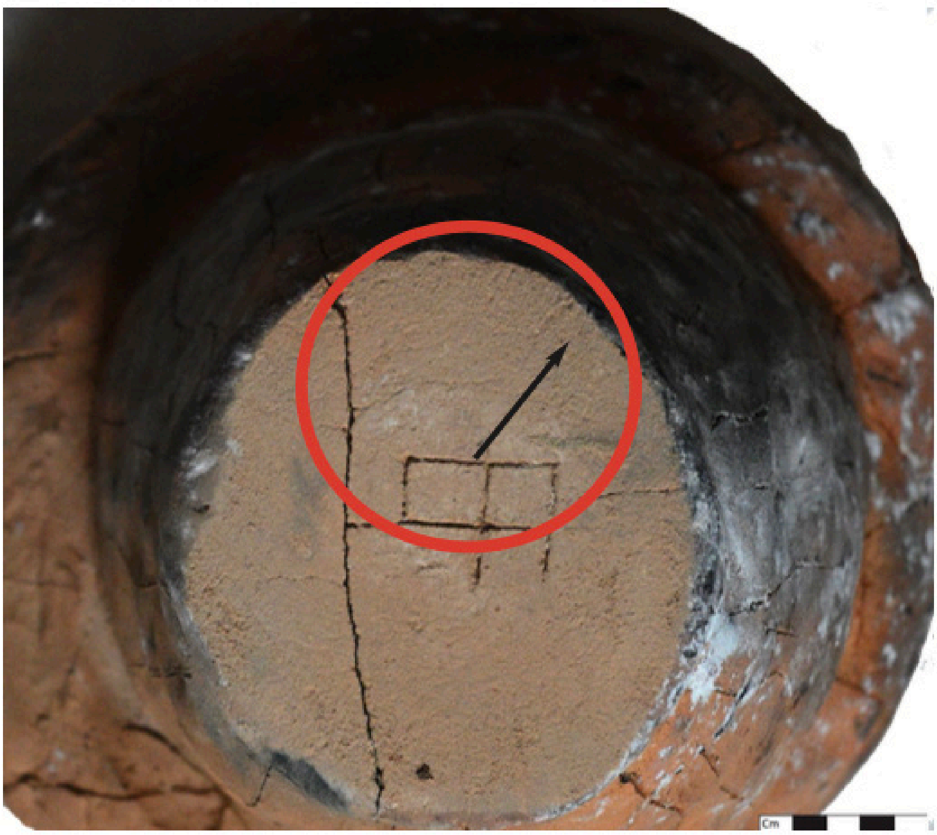



Figure 6.25 The dusty base of Vessel E35 and the scratches within the red circle, with an arrow to the right indicating the direction of the scratches (Author's Photo).

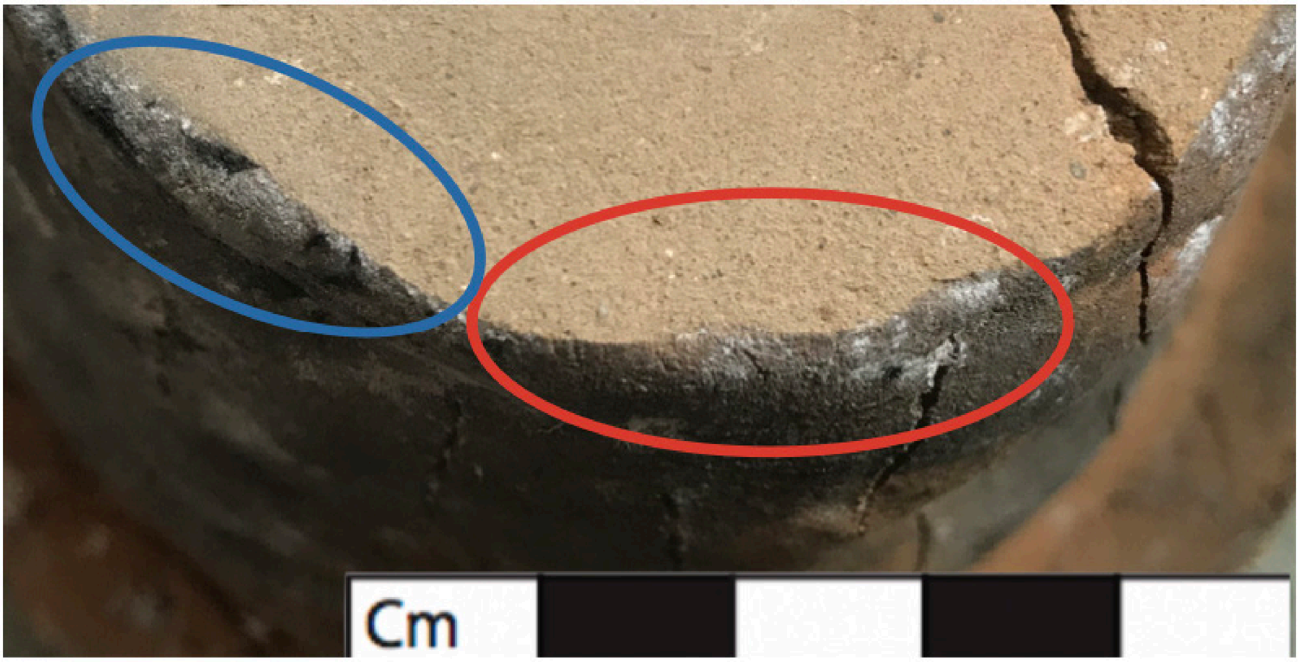



Figure 6.26 The edge of the base of Vessel E35, showing the surface is rougher than the pot wall, and the edge has been worn away more in the red oval than in the blue oval (Author's Photo).

Dust was also present on the bases of both pots. The base of Vessel E33 showed scratches in the compacted dust on the slate shelf. The scratches in the dust and on the vessel base where the compacted dust is present appear linear and likely indicate the direction in which the vessel was moved. The direction of the linear scratches varies, indicating a change in the vessel's movement during the six months. These scratches are shown within the red circle in Figure 6.24. The base of Vessel E35 on the wooden shelf also shows scratches, but it does not have the compacted dust like the other vessel (Figure 6.25).

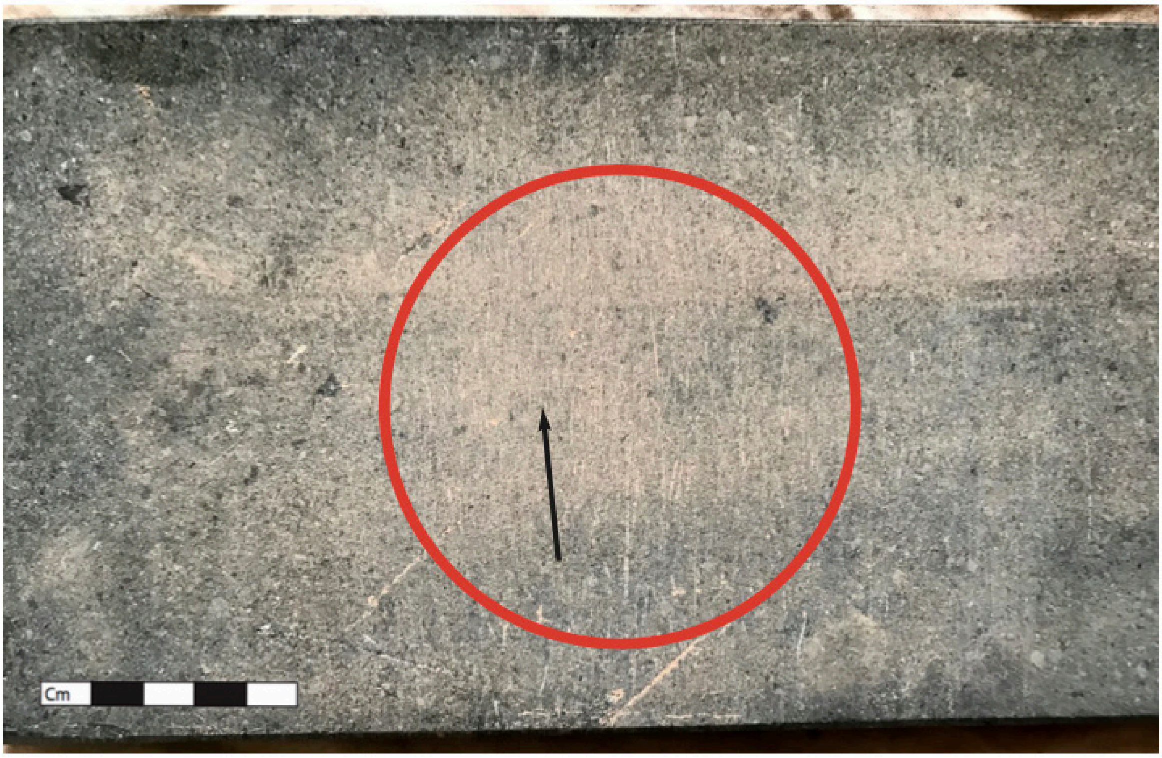


Figure 6.27 Scratches in the slate shelf after the experiment (above) compared to the shelf before the experiment (below); an area of significant damage is shown in red circles in both images with an arrow indicating the direction of the scratches (Author's Photo).


Figure 6.28 The smoothed surface of the wooden shelf after the experiment (above) compared to the shelf before the experiment (below); the area in the red circle is the smoothed area where Vessel E35 was placed (Author's Photo).

Once the base of Vessel E35 was cleared of the dust, there was less clear evidence of the linear scratch marks where the dust had been, although the entire surface was notably rougher than before (Figure 6.26). Signs of abrasion were very clear on the edge of Vessel E35's base at two points opposite each other and in line with the linear scratches (Figure 6.26). These abraded edges were in direct line with the linear scratches. The base of Vessel E33, from the slate shelf, showed similar signs of abrasion around the edges. This indicates an abrasion against the edges of the pot when the vessel was picked up and put down.

The slate shelf showed increased scratches on the surface compared to the surface before the experiment. Once the dust had been cleared, the linear scratches in the direction of the vessel were removed and replaced (Figure 6.27). The wooden base shows signs of abrasion after use as the wood fibres appear smoothed where the pot was placed. Meanwhile, the rest of the wood remains coarser (Figure 6.28), suggesting a level of burnishing occurred on the wooden base due to the coarser fabric of the pot.

The hairline crack on the base of Vessel E35 on the wooden shelf saw fragmental loss around it (Figure 6.29). This made the crack seem more prominent, but the vessel showed no signs of breaking like the other vessels from the Construction Experiment 6 Firing 5.9.5. The material loss is possibly due to abrasion but is more likely due to being knocked free with handling and repeatedly placed on a hard surface. The hairline crack on Vessel E33 does not show the same widening or fragmental loss. This suggests that the material the vessel is placed on can affect material loss.

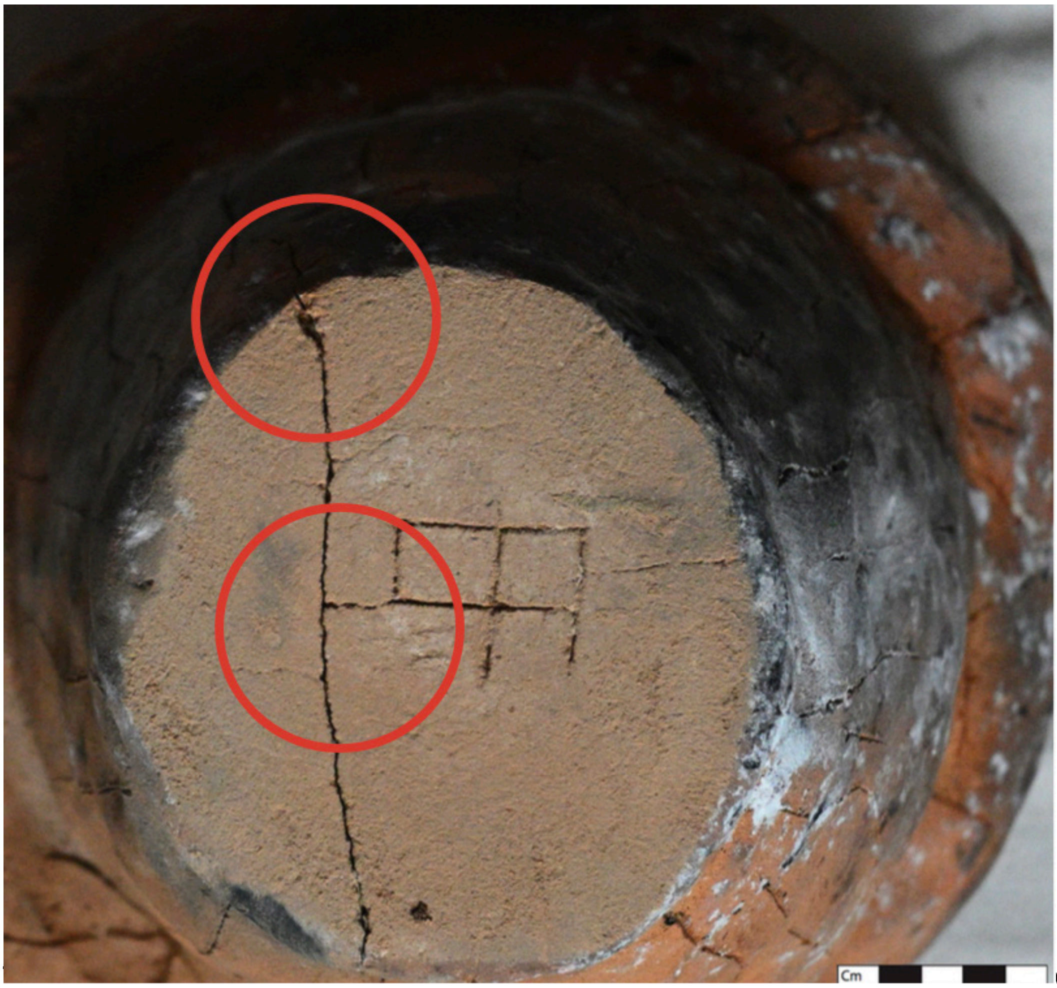



Figure 6.29 ... was lost, and the hairline cracks appeared widened (Author's Photo).

### 6.4 Use Wear Experiment 3 - Functionality of Organic Leather Lid on Storage Vessel

The data from previous Use Wear Experiments One and Two indicate that a vessel, if stored correctly, could be used as a storage vessel. However, a cover is likely needed to protect the contents of a vessel over several months. The difficulty in finding evidence of lids has been discussed previously in this chapter. Ceramic lids are tricky to shape; they could also be limited to a particular vessel due to size.

Data from Construction Experiment 1 showed that a slab with a 25% temper shrank by 10%. At the same time, Construction Experiment 3 revealed the difficulties in getting vessels to dry at an even rate, such as Vessel E25 getting a bowed base as it dried. Even making a lid and vessel together does not guarantee they fit if they both survive the firing. A firing may leave a lid without vessels or a vessel needing a new lid. The firing data from the construction experiments (Table 5.27) revealed a 20% loss of vessels during this process.

An ill-fitting lid is not significantly better than no lid. A lid carved of wood would have similar limitations as a ceramic one, limited to certain vessels due to diameter and heavy and hard cumbersome to store if not in use.

Large storage vessels observed at Sagnlandet Lejre, an open air archaeological museum in Denmark with an established history of experimental archaeology (Flores 2012, 56)., used in experiential archaeology use custom-made woven lids on the vessels (Figure 6.30). The vessels were placed on rough wooden shelves in the far corners of the building out of the way of everyday use. Woven lids that could be placed inside the rim or leather lids that could be fastened over the rim could be alternatives to wood or ceramic.

Figure 6.30 Large reproduction Iron Age vessels resting on rough wooden shelves at Sagnlandet Lejre, the second vessel on the left has a woven lid placed over the rim (Author’s Photo).

Grains are harvested in the autumn for use over the winter and replanting in the spring. If a vessel was used to store the grain, how could it be protected to ensure it was edible or viable for sowing? This experiment looks at how effectively a rudimentary cover protects cereals within a dry storage location over the autumn to winter months from when they would have been harvested and stored.

### 6.4.1 Use Wear Experiment 3, Location

This experiment was conducted in Cumbria in the eaves of a house so that the vessels were not disturbed for the length of the experiment. The experiment was conducted over six months. The experiment ran from October to March. This was undertaken to imitate the farming season of harvest and storage till the planting season in the spring. At Must Farm there is evidence of vessels being stored within the house and some that were outside and may have been in use on the palisade walk way (Brudenell 2024, 795). Within the house there were divides within the pottery; some were stored away to be used, some were broken and form a separate cluster, and some were in culinary use (Brudenell 2024, 791).

Storage is a significant issue for human food resources. Harvest occurs at different times but often in the autumn, and the harvested material needs to be stored through the winter and early spring months. It is either used as foodstuff or stored in a condition that can be sown in the spring to produce a viable crop for the following seasons. One of the ways that this can be undertaken is by adding lids to keep out many damaging factors such as pests, moulds, and moisture. Lids have been found in a few cases. Although rare, there is evidence of ceramic lids from the archaeological record. The lids found in excavations are from various locations across England, including funerary and domestic sites.

### 6.4.2 Use Wear Experiment 3, Pottery Used

Vessels E20 and E21 from the third pottery construction experiment were used in this experiment (Table 6.14). The two vessels are based on Collared Urns. They were selected because they have a very similar size and form and a solid, well-formed collar that can attach a lid to the vessel. As the vessels were made from the same materials and fired under the same conditions, it is unlikely that the materials of the vessels would have different reactions to the same conditions, thereby making the two vessels comparable.

Table 6.14 The two vessels used in this experiment and their comparative size (Author).

| Vessel Number | Clay | Temper % | Weight (g) | Height (mm) | Rim (mm) | Base (mm) | Collar (mm) |
|---|---|---|---|---|---|---|---|
| E20 | Yellow | 20 | 1392.3 | 154 | 143 | 89 | 56 |
| E21 | Yellow | 20 | 1399.1 | 164 | 121 | 94 | 47 |

Both vessels survived the firing without hairline cracks or chips, which could cause the contents to be lost. Furthermore, no bugs, insects or spores would be able to enter the inside of the vessel through any crack in the vessel walls.

### 6.4.3 Use Wear Experiment 3, Method

The experimental vessels were cleaned out on the inside with a dry brush. This removed any traces of ash and other material that would affect the results by altering the porous nature of the vessel or adding weight by mixing with the added contents.

The two vessels were filled with 100 grams of rolled oats fresh from a sealed packet (Figure 6.31). Oats represent a grain crop that could have been stored in the vessel. Rolled oats were used despite being more moisture-resistant than an intact grain. This was so that any moisture gain would be more evident in the results and because they were more readily available to the author at this time.

Oats within the sell-buy date of the projected end date of the experiment were used. Fresh oats from a sealed packet would have a lower moisture content and less chance of contamination with algae and moulds, which would be detrimental to the oats. The same bag of oats was used in both vessels so that there would be no variation between the moisture contents in the two vessels. The oats filled up about one-quarter of the vessel. Storage vessels were likely filled closer to the rim than done in this experiment, but the experiment was limited by the resources available at the time.


Figure 6.31 100g of freshly rolled oats in Vessel E20 (E20) before the lid is added (Author's Photo).


Figure 6.32 Vessel E20 (E20) with pigskin leather secured underneath the collar of the vessel (Author's Photo).

Vessel E20 had a thin pig leather lid; the leather was between 0.5 mm and 0.6 mm thick. The leather had been dyed; the material available was used due to global circumstances in 2020. This may reflect practices of making do and adapting materials to suit rather than having custom lids for each vessel. Vessel E21 was left uncovered.

The leather was pulled over the opening at the top of the vessel, and a spun natural linen fibre cord was wrapped around the vessel, over the top of the leather, just under the collar, securing the leather in place (Figure 6.32). The leather in this experiment was not cut to size but left to overhang. The leather was not cut to fit, but it was secured around the vessel with no space between the clay and the leather.

The two vessels were put together a foot apart in the eaves of a house, out of sight and safe from being disturbed, and were left for six months with monthly checks occurring to ensure nothing adversely affected the experiment. At the first check, it was noted that Vessel E21, without the lid, had become infected with weevils and insects and possible traces of mould. As such, it was decided to end the experiment with Vessel E21 for hygiene and safety reasons. The presence of the weevils and insects amongst the oats meant that weighing the oats was impossible as they would have adversely affected the weights. Instead, the contents were disposed of. The experiment continued with Vessel E20. There were no signs of weevils around Vessel E20 at the monthly checks, so the experiment ran for six months.

### 6.4.4 Use Wear Experiment 3, Results

When removed from the eaves, the top of the leather lid on Vessel E20 had dust and dirt on it (Figure 6.33). A layer of dust covered the leather, with larger pieces of dirt resting on it rested on the leather. The leather and the natural fibre cord remained intact and showed no signs of being eaten or rotting.

The lid and cord were carefully removed so no dust or dirt fell into the vessel. After a closer inspection, there was no evidence of weevils, insects or mould that had affected the oats in Vessel E21. The oats were removed from the vessel and weighed. The results showed a minor increase in weight to 102.1g (Table 6.15). The weight gain in the oats is likely from moisture making its way into the oats through the vessel walls.


Figure 6.33 Vessel E20 (E20), after the six-month experiment, shows traces of dirt and detritus that the lid stopped mixing with the oats within the red circle (Author's Photo).

Table 6.15 The identity of the pots used in the experiment and the weight of the oats before and after the experiment. (Author).

| Vessel Number | Covering | Weight of Oats (g) | Weight of Oats After Six Months (g) |
|---|---|---|---|
| E20 | yes | 100 | 102.1 |
| E21 | no | 100 | Contents disposed |

### 6.5 Use Wear Experiment 4 – Signs of Use Wear When A Vessel is Filled

This experiment combines the knowledge from Use Wear Experiments Two and Three. While Use Wear Experiment 2 was conducted over six months, this experiment was undertaken over a shorter period, three months. The wooden base in experiment two created a minor abrasion to the pot's base compared to the stone shelf. In contrast, the lid in experiment three allowed the contents of a vessel to be stored without contamination. Therefore, would using a more filled vessel on a wooden base for a short period produce more damage to the base than one with no contents?

#### 6.5.1 Use Wear Experiment 4, Location

This experiment was conducted in Cumbria. The vessels were kept in a secure location inside a house where the moisture content could be better regulated than outdoors and could not be disturbed during the experiment.

#### 6.5.2 Use Wear Experiment 4, Pottery Used

Pots E22 and E23 from Construction Experiment 3 were used. Pot E22 and E23 are the same height and size base. They were also made from the same clay and fired under the same conditions (Table 6.16). The two vessels also have the same frequency of temper and the same type of temper. This means the inclusions which create the abrasion are comparable across the two vessels. Due to their construction, the two pots make them suitable for comparison.

Table 6.16 The measurements for Pot E22 and E23 used in this experiment (Author).

| Vessel Number | Clay | Temper % | Dried Height (mm) | Dried Rim (mm) | Dried Base (mm) | Dried Collar (mm) | Fired Weight (g) |
|---|---|---|---|---|---|---|---|
| E22 | red/yellow | 20 | 137 | 134 | 86 | 42 | 1380.6 |
| E23 | red/yellow | 20 | 137 | 116 | 86 | 52 | 1393.2 |

**6.5.3 Use Wear Experiment 4, Method – Signs of Daily Wear on a Filled Storage Vessel**

The bases of the two pots were carefully photographed to allow comparison after the experiment ended. A hardwood plank of oak sanded smooth and lightly waxed with natural beeswax was also photographed to record the changes. Holes were drilled 20 cm apart to indicate where the vessel had to remain during the experimental period (Figure 6.31). Holes were used as they would remain visible even after creating dust, such as that seen in Use Wear Experiment 2.


Figure 6.34 The hardwood plank with three holes drilled into it to indicate the area to keep each vessel, one on either side of the central hole but not beyond the outside holes Author's Photo).

The insides of Vessels E22 and E23 were carefully cleaned out. Vessel E23 weighs 12.6 g more than Vessel E23 (Table 6.16); therefore, it was chosen as the vessel to add additional weight. Inside pot number 23, 550g of metal stainless steel ball bearings were placed. The ball bearings were used as they would not take on moisture. Using a non-porous material such as metal, the weight within Vessel E23 remained consistent throughout the experiment. Use Wear Experiment 1 showed that too much moisture within the clay of a vessel, such as that of Vessel E17, could make the vessel friable and lose structural integrity. The integrity of the vessels was being experimented upon, so the moisture between vessels E22 and E23 needed to remain comparable. Use Wear Experiment 3 proved that even with a lid in place, the oats within gained additional moisture from the weight gained. The metal ball bearings filled the vessel up to three-quarters filled.

A thin pigskin leather lid, 0.5 - 0.6mm, and natural spun linen cord were used. The leather was pulled over the top of the vessels, and then the cord was tied underneath the collar in the same manner as used in experiment three. The addition of the metal balls, the lid and the cord added 562g to the vessel, and at the start of the experiment, it weighed 1955.2g, and vessel number three weighed 1380.6g (Table 6.17).

Table 6.17 shows the weight so the vessels, the metal ball bearings, and the lids for each vessel in the experiment (Author).

| Vessel Number | Weight (g) | Metal Balls (g) | Lid and Cord (g) | Final Weight (g) |
|---|---|---|---|---|
| E22 | 1380.6 | N/A | N/A | 1380.6 |
| E23 | 1393.2 | 500 | 62 | 1955.2 |

The two vessels were placed on the same wooden plank 20cm apart. This was undertaken so that the wood would be comparable, as the variation in the grain and tensile strength of the wood would be negligible. Vessel E22 was acting as a control for Vessel E23.

The two pots were picked up and placed back down once a day in the same manner as the vessels in Use Wear Experiment 2. Again, the base was never touched, nor was the dust removed. The vessels were picked up one after the other with the same care, but the same natural approach to picking up was employed.

After three months had passed, the experiment ended. The pots and wooden bases were photographed once with the dust in place and again with it removed.

### 6.5.4 Use Wear Experiment 4, Results

The wooden base the vessel was standing on shows signs of dust from the abrasion of the pots. There is more dust where Vessel E23 was placed than Vessel E22 (Figure 6.35). Unfortunately, collecting the dust and weighing it was impossible to see how much had been produced. However, the loss of material from the vessels should show in the weight of the pots. (Table 6.18).

Once the debris had been cleared, the wooden base shows that the area where Vessel E23 had been had better-defined scratch marks than are seen where Vessel E22 sat (Figures 6.36, 6.37). The scratch marks on both wood parts run linearly across the grain. At the lip of both shelves were a series of abraded marks where the base of the vessel rubbed when being put back in place at the wrong angle.


Figure 6.35 The dust created by Vessel E22 on the left and Vessel E23 on the right after the experiment finished (Author's Photo).

Table 6.18 The change in weight from the experiment's start to the end shows material loss through abrasion (Author).

| Vessel Number | Weight At the Start (g) | Weight During the Experiment (g) | Weight After Three Months Vessels Emptied (g) |
|---|---|---|---|
| E22 | 1380.6 | 1380.6 | 1379.5 |
| E23 | 1393.2 | 1955.2 | 1390.5 |


Figure 6.36 The marks left by Vessel E23; the red circle shows an area of abrasion on the lip of the shelf where the vessel abraded it when placed down; the arrow shows the direction of the scratches (Author's Photo).

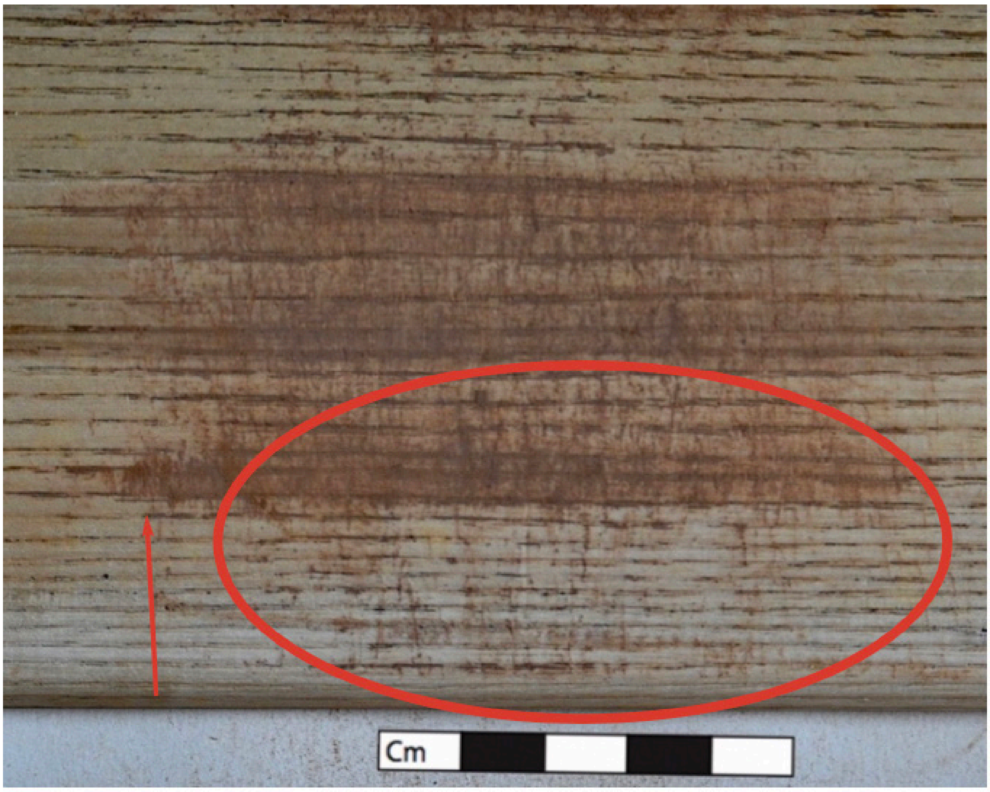



Figure 6.37 The marks left by Vessel E22 and the red arrows show the direction of the scratches; the oval shows an abrasion on the lip of the shelf where the pots have scraped it when being placed down (Author's Photo).


Figure 6.38 Vessel E22, the red circles show the location of the scratches, and the arrows show the linear and curved scratches on the base (Author's Photo).


Figure 6.39 Vessel E23, the red circles show areas of strong abrasion, and the arrows show the linear and curved scratches on the base (Author's Photo).

The dust patterns on the bases also indicate the direction of movement due to the abrasion patterns. The base of Vessel E22 shows both linear and short curved lines (Figure 6.38). The straight lines occurred when the vessel was moved backwards and forwards on the wooden base as it was picked up and put down. In contrast, the curved lines come from a slight twisting motion when the pot was being moved, likely when it was being stabilised after being put down. The dust distributed on the base of Vessel E23 also shows straight linear lines but in two directions and no clear indicator of the curved lines (Figure 6.39). This could mean the vessel did not need stabilising; the weight helped steady it. However, the lines in two directions suggest the vessel got slightly rotated, changing the direction it was picked up and put down during the three months (table A2.3).

The dust was carefully removed from the bases of the vessels. Once the dust was removed, clear linear lines had still been scratched into the base. Vessel E23 has intense scratches across the whole surface of the base (Figure 6.40). Furthermore, the smooth base from (Figure 6.41) has been worn away to reveal the temper in all but one part where the pot base dips in. Therefore, that area was protected from abrasion during the moving of the vessel (Figure 6.40).


Figure 6.40 The abraded surface with linear scratches, the direction indicated by red arrows, on Vessel E23 after three months of weighted movement (Author's Photo).


Figure 6.41, The base of Vessel E23 before the experiment, is much smoother, and no evidence of the movement lines or scratches, although some scratches occurred when the vessel was removed from the fire; these are circled in red (Author's Photo).

Vessel E22 shows a similar pattern of abrasion across the base but not to the same degree as Vessel E23 (Figure 6.42). More of the original surface remains, and the temper is less exposed, partly due to several dimples in the pot base during the making process (Figure 6.43). The dimples curve inwards and protect the base's surface from the abrasive dust on the wooden shelf.

The wear on the edges of the base on both vessels is not even. The vessels show more wear on the edges toward the deepest scratches (Figure 6.44, 6.45). At the same time, the edges in the opposite direction show that the edge of the vessel base remains less worn away (Figures 6.44, 6.45).


Figure 6.42 The base of Vessel E22 after the experiment, shows the abrasion and the area of the surface protected by the dimples in red circle (Author's Photo).


Figure 6.43 The base of Vessel E22 before the experiment with the dimpled areas in red circles (Author's Photo).

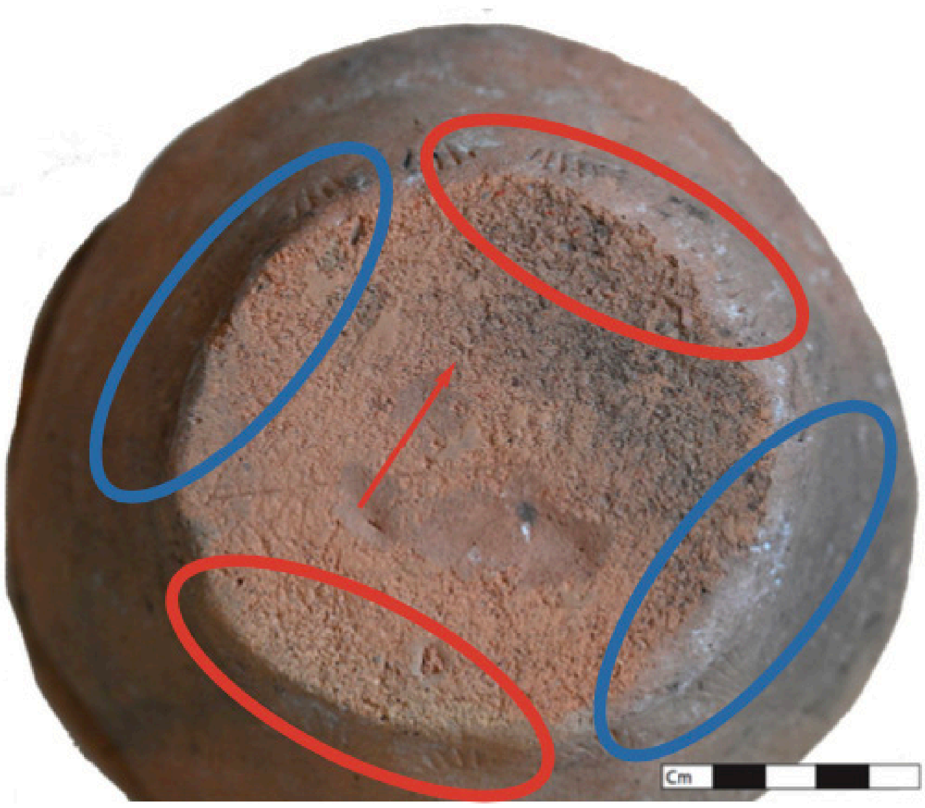



Figure 6.44 The base of Vessel E22 shows the direction of the scratches with the red arrows, the areas of increased wear in the red circles and minor wear in blue (Author's Photo).

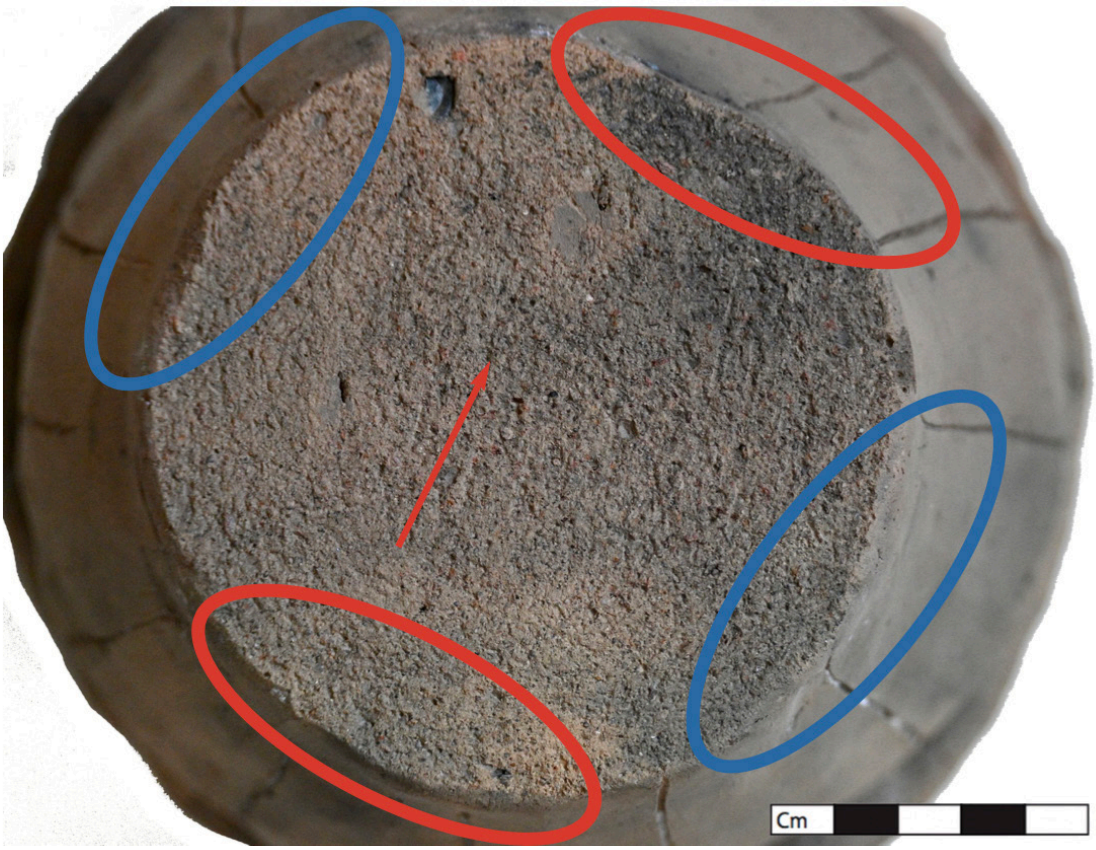



Figure 6.45 The base of Vessel E23  shows the direction of the scratches with the red arrows, the areas of increased wear in the red circles and minor wear in blue (Author's Photo).

On Vessel E23, a significant angular inclusion was present on the vessel base before the experiment began (Figure 6.46). This inclusion was not present after the experiment ended (Figure 6.47). This suggests that it was knocked loose during the experiment and was pushed into the clay base, and the wood created deep scratches due to its size. It may also have been responsible for the deep gouge in the wood on (Figure 6.36). The deep scratches on the wood are only found below Vessel E23. They are likely exacerbated by the vessel being heavier than Vessel E22.


Figure 6.46 The inclusion in the base of Vessel E23 before the start of the experiment in the red circle (Author's Photo).


Figure 6.47 The space where inclusion was in the base of Vessel E23 after the experiment, shown by the red circle (Author's Photo).

**6.6 Conclusion of Use Wear Experiments**

In this chapter, sixteen of the thirty-two surviving vessels from Chapter 5 were used in wear experiments. These vessels were chosen as they were suitable for the intended use and had comparable features. The sixteen vessels were used over four experiments, each lasting several months. The shortest was Use Wear Experiment 4, which was three months long, while the other three were six months long.

Of the sixteen vessels used across all the experiments, Vessel E17 suffered the most significant damage. In contrast, all the other vessels remained intact. While some apparent signs of use wear, such as scratches on the bases and frost fracture, occurred, other signs are only seen through data, such as weight gain from moisture. Vessels E33 and E35, made by potters with different skill levels, were used despite having hairline cracks across the bases. While some damage to the area surrounding the hairline crack on the bases occurred over the six months of the experiment, they remained intact. Therefore, archaeologists should not discount vessels damaged from firings as wasted resources. If a vessel has damage, it can still be used in other aspects of daily life. While the hairline cracked vessels would likely break during a reintroduction to heat during the cooking process and struggle to maintain liquid, they work as storage containers, particularly if a lid is added.

The weather data recorded in Use Wear Experiment 1 showed the conditions the pots were subject to during the six months of the experiment. The weather that the pots saw was not unusual compared to the weather data of the subsequent and preceding years. While the weather in the Bronze Age varied, it was also seasonal, and comparisons between the results and theoretical scenarios in the Bronze Age can be drawn.

Vessels from Waterloo Hill were excavated in the early 1900s, so the context is challenging (Hodgson, 1956, 13). Of the Collared Urns found within the site, some were inverted with cremations, and some were upright with cremations (Hodgson, 1956, 15). They were also all buried in individual pits, indicating a degree of control and careful consideration in these depositions at the cemetery site. Three vessels were left in exposed situations. These were Vessel E15 resting on stone in a stone crevice, Vessel E17 resting on earth under a wooden shelter and Vessel E18 resting on earth under a stone shelter. All three vessels had a wall exposed to the same conditions. These were undertaken to emulate a vessel stored in a subsidiary building standing on earth with Vessel E17. While Vessel E18 represents either a vessel in a more substantial subsidiary building standing on earth or a vessel within a stone cist such as those seen in Bewcastle. Vessel E15 was undertaken to explore the vessels from the Early Bronze Age cemetery at Allithwaite, which were buried in limestone fissures that were not necessarily filled in after the deposition of the pottery and remains (Wild 2003, 40).

The tempers of the two vessels were different but still within the construction norms of the Cumbrian assemblage. The control vessel in the loamy soil had the same 20% temper as Vessel E16. The results show that the sandy soil resulted in a more significant increase of moisture than the vessel in the loamy soil despite being subject to the same weather conditions for the same period and at the same depth in the ground (Table 7.2). Vessel E14 in the loamy soil gained 13.164%, while the other two vessels were over 21%. At the site in Aglionby, it is noted that the condition of the remains is poor (Clark 2005, 20). It is possible, therefore, that the vessels affected the remains.

The weathering experiment also raises the question of at which point the weather caused the vessels to start failing. The experiment in Use Wear One looks at the vessels at four points: before, at one month, at the end of three months and at the end of six months. An experiment looking at the daily condition of vessels during other months across various seasons and locations could further explore the storage of vessels. However, the data from this experiment reveals that damage occurs quickly in damp and cold conditions if the pots are not appropriately protected. It also revealed that storage of fired vessels in places such as outbuildings and eaves likely occurred even through winter.

These experiments also explored the viability of the vessels being used as storage vessels. In previous experimental work with clay, the Author discovered the difficulty of forming large clay discs (Freer 2021, 73). Shaping, drying, and then firing a clay disc large enough to fit across the diameter of a specific vessel's rim is a skilled activity. This goes against the previously discussed local production of small vessels by amateur potters (Millson 2013, 157). Furthermore, storing large clay disks when drying or not in use post-production is not an economical use of space.

Along with a minimal archaeological record for lids, organic options were explored and dismissed in Experiment Three. Wood was dismissed due to the weight, storage, and sizing issues similar to clay. The experiential experience of wooden lids causing chips and suffering from fire damage reinforced this decision. Woven natural materials can be used, as seen at Sagnlandet Lejre. However, they must be specific to each vessel, while a piece of leather works efficiently on many vessels. The collar on the Collared Urn is beneficial for securing a leather lid with string.

Many of the experiments within this chapter are affected by resource limitations due to global circumstances. Some aspects of the experiments were adapted to best suit the environment in which they occurred. If time had not been a factor in this thesis, further experiments to explore the vessels' ability to store whole grains would have occurred. However, using rolled oats more prone to moisture gain, showed the effectiveness of the lid over six months. Rolled oats were kept in pitted vessels at Sagnlandet Lejre without lids, and adding a lid may have improved their freshness.

The possibility occurred to the author after all the pots had been fired in construction experiments Chapter 5 that the time between firing and use may have only been minutes. If pots fail upon being reheated, more economical use of vessels would not include removing them from the fire. After putting a dried pot on a hearth to fire, it could quickly transition into a cooking vessel without ever leaving the embers. The Author did a similar activity when cooking on Norse period experimental vessels as they were fired (Freer 2021, 77). This would, however, mean storing unfired vessels.

Storing vessels is not without risk. Vessel E17, as previously mentioned, did not survive a month in its storage location on Earth under a wooden shelter. At the same time, Vessel E18, also on earth but in a stone shelter, survived better than Vessels E17 and E15. Vessel E15 was also sheltered by rock but was resting on a rock, suffered damage from frost, and took on significant amounts of moisture. Vessels E10, E13, and E19 resting in a woven willow basket in the covered shelter took on the least moisture and remained visibly unchanged. Therefore, vessels likely need to rest off the ground and be sheltered to survive even in an unfired condition. Allowing them to warm through the fire to remove the excess water the clay may have taken on would likely be necessary before placing them near or in a fire. The method used in Chapter 5 would likely be sufficient. It may limit the breakages reported by Milson of cooking vessels suffering thermal shock (Millson 2013, 157).

Use Wear Experiments Two and Four shelves were conducted at floor level. This was due to the positioning of storage vessels at Sagnlandet Lejre Figure 6.30. However, some vessels were placed on higher beams and shelves, resulting in a different lifting technique. Another experiment with a vessel placed up high could have exciting results compared to the experimental and experiential data from this chapter. However, the data from the shelf experiments show that vessels with contents in them are more susceptible to base wear caused by the additional weight. These vessels are also more likely to be moved than empty vessels so that the contents inside can be accessed. Therefore, base wear will occur quickly on a storage vessel's base (Table A2.3).

This thesis did not undertake cooking experiments, although they were observed at the experiential level. Several cooking experiments for the Bronze Age exist in the literature, such as Millson (2013). The analysis of lipids on pottery sherds from assemblages has also been studied, such as the work undertaken on the Cumbrian assemblage by Soberl (2011). While all experiments can produce new data, the value of the experiments varies. The Author believed that cooking experiments in this thesis would add significant value to the academic record; however, it was impossible to do so.

Furthermore, just because a vessel can be used for something does not mean it was used for that purpose. Signs of use on experimental vessels are important comparable data sets to original vessels. In an experiment on Norse pottery, the Author discovered that the ceramic vessel worked well for cooking flatbread and meats and vegetables; however, the original pottery only showed wear signs for the bread (Freer 2021, 79). The cultural influences of those using the vessels might need to be clarified to current archaeologists; therefore, multiple experiments around similar themes can help improve our understanding of vessel function and identity.

The results of these use wear experiments and the construction experiments in Chapter 5 will be discussed further in Chapter 7, Comparisons and Discussions of Themes. In Chapter 7, all the experiments will be discussed. The data from these two experimental chapters will also be compared to each other and the original and other experimental assemblages. In the discussion chapter, the experiments will be discussed individually and together to show how the data gained from them interlink and help to build a larger image of the pottery from the Bronze Age and answer the research questions of the thesis. What is more, the success and improvements made within these experiments will be discussed, as how they compare to original pottery and what further study, they could lead to.

# Chapter 7 Comparisons and Discussions of Themes

## 7.1 Approaches to Discussion

The previous chapters have examined the history of Bronze Age vessels in Britain. They have explored the pottery and the context behind the current understanding of the vessels. There has been a focus on how the pots could have been used and by whom in the case study areas.

The last two chapters, 5 and 6, have examined experimental construction and vessel uses. This chapter aims to explore the results from these two chapters within the broad context of the thesis, looking at how the results compare to the original data and how they answer the thesis' research questions. The three research aims were discussed in Chapter 1.

The study focused on four vessel forms due to the frequency of discovery across the country, particularly in the two study regions. These were discussed in detail in Chapter 4. These vessels were the Accessory Vessels, Beakers, Collared Urns and Food Vessels. All these pot types were found in different frequencies in different sites within the study regions and the country. Frequency can indicate a regional style of use, which will be discussed in this chapter.

The distribution of vessel finds from domestic to funerary was also explored further with the excavation contexts of the sites, the counties and the signs of use wear seen from the experiments. This was undertaken to define regional variations in pottery production and function, which could form different identities for the potters.

The thesis also explores the concept of functionality, which is the purpose of the pot, and how it helps us understand the vessel use and the society using it (Orton and Hughes 2013, 246 -7). All the vessels served at least one function, or they would have failed to be made. The experiments within the thesis look at how the vessels could have been used, not necessarily what they have historical considered to do, historical opinions such as Beakers being drinking cups only being partially proved correct (Guerra Doce, 2006, 254). A straightforward way to discover functionality is by comparing experimental vessels and originals (2.61). This can reveal the function of vessels and if the original pottery was used in this way.

The concepts of identity and functionality are linked, which can be seen in the results and analysis within this chapter. In some cases, through experimentation, it becomes apparent that vessels can function beyond the signs of use seen on the original pottery (Freer 2021, 78). Therefore, not using pottery in every way it can function is part of the identity of the vessel and the people using it. Not using a vessel can also be an expression of cultural preferences or a compliance with societal rules.

### 7.2. Comparative Approach to Functionality: Original Pottery Compared to Experimental and Experiential Pottery

The thesis utilises comparison to explore the results of the experiments. The comparisons in this section are mainly between original pottery and the experimental, but comparisons are drawn using data from the experiential vessels and experimental results by other archaeologists. Comparison lends itself to studying changes and similarities over space and time (Smith and Peregrine 2012, 4). Intensive comparisons focus on a few items in depth, while systematic studies look at larger samples and are often associated with anthropological studies (Smith and Peregrine 2012, 7). This study mainly used intensive comparisons, looking at only a few different assemblages and focusing on certain vessels within these assemblages. There is also the difference between synchronic studies, which focus on a particular time, and diachronic comparison, which looks across time (Feinman 2012, 27). This is a synchronic study focusing on the Bronze Age, specific points of comparison could easily be applied to different periods.

The domestic sites in this chapter are based on the Wiltshire Bronze Age sites, as there are no known domestic sites in Cumbria. However, occupation occurred in Cumbria during the Bronze Age, so there is a transfer of experience in the two case studies. The vessels in domestic experiments are based on the Cumbrian assemblage due to the location of the site and the need for Cumbria to be researched. Wiltshire as previously mentioned is less focused on due to the pandemic limiting access to the collections in person. The lack of in person inspection limits the ability to compare them although they can and will still feature in the discussion on identity and to a lesser degree function.

#### 7.2.1 Experiential Pottery Use at Sagnlandet Lejre

Sanglandet Lejre is an open-air experimental museum in Denmark. It was set up in 1964 and has had an international influence on archaeologists (Flores 2012, 56). Many archaeologists travel to the 43-hectare site for experimental archaeology (Flores 2012, 100). The long-established site at Sagnlandet Lejre works towards public education partially through experiential archaeology (Flores 2012, 177). Over a hundred families have participated in the experiential living experience, creating data about past societies (Sagnlandet Lejre 2015, 4). Part of the experiential experience involves the teaching of ceramics. Larger ceramics are considered more difficult (Sagnlandet Lejre 2015, 6). The pots, once made, are left for two days to dry in a shaded area before being bonfire-fired (Sagnlandet Lejre 2015, 7).

The author visited Sanglandet Lejre for two purposes in the summer of 2018 during their Prehistoric week. The first was to talk to experts and see the pottery they used in recreated settings. The second was to see evidence of wear and function on the experiential vessels. Inger Heebøll, the potter at Sagnlandet Lejre, was interviewed, as was one of the experiential visitors who had no previous archaeological experience, Rikke.The visitors pay for the change to stay and live within a Prehistoric setting. The museum uses archaeological artefacts and evidence to recreate domestic settings for the regions (Sagnlandet Lejre 2015, 4).

The pottery from the site was available to be examined, revealing some interesting results. The pottery ranged from replicated Neolithic vessels to more modern 17th-century vessels. The pots on the site are all based on the archaeological record, and the pottery is researched in detail before being produced (Heebøll Sagnlandet Lejre, 2018).

The pottery on-site at Sanglandet Lejre was tempered with a mixture of ground burnt granite and sand; this ratio is between 20 and 30%; however, it is undertaken by eye rather than through weight measurement (Heebøll Sagnlandet Lejre 2018). This is likely how the prehistoris pottery was made originally. The pots for the prehistoric period were built by the coil method, the same as the originals; however, to get the pointed bases and the step carination on the pottery, they are built in stages rather than all at once (Heebøll Sagnlandet Lejre 2018). It is easier for a potter to get their hand into a bigger pot than it is for the smaller ones, but it is the smaller ones which survive best through firing (Heebøll Sagnlandet Lejre 2018). Flatter-based vessels were easier to make than round-based theses from the Neolithic period (Heebøll Sagnlandet Lejre 2018). However, the flat-based vessels in Heebøll's experience broke first, and most frequently in bonfire firings, many get cracks down the sides even if they do not shatter.

The pottery is fired in both kilns and bonfires on the site, and these methods have different success ratios. The kilns have about a 75% survival rate, while the bonfires vary from 50 -100% (Heebøll Sagnlandet Lejre 2018). However, bonfires are more successful in creating a reducing atmosphere than kilns when an earth clamp is used (Heebøll Sagnlandet Lejre 2018). However, the pottery used experientially is fired at a higher temperature than those from the archaeological record to increase the durability of the vessels (Heebøll Sagnlandet Lejre 2018). However, the Author could still detect evidence of wear and breakage on these vessels.

The pottery from the 17th century's smallholding is different from that of the Bronze Age due to the added glazes; however, how they are used and stored is still interesting. The Author observed that pottery is still used despite having broken-off parts, such as spouts of jugs and handles or significant spalling (Figure 7.1). Chipped-off bottoms and cracked vessels were also being used. These vessels were stored on wooden shelves in a pantry and stored upside down to stop unsanitary things from falling into them (Figure 7.2). Flatter items designed to be used as plates or dishes were being used as lids on vessels, which were the correct way up which contents inside of them.

Figure 7.1 Broken pottery being used in experiential setting, the rim is cracked but still used in cooking Sagnlandet Lejre and a broken sherd used as a spoon rest (Author's Photo).

Figure 7.2 Glazed pottery stored upside down or stacked to stop things from falling into them while not in use at Sagnlandet Lejre (Author's Photo).


Figure 7.3 Cheesemaking ceramic dish at Sagnlandet Lejre (Author's Photo).


Figure 7.4 A cracked and chipped unglazed vessel being used to store water despite the crack allowing water to seep. The red oval marks the crack on the vessel at Sagnlandet Lejre (Author's Photo).

The pottery from the Viking area was interesting in that they had certain highly specialised vessels for activities such as cheese making (Figure 7.3) and more standard pots, which were used as and when needed for various tasks. However, the use of these vessels raise questions about the function of some of the Bronze Age pottery. Some vessels had cracked down the side but were still being used to store water as the pot only had a small seep (Rikke, Sagnlandet Lejre 2018)(Figure 7.4). Other vessels were deeply flawed from firing. However, despite their pitted nature, they were still used (Figure 7.5). The oil lamps seeped oils as they were heated and permeated through the vessel walls; however, this was not observed due to the fire ban in force across Denmark.

The Iron Age pottery is similar because it is used after being damaged. With these vessels, the Author was able to observe cooking. The contents cooked in the pots are based on foodstuffs found in the period (Sagnlandet Lejre 2015, 36). Food did not stick to the pot's walls often; if it did, it was quickly removed during the cleaning process (Rikke, Sagnlandet Lejre 2018). The pots were not placed directly on the fire but in the hearth beside the fire (Sagnlandet Lejre 2015, 36). However, the food burned on the side closest to the fire, so the pot had to be rotated during cooking (Rikke, Sagnlandet Lejre 2018). The pots were turned by carefully knocking them with a piece of wood or picking them up using a sheepskin cloth, the cloth being the more controlled way to move the pot (Rikke, Sagnlandet Lejre 2018). As things cook in the pot, the nature of the cooking was different to more modern methods, which altered the textures of some food; despite the length of the cooking period, they were not rendered to mush (Rikke, Sagnlandet Lejre 2018). However, the cooking food was not allowed to be seasoned with salt as the salt could cause spalling damage and increase the risk of the vessel breaking (Sagnlandet Lejre 2015, 36). It is possible salt was used in the British Bronze Age particularly by coastal communities.

Furthermore, caution had to be used when stirring the pot contents and knocking the spoon against the edge caused the pots to crack down the side (Sagnlandet Lejre 2015, 36). Pots were also damaged if they were less than half full and close to the fire due to issues with thermal shock (Sagnlandet Lejre 2015, 36). Therefore, vessels of the correct size had to be sourced for the cooking process (Sagnlandet Lejre 2015, 36). Vessels without the crushed granite temper would not be placed by the fire as they would break (Sagnlandet Lejre 2015, 36). However, the transportation of the pottery caused the most damage through knocks and human error (Rikke, Sagnlandet Lejre 2018). The damage was mostly the loss of handles or lids sliding off. Lids were used during cooking and storage. The lids used during cooking were ceramic or wooden. For storage, they were woven from rushes (Rikke, Sagnlandet Lejre 2018). Pots were often stacked on each other when not used (Figure 7.6). No lids were made from leather, although leather was used to create a cradle for suspending vessels in the Iron Age building (Figure 7.7).
The pots were hard to clean, even without removing burned food (Rikke, Sagnlandet Lejre 2018). The pots were cleaned with water, sand, or ash applied with grasses or birch branches (Sagnlandet Lejre 2015, 36). This likely created abrasion patterns within the internal surface of the vessel.

In the Neolithic area, very little cooking occurred due to the fire ban; however, one pot was used for cooking a fish stew. This pot was placed directly onto the embers, and the contents cooked over the fire. The stew contained a series of shellfish and was stirred (Figure 7.8). The shells of some shellfish soften during cooking; however, some harden or break, creating edges which could feasibly scar the inside of a pot.

Figure 7.5 A very pitted vessel being used to store oats at Sagnlandet Lejre (Author’s Photo).

Figure 7.6 Stacked ceramic pots and wooden bowls at the Iron Age experiential area Sagnlandet Lejre some containing food and liquid (Author's Photo).

Figure 7.7 Vessel suspended within a leather cradle a skin supports the base of the pot at Sagnlandet Lejre (Author’s Photo).


Figure 7.8 Shellfish being cooked as a stew in an unglazed vessel Sagnlandet Lejre (Author’s Photo).

The bases of the vessels from the Iron Age and Neolithic were looked at as they were unglazed. All the bases showed signs of wear. The rounded base of Neolithic vessels showed evidence of scratches, and the material was chipped off (Figure 7.9). While there is less evidence of scratches on round-based vessels, the tips of the points can appear rougher with the temper showing through, suggesting some wear occurring at the basal point (Figure 7.10). The bases of the flat-bottomed vessels showed much wear around the edges and scratches across the middle (Figure 7.11). The deep scratches tend to be straight, although there is evidence of curved scratches, which likely occurred with a twisting motion. Some of the scratches had a stepped pattern as if they had been rolled over a sharp object, such as a piece of gravel, which may have occurred when being pushed into place on a shelf (Figure 7.12).

The experiential vessels show many signs of use like those seen on the experimental vessels from this thesis. The pottery is, therefore, worth comparing to the original and experimental pottery to further the understanding of the function.

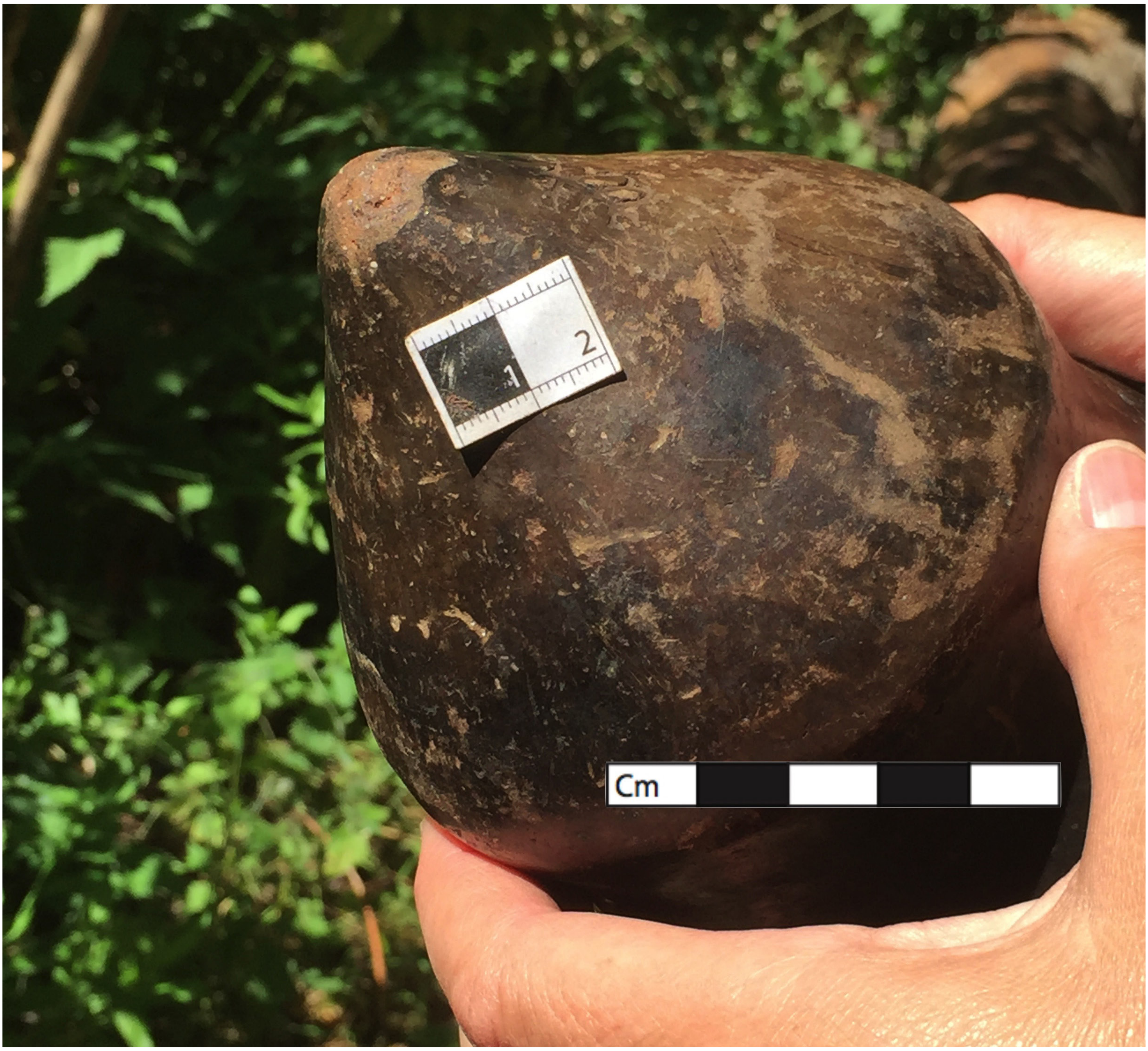



Figure 7.9 Round-based Neolithic vessel with chipped basal point (Author's Photo).

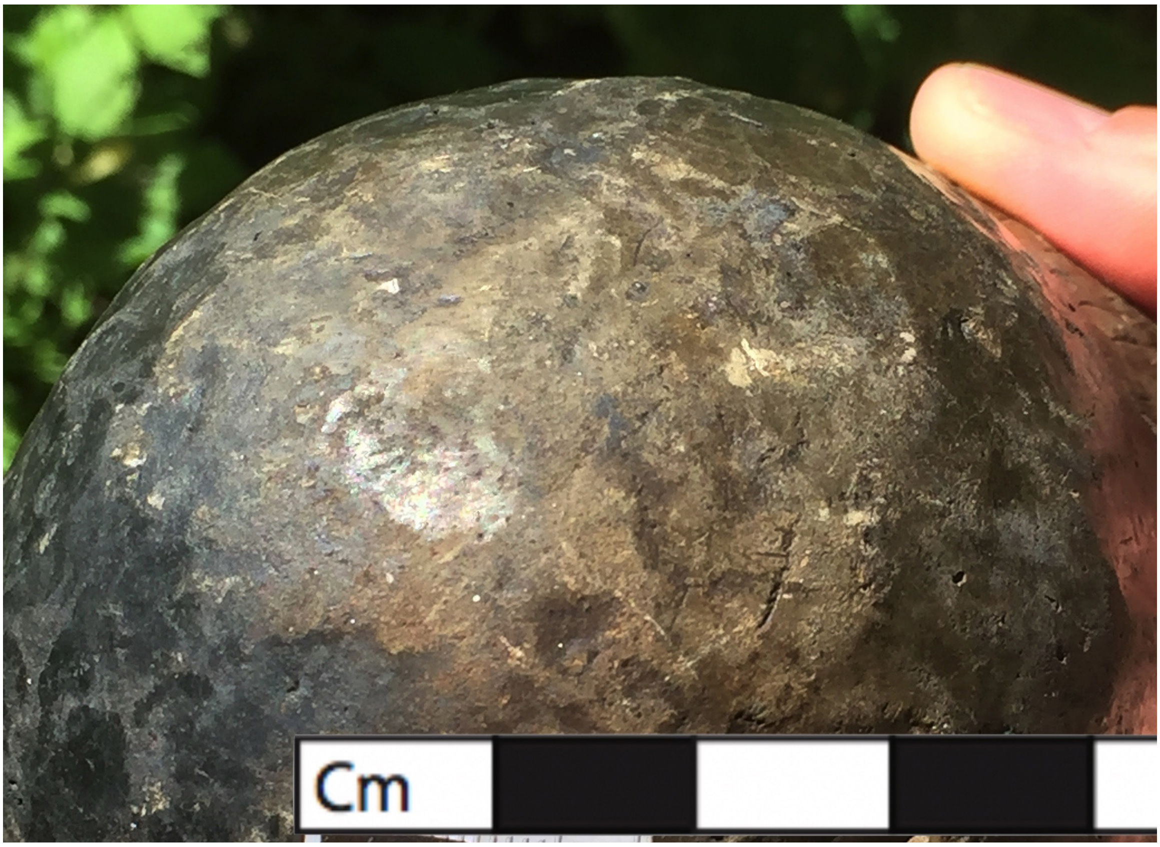



Figure 7.10 Round-based Neolithic vessel with abrasion around the base (Author's Photo).


Figure 7.11 Iron Age vessel with scratches around the edges of the base and a few across the middle (Author's Photo).


Figure 7.12 Iron Age vessel with scratches: The deep staggered scratch was likely caused by a stone between the pot and the shelf (Author's Photo).

### 7.2.2 Construction Comparisons

The first stage of comparison is looking at the construction of the vessels. Without the construction stage, there would not be either an original or experimental assemblage. Other archaeologists have conducted construction experiments (Millson 2013, 155-7), and comparison with original assemblages helps guide the experiments' direction (Hammersmith 2010, 125).

Clay is needed to construct pots. Construction Experiment results show that the clay near Garlands fired into a ceramic with a solid red colour and that the clay beds in the region had been used to fire ceramic objects for centuries with different amounts of success (Figure 4.24 and Figure 4.25). The experiments used a range of freshly dug, dried, and rehydrated clay. In the opinion of the potters, the fresh clay used in Construction Experiment 4 did not act any differently from the clay when hydrated in Construction Experiment 5. This indicates that clay could be dug and stored, ready to be used when needed by potters. Therefore, clay beds did not have to be at the settlement site, confirming the settlement pattern seen by Hamilton (2002, 39) and the ethnographic evidence from Gosselain Bafia observations that dried raw clay was often used without issue Gosselain 1992b, 565).

The temper varies from region to region, with flint common in Wiltshire (Woodward 2008, 295) and not in Cumbria (Hallam 2015, 100). The different quantities of temper affected the elasticity of the clay, with the higher percentages being more challenging to form (Table 5.2). The Author found that tempers over 30% were more challenging to form and less pleasant on the hands; the sharp inclusions caused grazes on the skin. The results from Construction Experiment 1 indicated that the vessels do not dry evenly and that different parts of the vessel dry at different rates depending on whether they were the rim base or height (Table 5.3). The different drying rates could cause some warping. However, this was not evident on any vessels from the experiments or the assemblage, so the measurements recorded in the experiment may be like those seen in actual vessels. The experiment also confirmed that the original pottery likely has twenty to thirty percent inclusions. When compared, the average frequency of temper seen in the assemblage is like that of the 20-30% experimental vessels. This matches Hallam's assessment of Cumbrian fabric as common when using the PCRG inclusion density chart, translating to 20 -30% inclusion (2015, 96) (PCRG 2010, 49).

Reproduction of individual vessels was undertaken in Construction Experiment 3. Of the six vessels made during this experiment, only one came close to being similar in dimensions to the original vessel it was based on (Table 5.14). In all the examples, the Author underestimated the clay needed to construct a vessel, even after conducting experiments which looked at the shrinkage rates of tempered clay. However, these vessels are comparable in form to the originals, meaning that with more experience, basic pottery building can make Collared Urns like the originals. Each potter has its approach to building a vessel, although there is no evidence in the Wiltshire Assemblage that very slim coils, like those taught in school pottery, were used to build vessels (Taylor 2013, 127). The Author, in their experiments, used thick coils or bands of clay to build up sections. The fine coils were used only on Accessory Vessel E28 to ensure thin walls.

Constructing a Collared Urn goes against the standard construction standards of a thin-walled vessel with a not-too-thick base. The bases of the vessels tend to be thicker than the walls, with some of the Collared Urns having bases over 40mm. An Aglionby vessel, Cumbria, of 333 mm in height, has a base thickness between 40 and 50 mm. Almost 15% of the vessel is base. The taller vessels have much thicker bases, such as the Collared Urn from Lacet Hill, which is broken; therefore, the amount of material used can be seen (Figure 7.13).

These vessels may be made that way to increase stability due to conical top-heavy forms. Nevertheless, the skill to make thick base vessels and fire them, likely in a pit without the bases showing signs of a blowout, indicates skill in the potters. They were capable of thin-walled and base vessels such as Accessory Vessels and Beakers. The thick walls and base are likely a choice and an indicator of the abundance of material available to allow them to form large vessels with clay-heavy walls.

Each experiment was built on the knowledge of the previous experiments. Each vessel attempted to replicate an original vessel from the Cumbrian assemblage. The vessels were in a similar size range, smaller than the average for the Cumbrian assemblage. This was partly because the large, Collared Urns over 400mm in size threw the average towards the larger end of the vessel size range (Table 7.1). However, because smaller vessels were made and utilised, they must have a role to play in society. Despite the difference in locations, and materials, sites across the country were all producing similar-sized vessels. This further indicates a societal need for a smaller vessel in a Collared Urn form.

From ethnographic study Roux suggests that the standardisation we see in assemblages matches societies with a low pottery output (2017, 779). The dimensions most likely to vary are height and the lip of the vessels tend to have the most individual expression (Roux 2017, 777). Therefore, the larger the pot the least standardised it becomes. Smaller vessels are easier to standardise and use less material to form so are a less resource heavy way of learning the skill and this might be why they occur in the assemblages as learning items and as personal gifts to the deceased from people who may not be skilled potters.

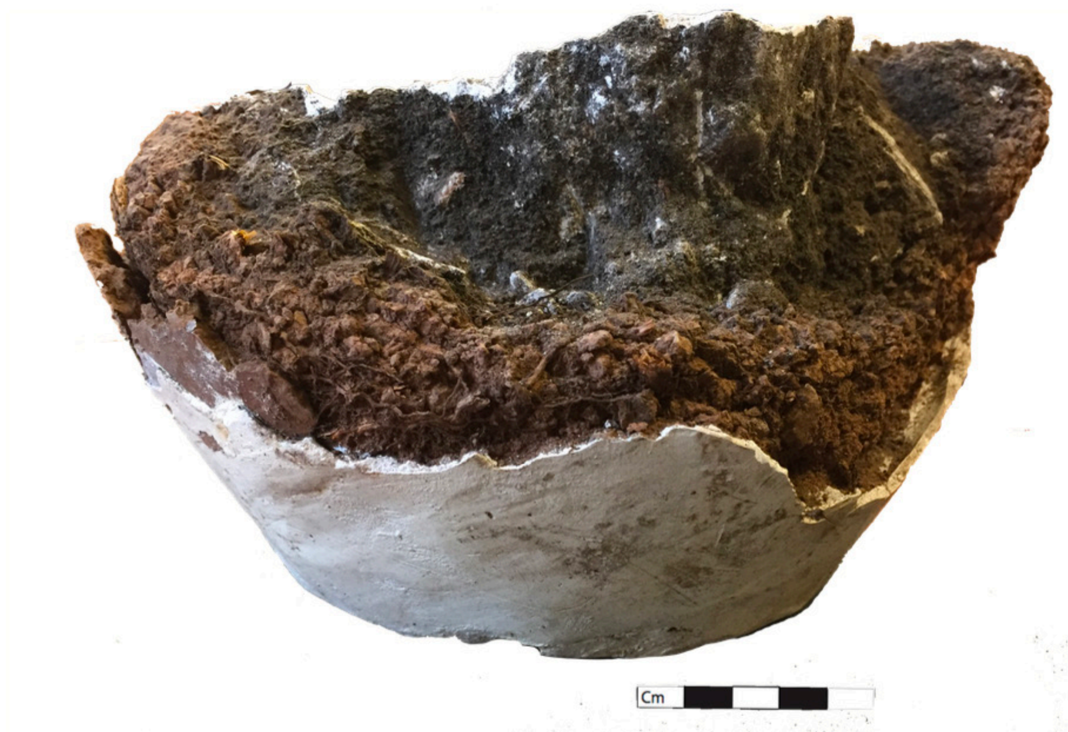



Figure 7.13 Tullie House C80 the partially reconstructed base of a Collared Urn from Lacet Hill showing the thickness of the base ((Author’s Photo) Table A1.-C80).

Table 7.1 The average dimensions of Collared Urns in the Tullie House assemblage and the Wiltshire assemblage pottery in this thesis; the base and collar data were unavailable for the Wiltshire assemblage (Author's Photo).

| | Average Height (mm) | Average Rim Diameter (mm) | Average Base (mm) | Average Collar (mm) |
|---|---|---|---|---|
| Collared Urns Cumbria | 275.647 | 210.611 | 102.3 | 80.1 |
| Collared Urns Wiltshire | 240.13 | 218.1 | N/A | N/A |

Despite the thickness of the clay and the rough nature of a bonfire firing, the vessels created survived the firing without suffering any blowouts, and only minor hairline cracks were noted on some vessels. The weight loss across these vessels is stable with minimal deviation, implying that they were all consistent in construction and the conditions they were subject to despite the slight variation in clay type. The nature of the tempering protected the vessels, as did the time taken to dry and warm the vessels prior to firing (Table 5.15).

Three potters, ranging from amateur to trained, were shown a range of 30 vessels from the Cumbrian assemblage ranging from Collared Urns and Beakers to Food Vessels. All the pots constructed during Construction Experiment 5 had flaws, but the primary form of each vessel type was detectable, with the Beakers and Collared Urns favoured. Potter 5 made Vessels E33 and E34, while the others only made one in the time (Table 5.19). This suggests a level of discontent with the first attempt, and in practice, that vessel may not have been fired but instead reworked by the potter. This option was unavailable due to the experimental nature of this experiment.

The pots were constructed base down to stop the warping of the base seen in Construction Experiment 3. The partially constructed elements of the vessel were dried in the same conditions. This meant that much space was needed to make a vessel. Considering the climate in Britain and Cumbria, mainly where rain and moisture are frequent, a covered area would be needed to store the vessels during construction. This could be an outhouse, the eaves or even a small, roofed shelter as seen in Gosselain 's ethnographic study (1992, 574). This same space-intensive area would be needed to make the originals. Several Barrel Urns were found at Bishops Canning Down between the post ring and outer wall (Brück 1999, 157). This suggests that the eaves and other sheltered but out-of-the-way locations were used to store vessels.

While the Cumbrian assemblage only sometimes shows signs of decoration, there are also very few marks of who made the pots. There is little to no evidence of fingerprints left on the vessels within the original Cumbrian assemblage, which bears out in the experimental ones made in Chapter 5. No fingerprints were left on the experimental vessels despite this not being mentioned to any of the experimental potters as a point of interest. The construction techniques used do not lend themselves to capturing the personal marks of the potter beyond the decoration they deliberately add. While in the Wiltshire assemblage, there is the occasional trace of the maker, such as a fingernail impression on W248 (DZSWS: STHEAD.257), an Accessory Vessel from Amesbury, or finger mark decoration W249 (DZSWS: STHEAD.263), a Food Vessel from Winterstoke, they are the exception rather than the rule (Table A1.2 - W248 W249).

During the experiments, the smoothing process to ensure that air is removed from the vessel walls was the main factor in leaving both the inside and external walls smooth. The Collared Urns have a thicker wall than the Beaker vessels, and the assemblage shows a broader range of care taken during construction. The most likely place to find unintentionally left fingerprints is, in the Authors' opinion, the Collared Urn assemblages. Vessel C53 (1977.25.9) from Garlands has what appears to be traces of finger marks on the inside of the vessels, which were left much rougher than the external surface (Figure 7.14)


Figure 7.14 Within the red circle is what appear to be finger mark impressions on the inside of Vessel C53 Tullie House, a Collared Urn from Garlands in Cumbria ((Author's Photo) Table A1.1 -C53).

A previous experiment by the author also discovered that the fingerprint size does not necessarily correlate to the size of the person leaving it (Freer 2015, 16). A man over six feet tall left a smaller fingerprint impression in 20% tempered clay than a woman just over five feet tall. Fingerprint here is classed as a single identified impression through a grouping of two partial prints that fit within a finger pattern. Therefore, it is not a reliable way to distinguish adults and adolescents by gender; only the young from the older community members as young children will leave a smaller fingerprint impression. Furthermore, the friability of the clay walls, resulting in damage to the surface after being buried for six months, as seen in Use Wear Experiment 1 (6.2.4, Results), would deteriorate any shallow fingerprint marks. Therefore, any fingerprints left behind after several thousand years in the ground would likely be significantly eroded and not give a reliable impression size.

### 7.2.3 Comparing the Signs of Firing

A certain amount of infrastructure is needed to make vessels. This indicates that there were either places in a domestic setting to make pots or pottery making was a scheduled event. Making clay pots is messy and not undertaken in sleeping or food preparation areas without significant clearing up. However, this does not signify whether the household or a travelling potter made the pots. Furthermore, constructing the vessel in small segments and then slotting them together was easier for the potter than constructing the pots in one go. The time needed to do it was similar but not intensive, with plenty of time between each stage. Except for Construction Experiment 4, all the vessels were fired in open or pit bonfires using combustible materials. The firing ranged from 3 hours to 20 hours. The firing is a critical stage that turns the clay into ceramic. It is also the least predictable of the firing stages; not all pots survive firing intact (Gosselain 1992a, 257).

During firings, there was a 13.2% breakage rate; 31 of the 38 vessels survived the firing intact or relatively so. This is better than the results seen at Sagnlandet Lejre. In an open fire, the survival rate of pots can be from 100% to 50%, while kilns can see an average of 75% survival (Heebøll Sagnlandet Lejre 2018). This is not consistent across all the vessel forms. All three of the largest Collared Urns made during Construction Experiment 6 broke during the cooling stage of the firing process, splitting from base to rim. This matches the experiences of the potters from Sagnlandet Lejre. Where they found that the firing of larger pots is complex in open firings; the large pots with flat bottoms are often the ones which fail, and many have cracks running up the sides (Heebøll Sagnlandet Lejre 2018). Two out of three vessels from Construction Experiment 2 broke during the initial firing process.

The Vessels were not proportional to the originals. However, they survived drying except for vessels E33 and E34, which lost their collars due to poor bonding of the collar to the body after it had dried too much. A vessel losing the collar or not having one applied did occur in practice, and the vessels were still used in this case in a burial setting. This did mean the vessel resembled the Collared Urn W219 (DZSWS: STHEAD.258) from Idmiston in Wiltshire (Figure 7.15).


Figure 7.15 Experimental Vessel E34 and Devizes Museum W219 from Idmiston are both examples of fired vessels without any decoration or attached collars ((Author's Photo and Devizes Museum 2023) Table A1.2 and Table A2.1).

The unfortunate fragmented nature of assemblages means that it is difficult to say whether the vessels with hairline cracks occurred in the original assemblages in the archaeological record. They likely did, and the cracks were a point of weakness from which sherds fragment. One of the Vessels from the Cumbrian assemblage is a primarily intact vessel with a large linear crack running from rim to base with evidence of an organic (likely a root) growing through the crack. There could have been a linear hairline crack like in Construction Experiment 6, which widened during deposition by the roots growing into and then through the gap (Figure 7.16). This does suggest that the hairline cracks are acceptable for the intended function.

The experiential vessels at Sangdeltland Lejre show evidence of use despite cracks and chips. Vessels with cracks were still used to contain liquid (Figure 7.17). Chipped material from the rim and base did not stop the vessels from being used as cooking vessels and placed on the fire containing food such as fish stew and porridge (Figure 7.17). This suggests that what could be perceived as a flaw may not be a flaw if it does not impede the function. It also suggests that function, at least in the experiential experience, is more important than appearance. In the Bronze Age, it is also possible that the vessel needed more than perfection in form.


Figure 7.16 Collared Urn C100 with a crack down the wall and a piece of root trapped between shown in the red circle (Author's Photo).

Figure 7.17 The cracked and chipped vessels are still used in experiential settings as cooking and storage vessels at Sangdeltland Lejre (Author's Photo).

### 7.2.4 Comparing The Use Wear

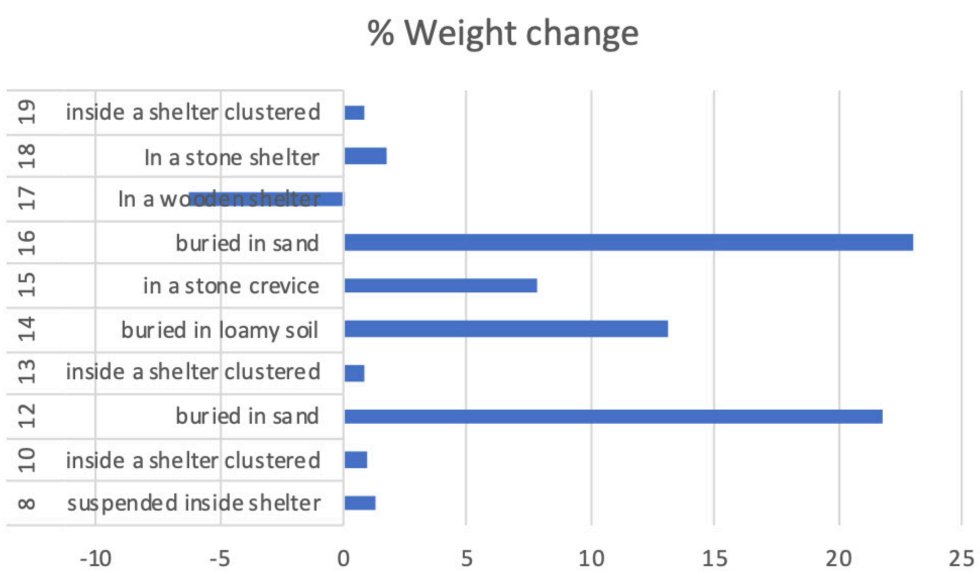
Use Wear Experiment 1 attempted to replicate the deliberate deposition of whole vessels in different locations derived from the archaeological record. This experiment aimed to cover both funerary and domestic situations. Therefore, some vessels were buried, and others were left exposed in different situations mimicking the depositional practices seen in Cumbria and possible storage situations of unused vessels.

Vessels E12 and E16 were placed in sandy soil, and Vessel E14 in loamy soil. Cumbrian vessels from different sites were found in sand pits. At the cemetery site of Garlands, the pots were found in pit sand (Hodgson 1956, 6), and at Aglionby, five Collared Urns were found in the sand (Clark 2005, 20). The Beaker from Garlands, several Collared Urns, and an Accessory Vessel from Waterloo Hill were seemingly deposited into the sand in deliberate burial practice with ash and charcoal nearby (Clark 2005, 20). In this area of Cumbria, burying in natural sand deposits was part of the burial tradition. Therefore, it was of interest to see what the effects of this were on the vessel. Loamy soil was used as a control for the two test vessels in the sand, but also due to it being the predominant soil type within the rest of the study area.

The sand pit where the pots were deposited had a high sand quantity due to the local kame sand belt (Jackson 1979, 5). The sand used in the experimental construction experiments was gathered within a mile of the experimental site near a commercial sand quarry.

The vessel at 20% temper also had a more considerable weight increase than the 30%. This could indicate the amount of clay verses temper, creating more space for water to be stored in the fabric of Vessel E16 instead of Vessel E12. The three vessels had plant life growing in the soil above them, dormant in winter, but in the six-month study, the vessels had traces of roots found around and within the vessels. Furthermore, the dampness of the walls made the vessels friable. In a comprehensive study, the vessels may have gained more significant damage from the plants and even wildlife. Plant damage is seen in the vessels from the assemblages. However, the type and amount of damage undertaken to the vessel are subject to the location of each vessel and are difficult to replicate in a short time frame.

Table 7.2 The percentage in weight change for all the vessels after 6 months (Author's Photo)



The vessels were placed in different locations for six months to study the effects of exposure on the vessels. The vessels were left empty, so the contents did not affect them through deposition or destruction from the contents or outside forces such as animals and decomposers. This experiment used complete vessels which were upright and empty. A vessel not currently in use could be stored.

Many archaeologists have speculated about suspending vessels or using perforations to suspend a vessel (Wilkin 2013, 161), so this was attempted In Use Wear Experiment 1 with Vessel E8 being suspended. Other vessels were placed with the dry, unheated structure Vessels E10, E13 and E19, clustered together as if in storage.

The results of this experiment show a significant threat to static vessels from moisture (6.3.4 Use Wear Experiment 2 and Millson 2013, 159). Water contents varied depending on the vessel's position, but all the vessels saw some increase in weight due to moisture; those inside showed the least increase while those exposed outside the most (Table 6.5). Vessel E17, on earth and exposed to the weather, was the only one with a negative weight gain due to lost material from the collapse of the walls from moisture and only some of the material collected. The vessels within an unheated wooden structure did gain moisture but not as much as those exposed to a great degree, such as Vessels 15 and 18.

Vessel E15 suffered a significant frost fracture on the side after moisture within the vessel wall froze, forcing the vessel wall to sheer material. This lost clay was not found. Despite this material loss, the vessel saw the most significant increase in moisture of the exposed vessels at 7.838%. Interestingly, Vessel E18, subject to the same conditions as Vessel E15 and E17, did not gain as much moisture, only 1.736%. The vessel also did not suffer significant damage to the pot's walls. Vessel C88 (1926.27.435), a Beaker from Newton Penrith, has a chip out of the base of the otherwise intact vessel. The colour of the clay and the exposed temperature do not suggest that the material was lost in the firing process but in a process after that. It is possible that the material was lost to a weathering situation, such as a frost fracture (Figure 7.18).


Figure 7.18 The loss area on the bottom of vessel Tullie House C88, a Beaker from Newton, compared to the frost fracture from Vessel E18, showing a similar style of material loss compared to Vessel E11 suffering firing damage (Author's Photo).

This is not the only vessel in the Cumbrian assemblage to have small amounts of material lost from the base like this. The loss of material from the base may be an artefact of the storage method of these vessels.

This indicates that vessels can sometimes be safely stored in a suitable outside location. If such a location was found on a settlement site, vessels could be stored for at least six months from winter through summer with no significant damage. This means vessels could be made in advance and used when needed rather than on demand.

Furthermore, the vessels within the unheated wooden structure, Vessels E8, E10, E13 and E19, only gained a small amount of moisture. Their weight increased by less than 1.5%. Vessel E8, suspended, gained more moisture than those placed in a basket. Possibly, the suspended Vessel E8, which had the same temper as Vessel E13, was subject to more moisture through breezes than Vessel E13, which was slightly more sheltered in a basket on the floor but still with air movement all around, so the vessels were not sitting in moisture.

Although it was a suitable way to store a vessel during this experiment, there is no known evidence that the purpose of the perforations in smaller vessels is suspension for storage. However, these vessels, much like Vessel E8, indicate that a potter can, in the correct location, store fired vessels for six months via suspension without them becoming structurally compromised or damaged. A vessel can be suspended on a rough natural fibre with minor breezes and not break or gain signs of wear at the perforations. Therefore, it would be difficult to assess if a vessel has been stored in such a manner in the archaeological record.

Very few vessels in the Cumbrian archaeological record show signs of abrasion to perforations. Perforations occur most commonly on smaller vessels. These vessels are more likely to have thinner walls, but there is no indication that the hole weakens the vessel. Use Wear Experiment 1 shows no difference in the perforations made to Vessels E8 and E10, which also had perforations but were not suspended by the cord. This indicates that the natural fibre cord was not abrasive enough to cause wear on a suspended vessel even after six months. If Vessel E8 was moved around more as if it was being used, taken down, and restrung, it may have gained more abrasion signs ((Figure 7.19 Table A2.3).

Vessel C92 (1926.27.434) from Skirwith Moor has a series of perforations around the middle of the body. The holes go straight through, and the surrounding clay does not indicate wear (Figure 7.20). The same is seen with Food Vessel C69 (1999.824). From Garlands, the holes remain neat and like the nonpenetrative indents, possibly made with the same tool (Figure 7.20). Vessel C104 (1977.95.2) from Bewcastle, also a Food Vessel, has perforations through the lugs. These remain neat with no enlargement to any side (Figure 7.20). It is, however, unlikely that the lugs are strong enough for suspension without some form of cradle like the one at Sagnlandet Lejre. Vessel C64 (1977.25.23, again from Garlands, is a somewhat damaged version of an Accessory Vessel; however, the perforated holes remain round and neat despite all the other damage (Figure 7.20). This likely means the vessel was never suspended, possibly due to the damage it sustained through firing, rendering it less functional. The sherd C61 (1977.25.17) From Garlands is a sherd from a larger vessel with a perforation. The perforation, like the previously mentioned ones, does not show much abrasion on the external face, although there is a chip which does not appear significant (Figure 7.20). There is a more likely sign of abrasion on the inside edge due to the hole widening unevenly (Figure 7.20).

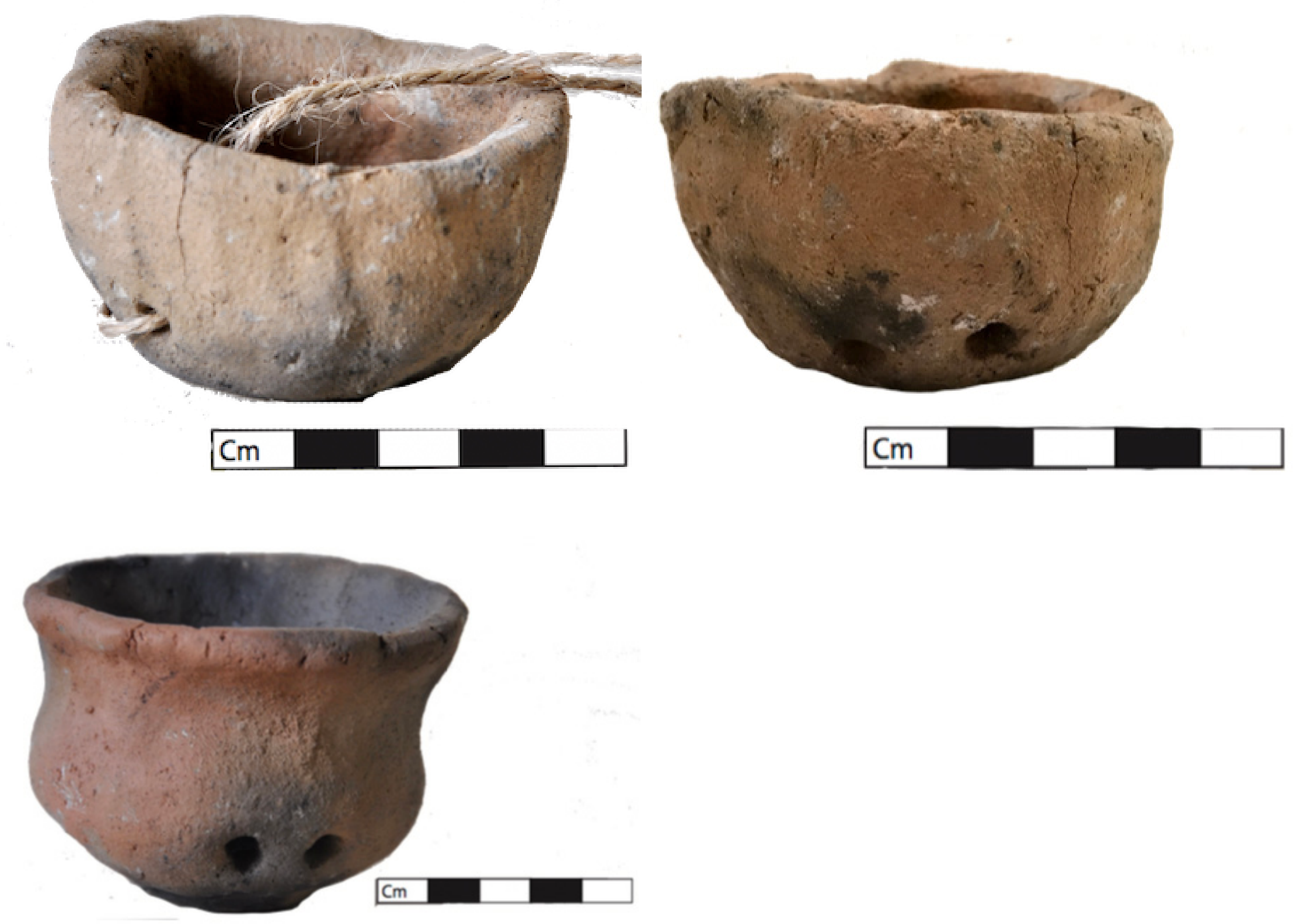



Figure 7.19 The experimental vessels with perforations show no difference between the perforations of a vessel suspended by a cord (top two pictures E8) and the one left unsuspended E10 (Author's Photo).

The only other vessel with possible signs of abrasion around perforations is C22 (1951.81.3), an Accessory Vessel from Broomrigg (Figure 7.21). However, this vessel is partially reconstructed around one of the perforations, which makes an assessment more difficult. However, the perforations are not equal, with downward wear on the holes causing the opening to look more flared than the other archaeological or experimental ones. However, this does not occur on the inside, so it may just be an example of a poorly constructed perforation (Figure 7.22). There is also the possibility of upward wear on the right-hand side holes, partially into the area or reconstruction. It could also be that a second perforation was made directly above the first. Internally, there are fewer signs of flare to the perforations, suggesting that if there was abrading damage, it mainly occurred on the outer face of the vessel.

Accessory Vessels may have been made quickly, possibly during the funerary process (Hallam 2015, 123); it is entirely likely that these vessels could only be very briefly suspended by the holes and not become worn due to the shortness of use. This speed could also result in poor construction, like in Figures 7.9 and 7.10, where perforations become distorted.


Figure 7.20 The original Cumbrian pottery assemblage, showing perforations; the bottom two images are from Tullie House C61 and have possible signs of abrasion on the inside surface around the hole, while no other perforation does (red circle)(Author’s Photo).


Figure 7.21 The flared and possibly worn perforation on Broomrigg C22 is in the red circle (Author's Photo).

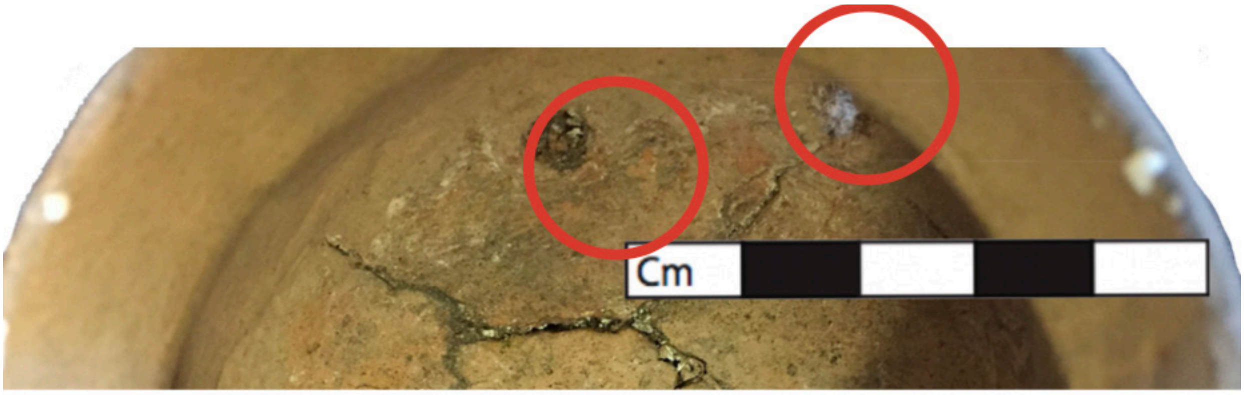



Figure 7.22 The internal perforation of red circles not displaying the flared nature of the external surface of Tullie House C22 (Table A1.1- C22) (Author's Photo).

At Sagnlandet Lejre, the experimental vessels were stored inside the reconstructed houses raised off the floor on wooden planks or shelves. There is some evidence in prehistory that stone and wooden shelving were used, such as in chambered tombs and Neolithic houses (Jones 1999, 67). Prehistoric houses sometimes had freestanding or built-in furniture, like the stone versions at Skara Brae. Archaeological evidence of internal pits within a Middle Bronze Age Roundhouse in the southwest indicates a continued tradition for built-in furniture within southwestern domestic buildings during the Bronze Age (Hart 2020, 126). Therefore, it is possible that wood or stone shelving is present in the Cumbrian domestic sites.

Wood and stone were chosen as base materials for a use-wear experiment as they, along with earth, were the most likely surface on which a vessel could be stored. Compacted earth was another option; however, this is difficult to replicate due to different geologies and the changing moisture contents. Furthermore, the unknown level of compaction and potential that vessels partially buried (Tomlain 2013, 580) meant the surface was not included.

The experiment showed that the bases of both vessels became worn, as did the bases the vessels were placed on. The wood became smooth, and the stone became rougher due to scratches. A significant amount of clay dust was created, which likely acted as an abrading material to the pottery and bases, especially as the clay dust would contain small stone fragments from the natural inclusions. These are likely the causes of the deeper scratches on the stone and pottery.

The bases also did not wear evenly. The bases had directional scratches from the loosened material abrading, but the edges of the base became rounded, and an angle developed. This could be detected on well-preserved original pottery bases if they were inspected looking for this. The linear scratches and wear patterns would indicate frequent movement in a single backwards and forward motion, indicating that a vessel was moved frequently. Vieugue 2014 conducted experiments on the bases of unglazed Neolithic vessels from Kovacevo. He found three types of wear on the bases: around the edge, on the most prominent part, and all over the base (Figure 7.23).

Replica Iron Age vessels from Sagnlandet Lejre used in the reproduction Iron Age building also gained signs of use wear on the bases. It is unknown how long these vessels had been used and to what frequency; however, there was evidence of scratching and rounding to the base of these vessels. The vessels had a burnished surface, unlike the vessels in the construction and use wear experiments and the assemblages seen by the Author (Figure 7.12). These bases were also worn to the edges and not in the vessel's middle. This is likely due to the middle of the base being slightly indented and not encountering the abrading base. The material these vessels were put on also varies, although they were used as storage vessels, so they did not gain any sooting from the fire, which could also act as an abrasive.

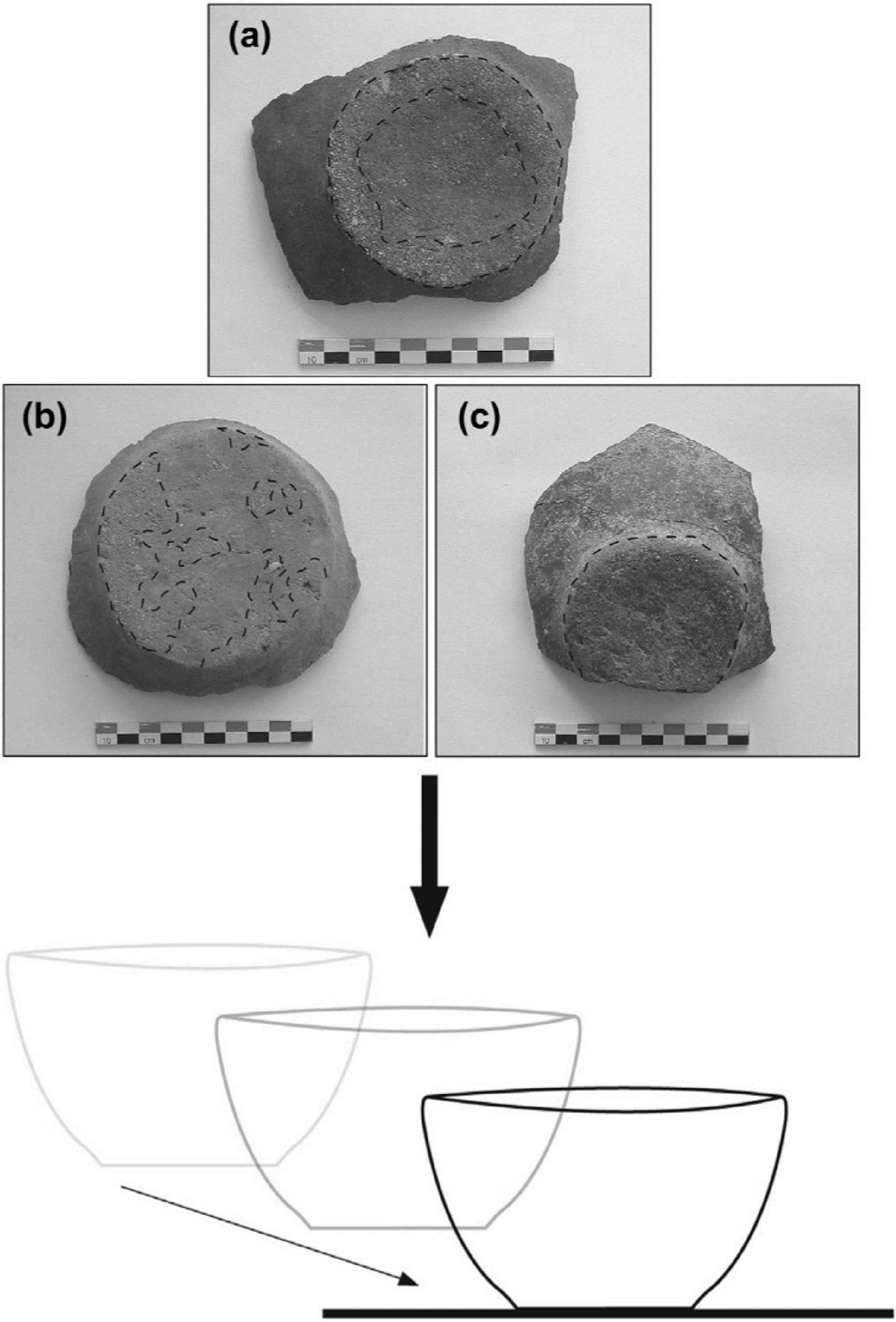



Figure 7.23 The different types of base wear suggested by Vieugue (2014 Figure 4, 625).

One of the Iron Age replica vessels has more twisted linear scratches, suggesting a twisting motion when lifted. At the same time, another showed an example of the deeper straight-line scratches where a slightly abrasive, likely a stone, was between the base and pot (Figure 7.24). Although the specifics of these vessels' use are unknown, it does prove that the use of vessels undertaken in a replicated living situation will cause wear on the bases like those seen in the use wear experiments. This means that it is theoretically possible to compare these types of marks to original vessels and speculatively say if they have been moved around regularly before their deposition or abandonment, depending on the context in which they were found.

At Kovacevo, Vieugue found that of the 4635 pots, 3476, or 75%, of the vessels had worn traces on the bases (2014, 625). Twenty six percent of these vessels had wear at the edge, 68% the entire base, and 6% the most prominent part of the base (Vieugue 2014, 625). He theorises many pots had long lives with frequent movement to gain this abrasion (Vieugue 2014, 625). However, the experiments in this thesis show that wear appears within three months, which is comparable to original Cumbrian vessels. Vessel E22 shows wear signs in Vieugue's style B, as does an experiential vessel from Sagnlandet Lejre (Figure 7.24), while Vessel E23 is more similar to style C. However, the Sagnlandet Lejre vessels had not reached the same level as abrasion (Figure 7.25). If Vessel E22 had been used longer, it may have abraded to the same level as Vessel E23. Vessels may have shorter lives than previously believed, especially considering the experiential experience of pots frequently breaking when moved (Reike Sagnlandet Lejre 2018).

The Kovacevo assemblage also has minimal internal wear, suggesting that these surfaces were not seeing abrasion. Only 2% show scratches (Vieugue 2014, 626). If they were primarily storage vessels, they would be moving around with weight inside them, increasing the rate of wear, as seen in the experiments in this thesis.


Figure 7.24 The signs of wear on the bases of an experiential vessels from Sagnlandet Lejre (left) with circular, linear scratches indicating a rotating or twisting movement on the vessel and E22 (right) (Author's Photo).

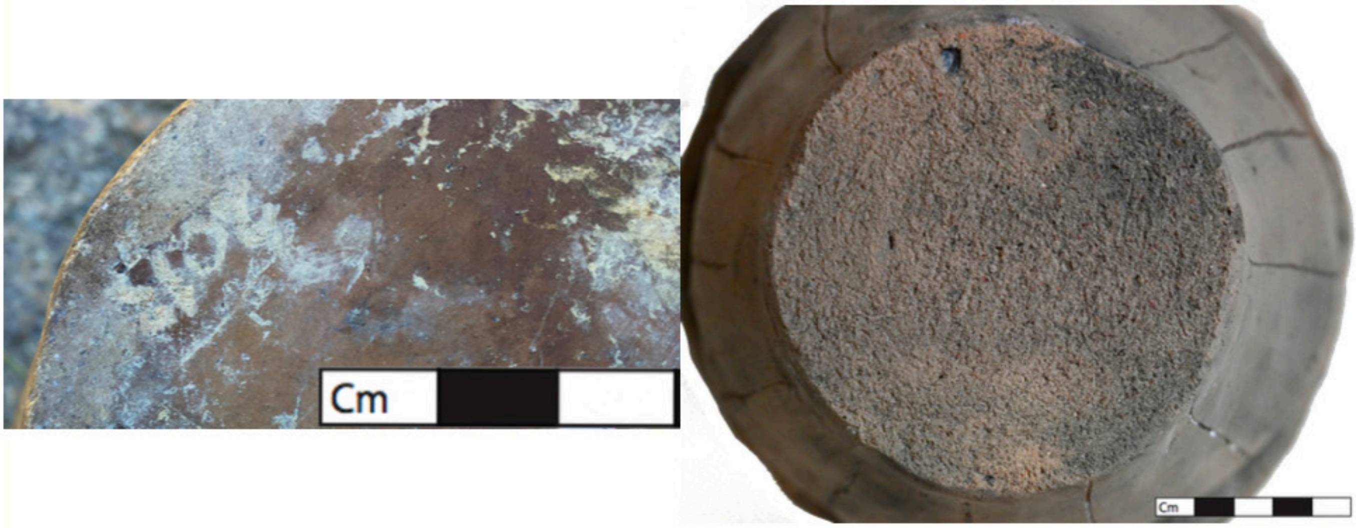



Figure 7.25 Deep linear scratches on the base of the experiential vessel from Sagnlandet Lejre (left) and wear around the edge of the base and E23 (right) (Author's Photo).

However, the vessel could be in a funerary setting containing ashes and moved in such a way before deposition and not just domestic. It is unknown if the cremated dead were interned immediately after a cremation or if they remained within a household for a period. The experiment lasted six months, and there were signs of wear. However, a vessel containing some weight for a shorter period could create the same or similar marks.

The scratches from the experiments remain linear and mostly one-directional due to the brief period of lifting and returning. The scratches on the base were random and could not be confused with decoration. However, in everyday use, the vessel may be lifted off, put down and returned and have scratches running in many different directions, like the ones observed at Sagnlandet Lejre. Furthermore, wear on the edges may occur all around the vessel if worn equally rather than just at one point in the brief experimental period, this was seen most clearly on the vessels from Sagnlandet Lejre.

Two, five stage grading methods were developed for the analysis of the bases. The first grading method studies the material loss through wear on the base with one being no signs of wear and five the whole surface of the vessel is worn (Figure 7.26). This grading scheme while still subjective is useful for visualising the damage in a consistent manner.

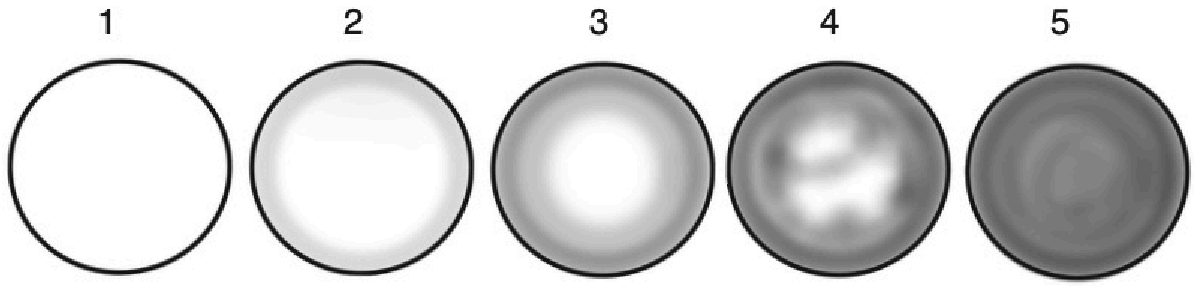



Figure 7.26 The grading scheme for wear across the base of the vessel with 1 being unworn and 5 being very worn (Author’s Photo).

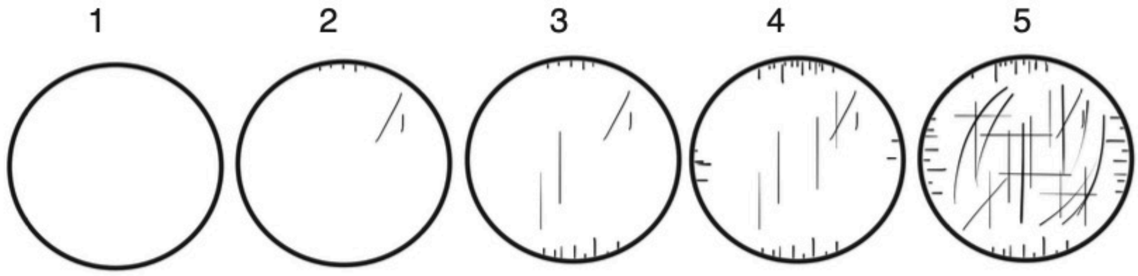



Figure 7.27 the grading system for scratched abrasions across the base of the vessel with 1 being unworn and 5 being very worn (Author’s Photo).

The second grading scheme again works on a scale of 1 -5. One is no signs of scratches and five is a heavily scratched base with scratches running in multiple directions (Figure 7.27). This can again be applied by archaeologists to study the signs of wear on bases of flat unglazed vessels in their assemblages.

The two grading systems were designed to work together and singularly. From the Authors analysis of bases some vessels had wear but no scratches and some vessels had a singular scratch but limited wear. Some of the vessels had multiple scratches and moderate wear. In the authors opinion vessels with a score of three out of ten and above likely show signs of use wear (Table 7.3). A score of two would mean there were no signs of any damage. A score of three out of five is highly indicative of use wear as by this stage there is repeated evidence of wear, and this is unlikely to have occurred through an accidental mishandling (Table 7.4). This grading scale was then applied to the original vessels that the Author could access the bases of and can be seen inteh appendicies.

Table 7.3 The scoring for wear out of a total of ten (Author).

| Combined Score Out of Ten | Type of Use |
|---|---|
| 2 | No sign of use |
| 3 | Light signs of use |
| 4 | Moderate use |
| 5 | Moderate to frequent use |
| 6 | Frequent use |
| 7 | Frequent to heavy use |
| 8 | Heavy use |
| 9 | Heavy to significat use |
| 10 | Significatly use |

Table 7.4 The scoring for wear out of a total of five (Author).

| Score Out of Five | Sign of Use Wear |
|---|---|
| 1 | No trace (0-5%) |
| 2 | Minimal trace (5%-30%) |
| 3 | Moderate signs of wear (30% - 50%) |
| 4 | Aeas of significant wear (50%-75%) |
| 5 | Heavily worn (75% -100%) |

Based on the Cumbrian assemblage which the Author has examined, there is no significant evidence of deep scratches (appendices). No vessel was scoring above a 4 on the scratch grading system. Vessel C33 (1997.325.139), a Beaker from Garlands, has a rough base with possible linear abrasions. There also are empty cavities in the fabric where it would appear inclusions may have been but have since been lost on Vessel C39 (1987.30.5) from Ewanrigg (Figure 7.28). However, there are also gaps for missing temper stones on the walls of the vessels so that the loss may have occurred through other uses, such as heating during cooking or handling. The loss could have also occurred post-deposition as the fabric became softer due to moisture in the soil.

The edge of the base of the vessel also looks slightly worn into a rounder profile than the crisp edge seen on other vessels. The base's roughness contrasts with the vessel's body, which is much smoother and deliberately decorated. This indicates that the damage to the base is unlikely to be purely depositional and caused through human activity. However, this vessel was excavated in the Victorian era and had over a century of handling since it was excavated. Some damage may have occurred more recently than in the Bronze Age. The vessels from the Victorian period, particularly in the Garlands assemblage, have been cleaned and, in many cases, varnished. This makes it more challenging to analyse the marks on the fabrics as they could quickly have occurred after the


Figure 7.28 Missing temper on the wall and base of Vessel C39 from Ewanrigg ((Author's Photo) Table A1.1 -C39).

Considering the nature of short-term movement on a vessel's base, Use Wear Experiment 4 was conducted to look at the functionality of a lidded vessel with contents being moved daily for three months. The smaller Collared Urns are seen to be domestic vessels, and they are the ones which are found with lids (Tomalin 2013, 580). Small storage vessels could be used frequently to access the contents. The weight of the contents could affect the wear and signs of use in a vessel.

Both vessels produced dust indicating wear to the bases occurred, Vessel E23 seemingly much more than Vessel E22. However, the total amount could not be gathered as it dispersed due to the draft made while moving each vessel. Vessel E23 also left a more wear patterns on the wooden base, with many deep linear gouges, as opposed to 22, which left fewer, less deep marks.

The clay bases of the vessels showed signs of wear, with more apparent signs seen on Vessel E23 and less on Vessel E22. Vessel E22 also showed signs of temper loss. The stones used in a temper were angular and, if caught between two surfaces, would either roll or drag and being a harder material, they left marks. A stone from the natural temper became dislodged and likely was the cause of many of the deeper marks on the vessel and wooden base.

The vessels show further evidence of material loss in the weight changes before and after the experiment. The experiment was conducted where the vessels had been stored for six months before the experiment. This was an inside central heated building away from windows and radiators with consistent moisture levels. The weight change is likely mostly from material loss.

Table 7.5 The change in weight from the experiment's start to the end shows material loss through abrasion (Author).

| Vessel Number | Weight At the Start (g) | Weight During the Experiment (g) | Weight After Three Months Vessels Emptied (g) |
|---|---|---|---|
| E22 | 1380.6 | 1380.6 | 1379.5 |
| E23 | 1393.2 | 1955.2 | 1390.5 |

Vessel E23, the weight went from 1393.2 to 1390.5, losing 2.7g of material (Table 7.5). There is a change from 1380.6g down to 1379.5g for Vessel E22, indicating just 1.1g of material lost. The bases of vessels can tell archaeologists much about the function of the vessel before it is deposed. Moving vessels frequently, even without weighted contents, wears away the bases.

Original vessels with similar signs of wear to the base can be seen. This is often through the temper being more exposed than in the surrounding fabric. Several of the bases of the vessels have been either reconstructed or coated in varnishes during previous eras. This means determining signs of wear on them is more challenging. Vessel C40 (1987.30.6) from Ewanrigg has a reconstructed base, but what is left shows far more exposed temper on the base of the vessel than on the walls of the body just above, as well as rounding and exposure of the temper on the edge of the vessel gaining a score of five by the base wear scale (Figure 7.29). The area which is not reconstructed does show a similar rounding of the base and the exposing of the temper seen in the experiments, although the temper is much coarser in this vessel than it is in the experimental vessels, and this may affect the distribution of the scratches however it is most likely that this vessel was moved on the base for at least a few months prior to becoming a burial vessel.

Interestingly, at Garlands, one of the vessels with possible signs of wear is Beaker Vessel 1997.325.139. The Beaker also has a rounded wear profile towards the base scoring three and with possible scratch lines scored at four along material loss of large temper inclusions (Figure 7.30). This gives a gives a total of seven suggesting frequent to heavy use. Indicating that this Beaker in had a function in a domestic setting more prominently than the funerary.


Figure 7.29 The base of Ewanrigg Vessel C40 with a reconstructed base, the worn edge of the original vessel, and exposed temper on the base remain ((Author’s Photo) Table A1.1 C40).


Figure 7.30 The base of Beaker C33 shows the rounding of the edge along with scratches over the rim and along the base highlighted in red circles ((Author's Photo) Table A1.1 -C33).

However, other vessels show no signs of wear. The Food Vessel from Brownrigg has a fabric on the base, which is very similar in condition to the walls (Figure 7.31). In comparison, the Food Vessel from Bewcastle has a more exposed temper on the base of one of the Food Vessels C103 (1977.95.1) compared to C104 (1977.95.2) while C105 (1977.95.3) has a base comparable to C104 (1977.95.2) (Figures 7.32, 7.33 and 7.34). This is very interesting because vessels C103 (1977.95.1) and C104 (1977.95.2) are similar in style and found in the same burial. The vessels lay side by side with their bases to the west wall in a sand-lined cist (Hodgson 1940, 158). While C105 (1977.95.3) was found in a secondary cist base upwards (Hodgson 1940, 158), as such, the wear on the base of one vessel out of the three indicates a factor beyond the deposition being the cause. Use Wear is visible on one vessel but not the other. The second, C105 (1977.95.3), is smaller, with no signs of wear on the base or in the perforations through the lugs, suggesting that there was little to no use of the vessel prior to deposition. This also suggests that practices at the same burial site were not consistent. There is seemingly no divide between those who use vessels in domestic and funerary versus only funerary. The use of both suggests a need for must-use vessels and when they had additional burials, they made similar forms or had similar forms in use that were used in burial situations.


Figure 7.31 The base of the vessel Tullie House C25 from Brownrigg Fell shows no signs of wear or abrasion ((Author’s Photo) Table A1.- C25).


Figure 7.32 The base of the vessel Tullie House C105 from the secondary cist shows very little evidence of abrasion on the base ((Author’s Photo) Table A1.1 -C105).


Figure 7.33 Vessel C103 from Bewcastle shows the base’s exposed temper compared to the wall surface ((Author’s Photo) Table A1.1 -C103).


Figure 7.34 Vessel C104 from Bewcastle shows the base's exposed temper compared to the wall surface ((Author's Photo) Table A1.1 -C104).


Figure 7.35 The experimental vessel  E23 base after being used for three months with contents leaving the base abraded and temper exposed (Author's Photo).

The wear on the base of Food Vessels C103 (1977.95.1) (Figure 7.34) is like the base of the experimental vessel (Figure 7.35). This could indicate the vessel having a function prior to deposition. However, it is interesting that only one of the two vessels has the signs. However, Food Vessel C103 (1977.95.1) is the larger of the two vessels, and the increased weight might have influenced the rate of wear seen on the vessel as per the results of Use Wear Experiment 4.

Furthermore, size affects the condition of the base. Only the Accessory Vessel, C92 (1926.27.434) from Skirwith Moor, had any decoration on the base. No other vessel in the Cumbrian assemblage has this. This suggests the vessel's base was not considered necessary, even on vessels inverted during burial. Therefore, having a base with imperfections or signs of use would not deter it from being used in other settings, such as funerary. On the other hand, the largest of the vessels, the Collared Urns, all had bases which seemed to be unworn. C71 (1999.826) from Garlands, over 400mm tall, has linear scratches on the bottom of the vessel's body but not on the base (Figure 7.36). These are likely from later handling incidents, such as being moved into storage and possibly while being cleaned rather than from use wear. The scratches are not deep, but they seem to cut through the darker colouration on the vessel, suggesting they occurred during cleaning or storage. Vessel C81 (1952.71), over 450mm from Little Mell Fell, was too fragile to invert safely. While the base has signs of material loss, it is consistent with the wear seen across the whole vessel, and it is more likely that this occurred during deposition than before it (Figure 7.37).


Figure 7.36 Tullie House C71 with liner scratches going up the sides of the vessel wall likely gained post-depositional ((Author's Photo) Table A1.1- C76).


Figure 7.67 The base of the Meir Pen vessel Tullie House C81 has had material loss around the base, like the condition of the rest of the vessel ((Author's Photo)Table A1.1-C81).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temper on experimental vessel E22 where the indented area is smooth (Author’s Photo)Table A1.1 and Table A2.1).

On Vessel C87 (1970.390 from Kirkoswald, an area of temper is exposed in the centre of the base but not elsewhere (Figure 7.38). This suggests that the temper was exposed through flaws in construction and possible rough handling, knocking some material loose when placing the vessel down. This is not the same type of wear seen in Use Wear Experiment 4 when areas of smooth fabric were left exposed in Vieugue's Style B of base wear or in the grading system developed during this study (Figure 7.38).

Bronze Age clay vessels are not the hardest material in an assemblage, so no vessel is ever likely to be pristine. Some scratches are likely to occur on most vessels despite the actions of the potters or users. Some minor scratches were gained on experimental vessels while in storage before experimentation. This makes identifying scratch marks more challenging and is why experiments to recreate them are necessary.

The Yorkshire Wolds has a known type of lidded Food Vessel with five confirmed vessels from four different sites (Wilkin 2013, 261). The lidded Food Vessels are notable amongst other types in part due to their size; they are smaller (Wilkin 2013, 262). Wilkin speculates that due to the depositional nature of some of these smaller vessels in adult graves, they could be related to children. However, insufficient evidence confirms this (2013, 262). Wilkin also notes that these Food Vessels have a typological connection, like Irish ceramics from the period (2013, 266). Fell speculated in 1967 that the Cumbrian Bronze Age was influenced by Ireland (Hallam 1993 43). Cumbria lies between Ireland and Yorkshire, so it is possible that the potting tradition passed through. However, there is no Irish presence in the pottery forms or usage style, even if it is present in surrounding counties such as Dumfries, Yorkshire, and the Isle of Mann (Hallam 1993 45).

In Northamptonshire, at Raunds, three sherds of Middle or Late Bronze Age pottery were found believed to be from a lid (Tomalin 2013 559). The sherds are of similar dimensions to a lid from Hockwold-Cum-Wilton associated with a biconical urn (Tomalin 2013, 560). The lid has curvature, and a peculated knob in the centre is used to remove it, perhaps as an imitation of a wooden form (Tomalin 2013, 560).

There are also ceramic lids found in the South West of England. Vessels from Shearplace Hill and Cheselbourne, in Dorset, show evidence of lids (Tomalin 2013 561). Furthermore, Dorset's lidded vessel is comparable to Long Bennington in Lincolnshire (Tomalin 2013 561). The site in Lincolnshire was a cremation burial site with several lidded biconical Urns (Tomalin 2013 561). The lids in Nottingham have a predicted diameter of 110 -117mm, within the range of Hockwold-Cum Whitton, which was up to 140mm (Tomalin 2013 580). However, at Shearplace Hill, it is believed that a lid was made to be about 240mm in diameter (Tomalin 2013, 580).

Shearplace Hill in the southwest was a domestic settlement, and the vessels are associated with the household amongst many other domestic finds (Brück 1999,146). The site at Shearplace Hill has many construction similarities to Bishops Cannings, which is in Wiltshire (Barrett et al. 1991, 206). This similarity and the large distribution of lids throughout the country suggest a national tradition of lids but not necessarily a standard practice.

There is also the possibility of wooden or woven material like reed, such as those used at Sagnlandet Lejre (Figure 7.39). However, these lids need to be made to fit each vessel, and while storage is a critical survival skill, it is also a hectic time, and having to prepare a lid for each vessel could reduce the time for collecting foodstuff. This is even more evident as no vessel in the assemblages has the same size rim or perfectly round circumference, so each lid needs to be custom-made for a good fit.

Figure 7.39 Experiential vessels at Sagnlandet Lejre on rough wooden planks, one with a woven organic lid and another with a large chip in the rim (Author's Photo).

Wooden and ceramic lids are heavier than woven or leather options, especially those that must be taken on and off to access foodstuffs during the winter, which could increase the chances of damaging the vessel through cracks and chips. Furthermore, the rims of vessels can be susceptible to damage from frequent knocks. At Sagnlandet Lejre, the experiential pots are not to have spoons left on the rims, nor are the spoons to be tapped on the edge to remove foodstuffs or else the rims suffer cracks and chips (Sagnlandet Lejre 2016, 15). While no cooking was undertaken in any experiment in this thesis, Vessel E34 was accidentally knocked on the rim during the removal from the fire, causing some of the rim to break away even though the walls of the vessel were thick and fully fired (Figure 7.40). These flaws could create gaps, leading to the loss of the vessel contents due to air moisture and insects being able to get through.


Figure 7.40 Vessel E34 with the chipped rim and sherds after bei[illegible]al from the fire (Author's Photo).

Textile woven fabric or leather lids are possible, but they have yet to be discovered. In Wiltshire, however, there is some evidence of fabric-wrapped Urns from Victorian archaeological records. From Winterslow, an urn was found 'wrapped in linen which had the appearance of a veil of fine lace of mahogany colour.' (Stevens and Stone 1939, 177). The linen, in this case, 'Crumbled to dust, and the wind blew it away' (Stevens and Stone 1939, 177). Similarly, at Durrington Walls, Cunnington mentions an urn wrapped in some quantity of linen or wool (Cunnington 1884, 261), but the wind again destroyed the evidence. Cunnington likely incorrectly identified the fabric as coarse wool due to his cultural understanding of textiles in this period (Haughton et al. 2021, 177). This suggests that, at least in Wiltshire, there was a tradition of wrapping urns in fabric when depositing them into graves. At Upton Pyne in Devon, a burial suggests that a metal pin was used to close a bag, and there are other similar finds on Dartmoor (Jones 2016, 222). This suggests that material was sometimes used to contain remains during burials practised in the southwest (Harris and Jones 2017, 7).

Furthermore, it has long been believed that textiles are associated with the decorative patterns on the walls of vessels (Haughton et al 2021, 177). The cord designs on the rims of vessels have been considered skeuomorphs of wicker lids on Fengate-style vessels, which were adopted by the makers of Collared Urns (Tomalin 2013, 572). Tomalin suggests these style textile lids suit Collared Urns and similar heavy-rimmed vessels (Tomalin 2013, 572). It has been long speculated that even if a vessel is not wrapped in fabric, some form of the organic lid contains the remains before burial (Williams *et al.* 2004, 47). A lid with a lip knotted tied under the collar would secure a cover as a drawstring or as a simple, secure point to fasten a cover down. It is also speculated that the lid was removable to allow potential depositions at significant sites. This might explain why the bone found in a burial is significantly less than expected for a complete set of remains (Williams *et al.* 2004, 47).

Interestingly, Tomalin suggests Collared Urn should be used with lids, but they are not among the vessel forms with a ceramic lid in the archaeological record. Tomalin suggests that a Collared Urn in Dorset from a cremation burial, with a rim diameter of 360 millimetres, had perforations through the rim, possibly to tie on a lid (2013, 581). However, he also strongly suggests that a well-fitted lid could be used domestically to store grain or flour (2013, 581).

Collared Urns are considered in the literature to be storage vessels for either cremated remains or within the household, although the larger the Collared Urn, the more likely it is to be associated with a burial (Tomalin 2013, 572). Furthermore, smaller vessels were given lids in the archaeological record. However, most theories have never been tested to see if there is any practicality in creating lids for smaller domestic Collared Urns or even cremation Urns.

Therefore, an experiment was conducted to see how effectively a lightweight lid stored food content over several winter months. This aimed to see how vital a lid was in the domestic function of a small Collared Urn or similar vessel. It also aimed to explore if a simple organic lid tied under the collar could function as a lid.

Vessel E20’s lid was photographed, showing a layer of dust and some larger pieces of dirt and detritus on the surface. This indicates that the leather lid kept the outside dirt from contaminating the internal contents. The lid was then removed, and the oats were weighed. They came in at 102.1g, indicating they had gained 2.1 g weight during the experiment. Due to the lid keeping out the large dust and dirt, this weight was likely coming from moisture, making it through the vessels of the wall and leather. Weight gain was recorded in the internally stored vessels in Use Wear Experiment 1, so it is known that moisture can permeate the walls of the vessels. However, it shows no significant increase in weight, and the oats likely would be classed as surviving if slightly stale. After the experiment, the oats were disposed of, but no mould or pests were visible. This shows the value of adding a fabric lid to vessels containing food.

Furthermore, the lid was quickly attached to the Collared Urn form. The leather was passed over the opening and tied underneath the rim section. This created a secure hold and kept the lid from falling off or pests being able to creep under. Lids were also possibly used in a funerary setting to contain the ashes. There is evidence of upturned Collared Urns in burial sites such as Ewanrigg (Longworth 1992, 341). These vessels contained cremated remains, and while they could have been placed in an organic bag that had since decomposed, they equally had had a lid of organic material that had also decomposed. The use of a lid in the funerary setting could also have been seen as a way of preserving the remains.

The leather lid that kept the large pieces of dirt outside the vessel during this experiment could easily keep fine cremated contents within an urn during burial. This would benefit not just during an inverted urn burial but also when trying to place an urn or remains in the ground upside down with dignity. A lid is needed on days with inclement weather, such as strong wind. If the burial did not occur directly after the cremation, it would also keep the remains secure and uncontaminated before internment, as suggested in previous literature.

The tied-on lid would make the remains accessible for the time before burial if that was what was needed. It is possible that a cover such as the one used in the experiment was used to seal the vessel, and it could be then wrapped in other textiles, which would explain why Cunnington saw linen and wool in the Durrington Walls case (Cunnington 1884, 261). A bag and lid are sensible methods to contain the remains during burial, particularly if vessel inversion occurs. Howards Davis speculates that a bag was used at an inverted burial in Allithwaite, Cumbria (2003, 38). It has also been suggested that it was not just a lid but the whole vessel was wrapped with shroud acting as a liminal membrane further transforming a vessel from the domestic to funerary through such a transformation (Copper et all 2019 183).

The domestic and funerary are viewed as two separate spheres, one of the living and one of the dead. However, that divide is less clearly seen once the pottery is studied beyond the context in which it is found. Practices seen as domestic can be just as easily attributed to the funerary, such as lids. The moving of pots occurs in both domestic and funerary vessels. Scientific analysis of residues can reveal more about the possible function of vessels at certain stages in their lifecycle. However, they also only capture moments, and the whole is, in some ways, still eluding archaeologists because we do not have the beliefs and practical aspects of the Bronze Age people’s daily lives and deaths.

### 7.2.5 Comparison of Other Scientific Methods

The experimental and comparative approach gives much insight into the production methods and possible uses. Petrology that has been undertaken has also given insights into how the material that makes the vessels was being sourced. The use wear gives insights into the storage and functionality of made vessels. Lipid analysis gives insight into the transitional status of vessels from a domestic to a funerary context.

The study of the lipids of the vessels is an important indication of function; it is not, however, a definitive approach for answering questions on functionality (Whelton et al. 2021, 17). Lipid tests need the lipids to be present in high quantities when heated for reside to be left (Evershed 2008, 902). The tests are also limited to specific residues; many traces still cannot be detected with the current methods (Evershed 2008, 904). Detecting certain soluble hydrophilic compounds is challenging as groundwater has often diluted them (Whelton et al. 2021, 3-4). This means inaccuracies in assumed use can occur as survivor biases in the lipids influence the data (Whelton et al. 2021, 14).

In recent years, there have been a growing number of articles urging caution when considering using destructive archaeological techniques (Whelton et al., 2021; Sykes 2020; Craig et al. 2019). Furthermore, its cost, complexity, and destructive nature mean it is only undertaken sometimes. Samples are best taken from pot walls that have not been washed or overly handled to limit the transfer of erroneous lipids (Skibo 2015, 196; PCRG 2010, 37). Destructive Testing methods also mean that the sample cannot be re-tested in the future, and the test undertaken may not advance research (Craig et al. 2019; 84 Whelton et al. 2021, 14).

Soberl (2011, 253 - 254 and 267 - 70) does not specify which pots the samples were taken from, with 73 results from Wiltshire compared to 23 from Cumbria (Table A2.5 and Table A2.6). The number of vessels tested shows that there is still a gap in the number of vessels being tested between these two regions. However, on average, the trace amount is higher for the Cumbrian assemblages, likely in part due to the smaller assemblage and vessels being more carefully selected for likely traces of residue due to the smaller sample size taking less time to view. This is unfortunate in limiting the understanding of the vessels and how the funerary deposition relates to possible prior use wear.

The results are insightful (Soberl 2011, 253 - 254 and 267 - 70) (Table A2.5 and Table A2.6). The Collared Urns show a mixed result of biomarkers detected, and none detected across both assemblages (Soberl 2011, 253 - 254). The analysed Beakers, however, do not show the same trace results as the Accessory Vessel (Soberl 2011, 267 - 70). This supports the previously mentioned theory of Hallam (2015, 123) that the small vessels are made possible during the funerary process is supported. Furthermore, it suggests that Beakers were not being used in a domestic settings in Cumbria, and when they are rarely used, it is purely in a funerary burial context. There is some evidence of alcohol in Spanish Beakers, but not all of them; some in Europe contain traces of copper from smelting (Guerra Doce 2006, 249 - 252). This shows that there were wildly different uses of Beakers on the continent, and the same was likely happening in Britain as the pots and migrants brought Beaker culture to the country.

Fatty acids are, as expected, the most commonly found trace in the pottery. This matches the general pattern of natural reside analysis across all pottery groups, likely due to the frequency of heating fatty foodstuffs in ceramics during prehistory (Soberl 2011, 24).

Furthermore, the Collared Urn with fatty acid traces is absorbed within the walls. Soberl's cooking experiment showed that there were traces of fatty acids after just five cooking sessions, although not as high in value as from some of the original pottery (Soberl 2011, 220). This suggests that some vessels were being used in cooking contexts for a long time, possibly years, to gain the level of residue found on the sherds. However, the size of the vessel and the treatment of the foodstuffs may limit the quantity of lipids deposited (Soberl 2011, 209), so the amount of lipids does not necessarily correlate with the vessel's lifespan. Furthermore, depending on the part of the vessel being tested, the lipid concentration may vary, with more lipids being found at the top of the vessel due to the hydrophobic nature of lipids (Soberl 2011, 192). Furthermore, it is known from experiential cooking experiences at Sagnlandet Lejre that cooking vessels must be filled halfway to ensure they do not crack due to the thermal differences (Sagnlandet Lejre 2016, 15). However, the burnt residue is left on the vessel walls due to the cooking process and water evaporation (Figure 7.41).

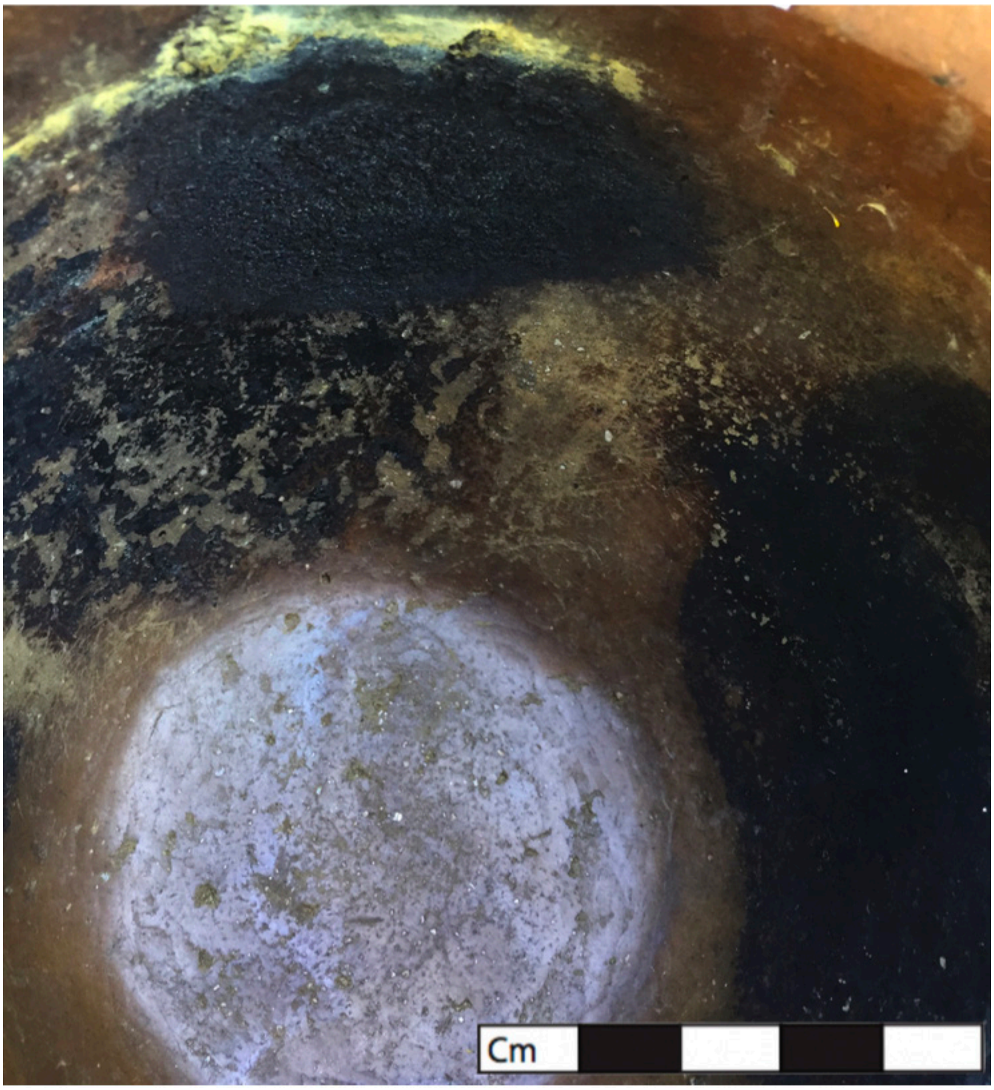


Figure 7.41 Burnt residue on the upper internal surface of a replica vessel from Sagnlandet Lejre (Author's Photo).

The vessel from Ewanrigg in Soberl's data set (Soberl 2011, 254) has traces of resins. This could signify that the vessel was storing different materials than the others or that the resin had been used to seal the vessel. The resin could also be used as glue to mend broken parts of a vessel or as a waterproofing agent (Soberl 2011, 39). However, resin does not seem to be a significant residue in the assemblage, suggesting that either storage vessels or broken vessels with resin fixed were not chosen for funerary deposition. This could be due to the continued use and need of the vessels in the domestic; it could also be seen as not wanting to bury the deceased in a broken vessel. This could be because of a person's belief or the practicality of the repairs, notwithstanding the funerary rites' uneven heat.

Beakers with domestic associations in Wiltshire show traces of simple dairy (Soberl 2011, 99). This suggests that Beakers are not just funerary vessels but have domestic functions within the households that may have transitioned into the funerary as needed. The lack of domestic sites from Cumbria means this is not comparable, but Beakers were more prevalent in domestic use than we currently know. It was just in a funerary context the people living in Cumbria were not using them.

Residue analysis also reveals that across the assemblage at Potterne, the vessels tested show evidence of all the different lipids tested for (Soberl 2011, 99). This suggests that the vessels may have had a non-specific function within the domestic rather than being assigned to a specific food group. Coupled with the large amount of bone waste associated with the site, feasting is likely, and the vessel could have been made for the feast rather than belong to a household. However, this is a Late Bronze Age site where the traditions differ from those from the Early Bronze Age. Nevertheless, this shows that the uses of pottery were adapted alongside the forms during the period. At least in Wiltshire, pottery was evolving and changing its form and role in tune with the demands of the identity of the uses.

However, the consensus from petrology was that pottery production in both Cumbria (Freestone 1992, 340) and Wiltshire (Tomalin 1992, 76) was produced locally using a local source of clay and temper. This theory was tested in the Cumbrian assemblage when a clay bed within a mile of a large cemetery site, Garlands, was used to successfully recreate a series of experimental vessels in chapter 5 that was used in chapter 6. The distribution, form, and frequency of the different vessel forms (chapter 3) suggest that communities in Cumbria and Wiltshire, although part of a broader cultural change, had individual approaches to tempering.

The temper varies from region to region, with flint common in Wiltshire (Woodward 2008, 295) and not in Cumbria (Hallam 2015, 100). Again, grog is not frequently recorded in the Cumbrian assemblage, but some are seen at the Maryport site of Ewanrigg (Craddock and Freestone 1992, 208). Furthermore, there is a variation in tempering between different vessel types at Ewanrigg; the Beakers are the only ones with grog temper (Longworth 1992, 342), although these are of two different traditions due to the nature of the temper not being well distributed in one of them (Freestone 1992, 340). Quartz is frequently seen in Cumbria and is preferred over limestone or shale (Freestone 1992, 340) despite also being abundant, likely due to the stability of quartz during firings. This does suggest a taught element to pottery production. The reliability of quartz was likely taught to potters even if they did not know the scientific reason behind this; they would know it increased the chance of the vessel surviving, and intact pots were the likely desired outcome from the potting process. Using the quartz became part of the potters' identity, with specific sources being chosen over others even if the reason why was no longer known.

Construction Experiment 1 (5.3.1) looked at the tempering of natural clay with different inclusion frequencies. Very few vessels in the Cumbrian assemblage have been studied well enough to have a definitive view of temper frequency and inclusion type; however, Ewanrigg has the most comprehensive data set (Longworth 1992, 340-6). Construction Experiment 1 used coarse sand as it was readily available to the Author and present, if not frequently, in the Ewanrigg assemblage, the most recently studied assemblage (Freestone 1992, 340). Sand from natural sand beds was used as flint, shell, and limestone, which are noticeably absent in the reports of the studied vessels (Freestone 1992, 340).

The experiment reveals that vessels can be produced with different quantities of inclusion. However, the technique needed to produce the vessels changes. The vessels with 30% and over temper were tougher to form vessels from as they were drier and tended towards cracking. Furthermore, the clay temper mix made the clay more challenging to work on, and the clay was coarse. With a temper, such as burnt flint or coarse grit, the potter could develop cuts or abrasions from the temper when forming the clay.

The research on North West Accessory Vessels by Hallam indicates that Cumbrian vessels of this form are between 20 and 30% tempered (2015, 96), while Millson suggests 20%, with some, if not all, of it, naturally occurring (2013, 96). This fits the Author's impressions of the vessels they have seen in the Cumbrian assemblage. The inclusion types, however, vary. As previously mentioned, sand tempering indicates Late Bronze Age pottery (Hamilton 2002,46).

The degree to which clay is deliberately tempered versus natural clay containing inclusions can be debated. The Ewanrigg assemblage indicates that included petrology is not from the site's bedrock but from glacial or fluvial flow (Freestone 1992, 340). However, it shows that the inclusions used are local to that region of the Cumbrian landscape, in this case, primarily volcanic and some quartz sands and silts (Longworth 1992, 342). However, shales and limestones, also in the area, are not present, indicating selection in the tempers. This matches Hallam's view that the inclusions used in Cumbria are reliable opening agents that do not risk an adverse reaction during firing (2015, 100).

As previously mentioned, there is the presence of grog within some of the Beakers at Ewanrigg. One Beaker had an even tempering of grog, and within that grog was the presence of grog (Freestone 1992, 340). This suggests the Beaker was made from a tradition of using grog as temper and reusing vessels repeatedly as needed (Freestone 1992, 340). This vessel contained at least two other fired vessels within it. These vessels could have broken during firing, or they could have been used and broken later. They could have deliberately been broken to be added into the new pot as grog as part of a continuing tradition. However, this vessel is different from any other within the assemblage at Ewanrigg and is of a finer make than all the others, nor does it fit comfortably with the other Beakers in the North West of England (Longworth 1992, 341). This suggests that the Beaker, though buried in a grave in the North West, was not made there and instead brought to the region through immigration or trade.

The experiments also reinforce the fact that clay with different tempers shrinks by varied amounts. When averaged, the height of the experimental vessels shrunk by 8.2%, and the bases, on average, shrunk by 14.96%. The rims shrunk 15.13%, but on average, the combined rims, bases, and heights shrunk 12.763%. This means that they did not shrink uniformly, likely due to the different thicknesses of these parts. The rims shrunk the most, but they were the thinnest and most exposed to the air, a significant factor in drying clay. While the bases were the thickest and least exposed to air, they contacted the least. The slab experiment suggests a shrinkage of 10%. The difference in the numbers is also likely due to the movement of the clay during the drying process. Rims could have collapsed slightly, making the vessels opening smaller than they were during the wet measuring. Clay could have slumped downwards towards the bases, thereby making the bases widen, meaning the average shrinkage is smaller than the height. The thickness of the material may also have contributed to the shrinkage rate, with the clay at the rim being significantly thinner than the base. The thinness would allow for more significant material shrinkage as there is less material.

It is also important to remember that despite the vessels adding the same amount of water during production, they had different amounts of dried clay. The different quantities of clay would affect the water content of the vessels, with the vessels with less temper having more clay available for the water to become mixed with. In contrast, the clay with the most temper had less clay and fewer places for water to bind. This might explain why these vessels were more prone to cracking during production. Coarser fabrics also have more openings for water to leave the vessels during the drying and firing, aiding them in the pit firings (Hallam 2015, 97).

Further experimentation may reveal the reason for the variability in the results. However, the experiment does show that temper frequency does affect the clay and the final vessel proportions. The Author found the 20 -30% temper by weight of dry materials to be the most satisfactory range to work with, and the likelihood of the Bronze Age potters having a preferred inclusion frequency is likely. There is also a possibility of precedent playing a part in the clay used. The clay used in the pottery at Ewanrigg is broadly the same, even if vessel forms vary (Freestone 1992, 340). This suggests that the potters had at least a preference for the clay and temper, if not the forms. Considering that the burial site spans 940 years according to the calibrated Radiocarbon dates ranging from 2460 to 1520 BC (Huntley 1992, 351), there is likely an element of taught behaviour in selecting material.

As an experiment, it would be interesting to bury a series of vessels with abraded bases, some inverted and some situated on their bases, and see if the burial affects the wear patterns. The presence of moisture is known to damage clay and soften edges, which may alter the appearance of use. This would help answer the question of whether post-depositional wear was seen at Bewcastle, where two out of three vessels buried at similar times in the same area had different signs of wear.

# Chapter 8 Discussion of Function and Identity of Bronze Age Vessels and the People Making and Using Them

## 8.1 Identity of Potters and The People Using The Vessels

Before further discussing potters' local or regional identity, the chapter will touch on the personal identity of who was possibly making the vessels. Previous chapters, 2.6.6 have discussed ethnographic understandings of potters within communities, such as the studies undertaken by Skibo (1992). These discussions have examined the potters' skill levels, production styles, genders, and ages. This theme of discussion has been expanded upon by archaeologists studying known Bronze Age sites in Britain, looking at the evidence for production at a local and industrial level, such as Taylor (2013, 125). Theories about the potters can be drawn through the studies of the ceramic material and the methods used in construction, such as the skill needed to form wall thickness and form of a Beaker (Hammersmith 2010, 119). Understanding skill can also show the transfer of knowledge and technology and interactions between social groups as ideas are transmitted (Roux 2019, 279).

By adding a practical experimental approach, the Author has tested these theories in the Construction Experiments (Chapters Five and Six). The experiments examined how much materials are added to make a vessel, how skilled you must form a vessel (Construction Experiments Four and Five) and how well the vessel survives firing.

Experimental and experiential potters such as Millson briefly explored the skill level needed in constructing replica urns (2013, 154). These experiments give insight into the skills the potters need, and the type of material procurement needed to build the styles of vessels we have available in the regional and national assemblages. However not all potters could have the same level as skill due to the time needed for each person to become a master at the craft (Roux 2019, 279)

The gender identity of potters is challenging to define. The cultural gender roles of the Bronze Age are still very speculative, and no clear matriarchal or patriarchal basis for pottery production should be assumed just because ethnographic evidence can lead that way such as the work undertaken by Gosselain (1992, 565). There are valid arguments for either gender being the leading potters in a community or it even being a shared endeavour. Women being the potters is explored through the concept that pottery traditions such as Beaker culture are spread by women moving and marrying into new areas (Needham 2005, 208). However, one single cause for the spread of a pottery form or style is unlikely, and many factors likely contribute (Millson 2013, 96). Skibo and Schiffer argued that women were likely the potters in prehistory (1995, 90) after studying ethnographic and archaeological evidence, although they acknowledge that this is difficult to prove (1995, 91).

Furthermore, the skill level needed to build a pot varies depending on the vessel type and the material used (Needham 2005, 188). There are very fine examples of Beaker vessels, but within the same assemblage, there are much more rudimentary versions of the same vessel

(Hammersmith 110). With Beakers, the height and thinness of the walls reflect the quality, and many in the assemblages are not considered high quality by these standards (Hammersmith 112). The same can be suggested of all the vessel forms, from the smallest Accessory Vessel (Hallam 2015, 195) to the largest Collared Urns. Location is also not a factor, as seen at Ewanrigg, where two Beaker vessels from context 84 in the cemetery range in quality of form, firing and decoration skill (Longworth 1992, 341-2). The variation in form could be due to different potters' techniques or different potters' understanding of the local potting material.

Vessels with different temper frequencies in Construction Experiment 1 showed that the clay and temper ratio could affect the final form. Clay with more temper needed more water to form and was more prone to cracking during the forming process. This meant it needed to be handled more precisely, and the form and dimensions had to be more clearly visualised from the start of the production process than with the pure clay, which was more forgiving and able to be manipulated to form. Therefore, a potter skilled with one form or frequency of temper could struggle to form a similar vessel in different clays. A local potter would likely know their local clay and how best to work it to their desired outcome in a way that a newcomer might need help managing on their first attempt.

The construction experiments prove that naturally sourced clay can be processed into wet or dried vessels and rehydrated clay. This leads to the idea that what we see in the assemblage is a finished vessel which was chosen worthy of being fired rather than a vessel discarded earlier in the production process. These vessels were likely made but have become lost. If the potter thought the vessel was displeasing or unlikely to survive, the vessel was likely discarded, and the clay repurposed into another vessel. Although the presence of wasters suggests that sometimes the firing failed, the vessel was still used as grave goods (Hallam 2015, 120).

The construction experiments proved that even after a brief viewing of a vessel form, an amateur potter could form a basic imitation without the potter ever having handled a vessel of that form. Furthermore, the vessels made by the amateur could then have this form survive a pit firing. Over several weeks, months or even years, the amateur potter from the construction experiments could quickly develop and hone their skills to make vessels like the more 'skilled' style vessels seen in the assemblages. If pottery was a skill from a young age, then some pots were made by children or others within the homestead and more skilled potters. There likely would have been several with potting skills in a household to cover the possibility of death of the potters. Brudenell suggest that some of the Pottery at Must Farm shows signs of being more unskilled and possibly made by less skilled potters or those still learning (2024, 791). Furthermore, Brudenell indicated that the pots with the signs of less skilled hands tend to be smaller and more closely associated with cooking activities where breakage is more common and therefore more opportunity to practice, although he also stresses that there is a level of oversite as the vessel forms do not significantly vary (2024, 791).

Construction Experiment 2 looked at reproducing three Accessory Vessel forms from the Cumbrian assemblage. Of the three forms, only two were successful. Experimental Vessels E7 and E9, based on Tullie vessels C69 (1999.824), broke during firing, leaving only one surviving vessel of this form. The other vessel forms survived. This experiment, however, showed that a moderately skilled potter could reproduce vessels quickly. Faster than seen in Millson's experiment, suggesting that the idea of a form could be very quickly spread and emulated by potters.

Taking the knowledge from Hammersmith's experiments, the time taken to make the vessels were recorded. The vessels were made concurrently, as suggested. Well-fired clay lasted, and less poorly clay objects became friable over time. It also showed that some tempering may have occurred to make natural clay lacking inclusions match the clay, as that was about 20% of the clay collected for the experiment (Sourcing Material 4.2).

Images of vessels were shown to the potters at the same frequency of occurrence in the Cumbrian assemblage. Interestingly, this produced the same pattern of pottery production, with more Collared Urns, fewer Beakers and no Food Vessels. However, in this case, Construction Experiment 5, no Food Vessels were attempted. This suggests that the potters saw something appealing in either the form or the perceived skill level of the vessels they chose. The most skilled potter chose to do a Beaker, while the two less skilled potters chose the Collared Urn (Table 5.19). This suggests that the curved form of the Beaker is seen to be more difficult by potters.

The vessels that broke were not necessarily unfunctional. They could be used in other future vessels as grog or possibly wasters, which were found for new purposes, such as the Accessory Vessel from Garlands, which became a grave good (Hallam 2015, 120). Hallam indicates that most of the Accessory Vessels in the Northern English Tradition have spalled to the degree that it is a recognisable characteristic not seen on the larger Food Vessels or Collared Urns (Hallam 2015, 121-122). The spalling may be part of the identity of the vessels, but it could just as quickly be part of the manufacturing method. Smaller vessels can be fired in small fires, such as a cooking fire, while larger vessels need a more considered firing approach and are subject to slightly more controlled firing conditions.

It is, interesting to consider why the vessels were deposited in sand pits. From the point of view of moisture gain, the sandpits are worse for vessels, which could contribute to faster vessel degradation (Experiment Chapter 6). Furthermore, roots and animals are still in sandy soil, so sandpits cannot give any special protection to a vessel. So, a personal reason for depositing in the sand should be attributed to the act. The sand pits were seen as different to the surrounding soil. Sandy soil is known to be difficult for some arable crops to survive in (Tubb 2011, 52). In Wiltshire, sandy sites have had limited activity from the Late Bronze Age to the Roman period (Tubb 2009, 65). A site associated with struggling to survive away from settlements might be why it was chosen to bury the dead. The sandy soil also tends to be acidic, which causes damage to cremated bone and very few examples of cremations are found in Cumbria (Walsh 2013, 191). It could also be that sandy soil is easier to dig. Practicality and spirituality could be factors in the reason for the preference for deposition. It is, however, a noticeable practice of the Cumbrian Bronze Age.

Shrinkage is an important factor to consider when determining the size of the vessels. The Collared Urns were placed inverted at Allithwaite into Limestone fissures (Wild 2003, 24). When discovered at Allithwaite, the inverted urns had only a few centimetres of space on either side, which tightly fit into the limestone crevices (Wild 2003, 40). This means the vessels were made to fit, or the natural fissures were widened. However, there is no evidence to support this at the site, unlike in Coniston, where the bedrock is cut into at a similar site to make large holes able to receive the burial urn (Wild 2003, 40). In this case, the size of the vessel is an integral part of the vessel's intended function if we assume the vessel was only intended to be used in funerary settings. However, in most situations, it is unlikely that Bronze Age potters were working to such a tight size requirement and were instead constrained by other factors such as time, material, fuel and possibly skills.

Construction Experiment 2 continued to look at the identity of the Cumbrian Bronze Age potters through the construction of Accessory Vessels. The experiment attempted to look at the resources needed to make even the smallest vessels found within an assemblage, the Accessory Vessels. It also sought to see how easy it was to transform the raw materials into viable replicas of the original vessels and what this could tell us about the process of making these vessel forms.

Of the three Accessory Vessel forms chosen to be reproduced, only two out of the three vessel forms survived firing. Vessel form three had a 66% loss rate. The sides of the vessel exploded outwards, a sign that there was a pocket of air trapped within the vessel wall, which expanded rapidly and caused the material in the way to blow out. This indicates that the potter who made these pots was likely less skilled at that form. Other potters possibly had difficulties in creating certain forms, leading to a favouring of specific styles. These styles would then be taught and passed down, creating a regional variation which could become an identity. Conversely, introducing new styles of vessels is a way for a potter to express their identity (Roux 2019 245).

The experiment also highlighted that the water content added to vessels varies depending on the frequency of tempering (Table 5.7). This raises the question of whether the temper was added to the clay to reduce water usage. As more water added increases the drying time. Therefore, is the tempering of the vessels, which is sometimes proven to be deliberate due to the presence of grog or rocks outside of the geographical norm (Freestone 1992, 340), a way to deal with the changes in the landscape? Rather than a deliberate act to include the landscape within their vessels, as suggested by (Hamilton 2002, 40). Is there a cultural, even a potential ritual, the element being driven by practicality? Or is it both? Although water was not known to be in short supply during the Bronze Age, seasonal differences may make it more labour-intensive to gather and store.

Furthermore, the experiment proved the difficulties in transporting vessels long distances. Small vessels were still broken when modern shipping materials and transport methods were used. Larger vessels seen in the assemblages and vessels with thinner walls would be much more susceptible to such damage, so moving them a significant distance would be an undertaking that must be planned and necessary. However, transporting has historically been a function of ceramics (Rice 1987, 208-209). The form of the vessel is an essential factor regarding how easy it is to transport them. Vessels with thinner walls are lighter and have more internal volume, making them preferred for this role (Orton and Hughes 2013, 251).

Some vessels, such as the burial Beaker found at Sizergh high in the Cumbrian fells, were most likely moved after firing to the place of deposition as the tradition is more similar to the Cumbrian coastal practice (Fell 1953, 2). Vessels like this one were unlikely to have been fired in the surrounding area due to the difficult terrain and lack of combustible material. The funerary rites were likely to have been undertaken in a slightly more functional area. However, there is some possible evidence of vessels being transported due to the geology of a vessel not matching the surrounding geology.

It is possible that the raw materials were moved, and the vessel was made where it was found. Were there transient potters with the raw material they knew worked for their construction style? However, this experiment proved that it could imitate vessel forms and produce similar vessels. Therefore, it could be people transporting the ideas and reproducing them. The ideas and identity are more transient than the actual physical manifestations in archaeological records.

Regardless of the intended function, the vessels still need the same essential time and materials to be produced. In Construction Experiment 3, the focus was less on the individual identity of the potters and more on the local and regional identity. The experiments also looked more into the functionality of constricting a vessel by looking at the quantity of materials and time needed.

Pots must have value in a household to demand much time and space (Table 5.22). However, the drying time that the vessels were subject to meant that several months of work were put into each vessel, from the initial gathering of raw materials to the construction, drying and then firing. This meant that space was needed to store the vessels and vessel-making components.

The experiment's time to dry the materials was overstated due to the potter's inexperience with making such thick-walled and based vessels. Caution was taken to get a more positive outcome, i.e., the vessels survived the firing. If making pots over many years, experience likely indicates the point in time that firing can occur without the loss of the vessel and the previously spent time and resources getting it into the dried vessel form. Therefore, it is more likely that experienced potters were making the larger vessels with more resources invested into them, than the inexperienced potters took more time to do this.

However, the active construction time is making a vessel is very little; less than a day was taken to make a pot, and several were made concurrently during the experiment. Therefore, could a potter travel around and make vessels in the community on a travelling basis if the local households each provided their materials? This is certainly a possibility. However, it is just as likely that the vessels were made within the households as the experiments have proven that stored clay can be rehydrated and a vessel made quickly and if small enough fired in a small hearth.

The time taken to make the vessels, in this case, 387 days (over a year) could explain why there is evidence of vessels transcending from the domestic through to the funerary settings. However, the experiments did take the construction time to an extreme. Nonetheless at least a week was needed to fully dry the vessel as seen in the experiences of the Bafia (Gosselain 1992b, 574). This will be explored further in the later sections of this chapter.

Construction Experiment 4, explored local potter production ideas by testing the viability of an unstudied clay bed. The clay bed selected was a meter deep and extracted from the ground before being transported to the potter's home to produce the vessels.

The clay bed was within two miles of a large Bronze Age Burial site, Garlands, which has both Collared Urns and Accessory Vessels (Hodgson 1956, 6-12). This echoed the traditional practices seen ethnographically and likely what was undertaken in the Bronze Age. However, the potter, in this case, used modern extraction means and transportation. It was therefore decided that as a trial run of the clay to see if it made viable vessel material, it would be formed into small Accessory Vessels. Then, the kiln was fired to ensure that the firing conditions could be controlled.

Due to the available cavity size, the kiln firing meant only Accessory Vessels could be made. The temperatures used were compared to other studies to confirm that they matched the ranges other experimental archaeologists and potters achieved (Table 5.13 Table 5.24, Rice 2015, 88; Taylor 2013, 131).

Six vessels were made during Construction Experiment 4, and three potters with different skill sets were asked to create these vessels to test the theory that people can recreate vessels no matter their skill levels.

Each vessel was an individual expression of a vessel within a theme of size and form. This suggests that the potters, even when creating vessels in each other's company, can overcome societal pressure and use the creation of a vessel to express their own identity. Furthermore, each vessel was constructed differently. Potter 1 made their vessels with many small coils, creating many joins, meaning the vessel was at more risk of failure. Potter 2 used a larger coil method, reducing the number of coils, and they were the only ones to attempt to reproduce the same vessel twice. Suggesting the potter was dissatisfied with the first attempt or had a personal preference for that style. The third potter, and the most experienced of them, was the most confident in potting techniques, using large coils and a hammer and anvil to manipulate the clay into the desired form.

After discovering that the clay near the Garlands site was suitable for constructing vessels, another experiment, Construction Experiment 5, was undertaken. This experiment further explored the idea of identity by having three potters of different skills take any amount of clay and attempt to reproduce any vessel form from a Cumbrian Bronze Age assemblage. They were all shown various forms with scale bars so they could understand the size and dimensions of the vessels. They were then given clay from the Cumbrian site. The vessels were then constructed as the potters saw fit.

The most unskilled potters, through to the most skilled potters, need time to perfect the forms if they are trying them for the first time. The vessels such as the ones made in this experiment may have been created but never made it into any assemblages; they could have been destroyed to make up grog to put in new attempts, or they could have been disposed of. No matter how the vessels survived, firing meant they were theoretically usable even if they did not have the correct forms. It is possible that misshapen vessels such as these that were made during learning experiences went on to be fired, as this is a crucial step in learning to make vessels and then be used. All the Cumbrian assemblage to date has been funerary. Therefore, a degree of selection in vessel significance may have kept these types of vessels out of the burial assemblages.

If easily made, vessels can be just as easily disposed of without concern. It is, therefore, curious that previously mentioned spalled and damaged accessory vessels were used as grave goods. Hallam speculates that the Accessory Vessels found in the Northern cemetery were made and fired in the funerary pyre (2015, 123). Hallam uses the vitrification in some Northern Accessory Vessel assemblages to argue that the vessels were fired in an unstable fire, potentially hot enough to consume remains (2013, 122). If it were the case that these small cups were being made directly for the funerary process, the funerary pyre would undoubtedly be hot enough to fire them.

Furthermore, removing small vessels from a bonfire firing in Construction Experiment 2 proves they can be removed quickly and successfully from such a firing. In that case, the final product is less important than the firing process, which explains the varied skill levels and the condition of the buried vessels.

There is also the deliberate destruction of vessels into sherds in middening practice, such as those at Potterne and East Chisenbury, where vast quantities of pots of various styles have been found (Waddington et al. 2018, 3). These vessels have been made to be used at the feasting event and then disposed of after the completion rather than continuing to be used in the domestic or funerary setting. At Potterne the breaking of artefacts is not limited to just pottery but also to other items including valuable jet jewellery (Brück 2018, 676). This suggests that the breaking of something whole was at least in the late Bronze age part of the cultural practice and the pots were possibly being made with intention of them being broken. At Must Farm where there is no evidence of this feasting practice happening on the site there is still a hight level of breakage. Of the 128 vessels half of them are seemingly broken which suggest a pot being broken once a week (Brundenell 2024, 796).

Breaks occur naturally through use, and broken sherds should not be discounted as part of a vessel's identity and intended purpose. Worn-down objects such as broken pottery sheds could be deposited in graves due to an association with the deceased as a grave good (Walsh 2013, 13). However very little has been undertaken to consider the identity of the person in the grave and their relationship with the pot unlike other artefacts. What was their gender their status or even their age archaeologists do not look to pots for this information (Cooper et al. 2021, 146). It has been suggested that the accessory cups could be seen with more female graves and the graves of children in the north (Copper et al 2021, 172). This does however need some further analysis to make strong arguments of pots and identity.

This led Millson to question why so few small vessels are found in assemblages if they are being made as and when needed (2013, 157). The vessels were likely being made as and when needed. However, they were poorly fired and disposed of without care, leading to them decomposing and no longer being found in the archaeological record. It is also more likely that large vessels are found due to survival biases. The larger pots have more time and care put into their construction and deposition if used in a funerary setting. Larger sherds are also more likely to be spotted and be considered pottery than small fragments, which can be overlooked if people are unaware of what they are looking for. In Use Wear Experiment 1, pieces of pot from Vessel E15 broke off due to exposure to moisture and freezing conditions, and they degraded to the point that the Author, who was actively trying to recover all the sherds, was unable to do so even after a short length of time.

### 8.2 Habitus and Seasonality of Pottery Making and Use

Habitus and the daily and seasonal lives of those making and working with pots should also be considered. The lives of the potters of the Bronze Age can only be seen in archaeological traces and comparison to Ethnoarchaeological experiences. The main questions asked in this thesis have looked at function and identity. These can be further broken down and explored.

Winter is not suitable for pot drying; however, farming may have taken up other times (Hamilton 2002, 45). Clay comes from the ground. When the ground has frozen in winter, accessing the material becomes difficult. Furthermore, inadequately stored wood becomes damp, making firing more difficult. Pots do not break at convenient times, and some are likely to perish during winter. Possibly due to the freezing condition affecting poorly stored vessels. Were pre-existing resources stored for production? Or were they made to order when weather and seasonal farming practices allowed as Robson suggests is the case (2022, 45).

Pots were also part of urn burials, cremation, and inhumations during the Bronze Age. Therefore, they would likely need to be made or stored ready for use. Alternatively, were other vessels repurposed and is that why some traces of lipids are? Short of an in-depth analysis of the vessels for signs of seasonality in the impressions of seeds and other seasonally changeable organics, it is likely that this question cannot be answered within this work.

Is there any difference between dry-processing clay and wet-processing clay in the vessel, and if so, is it possible to determine this in the archaeological record? However, it is still being determined if these were for wet or dry processing clay or even just a weathering process to allow it to become broken down before being turned into a usable medium. Dry processing benefits from the clay being easily hydrated to a workable consistency. Meanwhile, the dehydrated clay takes up less space when stored due to the lack of moisture. Wet processing is easily stored, and there is possible evidence of raw clay being stored in pits in the ground, possibly with broken vessels being softened by the damp clay for grog (Millson 2013, 126).

However, looking at the Gosselain 's 1992 study of the Bafia living in Cameroon can give insight into some of these questions. He notes that the majority of the pottery production is undertaken by women (565). One of the first things Gosselin noticed was taboos were associated with three stages of production, the extraction of a suitable clay, the drying and the firing (1992, 566). These taboos affected the times in which potters could undertake the production, these were associated with the reproductive cycle and pregnancy and during day and even months women were not able to make pots (566). This cultural practice might not apply to Bronze Age potters, but it does suggest that in a site many people would need the skills of pot production to ensure vessels were made during times when potters were culturally unable to craft.

Gosselain also noted that the Bafia potters all had their own source of clay, and this was respected by all the potters in the community (Gosselain 1992b, 565). He also observed that the pottery extraction was an exhausting process and pots would not be made on the same day as extraction (Gosselain 1992b, 565). There is evidence of clay processing at Pewsey, where pot materials were brought over 40km to the settlement in the Late Bronze Age (Tubb 2011, 31). This could suggest that the clay source was favoured, and the community worked together to source and store this clay. In Cameroon the climate often caused the clay to become dry quickly and the potters process involved letting the clay dry before pounding and sieving it (Gosselain 1992b, 565). This process was undertaken in the experimental chapters as was using freshly dug clay that was not dried out both were able to form vessels that survived firing. Letting the clay dry may however be a practical method of ensuring clay is available to the potters for when production of a pot is needed

The Bafia are in Cameroon which climatically differs from Britain and the case study regions of this thesis. However, the times taken in production can still be of use in understanding the taskscapes of Bronze Age life and how the rhythm of the season can define the use and identity of potters (Ingold 1993,164). The pottery when made was in some sites was initially on wooden racks over the fireplace while in other sites they were dried outside, although not in direct sun to avoid cracking. (Gosselain 1992b, 574). This suggests a personal preference, paired with the practicality of the living spaces and the weather conditions influence the pottery drying and there is not a set method amongst any group of people. Therefore, the drying method can be reflective of many factors and the success of drying intact is the most significant factor.

Before firing the pots were warmed on a domestic hearth as they were in the construction experiments in this thesis. The Bafia state that preheating is not necessary step, but it speeds up the process which can be due to financial or personal need for pottery otherwise in the humid season it can take months for a vessel to be dry enough to fire (Gosselain 1992b, 575). In dry conditions it only took a week for the Bafia to dry a vessel before firing. (Gosselain 1992b, 574). This is still a long time if a vessel is needed urgently for burial or trading needs. It is more than likely that the drying the vessels by fires occurred in the Bronze Age and the experiments in this thesis prove that it is a successful method for adding the pots to a fire.

At Must Farm a late Bronze Age site which burnt down there is evidence for 120 ceramic vessels across the whole site (Knight et al 2019, 656). While this initially sounds like a large amount of vessels it does cover five structures (Knight et al 2019,653) if evenly split that only leaves each house twenty four vessels to cook, clean, store food and even eat from. Pottery is not seemingly kept in abundance at this site but at a level which suggest daily uses and replenishment undertaken when needed. It therefore suggests pottery was made in batches and stored when not in use. Due to the semiaquatic nature of the site more pots made be made on lad in controlled firings than at other sites on dry land.

The experimental locations were chosen to emulate storage or domestic practices seen in the archaeological record. In the Late Bronze Age domestic site of Golden Ball Hill in Wiltshire, there are definitive patterns in sherd distribution showing that pottery was kept mainly to the south of the site and that certain fabrics only occur to the south, suggesting these were stored there (Freer 2017, 63). At Longbridge Deverill Cow Down Bancroft and Dunston Park, all from the South West, there is evidence of the disposal of Pottery sherds only to the righthand side of the property in the Late Bronze Age and Early Iron Age (Webley 2007, 128 -131). The distribution of other household tools, such as those involved in textile production, suggests that there were specialised areas within a settlement for these to occur (Haughton et al. 2021, 182). If it occurred with one household activity, it is more likely to do so with others.

The aspects of identities of a potter can be seen in their vessels, but a large assemblage is needed for the quirks in construction, form, and design to be noticed. Unfortunately, there are only sometimes large assemblages. Single internments are common and domestic sites, while more frequent in Wiltshire, but they are not found in Cumbria. Conversely, sites like Potterne and Golden Ball Hill, where there is a large assemblage, are either understudied or awaiting study even years after excavation (Freer 2017 unpublished). However, we can see a continued local presence in pottery and a distinct preference for vessels in the non-Beaker form in Cumbria. While the pottery forms can be similar between the two case study regions, it is also apparent that there is a difference in the distribution and frequency of these forms between the assemblages. This suggests that while not necessarily conforming to today's county boundaries, differences were occurring within the broader Bronze Age practice. Differences in pottery tempering, form choice and deposition. All these choices speak of the people making and using the vessels.

The experiments also highlight the importance of thinking of the vessels beyond their current state and within the broader spectrum of use. Pottery did not exist in a vacuum. People used it with organic material. Some of this is preserved within residues in the pottery walls. This allows us to glimpse that pot's use in one part of its life journey. Ellison's model of the round house suggest they have a higher number of fine wears used for food and drink consumption along with other high status finds such as bronze items and flints (Brück 1999,150). There has been evidence of whole pots found in ditches, post holes and pits of round houses and settlements (Brück 1999,150). These vessels can be found inverted or on their sides (Brück 2006, 298) much like those found in burial contexts This suggests that the pottery is seen to link life and death and the home and burials with pots could be part of the same thought process.

Many of the vessels indicate a transition from domestic to funerary and the closing of domestic sites. Many practices seen in Middle and late bronze age funerary practices can also be seen in Bronze Age settlements as the habitation ended (Brück 2006, 301). This could be because they did not have such clear divides between the two, we currently have as a society, and it may even be round houses, quern stones and even pots were seen as a living entity which need closure (Brück 2006, 302). But it could also be because of time, it takes time to create a vessel, and a surviving vessel is not guaranteed. Therefore, taking a vessel that exists and changing the function to one that would honour the dead likely occurred and would not offend the identity of the deceased and their family. The ideas of functionality and identity are as closely intertwined as the domestic and funerary, each playing into one another as needed.

Must Farm burnt down without any closing practices undertaken and artefacts were in situ. Most of the artefacts were found within the structures (Knight et al 2019, 656). It was noted that there were distinct spreads and discrete dumps of pottery, animal bone and stone (Knight et al 2019, 656). Indicating they had separate areas and their intermingling in pits and burials is a very determined and ritualist act that comes with the changes from life to death. Must Farm is however only inhabited for a short time possibly a year or less and this is seen through the immature middens associated with the site (Brudenell 2024, 791).

Two late bronze age roundhouses had within pits large amounts of pot sherds and male lamb bones likely part of a cycle of culling the herd for health through the seasons (Brück 2006, 301). The excess animals need to be killed and likely eaten before the winter and to balance the health of the herd an important part of the farming year. The pottery being broken could symbolise the transition to the next part of the season and the end of the current.

Use Wear Experiment 1 also looked at the depositional survival of vessels. The vessels were deposited into loamy soil, sandy soil, and rock crevices (Method 6.2.4). These were undertaken in Cumbria at the same site and mimicked three different types of burial in the region (Wild 2003, 24. Hodgson 1956, 6. Clark 2005, 20). Archaeologists have speculated whether the vessels found in Limestone fissures in Cumbria were buried (Wild 2003, 40) the experiments reveal that they likely were buried soon after deposition. Vessel E15 replicated these conditions in the experiment, the vessel gained a large amount of moisture which resulted in frost fracture. The vessel also developed a covering of organic materials such as moss and lichen within six months, changing the appearance of the pot this damage was not observed on the original pottery (Results 6.2.4) (Wild 2003, 40).

Burial conditions were also explored in Use Wear Experiment 1 with different soil types experimented on, Loamy and sandy soil. Vessel E14 was buried in loamy soil. This was undertaken as sites in the region have a similar loamy soil type such as Holmrook Hill (Table

3.2). Two Vessels, E12 and E16 were buried in sandy conditions as several Cumbrian burial sites, Aglionby, Garlands, Bewcastle and Waterloo Hill, are found in sandpits (Hodgson 1940, 158. Hodgson 1956, 6. Clark 2005, 20). The vessels with the sand took on more moisture than the other soil type; both sandy soil vessels gained over 20% in weight due to moisture, while the comparable vessels in loamy soil only just over 13% (Table 6.5, Results 6.2.4). The increase in moisture meant the pots were in a slightly worse condition at the end of the six months; the walls were more friable. While it is unknown if the Bronze Age people knew the vessels degraded faster in the sand than the soil, the deliberate burial at many different parts of the county is a defined cultural choice. Possibly sand pit burials were part of the cultural tradition of the Eden Valley, where many of these burials are clustered. Possibly sandier sites were easy to dig all year, making them attractive burial sites. It could also be that the sandy soil meant they were easily identifiable areas. Sometimes flora struggles on sandy soil due to lack of moisture, which could have associated these sandy areas with death. Why the sandy sites were part of the identity of the Bronze Age people in Cumbrian is not known, but we do know they were significant for burial at least in Cumbria where monument building was not as prevalent as in Wiltshire.

### 8.3 Final Thoughts on Discussion and Comparison

The experiments from this thesis, when shown in context with the original vessels, highlight a wide variation in the function of vessels even within the same site. However, the experiments play an important role in understanding the signs of use wear in the archaeological assemblage. They show that regional and specific identities can be seen in pottery. Pots made to similar forms and decorations can have different functions during their life but can be deposited together. The pots were also not all used in a way that created a movement, meaning many remained static and could have been made for burial rather than storage, as previously believed. At the same time, the forming of the vessels is an individual expression of the potter's identity; they chose the form and the intended function of the pot. The vessels are part of a larger tradition of cultural change, with pots having a significant function, not just the domestic but also the funerary deposition. While there is some continuation of cultural patterns from the Neolithic, the identity of pots and potters changed going into the Bronze Age and right through to the Iron Age transition, where mass middening of feasting pots became a communal activity (Darvill 2010, 234).

The experiments and the observations from experiential experiences show that signs of wear are gained on vessels even during short-term use, mainly on the base. Moreover, these marks are reproducible in both experiments and experiential situations. There are signs of the same marks within the original assemblages, although these are less clearly seen. There is also the issue that these tend to be found towards the bottom of vessels due to the base taking on significant wear from the way vessels stand. This suggests that the bases of vessels across all assemblages need a more in-depth study than they previously have. However, it is not always possible to do this due to gaining access and the fragility of the vessels.

The wear on bases also suggests that within specific communities, there was no clear definition between domestic pots and funerary pots, with both vessels with worn and unworn bases being found in the same grave. This, along with the lipid record, suggests that the vessels previously contained foodstuffs and that the pots used in burials were selected when needed. Sometimes, there may have been time to make new pots, but not always. This could be due to the time of year the burial took place. In winter, resources like clay are more difficult to source if the ground is frozen; therefore, an existing pot may be favoured. Unfortunately, we do not know enough about the burial practices and how long they waited, from death to cremation or inhumation.

This thesis has shown the softness of prehistoric ceramics. Even minimal movement can leave signs of abrasion on the pottery. Also, the bases of vessels, which are often not recorded, can hold much information on the possible materials the vessel was upon when in use and even the frequency of movement. The perforations and lugs on the vessels in assemblages also show that they were likely not suspended from these holes if used frequently; they are more likely a decorative addition or used to align cords for suspension. A vessel could still have been suspended in cradles, like those seen at Sagnlandet Lejre or suggested by Vieugue. Short-term suspension without significant movement leaves no evidence of wear, and it is possible many Accessory Vessels could have been briefly suspended.

The experiments also show that the deposition of the vessel matters. Where the vessel was left indicates how likely it is to survive to be part of the modern assemblage. Sand versus soil affected the moisture retention of the clay within just six months, and the more exposed a vessel was to moisture, the more likely it was to suffer damage through weathering or root action. The funerary vessels may be well represented due to the care taken in depositing and sealing them from these weathering conditions. The weathering experiment indicates that the pots at Allithwaite were buried in the crevices, an act only speculated about until this thesis. Meanwhile, domestic pottery, when no longer needed, was not given such protection or was ground down to grog to make new vessels. These smaller fragments are less likely to be collected and added to the assemblage, or if they are found, it is much harder to identify and gain insights from them, such as the signs of wear studied in this experiment.

Conversely, the Bronze Age practice of mound burial means the grave sites are easier to find. This has meant many of them have already been discovered and excavated, and in some cases, material lost, such as the organics and some pots, as they were not valuable to antiquarians. This cannot be undone, but it does mean that what we have left in all the assemblages has a survival bias that could be skewed towards grander or previously considered prestigious vessels such as the Beaker. This could well affect their perceived prevalence in the archaeological record.

Organic materials such as fabrics or woven materials could be more noticeable in the assemblages. Literature hints about the existence of these materials, although they are not found frequently. However, the experiments indicate a strong argument for them being used with association with vessels. Lids worked remarkably well with the pottery in the construction experiments, and in these experiments, the practice did not leave any signs of use wear to indicate their usage. Different approaches to lids are seen, woven vs leather vs fabric, and a more in-depth study is likely needed to see how the different materials work practically.

# Chapter 9 Conclusions

## 9.1 Research Conclusions from the Archeology

Through experiments, comparisons, and literature review, this thesis has explored intangible concepts such as identity and practical ideas about functionality. Cumbria and Wiltshire within Western England were chosen as case study regions for the thesis due to the range of different site types and landscapes (Chapter 3). Pottery from domestic and funerary sites in the case study regions was examined and compared to help understand the vessels and the people making and using them (Chapter 4). The pottery from these sites has been the focus of the study, with the experiments looking more at the understudied Cumbria assemblage (Table 3.1). However, what was learnt from these experiments and comparisons can apply more broadly across the country and other periods.

From a review of the current literature, it was apparent that, within the Bronze Age, there were individual approaches to pottery production and use, and much of it was produced locally from the petrological evidence (Cherry and Cherry 1992, 14; Taylor 2013, 125; Woodward 2008, 295). The pots were not necessarily being moved, but the culture was through migration and emulation. Many authors, such as Hallam (2015, 86) and Jones (2013, 368), discuss emulation. This study has shown that potters of all skill levels can recreate pots. However, regional skills and methods were likely included in these vessels, like those seen in the Late Bronze Age Must Farm site. Emulation could also explain the variations seen in use and depositional practice. The counties surrounding Cumbria have a higher frequency of Food Vessels; within Cumbria, the pots occur towards the north and the county boundaries, such as Bewcastle, suggesting a different tradition within the region (Clough 1968, 14). The Food Vessel increases in prominence with the growth of cremation burial practice, suggesting a cultural link between the pot and the people at the time (Cooper et al. 2021, 153). Furthermore, Food Vessels within Cumbria are more often found deposited as sherds, possibly in a continuation of Neolithic tradition rather than the Bronze Age depositional practice seen in other parts of the country like Wiltshire (Wilkin 2013, 114; Evans 2008, 100). This suggests that some vessel forms had transitional periods where the function was changed, such as Beakers, which were initially grave goods before becoming cremation urns (Cooper et al. 2021, 153).

Tempers differ across regions; grog, minerals, shell, or flint can be found. The tempers in the vessels in the assemblage vary and do not occur equally across both regions; even the stage of the Bronze Age can affect the type of temper commonly used. The Cumbrian Accessory Vessels were made with local stone tempers instead of shells or flint, as seen in the south (Hallam 2015, 100). Flint and shell are frequently seen in Wiltshire, likely due to the region's geology, but this is found mainly in Middle to Late Bronze Age vessels (Woodward, 2008, 107). The clay selected also makes a difference. The Kimmeridgian clay has calcium-rich inclusions, which are not seen in all the clay vessels, certainly not the Cumbrian ones (Cumbrian Landscape Assessment Chapter 2). These differences in clay and temper will change the potting traditions. As discussed in Chapter 2, the flint and calcium tempers need more preparation to reduce the chance of a blowout during firing as the temper calcifies with heat (Brontsky and Hamer 1986, 97). Therefore, the clay and temper had to be treated differently; some would need to be prepared before inclusion in the clay, adding extra steps and time to production (Gosselain 1992a, 257).

These traditions are likely part of an older potting style from the Neolithic. Cumbrian Collared Urns have very similar decorative styles to vessels found in the region from the Neolithic (Fell 1967, 19). The experiments in Chapter 5 show that it is possible to emulate and recreate forms like those in the archaeological record at different potting skill levels (Construction Experiment 5). The skills needed are also discussed in experiments by Hammersmith (2010, 111) and Milson (2013, 154). Both were quickly able to reproduce a different pottery form after being taught the basic skills of an experienced potter. The Bronze Age potters were not starting from scratch; they already had potters and potting materials, and the vessels' forms and functions were likely altered.

### 9.2 Conclusions from the Experiments

The function of the pottery has been a critical focus of the experiments and this thesis. Chapters 2, 3 and 4 explore past research, and Chapters 5 and 6 look at function and identity through experiments. The experiments were conducted over several months. The extended time frame was intended to imitate the projected creation and use of the vessels, from resource gathering to breaking during use. The experiments also created a comparative data set that could be compared to original pottery assemblages. The controlled nature of the experiments means the traces of use wear can be easily identified as belonging to specific actions (Skibo 1992, 109).

The bases of the pots were one focus of these experiments. In the Cumbrian assemblage, there is only one example of a pot with a decorated base, although such bases occur on Food Vessels as part of a northern trend (Hallam 2015, 192). The bases, however, are often found intact during excavation due to their thickness and flat form. The survival of bases means they hold a wealth of data that is looked at in the thesis. It was observed that creating scratches on the base of a vessel is very easy, even with minimal movement on an empty vessel (Use Wear Experiment 2 and Use Wear Experiment 4, Chapter 6). Therefore, bases found with very little damage are unlikely to have been moved around significantly after they were fired. This suggests a short time between vessel construction and deposition, while vessels with the marks could have existed in the domestic setting for much longer. The absence of use wear is as interesting as the presence because it is so easy to leave traces of use on unglazed ceramic. A grading system for analysing the type and amount of wear was created and could be applied to archaeological studies across the Prehistoric period.

However, the Bewcastle Food Vessel cists show us that the differentiation between used domestic and newly made funerary vessels might not be as culturally significant as speculated. The two vessels in the cist have the same form and decorative design, but one shows signs of a worn base, and the other has no signs of wear (Hodgson 1940, 159). This suggests that a vessel being included in the funeral process was more important than the form or prior function of the vessel. Furthermore, the funerary pots are only sometimes of exceptional quality and craftsmanship. An urn without a collar was found in Idmiston in Wiltshire (W219), and spalling has been seen on Accessory Vessels in the Cumbrian assemblage, reinforcing the concept that the presence of a vessel is more important than the condition it is in (Hallam 2015, 122, Devizes Museum W219). This suggests that a vessel's association with the deceased, through either function or identity, was a factor in the burial process. Including previously used pots in burials could also reflect the time taken to make a vessel. Pots take days to make due to the necessity of drying clay before firing it. However, the time to construct a vessel is only a few hours. Factoring in the damage and loss that can happen during bonfires or pit firings, a pragmatic approach of making more vessels than needed may have occurred. Due to seasonal demands in farming practices, constructing and storing vessels at appropriate times would be essential for storing food.

The construction time and failure rate from the experiments show that not all vessels survived firing; overall, there was a 13.2% breakage rate across the experiments in this thesis (Construction Experiment Conclusions 5.10). However, the second stage of the thesis experiment concluded that vessels can be stored in certain conditions with minimal damage for at least six months (Use Wear Experiment 1). The experiment showed that within a dry shelter on a raised wooden platform, the vessel gained minimal moisture and showed no signs of damage to the wall structure (Results 6.2.4). Additionally, a vessel stored directly on the ground with ample overhead and side coverage can survive through winter and spring without damage to the walls (Results 6.2.4). This means that vessels could be made seasonally and stored. Only the vessels left exposed on the ground and subject to moisture through lack of shelter suffered damage. Vessel E15 lost a small part of the wall to frost fracture on the side most exposed to the elements (Results 6.2.4). While Vessel E17 took on too much moisture, became friable, and eventually disintegrated (Results 6.2.4). This shows that vessels could be made and stored in out-of-the-way storage areas until the vessel was needed. This could be because of the harvest, a vessel broke during use, such as cooking or if they were needed for burial.

Use Wear experiments 1 and 3 also reveal that vessels would make suitable storage containers, as has long been speculated. The effectiveness of lids was explored in Use Wear Experiment 3 (6.4). This experiment showed that lids made from simple organic materials such as leather and string work very well on Collared Urns (Results 6.3.4). The lid secured quickly under the collar, and after six months over winter, the moisture level in the rolled oats had not increased significantly (Results 6.4.4).

Furthermore, despite the proximity, the pests that infected the exposed oats in Vessel E21 did not get into the lidded Vessel E20. The lack of large-scale ceramic lids in the archaeological record across the country is a likely indicator that lids were made from organic materials. The lids used on the vessel during the experiments left no marks on the pots (Results 6.4.4). The perforation on a vessel was possibly added to attach a lid or for suspension. Use Wear Experiment 1 suspended a vessel from the perforation with a natural cord and showed no signs of wear after six months (Results 6.2.4). The lid put on and left undisturbed for many months will likely not leave any marks. Lids secured through perforations that are removed and reapplied more frequently are more likely to develop signs of wear. However, these were not confidently observed in any of the perforations seen in the Cumbrian assemblage (Figure 7.8).

Lids are also beneficial in burial situations, ensuring the remains stay within the vessel. Even if the remains are within fabric bags, a lid will help ensure that the bag remains within the vessel (Harris and Jones 2017, 7), especially as some vessels are interred upside down and on their side. This short-term lid use is unlikely to leave any marks, and due to the organic nature of these lids, they have become lost to decomposition.

### 9.3 Future Research.

The experiments and analysis in this thesis have revealed exciting discussion points on use wear and object biography. Vessels can be viewed as disposable items or heirlooms that have passed through the years. This research has shown that the signs of wear on the vessel's base can indicate the possible length of time a vessel was in use. However, as with much research, there always comes a point where the research must end and the prospect of further study be accepted. This thesis opens many aspects of further study through the experimentation results.

Research building from Experiments 6.3 and 6.5 could be conducted to determine different wear patterns in different scenarios. Are scratches more likely on some surfaces than others? From this, a greater understanding of domestic habitus could be developed. For example, was stone used in storage areas and wood in houses? Alternatively, were there regional variations in roundhouse furnishing? Additional study into the storage of vessels would be incredibly beneficial, for understanding the lives of people in prehistory. Did vessels transition from inside to outside and then to the middens as they became increasingly worn out? These answers could be found through analysis and comparison of assemblages.

Did larger vessels react the same to the weather, and does filling a vessel better protect it from damage? This is likely only something that can be learnt through experimentation and comparison to experiential and ethnographic experiences.

Furthermore, does suspending a vessel extend the use life by limiting wear on the base? Or does it introduce a point of wear at different points in a vessel that were not considered during this thesis? If Vessel E8 had been moved around as if it were being used, taken down, and restrung, it may have gained more abrasion signs that did not occur during the six months untouched. If this wear does occur, can it be seen on vessels in any assemblage?  The abrasive nature of some of the use-wear experiments also produced waste in the form of dust. This dust was allowed to gather and naturally disperse throughout the experiments. This could reflect use, as seen in storage areas, but if vessels were being used in the household regularly, it is unlikely that dust would be allowed to gather as much as seen in the experiment (Figure). Therefore, conducting the experiment again but maintaining cleaner surroundings could change the results. Cleaner surroundings could extend the time before the same degree of wear occurs by removing the temper, notably scratches and gouges, as seen in Figure 6.40. Different temper types could also change the speed and appearance of wear. The flint temper could more easily scratch and add an abrasive point than natural fibres or rounder stones, while large inclusions could cause different shape gouges. Another possible experiment is looking at the multiple functions a pot could have during its life. Did storage vessels transition into cooking vessels? If so, are there differences in the wear on the base?

Conversely, did cooking pots retire and become storage vessels, and do signs of wear appear more rapidly on a vessel that has been heated multiple times? All the vessels in the thesis experiments were only heated once during the firing process. Would multiple refirings alter the nature and appearance of wear?

In the future, as an experiment, it would be interesting to bury a series of vessels with abraded bases, some inverted and some situated on their bases, and see if the burial affects the wear patterns. The presence of moisture is known to damage clay and soften edges, which may alter the appearance of use. This would help answer the question of whether post-depositional wear was seen at Bewcastle, where two out of three vessels buried at similar times in the same area had different signs of wear. It could also help the broader understanding of the pots found as grave goods.

Further work is necessary to explore the bases of assemblages both in the case study regions and the broader prehistoric assemblages. Bases are an underutilised part of the vessel in research, yet they connect the pot with the world around it by either sitting on it or being the first face that comes in contact with it if inverted. Using Tables 7.3 and 7.4 and Figures 7.26 and 7.27, it could be possible to classify wear across multiple assemblages quickly. The wear scheme can be used on all unglazed vessels and applied across prehistory. An analysis of wear patterns, along with other scientific analyses, such as lipids and petrology, could further develop an understanding of the lives of those using the vessels.

This thesis has mentioned differences both geographically and chronologically in temper use. Hallam (2015, 94) details the temper type of the Northern Accessory Vessels. If this could be tied to wear, it could indicate an aspect of identity not yet discussed. It would also be interesting to discover if the wear of bases is more frequently associated with certain grave types, genders or even other grave goods. For example, are there Accessory Vessels with worn bases linked to female graves? Or are worn vessels more commonly inverted? Once the base of the pot becomes a point of interest, many questions about the base and the identity of the makers and users can be asked. Other research beyond the base of vessels looks more at the Cumbrian assemblage and how pottery as a grave goods was used. The limited number of Beakers and Food Vessels compared to Collared Urns indicated a different approach to their regional identity. Looking at the pottery in the context of other grave goods and determining similarities and differences across the country could help explain more about the Cumbrian Bronze Age and the people living in the Bronze Age.

### 9.4 Final Thoughts

This thesis has discussed the function of the Bronze Age vessels and the possible different identities of those making and using them. It has also generated exciting results from use wear experimentation and comparison. The approaches developed in this thesis can be further explored and applied to other assemblages with flat and unglazed bases. It is hoped that the thesis will encourage more interest in studying the bases of vessels and that archaeological reports on pottery will start recording the wear signs on vessels. Standardisation in reporting the signs of use wear and the pottery bases will be incredibly beneficial in understanding more of the function of vessels. Wear analysis can give archaeologists much information without significant cost or destructive testing.

The comparison of vessels in the thesis experiments and the original assemblages has shown that vessels in both domestic and funerary contexts have complex biographies. Vessels can survive outside in correct conditions and be used as storage containers. The thesis has also demonstrated the rate at which wear can occur on a vessel, giving new insights into how long pottery could be used. The wear on the bases of vessels within grave contexts can indicate that the vessel likely transitioned from the domestic context.

It is also believed that some more of the potters' identities have been discovered. Regional and more localised variations in pottery form suggest that within the British Bronze Age, individual cultural traditions still occurred regularly. This can be seen in the deposition of pottery as grave goods and as part of significant middens, such as those Late Bronze Age sites in Wiltshire. There also appears to be a mixture of old and new pottery being deposited within graves at the same site, such as at Bewcastle. The pottery was likely made locally, and potters within the household learnt from within a community.

While many of these experiments can appear specific to individual pots, found at certain sites within the case study regions or even just to the Bronze Age, much of the data can be extrapolated to other pots, places, people, and periods. Flat-bottomed unglazed vessels frequently occur across all archaeological periods. Therefore, wear to the bases can be studied on all vessels, and lids can be applied to all storage pots. At the same time, the survival and burial aspects affect all vessels found in the archaeological record. The experiments in this thesis have merit in the larger picture of archaeological understanding of pottery and how people used it.

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# Appendix 1 Archaeological Data

**n.d. means data was not included as it does not exist, or the author was unable to verify the accuracy of it.**

Table A1.1 Archaeological data from the Cumbrian Assemblage showing location, type and dimensions (Author 2023).

| ID | Museum code | Site | Location | Type | Height mm | Rim mm | Base mm | Collar mm | Bevel mm | Thickness mm |
|---|---|---|---|---|---|---|---|---|---|---|
| C1 | 1987.31. | Aldoth | Aldoth | Collared Urn | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C2 | 1977.14.1 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 15 |
| C3 | 1977.14.2 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 13.5 |
| C4 | 1977.14.3 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 16.5 |
| C5 | 1977.14.4 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 11 |
| C6 | 1977.14.5 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 12.5 |
| C7 | 1977.14.6 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 13.5 |
| C8 | 1977.14.7 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 13 |
| C9 | 1977.14.8 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 19.2 |
| C10 | 1977.29. | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 13 |
| C11 | 1977.30. | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C12 | 1977.31. | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 12 |
| C13 | 1977.32. | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 14.5 |
| C14 | 1977.33. | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 13.5 |
| C15 | 1983.29. | Aughertree Fell | Aughertree Fell | Collared Urn Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | 14 |
| C16 | 1999.832.1 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 21 |
| C17 | 1999.832.2 | Aughertree Fell | Aughertree Fell | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 21 |
| C18 | 1999.832.3 | Aughertree Fell | Aughertree Fell | Collared Urn Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C19 | 1999.842.4 | Aughertree Fell | Aughertree Fell | Collared Urn Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | 13 |
| C20 | 1977.13. | Bewcastle | Bewcastle | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 6 |
| C21 | 2016.71. | Bloomfield | Bloomfield | Collared Urn Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C22 | 1951.81.3 | Broomrigg | Broomrigg | Accessory Vessel | 72 | 67 | 30 | n.d. | n.d. | n.d. |
| C23 | 1951.811. | Broomrigg | Broomrigg | Collared Urn | 400 | 232 | 106 | 78 | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm | Base mm | Collar mm | Bevel mm | Thickness mm |
|---|---|---|---|---|---|---|---|---|---|---|
| C24 | 1973.78. | Broomrigg | Broomrigg | Beaker | 110 | 93.5 | 76 | n.d. | n.d. | 7 |
| C25 | 1972.28. | Brownrigg fell | Brownrigg Fell | Food Vessel | 108 | 134 | 58 | n.d. | n.d. | n.d. |
| C26 | 1986.76. | Cardurnock | Cardurnock | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 13 |
| C27 | 1948.69. | Cist | Ainstable | Beaker | 163 | 136 | 91 | n.d. | n.d. | 8 |
| C28 | 1999.822. | Cist II | Clifton | Beaker | 176 | 132 | 80 | n.d. | n.d. | 9.5 |
| C29 | 1999.842. | Clifton | Clifton | Beaker | 191 | 130 | 84.5 | n.d. | n.d. | 9 |
| C30 | 1999.843. | Clifton | Clifton | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 18 |
| C31 | 1977.16. | Cumbria | Cumbria | Collared Urn | n.d. | 250 | n.d. | n.d. | n.d. | 18.2 |
| C32 | 1977.28. | Cumbria | Cumbria | Food Vessel | n.d. | 200 |  | n.d. | n.d. | 17.5 |
| C33 | 1997.325.139 | Cumbria | Cumbria | Beaker | 150 | 124 | 77 | n.d. | n.d. | 7 |
| C34 | 1987.30.1 | Ewanrigg | Maryport | Burial Urn Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 13 |
| C35 | 1987.30.10 | Ewanrigg | Maryport | Burial Urn Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 25 |
| C36 | 1987.30.2 | Ewanrigg | Maryport | Burial Urn Sherds | n.d. | n.d. | 106 | n.d. | n.d. | 20 |
| C37 | 1987.30.3 | Ewanrigg | Maryport | Burial Urn | 138 | 113 | 86 | n.d. | n.d. | 11 |
| C38 | 1987.30.4 | Ewanrigg | Maryport | Accessory Vessel | 66 | 67 | 58 | n.d. | n.d. | 7 |
| C39 | 1987.30.5 | Ewanrigg | Maryport | Overhanging rim urn | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C40 | 1987.30.6 | Ewanrigg | Maryport | Burial Urn | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C41 | 1987.30.7 | Ewanrigg | Maryport | Urn | 65 | n.d. | n.d. | n.d. | n.d. | 19 |
| C42 | 1987.30.8 | Ewanrigg | Maryport | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 12 |
| C43 | 1999.814.4 | Ewanrigg | Maryport | Overhanging rim urn | 210 | n.d. | n.d. | 45 | n.d. | 10 |
| C44 | 1999.817.1 | Ewanrigg | Maryport | Beaker Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | 6 |
| C45 | 1999.817.2 | Ewanrigg | Maryport | Beaker Sherd | 185 | 125 | 70 | n.d. | n.d. | n.d. |
| C46 | 1999.817.3. | Ewanrigg | Maryport | Cremation Urn | n.d. | n.d. | n.d. | n.d. | n.d. | 15 |
| C47 | 1999.817.5 | Ewanrigg | Maryport | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C48 | 1999.818.1 | Ewanrigg | Maryport | Biconical Urn | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C49 | 1999.818.2 | Ewanrigg | Maryport | Burial Urn Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C50 | 1999.818.3 | Ewanrigg | Maryport | Burial Urn | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C51 | 1999.819.4 | Ewanrigg | Maryport | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C52 | 1928.10. | Garlands | Carlisle | Beaker | 188 | 140 | 83 | n.d. | n.d. | 7 |
| C53 | 1975. 25.9 | Garlands | Carlisle | Collared Urn | 277 | 224 | n.d. | 78 | n.d. | n.d. |
| C54 | 1977.25.10 | Garlands | Carlisle | Collared Urn | 184 | 160 | 97 | n.d. | n.d. | n.d. |
| C55 | 1977.25.11 | Garlands | Carlisle | Collared Urn Sherd | 122 | 200 | n.d. | n.d. | n.d. | n.d. |
| C56 | 1977.25.12 | Garlands | Carlisle | Collared Urn Sherd | n.d. | 245 | n.d. | n.d. | n.d. | 14 |
| C57 | 1977.25.13 | Garlands | Carlisle | Collared Urn Sherd | n.d. | 285 | 78 | n.d. | n.d. | 13 |
| C58 | 1977.25.14 | Garlands | Carlisle | Collared Urn Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | 13.5 |
| C59 | 1977.25.15 | Garlands | Carlisle | Collared Urn Sherd | n.d. | 135 | n.d. | n.d. | n.d. | 10 |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm | Base mm | Collar mm | Bevel mm | Thickness mm |
|---|---|---|---|---|---|---|---|---|---|---|
| C60 | 1977.25.16 | Garlands | Carlisle | Collared Urn Sherd | n.d. | 410 | n.d. | n.d. | n.d. | 13 |
| C61 | 1977.25.17 | Garlands | Carlisle | Collared Urn | 85 | 95 | n.d. | n.d. | n.d. | 9 |
| C62 | 1977.25.18 | Garlands | Carlisle | Collared Urn Sherd | n.d. | 235 | n.d. | n.d. | n.d. | n.d. |
| C63 | 1977.25.19 | Garlands | Carlisle | Collared Urn Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | 20 |
| C64 | 1977.25.23 | Garlands | Carlisle | Accessory Vessel | 47 | 7.4 | 48 | n.d. | n.d. | n.d. |
| C65 | 1977.25.24 | Garlands | Carlisle | Collared Urn Sherd | n.d. | n.d. | 59 | n.d. | n.d. | n.d. |
| C66 | 1977.25.25 | Garlands | Carlisle | Collared Urn Sherd | n.d. | n.d. | 105 | n.d. | n.d. | 21 |
| C67 | 1999.821. | Garlands | Carlisle | Collared Urn | 288 | 204 | 108 | 62 | n.d. | n.d. |
| C68 | 1999.823. | Garlands | Carlisle | Accessory Vessel | 50 | 80 | n.d. | n.d. | n.d. | 10 |
| C69 | 1999.824. | Garlands | Carlisle | Food Vessel | 60 | 80 | n.d. | n.d. | n.d. | 15 |
| C70 | 1999.825. | Garlands | Carlisle | Biconical Urn | 113 | 118 | 71 | 33 | n.d. | 10 |
| C71 | 1999.826. | Garlands | Carlisle | Collared Urn | 400 | 312 | 96 | 86 | n.d. | n.d. |
| C72 | 1999.827. | Garlands | Carlisle | Collared Urn | 132 | 122 |  | 40 | n.d. | 8 |
| C73 | 1999.828. | Garlands | Carlisle | Collared Urn | 140 | 130 | 90 | 44 | n.d. | 10 |
| C74 | 1999.853. | Garlands | Carlisle | Collared Urn | 304 | 240 | 100 | 90 | n.d. | n.d. |
| C75 | 1901.47.2 | Grayson lands | Glassonby | Collared Urn | 305 | 260 | 91 | 81 | n.d. | n.d. |
| C76 | 1992.46.1 | Greystokes | Greystokes | Collared Urn | 181 | 195 | 125 | n.d. | n.d. | 5 |
| C77 | 1943.16. | Holmrook Hill | Holmrook Hill | Collared Urn | 405 | 290 | 140 | 120 | n.d. | n.d. |
| C78 | 1997.820. | Hunsonby | Hunsonby | Beaker | 190 | 136 | 78 | n.d. | n.d. | n.d. |
| C79 | 1968.884. | Irton | Irton | Sherds | n.d. | n.d. | n.d. | n.d. | n.d. | 12.5 |
| C80 | 1999.841. | Lacet Hill | Lacet Hill | Collared Urn | n.d. | 115 | 110 | n.d. | n.d. | n.d. |
| C81 | 1952.71 | Little Mell Fell | Little Mell Fell | Collared Urn | 450 | 332 | 123 | 142 | n.d. | n.d. |
| C82 | 1965.61. | Mecklin Park | Mecklin Park | Beaker Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | 5.5 |
| C83 | 1977.36. | Moorhouses | Penrith | Biconical Urn | 220 | n.d. | 96 | n.d. | n.d. | 17 |
| C84 | 1949.109.1 | Old Park | Kirkoswald | Collared Urn | 317 | n.d. |  | n.d. | n.d. | n.d. |
| C85 | 1949.109.2 | Old Park | Kirkoswald | Accessory Vessel | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C86 | 1949.109.3 | Old Park | Kirkoswald | Accessory Vessel | 43.5 | 45 | 24 | n.d. | n.d. | 4 |
| C87 | 1970.39. | Old Park | Kirkoswald | Sherds | n.d. | n.d. | 90 | n.d. | n.d. | 24 |
| C88 | 1926.27.435 | Penrith | Penrith | Beaker | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C89 | 1999.829. | Ravenglass | Ravenglass | Collared Urn | 155 | 153 | 101 | 62 | n.d. | n.d. |
| C90 | 1999.844. | Ravenglass | Ravenglass | Urn- Flower-pot shape | 111 | 106 | 52.5 | n.d. | n.d. | n.d. |
| C91 | 1994.21. | Rickerby house | Carlisle | Food Vessel | n.d. | n.d. | n.d. | n.d. | n.d. | n.d. |
| C92 | 1926.27.434 | Skirwith Moor | Skirwith Moor | Accessory Vessel | 71 | 67 | 49 | n.d. | n.d. | 4 |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm | Base mm | Collar mm | Bevel mm | Thickness mm |
|---|---|---|---|---|---|---|---|---|---|---|
| C93 | 1961.77. | Springfield Quarry | Springfield Quarry | Food Vessel | 230 | 203 | 103 | n.d. | 25.5 | n.d. |
| C94 | 1903.7. | Stone cairn | Lazonby/Great Salkeld | Collared Urn Sherd | n.d. | n.d. | n.d. | n.d. | n.d. | 5 |
| C95 | 1964.48.1. | Thursby | Thursby | Tripartite Urn | 280 | 241 | 138 | n.d. | 29 | n.d. |
| C96 | 1964.48.2. | Thursby | Thursby | Skeuomorphic Basket Ware | n.d. | 260 | n.d. | n.d. | 25 | n.d. |
| C97 | 1926.2.57 | Waterloo Hill | Aglionby | Urn - Encrust-ed | 333 | 284 | 130 | n.d. | 40.5 | n.d. |
| C98 | 1926.25.2 | Waterloo Hill | Aglionby | Collared Urn Sherd | n.d. | n.d. | n.d. | 53 | | 11 |
| C99 | 1927.15.1 | Waterloo Hill | Aglionby | Collared Urn (Biconical) | 351 | 286 | 124 | 75 | n.d. | n.d. |
| C100 | 1927.15.2 | Waterloo Hill | Aglionby | Collared Urn | 322 | 214 | 83.5 | 83 | n.d. | n.d. |
| C101 | 1927.15.3 | Waterloo Hill | Aglionby | Collared Urn | 163 | 153 | 66 | 42 | n.d. | n.d. |
| C102 | 1927.31. | Waterloo Hill | Aglionby | Accessory Vessel | 70.5 | 64.5 | 32 | n.d. | n.d. | 9.5 |
| C103 | 1977.95.1 | White Lyne | Bewcastle | Food Vessel | 122 | 155 | 73 | n.d. | 17.5 | n.d. |
| C104 | 1977.95.2 | White Lyne | Bewcastle | Food Vessel | 119 | 140 | 64 | n.d. | 16.8 | n.d. |
| C105 | 1977.95.3 | White Lyne | Bewcastle | Food Vessel | 98 | 103 | 45 | n.d. | 17 | n.d. |
| C106 | 1999.854. | Aughertree Fell | Aughertree Fell | Collared Urn | 263 | 206 | 98 | 14 | n.d. | n.d. |

Table A1.2 Archaeological data from the Wiltshire Assemblage showing location, type and dimensions (Author 2023).

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W1 | DZSWS:1953.69 | Bowl barrow Preshute G1a | n.d. | Accessory Cup | 36 | 85 |
| W2 | DZSWS:1953.70 | Bowl barrow Preshute G1a | n.d. | Accessory Cup | 49 | 80 |
| W3 | DZSWS:1953.71 | Bowl barrow Preshute G1a | n.d. | Collared Urn | 163 | 145 |
| W4 | DZSWS:1955.216 | Barrow Goddard 2 | Kingston Deverill | Beaker Sherd | n.d. | n.d. |
| W5 | DZSWS:1955.218 | Barrow 1, | Roundway | 64 Sherds | n.d. | n.d. |
| W6 | DZSWS:1960.9.3 | Bell Barrow Milton Libourne | Milton | Accessory Cup | 59 | 88 |
| W7 | DZSWS:1960.10.250 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Food Vessel Sherds | n.d. | n.d. |
| W8 | DZSWS:1960.10.251 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W9 | DZSWS:1960.10.253 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Food Vessel Sherds | n.d. | n.d. |
| W10 | DZSWS:1960.10.304 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W11 | DZSWS:1960.10.305 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W12 | DZSWS:1960.10.306 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W13 | DZSWS:1960.10.307 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W14 | DZSWS:1960.10.308 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W15 | DZSWS:1960.10.309 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W16 | DZSWS:1960.10.310 | Snail Down I, twin disc barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W17 | DZSWS:1960.10.313 | Snail Down II, saucer barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W18 | DZSWS:1960.10.314 | Snail Down II, saucer barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W19 | DZSWS:1960.10.322 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W20 | DZSWS:1960.10.323 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W21 | DZSWS:1960.10.324 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W22 | DZSWS:1960.10.325 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W23 | DZSWS:1960.10.326 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W24 | DZSWS:1960.10.327 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W25 | DZSWS:1960.10.328 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W26 | DZSWS:1960.10.329 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W27 | DZSWS:1960.10.330 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W28 | DZSWS:1960.10.331 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W29 | DZSWS:1960.10.332 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W30 | DZSWS:1960.10.333 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W31 | DZSWS:1960.10.334 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W32 | DZSWS:1960.10.335 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W33 | DZSWS:1960.10.336 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W34 | DZSWS:1960.10.337 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W35 | DZSWS:1960.10.338 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W36 | DZSWS:1960.10.339 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W37 | DZSWS:1960.10.340 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W38 | DZSWS:1960.10.341 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W39 | DZSWS:1960.10.342 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W40 | DZSWS:1960.10.343 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W41 | DZSWS:1960.10.344 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W42 | DZSWS:1960.10.345 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W43 | DZSWS:1960.10.346 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W44 | DZSWS:1960.10.347 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W45 | DZSWS:1960.10.348 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W46 | DZSWS:1960.10.349 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W47 | DZSWS:1960.10.350 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W48 | DZSWS:1960.10.351 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W49 | DZSWS:1960.10.352 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W50 | DZSWS:1960.10.353 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W51 | DZSWS:1960.10.354 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W52 | DZSWS:1960.10.355 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W53 | DZSWS:1960.10.356 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W54 | DZSWS:1960.10.357 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W55 | DZSWS:1960.10.358 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W56 | DZSWS:1960.10.359 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W57 | DZSWS:1960.10.360 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W58 | DZSWS:1960.10.361 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W59 | DZSWS:1960.10.362 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W60 | DZSWS:1960.10.363 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W61 | DZSWS:1960.10.364 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W62 | DZSWS:1960.10.365 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W63 | DZSWS:1960.10.366 | Snail Down III, Bell barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W64 | DZSWS:1960.10.367 | Snail Down X, Bowl barrow | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |
| W65 | DZSWS:1960.10.369 | Snail Down X, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W66 | DZSWS:1960.10.370 | Snail Down X, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W67 | DZSWS:1960.10.371 | Snail Down XI, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W68 | DZSWS:1960.10.372 | Snail Down XI, Bowl barrow | Collingbourne Kingston, | Beaker Sherd? | n.d. | n.d. |
| W69 | DZSWS:1960.10.373 | Snail Down XI, Bowl barrow | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W70 | DZSWS:1960.10.374 | Snail Down XI, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W71 | DZSWS:1960.10.375 | Snail Down XI, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W72 | DZSWS:1960.10.376 | Snail Down XI, Bowl barrow | Collingbourne Kingston, | Peterborough? | n.d. | n.d. |
| W73 | DZSWS:1960.10.378 | Snail Down XIII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W74 | DZSWS:1960.10.379 | Snail Down XIII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W75 | DZSWS:1960.10.380 | Snail Down XIII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W76 | DZSWS:1960.10.381 | Snail Down XIII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W77 | DZSWS:1960.10.382 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |
| W78 | DZSWS:1960.10.383 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W79 | DZSWS:1960.10.384 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W80 | DZSWS:1960.10.385 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W81 | DZSWS:1960.10.386 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W82 | DZSWS:1960.10.387 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W83 | DZSWS:1960.10.388 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W84 | DZSWS:1960.10.392 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W85 | DZSWS:1960.10.393 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W86 | DZSWS:1960.10.394 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W87 | DZSWS:1960.10.395 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W88 | DZSWS:1960.10.396 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W89 | DZSWS:1960.10.397 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W90 | DZSWS:1960.10.398 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W91 | DZSWS:1960.10.399 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W92 | DZSWS:1960.10.400 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W93 | DZSWS:1960.10.401 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W94 | DZSWS:1960.10.402 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W95 | DZSWS:1960.10.403 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W96 | DZSWS:1960.10.404 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W97 | DZSWS:1960.10.405 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W98 | DZSWS:1960.10.406 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W99 | DZSWS:1960.10.407 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W100 | DZSWS:1960.10.408 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W101 | DZSWS:1960.10.409 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W102 | DZSWS:1960.10.410 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W103 | DZSWS:1960.10.411 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W104 | DZSWS:1960.10.412 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W105 | DZSWS:1960.10.413 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W106 | DZSWS:1960.10.414 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W107 | DZSWS:1960.10.415 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W108 | DZSWS:1960.10.416 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W109 | DZSWS:1960.10.418 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Accessory Cup | n.d. | n.d. |
| W110 | DZSWS:1960.10.419 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W111 | DZSWS:1960.10.420 | Snail Down XIV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W112 | DZSWS:1960.10.426 | Snail Down XV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W113 | DZSWS:1960.10.427 | Snail Down XV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W114 | DZSWS:1960.10.428 | Snail Down XV, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W115 | DZSWS:1960.10.432 | Snail Down XVII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W116 | DZSWS:1960.10.433 | Snail Down XVII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W117 | DZSWS:1960.10.434 | Snail Down XVII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W118 | DZSWS:1960.10.435 | Snail Down XVII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W119 | DZSWS:1960.10.436 | Snail Down XVII, Bowl barrow | Collingbourne Kingston, | Overhanging Rim Urn | n.d. | n.d. |
| W120 | DZSWS:1960.10.441 | Snail Down XVII, Bowl barrow | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W121 | DZSWS:1960.10.453 | Bell barrow Snail Down III | Collingbourne Kingston, | curved Rim Jar | n.d. | n.d. |
| W122 | DZSWS:1960.10.454 | ring ditch Snail Down V, | Collingbourne Kingston, | curved Rim Jar | n.d. | n.d. |
| W123 | DZSWS:1960.10.455 | Bowl barrow, Snail Down XV | Collingbourne Kingston, | curved-Rim cooking Pot | n.d. | n.d. |
| W124 | DZSWS:1960.10.456 | ring ditch Snail Down V | Collingbourne Kingston, | Jar | n.d. | n.d. |
| W125 | DZSWS:1960.10.457 | Bowl barrow Snail Down X, | Collingbourne Kingston, | Jar | n.d. | n.d. |
| W126 | DZSWS:1960.10.458 | Bowl barrow, Snail Down XV | Collingbourne Kingston, | Jar | n.d. | n.d. |
| W127 | DZSWS:1960.10.459 | ring ditch Snail Down V | Collingbourne Kingston, | Bowl | n.d. | n.d. |
| W128 | DZSWS:1960.10.460 | earthworks Snail Down VI | Collingbourne Kingston, | Bowl | n.d. | n.d. |
| W129 | DZSWS:1960.10.461 | Bowl barrow, Snail Down XV | Collingbourne Kingston, | Bowl | n.d. | n.d. |
| W130 | DZSWS:1960.10.537 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W131 | DZSWS:1960.10.540 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W132 | DZSWS:1960.10.541 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W133 | DZSWS:1960.10.542 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W134 | DZSWS:1960.10.543 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W135 | DZSWS:1960.10.544 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W136 | DZSWS:1960.10.545 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W137 | DZSWS:1960.10.546 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W138 | DZSWS:1960.10.547 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W139 | DZSWS:1960.10.548 | Bowl barrow Snail Down XVIII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W140 | DZSWS:1960.10.549 | Bowl barrow Snail Down XVIII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W141 | DZSWS:1960.10.550 | Bowl barrow Snail Down XVIII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W142 | DZSWS:1960.10.551 | Bowl barrow Snail Down XVIII | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W143 | DZSWS:1960.10.552 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W144 | DZSWS:1960.10.553 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |
| W145 | DZSWS:1960.10.554 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |
| W146 | DZSWS:1960.10.555 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |
| W147 | DZSWS:1960.10.556 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |
| W148 | DZSWS:1960.10.557 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W149 | DZSWS:1960.10.558 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W150 | DZSWS:1960.10.559 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |
| W151 | DZSWS:1960.10.560 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Peterborough Ware | n.d. | n.d. |
| W152 | DZSWS:1960.10.561 | twin Bell barrow Snail Down XIX | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W153 | DZSWS:1960.10.562 | Bowl barrow Snail Down XX | Collingbourne Kingston, | Beaker Sherd? | n.d. | n.d. |
| W154 | DZSWS:1960.10.565 | twin disc barrow Snail Down I | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W155 | DZSWS:1960.10.566 | twin disc barrow Snail Down I | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W156 | DZSWS:1960.10.567 | twin disc barrow Snail Down I | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W157 | DZSWS:1960.10.568 | twin disc barrow Snail Down I | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W158 | DZSWS:1960.10.569 | twin disc barrow Snail Down I | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W159 | DZSWS:1960.10.570 | twin disc barrow Snail Down I | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W160 | DZSWS:1960.10.571 | twin disc barrow Snail Down I | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W161 | DZSWS:1960.10.574 | Bell barrow Snail Down III | Collingbourne Kingston, | Overhanging Rim Urn | n.d. | n.d. |
| W162 | DZSWS:1960.10.575 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W163 | DZSWS:1960.10.576 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W164 | DZSWS:1960.10.577 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W165 | DZSWS:1960.10.578 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W166 | DZSWS:1960.10.579 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W167 | DZSWS:1960.10.580 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W168 | DZSWS:1960.10.581 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W169 | DZSWS:1960.10.582 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W170 | DZSWS:1960.10.583 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W171 | DZSWS:1960.10.584 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W172 | DZSWS:1960.10.585 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W173 | DZSWS:1960.10.586 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W174 | DZSWS:1960.10.587 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W175 | DZSWS:1960.10.588 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W176 | DZSWS:1960.10.589 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W177 | DZSWS:1960.10.590 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W178 | DZSWS:1960.10.591 | Bell barrow Snail Down III | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W179 | DZSWS:1960.10.592 | Bell barrow Snail Down III | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W180 | DZSWS:1960.10.593 | Bell barrow Snail Down III | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W181 | DZSWS:1960.10.594 | Bell barrow Snail Down III | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W182 | DZSWS:1960.10.597 | earthworks Snail Down VI/ VII, | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W183 | DZSWS:1960.10.606 | Bowl barrow Snail Down XIV | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W184 | DZSWS:1960.10.610 | Bowl barrow Snail Down XIV | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W185 | DZSWS:1960.10.625 | pond barrow Snail Down XVI | Collingbourne Kingston, | Overhanging Rim Urn | n.d. | n.d. |
| W186 | DZSWS:1960.10.618 | ditch fill of Bowl barrow Snail Down XVII | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W187 | DZSWS:1960.10.631 | Bowl barrow Snail Down XI | Collingbourne Kingston, | Bucket Urn | n.d. | n.d. |
| W188 | DZSWS:1960.10.653 | linear ditch Snail Down VI | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W189 | DZSWS:1960.10.655 | Bowl barrow Snail Down XIII | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W190 | DZSWS:1960.10.657 | Bowl barrow Snail Down XX | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W191 | DZSWS:1960.10.658 | Bowl barrow Snail Down XX | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W192 | DZSWS:1960.10.659 | Bowl barrow Snail Down XX | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W193 | DZSWS:1960.10.661 | linear earthwork Snail Down VI/VI | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W194 | DZSWS:1960.10.662 | linear earthwork Snail Down VI | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W195 | DZSWS:1960.10.663 | Bowl barrow XX, Snail Down VI/VII | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W196 | DZSWS:1960.10.664 | linear earthwork near Bowl barrow XX | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W197 | DZSWS:1960.10.665 | Bowl barrow Snail Down XIV | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W198 | DZSWS:1960.10.676 | Bowl barrow Snail Down XX | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W199 | DZSWS:1960.10.677 | linear ditch Snail Down VI/VII | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W200 | DZSWS:1960.10.678 | linear ditch Snail Down VI/VII | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W201 | DZSWS:1960.10.679 | linear ditch Snail Down VI/VII | Collingbourne Kingston, | Pot | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W202 | DZSWS:1960.10.680 | linear ditch Snail Down VI/VII | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W203 | DZSWS:1960.10.681 | linear ditch Snail Down VI/VII | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W204 | DZSWS:1960.10.682 | linear ditch Snail Down VI/VII | Collingbourne Kingston, | Pot | n.d. | n.d. |
| W205 | DZSWS:1960.10.685 | Snail Down III Bell barrow | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W206 | DZSWS:1960.10.686 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W207 | DZSWS:1960.10.687 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W208 | DZSWS:1960.10.688 | Snail Down III, Bell barrow | Collingbourne Kingston, | Accessory Cup | n.d. | n.d. |
| W209 | DZSWS:1960.10.689 | Snail Down III, Bell barrow | Collingbourne Kingston, | Overhanging Rim Urn | n.d. | n.d. |
| W210 | DZSWS:1960.10.690 | Snail Down III, Bell barrow | Collingbourne Kingston, | Overhanging Rim Urn | n.d. | n.d. |
| W211 | DZSWS:1960.10.1002 | Bowl barrow Snail Down XVII | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W212 | DZSWS:1960.10.1003 | saucer barrow Snail Down II | Collingbourne Kingston, | Collared Urn Sherd | n.d. | n.d. |
| W213 | DZSWS:1962.26.1 | Bowl barrow | West Overton | Collared Urn | 138 | 140 |
| W214 | DZSWS: STHEAD.280 | Bowl Barrow | Barrow Wilsford G7 | Collared Urn | 202 | 175 |
| W215 | DZSWS:X115 | gravel digging at | Knowle, | Urn | 223 | 200 |
| W216 | DZSWS:X26 | Collingbourne Ducis G1 | Collingbourne Ducis G1 | Urn | 122 | 115 |
| W217 | DZSWS:X8 | Beckhampton, Avebury. | Beckhampton, Avebury. | Urn | 140 | 130 |
| W218 | DZSWS: STHEAD.261 | disc barrow Winterbourne Stoke G47 | Winterbourne Stoke | Urn | 270 | 245 |
| W219 | DZSWS: STHEAD.258 | disc barrow Idmiston G1 | Idmiston | Urn | 300 | 284 |
| W220 | DZSWS: STHEAD.255 | Bowl barrow Collingbourne Kingston G17 | Collingbourne Kingston | Urn | 280 | 220 |
| W221 | DZSWS: STHEAD.250 | Bowl barrow Codford St. Mary | Codford St. Mary | Urn | 390 | 365 |
| W222 | DZSWS: STHEAD.176 | Bowl barrow Durrington G11 | Durrington | Urn | 330 | 310 |
| W223 | DZSWS: STHEAD.62 | Bowl barrow Upton Lovell 'Golden Barrow' | Upton Lovell ' | Urn | 151 | 130 |
| W224 | DZSWS:1960.10.690 | Snail Down III, Bell barrow, | Collingbourne Kingston, | Urn | 290 | 280 |
| W225 | DZSWS:1953.71 | Bowl barrow Preshute G1a | | Collared Urn | 163 | 145 |
| W226 | DZSWS: STHEAD.240 | Bowl barrow Durrington G36 | Durrington | Accessory Cup | 76 | 75 |
| W227 | DZSWS:1960.10.312 | twin disc barrow, | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W228 | DZSWS:1960.10.315 | twin disc barrow, | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W229 | DZSWS:1960.10.316 | twin disc barrow, | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W230 | DZSWS:1960.10.317 | twin disc barrow, | Collingbourne Kingston, | Beaker Sherd | n.d. | n.d. |
| W231 | DZSWS:1960.10.318 | twin disc barrow, | Collingbourne Kingston, | Sherds | n.d. | n.d. |
| W232 | DZSWS:2004.256.43 | Post Hole 3, | Woodhenge, Durrington, | Beaker Sherd | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W233 | DZSWS:2004.256.52 | n.d. | Woodhenge, Durrington, | Beaker Sherd | n.d. | n.d. |
| W234 | DZSWS:2004.256.54 | n.d. | Woodhenge, Durrington, | Beaker Sherd | n.d. | n.d. |
| W235 | DZSWS:2004.256.42 | Post Hole 2, | Woodhenge, Durrington, | Beaker Sherd | n.d. | n.d. |
| W236 | DZSWS:2004.256.40 | n.d. | Woodhenge, Durrington, | Beaker Sherd | n.d. | n.d. |
| W237 | DZSWS:2004.256.35 | n.d. | Woodhenge, Durrington, | Beaker Sherd | n.d. | n.d. |
| W238 | DZSWS:2004.256.36 | n.d. | Woodhenge, Durrington, | Beaker Sherd | n.d. | n.d. |
| W239 | DZSWS:2004.256.37 | n.d. | Woodhenge, Durrington, | Beaker Sherd | n.d. | n.d. |
| W240 | DZSWS:1968.24.1 | Barrow G 51 | Amesbury, | Middle Rhine Bell Beaker, | 174 | 124 |
| W241 | DZSWS:1968.24.2 | Barrow G 51 | Amesbury, | Beaker | 165 | 125 |
| W242 | DZSWS: STHEAD.32 | Bowl barrow Boyton G4a | Amesbury, | Accessory Cup | 37 | 76 |
| W243 | DZSWS: STHEAD.85a | Bowl barrow Boyton G4a | Amesbury, | late period Beaker | 207 | 140 |
| W244 | DZSWS: STHEAD.119 | Bowl barrow, G19a | Amesbury | Accessory Grape Cup | 40 | 73 |
| W245 | DZSWS: STHEAD.123 | Bowl barrow, G19 | Amesbury | Accessory Cup | 40 | 90 |
| W246 | DZSWS: STHEAD.123a | Bowl barrow, G19 | Amesbury | Accessory Cup | 30 | 60 |
| W247 | DZSWS: STHEAD.180 | G51 | Amesbury | 1 Long Necked Beaker | 193 | 132 |
| W248 | DZSWS: STHEAD.257 | Bowl barrow G3 | Amesbury | Stonehenge' Barrel Urn | 570 | 455 |
| W249 | DZSWS: STHEAD.263 | G24 | Winterbourne Stoke | Food Vessel | 286 | 262 |
| W250 | DZSWS:1968.24.23 | barrow G 51 | Amesbury | 4 Beaker Sherds | n.d. | n.d. |
| W251 | DZSWS:1968.24.25 | barrow G 51 | Amesbury | 9 Beaker Sherds | n.d. | n.d. |
| W252 | DZSWS:1960.8.3 | n.d. | West Kennet Long Barrow | Beaker Sherd | n.d. | n.d. |
| W253 | DZSWS:X23 | G23c | Avebury | Accessory Grape Cup | 48 | 98 |
| W254 | DZSWS:2004.261.1 | Overton Hill | Avebury | Beaker | 102 | 110 |
| W255 | DZSWS:2006.77.38 | cutting IX | Avebury | 38 Beaker Sherds | | |
| W256 | DZSWS:X112 | The Cove | Avebury | Middle Rhine Bell Beaker, f | 215 | 146 |
| W257 | DZSWS:1960.8.251 | West Kennet Long Barrow, | Avebury, | all over cord Beaker, | 213 | 148 |
| W258 | DZSWS:1960.8.252 | West Kennet Long Barrow, | Avebury, | European Bell Beaker, | n.d. | n.d. |
| W259 | DZSWS:1965.14.3 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W260 | DZSWS:1960.8.496 | West Kennet Long Barrow, | Avebury, | Beaker Sherd | n.d. | n.d. |
| W261 | DZSWS:1960.8.498 | West Kennet Long Barrow, | Avebury, | Beaker Sherd | n.d. | n.d. |
| W262 | DZSWS:1960.8.746 | West Kennet Long Barrow, | Avebury, | Beaker Sherd | n.d. | n.d. |
| W263 | DZSWS:1960.8.760 | West Kennet Long Barrow, | Avebury, | Beaker Sherd | n.d. | n.d. |
| W264 | DZSWS:1960.8.764 | West Kennet Long Barrow, | Avebury, | 2 Beaker Sherds | n.d. | n.d. |
| W265 | DZSWS:1960.8.765 | West Kennet Long Barrow, | Avebury, | Beaker Sherd | n.d. | n.d. |
| W266 | DZSWS:1960.8.766 | West Kennet Long Barrow, | Avebury, | Beaker Sherd | n.d. | n.d. |
| W267 | DZSWS:1960.8.767 | West Kennet Long Barrow, | Avebury, | Beaker Sherd | n.d. | n.d. |
| W268 | DZSWS:1960.8.770 | West Kennet Long Barrow, | Avebury, | 3 Beaker Sherds | n.d. | n.d. |
| W269 | DZSWS:1960.8.771 | West Kennet Long Barrow, | Avebury, | 2 Beaker Sherds | n.d. | n.d. |
| W270 | DZSWS:1960.8.785 | West Kennet Long Barrow, | Avebury, | 3 Beaker Sherds | n.d. | n.d. |
| W271 | DZSWS:1960.8.786 | West Kennet Long Barrow, | Avebury, | 3 Beaker Sherds | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W272 | DZSWS:1960.8.788 | West Kennet Long Barrow, | Avebury, | 4 Beaker Sherds | n.d. | n.d. |
| W273 | DZSWS:1960.8.789 | West Kennet Long Barrow, | Avebury, | 3 Beaker Sherds | n.d. | n.d. |
| W274 | DZSWS:1960.8.812 | West Kennet Long Barrow, | Avebury, | Beaker Sherd | n.d. | n.d. |
| W275 | DZSWS:1965.14.47 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W276 | DZSWS:1965.14.48 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W277 | DZSWS:1965.14.49 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W278 | DZSWS:1965.14.50 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W279 | DZSWS:1965.14.51 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W280 | DZSWS:1965.14.52 | G55 | Avebury, | 2 Beaker Sherds | n.d. | n.d. |
| W281 | DZSWS:1965.14.53 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W282 | DZSWS:1965.14.54 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W283 | DZSWS:2004.572.71 | West Kennet Long Barrow, | Avebury, | 7 Beaker Sherds | n.d. | n.d. |
| W284 | DZSWS:2004.572.72 | West Kennet Long Barrow, | Avebury, | 12 Beaker Sherds | n.d. | n.d. |
| W285 | DZSWS:2004.572.73 | West Kennet Long Barrow, | Avebury, | 23 Beaker Sherds | n.d. | n.d. |
| W286 | DZSWS:1965.14.140 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W287 | DZSWS:1965.14.141 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W288 | DZSWS:1965.14.142 | G55 | Avebury, | 2 Beaker Sherds | n.d. | n.d. |
| W289 | DZSWS:1965.14.143 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W290 | DZSWS:1965.14.144 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W291 | DZSWS:1965.14.145 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W292 | DZSWS:1965.14.146 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W293 | DZSWS:1965.14.147 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W294 | DZSWS:1965.14.148 | G55 | Avebury, | 11 Beaker Sherds | n.d. | n.d. |
| W295 | DZSWS:1965.14.149 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W296 | DZSWS:1965.14.150 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W297 | DZSWS:1965.14.151 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W298 | DZSWS:1965.14.152 | G55 | Avebury, | 10 Beaker Sherds | n.d. | n.d. |
| W299 | DZSWS:1965.14.153 | G55 | Avebury, | 5 Beaker Sherds | n.d. | n.d. |
| W300 | DZSWS:1965.14.154 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W301 | DZSWS:1965.14.155 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W302 | DZSWS:1965.14.156 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W303 | DZSWS:1965.14.157 | G55 | Avebury, | 2 Beaker Sherds | n.d. | n.d. |
| W304 | DZSWS:1965.14.158 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W305 | DZSWS:1965.14.159 | G55 | Avebury, | Collared Urn Sherd | n.d. | n.d. |
| W306 | DZSWS:1965.14.160 | G55 | Avebury, | Collared Urn Sherd | n.d. | n.d. |
| W307 | DZSWS:1965.14.209 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W308 | DZSWS:1965.14.210 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W309 | DZSWS:1965.14.211 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W310 | DZSWS:1965.14.212 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W311 | DZSWS:1965.14.213 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W312 | DZSWS:1965.14.214 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W313 | DZSWS:1965.14.215 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W314 | DZSWS:1965.14.216 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W315 | DZSWS:1965.14.218 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W316 | DZSWS:1965.14.219 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W317 | DZSWS:1965.14.220 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W318 | DZSWS:1965.14.221 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W319 | DZSWS:1965.14.222 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W320 | DZSWS:1965.14.223 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W321 | DZSWS:1965.14.226 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W322 | DZSWS:1965.14.227 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W323 | DZSWS:1965.14.228 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W324 | DZSWS:1965.14.229 | G55 | Avebury, | 2 Beaker Sherds | n.d. | n.d. |
| W325 | DZSWS:1965.14.230 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W326 | DZSWS:1965.14.231 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W327 | DZSWS:1965.14.232 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W328 | DZSWS:1965.14.233 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W329 | DZSWS:1965.14.234 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W330 | DZSWS:1965.14.235 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W331 | DZSWS:1965.14.236 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W332 | DZSWS:1965.14.237 | G55 | Avebury, | 2 Beaker Sherds | n.d. | n.d. |
| W333 | DZSWS:1965.14.240 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W334 | DZSWS:1965.14.241 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W335 | DZSWS:1965.14.253 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W336 | DZSWS:1965.14.254 | G55 | Avebury, | Beaker Sherd | n.d. | n.d. |
| W337 | DZSWS: STHEAD.92 | G65c | Durrington | Aldbourne Accessory Cup | 58 | 114 |
| W338 | DZSWS:X117 | G16a, | Winterbourne Stoke | Aldbourne Accessory Cup | 45 | 108 |
| W339 | DZSWS: STHEAD.79a | n.d. | Wilsford | Aldbourne Accessory Cup | 68 | 101 |
| W340 | DZSWS:2004.219.391 | n.d. | Aldbourne | Collared Urn | n.d. | n.d. |
| W341 | DZSWS: STHEAD.296 | G53, | Bishops Can-nings | Long Necked Beaker | 147 | 105 |
| W342 | DZSWS:X3 | n.d. | Beckhampton | bi conical | n.d. | n.d. |
| W343 | DZSWS:X8 | n.d. | Beckhampton | Collared Urn | 140 | 130 |
| W344 | DZSWS:X14 | Bowl barrow | Cherhill | Biconical Urn | 450 | 350 |
| W345 | DZSWS:X9 | n.d. | Cherhill | Beaker Sherd | n.d. | n.d. |
| W346 | DZSWS:1984.100.5 | n.d. | Cherhill | 5 Beaker Sherds | n.d. | n.d. |
| W347 | DZSWS: STHEAD.250 | n.d. | Codford St. Mary | Collared Urn | 390 | 365 |
| W348 | DZSWS:X26 | n.d. | Collingbourne Ducis | Collared Urn | 122 | 115 |
| W349 | DZSWS:X123 | n.d. | Figheldean | Enlarged Food Vessel | 268 | 260 |
| W350 | DZSWS:X147 | n.d. | Figheldean | Food Vessel | 145 | 118 |
| W351 | DZSWS:X146.4 | n.d. | Figheldean | Beaker | 145 | 118 |
| W352 | DZSWS: STHEAD.294 | n.d. | Idmiston | Accessory Cup | 24 | 50 |
| W353 | DZSWS:X115 | n.d. | Little Bedwyn | Collared Urn | 233 | 200 |
| W354 | DZSWS:X118 | n.d. | Market Laving-ton, | Collared Urn | n.d. | n.d. |
| W355 | DZSWS: STHEAD.81b | n.d. | Mere | Bell Beaker | 147 | 148 |
| W356 | DZSWS: STHEAD.285 | n.d. | Kingston De-verill, | Accessory Cup | 82 | 203 |
| W357 | DZSWS:1980.61.1 | n.d. | Milston Down | 6 Sherds of Beaker | n.d. | n.d. |
| W358 | DZSWS:1994.15 | n.d. | Milston | Collared Urn Sherd | n.d. | n.d. |
| W359 | DZSWS:1960.9.3 | n.d. | Milton Lilbourne | Accessory Cup | 59 | 88 |
| W360 | DZSWS:X133 | n.d. | Netheravon | Beaker | 167 | 125 |
| W361 | DZSWS:X133 | n.d. | Netheravon | Beaker | 170 | 115 |

| ID | Museum code | Site | Location | Type | Height mm | Rim mm |
|---|---|---|---|---|---|---|
| W362 | DZSWS:2004.226.1 | n.d. | Ogbourne St Andrew, | Accessory Cup | 35 | 39 |
| W363 | DZSWS:1976.87.3 | n.d. | Ogbourne St George | Collared Urn Sherd | n.d. | n.d. |
| W364 | DZSWS:1979.69 | n.d. | Roundway | Urn | n.d. | n.d. |
| W365 | DZSWS:1971.48 | n.d. | Pewsham | Collared Urn Sherd | n.d. | n.d. |
| W366 | DZSWS:X50 | n.d. | Roundway | Bell Beaker | 150 | 123 |
| W367 | DZSWS:2004.264.1 | n.d. | Upavon | Beaker Wessex/Mid-Rhine type | 194 | 142 |
| W368 | DZSWS:1965.1 | n.d. | Upavon | Accessory Cup | n.d. | n.d. |
| W369 | DZSWS: STHEAD.62 | n.d. | Upton Lovell, | Miniature Collared Urn | 151 | 130 |
| W370 | DZSWS: STHEAD.43 | n.d. | Upton Lovell, | Miniature Food Vessel | 87 | 130 |
| W371 | DZSWS: STHEAD.13 | n.d. | Upton Lovell, | Bell Beaker | 160 | 110 |
| W372 | DZSWS: STHEAD.202 | Long Barrow Warminster | Warminster | Accessory Cup | 83 | 140 |
| W373 | DZSWS:X110 | n.d. | Warminster | Collared Urn | n.d. | n.d. |
| W374 | DZSWS:2004.202.56.11 | Bronze Age Farm | Bishops Cannings | Deverel Rimbury | n.d. | 30 |

Table A1.3 Archaeological data from the Wiltshire Assemblage showing decoration and archaeological information where applicable (Author 2023).

| **ID** | **Type** | **Decoration** | Notes |
|---|---|---|---|
| W1 | Accessory Cup | n.d. | Female inhumation |
| W2 | Accessory Cup | n.d. | Female inhumation with perforations |
| W3 | Collared Urn | n.d. | upright in a cist |
| W4 | Beaker Sherd | n.d. | n.d. |
| W5 | 64 Sherds | n.d. | Middle Bronze Age |
| W6 | Accessory Cup | n.d. | two perforations |
| W7 | Food Vessel Sherds | n.d. | n.d. |
| W8 | Collared Urn Sherd | n.d. | n.d. |
| W9 | Food Vessel Sherds | n.d. | lower body and base Sherds |
| W10 | Beaker Sherd | n.d. | SW quad. Of bank fill |
| W11 | Beaker Sherd | n.d. | SW quad. |
| W12 | Beaker Sherd | n.d. | 3 rims calcined flint inclusions |
| W13 | Beaker Sherd | comb imp. | Bank II, SW quad-rant bank fill |
| W14 | Beaker Sherd | comb imp. | Bank II, SW quad-rant, bank fill |
| W15 | Beaker Sherd | n.d. | Bank II, SW quad-rant bank fill |
| W16 | Beaker Sherd | n.d. | 5 from Bank 9 II, SE, SW, NW quadrants, bank fill |
| W17 | Beaker Sherd | herringbone | n.d. |
| W18 | Beaker Sherd | n.d. | 5 Sherds |
| W19 | Beaker Sherd | base | n.d. |
| W20 | Beaker Sherd | herringbone | n.d. |
| W21 | Beaker Sherd | triangular stabs | n.d. |
| W22 | Beaker Sherd | comb imp. | n.d. |
| W23 | Beaker Sherd | finger nail imp. | n.d. |
| W24 | Beaker Sherd | horizontal lines and oval imp. | 2 Sherds |
| W25 | Beaker Sherd | ladder pattern | 2 Sherds |
| W26 | Beaker Sherd | oval stabs | n.d. |
| W27 | Beaker Sherd | vertical comb-impressed lines | n.d. |
| W28 | Beaker Sherd | comb-filled chevron/lozenge | n.d. |
| W29 | Beaker Sherd | vertical and horizontal comb-imp | 2 Sherds conjoined |
| W30 | Beaker Sherd | comb-impressed cross-hatching boarded by multiple horizontal lines, | 2 Sherds |
| W31 | Beaker Sherd | incised lines of tall pendant triangle | n.d. |
| W32 | Beaker Sherd | n.d. | n.d. |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W33 | Beaker Sherd | single finger-nail imp | n.d. |
| W34 | Beaker Sherd | n.d. | n.d. |
| W35 | Beaker Sherd | deep, incised, filled pendant triangle | n.d. |
| W36 | Beaker Sherd | 8 horizontal impressed lines | n.d. |
| W37 | Beaker Sherd | paired fingernail impression | n.d. |
| W38 | Beaker Sherd | horizontal, comb-impressed lines | n.d. |
| W39 | Beaker Sherd | horizontal comb-impressed lines | n.d. |
| W40 | Beaker Sherd | triangle motif and lines | n.d. |
| W41 | Beaker Sherd | comb-impressed lines forming multiple chevrons | n.d. |
| W42 | Beaker Sherd | comb-impressed lines, shallow pendant chevrons, | finely crushed calcined flint |
| W43 | Beaker Sherd | vertical impressions and multiple comb-impressions, | well, fired with soapy-textured finish |
| W44 | Beaker Sherd | abraded ladder motif | |
| W45 | Beaker Sherd | traces of filled-triangle, comb-impressed motif | pink/brown fabric |
| W46 | Beaker Sherd | paired finger-tip impressions | orange, brown fabric with black core |
| W47 | Beaker Sherd | single line of twisted cord impression | grey fabric |
| W48 | Beaker Sherd | vertical lines of paired finger-nail impressions | brown fabric with finely crushed calcined flint inclusions |
| W49 | Beaker Sherd | n.d. | brown fabric outside and dark grey inner, hard and well-fired |
| W50 | Beaker Sherd | comb impressions forming filled opposing triangles or lozenges | pink/brown fabric, well-fired with calcined flint inclusions |
| W51 | Beaker Sherd | traces of horizontal and vertical comb-impressed lines | pink/brown fabric |
| W52 | Beaker Sherd | horizontal and vertical comb-impressed lines | red surface fabric, well fired |
| W53 | Beaker Sherd | paired finger-nail impression as a crowfeet motif | pink fabric with black interior surface |
| W54 | Beaker Sherd | two zones of a ladder motif, maggots along top of rim | rim sherd of light brown fabric with grey core |
| W55 | Beaker Sherd | single, deep horizontal groove above base | pink fabric |
| W56 | Beaker Sherd | comb impressions forming horizontal lines, with traces of an area of opposed multi chevrons, | pink/brown fabric, well fired with finely crushed calcined flint inclusion |
| W57 | Beaker Sherd | vertical nail impressions | 2 Sherds conjoined red/brown fabric with crushed calcined flint opening agent |
| W58 | Beaker Sherd | n.d. | pink/brown fabric with what is probably the springing of a handle |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W59 | Beaker Sherd | traces of horizontal com-impressed lines, external scar represents traces of a firing spall | pink/brown fabric |
| W60 | Beaker Sherd | area of comb-impressed ladder motif | rim sherd of pink, well-fired fabric |
| W61 | Beaker Sherd | n.d. | pink exterior and brown interior |
| W62 | Beaker Sherd | grooved ware decorated externally with two shallows, clearly defined grooves | pink fabric with finely crushed calcined flint and grog inclusion |
| W63 | Beaker Sherd | n.d. n.d. | |
| W64 | Peterborough Ware | n.d. | also, beaker and collared urn sherd |
| W65 | Beaker Sherd | paired finger-nail impressions | dark brown, gritty fabric with crushed inclusion |
| W66 | Beaker Sherd | random or broadly linear triangular impressions | light brown fabric, fine and well-fired |
| W67 | Beaker Sherd | n.d. | 3 Sherds abraded red fabric |
| W68 | Beaker Sherd? | n.d. | 3 Sherds abraded |
| W69 | Collared Urn Sherd | n.d. | 2 Sherds Deverel Rimbury ware, pink surface with a grey core |
| W70 | Beaker Sherd | comb imp. two bands of cross-hatching and two horizontal lines | fine dark brown fabric |
| W71 | Beaker Sherd | horizontal lines of paired fingernail herring-bone decoration emphasising raised cordons | red-brown exterior fabric with a grey-brown interior |
| W72 | Peterborough? | groove ware bird bone impressions | gritty clay with grey-brown outside, brown inner and black core |
| W73 | Beaker Sherd | close-set vertical filled triangles made using a fine comb | well-fired clay with brown outer and grey inner |
| W74 | Beaker Sherd | horizontal rows of regularly spaced sub-triangular stabs | deep red, well-fired clay, a base angle sherd |
| W75 | Beaker Sherd | comb-impressed, filled floating lozenges | fine red-brown fabric, from the belly of a round-bodied pot |
| W76 | Beaker Sherd | short vertical impressions | Deverel Rimbury ware, red surface with a black core and large, calcined flint inclusions |
| W77 | Peterborough Ware | n.d. | pink-brown fabric with calcined flint inclusions |
| W78 | Beaker Sherd | n.d. | 13 Sherds |
| W79 | Beaker Sherd | n.d. | 10 Sherds |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W80 | Beaker Sherd | n.d. | 2 rim Sherds of orange fabric with black core, with abundant finely crushed calcined flint inclusions |
| W81 | Beaker Sherd | n.d. | 4 Sherds |
| W82 | Beaker Sherd | n.d. | 2 Sherds |
| W83 | Collared Urn Sherd | n.d. | 2 Sherds |
| W84 | Beaker Sherd | two ladder motifs separated by a line of comb-impressions | hard, red-brown clay from the waist of a necked beaker |
| W85 | Beaker Sherd | combed ladder pattern, hints of a narrow undecorated band | belly of a necked beaker |
| W86 | Beaker Sherd | three encircling, twisted cord lines | fine dark-brown fabric |
| W87 | Beaker Sherd | area of ladder motif with border of three lines of comb impressions above and below | fine brown fabric from the neck of a barrel-necked vessel |
| W88 | Beaker Sherd | three or four carelessly applied comb impressions | dark-brown fabric, a flat-topped rim sherd |
| W89 | Beaker Sherd | n.d. | hard fabric, red-brown outer and black inner |
| W90 | Beaker Sherd | two pairs of fingernail impressions | soft fabric, orange exterior and dark grey interior |
| W91 | Beaker Sherd | n.d. | brown gritty fabric with abundant finely crushed calcined-flint inclusions |
| W92 | Beaker Sherd | paired fingernail, herringbone, raising horizontal ribs around the neck of the vessel | well-fired red brown fabric |
| W93 | Beaker Sherd | abraded comb decoration forming large triangles | 2 Sherds dark brown fabric |
| W94 | Beaker Sherd | random fingernail impressions from the upper part of a straight-necked vessel | fine, hard, well-fired red-brown fabric |
| W95 | Beaker Sherd | deep comb impressions to create opposed, filled triangles | fine, well-fired, dark brown fabric with orange core |
| W96 | Beaker Sherd | areas of combed, ladder motif | 2 rim sherds of grey-brown fabric from the neck of a barrel-necked vessel, |
| W97 | Beaker Sherd | fingernail rusticated, with heavy plastic decoration | 2 Sherds same vessel |
| W98 | Beaker Sherd | regular rows of small, oval, or sub-triangular stabs | 2 Sherds same vessel light brown fabric |
| W99 | Beaker Sherd | random, triangular impressions | well-fired, pink fabric |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W100 | Beaker Sherd | two converging ladder motifs | grey-brown fabric with traces of coil breaks |
| W101 | Beaker Sherd | four overlapping, broadly parallel combed lines | fine brown fabric with traces of coil breaks |
| W102 | Beaker Sherd | two encircling combed circles | base angle sherd of soft, orange-brown fabric with black core and abundant calcined flint |
| W103 | Beaker Sherd | abraded line of comb impressions | flat-topped rim sherd, orange exterior and brown interior with black core |
| W104 | Beaker Sherd | area of comb-decoration, a broad ladder above a zone of filled triangles | well-fired pink fab-ric from the belly of a necked beaker |
| W105 | Beaker Sherd | paired fingernail impressions | pink fabric |
| W106 | Beaker Sherd | vertical rows of triangular impressions | soft orange fabric |
| W107 | Beaker Sherd | comb-decorated with 3 horizontal lines bordering filled chev-rons | rim sherd from a necked beaker of orange-brown fabric |
| W108 | Beaker Sherd | deeply comb-impressed with an area of opposed filled trian-gles | light-brown fabric |
| W109 | Accessory Cup | profuse, small triangular stabs | base sherd of grey fabric |
| W110 | Beaker Sherd | n.d. | base sherd of orange exterior and grey-brown interior, calcined-flint-filled fabric |
| W111 | Beaker Sherd | n.d. | brown gritty fabric with abundant finely crushed calcined-flint inclu-sions |
| W112 | Beaker Sherd | small, oblique fingernail imp. | red-brown fabric with a dark core |
| W113 | Beaker Sherd | four horizontals, slightly curved lines of comb impressions | hard, dark-brown clay with finely crushed inclusions |
| W114 | Beaker Sherd | row of abraded, possibly fingernail, impressions | red outer layer, black inner and core |
| W115 | Beaker Sherd | four close-set, horizontal combed lines | red, well-fired clay with a grey inner surface |
| W116 | Beaker Sherd | n.d. | red, well-fired clay with a grey inner surface |
| W117 | Beaker Sherd | possible incised line below rim | red fabric, |
| W118 | Beaker Sherd | n.d. | red, well-fired fabric with grey inner surface, |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W119 | Overhanging Rim Urn | n.d. | n.d. |
| W120 | Beaker Sherd | n.d. | pink fabric |
| W121 | curved Rim Jar | n.d. | grey/beige fabric with inclusions |
| W122 | curved Rim Jar | n.d. | n.d. |
| W123 | curved-Rim cooking Pot | n.d. | n.d. |
| W124 | Jar | n.d. | thick-rimmed storage |
| W125 | Jar | n.d. | large with heavy rim |
| W126 | Jar | n.d. | large with heavy rim |
| W127 | Bowl | bead rim bowl | n.d. |
| W128 | Bowl | bead rim bowl | n.d. |
| W129 | Bowl | flanged rim bowl | n.d. |
| W130 | Beaker Sherd | traces of comb-impressed lines | grey, well-fired fabric |
| W131 | Beaker Sherd | n.d. | hard, dark-brown fabric, well-fired |
| W132 | Beaker Sherd | n.d. | hard, red fabric with grey inner surface, well-fired |
| W133 | Beaker Sherd | 4 horizontal rows, regularly spaced single, vertical fingernail impressions | hard fabric, well-fired, |
| W134 | Beaker Sherd | combed decoration, filled chevron motif | red, well-fired fabric |
| W135 | Beaker Sherd | decorated with comb cross-hatching | red, well-fired fabric |
| W136 | Beaker Sherd | comb cross-hatching | from the neck of a vessel pinkish-grey, well-fired fabric |
| W137 | Beaker Sherd | coarse comb herring bone impressions | grey, well-fired fabric |
| W138 | Beaker Sherd | vertical rows of regularly spaced fingernail or bird-bone impressions | round-bellied pot of hard brown fabric with abundant, finely crushed calcined flint inclusions |
| W139 | Beaker Sherd | three horizontal, twisted cord impressions | fine, waxy-textured red fabric |
| W140 | Beaker Sherd | faint fingernail impressions | red coarse, calcined flint-filled fabric, |
| W141 | Beaker Sherd | n.d. | fine |
| W142 | Collared Urn Sherd | n.d. | n.d. |
| W143 | Peterborough Ware | row of oblique fingernail impressions | pink outer and grey inner slightly porous fabric |
| W144 | Peterborough Ware | whipped cord impressions as a single horizontal line, two rows of vertical maggots | coarse pink fabric with large, calcined flint inclusions |
| W145 | Peterborough Ware | two large, deep bird-bone impressions | pink-brown fabric, grey inner surface |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W146 | Peterborough Ware | a row of herringbone, short, twisted cord impressions with oblique row inside rim, no external decoration | flat-topped rim grey fabric with calcined flint inclusions |
| W147 | Peterborough Ware | traces of two rows of bird-bone impressions | 2 Sherds pink outer fabric, grey inner with large, calcined flint inclusions up to 8mm |
| W148 | Beaker Sherd | externally with two rows of twisted cord impressions | light brown, fine fabric |
| W149 | Beaker Sherd | externally with shallow finger print impressions | fairly coarse, calcined flint-filled fabric, brown surface with a black core |
| W150 | Peterborough Ware | n.d. | slightly porous fabric, pink outer and grey inner fabric |
| W151 | Peterborough Ware | n.d. | red-brown fabric with dark grey inner with large, calcined flint inclusions |
| W152 | Beaker Sherd | n.d. | round-rim of light brown fabric with a grey core |
| W153 | Beaker Sherd? | combed impressions, a single zone ladder motif | hard pink well-fired clay, crushed shell inclusions |
| W154 | Beaker Sherd | comb impressions | pink fabric with grey core |
| W155 | Beaker Sherd | comb impressions | dark grey fabric with black inner |
| W156 | Beaker Sherd | n.d. | base sherd dark pink fabric |
| W157 | Beaker Sherd | n.d. | pink fabric |
| W158 | Beaker Sherd | n.d. | n.d. |
| W159 | Beaker Sherd | n.d. | black clay |
| W160 | Beaker Sherd | n.d. | 3 Sherds |
| W161 | Overhanging Rim Urn | n.d. | 3 Sherds |
| W162 | Beaker Sherd | comb impressions | n.d. |
| W163 | Beaker Sherd | n.d. | n.d. |
| W164 | Beaker Sherd | n.d. | n.d. |
| W165 | Beaker Sherd | n.d. | 2 Sherds |
| W166 | Beaker Sherd | n.d. | n.d. |
| W167 | Beaker Sherd | n.d. | red |
| W168 | Beaker Sherd | n.d. | n.d. |
| W169 | Beaker Sherd | n.d. | 2 Sherds |
| W170 | Beaker Sherd | n.d. | 2 Sherds |
| W171 | Beaker Sherd | n.d. | 2 Sherds |
| W172 | Beaker Sherd | n.d. | 3 Sherds |
| W173 | Beaker Sherd | n.d. | n.d. |
| W174 | Beaker Sherd | comb impression | n.d. |
| W175 | Beaker Sherd | n.d. | n.d. |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W176 | Beaker Sherd | n.d. | 3 Sherds |
| W177 | Beaker Sherd | n.d. | n.d. |
| W178 | Beaker Sherd | n.d. | n.d. |
| W179 | Collared Urn Sherd | internal rim with twisted cord | 4 Sherds from a collared vessel, |
| W180 | Collared Urn Sherd | twisted cord pattern | 9 Sherds |
| W181 | Collared Urn Sherd | n.d. | 85 Sherds |
| W182 | Beaker Sherd | ladder motif | n.d. |
| W183 | Beaker Sherd | n.d. | 3 Sherds |
| W184 | Collared Urn Sherd | n.d. | 2 Sherds possible grave goods found in cremation pit |
| W185 | Overhanging Rim Urn | n.d. | lower edge of collar |
| W186 | Beaker Sherd | n.d. | n.d. |
| W187 | Bucket Urn | n.d. | Deverel Rimbury ware, base |
| W188 | Pot | n.d. | body sherd with rib/lug clay inclusions, flint, iron minerals, sand/ quartz, from a Deverel Rimbury pot |
| W189 | Pot | n.d. | body sherd with clay inclusions, flint, sand/quartz, from a Deverel Rimbury pot |
| W190 | Pot | n.d. | rim plain ware with inclusions of flint, grog, and sand/ quartz, |
| W191 | Pot | n.d. | rim plain ware with inclusions of flint, grog, and sand/ quartz, |
| W192 | Pot | n.d. | plain ware with inclusions of flint, grog, and sand/ quartz, |
| W193 | Pot | n.d. | plain ware with inclusions of flint, iron minerals, sand/ quartz |
| W194 | Pot | n.d. | plain ware with inclusions of chalk, flint, iron minerals and sand/quartz |
| W195 | Pot | n.d. | rim plain ware with inclusions of flint, iron minerals, sand/ quartz |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W196 | Pot | n.d. | rim plain ware with inclusions of chalk, flint, iron minerals, sand/quartz, |
| W197 | Pot | n.d. | plain ware with inclusions of flint, iron minerals and sand/quartz |
| W198 | Pot | n.d. | 7 Sherds Deverel Rimbury ware |
| W199 | Pot | n.d. | 2 Sherds conjoined light orange in co-lour with inclusions |
| W200 | Pot | n.d. | 2 Sherds one red/ orange in colour, the other black |
| W201 | Pot | n.d. | 2 Sherds one red in colour, the other black |
| W202 | Pot | n.d. | 14 Sherds one rim |
| W203 | Pot | n.d. | n.d. |
| W204 | Pot | n.d. | 3 conjoined Sherds |
| W205 | Collared Urn Sherd | n.d. | restored |
| W206 | Collared Urn Sherd | n.d. | restored |
| W207 | Collared Urn Sherd | 4-6 irregular lines of comb-impressed dots round flared collar | mini vessel |
| W208 | Accessory Cup | n.d. | n.d. |
| W209 | Overhanging Rim Urn | vertical bands of impressed cord chevrons or cross-hatching with fingernail impressions around shoulders | the bottom half with seven large, shallow grooves possibly from coils |
| W210 | Overhanging Rim Urn | panels of horizontal dots impressed comb separated by vertical lines of horizontal dots comb-impressed around collar and similar diagonal lines of dots around inner rim | n.d. |
| W211 | Collared Urn Sherd | diagonal cording lines | mini vessel |
| W212 | Collared Urn Sherd | n.d. | mini vessel with high waist and flared flat rim |
| W213 | Collared Urn | z-like chevrons around collar and z-like chevrons around neck | mini vessel |
| W214 | Collared Urn | n.d. | n.d. |
| W215 | Urn | n.d. | n.d. |
| W216 | Urn | n.d. | n.d. |
| W217 | Urn | n.d. | n.d. |
| W218 | Urn | n.d. | n.d. |
| W219 | Urn | n.d. | n.d. |
| W220 | Urn | n.d. | n.d. |
| W221 | Urn | n.d. | n.d. |
| W222 | Urn | n.d. | n.d. |
| W223 | Urn | n.d. | n.d. |
| W224 | Urn | n.d. | n.d. |
| W225 | Collared Urn | n.d. | n.d. |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W226 | Accessory Cup | n.d. | n.d. |
| W227 | Beaker Sherd | n.d. | Excavated by Nick Thomas, 1953-1957. |
| W228 | Beaker Sherd | n.d. | n.d. |
| W229 | Beaker Sherd | n.d. | n.d. |
| W230 | Beaker Sherd | n.d. | n.d. |
| W231 | Sherds | n.d. | Mrs M E Cunning-ton and Mr B H Cunnington, 1926 - 1928. |
| W232 | Beaker Sherd | n.d. | n.d. |
| W233 | Beaker Sherd | n.d. | n.d. |
| W234 | Beaker Sherd | n.d. | n.d. |
| W235 | Beaker Sherd | n.d. | n.d. |
| W236 | Beaker Sherd | 9 have burnt interior surfaces, | n.d. |
| W237 | Beaker Sherd | n.d. | n.d. |
| W238 | Beaker Sherd | n.d. | n.d. |
| W239 | Beaker Sherd | n.d. | n.d. |
| W240 | Middle Rhine Bell Beaker, | n.d. | n.d. |
| W241 | Beaker | n.d. | n.d. |
| W242 | Accessory Cup | lower half decorated with 7 lines of whipped cord and the upper half with zig-zag hatchings of the same | n.d. |
| W243 | late period Beaker | decorated with 2 pairs of bordered fingernail patterns and circular punch marks, with vertical and horizontal comb im-pressed lines separated by crescent shaped punched marks | n.d. |
| W244 | Accessory Grape Cup | n.d. | n.d. |
| W245 | Accessory Cup | decorated with whipped cord in 3 lines of a herringbone zig-zag design (containing a fingernail imprint in centre) | n.d. |
| W246 | Accessory Cup | Very thick rim and hollowed out base, decorated with twisted cord impressions across the rim | n.d. |
| W247 | 1 Long Necked Beaker | Two bands of deep arrows filled with horizontal lines around the neck and three bands of vertical strips alternately filled with horizontal lines around the body, the bottom two separat-ed by lines and a space, f | n.d. |
| W248 | Stonehenge' Barrel Urn | band of circular fingerprint impressions and below which are three bands of nodules running around the collar forming the top of ten vertical cord-like lines running in relief from the base to the collar | n.d. |
| W249 | Food Vessel | wide spreading rim containing stab marks and two ridges notched with finger impressions around waist, found inverted | n.d. |
| W250 | 4 Beaker Sherds | n.d. | n.d. |
| W251 | 9 Beaker Sherds | n.d. | n.d. |
| W252 | Beaker Sherd | n.d. | n.d. |
| W253 | Accessory Grape Cup | zig-zags around inner rim, 4 grooves around outer rim, perfo-rated twice in side with nodules in 4 rows to waist | |
| W254 | Beaker | n.d. | n.d. |
| W255 | 38 Beaker Sherds | n.d. | n.d. |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W256 | Middle Rhine Bell Beaker, f | n.d. | n.d. |
| W257 | all over cord Beaker, | n.d. | n.d. |
| W258 | European Bell Beaker, | n.d. | found upside down |
| W259 | Beaker Sherd | n.d. | contains abundant coarse dark grains and quartz |
| W260 | Beaker Sherd | n.d. | n.d. |
| W261 | Beaker Sherd | n.d. | n.d. |
| W262 | Beaker Sherd | n.d. | n.d. |
| W263 | Beaker Sherd | n.d. | n.d. |
| W264 | 2 Beaker Sherds | n.d. | n.d. |
| W265 | Beaker Sherd | n.d. | n.d. |
| W266 | Beaker Sherd | n.d. | n.d. |
| W267 | Beaker Sherd | n.d. | n.d. |
| W268 | 3 Beaker Sherds | n.d. | n.d. |
| W269 | 2 Beaker Sherds | n.d. | n.d. |
| W270 | 3 Beaker Sherds | n.d. | n.d. |
| W271 | 3 Beaker Sherds | n.d. | n.d. |
| W272 | 4 Beaker Sherds | n.d. | n.d. |
| W273 | 3 Beaker Sherds | n.d. | n.d. |
| W274 | Beaker Sherd | n.d. | n.d. |
| W275 | Beaker Sherd | n.d. | n.d. |
| W276 | Beaker Sherd | n.d. | n.d. |
| W277 | Beaker Sherd | n.d. | n.d. |
| W278 | Beaker Sherd | n.d. | n.d. |
| W279 | Beaker Sherd | n.d. | n.d. |
| W280 | 2 Beaker Sherds | n.d. | n.d. |
| W281 | Beaker Sherd | n.d. | n.d. |
| W282 | Beaker Sherd | n.d. | n.d. |
| W283 | 7 Beaker Sherds | n.d. | n.d. |
| W284 | 12 Beaker Sherds | n.d. | n.d. |
| W285 | 23 Beaker Sherds | n.d. | n.d. |
| W286 | Beaker Sherd | n.d. | n.d. |
| W287 | Beaker Sherd | n.d. | n.d. |
| W288 | 2 Beaker Sherds | n.d. | n.d. |
| W289 | Beaker Sherd | n.d. | n.d. |
| W290 | Beaker Sherd | n.d. | n.d. |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W291 | Beaker Sherd | n.d. | n.d. |
| W292 | Beaker Sherd | n.d. | n.d. |
| W293 | Beaker Sherd | n.d. | n.d. |
| W294 | 11 Beaker Sherds | n.d. | n.d. |
| W295 | Beaker Sherd | n.d. | n.d. |
| W296 | Beaker Sherd | n.d. | n.d. |
| W297 | Beaker Sherd | n.d. | n.d. |
| W298 | 10 Beaker Sherds | n.d. | n.d. |
| W299 | 5 Beaker Sherds | n.d. | n.d. |
| W300 | Beaker Sherd | n.d. | n.d. |
| W301 | Beaker Sherd | n.d. | n.d. |
| W302 | Beaker Sherd | n.d. | n.d. |
| W303 | 2 Beaker Sherds | n.d. | n.d. |
| W304 | Beaker Sherd | n.d. | n.d. |
| W305 | Collared Urn Sherd | n.d. | n.d. |
| W306 | Collared Urn Sherd | n.d. | n.d. |
| W307 | Beaker Sherd | n.d. | n.d. |
| W308 | Beaker Sherd | n.d. | n.d. |
| W309 | Beaker Sherd | n.d. | n.d. |
| W310 | Beaker Sherd | n.d. | n.d. |
| W311 | Beaker Sherd | n.d. | n.d. |
| W312 | Beaker Sherd | n.d. | n.d. |
| W313 | Beaker Sherd | n.d. | n.d. |
| W314 | Beaker Sherd | n.d. | n.d. |
| W315 | Beaker Sherd | n.d. | n.d. |
| W316 | Beaker Sherd | n.d. | n.d. |
| W317 | Beaker Sherd | n.d. | n.d. |
| W318 | Beaker Sherd | n.d. | n.d. |
| W319 | Beaker Sherd | n.d. | n.d. |
| W320 | Beaker Sherd | n.d. | n.d. |
| W321 | Beaker Sherd | n.d. | n.d. |
| W322 | Beaker Sherd | n.d. | n.d. |
| W323 | Beaker Sherd | n.d. | n.d. |
| W324 | 2 Beaker Sherds | n.d. | n.d. |
| W325 | Beaker Sherd | n.d. | n.d. |
| W326 | Beaker Sherd | n.d. | n.d. |
| W327 | Beaker Sherd | n.d. | n.d. |
| W328 | Beaker Sherd | n.d. | n.d. |
| W329 | Beaker Sherd | n.d. | n.d. |
| W330 | Beaker Sherd | n.d. | n.d. |
| W331 | Beaker Sherd | n.d. | n.d. |
| W332 | 2 Beaker Sherds | n.d. | n.d. |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W333 | Beaker Sherd | n.d. | n.d. |
| W334 | Beaker Sherd | n.d. | n.d. |
| W335 | Beaker Sherd | n.d. | n.d. |
| W336 | Beaker Sherd | n.d. | n.d. |
| W337 | Aldbourne Accessory Cup | Perforated twice with a band of incised zigzags around the flared inner lip and chevrons around the outside of the lip (every other zigzag or chevron of which contained impressed dots) and two bands around the waist - one plain and one with chevrons (below which are a line of dots) | n.d. |
| W338 | Aldbourne Accessory Cup | vertical lines of dots between two pairs parallel lines of impressed cord on the outside (the lower half containing diagonal hatchings of cord and two perforations) and a wide flared rim decorated with zigzags between two pairs of parallel impressed cord lines on the inside | n.d. |
| W339 | Aldbourne Accessory Cup | Perforated at four sides and decorated on top half with two bands of dots in a strange configuration (possibly lozenge shaped), each bordered by a dual line of dots which also surrounds the waist and base. A circle and cross of three lines of dots is also found on the base. | n.d. |
| W340 | Collared Urn | n.d. | n.d. |
| W341 | Long Necked Beaker | two bands of lozenges (one small and one large) around the neck, and a third (large) around the body with bands of incised vertical marks between them | n.d. |
| W342 | bi conical | n.d. | n.d. |
| W343 | Collared Urn | decorated with a band of zigzags around collar, 2 bands of irregular chevrons above waist and 1 band of diagonal marks below waist (all in impressed cord) | n.d. |
| W344 | Biconical Urn | late bronze age | n.d. |
| W345 | Beaker Sherd | n.d. | n.d. |
| W346 | 5 Beaker Sherds | n.d. | n.d. |
| W347 | Collared Urn | 2 rows of dots around inner rim and 3 bands of chevrons around overhanging collar with a small base | n.d. |
| W348 | Collared Urn | empty and decorated with vertical lines around collar bordered by 2 lines of impressed cord on top and bottom, 3 bands of alternately slanting diagonal lines below collar and large chevrons below waist, all bordered by lines of impressed cord | n.d. |
| W349 | Enlarged Food Vessel | n.d. | n.d. |
| W350 | Food Vessel | n.d. | n.d. |
| W351 | Beaker | n.d. | 1 beaker found full of shells, bone, and a tooth, from inside barrow G.25 |
| W352 | Accessory Cup | n.d. | n.d. |
| W353 | Collared Urn | cord impressed cross-hatching around collar and waist rim from a cremation during gravel digging | n.d. |
| W354 | Collared Urn | n.d. | n.d. |
| W355 | Bell Beaker | lines of comb impressions over whole body except a band of cross-hatching around neck and waist, | n.d. |
| W356 | Accessory Cup | miniature urn of rude construction with a single line of thumbnail cord pattern along the rim and on the sides four knobs or eyelets pierced vertically for suspension (the bottom and sides are covered in soot and grease) | n.d. |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| W357 | 6 Sherds of Beaker | n.d. | n.d. |
| W358 | Collared Urn Sherd | n.d. | n.d. |
| W359 | Accessory Cup | decorated with diagonal lines around a flared rim, 2 bands of zigzags around the neck and one band of straight vertical lines below the waist, each bordered by incised lines, | n.d. |
| W360 | Beaker | n.d. | n.d. |
| W361 | Beaker | n.d. | n.d. |
| W362 | Accessory Cup | thick sides and two imitation perforations on side and decorated with two of three lines of large, impressed dots around | n.d. |
| W363 | Collared Urn Sherd | n.d. | n.d. |
| W364 | Urn | n.d. | n.d. |
| W365 | Collared Urn Sherd | n.d. | n.d. |
| W366 | Bell Beaker | n.d. | |
| W367 | Beaker Wessex/Mid-Rhine type | n.d. | n.d. |
| W368 | Accessory Cup | n.d. | n.d. |
| W369 | Miniature Collared Urn | slight grooves around the upper part and diagonal lines around the collar, 3 slight ridges between collar and waist ridge and slight vertical markings from waist to base | n.d. |
| W370 | Miniature Food Vessel | n.d. | n.d. |
| W371 | Bell Beaker | n.d. | n.d. |
| W372 | Accessory Cup | n.d. | n.d. |
| W373 | Collared Urn | n.d. | n.d. |
| W374 | Deverel Rimbury | Four rows of chevrons | found under the eaves of the roud house |

Table A1.4 Archaeological data from the Cumbrian Assemblage showing decoration and archaeological information where applicable (Author 2023).

| ID | Type | Decoration | Notes |
|---|---|---|---|
| C1 | Collared Urn | n.d. | n.d. |
| C2 | Sherds | n.d. | n.d. |
| C3 | Sherds | n.d. | n.d. |
| C4 | Sherds | n.d. | n.d. |
| C5 | Sherds | n.d. | n.d. |
| C6 | Sherds | n.d. | n.d. |
| C7 | Sherds | n.d. | n.d. |
| C8 | Sherds | n.d. | n.d. |
| C9 | Sherds | n.d. | n.d. |
| C10 | Sherds | n.d. | n.d. |
| C11 | Sherds | n.d. | n.d. |
| C12 | Sherds | n.d. | n.d. |
| C13 | Sherds | n.d. | n.d. |
| C14 | Sherds | n.d. | n.d. |
| C15 | Collared Urn Sherd | n.d. | n.d. |
| C16 | Sherds | n.d. | n.d. |
| C17 | Sherds | n.d. | n.d. |
| C18 | Collared Urn Sherd | n.d. | n.d. |
| C19 | Collared Urn Sherd | n.d. | n.d. |
| C20 | Sherds | n.d. | n.d. |
| C21 | Collared Urn Sherd | n.d. | n.d. |
| C22 | Accessory Vessel | 2 holes on one side | n.d. |
| C23 | Collared Urn | n.d. | n.d. |
| C24 | Beaker | concentric lines and triangles | n.d. |
| C25 | Food Vessel | cord chevrons and dot stabs | n.d. |
| C26 | Sherds | n.d. | n.d. |
| C27 | Beaker | zoned decoration of lines and zig zags | n.d. |
| C28 | Beaker | n.d. | n.d. |
| C29 | Beaker | comb decoration | n.d. |
| C30 | Sherds | n.d. | found inside the beaker at Clifton |
| C31 | Collared Urn | red exterior black interior lines both sides | n.d. |
| C32 | Food Vessel | red brown coarse ware | n.d. |
| C33 | Beaker | zoned decoration of lines and chevrons | n.d. |
| C34 | Burial Urn Sherds | n.d. | n.d. |
| C35 | Burial Urn Sherds | n.d. | n.d. |
| C36 | Burial Urn Sherds | n.d. | rim thickness 28 |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| C37 | Burial Urn | n.d. | radio carbon dated to within 2 standard deviations 2460-1520 BC |
| C38 | Accessory Vessel | n.d. | three material bags found inside |
| C39 | Overhanging rim urn | n.d. | n.d. |
| C40 | Burial Urn | n.d. | n.d. |
| C41 | Urn | n.d. | found with ten pieces of slag |
| C42 | Sherds | n.d. | minimum thickness 7 |
| C43 | Overhanging rim urn | n.d. | n.d. |
| C44 | Beaker Sherd | n.d. | n.d. |
| C45 | Beaker Sherd | n.d. | n.d. |
| C46 | Cremation Urn | n.d. | n.d. |
| C47 | Sherds | n.d. | n.d. |
| C48 | Biconical Urn | n.d. | n.d. |
| C49 | Burial Urn Sherds | n.d. | n.d. |
| C50 | Burial Urn | n.d. | n.d. |
| C51 | Sherds | n.d. | n.d. |
| C52 | Beaker | whipped cord and hashed zones | sandpit |
| C53 | Collared Urn | n.d. | n.d. |
| C54 | Collared Urn | chevron decoration, impressed cord also slash lattice | n.d. |
| C55 | Collared Urn Sherd | impressed cord triangles and lattice | n.d. |
| C56 | Collared Urn Sherd | n.d. | n.d. |
| C57 | Collared Urn Sherd | n.d. | n.d. |
| C58 | Collared Urn Sherd | n.d. | n.d. |
| C59 | Collared Urn Sherd | n.d. | n.d. |
| C60 | Collared Urn Sherd | impressed cord lattice | n.d. |
| C61 | Collared Urn | n.d. | n.d. |
| C62 | Collared Urn Sherd | n.d. | n.d. |
| C63 | Collared Urn Sherd | n.d. | n.d. |
| C64 | Accessory Vessel | two holes in side | n.d. |
| C65 | Collared Urn Sherd | n.d. | n.d. |
| C66 | Collared Urn Sherd | n.d. | n.d. |
| C67 | Collared Urn | n.d. | n.d. |
| C68 | Accessory Vessel | n.d. | n.d. |
| C69 | Food Vessel | n.d. | n.d. |
| C70 | Biconical Urn | n.d. | n.d. |
| C71 | Collared Urn | n.d. | n.d. |
| C72 | Collared Urn | n.d. | n.d. |
| C73 | Collared Urn | n.d. | n.d. |

| ID | Type | Decoration | Notes |
|---|---|---|---|
| C74 | Collared Urn | chevrons and impressed decoration | n.d. |
| C75 | Collared Urn | impressed | n.d. |
| C76 | Collared Urn | n.d. | n.d. |
| C77 | Collared Urn | Impressed cord triangles | below turf |
| C78 | Beaker | n.d. | n.d. |
| C79 | Sherds | n.d. | n.d. |
| C80 | Collared Urn | n.d. | n.d. |
| C81 | Collared Urn | n.d. | n.d. |
| C82 | Beaker Sherd | n.d. | n.d. |
| C83 | Biconical Urn | n.d. | n.d. |
| C84 | Collared Urn | n.d. | n.d. |
| C85 | Accessory Vessel | four holes and zones filled with lines also ring and dot | n.d. |
| C86 | Accessory Vessel | impressed comb and slash | n.d. |
| C87 | Sherds | n.d. | n.d. |
| C88 | Beaker | comb lines and zig zags | n.d. |
| C89 | Collared Urn | n.d. | n.d. |
| C90 | Urn- Flowerpot shape | n.d. | n.d. |
| C91 | Food Vessel | impressed cord | n.d. |
| C92 | Accessory Vessel | geometric line | n.d. |
| C93 | Food Vessel | incised line and stab at the top and neck | n.d. |
| C94 | Collared Urn Sherd | whip cord | n.d. |
| C95 | Tripartite Urn | stab all over | n.d. |
| C96 | Skeuomorphic Basket Ware | n.d. | n.d. |
| C97 | Urn - Encrusted | applied cordon | n.d. |
| C98 | Collared Urn Sherd | line impressions | sandpit |
| C99 | Collared Urn (Biconical) | n.d. | sandpit |
| C100 | Collared Urn | impressed cord | sandpit |
| C101 | Collared Urn | impressed cord | sandpit |
| C102 | Accessory Vessel | two holes | sandpit |
| C103 | Food Vessel | comb chevrons and lugs | n.d. |
| C104 | Food Vessel | herringbone and lugs | n.d. |
| C105 | Food Vessel | n.d. | n.d. |
| C106 | Collared Urn | n.d. | n.d. |

# Appendix 2 Use Wear

**n.d. means data was not included as it does not exist, or the author was unable to verify the accuracy of it.**

Table A2.1 Experimental Vessel co

nstruction and condition (Author 2023).

| ID | Experimental Pot | Type | Construction Experiment | Condition | Temper % |
|---|---|---|---|---|---|
| E1 | 1 | Accessory Vessel | 1 | Intact | 0 |
| E2 | 2 | Accessory Vessel | 1 | Intact | 10 |
| E3 | 3 | Accessory Vessel | 1 | Intact | 20 |
| E4 | 4 | Accessory Vessel | 1 | Intact | 30 |
| E5 | 5 | Accessory Vessel | 1 | Intact | 40 |
| E6 | 6 | Accessory Vessel | 1 | Intact | 50 |
| E7 | 7 | Accessory Vessel | 2 | Broken | 25 |
| E8 | 8 | Accessory Vessel | 2 | Intact | 20 |
| E9 | 9 | Accessory Vessel | 2 | Broken | 25 |
| E10 | 10 | Accessory Vessel | 2 | Intact | 28 |
| E11 | 11 | Accessory Vessel | 2 | Broken | 25 |
| E12 | 12 | Accessory Vessel | 2 | Intact | 30 |
| E13 | 13 | Accessory Vessel | 2 | Intact | 20 |
| E14 | 14 | Accessory Vessel | 2 | Intact | 20 |
| E15 | 15 | Accessory Vessel | 2 | Intact | 20 |
| E16 | 16 | Accessory Vessel | 2 | Intact | 20 |
| E17 | 17 | Accessory Vessel | 2 | Intact | 25 |
| E18 | 18 | Accessory Vessel | 2 | Intact | 25 |
| E19 | 19 | Accessory Vessel | 2 | Intact | 25 |
| E20 | 20 | Collared Urn | 3 | Intact | 20 |
| E21 | 21 | Collared Urn | 3 | Intact | 20 |
| E22 | 22 | Collared Urn | 3 | Intact | 20 |
| E23 | 23 | Collared Urn | 3 | Intact | 20 |
| E24 | 24 | Collared Urn | 3 | Intact | 20 |
| E25 | 25 | Collared Urn | 3 | Intact | 19.6 |
| E26 | 26 | Accessory Vessel | 4 | Intact | <20 |
| E27 | 27 | Accessory Vessel | 4 | Intact | <20 |
| E28 | 28 | Accessory Vessel | 4 | Intact | <20 |
| E29 | 29 | Accessory Vessel | 4 | Intact | <20 |
| E30 | 30 | Accessory Vessel | 4 | Intact | <20 |
| E31 | 31 | Accessory Vessel | 4 | Intact | <20 |
| E32 | 32 | Beaker | 5 | Intact | <20 |
| E33 | 33 | Collared Urn | 5 | Intact | <20 |
| E34 | 34 | Collared Urn | 5 | Chipped | <20 |
| E35 | 35 | Collared Urn | 5 | Intact | <20 |
| E36 | 36 | Collared Urn | 6 | Broken | <20 |
| E37 | 37 | Collared Urn | 6 | Broken | <20 |
| E38 | 38 | Collared Urn | 6 | Broken | <20 |

Table A2.2 Experimental pottery use wear grading results (Author 2023).

| ID | Pot Name | Type | Construction Experiment | Use Wear Experiment | Abrasion | Scratches | Total | Type of Use |
|---|---|---|---|---|---|---|---|---|
| E8 | 8 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E10 | 10 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E12 | 12 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E13 | 13 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E14 | 14 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E15 | 15 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E16 | 16 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E17 | 17 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E18 | 18 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E19 | 19 | Accessory Vessel | 2 | 1 | 1 | 1 | 2 | No sign of use |
| E20 | 20 | Collared Urn | 3 | 3 | 1 | 1 | 2 | No sign of use |
| E21 | 21 | Collared Urn | 3 | 3 | 1 | 1 | 2 | No sign of use |
| E22 | 22 | Collared Urn | 3 | 4 | 5 | 3 | 8 | Heavy use |
| E23 | 23 | Collared Urn | 3 | 4 | 5 | 4 | 9 | Heavy to significant use |
| E33 | 33 | Collared Urn | 5 | 2 | 5 | 3 | 8 | Heavy use |
| E35 | 35 | Collared Urn | 5 | 2 | 5 | 2 | 7 | Frequent to heavy use |

Table A2.3 Cumbrian assemblage use wear grading results (Author 2023).

| ID | Museum code | Type | Abrasion | Scratches | Total | Type of Use |
|---|---|---|---|---|---|---|
| C22 | 1951.81.3 | Accessory Vessel | 1 | 1 | 2 | No sign of use |
| C25 | 1972.28. | Food Vessel | 1 | 1 | 2 | No sign of use |
| C27 | 1948.69. | Beaker | 2 | 3 | 5 | Moderate to frequent use |
| C33 | 1997.325.139 | Beaker | 4 | 3 | 7 | Frequent to heavy use |
| C36 | 1987.30.2 | Burial Urn Sherds | 2 | 1 | 3 | Light signs of use |
| C38 | 1987.30.4 | Accessory Vessel | 1 | 1 | 2 | No sign of use |
| C39 | 1987.30.5 | Overhanging rim urn | 1 | 1 | 2 | No sign of use |
| C40 | 1987.30.6 | Burial Urn | 5 | 2 | 7 | Frequent to heavy use |
| C46 | 1999.817.3. | Cremation Urn | 2 | 1 | 3 | Light signs of use |
| C52 | 1928.10. | Beaker | 2 | 2 | 4 | Moderate use |
| C53 | 1975. 25.9 | Collared Urn | 4 | 3 | 7 | Frequent to heavy use |
| C54 | 1977.25.10 | Collared Urn | 2 | 1 | 3 | Light signs of use |
| C59 | 1977.25.15 | Collared Urn | 3 | 1 | 4 | Moderate use |
| C61 | 1977.25.17 | Collared Urn | 2 | 1 | 3 | Light signs of use |
| C62 | 1977.25.18 | Collared Urn | 1 | 1 | 2 | No sign of use |
| C64 | 1977.25.23 | Accessory Vessel | 1 | 1 | 2 | No sign of use |
| C65 | 1977.25.24 | Collared Urn | 1 | 1 | 2 | No sign of use |
| C66 | 1977.25.25 | Collared Urn | 1 | 2 | 3 | Light signs of use |
| C68 | 1999.823. | Accessory vessel | 2 | 2 | 4 | Moderate use |
| C69 | 1999.824. | Food Vessel | 2 | 1 | 3 | Light signs of use |
| C70 | 1999.825. | Biconical Urn | 2 | 1 | 3 | Light signs of use |
| C71 | 1999.826. | Collared Urn | 1 | 1 | 2 | No sign of use |
| C73 | 1999.828. | Collared Urn | 1 | 2 | 3 | Light signs of use |
| C74 | 1999.853. | Collared Urn | 2 | 2 | 4 | Moderate use |
| C77 | 1943.16. | Collared Urn | 3 | 2 | 5 | Moderate to frequent use |
| C87 | 1970.39. | Collared Urn | 1 | 1 | 2 | No sign of use |
| C88 | 1926.27.435 | Beaker | 2 | 1 | 3 | Light signs of use |
| C90 | 1999.844. | Urn- Flowerpot shape | 1 | 1 | 2 | No sign of use |
| C92 | 1926.27.434 | Accessory Vessel | 1 | 1 | 2 | No sign of use |
| C93 | 1961.77. | Food Vessel | 1 | 1 | 2 | No sign of use |
| C103 | 1977.95.1 | Food Vessel | 4 | 2 | 6 | Frequent use |
| C105 | 1977.95.3 | Food Vessel -Yorkshire Vase | 1 | 1 | 2 | No sign of use |
| C106 | 1999.854. | Collared Urn | 3 | 2 | 5 | Moderate to frequent use |

Table A2.4 Cumbrian pottery assemblage average dimensions divided by names used in assemblage data set. In the experiments data sets vessel types such as incense cup and pygmy cup were combined into 1 data set known as Accessory Vessel (Author 2023).

| **Vessel Type** | **Average Height mm** | **Average Rim mm** | **Average Base mm** | **Average Collar Depth mm** | **Average Bevel mm** | **Average Thickness mm** |
|---|---|---|---|---|---|---|
| Beaker | 166.8 | 127 | 81.4 | n.d. | n.d. | 79 |
| Beaker Sherd | 185 | 125 | 70 | n.d. | n.d. | 58 |
| Biconical Urn | 166.5 | 118 | 83.5 | 32.5 | n.d. | 135 |
| Burial Urn | 138 | 113 | 86 | n.d. | n.d. | 11 |
| Burial Urn Sherds | n.d. | n.d. | 106 | n.d. | n.d. | 215 |
| Collared Urn | 275.6 | 211 | 102.3 | 73 | n.d. | 103 |
| Collared Urn (Biconical) | 351 | 286 | 124 | 75 | n.d. | n.d. |
| Collared Urn Sherd | 122 | 252 | 80.7 | 53 | n.d. | 13.4 |
| Cremation Urn | n.d. | n.d. | n.d. | n.d. | n.d. | 15 |
| Food vessel -Yorkshire Vase | 98 | 103 | 45 | n.d. | 17 | n.d. |
| Food Vessel | 127.7 | 152 | 74.4 | n.d. | 19.9 | 16.25 |
| Incense Cup | 62.7 | 70 | 36.6 | n.d. | n.d. | 7.3 |
| Overhanging rim urn | 210 | n.d. | n.d. | 45 | n.d. | 10 |
| Pygmy Urn | 66 | 67 | 58 | n.d. | n.d. | 7 |
| Sherds | n.d. | n.d. | 90 | n.d. | n.d. | 147 |
| Skeuomorphic Basket Ware | n.d. | 260 | n.d. | n.d. | 25 | n.d. |
| Tripartite Urn | 280 | 241 | 138 | n.d. | 29 | n.d. |
| Urn | 65 | n.d. | n.d. | n.d. | n.d. | 19 |
| Urn - Encrusted | 333 | 284 | 130 | n.d. | 40.5 | n.d. |
| Urn- Flowerpot shape | 111 | 106 | 52.5 | n.d. | n.d. | n.d. |

Table A2.5 the Cumbrian lipid data (Soberl 2011, 253 - 254)

| Lab sample | Site name: | Context: | Pottery type: | Lipid concentration [µg g-1] | Biomarkers detected: | δ13C C16:0 [‰] | δ13C C18:0 [‰] |
|---|---|---|---|---|---|---|---|
| CMB 01 | Aglionby sand pit | funerary | Collared Um | 0 | n.d. | n.d. | n.d. |
| CMB 02 | Aglionby sand pit | funerary | Collared Urn | 1562.56 | FA (16=18; 14:0, 15:0, 17:0, 18:1, 20:0,22:0), K | -29.17 | -28.8 |
| CMB 03 | Aglionby sand pit | funerary | Collared Urn | 18.79 | FA traces, P | n.d. | n.d. |
| CMB 04 | Aglionby sand pit | funerary | Beaker/Collared Urn or Food Vessel | 0 | n.d. | n.d. | n.d. |
| CMB 04 | Aglionby sand pit | funerary | Beaker or Food Vessel | 2 | Fa traces, P | n.d. | n.d. |
| CMB 05 | Aglionby sand pit | funerary | Beaker? | 0 | n.d. | n.d. | n.d. |
| CMB 06 | Aglionby sand pit | funerary | Collared Urn/ F00d Vessel | 121.94 | FA (1648; 181, 20:0, 22:0), P | -28.25 | -27.65 |
| CMB 07 | Aughertree Fell | funerary | Collared Urn | 1651.41 | FA (16<18; 10:0, 12:0, 14:0, 15:0, 17:0, 17:0br, 18 1 20:0,22:0,24:0), P | -29.75 | -32.51 |
| CMB 08 | Aughertree Fell | funerary | Collared Urn | 29.79 | FA (16=18), P | | |
| CMB 09 | Aughertree Fell | funerary | Collared Urn | 138.05 | FA (16<18; 12:0, 14:0, 15:0, 17:0, 17:0br, 18:1,20:0), P | -29.55 | -33.42 |
| CMB 10 | Aughertree Fell | funerary | Collared Urn | 635.81 | FA (16<18; 12:0, 14:0, 15:0, 17:0, 17:0br, 18:1,20:0), P | -28.93 | -31.45 |
| CMB 11 | Greystoke Moor | funerary | Collared Urn | 0 | n.d. | n.d. | n.d. |
| CMB 12 | Ewanrigg, Maryport | funerary | Urn | 276.68 | FA (16<18), P, A contamination | n.d. | n.d. |
| CMB 13 | Ewanrigg, Maryport | funerary | Urn | 9.07 | FA (16=18), P | -30.11 | -34.46 |
| CMB 14 | Ewanrigg, Maryport | funerary | Urn | 3.71 | FA traces, P, A contamination | | |
| CMB 15 | Ewanrigg, Maryport | funerary | Urn | 5 | FA (16>18), pimaric acid, isopimaric acid, dehydroabietic acid, abietic acid | n.d. | n.d. |
| CMB 16 | Overby Quarry | funerary | Collared Urn? | 0 | n.d. | n.d. | n.d. |
| CMB 17 | Overby Quarry | funerary | Collared Urn? | 0 | n.d. | n.d. | n.d. |
| CMB 18 | Overby Quarry | funerary | Collared Urn? | 1.9 | n.d. | n.d. | n.d. |
| CMB 19 | Overby Quarry | funerary | Mini Collared Urn? | 0 | n.d. | n.d. | n.d. |
| CMB 20 | Overby Quarry | funerary | Collared Urn? | 3.02 | FA traces | n.d. | n.d. |
| CMB 21 | Overby Quarry | funerary | Collared Urn | 2.79 | TAG traces | n.d. | n.d. |

Table A2.6 Wiltshire lipid data (Soberl 2011, 267 - 270)

| Lab sample | Site name: | Context: | Pottery type: | Lipid concen-tration [µg g-1] | Biomarkers detected: | δ13C C16:0 [‰] | δ13C C18:0 [‰] |
|---|---|---|---|---|---|---|---|
| WIL 01 | Bulford | funerary | Food vessel | 100.08 | FA (16<18; 14:0, 15:0, 15:Obr, 17:0, 17:0br, 18:1), MAG K, DAG, TAG | n.d. | n.d. |
| WIL 02 | Bulford | funerary | Food vessel | 146 | FA (16<18; 14:0, 15:0, 15:Obr, 17:0, 17:0br, 18:1), MAG K, DAG, TAG | -28.71 | -31.6 |
| WIL 03 | Bulford | funerary | Collared Urn | 191 | FA (16<18; 14:0, 15:0, 15:0br, 17:0, 17:0br, 18:1, 20:0, 22:0, 24:0, 26:0), A, OH, WE, HWE, diesters | n.d. | n.d. |
| WIL 04 | Staverton | non-fu-nerary | Beaker | 0.57 | n.d. | n.d. | n.d. |
| WIL 05 | Staverton | non-fu-nerary | Beaker/ Collared urn | 0 | n.d. | n.d. | n.d. |
| WIL 05 | Staverton | non-fu-nerary | Beaker/ Collared urn | 0 | n.d. | n.d. | n.d. |
| WIL 06 | Staverton | non-fu-nerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 07 | Tidworth | funerary | Collared Urn | 0 | n.d. | n.d. | n.d. |
| WIL 08 | Tidworth | funerary | Collared Urn | 0 | n.d. | n.d. | n.d. |
| WIL 09 | Tidworth | funerary | Collared Urn | 0 | n.d. | n.d. | n.d. |
| WIL 10 | Old Sarum | funerary | Collared Urn | 3.56 | TAG traces, modern contamination | -31.26 | 1.67 |
| WIL 11 | Old Sarum | funerary | Collared Urn | 0 | n.d. | n.d. | n.d. |
| WIL 12 | Old Sarum | funerary | Collared Urn | 0.16 | n.d. | n.d. | n.d. |
| WIL 13 | Old Sarum | funerary | Collared Urn | 0.37 | n.d. | n.d. | n.d. |
| WIL 14 | Old Sarum | funerary | Collared Urn | 0.19 | n.d. | n.d. | n.d. |
| WIL 15 | Old Sarum | funerary | Food vessel | 2.24 | FA (16<18;, 18:1,20:0,22:0,24:0), MAG, DAG traces, TAG traces | n.d. | n.d. |
| WIL 16 | Old Sarum | funerary | Food vessel | 1.14 | FA traces | n.d. | n.d. |
| WIL 17 | Old Sarum | funerary | Collared Urn | 4 | FA traces, DAG, TAG modern contam-ination | -29.55 | -29.69 |
| WIL 18 | Old Sarum | funerary | Food vessel | 24.06 | FA (16<18; 14:0, 15:0, 15:0br, 17:0, 17:0br, 18:1, 20:0, 22:0, 24:0, 26:0), MAG, K, DAG, TAG traces | -28.4 | -33.31 |
| WIL 19 | Old Sarum | funerary | Food vessel | 3 | FA traces, TAG modern contamination | n.d. | n.d. |
| WIL 20 | Old Sarum | funerary | Food vessel urn | 18.09 | FA (16<18; 14:0, 15:0, 17:0, 17:0br, 18:1,20:0), MAG DAG, TAG | -29.92 | -33.62 |
| WIL 21 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 22 | Boscombe | funerary | Beaker | 0.8 | n.d. | n.d. | n.d. |
| WIL 23 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 24 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 25 | Boscombe | funerary | Beaker | 0.6 | n.d. | n.d. | n.d. |
| WIL 26 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |

| Lab sample | Site name: | Context: | Pottery type: | Lipid concentration [µg g-1] | Biomarkers detected: | δ13C C16:0 [‰] | δ13C C18:0 [‰] |
|---|---|---|---|---|---|---|---|
| WIL 27 | Boscombe | funerary | Beaker | 0.46 | n.d. | n.d. | n.d. |
| WIL 28 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 29 | Boscombe | funerary | Beaker | 11.1 | FA (16<18; 14:0, 15:0, 17:0, 18:1, 20:0, 22:0,24:0), MAG, DAG traces, TAG traces | -27.57 | -32.7 |
| WIL 30 | Boscombe | funerary | Beaker | 0 | n.d. | -26.93 | -31.66 |
| WIL 31 | Boscombe | funerary | Beaker | 1.46 | FA traces, P | n.d. | n.d. |
| WIL 32 | Boscombe | funerary | Beaker | 1.3 | FA traces, P | n.d. | n.d. |
| WIL 33 | Boscombe | funerary | Beaker | 3.36 | TAG traces, P | n.d. | n.d. |
| WIL 34 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 35 | Boscombe | funerary | Beaker | 0.94 | n.d. | n.d. | n.d. |
| WIL 36 | Boscombe | funerary | Beaker | 0.95 | n.d. | n.d. | n.d. |
| WIL 37 | Boscombe | funerary | Beaker | 7.1 | isopimaric acid, dehydroabietic acid, abietic acid | n.d. | n.d. |
| WIL 38 | Boscombe | funerary | Beaker | 17.72 | FA (16<18; 14:0, 15:0, 15:0br, 17:0, 17:0br, 18:1, 20 0 22:0, 24:0), MAG traces | -27.32 | -33.44 |
| WIL 39 | Boscombe | funerary | Food Vessel | 0 | n.d. | n.d. | n.d. |
| WIL 40 | Boscombe | funerary | Food Vessel | 77.55 | FA (16>18; 12:0, 14:0, 15:0, 15:0br, 17:0, 17:0br, 18 1 20:0, 22:0, 24:0), MAG traces, DAG, TAG | -30.08 | -35.7 |
| WIL 41 | Boscombe | funerary | Beaker | 9.79 | FA (16<18; 14:0, 15:0, 15:Obr, 17:0, 17:Obr, 18:1, 20 0 22:0, 24:0, 26:0), MAG, OH, DAG, WE traces, TAG | -27.65 | -32.68 |
| WIL 42 | Boscombe | funerary | Beaker | 3.5 | FA (16=18), OH, K WE | n.d. | n.d. |
| WIL 43 | Boscombe | funerary | Beaker | 751.18 | FA (16>18; 14:0, 15:0, 17:0, 17:0br, 18:1,20:0,22:0, 24:0, 26:0), MAG, OH, DAG, TAG | -27.03 | -28.9 |
| WIL 44 | Boscombe | funerary | Beaker | 1.17 | n.d. | n.d. | n.d. |
| WIL 45 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 46 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 47 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 48 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 49 | Boscombe | funerary | Beaker | 1.72 | FA (16<18), pimaric acid, isopimaric acid, dehydroabietic acid, abietic acid | n.d. | n.d. |
| WIL 50 | Boscombe | funerary | Beaker | 86.47 | FA (16>18; 14:0, 15:0, 17:0, 17:0br, 18:1,20:0,22:0, 24:0, 26:0), MAG, OH, DAG, TAG | -27.75 | -33.67 |
| WIL 51 | Boscombe | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 52 | Boscombe | non-funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 53 | Bicester | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 54 | Bicester | funerary | Beaker | 0 | n.d. | n.d. | n.d. |
| WIL 55 | Boscombe | non-funerary | Collared Urn | 4.18 | FA traces, DAG, TAG modern contamination | -29.11 | -32.86 |
| WIL 56 | Boscombe | non-funerary | Collared Urn | 24.52 | FA (16<18), P, MAG, DAG, TAG | -29.3 | -31.17 |
| WIL 57 | Boscombe | non-funerary | Collared Urn | 66.95 | FA (16<18; 14:0, 15:0, 17:0, 17:Obr, 18:1,20:0), MAG DAG, TAG | -28.49 | -31.53 |
| WIL 58 | Boscombe | non-funerary | Collared Urn | 13.53 | FA traces, MAG, DAG, TAG | -29.12 | -33.55 |

| Lab sample | Site name: | Context: | Pottery type: | Lipid concentration [µg g-1] | Biomarkers detected: | δ13C C16:0 [‰] | δ13C C18:0 [‰] |
|---|---|---|---|---|---|---|---|
| WIL 59 | Boscombe | non-funerary | Collared Urn | 6.44 | FA traces, P | -26.51 | -32.23 |
| WIL 60 | Boscombe | funerary | Beaker | 0.59 | FA traces, pimaric acid, isopimaric acid, dehydroabietic acid, abietic acid | n.d. | n.d. |
| WIL 61 | Boscombe | funerary | Beaker | 2.18 | FA traces | n.d. | n.d. |
| WIL 62 | Boscombe | funerary | Beaker | 2.31 | FA traces | n.d. | n.d. |
| WIL 63 | Boscombe | funerary | Beaker | 7.15 | FA (16=18; 17:0, 18:1), MAG traces, TAG traces | -27.28 | -27.84 |
| WIL 64 | Boscombe | funerary | Beaker | 137.93 | FA (16>18; 14:0, 15:0, 17:0, 17:0br, 18:1,20:0,22:0, 24:0) | -26.59 | -26.14 |
| WIL 65 | Boscombe | funerary | Beaker | 82.66 | FA (16>18; 14:0, 15:0, 17:0, 17:0br, 18:1,20:0,22:0, 24:0) | -26.62 | -26.1 |
| WIL 66 | Boscombe | non-funerary | Collared Urn | 4 | FA traces | n.d. | n.d. |
| WIL 67 | Boscombe | non-funerary | Collared Urn | 3.36 | FA traces | n.d. | n.d. |
| WIL 68 | Boscombe | non-funerary | Collared Urn | 0.38 | n.d. | n.d. | n.d. |
| WIL 69 | Boscombe | non-funerary | Collared Urn | 0 | n.d. | n.d. | n.d. |
| WIL 72 | Cuckoo Stone | funerary | Collared Urn | 21.88 | FA (16<18; 14:0, 15:0, 17:0, 18:1,20:0), MAG, K, DAG TAG | -28.07 | -30.72 |
| WIL 73 | Cuckoo Stone | funerary | Collared Urn | 4 | TAG modern contamination | -31.6 | -28.11 |
| WIL 74 | Cuckoo Stone | funerary | Collared Urn | 4.8 | TAG modern contamination | n.d. | n.d. |